

# **Environmental Scan on Encouraging Rural Participation in Population-Based Total Cost of Care (TCOC) Models**

**September 11, 2023**

This environmental scan was prepared at the request of the Office of the Assistant Secretary for Planning and Evaluation (ASPE) as background information to assist the Physician-Focused Payment Model Technical Advisory Committee (PTAC) in preparing for a theme-based discussion on encouraging rural participation in population-based total cost of care (PB-TCOC) models. Topics that are addressed in this environmental scan include challenges affecting rural patients and providers; opportunities for Alternative Payment Models (APMs) and PB-TCOC models to address challenges in rural areas; trends in rural providers' participation in APMs; driving care delivery transformation in rural providers, including models that include or target rural participants in their model designs; leveraging financial incentives to improve rural health care; adoption and use of health information technology, including telehealth, and data analytics among rural providers; and measurement of rural providers' performance in APMs.<sup>i</sup> The environmental scan is based on information that was publicly available relating to this topic in the literature as of the time that the analysis was completed.

---

<sup>i</sup> This analysis was prepared under contract #HHSP233201500048IHHS75P00123F37023 between the Department of Health and Human Services' Office of Health Policy of the Assistant Secretary for Planning and Evaluation (ASPE) and NORC at the University of Chicago. The opinions and views expressed in this analysis are those of the authors. They do not reflect the views of the Department of Health and Human Services, the contractor, or any other funding organizations. This analysis was completed on September 11, 2023.

## Table of Contents

<b>I. Introduction and Purpose .....</b>	<b>11</b>
<b>II. Key Highlights .....</b>	<b>12</b>
II.A. Definitions.....	12
II.B. Key Findings .....	13
<b>III. Research Approach .....</b>	<b>18</b>
III.A. Research Questions .....	18
III.B. Research Methods .....	20
<b>IV. Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients .....</b>	<b>21</b>
IV.A. Rural Areas .....	21
Data Definitions of Rural.....	22
IV.B. Rural Health Care Facilities and Providers.....	22
Medicare Rural Health Care Facilities .....	23
Other Health Care Facilities Serving Rural Areas .....	25
<b>V. Challenges Affecting Rural Patients and Providers .....</b>	<b>26</b>
V.A. Characteristics of Rural Patients.....	26
V.B. Characteristics of Rural Health Care Systems and Settings/Providers .....	26
V.C. Barriers to Care Delivery in Rural Locations .....	27
V.D. Diversity Among Different Kinds of Rural Areas .....	27
Data Sources and Methods.....	28
Results by RUCC Code .....	29
Results by Geographic Region.....	35
Results.....	35
V.E. Additional Considerations for Super-Rural, Remote, or Frontier Areas .....	42
V.F. Challenges Affecting Rural Providers’ Participation in Alternative Payment Models .....	42
<b>VI. Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Areas .....</b>	<b>43</b>
VI.A. Discussion of Potential Opportunities.....	43
VI.B. Examples of Successful Models .....	43
<b>VII. Trends in Rural Providers’ Participation in APMs.....</b>	<b>45</b>
VII.A. Models for which Rural Providers were/are Eligible.....	46
VII.B. Models for which Rural Providers were Not Eligible.....	52
VII.C. Other Federal Programs for which Rural Providers are Eligible .....	52
<b>VIII. CMMI Models that Include or Target Rural Participants in their Model Designs .....</b>	<b>54</b>
VIII.A. Types of Rural Providers.....	56

VIII.B. Care Delivery Innovations.....	56
VIII.C. Payment Mechanisms .....	58
VIII.D. Lessons Learned Related to Encouraging Participation of Rural Providers .....	60
VIII.E. Experience with Medicare Advantage .....	61
<b>IX. Driving Care Delivery Transformation in Rural Providers .....</b>	<b>61</b>
IX.A. Required and Voluntary Activities in APMs .....	63
Required Activities .....	63
Voluntary Activities .....	64
IX.B. Strategies to Improve Health Care in Rural Areas or for Rural Patients.....	65
<b>X. Leveraging Financial Incentives to Improve Rural Health Care .....</b>	<b>67</b>
X.A. Financial Incentives Offered to Rural Providers by Payer Type.....	67
X.B. Eligibility Criteria for Rural Providers.....	70
X.C. Effectiveness of Different Financial Incentives.....	70
<b>XI. PTAC Proposals that Include or Target Rural Participants in Proposed Model Designs .....</b>	<b>71</b>
XI.A. Types of Rural Providers .....	71
XI.B. Care Delivery Innovations.....	72
XI.C. Payment Mechanisms.....	72
<b>XII. Use of Telehealth Among Rural Patients and Providers .....</b>	<b>73</b>
XII.A. Trends in Adoption and Use Among Rural Patients and Providers .....	73
XII.B. Barriers to Adoption and Use Among Rural Patients and Providers .....	73
XII.C. Strategies to Support Adoption and Use Among Rural Patients and Providers .....	74
<b>XIII. Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers .....</b>	<b>74</b>
XIII.A. Trends in Adoption and Use Among Rural Patients and Providers .....	74
XIII.B. Barriers to Adoption and Use Among Rural Patients and Providers .....	75
XIII.C. Strategies to Support Adoption and Use Among Rural Patients and Providers .....	75
<b>XIV. Measuring Rural Providers’ Performance in APMs .....</b>	<b>75</b>
XIV.A. Measures Relevant to Rural Providers and Their Patients.....	76
XIV.B. Challenges in Measuring Rural Providers’ Performance .....	77
<b>XV. Areas Where Additional Information is Needed .....</b>	<b>79</b>
<b>Appendix A. Research Questions by Environmental Scan Section .....</b>	<b>80</b>
<b>Appendix B. Search Strategy .....</b>	<b>84</b>
<b>Appendix C. Data Definitions of Rural .....</b>	<b>90</b>
<b>Appendix D. Analysis of Selected Area Health Resource File Variables By RUCC Code and Region .....</b>	<b>95</b>
Additional Details on the AHRF Analysis.....	95
Results By Geographic Region and RUCC Code .....	96

**Appendix E. Summary of Model Features and Characteristics of 22 Selected CMMI Models that Include or Focus on Rural Providers in their Model Design ..... 115**  
**Appendix F. Summary of Model Features and Characteristics of 11 Proposals Reviewed by PTAC as of September 2020 that Include or Focus on Rural Providers in their Model Design ..... 165**  
**Appendix G. Summary of Model Features and Characteristics Related to Rural Providers’ Participation in Other Federal Programs ..... 183**  
**Appendix H. Areas for Future Exploration and Research ..... 193**  
**Appendix I. Annotated Bibliography ..... 194**  
**Appendix J. References ..... 246**

## List of Exhibits

Exhibit 1.	Issues Affecting Rural Health care Systems, Settings, Providers, and Patients .....	27
Exhibit 2.	Rurality Designation.....	28
Exhibit 3.	Rural-Urban Continuum Code by United States County, 2020.....	30
Exhibit 4.	Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply.....	31
Exhibit 5.	Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply.....	32
Exhibit 6.	Distribution of Counties and Population by Rural-Urban Continuum Code .....	34
Exhibit 7.	Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply.....	36
Exhibit 8.	Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply.....	38
Exhibit 9.	Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply.....	40
Exhibit 10.	Percentage of Medicare Providers Participating in Advanced APMs by Location and Provider Type, 2017-2019 .....	49
Exhibit 11.	Percentage of Physicians Participating in Advanced APMs by Location and Physician Specialty, 2017--2019 .....	49
Exhibit 12.	CMMI Models that Include or Target Rural Participants in Proposed Model Design and Related Care Delivery Innovations including Model, Model Years, and Model Stage .....	55
Exhibit 13.	CMMI Models that Include or Target Rural Participants in Proposed Model Design and Related Care Delivery Innovations .....	56
Exhibit 14.	CMMI Models that Include or Target Rural Participants in Proposed Model Design and Payment Mechanisms .....	58
Exhibit 15.	CMMI Model Activities Supporting Rural Health .....	61
Exhibit 16.	HCPCS Codes to Support Behavioral Health Care Integration .....	66
Exhibit 17.	Summary Table of Rural-Focused Alternative Payment Models and Other Programs .....	67
Exhibit C1.	Rurality Designations by Data Source .....	92
Exhibit C2.	Uses and Comparisons of Rural Definitions.....	93
Exhibit C3.	Frontier and Remote Designations .....	93
Exhibit D1.	Variable and Definitions from the AHRF Selected for Analysis.....	95
Exhibit D2.	Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply by Geographic Region and Rural-Urban Continuum Code .....	98
Exhibit D3.	Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply by Geographic Region .....	110
Exhibit D4.	Distribution of Counties and Population by Geographic Region .....	114
Exhibit E1.	Characteristics of CMMI Models that Include Rural Providers in their Model Design .....	116
Exhibit E2.	Characteristics of CMMI Models that Focus on Rural Providers in their Model Design...	154
Exhibit F1.	Characteristics of PTAC PFPM Proposals that Include Rural Providers in their Model Design .....	166
Exhibit F2.	Characteristics of PTAC PFPM Proposals that Focus on Rural Providers in their Model Design .....	178

Exhibit F3.	Characteristics of Other PTAC Proposals that Focus on Rural Providers in their Model Design .....	181
Exhibit G1.	Characteristics of Other Federal Programs that Include Rural Providers in their Model Design .....	184

## List of Acronyms

AAHPM	American Academy of Hospice and Palliative Medicine
ACA	Affordable Care Act
ACO	Accountable Care Organization
ACO REACH	Accountable Care Organization Realizing Equity, Access, and Community Health
ACS	American College of Surgeons
ADI	Area Deprivation Index
AIP	Advance Incentive Payment
AHC	Accountable Health Communities
AI/AN	American Indian/Alaska Native
AIM	ACO Investment Model
AMI	Acute myocardial infarction
API	Application programming interface
APM	Alternative Payment Model
AQC	Alternative Quality Contract
ARPA	American Rescue Plan Act
AWV	Annual Wellness Visit
BCBSMA	Blue Cross Blue Shield of Massachusetts
BCBSNC	Blue Cross Blue Shield of North Carolina
BPCI-A	Bundled Payments for Care Improvement Advanced
CAA	Consolidated Appropriations Act
CABG	Coronary artery bypass graft
CAH	Critical Access Hospital
CAUTI	Catheter-associated urinary tract infection
CBE	Consensus-based entity
CBSA	Core based statistical area
CCO	Coordinated Care Organization
CCPN	Community Care Physician Network
CDI	Clostridium difficile infection
CEC	Comprehensive End-Stage Renal Disease Care
CEHRT	Certified EHR Technology
CHART	Community Health Access and Rural Transformation
CHIP	Children's Health Insurance Program
CHW	Community health worker
CLABSI	Central line-associated bloodstream infection
CMF	Care management fee
CMMI	Center for Medicare & Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
CNM	Certified nurse midwife
CoCM	Collaborative care model
CoP	Condition of Participation
COPD	Chronic obstructive pulmonary disease
CTO	Care transition organization
CVD	Cardiovascular disease
DO	Doctor of osteopathic medicine

DSMT	Diabetes Self-Management Training
ECE	Extraordinary Circumstances Exception
ED	Emergency department
EHR	Electronic health record
eICU	Electronic ICU
EMS	Emergency medical services
ET3	Emergency Triage, Treat, and Transport
FAR	Frontier and Remote
FFS	Fee-for-service
FQHC	Federally Qualified Health Center
FSED	Freestanding ED
FY	Fiscal year
GAO	Government Accountability Office
HACRP	Hospital-Acquired Conditions Reduction Program
HCPCS	Healthcare Common Procedure Coding System
HF	Heart failure
HHA	Home health agency
HHS	Department of Health and Human Services
HHVBP	Home Health Value-Based Purchasing
HIE	Health information exchange
HIT	Health information technology
HITECH	Health Information Technology for Economic and Clinical Health
HPSA	Health Professional Shortage Area
HRRP	Hospital Readmissions Reduction Program
HRSA	Health Resources and Services Administration
HRSN	Health-related social need
ICU	Intensive care unit
IFEC	Independent freestanding emergency center
IPPS	Inpatient Prospective Payment System
LPC	Licensed professional counselor
LTCH	Long-term care hospital
MACRA	Medicare Access and CHIP Reauthorization Act
MAP	Measure Applications Partnership
MBQIP	Medicare Beneficiary Quality Improvement Project
MCCM	Medicare Care Choices Model
MCO	Managed care organization
MCP	Making Care Primary
MD	Medical doctor
MDAPM	Maryland All-Payer Model
MDPCP	Maryland Primary Care Program
MDPP	Medicare Diabetes Prevention Program
MDTCOC	Maryland Total Cost of Care
MFT	Marriage and family therapist
MHC	Mental health counselor
MHI	Mental Health Integration
MIPS	Merit-based Incentive Payment System



MPFS	Medicare Physician Fee Schedule
MRSA	Methicillin-resistant Staphylococcus aureus
MSSP	Medicare Shared Savings Program
MTM	Medication Therapy Management
NF	Nursing facility
NGACO	Next Generation Accountable Care Organization
NP	Nurse practitioner
NQF	National Quality Forum
NSM	Net savings to Medicare
OMB	Office of Management and Budget
OPD	Outpatient department
PA	Physician assistant
PAC	Post-acute care
PARHM	Pennsylvania Rural Health Model
PBPM	Per beneficiary per month
PB-TCOC	Population-based total cost of care
PCMH	Primary care medical home
PFBM	Physician-focused payment model
PHE	Public health emergency
PMPM	Per member per month
PPS	Prospective Payment System
PQM	Partnership for Quality Measurement
PRC	Personalized Recovery Care
PRT	Preliminary Review Team
PSI	Patient Safety Indicator
PTAC	Physician-Focused Payment Model Technical Advisory Committee
PY	Performance year
QPP	Quality Payment Program
REC	Regional extension center
REH	Rural Emergency Hospital
RFI	Request for Input
RHC	Rural Health Clinic
RHRCA	Rural Health Redesign Center Authority
RPA	Renal Physicians Association
RTS	Report to the Secretary
RUCA	Rural-Urban Commuting Area
RUCC	Rural-Urban Continuum Code
SDOH	Social determinants of health
SES	Socioeconomic status
SIM	State Innovation Model
SME	Subject matter expert
SNF	Skilled nursing facility
SSI	Surgical site infection
THA	Total hip arthroplasty
TIN	Taxpayer identification number
TKA	Total knee arthroplasty

TPR	Total patient revenue
U.S.	United States
UNMHSC	University of New Mexico Health Sciences Center
VA	Veterans Affairs
VBP	Value-Based Purchasing
VFC	Vaccines for Children
VTAPM	Vermont All-Payer Model

## I. Introduction and Purpose

Under the bipartisan Medicare Access and Children’s Health Insurance Program (CHIP) Reauthorization Act (MACRA) of 2015, Congress significantly changed Medicare fee-for-service (FFS) physician payment methods. The law also specifically encouraged the development of Alternative Payment Models (APMs) known as physician-focused payment models (PFPMs) and created the Physician-Focused Payment Model Technical Advisory Committee (PTAC) to review stakeholder-submitted PFPM proposals and make comments and recommendations on them to the Secretary of Health and Human Services (HHS; “the Secretary”).

Since its inception, PTAC has received 35 proposals for PFPMs from a diverse set of physician payment stakeholders, including professional associations, health systems, academic groups, public health agencies, and individual providers.<sup>ii</sup> PTAC evaluates the PFPM proposals based on the extent to which they meet the Secretary’s 10 regulatory criteria for PFPMs (specified in federal regulations at 42 CFR § 414.1465). Several of the 10 criteria for proposed PFPMs that PTAC uses to evaluate stakeholder-submitted proposals are especially pertinent to encouraging rural provider participation in population-based models.

Given the increased emphasis on developing larger, population-based APMs that encourage accountable care relationships, PTAC has conducted several theme-based discussions between 2021 and mid-2023 that have examined key care delivery and payment issues related to improving care coordination.

A key theme that has emerged during these theme-based discussions relates to rural provider participation in population-based models. Relevant topics identified for investigation include creating a better understanding of how to:

- Drive care delivery transformation among rural providers;
- Leverage financial incentives to improve rural health care;
- Adopt and use health information technology (HIT), including telehealth, and data analytics among rural providers; and
- Measure rural providers’ performance in APMs.

Several previous submitters have addressed rural provider challenges, rural patient issues, barriers to rural provider participation in population-based models, and approaches to overcome these challenges, issues, and barriers in their proposals. PTAC has assessed the submitters’ ideas for encouraging rural provider participation and has provided comments and recommendations on the strengths and weaknesses of their proposals in the Committee’s Reports to the Secretary.

This environmental scan provides PTAC members with background information and context reflecting expert perspectives on issues related to rural providers and their patients. The environmental scan is expected to help PTAC members review strategies in proposals previously submitted to the Committee. In addition, the environmental scan can inform the Committee’s review of future proposals, and future

---

<sup>ii</sup> The 35 proposals submitted to PTAC represent an unduplicated count (i.e., proposals with multiple submissions are counted only once) of the number of proposals that have been voted and deliberated on by the Committee (28) and the number of proposals that have been withdrawn by stakeholders (7, including one proposal that was withdrawn prior to any review by the Committee).

comments and recommendations that Committee members may submit to the Secretary relating to rural provider participation in population-based models.

This environmental scan summarizes relevant information from PTAC's review of proposals from previous submitters and findings from relevant literature, selected Center for Medicare & Medicaid Innovation (CMMI) Models, and other Centers for Medicare & Medicaid Services (CMS) and state models, demonstrations, and programs.

Section II provides key highlights of the findings from the environmental scan. Section III describes the research questions and methods used in the environmental scan. Subsequent sections explore defining rural in the context of health systems, settings/providers, and patients (Section IV); challenges affecting rural patients and providers (Section V); opportunities for APMs and PB-TCOC models to address challenges in rural areas (Section VI); trends in rural providers' participation in APMs (Section VII); CMMI Models that include or target rural participants in their model designs (Section VIII); driving care delivery transformation among rural providers (Section IX); leveraging financial incentives to improve rural health care (Section X); PTAC proposals that include or target rural participants in proposed model designs (Section XI); use of telehealth among rural patients and providers (Section XII); adoption and use of HIT and data analytics among rural patients and providers (Section XIII); measuring rural providers' performance in APMs (Section XIV); and areas where additional information is needed (Section XV). Additionally, a list of exhibits and list of abbreviations can be found at the beginning of the environmental scan, following the table of contents.

## II. Key Highlights

The following section provides important definitions and highlights key findings from this environmental scan on encouraging rural provider participation in population-based models.

### II.A. Definitions

The following are key definitions related to the analysis of opportunities for encouraging rural provider participation in population-based models.

**Rural Area.** The Rural Health Information Hub notes that rural is "...an inexact term that can mean different things to different people, organizations, and governments."<sup>1</sup> There are a variety of definitions for determining what constitutes a rural area that are used for different purposes. The criteria used to identify rural areas include geography, population size, population density, proximity to metropolitan areas, and geographic remoteness. The most remote areas that are sparsely populated and geographically isolated from population centers and services are often categorized as "frontier" areas. Rural areas are largely classified at either the county, zip code, or census tract level by different sources (i.e., the U.S. Census Bureau [Census Bureau], the Office of Management and Budget [OMB], and the U.S. Department of Agriculture [USDA]).

PTAC is using the following working definition of "rural area" as a starting point:

- The Office of Management and Budget (OMB) identifies metropolitan areas as counties with 50,000 or more people, and rural areas as counties with fewer than 50,000 people.
- The U. S. Department of Agriculture's Rural-Urban Continuum Codes (RUCC) can be used to further identify differences in rural counties based on population size and proximity to metropolitan areas.

This definition will likely evolve as the Committee collects additional information from stakeholders.

This working definition of rural area draws from OMB's definition of counties with fewer than 50,000 people and USDA's nine Rural-Urban Continuum Codes, the latter allowing for further investigation of rural counties' differences based on population size and proximity to metropolitan areas. Please see Appendix C for additional information about RUCC codes.

**Rural Provider.** A rural provider is a provider (e.g., an independent practitioner or other type of provider) physically located in a rural area. Rural providers include Critical Access Hospitals, Federally Qualified Health Centers, Rural Health Clinics, Medicare-dependent Hospitals, and Rural Emergency Hospitals. Other providers that may not focus explicitly on rural populations but still provide services to them include large integrated delivery networks, sole community hospitals, mobile clinics, freestanding emergency departments, and Accountable Care Organizations.

PTAC is using the following working definition for rural providers:

- Rural providers are providers, including independent practitioners and other types of providers, that are physically located in rural areas.
- Additionally, PTAC is aware that some rural communities have access to providers that are located in urban or suburban communities.

**Rural Patient.** A rural patient is a patient residing in a rural area.

## II.B. Key Findings

Below are the key findings from the different sections covered in this environmental scan.

### Challenges Affecting Rural Patients, Facilities, and Providers

Rural patients face numerous socioeconomic, geolocation, and health challenges compared to non-rural patients, which include but are not limited to lower income, reduced transportation options, older age, and higher rates of chronic conditions, obesity, and substance use disorder.<sup>2, 3, 4, 5, 6, 7</sup> With respect to health care, rural patients have less access to health services, live farther from health care facilities, and have lower rates of health care insurance coverage than non-rural patients.<sup>8, 9, 10, 11</sup>

Rural facilities face challenges with financial stability, limited health information technology, health care workforce retention, and access to ancillary service providers, making it difficult for rural facilities to provide all of the health care services required to fully address their patients' needs. Rural facilities often have lower patient volumes than their urban counterparts, making it challenging to maintain consistent and sustainable funding, particularly during times of uncertainty such as the COVID-19 public health emergency (PHE).<sup>12, 13</sup>

Rural areas' lower health information technology (HIT) adoption rates hinder effective tracking of patients' care and progress, as well as provision of remote care.<sup>14</sup> Rural systems face difficulty in hiring and retaining the breadth of health care providers necessary to offer patients comprehensive health care services.<sup>15</sup> The lower primary care physician to patient ratio in rural areas,<sup>16</sup> coupled with limited access to ancillary service providers (e.g., home health care, diagnostic testing, and dialysis services providers<sup>17</sup>), leaves many rural health facilities understaffed and overburdened.<sup>18, 19</sup>

Rural facilities and providers face key challenges that make participation in APMs difficult. Typical rural residents receive fewer health care services, particularly services found to improve long-term health

outcomes,<sup>20</sup> which may impact their performance in APMs. APMs' criteria around eligibility (i.e., minimum patient populations) and payment (i.e., requiring facilities to forego augmented Medicare FFS payments) have prevented certain rural providers from participating in APMs.<sup>21, 22</sup> Rural providers may encounter difficulty shifting to APMs for only part of providers' patient loads,<sup>23</sup> and their workforce shortages may prevent them from having the minimum staffing necessary for participation.<sup>24, 25</sup> Providers' low patient volumes and small patient populations can be inadequate for APM evaluation and can skew quality and efficiency measurements when patients require more expensive care.<sup>26, 27</sup> Last, rural providers' low financial reserves and uncertain financial stability render it difficult for them to afford the additional costs required for APM participation (i.e., additional infrastructure and staff), and may breed hesitancy among providers to take on additional downside risk and participate in two-sided risk models.<sup>28, 29, 30, 31</sup>

### **Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Areas**

There have been significant increases in Medicare Advantage (MA) plans and MA enrollment in rural areas between 2010 and 2023. Although fewer rural beneficiaries are enrolled in MA (40% vs. 44% in micropolitan areas and 53% in metropolitan areas), the share of eligible rural beneficiaries enrolled in MA plans has nearly quadrupled since 2010.<sup>32</sup>

Similarly, the average Medicare beneficiary living in a rural community has a selection of 27 MA plans to choose from in 2023, up from 19 in 2010. By comparison, micropolitan residents have 31 plans to choose from in 2023, versus 21 in 2010 and metropolitan residents have 46 plans to choose from in 2023, compared to 32 in 2010.

APMs and PB-TCOC models may have opportunities to address challenges and drive value-based care for FFS beneficiaries in rural areas. These models may include design and implementation of customized payment approaches that incentivize clinicians to provide high-quality, high-value care. The significant challenges in rural areas, described above, highlight the importance of developing effective value-based care in rural areas. More than in other areas, health care in rural areas relies on primary care and community-based relationships. These characteristics are well-suited for APMs because they can foster coordination across the care continuum. Furthermore, strong existing relationships among providers within a community can also help facilitate delivery system changes in rural health care systems.<sup>33</sup> APMs can also help to provide resources to support infrastructure development, as well as a more predictable revenue stream for rural providers.

### **Trends in Rural Providers' Participation in APMs**

Rural providers participate in advanced APMs at a lower rate than their suburban and urban counterparts. For example, a GAO analysis found that 11.9 percent of providers in rural and health professional shortage areas took part in advanced APMs in 2019, compared with 14.8 percent of providers in other areas.<sup>34</sup> While rural providers are eligible to participate in many APMs, few CMMI Models specifically address characteristics of rural patients.<sup>35</sup> Many rural providers face barriers in the transition to APMs, such as insufficient capital to invest in funding that transition, purchasing electronic health records (EHRs), and accessing the data necessary for optimizing their participation in these models.<sup>36</sup> Rural providers also tend to have smaller financial reserves and uncertain financial stability, which challenge their ability to take on downside risk and transition into two-sided risk arrangements.<sup>37, 38, 39</sup> Additionally, solo and small practice providers are more likely to practice in rural areas,

compounding barriers related to low patient volumes, disproportionate patient risk, and financial stability.<sup>40, 41</sup>

### **CMMI Models that Include or Target Rural Participants in their Model Designs**

CMMI Models that either specifically target or include rural participants in their model designs offer a number of key findings that we can learn from their implementation, including relevant care delivery innovations, payment methodologies, and lessons learned to encourage participation. Care delivery innovations include offering behavioral health care services, supporting the use of telehealth services, supporting and encouraging care coordination across providers, improving specialty integration, and many more. Payment mechanisms to support providers include pre-paid shared savings, per beneficiary per month (PBPM) payments, global budgets, FFS payments, population-based payments, bundled payments, and performance-based payments. Lessons learned include establishing longer on-ramps for rural practices interested in APM participation;<sup>42</sup> developing APMs that specifically target rural settings;<sup>43</sup> identifying suitable, risk-adjusted quality measures;<sup>44</sup> providing risk protection caps on risk exposure;<sup>45</sup> extending bonus payments for new Advanced APM participants;<sup>46</sup> and decreasing qualifying participation thresholds for rural providers operating under APMs.<sup>47</sup>

### **Driving Care Delivery Transformation in Rural Providers**

Numerous CMMI Models include activities aimed at improving access to and quality of care for rural areas. Five of these models specifically target rural areas, while the rest include specific enhancements that affect rural health without it being the main focus. Five CMMI Models that target rural areas are the Community Health Access and Rural Transformation (CHART) Model, Pennsylvania Rural Health Model (PARHM), Frontier Community Health Integration Project (FCHIP) Demonstration, ACO Investment Model (AIM), and the Rural Community Hospital Demonstration.<sup>iii</sup> For models such as PARHM, participating organizations are required to develop and implement care innovation plans that address health inequities, identify community resources and barriers, and propose strategies that promote high-quality care in rural settings. Similarly, the FCHIP Demonstration requires participants to use information on social determinants of health (SDOH) and health-related social needs (HRSNs) to inform health care redesign activities, which may support patient-centered care for rural populations. Participants from the FCHIP Demonstration and AIM use model funds to invest in telehealth services and HIT infrastructure to improve access to and coordination between services. In contrast, other CMMI Models that affect rural areas allowed additional regulatory and care team flexibilities to improve access to and quality of care (e.g., the ACO Realizing Equity, Access, and Community Health [ACO REACH] Model; the Emergency Triage, Treat, and Transport [ET3] Model, and the Part D Enhanced Medication Therapy Management [MTM] Model). In general, strategies to improve health care for rural populations target the shortage of health care professionals, barriers in accessing care, and lack of resources. The shift in payment methods prompted by the CMMI Models and Demonstrations aimed to provide additional resources to address rural health challenges, however model evaluation results have been mixed. PARHM was the most successful in reducing costs and post-acute care utilization.<sup>48</sup>

### **Leveraging Financial Incentives to Improve Rural Health Care**

---

<sup>iii</sup> The Rural Community Hospital Demonstration was developed by statute in the Medicare Modernization Act of 2003 and predates CMMI, thus it is not necessarily comparable to other CMMI models.

Several APMs and value-based programs focus on rural providers and provide financial incentives tailored to encourage or enhance rural providers' participation. Some research suggests that the most promising models for rural providers include at least one strong financial incentive, as well as participation by all-payer types. Due to the lower volume of health care services delivered in rural areas, the alignment of financial incentives across payer types may increase the strength of such incentives and the viability of the model in rural settings. For example, PARHM provides fixed population-based payments for participating hospitals and engages all payer types. Evaluation reports suggest that this is a promising strategy as long as sufficient participation is reached across all payer types.<sup>49</sup> Other models offered an up-front payment for rural Medicare providers to join (e.g., AIM) or adjusted performance benchmarks for patient populations with higher health care and social needs (e.g., ACO REACH), encouraging participation from providers who furnish care to underserved populations, including rural providers.<sup>50</sup> The percentage of participating providers who are Federally Qualified Health Centers (FQHCs), Rural Health Clinics (RHCs), and Critical Access Hospitals (CAHs) has increased with each year of the ACO REACH Model from 2021 to 2023, although this proportion remains small (less than one percent of participating providers); no evaluation reports are yet available.<sup>51</sup> In comparison, the number of FQHCs, RHCs, and CAHs participating in the Medicare Shared Savings Program (MSSP) is substantially higher, with 4,409 FQHCs, 2,240 RHCs, and 467 CAHs as of January 1, 2023.<sup>52</sup>

### **PTAC Proposals that Include or Target Rural Participants in Proposed Model Designs**

Eleven of the 35 proposals that were submitted to PTAC between 2016 and 2020 included or targeted rural participants in their proposed model design. The proposals that have been submitted to PTAC included several activities that may best engage rural providers. Some PTAC proposed models provided financial incentives for small practices, addressed availability of telehealth services and in-home medical care, or included strategies to reduce hospital readmissions and return ED visits.

Of the 11 proposals that included or targeted rural providers, primary care was the most common focus (six proposals), followed by specialty care (three proposals) and emergent care (two proposals).<sup>iv</sup> Common care delivery innovations included engaging non-physician providers (six proposals; e.g., physician assistants, nurse practitioners, clinical nurse specialists, clinical social workers, and care coordinators), implementing or leveraging telehealth (five proposals), and expanding care networks or forming new entities (two proposals). All 11 proposals included performance measures relevant to rural health care, including hospital inpatient readmissions and/or ED revisits (five proposals), hospital inpatient and ED utilization (three proposals), medication documentation and/or reconciliation (three proposals), screenings (two proposals), and patient experience (two proposals). Less than half (four) of the 11 proposals included financial incentives that could encourage rural provider participation in the PFFM. These incentives included up-front payments to support patient-centered care delivery and performance-based payments with no downside risk. One additional proposal included suggested changes related to increasing the provision of preventive care and Medicare Annual Wellness Visits (AWVs) to Medicare beneficiaries in RHCs.

### **Use of Telehealth Among Rural Patients and Providers**

---

<sup>iv</sup> Note Mercy Accountable Care Organization submitted a proposal with an advanced primary care focus that is not a physician-focused payment model and thus it is not included in this description.



Telehealth can improve access to and quality of care for rural patients by reducing wait times, increasing appropriate referrals, facilitating diagnostic tests and treatment, and enhancing provider-to-provider communication.<sup>53, 54, 55, 56</sup> However, expanded telehealth use could impose unintended consequences, such as worsening health care disparities among patients with low socioeconomic status.<sup>57</sup> Such health care disparities may occur because of differences in broadband internet access and digital literacy across population groups.<sup>58</sup> Historically, telehealth was more commonly used in rural areas, aiming to expand health care access to patients living in areas with health care provider shortages.<sup>59, 60</sup> Medicare greatly expanded the FFS telehealth services it reimbursed as well as the health care practitioners who can bill for telehealth services at the onset of the COVID-19 pandemic.<sup>61</sup>

Rural providers and patients often encounter barriers to using telehealth, including patients' limited broadband access and lack of necessary technology.<sup>62, 63</sup> Rural providers may not have adequate time and space to conduct telehealth visits or the available funds to implement and maintain telehealth platforms.<sup>64, 65</sup> Some research suggests that models which bundle payments for services associated with specific procedures or conditions give providers flexibility to deliver telehealth services in an innovative and efficient manner compared to traditional payment models.<sup>66</sup> APMs could also provide bonus payments for rural providers to develop their telehealth infrastructure. For example, global budgets provide rural hospitals with a more predictable stream of funds. This financial stability can allow rural hospitals to invest in telehealth infrastructure and budget for telehealth maintenance costs.<sup>67</sup> Some constituencies and policy makers continue to emphasize the need for more funding, resources (e.g., broadband facilities and equipment), and federal coordination efforts to increase access to broadband networks for rural patients and providers.<sup>68, 69</sup>

### **Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers**

Rural providers may be able to leverage HIT and data analytics to help overcome barriers that disproportionately affect rural patients (e.g., health care provider shortages), thereby increasing their chance of success in APMs.<sup>70</sup> For example, in rural areas with health care provider shortages, the use of EHRs and other HIT can increase efficiency and engagement with rural patients.<sup>71, 72</sup> Through EHRs, patients can communicate with their providers without in-person visits, receive reminders for follow-up care, schedule appointments, find health education materials, and self-manage some of their medical needs.<sup>73</sup> Rural providers adopt HIT at similar or reduced rates compared to urban providers, while rural patients are less likely to engage with HIT than urban patients.<sup>74, 75, 76</sup> At the time of this environmental scan, research was limited about the use of data analytics in rural health care settings compared to those in non-rural areas.

Rural provider barriers to HIT primarily center around HIT infrastructure development and maintenance.<sup>77</sup> For example, approximately 43 percent of Rural Health Clinics report that costs for HIT improvements prevent their participation in ACOs.<sup>78</sup> Barriers to rural patient engagement with HIT include limited broadband access<sup>79, 80</sup> and low digital literacy.<sup>81</sup> Strategies to increase HIT adoption and use among rural providers include providing access to HIT infrastructure funding<sup>82</sup> and technical assistance,<sup>83</sup> and the adoption of value-based payment incentives for rural providers to use HIT.<sup>84</sup> Efforts to increase broadband internet access and digital skills training could help increase patient engagement with HIT.<sup>85</sup>

### **Measuring Rural Providers' Performance in APMs**

Many existing performance measures do not take into account the circumstances rural providers face when delivering health care services to their rural patient populations. Not only are some measures inappropriate to use in rural areas, but rural providers also face additional challenges that hinder their ability to assess performance. Moreover, some rural provider types, including RHCs and FQHCs, are not required to participate in the Medicare quality program. RHCs and FQHCs use different claims forms that may increase difficulty of reporting claims-based measures. Such difficulties could discourage RHCs from participating in ACOs because they lack confidence in their ability to report on quality measures.

Some experts note that designing and implementing performance measures that are appropriate for rural providers could support high-value care delivery for rural providers and patient populations. To improve measurement efficacy, measures may need to consider the circumstances that rural providers experience when delivering care to rural patient populations such as low case volumes. Low case volumes can be a substantial barrier for performance measurement efforts in rural areas because they reduce the reliability and validity of performance measurement results, challenge the comparison of performance across providers, and can also impact rural providers' ability to participate in CMS quality programs.<sup>86</sup>

In 2014, the National Quality Forum (NQF) established a Measure Applications Partnership (MAP) Rural Health Workgroup to identify criteria for selecting rural-relevant measures. Selection criteria included measures that are NQF-endorsed,<sup>v</sup> are cross-cutting, are resistant to low case volumes, and address care transitions.<sup>87, 88</sup> These criteria informed the selection of the current set of 37 key rural-relevant measures used today in rural hospital and ambulatory care settings. The measures cover rural-relevant topics such as readmissions, behavioral health and substance use, telehealth, access to care, and SDOH.<sup>89</sup>

Workforce shortages and limited funds and other resources challenge rural providers' ability to participate in performance measurement and quality improvement efforts. Funding the development of rural-relevant measures, modifying measurement approaches to reduce the administrative burden of data collection (e.g., allowing the collection of data electronically versus over the telephone), and reconsidering how rural providers are incentivized for quality improvement efforts could help to address these challenges.<sup>90, 91</sup>

### **III. Research Approach**

This section provides a brief review of the research questions and methods that were used in developing this environmental scan.

#### **III.A. Research Questions**

Working closely with ASPE staff and with input from a subset of Committee members known as a Preliminary Comments Development Team (PCDT)<sup>vi</sup>, the following research questions were developed to inform this environmental scan. For several research questions, selected examples are provided that focus on the broader intent of this environmental scan.

---

<sup>v</sup> As announced in April 2023, the Partnership for Quality Measurement (PQM) oversees consensus-based entity (CBE) evaluation and maintenance of quality measures.

<sup>vi</sup> A Preliminary Comments Development Team (PCDT) comprised three PTAC members: Jay Feldstein, DO; Joshua Liao, MD, MSc; and James Walton, DO, MBA.

- How should “rural” be defined as it pertains to geographic areas, health care systems, settings/providers, and patient populations?
  - What are the types of health care providers that serve rural areas (including non-rural providers whose catchment areas include rural areas)?
  - To what extent do rural beneficiaries have access to providers located in non-rural areas?
  - What are the characteristics and needs of rural Medicare beneficiaries (chronic conditions, other factors, practice patterns)? How many beneficiaries live in the different types of rural areas, such as areas that are less rural (i.e., have an urban population of 20,000 or more and are adjacent to a metro area, compared to very rural (i.e. have an urban population of less than 2,500 people and are not adjacent to a metro area)?
  - How do rural beneficiaries’ service utilization patterns compare with service utilization patterns of other Medicare beneficiaries (for example, use of specialists and other types of providers)?
  - What social and other risk factors influence patient populations residing in rural areas, as compared to other geographies?
  - How can rural providers be incentivized to address social risk factors faced by the communities and sub-populations they serve (e.g., including indigenous communities, patients with behavioral health and substance use disorder needs)?
- What are the major challenges that affect rural patients and rural providers?
  - How do the challenges vary for different types of rural areas i.e. those that are less rural versus those that are very rural)?
  - How does the availability of specialty providers vary depending on the type of rural area?
  - How is the current Medicare payment methodology for both FFS and for Medicare Advantage affecting care delivery in rural areas, both positively and negatively?
- What are the major barriers that hinder rural providers’ participation in APMs?
  - What specific APM eligibility criteria discourage or prevent rural providers’ participation in APMs (such as attributable population size, facility type, facility size, or HIT infrastructure requirements)?
  - What issues affect the participation of rural Federally Qualified Health Centers in population-based models?
  - What issues affect the participation of Rural Health Clinics (RHCs) in population-based models?
  - What issues affect the participation of solo practitioners in population-based models?
  - What other barriers affect rural safety net providers’, such as Critical Access Hospitals and Rural Health Clinics, participation in APMs?
- What care delivery interventions are most effective in driving value-based care transformation in rural areas?
  - What strategies do these interventions or models include (for example, telehealth services, remote monitoring, patient education and self-management, use of community paramedicine or community health workers [CHWs], use of freestanding emergency departments [FSEDs], screening for and addressing health-related social needs [HRSNs])?

- What are examples of organizations that have been effective in implementing value-based care delivery models for patients and providers in rural areas? How does the effectiveness of these approaches vary for different kinds of rural providers (such as individual practices versus hospitals versus integrated delivery systems)?
- What types of care are most difficult to provide in rural areas (for example, home health care; hospice and palliative care; behavioral health care; alcohol and substance use disorder services; reproductive, obstetric, and maternal health services)? What strategies can specifically target these types of care for improvement?
- How can care delivery interventions address specific barriers faced by patient populations residing in rural areas (for example, lack of access to care, lack of health care coverage, distance and lack of transportation, provider shortages, lack of communication or trust)?
  - For instance, should or do rural health care delivery interventions or models focus on specific populations (for example, veterans, persons who identify as American Indians and Alaska Natives [AI/ANs], uninsured populations)? What financial incentives are being used or could be used to increase rural providers' participation in APMs?
- What financial incentives are used to increase rural providers' participation in APMs?
  - Which payers (Medicare FFS, Medicare Advantage, Medicaid, commercial) offer financial incentives to rural providers?
  - What criteria must rural providers meet to be eligible for these financial incentives?
  - How can these incentives be leveraged to drive value-based care transformation among rural providers?
  - What financial risks are associated with APM participation for rural providers (for example, financial insolvency, bankruptcy, closure, Medicare margins)?
- What are the rural-specific issues related to different aspects of health system delivery?
  - What are the rural-specific issues related to care coordination, integration, and transition management?
  - What are the rural-specific issues related to telehealth?
  - What are the rural-specific issues related to infrastructure?

A summary of research questions by the environmental scan section is provided in Appendix A.

### **III.B. Research Methods**

The environmental scan presents background information from a targeted review of the literature, PTAC documents, and resources related to CMMI and other models, such as the Medicare Shared Savings Program (MSSP), the Community Health Access and Rural Transformation (CHART) Model, Pennsylvania Rural Health Model (PARHM), Frontier Community Health Integration Project (FCHIP) Demonstration, ACO Investment Model (AIM), and the Rural Community Hospital Demonstration. The aim of the targeted internet search was to identify and to synthesize information from existing peer-reviewed publications and gray literature from organizations focused on health care delivery transformation. To conduct this internet search, we used the terms "rural health" and "rural health care" in conjunction with more specific search terms for each section. For example, for Section V, "Challenges Affecting Rural Patients and Providers," some of the terms we used along with "rural health" and "rural health care" included "chronic conditions," "disparities," "SDOH," and "barriers." The inclusion criteria focused the search on publications from health care agencies and research organizations between 2013 and the

present, in the English language, and based in the United States. The detailed search strategy is provided in Appendix B.

The analysis of PTAC proposals included a thorough review of past proposals, PTAC Reports to the Secretary, and content available in other PTAC process documents (e.g., public meeting minutes, Preliminary Review Team [PRT] reports). The analysis of CMMI APMs was based on a review of publicly available resources, including the description of and technical documents related to each selected model on the CMMI website and recent CMMI Model evaluation reports for the model, when an evaluation report was available. Where CMMI Model evaluation reports were not available on the CMMI website, an internet search was conducted to locate other relevant evaluations, including those that may have been initiated by the participants themselves. For CMMI Models that involved a state Medicaid agency, the agency's website was reviewed to identify any additional information on the model.

#### **IV. Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients**

There are several definitions of rurality and different approaches to analysis of rural populations and health systems. This section provides an overview of these definitions, as well as the characteristics of health care systems and patients in areas covered by these definitions. It also describes barriers to care delivery in areas that are classified as rural.

##### **IV.A. Rural Areas<sup>vii</sup>**

The Rural Health Information Hub notes that rural is "...an inexact term that can mean different things to different people, organizations, and governments. Trying to define 'rural' is a challenging task in a nation with diverse geography and changing demographics."<sup>92</sup> There are a variety of definitions for determining what constitutes a rural area that are used for different purposes. The criteria used to identify rural areas include geography, population size, population density, proximity to metropolitan areas, and geographic remoteness. The most remote areas that are sparsely populated and geographically isolated from population centers and services are often categorized as "frontier" areas. Frontier areas face challenges with health care access compared to other rural areas.<sup>93</sup>

PTAC is using the following working definition of "rural area" as a starting point:

- The Office of Management and Budget (OMB) identifies metropolitan areas as counties with 50,000 or more people, and rural areas as counties with fewer than 50,000 people.
- The U. S. Department of Agriculture's Rural-Urban Continuum Codes (RUCC) can be used to further identify differences in rural counties based on population size and proximity to metropolitan areas.

This definition will likely evolve as the Committee collects additional information from stakeholders.

This working definition of rural area draws from OMB's definition of counties with fewer than 50,000 people and USDA's nine Rural-Urban Continuum Codes, the latter allowing for further investigation of rural counties' differences based on population size and proximity to metropolitan areas.

---

<sup>vii</sup> Note the literature cited throughout this document defines rural in several different ways.

**Rural Patient.** A rural patient is a patient residing in a rural area.

**Rural Provider.** A rural provider is a provider (e.g., an independent practitioner or other type of provider) physically located in a rural area. Rural providers include Critical Access Hospitals, Federally Qualified Health Centers, Rural Health Clinics, Medicare-dependent hospitals, and Rural Emergency Hospitals. Other large integrated delivery networks, mobile clinics, Sole Community Hospitals, freestanding emergency departments, and Accountable Care Organizations.

#### Data Definitions of Rural

There are several levels of geographic boundaries in the United States, ranging from regions (e.g., Northeast, Northwest, Southeast, Southwest, and Midwest) to census blocks (a small area bounded by visible features as well as nonvisible boundaries such as property lines, city, township, school district, county limits and short line-of-sight extensions of roads).<sup>94</sup> Geographic boundaries at the county, zip code, and census tract levels allow for analysis of population trends at increasingly granular levels. These three levels are often used to categorize areas as either rural or non-rural.<sup>viii</sup>

For example, USDA's Rural-Urban Continuum Codes (RUCCs) classify metropolitan (metro) counties by the population size of their metro area, and nonmetropolitan counties by their degree of urbanization and adjacency to a metro area.<sup>95</sup> Similarly, OMB's Core Based Statistical Areas (CBSAs) classify counties as metropolitan, micropolitan, and noncore, with rural being defined as all nonmetropolitan counties (i.e., micropolitan and noncore counties).<sup>96</sup> Meanwhile, the U.S. Health Resources and Services Administration (HRSA)'s rural definition includes all non-metro counties, metro census tracts with USDA Rural-Urban Commuting Area Codes (RUCA) codes 4-10 (i.e. micropolitan, small town, and rural areas), large area census tracts of at least 400 square miles in area with a population of 35 or less per square mile, and all outlying metro counties without an urbanized area.<sup>97</sup>

These differing definitions are used for various purposes, including grantmaking, public policy, and research. The numerous definitions of rural makes it difficult to fully understand rural-urban disparities as well as health facilities' eligibility for funding.<sup>98</sup> For example, HRSA uses their definition for grantmaking to eligible health care providers,<sup>99</sup> while CMS relies on the Census' urban definition for Rural Health Clinic determinations,<sup>100</sup> and HHS uses the OMB definition to tier reimbursement for Medicare services.<sup>101</sup>

Appendix C includes additional information about the various kinds of rural definitions.

#### **IV.B. Rural Health Care Facilities and Providers**

Rural health care facilities and providers (including independent practitioners and other types of providers) are often physically located in rural areas, however given the differing parameters of rural described above combined with caveats with certain health care funding streams (such as urban hospitals being able to reclassify as rural for wage index purposes)<sup>102</sup>, some rural providers end up being located in non-rural areas. Compared to non-rural providers, rural providers may face different challenges, including economic and cultural obstacles, as well as treating patient populations with higher disease burden.<sup>103</sup>

---

<sup>viii</sup> Examples of selected definitions of rurality in data are provided in Appendix C.

## Medicare Rural Health Care Facilities

Rural health care settings that provide care to Medicare beneficiaries include Critical Access Hospitals, Federally Qualified Health Centers, Rural Health Clinics, Medicare-dependent hospitals, Sole Community Hospitals, and Rural Emergency Hospitals.

**A Critical Access Hospital (CAH)** is a “designation given to eligible rural hospitals by CMS.”<sup>104</sup> CAHs provide 24-hour emergency care services to rural populations. CAH eligibility requires the hospital to participate in Medicare and to be licensed as an acute care hospital. It must also be located in a rural area, in a state that has established a State Medicare Rural Hospital Flexibility Program, and either more than 35 miles from the nearest hospital or CAH or more than 15 miles in areas with mountainous terrain or only secondary roads.<sup>105</sup> CAHs must be located in areas that are outside metro areas as defined by the OMB and must not be classified as an urban hospital.<sup>106</sup> CAHs must maintain a maximum of 25 inpatient beds that can be used for either inpatient or swing bed services (beds that can be used for either acute or post-acute care)<sup>107</sup> and an annual average length of stay of 96 hours or fewer per patient for acute inpatient care (excluding swing bed services and beds that are within distinct part units).<sup>108</sup> CAHs often operate other facilities. Sixty percent of CAHs manage Rural Health Clinics, and 38 percent provide skilled nursing care. Beyond these facilities, CAHs are more likely to operate dental offices, behavioral health practices, community health centers, pharmacies, and emergency medical services (EMS) than specialty facilities or primary group practices.<sup>109</sup>

Attaining CAH status allows the hospital to receive cost-based reimbursement<sup>ix</sup> from Medicare, have flexible staffing and services (to the extent permitted under state laws), have capital improvement costs included in allowable Medicare reimbursement costs, and have access to specialized education resources, grants, and/or technical assistance (such as assistance with transitioning to value-based care, navigating federal regulations, and support with operations and financial performance).<sup>110, 111</sup>

**Federally Qualified Health Centers (FQHCs)** provide comprehensive primary and preventive services to patients regardless of their ability to pay. FQHCs must be located in or serve a designated Medically Underserved Area or serve a Medically Underserved Population, have a sliding fee discount program, be governed by a board of directors representative of their service population, and provide services during times that are accessible by their patients (e.g., after hours). FQHCs are community-based and provide care through interdisciplinary teams and patient-centered approaches. FQHCs serve approximately one in five rural residents and have specific Medicaid and Medicare reimbursement systems.<sup>112</sup> They also have their own benefits through being a Health Center Program award recipient, such as access to certain grants and to the Vaccines for Children (VFC) program, reduced costs for prescription and non-prescription medications, and additional training and technical assistance.<sup>113</sup> FQHCs may receive additional support to serve specific populations, such as migratory and seasonal agricultural workers, unhoused people, and individuals living in public housing.

**Rural Health Clinics (RHCs)** may be either for-profit and nonprofit facilities. They provide primary care and routine laboratory services to rural areas. They must be located in a rural area designated as a

---

<sup>ix</sup> Medicare provides cost-based payments to CAHs based on the actual cost of the hospital’s services instead of the standard Medicare fee. MA plans are not required to reimburse at the same rate as traditional Medicare if they have a different contract with the hospital.

health professional shortage area or underserved area (HPSA) in the last four years by HRSA.<sup>x,114</sup> RHCs are required to use a team approach of physicians working with non-physician providers. This means that RHCs are staffed at least 50 percent of the time by a nurse provider, physician assistant, or certified nurse midwife.<sup>115</sup> A medical doctor (MD) or doctor of osteopathic medicine (DO) must direct the RHC; however, their time allocated to direct patient care may be limited, as there is no required number of hours that they must spend employed by the RHC.

RHCs may be limited to a specific type of primary care (e.g., obstetrics and gynecology or pediatrics). Compared to FQHCs, RHCs are not required to have a representative board of directors, charge based on a sliding fee scale (although some do), provide emergency coverage, or have minimum services.<sup>116</sup> RHCs may be independent (freestanding) or provider-based to a Medicare-participating hospital, nursing home, or home health agency.<sup>117</sup> RHCs are reimbursed by Medicare at an enhanced all-inclusive rate (AIR) for visits for certain primary and preventive health services.<sup>xi</sup> The AIR payment is calculated by dividing the facility's total costs by the total number of visits.<sup>118</sup> For independent RHCs, Medicare pays 80 percent of the AIR, and beneficiaries are responsible for the remaining 20 percent, while a provider-based RHC associated with a hospital with fewer than 50 beds is exempt from the national payment limit per visit.<sup>119</sup> RHC services are subject to the annual Part B deductible. RHCs' coinsurance payment amount for visits is based on provider charges, while FQHCs' coinsurance payment is the lesser of the provider charges versus the payment rate. These factors result in beneficiaries generally having higher cost of care at RHCs than at FQHCs.<sup>120</sup>

**Medicare-dependent Hospitals (MDHs)** are hospitals that have 60 percent or more of inpatient days or discharges from Medicare patients, have 100 or fewer beds, and are generally located in rural areas.<sup>121</sup> These hospitals' reliance on Medicare for financial stability makes them vulnerable to prospective payment. MDHs receive an additional payment from CMS if their costs in one of three years was higher than what the hospital would have otherwise received under the inpatient prospective payment system (IPPS). The hospital does not receive an additional payment if the IPPS amount is higher than their costs.<sup>122</sup> Additionally, a MDH with a caseload that falls more than 5 percent due to circumstances beyond its control may receive payment to compensate it for its lost revenue.<sup>123</sup>

**Sole Community Hospital (SCH)** is a designation created by CMS in 1983 for small rural hospitals that are the sole source of hospital services in a geographic area for Medicare beneficiaries. SCHs must be 1) located at least 35 miles from a similar hospital, or 2) between 25 and 35 miles from a similar hospital and have less than 50 acute care beds and would admit at least 75 percent of patients from the service area were it not for some patients requiring specialized care that the hospital does not offer, or 3) between 15-25 from similar hospitals that are inaccessible due to topography or weather or 4) travel time to the nearest hospital is at least 45 minutes.<sup>124</sup> SCHs receive increased payments based on their discharge costs in a base year.<sup>125</sup>

**Rural Emergency Hospital (REH)** is a new designation given to eligible rural hospitals by CMS that became effective on January 1, 2023, for rural areas to access critical outpatient hospital services that CAHs or other small rural hospitals may not be able to sustain.<sup>126</sup> This designation was established in the

---

<sup>x</sup> HPSAs can be geographic areas, populations, or facilities that have a shortage of primary, dental, or mental health care providers. HPSAs are in part determined based on the ratio of health professionals to population (e.g., for primary care, the ratio must be one provider to 3,000 people).

<sup>xi</sup> Similar to CAHs, MA plans are not required to reimburse RHCs at the same rate as traditional Medicare.



Consolidated Appropriations Act of 2021 (effective December 27, 2020) to address the large number of rural hospital closures during and prior to the COVID-19 PHE.<sup>127, 128</sup> REHs must provide 24-hour emergency services and observation care, have 50 or fewer beds, and be located in a rural area based on OMB's CBSA rural classification, or be treated as located in a rural area.<sup>129, 130</sup> REHs may provide other outpatient services based on the community's needs. REHs have flexible staffing and services, access to technical assistance through the Rural Health Redesign Center, receive enhanced Medicare payments for certain outpatient services, and receive an additional monthly facility payment.<sup>xii</sup>

#### Other Health Care Facilities Serving Rural Areas

In addition to the facilities listed above, facilities that do not necessarily focus on rural areas and/or the Medicare population can also serve rural patients. For example, large integrated delivery networks, such as the Mayo Clinic, Geisinger Health System, and Kaiser Permanente, operate hospitals and other health care facilities in both rural and urban areas. These large systems can leverage economies of scale and may be able to bring more advanced services to rural patient populations.

Mobile clinics can deliver services such as preventive and primary care, oral health, and chronic care management in rural areas that lack access to other health care facilities.<sup>131</sup> These clinics are often affiliated with FQHCs. Studies have found that mobile health clinic patients, particularly those who are higher risk, have higher screening rates, improved chronic disease management, and fewer emergency department (ED) visits compared to patients who access care at other settings.<sup>132, 133</sup>

Freestanding emergency departments (FSEDs) are facilities that are separate from hospitals and provide emergency care. FSEDs do not have operating or inpatient rooms and instead transfer patients who require the level of care provided in those settings to the hospital. FSEDs are an option for rural areas that do not have the patient volume to support inpatient facilities.<sup>134</sup> There are two types of FSEDs: hospital outpatient departments (hospital OPDs), which are owned and operated by medical centers or hospital systems, and independent freestanding emergency centers (IFECs), which can be owned by any individual or business entity.<sup>135</sup> The majority of FSEDs are hospital OPDs, and one-third are IFECs.<sup>136</sup> Because IFECs operate independently from hospitals, this prevents them from receiving Medicare reimbursements for facility fees. FSEDs' requirements for both hospital OPDs and IFECs are regulated at the state level. States have varying legislation to allow for the construction of IFECs, and some states allow only hospital OPDs.<sup>137</sup> Accountable Care Organizations (ACOs) and their affiliated providers may serve rural areas in a few ways. In some cases, an ACO will have a provider network located entirely in a rural area, while other ACOs may have a large provider network that includes providers located in a rural area, such as Iowa Point Health, which has hospitals located in both rural and urban areas.<sup>138</sup> Finally, ACOs that do not have providers located in rural areas can serve rural patients virtually via telehealth.<sup>139</sup>

---

<sup>xii</sup> For 2023, REHs' monthly facility payment is the average annual additional fiscal amount CAHs received in 2019 of cost reimbursement over the payment that would have been received under a prospective payment system. Their annual facility payment amount for 2023 is \$3,219,528. In subsequent years, REHs' monthly payment will have the hospital market basket percentage increase applied to the monthly payment of the previous year. Source: Centers for Medicare & Medicaid Services. Calculation of Rural Emergency Hospital (REH) Monthly Additional Facility Payment for 2023.

## **V. Challenges Affecting Rural Patients and Providers**

The following section describes the challenges that affect rural patients and providers, including caring for patients with specific demographic and health characteristics more prevalent in rural areas, health and health care disparities experienced by patients in rural areas, and rural patients' HRSNs. There are also structural and organizational factors that present barriers that affect patient care and challenges affecting rural providers' participation in PB-TCOC models.

### **V.A. Characteristics of Rural Patients**

Rural patients may experience several challenges that make it difficult for them to access high-quality health care. For example, rural patients have a significantly lower provider to patient ratio, as compared to non-rural patients, for both physicians (13 versus 31.2 providers per 10,000 people) and specialists (three versus 26 providers per 10,000 people).<sup>140</sup> Rural residents under 65 years old are less likely to have private insurance coverage and more likely to be uninsured than urban residents.<sup>141</sup> Rural residents are more likely to be covered by Medicaid and less likely to be offered health insurance through an employer than residents in non-rural areas.<sup>142</sup> On average, rural populations are poorer than non-rural populations: median household income in completely rural areas is \$15,950 lower than in mostly urban areas.<sup>xiii,143</sup> Among rural residents, Black residents have the highest rate of poverty (31.6 percent), followed by American Indian and Alaska Native residents (30.9 percent), people of Hispanic origin (23.8 percent), and white residents (14 percent).<sup>144</sup>

Rural residents often have limited transportation options and may face additional challenges with terrain or road infrastructure. For example, 13 percent of rural non-highway roads are ranked as poor by National Transportation Research.<sup>145</sup> Rural households also have lower broadband access, with 70 percent of households having access to high-speed internet, compared to 85 percent of households in large metropolitan areas.<sup>146</sup> Last, rural water systems are often difficult to maintain in ways that may compromise rural residents' access to healthy drinking water.<sup>147</sup>

Rural residents often have poorer health status than urban residents. Rural residents often have a higher disease burden, with 23 percent of non-metropolitan residents reporting having two to three chronic conditions, compared to 19 percent of metropolitan residents.<sup>148</sup> On average, compared with their urban counterparts, rural residents are older (17.5 percent of the rural population in 2016 was 65 years or older, compared to 13.8 percent in urban areas)<sup>149</sup> and have a higher obesity rate (34.2 percent versus 28.7 percent).<sup>150</sup> Rural residents also have higher rates of tobacco, alcohol, and opioid use, compared to non-rural residents.<sup>151</sup> In addition, rural youth have a suicide rate that is two times that of their urban peers.<sup>152</sup>

### **V.B. Characteristics of Rural Health Care Systems and Settings/Providers**

Characteristics of several specific care settings are described above in Section IV.B. Additional characteristics, namely challenges to delivering care in rural locations, are described below in Section V.C.

---

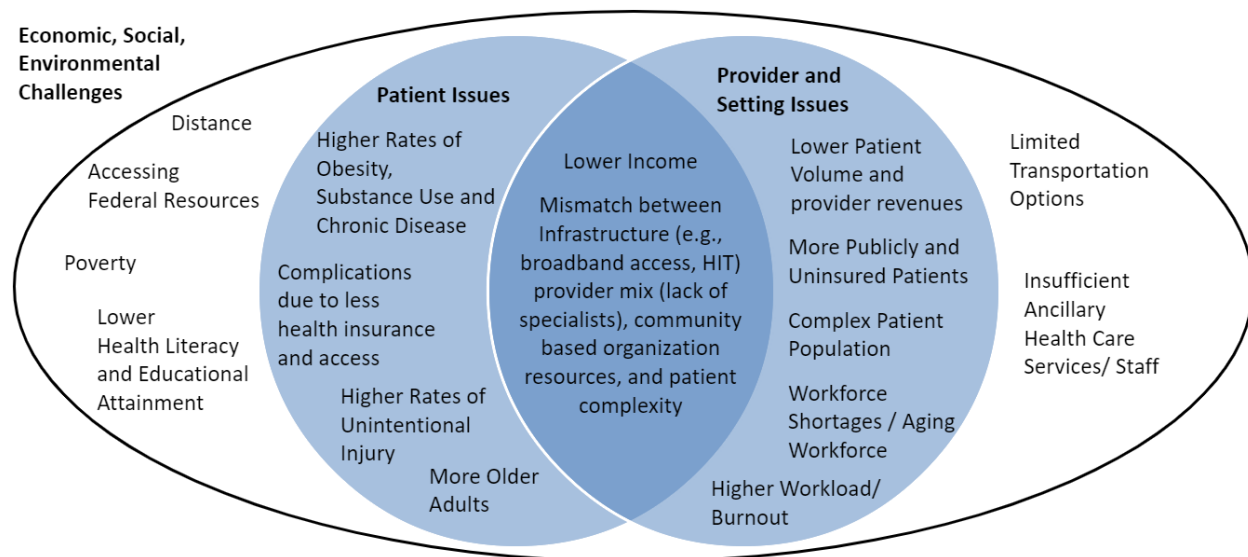
<sup>xiii</sup> Completely rural are counties that have 100% of their population living in a rural area, as defined by the Census; mostly urban is defined as counties where at least half of the population lives in urban areas.

### V.C. Barriers to Care Delivery in Rural Locations

Factors related to the rural environment itself can pose challenges to care delivery. Health care systems operating in rural areas experience low patient volume relative to those in non-rural areas. This makes it difficult for systems to maintain consistent and sustainable funding.<sup>153, 154, 155</sup> Rural facilities' challenges with financial viability are exacerbated in times of uncertainty, such as the COVID-19 PHE. For example, 136 rural hospitals closed or converted to another type of facility that provides non-inpatient care from 2010-2021;<sup>156, 157</sup> these closures further reduce access to care for rural patients.

Rural areas also experience lower HIT adoption rates due to limited financial resources and inconsistent broadband access. These limitations hinder effective tracking of patients' care and progress, as well as provision of remote care (e.g., telemonitoring).<sup>158</sup> Systems in these areas tend to have an overburdened workforce and face difficulty in hiring and retaining the breadth of health care providers necessary to offer patients comprehensive health care services.<sup>159</sup> Availability of qualified health care providers in rural areas is limited, in part, because medical schools and residency programs are concentrated in urban and suburban areas.<sup>160, 161</sup> The lower primary care physician to patient ratio in rural areas,<sup>162</sup> coupled with limited access to ancillary service providers (e.g., home health care, diagnostic testing, and dialysis services providers<sup>163</sup>), leaves many rural health facilities understaffed and overburdened.<sup>164</sup> Moreover, health systems' contract labor expenses increased by 258 percent during the public health emergency,<sup>165</sup> and are continuing to rise. Rural health care facilities do not have the financial resources to provide compensation in line with these increased labor costs, thus further straining their workforce. Last, 2.3 million rural people live in an ambulance desert, which is defined as being located 25 minutes from an ambulance station. The lack of access to ambulatory services has implications for rural CAHs and REHs who rely on ambulance transfers to provide care for their patients.<sup>166</sup> Exhibit 1 shows issues affecting rural health care systems, settings, providers, and patients.

**Exhibit 1.** Issues Affecting Rural Health care Systems, Settings, Providers, and Patients



### V.D. Diversity Among Different Kinds of Rural Areas

As described above, barriers to care delivery in rural locations may be wide-ranging, including challenges related to the environment or geography, as well as resources (e.g., financial stability, technological

infrastructure, and staffing). In August 2023, an analysis was conducted to assess differences in selected indicators of access to health care, utilization of services, and provider supply between rural and non-rural counties, nationally and by region.

## Data Sources and Methods

### Data Sources

This analysis used 100 percent of the following data sources:

- Calendar Year (CY) 2013 USDA RUCCs (last updated December 10, 2020);<sup>xiv</sup> and
- CY 2021-2022 county-level data from the Area Health Resources Files (AHRF).<sup>xv</sup>

The USDA’s RUCCs distinguish metropolitan counties by the population size of their metropolitan area, and nonmetropolitan counties by the degree of urbanization and their adjacency to a metropolitan area.<sup>xvi</sup> RUCCs range in integers from 1 to 9, with integers 1, 2, and 3 representing non-rural counties, and integers 4, 5, 6, 7, 8, and 9 representing rural counties. County-level data for the 2013 RUCCs was last updated in December of 2020.

The AHRF include county-level data from over 50 sources focused on health care professions, facilities, and utilization and are commonly used in health services research to examine market-level characteristics. Selected variables from the AHRF were used in this analysis.

### Study Population

The RUCC and AHRF datasets include information for all 50 states plus Washington, D.C. U.S. territories are not consistently available across all datasets and were excluded from the analyses.

### Analytic Approach

The publicly available RUCC dataset includes concatenated Federal Information Processing Standard (FIPS) state and county code, state, county name, RUCC, and a description of the RUCC category (e.g., “Non-metro – completely rural or less than 2,500 urban population, adjacent to a metro area”). The RUCC variable was used to categorize counties as rural and non-rural based on the following designations (Exhibit 2):

**Exhibit 2. Rurality Designation**

Data File/Designation	Rural Codes	Non-Rural Codes
2013 RUCC (last updated 12/10/2020)	4, 5, 6, 7, 8, 9	1, 2, 3

<sup>xiv</sup> The USDA’s RUCC files are publicly available from <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>.

<sup>xv</sup> Health Resources and Services Administration (HRSA) publicly available data file; <https://data.hrsa.gov/data/download>, <https://data.hrsa.gov/topics/health-workforce/ahrf>

<sup>xvi</sup> The 2013 RUCC codes’ identification of metropolitan areas is based on the Office of Management and Budget (OMB) delineation as of February 2013. Rural-Urban Continuum Codes. USDA Economic Research Service. Last updated December 10, 2020. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

The RUCC dataset was used to produce a map that depicts rural and non-rural designations across the U.S. at the county level. The map included a color gradient to distinguish rural counties (blue) from non-rural counties (orange).

The following county-level access, utilization, and supply variables<sup>xvii</sup> at the county level were obtained from AHRF for the most recent data years available:<sup>xviii</sup>

- Number of the population under age 65 years without health insurance (2019),
- Number of PCPs (2020),
- Number of specialists (2020),<sup>xix</sup>
- Number of cardiovascular disease (CVD) specialists (2020),
- Number of gastroenterology specialists (2020),
- Number of neurological surgery specialists (2020),
- Number of FQHCs and RHCs (combined; 2021), and
- Number of short-term general hospital beds (2020).

The COVID-19 Public Health Emergency likely affected the above list of county-level access, utilization and supply metrics. However, out of the above list, the variable we would anticipate being most affected by the pandemic (population w/o health insurance) is from 2019. At the same time, we would not expect to see the pandemic affect the number of providers available in 2020 or the number of FQHCs and RHCs in 2021. Instead, we anticipate the pandemic's effects on the health care workforce would more likely start to show in 2021 or 2022.

The corresponding population estimate for each data year was used to create a proportion or estimates per 100,000 population. U.S. Census Bureau definitions of geographic regions (i.e., New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific) used in analyses were obtained from the AHRF dataset.

To assess differences in key indicators of access to health care, utilization of services, and provider supply between counties designated as rural and non-rural, the RUCC dataset was merged with the AHRF dataset using the concatenated FIPS state and county code.

Descriptive statistics (mean and standard deviation) were produced for each variable by RUCC code.<sup>xx</sup> The count and proportion of the population and counties by RUCC code are also provided.<sup>xxi</sup>

### Results by RUCC Code

Exhibit 3 provides a visual representation of rurality designation by county across the U.S. based on RUCC codes. Visually, there are more rural counties (blue) compared to non-rural counties (orange) in the U.S, and the number of rural and non-rural counties varies by region. Rural counties are spread

---

<sup>xvii</sup> Additional information on each variable is provided in Appendix C.

<sup>xviii</sup> In cases where the most recent data years were 2020 and/or 2021, 2019 data were also included to provide a pre-COVID-19 pandemic comparison.

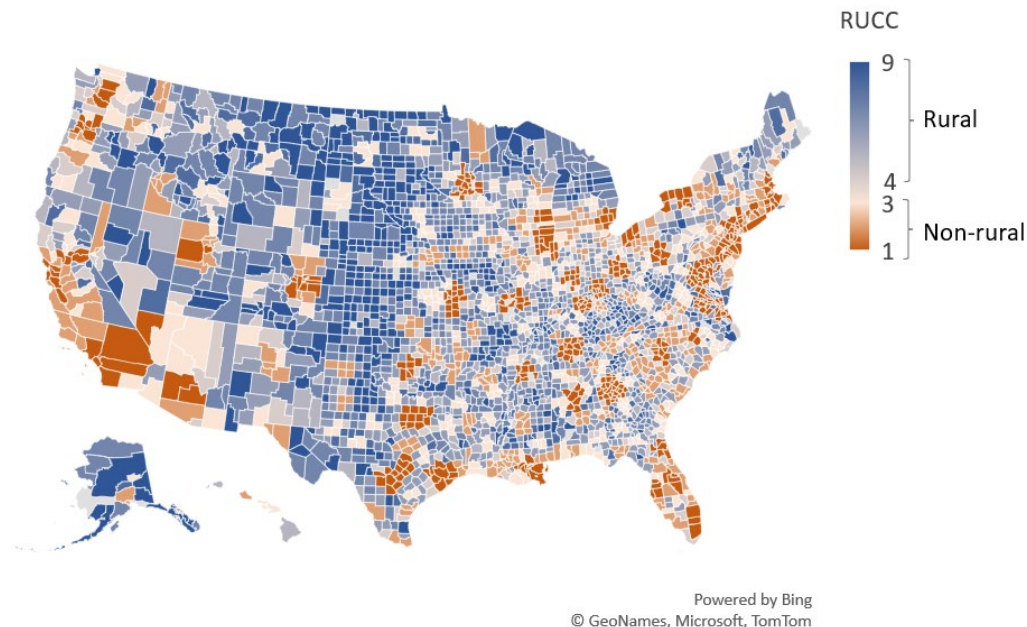
<sup>xix</sup> The number of specialists reported combined all medical specialists of all ages, all surgical specialists of all ages, and all other specialists of all ages.

<sup>xx</sup> For descriptive statistics by geographic region and RUCC code, refer to Appendix C.

<sup>xxi</sup> For the count and proportion of the population and counties by region and RUCC code, refer to Appendix C.

throughout the U.S., with higher concentrations in the Western U.S. Non-rural counties tend to be concentrated in coastal regions.

**Exhibit 3. Rural-Urban Continuum Code by United States County, 2020**



Source: NORC analysis of counties by 2013 Rural-Urban Continuum Codes (RUCCs) (last updated 12/10/2020).

Descriptive statistics based on nine selected characteristics of access to care, utilization of services, and provider supply for rural and non-rural counties are provided in Exhibits 4 and 5. Several differences between non-rural and rural counties were identified.

- Counties in rural areas had larger proportions of adults under the age of 65 years without insurance.
- Counties in non-rural areas of 1 million population or more (i.e., RUCC = 1) had the smallest percentage of individuals without health insurance.
- Rural counties had lower numbers of PCPs, specialists, CVD specialists, gastroenterologists, and neurological surgery specialists per 100,000 people than non-rural counties.
- Notably, rural counties adjacent to a metro area (RUCC = 4, 6, and 8) had fewer providers and facilities compared to rural counties that were not adjacent to a metro area (RUCC = 5, 7, and 9).  
For example:
  - Counties that were completely rural or had less than 2,500 urban population and were adjacent to a metro area (i.e., RUCC = 8) had a mean of 23.03 PCPs per 100,000 people in 2020 (with a standard deviation of 31.04), while counties that were completely rural or had less than 2,500 urban population and were not adjacent to a metro area (i.e., RUCC = 9) had a mean of 31.90 PCPs per 100,000 people in 2020 (with a standard deviation of 44.51).
  - Counties with an urban population of 20,000 or more and were adjacent to a metro area (i.e., RUCC = 4) had a mean of 88.55 PCPs per 100,000 people in 2020 (with a standard deviation of 66.22), while with an urban population of 20,000 or more and

were adjacent to a metro area (i.e., RUCC = 5) had a mean of 146.07 PCPs per 100,000 people in 2020 (with a standard deviation of 132.86).

- In general, rural counties adjacent to a metro area (RUCC = 4, 6, and 8) had fewer providers and facilities compared to rural counties that were not adjacent to a metro area (RUCC = 5, 7, and 9).
- Counties in rural areas had a larger number of FQHCs and RHCs as well as short-term general hospital beds per 100,000 people, compared to counties in non-rural areas.

**Exhibit 4. Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply**

**National, Non-Rural and Rural Totals**

Variable	Mean (Standard Deviation)		
	National Total	Non-Rural Subtotal	Rural Subtotal
<b>Proportion under age 65 without health insurance, 2019</b>	11.94 (5.12)	10.62 (4.57)	12.72 (5.27)
<b>PCPs per 100,000 population, 2020</b>	43.45 (33.85)	52.89 (35.65)	37.94 (31.49)
<b>Specialists per 100,000 population, 2020</b>	83.28 (133.4)	146.38 (187.91)	46.46 (62.51)
<b>CVD specialists per 100,000 population, 2020</b>	2.27 (4.71)	4.27 (6.14)	1.1 (3.06)
<b>Gastroenterology specialists per 100,000 population, 2020</b>	1.38 (3.21)	2.93 (4.45)	0.47 (1.59)
<b>Neurological surgery specialists per 100,000 population, 2020</b>	0.62 (2.08)	1.37 (3.02)	0.17 (1.01)
<b>FQHCs and RHCs per 100,000 population, 2021</b>	17.20 (21.18)	6.73 (9.66)	23.39 (23.57)
<b>Short-term hospital beds per 100,000 population, 2020</b>	249.41 (429.12)	188.94 (201.78)	284.70 (514.31)

Note: PCP=primary care provider; CVD=cardiovascular disease; FQHC=Federally Qualified Health Center; RHC=rural health clinic.

2) Transposed National Summary Table: Non-Rural and Rural by RUCC Code

**Exhibit 5. Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply**

**Non-Rural and Rural Totals by RUCC Code**

Variable	Mean (Standard Deviation)								
	Non-rural by RUCC Code			Rural by RUCC Code					
	Counties in metro areas of 1 million population or more (RUCC 1)	Counties in metro areas of 250,000 to 1 million population (RUCC 2)	Counties in metro areas of fewer than 250,000 population (RUCC 3)	Urban population of 20,000 or more		Urban population of 2,500 to 19,999		Completely rural or less than 2,500 urban population	
				Adjacent to a metro area (RUCC 4)	Not adjacent to a metro area (RUCC 5)	Adjacent to a metro area (RUCC 6)	Not adjacent to a metro area (RUCC 7)	Adjacent to a metro area (RUCC 8)	Not adjacent to a metro area (RUCC 9)
Proportion under age 65 without health insurance, 2019	9.91 (4.47)	11.04 (4.78)	11.02 (4.35)	11.32 (4.97)	12.09 (4.8)	12.79 (5.43)	12.59 (5.59)	12.87 (4.55)	13.54 (5.15)
PCPs per 100,000 population, 2020	54.85 (34.13)	51.74 (31.96)	51.76 (40.82)	44.12 (20.09)	60.34 (25.85)	36.22 (22.93)	45.99 (28.79)	23.03 (26.44)	31.90 (44.51)
Specialists per 100,000 population, 2020	162.24 (167.14)	137.77 (156.15)	136.46 (236)	88.55 (66.22)	146.07 (132.86)	39.44 (39.42)	55.3 (62.89)	18.9 (24.25)	18.69 (36.32)
CVD specialists per 100,000 population, 2020	4.46 (5.34)	3.97 (5.08)	4.38 (7.86)	2.75 (2.88)	5.09 (5.76)	0.84 (2.3)	1.04 (2.87)	0.18 (1.12)	0.29 (3.13)
Gastroenterology specialists per 100,000 population, 2020	3.12 (3.46)	2.7 (3.68)	2.95 (6.01)	1.44 (1.87)	2.51 (3.62)	0.27 (1.1)	0.47 (1.8)	0.05 (0.52)	0.05 (0.56)
Neurological surgery specialists per 100,000 population, 2020	1.24 (1.91)	1.34 (2.36)	1.57 (4.42)	0.39 (1.16)	1.25 (2.61)	0.1 (0.84)	0.13 (0.84)	0.01 (0.19)	0.06 (0.76)
FQHCs and RHCs per 100,000 population, 2021	4.27 (6.33)	7.33 (9.98)	9.08 (11.76)	7.84 (7.15)	10.31 (8.59)	16.83 (13.03)	22.18 (17.31)	29.05 (22.65)	41.68 (34.31)



Variable	Mean (Standard Deviation)								
	Non-rural by RUCC Code			Rural by RUCC Code					
	Counties in metro areas of 1 million population or more (RUCC 1)	Counties in metro areas of 250,000 to 1 million population (RUCC 2)	Counties in metro areas of fewer than 250,000 population (RUCC 3)	Urban population of 20,000 or more		Urban population of 2,500 to 19,999		Completely rural or less than 2,500 urban population	
				Adjacent to a metro area (RUCC 4)	Not adjacent to a metro area (RUCC 5)	Adjacent to a metro area (RUCC 6)	Not adjacent to a metro area (RUCC 7)	Adjacent to a metro area (RUCC 8)	Not adjacent to a metro area (RUCC 9)
Short-term hospital beds per 100,000 population, 2020	155.66 (139.26)	180.67 (177.99)	238.06 (269.48)	202.29 (138.86)	320.58 (200.68)	205.03 (246.76)	311.32 (294.83)	289.22 (1045.23)	399.57 (668.31)

Note: PCP=primary care provider; CVD=cardiovascular disease; FQHC=Federally Qualified Health Center; RHC=rural health clinic.

The count and proportion of the population and counties by RUCC code is in Exhibit 6. Nearly 14 percent of the U.S. population lives in rural areas: approximately 6 percent of the population lives in non-metropolitan areas with urban populations of 20,000 or more (RUCC = 4, 5), nearly 7 percent lives in areas with urban populations of 2,500 to 19,999 (RUCC = 6, 7), and just over 1 percent lives in completely rural or less than 2,500 urban populations (RUCC = 8, 9).

Roughly 63 percent of the 3,141 counties across the U.S. and Washington, D.C. are designated as rural: nearly 10 percent of counties have urban populations of 20,000 or more (RUCC = 4, 5), approximately 33 percent have urban populations of 2,500 to 19,999 (RUCC = 6, 7), and just over 20 percent are completely rural areas or populations of less than 2,500 (RUCC = 8, 9).

**Exhibit 6. Distribution of Counties and Population by Rural-Urban Continuum Code**

**Total, Non-rural and Rural**

Category/ RUCC Code	Counties	Proportion of U.S. Total Counties (%)	Population	Proportion of U.S. Total Population (%)
<b>National Total</b>	<b>3,141</b>	<b>100.00</b>	<b>331,862,228</b>	<b>100.00</b>
<b>Non-Rural Subtotal</b>	<b>1,167</b>	<b>37.15</b>	<b>285,811,156</b>	<b>86.12</b>
Counties in metro areas of 1 million population or more (RUCC 1)	432	13.75	184,538,309	55.61
Counties in metro areas of 250,000 to 1 million population (RUCC 2)	379	12.07	71,328,593	21.49
Counties in metro areas of fewer than 250,000 population (RUCC 3)	356	11.33	29,944,254	9.02
<b>Rural Subtotal</b>	<b>1,974</b>	<b>62.85</b>	<b>46,051,072</b>	<b>13.88</b>
Urban population of 20,000 or more, adjacent to a metro area (RUCC 4)	214	6.81	13,739,786	4.14
Urban population of 20,000 or more, not adjacent to a metro area (RUCC 5)	92	2.93	5,078,239	1.53
Urban population of 2,500 to 19,999, adjacent to a metro area (RUCC 6)	592	18.85	14,542,701	4.38
Urban population of 2,500 to 19,999, not adjacent to a metro area (RUCC 7)	433	13.79	8,093,024	2.44
Completely rural or less than 2,500 urban population, adjacent to a metro area (RUCC 8)	220	7.00	2,104,173	0.63
Completely rural or less than 2,500 urban population, not adjacent to a metro area (RUCC 9)	423	13.47	2,493,149	0.75

## Results by Geographic Region

Additionally, results were stratified by region and RUCC category to assess differences in access, utilization, and supply by rurality designation across regions. The following nine regions were included in the analysis:

- New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
- Middle Atlantic: New Jersey, New York, Pennsylvania
- East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin
- West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
- South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
- East South Central: Alabama, Kentucky, Mississippi, Tennessee
- West South Central: Arkansas, Louisiana, Oklahoma, Texas
- Mountain: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming
- Pacific: Alaska, California, Hawaii, Oregon, Washington

Small sample sizes emerged when assessing some of the selected key variables by both RUCC and region. The criterion of  $n < 30$  was used to suppress categories with small sample sizes on the basis that descriptive statistics may be unreliable.

## Results

Descriptive statistics on access to health care, utilization of services, and provider supply were stratified by U.S. region to produce Exhibits 7, 8, and 9.

Several regional differences emerged in access, utilization, and supply. The proportion of adults under the age of 65 years without insurance was highest in the South Atlantic, West South Central, and Mountain regions than in other regions.

The South Central regions (East and West) had the smallest numbers of PCPs per 100,000 people, compared to the other regions. The number of specialists per 100,000 people, including CVD specialists and gastroenterologists, was smallest in the West North Central, West South Central, and Mountain regions than in other regions. The West North Central, East South Central, West South Central, and Mountain regions had the lowest number of neurological surgery specialists per 100,000 people, compared to the other regions. Across all regions, the number of PCPs and specialists (including total specialists, CVD specialists, gastroenterologists, and neurological surgery specialists) per 100,000 people were higher in non-rural counties than in rural counties.

The Middle Atlantic region had the lowest number of FQHCs and RHCs per 100,000 people, whereas the West North Central region had the highest number of FQHCs and RHCs per 100,000 people. The West North Central region also had the highest number of short-term general hospital beds per 100,000 people, compared to the other regions. Relative to the other regions, the New England, East North Central, and Pacific regions had the lowest number of short-term general hospital beds per 100,000 people. Across all regions, the combined number of FQHCs and RHCs per 100,000 people was larger in rural counties than in non-rural counties. Across all regions except for the East North Central region, the number of short-term hospital beds per 100,000 people was larger in rural counties than in non-rural counties.

**Exhibit 7. Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply**

**National and Regional Totals (Non-rural and Rural)**

Variable	Mean (Standard Deviation)									
	National Total	New England Total	Middle Atlantic Total	East North Central Total	West North Central Total	South Atlantic Total	East South Central Total	West South Central Total	Mountain Total	Pacific Total
<b>Proportion under age 65 without health insurance, 2019</b>	11.94 (5.12)	7.03 (3.12)	6.63 (1.99)	8.26 (2.25)	10.62 (4.2)	13.33 (4.19)	11.91 (3.4)	17.91 (5.97)	12.82 (3.39)	10.07 (3.50)
<b>PCPs per 100,000 population, 2020</b>	43.45 (33.85)	81.64 (33.94)	54.42 (42.75)	43.27 (29.56)	42.02 (39.69)	42.75 (29.55)	36.83 (25.37)	33.59 (25.96)	46.44 (32.95)	63.91 (40.76)
<b>Specialists per 100,000 population, 2020</b>	34.63 (57.24)	235.14 (211.56)	177.23 (298.50)	86.58 (112.62)	51.44 (120.11)	99.41 (131.09)	70.98 (98.36)	53.12 (82.59)	77.66 (87.75)	114.49 (108.29)
<b>CVD specialists per 100,000 population, 2020</b>	2.27 (4.71)	7.02 (8.42)	6.18 (8.46)	2.45 (3.97)	1.14 (4.77)	2.85 (4.45)	2.16 (4.27)	1.39 (2.8)	1.63 (4.11)	2.37 (2.78)
<b>Gastroenterology specialists per 100,000 population, 2020</b>	1.38 (3.21)	4.18 (4.69)	4.03 (7.51)	1.34 (2.63)	0.63 (2.89)	1.87 (3.1)	1.25 (2.64)	0.88 (2.07)	0.81 (1.86)	1.71 (2.27)
<b>Neurological surgery specialists per 100,000 population, 2020</b>	0.62 (2.08)	1.37 (2.66)	1.61 (5.22)	0.61 (1.52)	0.42 (2.29)	0.72 (1.83)	0.53 (1.58)	0.42 (1.26)	0.54 (1.58)	0.68 (1.2)
<b>FQHCs and RHCs per 100,000 population, 2021</b>	17.20 (21.18)	9.64 (11.09)	5.73 (9.78)	11.31 (12.11)	25.44 (26.56)	11.87 (15.81)	21.21 (21.46)	18.09 (20.11)	21.56 (25.51)	15.60 (23.62)

Variable	Mean (Standard Deviation)									
	National Total	New England Total	Middle Atlantic Total	East North Central Total	West North Central Total	South Atlantic Total	East South Central Total	West South Central Total	Mountain Total	Pacific Total
<b>Short-term hospital beds per 100,000 population, 2020</b>	249.41 (429.12)	189.29 (127.04)	256.6 (288.4)	182.15 (185.52)	381.70 (548.74)	185.57 (281.93)	280.26 (766.28)	192.14 (214.83)	296.35 (434.97)	182.24 (218.78)

Source: NORC analysis of 2021-2022 AHRF and 2013 RUCCs.

Note: PCP=primary care provider; CVD=cardiovascular disease; FQHC=Federally Qualified Health Center; RHC=rural health clinic.

New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic: New Jersey, New York, Pennsylvania

East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin

West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

East South Central: Alabama, Kentucky, Mississippi, Tennessee

West South Central: Arkansas, Louisiana, Oklahoma, Texas

Mountain: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming

Pacific: Alaska, California, Hawaii, Oregon, Washington

**Exhibit 8. Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply**

**National and Regional Non-rural Totals**

Variable	Mean (Standard Deviation)									
	National Non-rural Total	New England Non-rural	Middle Atlantic Non-rural	East North Central Non-rural	West North Central Non-rural	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>Proportion under age 65 without health insurance, 2019</b>	10.62 (4.57)	5.55 (2.29)	6.64 (2.22)	7.61 (1.8)	8.84 (3.72)	12.39 (3.91)	11.14 (3.01)	15.81 (5.41)	11.23 (3.17)	8.51 (2.13)
<b>PCPs per 100,000 population, 2020</b>	52.89 (35.65)	86.59 (37.14)	65.00 (48.38)	54.01 (33.82)	49.73 (37.81)	51.02 (32.53)	45.6 (32.46)	40.73 (29.55)	51.90 (30.65)	70.02 (29.72)
<b>Specialists per 100,000 population, 2020</b>	146.38 (187.91)	289.81 (211.9)	232.72 (356.65)	140.28 (148.54)	130.00 (233.3)	141.48 (162.60)	117.76 (142.06)	103.01 (120.66)	135.46 (102.38)	177.83 (118.33)
<b>CVD specialists per 100,000 population, 2020</b>	4.27 (6.14)	9.34 (8.62)	8.13 (9.62)	4.21 (4.61)	3.86 (9.39)	4 (5.06)	3.64 (5.39)	2.76 (3.71)	3.21 (2.79)	4.07 (2.79)
<b>Gastroenterology specialists per 100,000 population, 2020</b>	2.93 (4.45)	5.45 (3.98)	5.34 (8.92)	2.54 (3.36)	2.6 (5.81)	2.85 (3.67)	2.46 (3.47)	2.19 (2.88)	2.36 (2.27)	3.26 (2.32)
<b>Neurological surgery specialists per 100,000 population, 2020</b>	1.37 (3.02)	1.99 (2.28)	2.23 (6.38)	1.2 (1.99)	1.52 (4.58)	1.25 (2.26)	1.16 (2.19)	1.09 (1.81)	1.5 (1.68)	1.43 (1.4)
<b>FQHCs and RHCs per 100,000 population, 2021</b>	6.73 (9.66)	5.33 (6.25)	3.2 (3.51)	5.51 (8.3)	9.12 (11.11)	6.09 (10.1)	9.00 (11.21)	8.47 (11.41)	6.23 (8.39)	6.46 (6.48)

Variable	Mean (Standard Deviation)									
	National Non-rural Total	New England Non-rural	Middle Atlantic Non-rural	East North Central Non-rural	West North Central Non-rural	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>Short-term hospital beds per 100,000 population, 2020</b>	188.94 (201.78)	185.11 (121.84)	255.68 (323.41)	186.72 (142.02)	219.77 (241.73)	173.47 (189.95)	200.90 (214.35)	160.42 (170.69)	179.92 (218.71)	166.01 (97.42)

Source: NORC analysis of 2021-2022 AHRF and 2013 RUCCs.

Note: PCP=primary care provider; CVD=cardiovascular disease; FQHC=Federally Qualified Health Center; RHC=rural health clinic.

New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic: New Jersey, New York, Pennsylvania

East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin

West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

East South Central: Alabama, Kentucky, Mississippi, Tennessee

West South Central: Arkansas, Louisiana, Oklahoma, Texas

Mountain: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming

Pacific: Alaska, California, Hawaii, Oregon, Washington

**Exhibit 9. Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply**

**National and Regional Non-rural Totals**

Variable	Mean (Standard Deviation)									
	National Non-rural Total	New England Non-rural	Middle Atlantic Non-rural	East North Central Non-rural	West North Central Non-rural	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>Proportion under age 65 without health insurance, 2019</b>	10.62 (4.57)	5.55 (2.29)	6.64 (2.22)	7.61 (1.8)	8.84 (3.72)	12.39 (3.91)	11.14 (3.01)	15.81 (5.41)	11.23 (3.17)	8.51 (2.13)
<b>PCPs per 100,000 population, 2020</b>	52.89 (35.65)	86.59 (37.14)	65.00 (48.38)	54.01 (33.82)	49.73 (37.81)	51.02 (32.53)	45.6 (32.46)	40.73 (29.55)	51.90 (30.65)	70.02 (29.72)
<b>Specialists per 100,000 population, 2020</b>	146.38 (187.91)	289.81 (211.9)	232.72 (356.65)	140.28 (148.54)	130.00 (233.3)	141.48 (162.60)	117.76 (142.06)	103.01 (120.66)	135.46 (102.38)	177.83 (118.33)
<b>CVD specialists per 100,000 population, 2020</b>	4.27 (6.14)	9.34 (8.62)	8.13 (9.62)	4.21 (4.61)	3.86 (9.39)	4 (5.06)	3.64 (5.39)	2.76 (3.71)	3.21 (2.79)	4.07 (2.79)
<b>Gastroenterology specialists per 100,000 population, 2020</b>	2.93 (4.45)	5.45 (3.98)	5.34 (8.92)	2.54 (3.36)	2.6 (5.81)	2.85 (3.67)	2.46 (3.47)	2.19 (2.88)	2.36 (2.27)	3.26 (2.32)
<b>Neurological surgery specialists per 100,000 population, 2020</b>	1.37 (3.02)	1.99 (2.28)	2.23 (6.38)	1.2 (1.99)	1.52 (4.58)	1.25 (2.26)	1.16 (2.19)	1.09 (1.81)	1.5 (1.68)	1.43 (1.4)



Variable	Mean (Standard Deviation)									
	National Non-rural Total	New England Non-rural	Middle Atlantic Non-rural	East North Central Non-rural	West North Central Non-rural	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>FQHCs and RHCs per 100,000 population, 2021</b>	6.73 (9.66)	5.33 (6.25)	3.2 (3.51)	5.51 (8.3)	9.12 (11.11)	6.09 (10.1)	9.00 (11.21)	8.47 (11.41)	6.23 (8.39)	6.46 (6.48)
<b>Short-term hospital beds per 100,000 population, 2020</b>	188.94 (201.78)	185.11 (121.84)	255.68 (323.41)	186.72 (142.02)	219.77 (241.73)	173.47 (189.95)	200.90 (214.35)	160.42 (170.69)	179.92 (218.71)	166.01 (97.42)

Source: NORC analysis of 2021-2022 AHRF and 2013 RUCCs.

Note: PCP=primary care provider; CVD=cardiovascular disease; FQHC=Federally Qualified Health Center; RHC=rural health clinic.

New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic: New Jersey, New York, Pennsylvania

East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin

West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

East South Central: Alabama, Kentucky, Mississippi, Tennessee

West South Central: Arkansas, Louisiana, Oklahoma, Texas

Mountain: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming

Pacific: Alaska, California, Hawaii, Oregon, Washington

## **V.E. Additional Considerations for Super-Rural, Remote, or Frontier Areas**

Super-rural areas are those in the bottom quartile of nonmetropolitan ZIP codes by population density.<sup>167</sup> Remote and frontier areas are those that are the most geographically isolated and sparsely populated; residents in remote and frontier communities may have difficulty accessing basic necessities, including health care, schools, and grocery stores.<sup>168</sup> <sup>xxii</sup>

Lack of infrastructure may exacerbate challenges accessing health care in these areas. Internet access is often more limited in these areas as they are often not prioritized for broadband expansion.<sup>169</sup> Many of these counties do not have a hospital in their region. Those that do may face higher patient costs to compensate for the lower volume of patients served, as rural health care facilities may not be able to meet the facilities' fixed operating costs (i.e. staffing requirements, equipment, and electricity) with the limited revenue they generate from lower patient numbers.<sup>170</sup> Moreover, these areas have even fewer public transportation options than their less rural counterparts and may have poorer road infrastructure, which is exacerbated in harsh weather conditions.<sup>171</sup> These areas have fewer behavioral health providers,<sup>172</sup> which is particularly salient in light of these communities reporting higher rates of substance abuse and domestic violence than their rural and urban counterparts.<sup>173</sup>

## **V.F. Challenges Affecting Rural Providers' Participation in Alternative Payment Models**

Rural providers face specific challenges to participating in APMs broadly, including PB-TCOC models.<sup>174</sup> One important factor is that, compared to urban and suburban providers, rural providers are less likely to be eligible to participate in APMs.<sup>175</sup> Certain rural provider types, such as FQHCs and RHCs, are explicitly excluded from CMMI model participation.<sup>176</sup> Rural providers do not have a sufficient patient population size to report statistically meaningful data on performance measures, which is an important component of APM participation. APMs' patient attribution approaches may also influence rural provider participation depending on which health care setting the patient is attributed to.

Rural providers often lack the financial resources needed to support certain aspects of participation in APMs. These aspects include the hiring of additional staff, developing new care management strategies, implementing EHRs and other HIT, and performing data analyses to assess their patient population (e.g., identifying patients at high or rising risk). Rural providers also have more difficulty making financial plans that would support APM participation due to the unpredictability of when they will recognize revenue combined with a lower profit margin compared to non-rural providers.<sup>177</sup> Moreover, CMS-HCC risk scores may be underestimating rural beneficiaries' health care utilization compared to urban beneficiaries, which can lead to financial loss for rural providers.<sup>178</sup> APMs and TCOC models that aim to reduce spending per provider could lead to that facilities' bankruptcy given the facilities' inability to lower their costs further while continuing to provide care.<sup>179,180,181</sup> In part, due to the factors outlined above, some rural providers are averse to the financial risk involved in participating in APMs. Moreover, rural providers may not have the same access to APMs as other providers.<sup>182</sup> In many cases, the payment mechanisms for APMs are developed for advanced, highly integrated health systems, and rural providers may not have the resources or infrastructure to participate in these models.<sup>183</sup>

---

<sup>xxii</sup> The frontier designation only applies to claims for ambulance services originating in zip codes in these areas and does not apply to payment for other types of services.

## **VI. Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Areas**

APMs and PB-TCOC model design may consider ways to address barriers that rural providers and patients face. This section describes potential opportunities for APMs and PB-TCOC models to address challenges in rural areas and provides examples of models that have had a positive effect on health care in rural areas.

### **VI.A. Discussion of Potential Opportunities**

Policy makers have concluded that moving away from FFS payment for health care is necessary to reward providers for delivering value-based, person-centered care.<sup>184</sup> Just as in suburban and urban areas, policy makers have identified APMs and PB-TCOC models as mechanisms to help incentivize value-based care in rural areas.

As described above, rural areas face significant needs and disparities in supply and access to health care. These issues further highlight the importance of developing effective value-based care and achieving improvements through APMs in rural areas. The pre-existing primary care focus and community-based relationships in rural areas are well-suited for APMs, because they can enable partnerships across the care continuum and support opportunities for more rapid delivery system changes in rural health care systems.<sup>185</sup> However, limited resources results in substantial competition among rural providers, rendering it difficult for them to secure additional financing or support.

Customized APMs and payment mechanisms need to take into account the different needs and contexts of rural health care and work within the existing structures of hospitals and health care providers. Future models for rural areas may provide better opportunities to transform care in rural areas if differential circumstances of rural areas are taken into account when designing models and rural-focused payment mechanisms. In doing so, APMs that are well-suited to rural areas and are designed with the input of rural providers may help attract, engage, and retain rural providers.<sup>186</sup>

CMS has several innovative models that connect beneficiaries to clinical and/or community services in order to address unmet HRSNs, including the Accountable Health Communities (AHC) Model, PARHM, and the CHART Model.<sup>xxiii</sup> Features of these and other models are described in sections below.

### **VI.B. Examples of Successful Models**

Studies on ACO models show inconsistent but sometimes promising evidence that ACOs can achieve their goals of maintaining or improving the quality of care and reducing spending overall.<sup>187</sup> Several CMMI ACO models either specifically focus on rural providers or incorporate rural providers. One model focused on rural providers is the ACO Investment Model (AIM), which tested the use of pre-paid shared savings to encourage new ACOs participating in the Medicare Shared Savings Program (MSSP) to form in rural and underserved areas.<sup>188</sup>

AIM offered providers up-front funding to support ACO participation and successfully increased interest in ACOs. The model ultimately reduced Medicare spending while maintaining or improving quality of care in rural and underserved areas.<sup>189,190</sup> Even those AIM ACOs that did not opt to take on two-sided financial risk consistently decreased spending and maintained quality for the duration of the model.

---

<sup>xxiii</sup> CMMI announced that the CHART Model would end early on September 30, 2023, based on feedback received from model stakeholders, as well as a lack of hospital participation.

However, after the initial up-front investment funding provided by the model ended, ACO leaders expressed concerns, particularly in the context of accepting two-sided risk. The ACO leaders noted that AIM ACOs were challenged due to having low numbers of attributed patients, small participant networks, limited data analytic capacities, and other organizational barriers.<sup>191</sup> As of the final AIM evaluation report, approximately 30 percent (14 out of the initial 47) of the AIM ACOs remained in MSSP, with only seven AIM ACOs operating using the two-sided financial risk track.<sup>xxiv, 192</sup>

Models that provide global budgets<sup>xxv</sup> or prospective payments on a per patient basis have been implemented with some success in rural areas. Examples include Maryland's global budget initiatives, Maryland's current TCOC Model, and PARHM. The predictable, up-front funding offered by global budgeting can help participating hospitals focus on transitioning providers to value-based care instead of focusing on volume of services.<sup>193</sup>

Maryland's Total Patient Revenue (TPR) global budget program for rural hospitals led to reductions in outpatient utilization, including a roughly nine percent decrease in outpatient encounters, driven by a 15 percent decrease in non-ED visits. The TPR program did not result in statistically significant decreases in inpatient utilization, however, highlighting that the potential observation that the TPR program altered financial incentives more for outpatient departments than for inpatient departments.<sup>194</sup> Similarly, early results of the PARHM Model show that preliminary Medicare per member per month (PMPM) spending for PARHM hospitals continues to be below the national average for rural hospitals. The model has also improved quality outcomes, with preliminary results showing that 80 percent of participants improved avoidable utilizations, 83 percent improved their hospital-acquired condition reduction scores, and 100 percent maintained their CMS admission rates.<sup>195</sup>

The Maryland TCOC Model incorporates model design features that may help rural providers transition to value-based care, including care transformation organizations (CTOs). A part of the Maryland Primary Care Program (MDPCP), CTOs hire and manage interdisciplinary care management teams to support care coordination services for Medicare beneficiaries attributed to participant practices.<sup>196</sup> CTOs offer an opportunity for providers in rural areas to access care management staff that they might otherwise be unable to hire. CTOs leverage economies of scale to deploy resources that might be otherwise impossible for small, medium, and rural practices, given their tighter budgets and lower levels of economic stability.<sup>197</sup> Similarly, the Vermont All-Payer Model offers providers additional resources for care coordination and collaboration with community providers, including providing additional funding for primary prevention programs, care coordination teams, and patient-centered medical homes.<sup>198, 199,</sup>  
200

---

<sup>xxiv</sup> CMS added the following changes to MSSP in 2022: updated the Medicare Economic Index weights, added several temporary telehealth codes to be available until the end of 2023 on a Category 3 basis, extended certain telehealth flexibilities through 151 days after the COVID-19 PHE expires, provided advance shared savings payments to "low-revenue" ACOs that are both new to the MSSP and serve underserved populations and increased flexibility for these ACOs to share in savings, provided ACOs a more gradual glide path to two-sided risk, modified MSSP's quality scoring by adopting a sliding scale for shared-savings eligibility, added a new health equity adjustment, and added five new Merit-Based Incentive Payment System Value Pathways. Possibly the biggest change MSSP introduced in 2022 was a new payment option known as Advance Investment Payments, which includes an upfront payment of \$250,000 and two years of quarterly payments.

<sup>xxv</sup> Global budgets are prospective, institution-level payments (often to hospitals) that reflect costs they are anticipated to incur over a specified period.

In 2012, the state of Oregon launched the Coordinated Care Organization (CCO) program, supported through the state's 1115 Medicaid waiver and an accompanying State Innovation Model (SIM) grant from CMMI.<sup>201</sup> CCOs differ from Medicaid Managed Care Organizations (MCOs) in several key ways: they are locally governed; set a global budget for physical, mental, and dental health (rather than capitated rates for each type of care); offer increased flexibility to pay for additional services to address HRSNs and SDOH; require coordination between health care providers to improve health care delivery and payment; and receive bonus payments based on achievement of specific outcomes.<sup>202</sup> CCOs were positioned throughout the state of Oregon, including in rural areas. While CCOs were associated with reduced total spending, improvement on quality measures was mixed. The CCO program led to improvement on avoidable ED visits, adolescent receipt of well-care visits, and appropriate use of antibiotics for bronchitis, but did not lead to improvement on glucose testing for people with diabetes, 30-day follow-up after hospitalization for pneumonia, and 30-day follow-up after hospitalization for mental illness.<sup>203</sup> CCOs helped to improve care coordination, but rural areas reported increased challenges with care coordination and access to patient-centered primary care homes, likely due to workforce shortages and lack of resources.<sup>204</sup>

Blue Cross and Blue Shield of North Carolina (BCBSNC) introduced Blue Premier, a new commercial ACO program, in January 2019. The Blue Premier program offers two-sided risk arrangements, incorporating payments based on quality-adjusted total cost of care, to health systems.<sup>205</sup> Early reports of Blue Premier estimated that the program had saved \$153 million in costs in its first year.<sup>206</sup> In 2020, BCBSNC announced that it was creating a joint ACO with Caravan Health, a company focused on incorporating community health systems and rural health systems into ACOs. The joint ACO was created with the goal of enabling community and rural hospital participation in Blue Premier and holds both BCBSNC and providers jointly accountable for meeting quality and cost measures. Caravan Health<sup>xxvi</sup> will offer providers access to resources, such as enhanced data analytics, patient engagement technologies, accountability tools, and on-the-ground support, with the goal of enabling quality measurement and improvement.<sup>207</sup>

## VII. Trends in Rural Providers' Participation in APMs

In general, rural providers participate in advanced APMs at a lower rate than their suburban and urban counterparts.<sup>208</sup> While rural providers are eligible to participate in many APMs, few CMMI Models address the specific characteristics of rural patient populations, such as having higher rates of substance use, obesity, and chronic disease, as well as more elderly patients.<sup>209, 210</sup> Many rural providers face barriers in the transition to APMs, such as insufficient capital for necessary up-front investments in data analytics and EHR technology.<sup>211</sup> These barriers can be even greater for solo and small practice providers, who are more likely to practice in rural areas.<sup>212, 213</sup> Rural providers also tend to have smaller financial reserves and uncertain financial stability, which challenge their ability to take on downside risk and transition into two-sided risk arrangements.<sup>214</sup> Narrow financial margins for CAHs and other safety net hospitals can challenge their ability to take on the increased financial risk associated with APMs.<sup>215, 216</sup> The following sections describe models for which rural providers were or were not eligible.

---

<sup>xxvi</sup> Caravan Health was acquired by Signify Health on 3/1/2022, and Signify Health was acquired by CVS Health on 3/29/23.

## VII.A. Models for which Rural Providers were/are Eligible

In most APMs, RHCs, FQHCs, and CAHs were eligible; however, participation among rural providers and patients was not the primary focus. Several APMs piloted and organized by CMMI specifically target care transformation in rural settings.<sup>217, 218</sup> For additional model information, please refer to Appendix E.

- AIM (2015-2018) tested the use of pre-paid shared savings to encourage new MSSP ACOs to form in rural and underserved areas.<sup>219, xxvii</sup>
- PARHM (2017-2024) tests the efficacy of hospital global budgets in supporting rural care delivery transformation, with the aim of increasing rural Pennsylvanians' access to high-quality care while reducing the growth of hospital expenditures across payers.<sup>220</sup> PARHM participants include diverse types of rural hospitals, including independent and system-owned hospitals, Inpatient Prospective Payment System (IPPS) hospitals, and CAHs.
- The CHART Model (2020-2023),<sup>221</sup> was developed with the goal of working toward the transformation of rural health care delivery systems and was terminated due to insufficient hospital participation. The model provided up-front investments and predictable capitated payments, operational and regulatory flexibility through various waiver options, and increased focus on social determinants of health.<sup>222</sup> Initially, the model included two tracks: (1) the Community Transformation Track available to hospitals and state-based organizations; and (2) the ACO Transformation Track available to ACOs.<sup>223</sup> The ACO-based track was terminated in February 2022, and CMMI announced in November 2022 that there was insufficient participation from rural health hospitals to proceed with the first implementation year of the Community Transformation Track of the model.<sup>224</sup> In March 2023, CMMI announced that the CHART Model would end early on September 30, 2023.<sup>225</sup>
- The Frontier Community Health Integration Project (FCHIP) Demonstration (2016-2019) offers 10 CAHs in Montana, Nevada, and North Dakota enhanced payments to test their feasibility for developing new models of health care delivery, including ambulance services, skilled nursing facility (SNF) care, and telehealth services.<sup>226</sup>

A number of APMs piloted and organized by CMMI allow for participation by rural providers but are not specifically structured for participation by rural providers. For more details on these models, including any relevant evaluation findings and lessons learned for rural providers, see Appendix E. These APMs include:

- The Accountable Health Communities (AHC) Model (2017-2023), which focuses on establishing bridge organizations to address HRSNs of Medicare and Medicaid beneficiaries through screening, referral, and community navigation services. The model included rural participant organizations in a number of states.<sup>227</sup>
- The Accountable Care Organization Realizing Equity, Access, and Community Health (ACO REACH) Model (2023-2026), which currently includes both RHCs and CAHs on the list of potentially eligible participants for inclusion in ACO REACH networks.<sup>228</sup>
- The Value in Opioid Use Disorder Treatment (Value in Treatment) Demonstration Program (2021-2024), which provides per beneficiary per month (PBPM) care management fees (CMF) and a performance-based incentive to increase access to opioid use disorder treatment services, improve physician and mental health outcomes for these beneficiaries, and reduce Medicare

---

<sup>xxvii</sup> The Advance Payment ACO Model preceded AIM and did not generate substantial rural participation.

expenditures. Participating providers include FQHCs, one RHC, behavioral health clinics, group practices, and opioid treatment programs in rural areas.<sup>229</sup>

- The Vermont All-Payer ACO Model (VTAPM; 2017-2024), which is a voluntary, ACO-based model featuring separate payer arrangements with Medicare, Medicaid, and private payers.<sup>230</sup> While Vermont is a largely rural state, the model is not solely focused on rural providers in the state. All hospitals in Vermont, including CAHs, are eligible to participate in any combination of the ACO payer initiatives. In the third year of the model, seven out of eight CAHs in the state participated in the Medicaid and commercial payer initiatives, but only two CAHs participated in the Medicare payer initiative due to its greater likelihood of downside risk.<sup>231</sup>
- The Maryland All-Payer Model (MDAPM; 2014-2018), which shifted all hospital revenue into global payment models to test the effectiveness of an all-payer system holding hospitals accountable for the total per capita cost of care. All hospitals, including rural hospitals, operated under global budgeting.<sup>232</sup> The MDAPM historically focused solely on the hospital setting and did not sufficiently address cost savings and quality improvements for nonhospital and primary care providers, leading the state of Maryland and CMMI to develop the Maryland Total Cost of Care Model.<sup>233</sup>
- The Maryland Total Cost of Care Model (MDTCOC; 2019-2026), which replaced the MDAPM. The MDTCOC model builds off the MDAPM and expands its focus from strictly hospital-based to encompass the entire health care system, including hospitals, primary care providers, and specialists, and encourage comprehensive coordination between providers to enable patient-centered care.<sup>234</sup> The MDTCOC features a per capita limit on Medicare TCOC in the state of Maryland, and includes the Hospital Payment Program, the Care Redesign Program, and the Maryland Primary Care Program. All hospitals, including rural hospitals, participate in the model, and FQHCs are eligible to participate in the Maryland Primary Care Program.<sup>235</sup>
- The Medicare Care Choices Model (MCCM; 2016-2021), which provided Medicare beneficiaries qualifying for the Medicare hospice benefit the option to receive hospice-like services concurrently with the receipt of curative services. Medicare-certified hospices from rural geographic areas participated in the model.<sup>236</sup>
- The Million Hearts Cardiovascular Disease Risk Reduction (Million Hearts™) Model (2017-2021), which offers targeted incentives to health care practitioners to engage in beneficiary cardiovascular disease (CVD) risk calculation and population-level risk management. The model did not have a specific rural focus but included community health centers and other rural providers.<sup>237</sup>
- The Next Generation Accountable Care Organization (NGACO) Model (2016-2021), which aimed to encourage ACOs to assume increasing levels of financial risk and accompanying rewards. The model did not have a specific focus on recruiting rural providers, but ACOs with a rural presence participated in the model and were supported by regional efficiency trend adjustments to ensure appropriate compensation and account for major payment changes beyond participants' control.<sup>238</sup>
- The Expanded Home Health Value-Based Purchasing (Expanded HHVBP) Model (2022-20xx), which offers home health agencies (HHAs) adjustments to their FFS payments based on their relative performance against a set of quality measures. All Medicare-certified HHAs, regardless of rurality, are included in the model, and are assigned to larger-volume or smaller-volume cohorts based on their sizes.

- The Emergency, Triage, Treat, and Transport (ET3) Model (2021-2023), which offers increased flexibility to ambulance care teams to triage beneficiaries in place using telehealth or qualified health care practitioners or to transport patients to alternative destinations, such as primary care offices and urgent care clinics. While the model does not address only providers in rural areas, at least 31 participants include non-metropolitan counties in their service area.<sup>239</sup>
- The Diabetes Prevention Program Expanded (MDPP) Model (2018-ongo), which offers performance-based payments to MDPP service suppliers. MDPP suppliers include RHCs and FQHCs and can participate regardless of rurality; however, there are many fewer rural MDPP supplier locations, with the majority clustered in large urban areas.<sup>240</sup>
- The Part D Enhanced Medication Therapy Management (MTM) Model (2017-2021), which offered Part D sponsors additional payment incentives and regulatory flexibilities with the aim of improving outcomes and reducing net Medicare expenditures. The model did not have a specific rural focus, but it included highly rural states in the covered regions.<sup>241</sup>
- The Primary Care First (PCF) Model (2021-2027), which is a multi-payer model aimed to support delivery of advanced primary care, including a hybrid total primary care payment incorporating a population-based per member per month (PMPM) payment for attributed beneficiaries, a flat per visit fee, and a two-sided risk-based performance-based adjustment. PCF participation is not specifically focused on rural providers but may include rural areas in participation regions.<sup>242</sup>
- The Bundled Payments for Care Improvement (BPCI) Advanced initiative (2018-2025), which does not limit applicants based on geographic region, rurality, or facility size. The model does exclude CAHs, hospitals participating in the Rural Community Hospital Demonstration, and rural hospitals participating in the PARHM from the definition of an acute care hospital (ACH) for purposes of BPCI Advanced.<sup>243</sup>
- The Comprehensive Primary Care Plus (CPC+) Model (2017-2021), which was a national advanced primary care medical home-focused model that offered various payment elements, including care management fees, performance-based incentive payments, and usual or adjusted FFS payments. The model did not note a specific rural focus but included many rural areas. RHCs and FQHCs were ineligible to participate in the model due to the model's payment design.<sup>244</sup>

**Characteristics of Rural Providers' Participation.** Generally, analyses of rural providers' participation in APMs show proportionally lower participation by rural providers than by metropolitan/non-rural providers.<sup>245, 246, 247</sup> In one analysis of provider participation in CMS' Quality Payment Program by the Rural Policy Research Institute, the authors found that a lower proportion of non-metropolitan providers (11.3 percent) participated in advanced APMs<sup>xxviii</sup> with two-sided risk, when compared to metropolitan providers (16.6 percent). Non-metropolitan providers had higher rates of Merit-based Incentive Payment System (MIPS)<sup>xxix</sup> only participation (49.8 percent compared to 47.7 percent) and one-sided risk MIPS APM participation (25.8 percent compared to 23.6 percent) than metropolitan providers.<sup>248</sup>

---

<sup>xxviii</sup> Under the Quality Payment Program (QPP), advanced APMs are APMs that include specific features: participation in the advanced APM track of the QPP offers participants exemption from participation in MIPS and eligibility to receive a 3.5 percent incentive payment in performance year (PY) 2023 and an increased physician fee schedule for PY 2024 and beyond.

<sup>xxix</sup> MIPS offers providers performance-based payment adjustments based on performance in four categories: quality, cost, promoting interoperability of EHRs, and participation in improvement activities.



Similarly, researchers found that rural ACOs participating in MSSP were less likely to switch to two-sided risk than their urban counterparts,<sup>249</sup> and that ACOs remaining in the AIM served less rural areas.<sup>250</sup> The U.S. Government Accountability Office (GAO) noted that providers based in rural areas were less likely (12 percent participation) to participate in advanced APMs than providers based in non-rural areas (about 15 percent participation) in 2019. At the same time, participation in advanced APMs increased at a faster rate among providers in rural areas (109 percent increase) than among providers in non-rural areas (93 percent increase) from 2017 to 2019.<sup>251</sup>

Exhibit 10 shows the percentage of Medicare providers participating in advanced APMs by location (rural/non-rural) and provider type (physician, nurse practitioner, and physician assistant). Providers participating in advanced APMs in rural areas were primarily physicians, with the next most common types of providers being nurse practitioners and physician assistants. The percentage of physicians participating in advanced APMs in rural areas was slightly lower than the percentage of physicians participating in non-rural areas, and the percentage of nurse practitioners and physician assistants participating in rural areas was slightly higher than the percentage participating in non-rural areas, possibly indicating rural areas have a higher reliance on the latter for clinical care than non-rural areas.<sup>252</sup>

**Exhibit 10. Percentage of Medicare Providers Participating in Advanced APMs by Location and Provider Type, 2017-2019**

Provider Type	2017		2018		2019	
	Rural	Non-Rural	Rural	Non-Rural	Rural	Non-Rural
Physician	69.12%	76.02%	68.97%	73.20%	69.16%	71.02%
Nurse Practitioner	14.79%	10.72%	14.24%	12.19%	14.32%	13.08%
Physician Assistant	9.25%	7.42%	9.83%	7.94%	8.99%	8.67%

Data from *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. <https://www.gao.gov/assets/gao-22-104618.pdf>

Physicians participating in advanced APMs in rural areas were most commonly in primary care specialties such as family practice and internal medicine.<sup>253</sup> For more details on overall provider participation by physician specialty, see Exhibit 11.

**Exhibit 11. Percentage of Physicians Participating in Advanced APMs by Location and Physician Specialty, 2017--2019**

Provider Type	2017		2018		2019	
	Rural	Non-Rural	Rural	Non-Rural	Rural	Non-Rural
Family Practice	23.57%	14.60%	23.11%	13.43%	21.03%	13.68%
Internal Medicine	16.93%	20.71%	13.66%	17.56%	16.55%	19.02%
Emergency Medicine	5.97%	4.71%	6.50%	5.20%	6.04%	4.79%
Diagnostic Radiology	4.62%	4.19%	6.25%	4.65%	5.80%	4.09%

Provider Type	2017		2018		2019	
	Rural	Non-Rural	Rural	Non-Rural	Rural	Non-Rural
Orthopedic Surgery	3.20%	3.40%	3.66%	3.45%	5.35%	5.32%
Hospitalist	0.22%	0.22%	2.32%	1.65%	4.29%	2.83%
Cardiology	4.16%	3.92%	4.07%	3.74%	3.46%	3.68%
Obstetrics / Gynecology	4.04%	4.31%	3.69%	4.28%	3.40%	4.17%
General Surgery	3.66%	2.84%	3.53%	2.97%	3.11%	2.89%
Nephrology	3.12%	2.25%	2.78%	2.16%	2.40%	1.80%
Anesthesiology	2.89%	3.19%	2.30%	3.73%	2.28%	3.26%
Gastroenterology	1.66%	2.37%	2.23%	2.52%	1.88%	2.15%
Neurology	2.05%	2.70%	2.18%	2.69%	1.86%	2.44%
Pulmonary Disease	1.48%	1.78%	1.54%	2.02%	1.51%	1.89%
Psychiatry	1.22%	2.66%	1.61%	2.56%	1.37%	2.45%
Urology	1.63%	1.29%	1.51%	1.31%	1.28%	1.25%
Ophthalmology	1.36%	2.38%	1.42%	2.40%	1.22%	1.97%
Podiatry	1.11%	1.23%	1.23%	1.20%	1.22%	1.06%
Hematology / Oncology	1.61%	1.55%	1.38%	1.57%	1.11%	1.34%
Dermatology	1.00%	1.41%	0.83%	1.48%	1.03%	1.33%
All other physician specialties	14.48%	18.23%	14.16%	19.29%	13.77%	18.54%
Unknown	0.05%	0.09%	0.07%	0.11%	0.04%	0.05%

Data from *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. <https://www.gao.gov/assets/gao-22-104618.pdf>

**Barriers to Rural Providers’ Participation.** Providers in rural or traditionally medically underserved areas face challenges that impact their ability to adopt and participate in APMs. As a result of these challenges, rural providers have been slower to participate in population-based TCOC models and other APMs.<sup>254</sup>

Some of these barriers include:

- Many models have explicitly excluded FQHCs and RHCs.<sup>255, 256</sup>
- Criteria around eligibility (i.e., minimum patient populations) and payment (i.e., requiring facilities to forego augmented Medicare FFS payments) have prevented rural providers from participating.<sup>257, 258</sup>
- The pre-existing predominantly FFS payment system;<sup>259</sup>
- Difficulty shifting to APMs for only part of providers’ patient loads;<sup>260</sup>
- Low patient volumes and small patient populations, which can be inadequate for evaluation purposes and insufficient to meet model participation requirements, and can skew quality and efficiency measurements when patients require more expensive care;<sup>261, 262</sup>

- Geographically diverse patient populations, which can limit practices' abilities to provide care management and population health services;<sup>263</sup>
  - Less control over cost of care with referrals to tertiary care;<sup>264</sup>
  - Rural residents typically receive fewer health care services than non-rural residents, particularly services found to improve long-term health outcomes, which impacts rural providers' performance in APMs;<sup>265</sup>
  - Low financial reserves and uncertain financial stability, which breed hesitancy to take on additional downside risk and participate in two-sided risk models;<sup>266, 267, 268, 269</sup>
  - Lack of awareness and understanding of APMs;<sup>270</sup>
  - High levels of effort needed to understand model requirements due to frequent regulatory changes, lack of clarity, and difficulty understanding model participation requirements;<sup>271, 272</sup>
  - Workload and practitioner shortages;<sup>273, 274</sup> and
  - Insufficient capital to finance the up-front costs of transitioning to an APM, including purchasing EHR technology and the added costs associated with retrieving and reporting quality data.<sup>275, 276</sup>
- For additional detail on barriers to the adoption and use of HIT and data analytics among rural providers, see Section XIII.B below.

In qualitative interviews, hospital leaders from CAHs participating in the VTAPM noted that serious barriers to participating in the higher-risk Medicare ACO initiative included a lack of needed up-front funding, the potential for larger shared losses, and perceived uncertainty around the Medicare ACO initiative's impact on Medicare cost reporting, coupled with a lack of organizational financial reserves.<sup>277</sup>

PB-TCOC models can often utilize an ACO-based structure, which aims to financially incentivize an increased focus on primary care, care coordination, engagement across the care continuum, and patient connections to their health care providers; yet, the ACO-based structure can offer barriers to implementation in rural contexts.<sup>278</sup> ACO participation is lower in rural areas more broadly, for a number of reasons.<sup>279</sup> ACOs are less likely to enter rural markets, partially because performance benchmarks can be harder to achieve in rural markets, due to the "rural glitch" present in current ACO benchmarking methodologies<sup>xxx, 280</sup> Performance benchmarks are calculated using two cost sources, including both a historical benchmark of the costs for the ACO's patients and a regional adjustment for the costs of all patients in the region, including patients attributed to the ACO. In areas where the ACO's attributed populations reflect a larger percentage of the area's population, spending reductions achieved by ACOs can be substantial enough to lower regional cost. As the ACO reduces the cost of its own beneficiaries, it also reduces the cost of beneficiaries in the regional comparison, reducing the impact of the ACO's performance against the regional benchmarks, such that they do not appropriately reflect and reward ACO efficiencies and care improvements.<sup>281</sup> Efforts are being made to address this "rural glitch" by combining and averaging national and regional inflation; however, this may not adequately address the concerns for ACOs concentrated in rural areas. Some ACO models may emphasize reducing wasteful utilization, but for many populations the primary problem is underutilization and underspending which are not always accounted for in historical costs, leading to conflicting goals of improving quality while reducing cost.<sup>282</sup>

---

<sup>xxx</sup> Note that CMS made several changes to MSSP in 2022 as detailed in footnote XXVI in an attempt to remedy the rural glitch.

## VII.B. Models for which Rural Providers were Not Eligible

Several CMMI Models either exclude or are largely ineligible for rural providers:

- The Comprehensive Care for Joint Replacement (CJR) Model (2016-2024) tests bundled payment and quality measurement for an episode of care associated with hip and knee replacements. The model operates in 67 specified metropolitan statistical areas (MSAs), which are associated with a core urban area and have a population of at least 50,000. Non-MSA counties are not eligible to participate in the model, and hospitals that were designated as low-volume or rural in participating MSAs were eligible to participate after performance year (PY) 2 of the model.
- The Radiation Oncology (RO) Model<sup>xxxii</sup> excluded practices in extreme rural regions from participation in the model to avoid the potential closure of rural, free-standing radiation oncology clinics. RO Model requirements, including peer review mandates, require increased administrative support and investment that smaller rural practices may face challenges in funding. Practices failing to meet model requirements could face financial penalties that they cannot afford, leading to practice closures.<sup>283</sup> Rural radiotherapy providers and suppliers are included in the model, and the model does provide a nonadvanced track for providers who lack certified EHR technology, enabling smaller and rural practices to participate in the APM without necessitating the capital investment in certified EHR technology.<sup>284</sup>
- The Independence at Home (IAH) Demonstration (2012x-2023) provides funding for primary care practices offering home-based primary care to high-cost beneficiaries with multiple chronic conditions. All 14 of the originally participating primary care practices were in urban areas.<sup>285</sup>
- The Oncology Care Model (OCM) (2016-2022) was developed with the goal of encouraging coordinated and value-based cancer care to reduce Medicare payments and improve quality of care for patients with cancer, offering retrospective calculated performance-based payments if cost savings and quality payments were met. Few rural practices participated in the model, and fewer than three percent of episodes were triggered by rural residents, limiting the findings for rural participants.<sup>286</sup>

## VII.C. Other Federal Programs for which Rural Providers are Eligible

Some rural providers are eligible to participate in other value-based payment policies or options currently embedded within Medicare FFS. Policies include the Hospital-Acquired Condition Reduction Program (HACRP, effective 2014-present), Hospital Readmissions Reduction Program (HRRP, effective 2012-present), and Hospital Value-Based Purchasing Program (Hospital VBP, effective 2012-present). Rural providers are also eligible to participate in MSSP (effective 2012-present). The three hospital-focused programs specifically target care provided in inpatient hospitals that are paid through Medicare's IPPS, whereas MSSP's clinical focus is on total care across multiple settings furnished by a variety of providers and suppliers (including physicians and hospitals) that join together to create an ACO. These four programs were assessed based on their program design components relevant to rural providers (eligibility criteria, specific requirements, flexibilities, characteristics of rural participation, and whether rural provider participation challenges [described above] were addressed); payment design features, specifically whether the program provided financial incentives to enhance rural provider participation; performance measurement components (i.e., rural-relevant measures and whether any

---

<sup>xxxii</sup> On August 29, 2022, CMS published a final rule in the Federal Register, [CMS-5527-F2](#), which finalized delaying the current start date of the RO Model to a date to be determined through future rulemaking.

modifications to measurement, performance-based payments, or benchmarking were made for rural providers); and lessons learned to date related to provider participation.

**Eligibility Criteria.** The three hospital-focused programs include all IPPS hospitals in the program and exclude CAHs from participation. The HACRP additionally excludes rehabilitation hospitals and units, long-term care hospitals (LTCHs), psychiatric hospitals and units, children’s hospitals, PPS-exempt cancer hospitals, Veterans Affairs (VA) hospitals, short-term acute care hospitals in U.S. territories, and religious nonmedical health care institutions. HACRP and HRRP both have requirements for the minimum number of discharges for quality measure calculation. As MSSP focuses on total care, it allows a broader range of providers and health care settings to participate, including all providers or suppliers enrolled in Medicare that bill for items and services furnished to Medicare FFS beneficiaries under a Medicare billing number assigned to the taxpayer identification number (TIN) of an ACO participant in accordance with applicable Medicare regulations. Participants must have at least 5,000 attributed Medicare FFS patients and agree to participate for at least five years. In addition, FQHCs, RHCs, and CAHs are eligible to join an ACO under MSSP; FQHCs, RHCs, and some CAHs are also eligible to become their own ACO under MSSP.

**Specific Requirements for Rural Providers.** None of the three hospital-focused programs had separate or additional requirements for rural participants. Under MSSP, ACOs that are formed by or include FQHCs and RHCs are required to submit attestation listing their physician national provider identifiers (NPIs) that provide direct patient primary care services (i.e., the physicians that deliver the FQHC’s/RHC’s primary care services). This attestation is needed to supplement their claims data as required for assignment.

**Flexibilities for Rural Providers.** Although not specific to rural providers, HACRP and Hospital VBP offer Extraordinary Circumstances Exceptions (ECEs) and IPPS Measure Exceptions<sup>xxxii</sup> to participants that allow them to be exempt from quality reporting. MSSP uses a two-step assignment process, which may be helpful in rural areas with fewer providers, as beneficiaries can be assigned to an ACO if they receive at least one primary care service from a physician within the ACO or if they receive a plurality of primary care services from physicians and certain non-physician practitioners (nurse practitioners, clinical nurse specialists, and physician assistants) within the ACO.

**Rural Participation.** Although rural IPPS hospitals can participate in the three hospital-focused programs, participant hospitals are disproportionately urban.<sup>287</sup> As of January 2023, 467 CAHs (approximately 35 percent of all CAHs) and 2,240 RHCs (1,574 provider-based RHCs and 666 freestanding, independent RHCs, approximately 51% of all RHCs) were participating in an MSSP ACO.<sup>xxxiii,</sup>  
288

**Rural Provider Participation Challenges.** None of the three hospital-focused programs specifically addressed participation challenges that rural providers may face. Under MSSP, telehealth expansion

---

<sup>xxxii</sup> Hospitals are exempt from the CLABSI and CAUTI measures if they have no applicable locations for the measures (e.g., no ICUs or adult or pediatric medical wards, surgical wards, or medical/surgical wards). Hospitals are exempt from the SSI measure if they perform a combined total of nine or fewer abdominal hysterectomies and specified colon surgeries in the calendar year before the year for which they are requesting a reporting exemption.

<sup>xxxiii</sup> Facility counts available from program data.

may support patients and providers in rural areas. For more discussion on the effectiveness of telehealth in rural areas, please refer to Section XII.

**Financial Incentives to Enhance Rural Provider Participation Specifically.** None of the three hospital-focused programs offered separate or additional incentives to rural providers, nor did they target incentives toward rural providers (e.g., up-front payments). MSSP offers different tracks with varying levels of risk, which could encourage rural provider participation. Under MSSP, CMS is offering a new payment option, Advance Investment Payments (AIPs), to encourage ACOs to form in rural and underserved areas. AIPs offer eligible ACOs an up-front payment of \$250,000 and two years of quarterly payments to build the infrastructure needed to succeed in MSSP and promote equity by holistically addressing beneficiary needs, including social needs. AIPs will be recouped from ACOs' shared savings.

**Performance Measurement Features for Rural Providers.** All programs included rural-relevant measures. Measurement areas included patient safety, hospital-acquired infections, hospital readmissions, ambulatory care sensitive conditions, mortality and complications, medication reconciliation, health care screenings, and patient experience with care. Only one program (HRRP) included modifications to measurement for rural providers; in FY 2019, CMS updated the payment methodology, calculating the payment adjustment factor using a stratified methodology and assigning hospitals to one of five peer groups for comparison based on the hospital's portion of dual eligible beneficiaries so as to not disproportionately penalize hospitals serving vulnerable and safety net populations. No program included modifications to performance-based payment for rural providers. Only MSSP modified benchmarking in a way that may advantage rural providers, using different confidence intervals to set the minimum savings rate for shared savings in smaller and larger ACOs, improving smaller ACOs' ability to achieve shared savings.

**Lessons Learned Related to Rural Provider Participation.** Under both HACRP and HRRP,<sup>xxxiv</sup> hospitals that served higher proportions of vulnerable and underserved populations were disproportionately penalized, receiving a penalty.<sup>289</sup> Under MSSP, regional adjustments to benchmarks actually penalized rural ACOs, which have a higher percentage of the area's Medicare beneficiaries in their plans; MSSP's benchmarking methodology has been updated in subsequent program years. MSSP can also give newly forming, smaller ACOs that treat patients in rural or underserved areas an on-ramp to participation by providing up-front payments that can be used to hire staff or address patient-centered care needs. Whereas downside risk can discourage providers with less APM experience or that serve rural populations from participation, longer on-ramps with one-sided risk options may encourage rural providers to join and stay in the program. Additionally, growth of net patient revenue may encourage rural hospitals to remain in the program.<sup>290</sup>

## **VIII. CMMI Models that Include or Target Rural Participants in their Model Designs**

A number of CMMI Models either specifically target or include rural participants in their model designs. For additional details on model years and current stage, see Exhibit 12.

---

<sup>xxxiv</sup> As noted above, the HRRP methodology was updated in FY 2019.

**Exhibit 12. CMMI Models that Include or Target Rural Participants in Proposed Model Design and Related Care Delivery Innovations including Model, Model Years, and Model Stage**

<b>Model</b>	<b>Model Years</b>	<b>Model Stage</b>
ACO Investment Model (AIM)	2015-2018	Not active; model concluded
Pennsylvania Rural Health Model (PARHM)	2017-2024	Active; ongoing
Community Health Access and Rural Transformation (CHART) Model	2020-2023	Not active; model withdrawn early
Frontier Community Health Integration Project (FCHIP) Demonstration	2016-2019 2022-2027	Active; demonstration extended
Accountable Health Communities (AHC) Model	2017-2023	Not active; model concluded
Accountable Care Organization Realizing Equity, Access, and Community Health (ACO REACH) Model	2023-2026	Active; ongoing
Value in Opioid Use Disorder Treatment (Value in Treatment) Demonstration Program	2021-2024	Active; ongoing
Vermont All-Payer ACO Model (VTAPM)	2017-2024	Active; ongoing
Maryland All-Payer Model (MDAPM)	2014-2018	Not active; model concluded
Maryland Total Cost of Care (MDTCOC) Model	2019-2026	Active; ongoing
Medicare Care Choices Model (MCCM)	2016-2021	Not active; model concluded
Million Hearts Cardiovascular Disease Risk Reduction (Million Hearts™) Model	2017-2021	Not active; model concluded
Next Generation Accountable Care Organization (NGACO) Model	2016-2021	Not active; model concluded
Expanded Home Health Value-Based Purchasing (Expanded HHVBP) Model	2022 - ongoing	Active; ongoing
Emergency, Triage, Treat, and Transport (ET3) Model	2021-2023	Not active; model withdrawn early
Medicare Diabetes Prevention Program (MDPP) Expanded Model	2018 - ongoing	Active; ongoing

Model	Model Years	Model Stage
Part D Enhanced Medication Therapy Management (MTM) Model	2017-2021	Not active; model concluded
Primary Care First (PCF) Model Options	2021-2026	Active; ongoing
Bundled Payments for Care Improvement Advanced (BPCI-A) Initiative	2018-2025	Active; ongoing
Comprehensive Primary Care Plus (CPC+) Model	2017-2021	Not active; model concluded

For more in-depth information on the Models’ Clinical Focus, Providers, Setting, and Patient Population; Components Relevant to Rural Providers; Payment Design Features; Performance Measurement Features for Rural Providers; and Lessons Learned Related to Rural Provider Participation, please see Appendix E.

**VIII.A. Types of Rural Providers**

For a more in-depth discussion of the types of rural providers that provide care to Medicare beneficiaries and are eligible to participate in CMMI Models, see Section IV.B. Rural Health Care Facilities and Providers.

**VIII.B. Care Delivery Innovations**

CMMI Models that either specifically target or include rural participants in their model designs offer a number of care delivery innovations to best support the path toward value-based care, including offering behavioral health care services, supporting the usage of telehealth services, supporting and encouraging care coordination across providers, improving specialty integration, and much more. For more details on each model and their related payment mechanisms, see Exhibit 13 and Appendix E.

**Exhibit 13. CMMI Models that Include or Target Rural Participants in Proposed Model Design and Related Care Delivery Innovations**

Model	Care Delivery Innovations
ACO Investment Model (AIM)	Interdisciplinary teams to address HRSNs; supporting and sharing information on clinical and non-clinical factors that contribute to health and success of treatment
Pennsylvania Rural Health Model (PARHM)	Participating hospitals are paid a fixed amount up front, regardless of patient volume, to invest in high-quality primary and specialty care that addresses community-specific needs.
Frontier Community Health Integration Project (FCHIP) Demonstration	Enhanced Medicare payments allow care delivery innovation; for example, some participants used enhanced Medicare payments for telehealth to establish specialty care access.
Accountable Health Communities (AHC) Model	Coordination between health care services and community services organizations



Model	Care Delivery Innovations
Accountable Care Organization Realizing Equity, Access, and Community Health (ACO REACH) Model	Higher risk sharing arrangements and risk-adjusted monthly payments for all covered costs under Global and Total Care Capitation option; tying payments to improvements in quality of care provided; benefit enhancements; demonstrated experience as requirement of participation
Value in Opioid Use Disorder Treatment (Value in Treatment) Demonstration Program	Uses a PBPM care management fee and performance-based incentives to reduce hospitalizations and ED visits, utilization of inpatient residential treatment, and incidence of infectious diseases
Vermont All-Payer ACO Model (VTAPM)	Provides funding for start-up investment to bring together Vermont physicians, hospitals, and other care providers to better coordinate care for patients with Medicare, Medicaid, or commercial insurance. The model aims to incentivize coordination to achieve ACO scale, all-payer and Medicare financial and health outcomes, and quality of care targets.
Maryland All-Payer Model (MDAPM)	Maryland shifted all hospital revenue into global payment models. Improvements in quality of care for Maryland residents are evaluated through both hospital quality and population health measures.
Maryland Total Cost of Care (MDTCOC) Model	All Maryland hospitals participate in the model.
Medicare Care Choices Model (MCCM)	Participating hospices provided services that were available under the Medicare hospice benefit for routine home care and respite levels of care.
Million Hearts Cardiovascular Disease Risk Reduction (Million Hearts™) Model	Focus, coordinate, and enhance disease prevention activities; coordination among primary and specialty care providers, health centers, and hospital outpatient departments; risk stratification, cardiovascular care management, and risk reduction; medication management
Next Generation Accountable Care Organization (NGACO) Model	Enable provider groups to assume higher levels of financial risk and reward; tools to support patient engagement and care management include embedded and centralized care managers, shared access to EHRs, communication protocols, and monitoring beneficiaries at risk of hospital readmission.
Expanded Home Health Value-Based Purchasing (Expanded HHVBP) Model	Provides financial incentives to provide better quality care with greater efficiency for beneficiaries who may be at risk for poorly coordinated care; focuses on better coordinated care for beneficiaries with chronic conditions, reducing ED utilization
Emergency, Triage, Treat, and Transport (ET3) Model	Allows EMS team flexibility to transport patients to alternative destinations such as a primary care office, urgent care clinic, or community mental health center (CMHC), as well as initiate immediate treatment via a designated partner or telehealth
Medicare Diabetes Prevention Program (MDPP) Expanded Model	Administers preventive/management program to prevent/monitor diabetes and monitors risk reduction

Model	Care Delivery Innovations
Part D Enhanced Medication Therapy Management (MTM) Model	Provides Part D sponsors with additional payment incentives and allows for regulatory flexibilities to target enrollees and offer tailored services
Primary Care First (PCF) Model Options	Enables primary care practices to offer a broader range of health care services to meet patient needs, including behavioral health integration; eligibility requirements for PCF practices in each cohort; flexibility to support innovative care delivery
Bundled Payments for Care Improvement Advanced (BPCI-A) Initiative	Establishes an “accountable party” and shifts emphasis from individual services to clinical episodes; ensures that providers from all health care settings communicate and collaborate on quality and total cost of care
Comprehensive Primary Care Plus (CPC+) Model	Organizes care by practice-identified teams responsible for a specific, identifiable panel of patients to optimize continuity; synchronous telehealth and e-visits; behavioral health specialist consultations and warm handoffs to co-located behavioral health professionals; supporting and sharing information on clinical and non-clinical factors that contribute to health and success of treatment; screening for HRSNs; referrals to address HRSNs and monitor follow-up; and implementing strategies to advance equitable access to care

**VIII.C. Payment Mechanisms**

CMMI Models that include or target rural participants use a variety of payment mechanisms to support providers, including pre-paid shared savings, PBPM payments, global budgets, FFS payments, population-based payments, bundled payments, and performance-based payments. For more details on each model and their related payment mechanisms, see Exhibit 14 and Appendix E. Appendix G includes information about rural providers’ participation in other Federal programs.

**Exhibit 14. CMMI Models that Include or Target Rural Participants in Proposed Model Design and Payment Mechanisms**

Model	Payment Mechanisms
ACO Investment Model (AIM)	Pre-paid shared savings to encourage new ACOs to form in rural and underserved areas; monthly PBPM payments
Pennsylvania Rural Health Model (PARHM)	All-payer global budget for each participating hospital. Financial incentives for participating hospitals may be determined according to model goals for: 1) increasing access to primary and specialty care; 2) reducing rural health disparities through improved chronic disease management and preventive screenings; and 3) decreasing deaths from substance use disorder and improving access to treatment for opioid use disorder.
The Frontier Community Health Integration Project (FCHIP) Demonstration	Medicare waivers offered to CAHs with low population density; enhanced Medicare payments for telehealth, Part B ambulance, and home health services

Model	Payment Mechanisms
Accountable Health Communities (AHC) Model	<p>Funds for this model support the infrastructure and staffing needs of bridge organizations, and do not pay directly or indirectly for any community services.</p> <p><b>Assistance</b> track: Funding for screening Medicare and Medicaid beneficiaries for five HRSNs</p> <p><b>Alignment</b> track: Same as Assistance track plus additional funding to support establishing a governing body of community partners/ organizations and conducting a gap analysis to determine available resources and additional resources needed</p>
Accountable Care Organization Realizing Equity, Access, and Community Health (ACO REACH) Model	<p><b>Professional:</b> Risk-adjusted, monthly Primary Care Capitation payment; 50 percent shared risk</p> <p><b>Global:</b> Risk-adjusted, monthly Primary Care Capitation payment or Total Care Capitation Payment (for all covered services, including specialty care); 100 percent shared risk</p> <p>The ACO REACH Model includes a beneficiary-level Health Equity Benchmark Adjustment provided to ACOs serving high proportions of underserved beneficiaries.</p>
Value in Opioid Use Disorder Treatment (Value in Treatment) Demonstration Program	PBPM care management fee, performance-based incentive
Vermont All-Payer ACO Model (VTAPM)	The VTAPM seeks to unite Medicare, Medicaid, and commercial payers under the same payment structure, offering the potential to provide more consistent incentives across payers and hopefully increase APM participation. <sup>291</sup>
Maryland All-Payer Model (MDAPM)	All hospitals in the state operated under global budgeting, and all but one rural hospital in TPR remained within 0.5 percent budget corridor.
Maryland Total Cost of Care (MDTCOC) Model	A per capita limit on Medicare TCOC in Maryland, holding the state fully at risk for Medicare beneficiaries
Medicare Care Choices Model (MCCM)	PBPM fee dependent on the number of calendar days that services were provided under the model
Million Hearts Cardiovascular Disease Risk Reduction (Million Hearts™) Model	One-time payment for control group participants; one-time payment and ongoing monthly payments for high-risk beneficiaries in the intervention group; PBPM payments are for enrolling beneficiaries, reducing cardiovascular disease risk, and providing cardiovascular care management.
Next Generation Accountable Care Organization (NGACO) Model	FFS payments with fixed per PBPM infrastructure payments, population-based payments, all-inclusive population-based payments; shared risk
Expanded Home Health Value-Based Purchasing (Expanded HHVBP) Model	Quality performance adjusted Medicare FFS payments; HHAs receive adjustments to their Medicare FFS payments based on their performance against a set of quality measures, relative to their peers' performance; performance in a specified year also impacts payment adjustments in a later year.

Model	Payment Mechanisms
Emergency, Triage, Treat, and Transport (ET3) Model	Billing for emergency ground ambulance services for initiation and facilitation of a Treatment in Place intervention or for Transport to an Alternative Destination; participants may be eligible for up to a three percent upward adjustment to Model Intervention Payments.
Medicare Diabetes Prevention Program (MDPP) Expanded Model	Performance payment per beneficiary based on session attendance and percentage of weight lost
Part D Enhanced Medication Therapy Management (MTM) Model	PBPM prospective payments
Primary Care First (PCF) Model	Total Primary Care Payment paid to deliver advanced primary care in/outside of office; risk-adjusted PMPM payments; flat per visit fees; performance-based incentives; separate payment structure for practices that care for seriously ill populations
Bundled Payments for Care Improvement Advanced (BPCI-A) Initiative	One risk track; 90-day clinical episodes with retrospective, bundled payments
Comprehensive Primary Care Plus (CPC+) Model	Care management fee; performance-based incentive payments; Medicare Physician Fee Schedule (MPFS)

**VIII.D. Lessons Learned Related to Encouraging Participation of Rural Providers**

Lessons learned from the implementation of CMMI Models highlight several key approaches for encouraging rural providers’ participation in population-based TCOC models, including:

- Establishing longer on-ramps for rural practices interested in APM participation;<sup>292</sup>
- Developing APMs that specifically target care transformation in rural settings, such as the PARHM;<sup>293</sup>
- Ensuring that APM payment methodologies are “transparent, predictable, and sustainable;”<sup>294</sup>
- Identifying suitable, risk-adjusted quality measures to better evaluate the care delivered to high-risk populations;<sup>295</sup>
- Providing risk protection caps on risk exposure for rural providers less equipped and less ready to take on downside risk;<sup>296</sup>
- Extending bonus payments for new Advanced APM participants;<sup>297</sup> and
- Decreasing qualifying participation thresholds for rural providers such as RHCs and FQHCs operating under APMs.<sup>298</sup>

Evaluation reports from CMMI Models note particular challenges with maintaining APM participation of small and rural providers. The final evaluation report for AIM noted that ACOs exiting from the program tended to have higher proportions of rurality (76.4 percent rurality) and be smaller (average 9,780 assigned beneficiaries) than ACOs remaining in the program (43.8 percent rurality and average 12,119 assigned beneficiaries).<sup>299</sup> Interviews with exiting ACOs highlighted the importance of developing continued financial incentives for rural providers, such as bonus payments, in order to maintain their participation in models. For many rural providers, the absence of value-based payment adjustments under the Quality Payment Program can limit their incentive to participate in Pathways to Success and take on additional downside risk.<sup>300</sup> At the same time, many exiting AIM ACOs opted to re-join MSSP as

part of larger entities that were better able to manage financial risk, highlighting the importance of providing additional risk exposure protections, such as risk protection caps or upside-only financial models, for smaller, rural providers.<sup>301</sup> The overall proportion of rural facilities participating in the Comprehensive End-Stage Renal Disease Care (CEC) Model decreased from 2012 to 2019.<sup>302</sup>

### VIII.E. Experience with Medicare Advantage

Analysis of Medicare Advantage (MA) beneficiaries showed that switching from MA to traditional Medicare was much more common for rural enrollees (10.5 percent) than non-rural enrollees (5 percent).<sup>303</sup> Potential reasons for this disparity include the smaller number of MA plans and the smaller, more restrictive provider networks available to rural MA beneficiaries.<sup>304</sup>

There have been significant increases in Medicare Advantage (MA) plans and MA enrollment in rural areas between 2010 and 2023. Although fewer rural beneficiaries are enrolled in MA (40% vs. 44% in micropolitan areas and 53% in metropolitan areas), the share of eligible rural beneficiaries enrolled in MA plans has nearly quadrupled since 2010. Similarly, the average Medicare beneficiary living in a rural community has a selection of 27 MA plans to choose from in 2023, up from 19 in 2010. By comparison, micropolitan residents have 31 plans to choose from in 2023, versus 21 in 2010 and metropolitan residents have 46 plans to choose from in 2023, compared to 32 in 2010.<sup>305</sup>

For more details on the participation of rural providers in APMs, see Exhibits 13 and 14 above.

## IX. Driving Care Delivery Transformation in Rural Providers

CMMI’s goals of improving access, quality, and continuity of care while reducing Medicare expenditures are implemented through a range of CMMI Models that allow rural providers, including FQHCs, RHCs, and CAHs, to participate. Twenty-two CMMI Models that allow rural providers to participate are evaluated in this environmental scan.<sup>xxxv</sup> Of these 22 models, 12 CMMI Models, described in this section, are most relevant to health care delivery transformation in rural areas (Exhibit 15). Of these 12 models, five were specifically designed for rural populations: AIM, CHART, FCHIP, PARHM, and the Rural Community Hospital Demonstration.

**Exhibit 15. CMMI Model Activities Supporting Rural Health**

Model	Rural focus	Rural-Relevant Activities
ACO REACH	No	Development and implementation of a health equity plan; collection of demographic and social needs data; care team enhancements; improve provider and beneficiary representation among the governing board
Accountable Health Communities Model	No	Identify and address health-related social needs; complete at least 750,000 health screenings annually; coordinate and connect beneficiaries to community services

<sup>xxxv</sup> For additional details on the selection and assessment of CMMI Models, see Appendix D.

Model	Rural focus	Rural-Relevant Activities
ACO Investment Model	Yes	Investments in health infrastructure to improve population care management (e.g., hiring management companies to assist with ACO set-up activities and improved health infrastructure)
CHART Model <sup>xxxvi</sup>	Yes	Development and implementation of a care delivery transformation plan; operational and regulatory flexibility
Comprehensive Primary Care Plus (CPC+)	No	Data feedback on utilization and TCOC; HIT vendor support in expanding and investing in HIT
Emergency Triage, Treat, and Transport (ET3)	No	Care team flexibility
Frontier Community Health Integration Project (FCHIP)	Yes	Care team flexibility; investment in ambulatory, SNF/NF, and telehealth services
Million Hearts Cardiovascular Disease Risk Reduction (Million Hearts™)	No	Identify prevention and population health interventions
Pennsylvania Rural Health Model (PARHM)	Yes	Development and implementation of a rural hospital transformation plan; establishment of the Rural Health Redesign Center Authority (RHRCA) to help build trust among hospitals, payers, and implementation partners
Part D Enhanced Medication Therapy Management (MTM)	No	Regulatory flexibilities
Primary Care First (PCF) Model	No	Investment in health infrastructure
Rural Community Hospital Demonstration	Yes	Investment in inpatient and emergency services (i.e., offer 24-hour emergency services)

Note: Only CMMI Models and activities with a large impact or specific focus on rural populations were included in this table.

<sup>xxxvi</sup> CMMI announced that the CHART Model would end early on September 30, 2023, based on feedback received from model stakeholders, as well as a lack of hospital participation.

## IX.A. Required and Voluntary Activities in APMs

The CMMI Models that have the greatest effect on rural areas require participating organizations to identify specific community needs and to design and implement a care transformation plan. Many of these models also increase health care team flexibility and encourage/improve data infrastructure and HIT (such as improved telehealth services) as a way of supporting model goals.

### Required Activities

**Tailored care transformation plans.** The ACO REACH Model, CHART Model, and PARHM require participants to develop and implement a care innovation plan that addresses health inequities, identifies community barriers and resources, and develops strategies to promote patient-centered care. After identifying local health disparities, the ACO REACH Model supports patients by assisting them through the health system and addressing individual barriers to care (e.g., offering telehealth visits, home care, and help with co-pays).<sup>306</sup> The ACO REACH Model also continuously monitors health disparities and community needs, through the collection of beneficiary-reported demographic and social needs data.<sup>307</sup> While all model participants receive risk-adjusted payments, ACOs serving populations with high proportions of underserved beneficiaries, including rural areas, are encouraged to participate with a beneficiary-level health equity benchmark adjustment that increases their potential earnings.<sup>308,xxxvii</sup>

Similarly, the CHART Model provides financial stability for rural hospitals to expand primary and specialty care services, while also addressing community factors such as SDOH, including food and housing insecurity.<sup>309</sup> In exchange for up-front capitated payments, participating hospitals must collaborate with community stakeholders to develop and implement health care delivery redesign strategies.<sup>310</sup> This model will end early in 2023 due to lack of hospital participation. It did not begin the implementation phase so payment methods and model results will not be evaluated.<sup>311</sup>

Under the PARHM, the state of Pennsylvania provides global budgets and funds to support rural hospital care delivery transformations. In exchange, it requires all participants to submit a hospital transformation plan, outlining opportunities to invest in high-quality primary and specialty care tailored to the specific needs of the local communities that the hospital serves.<sup>312</sup> Hospitals can also receive incentive payments for reaching model goals; these goals include increasing access to primary and specialty care, improving coordination and linkage of medical and social needs services, reducing rural health disparities through improved preventive screenings and chronic disease management, and improving access to treatment for opioid use disorder and decreasing substance-related deaths.<sup>313</sup> An evaluation of the first two performance years found that PARHM transformation plans successfully addressed rural health disparities, including improved patient and staff education, regular data collection of HRSNs and high-risk patients, and the implementation of post-discharge follow-up processes. The model also resulted in reduced costs, improved care coordination, and decreased post-acute care (PAC) utilization in rural Pennsylvania.<sup>314</sup>

**Identification of community and health-related social needs.** Other CMMI Models and Demonstrations, including the FCHIP Demonstration, AHC Model, and Million Hearts™ Cardiovascular Disease Risk Reduction Model, include the identification of SDOH and HRSNs as a key component to health care redesign activities. The FCHIP Demonstration aims to improve access to and integrate acute care, extended care, and other health care services for Medicare and Medicaid beneficiaries in very sparsely

---

<sup>xxxvii</sup> The ACO REACH Model is still in its early stages, so performance has not been evaluated yet.

populated areas. While the model supports 10 participating CAHs and local delivery systems in Montana, Nevada, and North Dakota, one model objective is to keep patients within the community (as opposed to transferring them to outside providers) through improvements to ambulatory services, SNF/NF care, and telehealth services funded by Medicare payment adjustments.<sup>315</sup> An evaluation of the model found that all CAHs reported high patient satisfaction with telehealth services, since these services increased accessibility for rural beneficiaries and helped establish a referral process.<sup>316</sup> However, there is little evidence that this finding is attributable to the demonstration as opposed to increased popularity in telehealth services overall.<sup>317</sup>

Similarly, the AHC Model aims to strengthen clinical-community collaboration through the identification of community HRSNs (i.e., housing instability, food insecurity, interpersonal violence, utility difficulties, and transportation needs), referral of community resources, and providing support via patient navigation services.<sup>318</sup> Ten of the 28 model participants include at least one organization that serves rural counties.<sup>319</sup> Additionally, the Million Hearts™ Cardiovascular Disease Risk Reduction Model was a randomized control trial that generated individualized risk scores and successfully identified prevention and population health incentives for cardiovascular disease (CVD). Although there was no rural focus, all but one state included rural providers.<sup>320</sup>

#### Voluntary Activities

Although not required by CMMI Models, many of the models involve encouraging/improving telehealth services and, more broadly, increasing flexibility for members of the care delivery team to provide services in a variety of settings as a strategy to improve access to health care in rural areas.

**Investment in telehealth.** Some CMMI Models or Demonstrations, such as the FCHIP Demonstration, increase access to care for rural beneficiaries by utilizing and investing in telehealth services, while the ACO Investment, PCF, and CPC+ Models support HIT advances depending on the providers and whether they chose to make HIT investments. The FCHIP Demonstration includes 10 CAHs in rural areas, and funds target care delivery innovations centered around identifying and addressing local community health needs through increased access to telehealth, expanded SNF/NF care, and ambulatory care services.<sup>321</sup> Additionally, Diabetes Self-Management Training (DSMT), a Medicare value-based initiative, offers opportunities that educate diabetic patients on how to cope and self-manage their diabetes by providing instruction on self-monitoring of blood glucose, diet and exercise, insulin treatment plans, and self-management skills, in hopes of minimizing the need for future advanced care.<sup>322</sup> Medicare beneficiaries in rural areas can access these services via either telehealth or by attending training sessions in person at participating CAHs, FQHCs, HHAs, outpatient hospital departments, clinics, physician practices, SNFs, and RHCs.

**Investment in health infrastructure.** The ACO Investment Model (AIM) supports ACOs participating in the Medicare Shared Savings Program (MSSP) by funding health infrastructure advancements and care management improvements.<sup>323</sup> Of the 45 model participants, 36 had at least 65 percent of their delivery sites in rural areas, and 27 ACOs reported having CAHs or IPPS hospitals with fewer than 100 beds.<sup>324</sup> The final evaluation of this model found that most AIM ACOs were rural, served a small number of beneficiaries, included safety net providers and CAHs, and utilized management firms. On average, participating ACOs spent 16 percent of their AIM funds to invest in HIT, 25 percent for administrative activities, 53 percent for improvements in care management, and the rest for other activities.<sup>325</sup> Similarly, the PCF Model emphasizes the doctor-patient relationship, aims to improve care for patients



with complex chronic conditions, and introduces financial incentives to improve health outcomes.<sup>326</sup> The PCF Model improves care coordination and management across providers and health systems by requiring all participants to use 2015 Certified Electronic Health Record Technology (CEHRT) to support data and communication exchanges via the Application Programming Interface (API) and to connect with their regional health information exchange (HIE).<sup>327</sup> Although rural populations were not the focus, this model has been implemented in 26 regions, several of which include rural areas.<sup>328</sup> Similarly, the CPC+ Model tested whether multi-payer payment reform, the use of data-driven decisions, and meaningful use of HIT could improve care and population health while lowering Medicare costs. Many participants practiced in regions that included rural areas, although rural areas were not the focus of the model. RHCs and FQHCs were not eligible to participate.<sup>329</sup>

**Care team flexibility and expanded services.** Another approach used to support person-centered care while reducing Medicare costs and unnecessary utilization is through greater model flexibility. The ACO REACH Model includes a nurse practitioner service benefit enhancement which allows nurse practitioners to certify need for a variety of services, such as hospice, home infusion, and medical nutrition therapy, rather than waiting for and introducing another health professional into the care team.<sup>330</sup> The ET3 Model<sup>xxxviii</sup> increases flexibility by allowing ambulance care teams to determine the most appropriate site of care.<sup>331</sup> The ET3 Model also allows staff to initiate and facilitate treatment in place with a qualified health partner, either at the scene or via telehealth, as well as to choose whether the patient is transported to an ED or alternative destination, such as a primary care office, urgent care clinic, or CMHC, thus reducing avoidable ED visits.<sup>332</sup> The Part D Enhanced MTM Model allows different MTM services to be offered to different enrollees based on risk levels, interventions to be tailored to enrollee-specific barriers, and a more expansive set of MTM-related items and services to be offered.<sup>333</sup> This model also provides the ability for participants to experiment with alternative communication strategies to improve beneficiary, pharmacist, and medical provider coordination and engagement.<sup>334</sup> While not specifically focused on rural populations, model participants included highly rural states, and half (11 out of 22 participants) were eligible for performance-based incentive payments.<sup>335</sup> Lastly, the Rural Community Hospital Demonstration (RCHD) tests the feasibility and advisability of cost-based reimbursement by providing enhanced reimbursement for covered inpatient services in small hospitals (fewer than 51 acute care beds) that are ineligible for CAH designation. A subsequent evaluation found that the demonstration had a positive impact on the financial outcomes of the 12 hospitals that joined under the 21<sup>st</sup> Century Cures Act (CCA) extension.<sup>336</sup>

## **IX.B. Strategies to Improve Health Care in Rural Areas or for Rural Patients**

To improve health care for patients in rural areas, specific strategies must be implemented that address the particular challenges posed by rural areas. A shortage of professionals, limited access to resources, and minimal facilities create specialty integration and care transition issues that make it difficult to provide well-rounded care to rural patients.<sup>337</sup> These challenges were only exacerbated by the COVID-19 PHE, creating an even more pressing need for innovative solutions. Two main approaches to tackle issues around specialty care integration in rural areas include shifts in payment methods and integration of primary and behavioral health care, while telehealth and additional outreach activities have been integral in strategies to increase access and improve care coordination.

**Specialty care integration strategies.** An example of addressing issues of specialty integration in rural areas via shifts in payment methods can be seen in the PARHM. To meet the needs of the rural

---

<sup>xxxviii</sup> CMMI announced that the ET3 Model will end two years early on December 31, 2023. Model participation and the number of ET3 interventions provided under the model were lower than anticipated.

Pennsylvanian community, PARHM provides an opportunity for providers to shift away from FFS payments to value-based payments. To aid rural hospitals in this process and keep them financially stable through the transition, the model provides a predictable revenue stream through global budgets.<sup>338</sup> Hospital mergers and acquisitions and the creation of a global budget help to address barriers such as lack of funds and financial stability for rural hospitals, while increasing access to high-quality hospital services in underserved communities.<sup>339</sup> To execute the model’s strategies, Pennsylvania has created the Rural Health Redesign Center Authority (RHRCA), which aims to foster collaboration and carry out the strategies defined in PARHM.

Another approach to increase health care access in rural areas has been to integrate primary care and behavioral health care. There is a shortage of behavioral health professionals throughout the United States as a whole, but particularly so in rural areas.<sup>340</sup> Organizations throughout rural areas are expanding coverage to licensed professional counselors (LPCs), mental health counselors (MHCs), and marriage and family therapists (MFTs). Because Medicare reimburses only specific clinicians for behavioral health services, the expansion to LPCs, MHCs, and MFTs would help improve access to behavioral health services for Medicare beneficiaries.<sup>341</sup> These providers were added as Medicare-covered providers in 2023 and will be eligible for reimbursement starting on January 1, 2024.<sup>342, 343</sup> Many rural organizations have seen the benefit of coordinating care between such behavioral health services and physical services and are therefore striving to integrate the two through cross-specialty collaboration. In practice, this could take the shape of a rural hospital network leveraging its Mental Health Integration (MHI) program to address both physical and mental health needs in a single care team that is led by each patient’s primary care provider and is made available to the general patient population.<sup>344</sup>

In 2018, CMS also implemented a set of Healthcare Common Procedure Coding System (HCPCS) codes to encourage individual providers, FQHCs, and RHCs to integrate behavioral health care. The codes and their definitions are provided in Exhibit 16. To meet the criteria to bill under these codes, providers must furnish services under a behavioral health integration care delivery approach.<sup>345,346</sup>

**Exhibit 16. HCPCS Codes to Support Behavioral Health Care Integration**

HCPCS Code	Code Description
G05011	Rural health clinic or Federally Qualified Health Center (RHC or FQHC) only, general care management, 20 minutes or more of clinical staff time for chronic care management services or behavioral health integration services directed by an RHC or FQHC practitioner (physician, NP, PA, or CNM), per calendar month
G05012	Rural health clinic or Federally Qualified Health Center (RHC/FQHC) only, psychiatric collaborative care model (psychiatric CoCM), 60 minutes or more of clinical staff time for psychiatric CoCM services directed by an RHC or FQHC practitioner (physician, NP, PA, or CNM) and including services furnished by a behavioral health care manager and consultation with a psychiatric consultant, per calendar month

Notes: NP=nurse practitioner; PA=physician assistant; CNM=certified nurse midwife.

**Care transition strategies.** The implementation of telehealth services has been a common strategy to improve care transitions and access to health care in rural areas.<sup>347</sup> An example of this can be seen in

the FCHIP Demonstration. Federally mandated and running from 2016 to 2019, FCHIP aimed to improve access to health care for Medicare and Medicaid beneficiaries in the most rural regions of the United States, offering participation to CAHs in counties with populations of fewer than six persons per square mile.<sup>348</sup> Eight of the participating CAHs utilized telehealth, and all eight reported high patient satisfaction with the telehealth services.<sup>349</sup> The implementation of telehealth allowed rural patients to receive care without traveling extensive distances; this both saves cost and increases access. Additionally, the CAHs were able to strengthen relationships with distant providers using telehealth, making it easier to establish referral processes and improve transitions of care.<sup>350</sup>

Increased care coordination activities also seek to improve care transitions for rural patients. Particularly in response to the gaps in care that remain from the COVID-19 PHE, care coordination plays a substantial role in mitigating challenges facing rural patients. These challenges include the ability to travel to care, advocate for oneself, and communicate with care teams. Specifically, to improve transitions to home in rural areas, care coordination activities can be expanded to include facilitating neighborhood check-ins to provide food and prescriptions, advocating for audio-only visits, and providing tablets for shelters to conduct telehealth visits.<sup>351</sup> Legislation such as The American Rescue Plan Act (ARPA), passed in March 2021, includes provisions to help improve care coordination such as this.<sup>352</sup>

## **X. Leveraging Financial Incentives to Improve Rural Health Care**

Financial incentives can be used by health care organizations to recruit and retain health care providers, increase access to care, and improve the quality of care in rural settings. This section describes the financial incentives offered to rural providers by payer type, eligibility criteria rural providers must meet to receive financial incentives, and the effectiveness of different financial incentives.

### **X.A. Financial Incentives Offered to Rural Providers by Payer Type**

Rural health care providers have historically served a higher proportion of Medicare and Medicaid enrollees than urban health care providers and may benefit from innovative APMs due in part to smaller patient volumes.<sup>353</sup> Many of the APMs to date have had a broad focus and may not include financial incentives tailored for rural providers, such as additional payments to support transportation challenges (e.g., for home health care workers) or investments in telehealth infrastructure. Most CMMI models with financial incentives also aim to lower costs, which can be challenging for rural providers. For example, with ACO models, financial incentives are tied to generating savings. This model design serves as a barrier to participation by rural providers as rural hospitals, especially CAHs, tend to have small or negative operating and total margins, giving little room for cost savings.<sup>354</sup> Exhibit 17 highlights APMs and other selected programs by payer type that offer incentives that may specifically benefit rural providers. Most models do not provide additional financial incentives specifically designed for rural providers.

#### **Exhibit 17. Summary Table of Rural-Focused Alternative Payment Models and Other Programs**

Payer Type	Model/Program	Specific Rural Benefits	Financial Incentive for Rural Providers
All/multi	PARHM <sup>xxxix</sup>	Fixed up-front payments regardless of patient volume	Focused
	CHART <sup>xi</sup>	Financial stability; regulatory flexibility for rural hospitals	Focused (Community Transformation Track)
	VTAPM <sup>xli</sup>	Rural settings are one area of focus	Inclusive
	State Innovation Model (SIM) <sup>xlii</sup>	Telehealth expansion specialty care; loan repayment for providers in rural areas	Focused
	Maryland Total Cost of Care (MDTOC) Model <sup>xliii</sup>	Leveraged local services and supports to benefit rural hospitals <sup>355</sup>	Inclusive
Medicare FFS & Medicare Shared Savings Program (MSSP)	ACO REACH Model <sup>xliv</sup>	Beneficiary-level Health Equity Benchmark Adjustment provided to ACOs serving high proportions of underserved beneficiaries	Inclusive
	NGACO Model <sup>xlv</sup>	Regional efficiency trend adjustments to ensure that participating providers received adequate compensation for services provided in regions experiencing major payment changes	Inclusive
	FCHIP Demonstration <sup>xlvi</sup>	Targets most sparsely populated rural counties to improve health outcomes and reduce expenditures	Focused

<sup>xxxix</sup> More information on PARHM is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/pa-rural-health-model>.

<sup>xi</sup> More information on the CHART Model is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/chart-model>.

<sup>xli</sup> More information on VTAPM is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/vermont-all-payer-aco-model>.

<sup>xlii</sup> More information on SIM is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/state-innovations>.

<sup>xliii</sup> More information on the Maryland All-Payer Model is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/maryland-all-payer-model>.

<sup>xliv</sup> More information on ACO REACH Model is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/aco-reach>.

<sup>xlv</sup> More information on the NGACO Model is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/next-generation-aco-model>.

<sup>xlvi</sup> More information on the FCHIP Demonstration is available on this CMMI Model’s summary page:

<https://innovation.cms.gov/innovation-models/frontier-community-health-integration-project-demonstration>.

Payer Type	Model/Program	Specific Rural Benefits	Financial Incentive for Rural Providers
	AIM <sup>xlvii</sup>	Up-front funds used to increase staffing or invest in data analytics and health information technology	Inclusive
	ET3 Model <sup>xlviii</sup>	Low-volume exemption for ambulance transports for rural providers	Inclusive
Medicare Advantage	VBID Model <sup>xlix</sup>	Supplemental benefits to address socioeconomically disadvantaged areas and underserved communities, especially health-related social needs areas of food, transportation, housing insecurity	Inclusive
Medicaid	Making Care Primary (MCP) Model <sup>l</sup>	Upside-only performance incentive for FQHCs	Inclusive
State Medicaid expansion	Missouri	275,000 additional Missouri residents were eligible for health care coverage, and 41 percent of those residents lived in rural areas. <sup>356</sup>	N/A
State Reinsurance Program	Colorado	Offers higher rate of reimbursement in areas with the highest health care costs, which are often rural and remote areas <sup>357</sup>	Inclusive
Commercial	Hospital Pay-for-Performance Program	Awards financial incentive up to 6% of a hospital's payment for short-term improvements in quality and population health management <sup>358</sup>	Focused
	Alternative Quality Contract (AQC) of BCBSMA	Allows medical groups with as few as 1,000 Blue Cross patients to participate <sup>359</sup>	Inclusive
	Accelerate to Value of BCBSNC	Community Care Physician Network (CCPN) joined the Blue Premier model in early 2021 to provide financial and operational benefits to its participating primary care practices in rural and underserved areas of North Carolina. <sup>360</sup>	Inclusive

<sup>xlvii</sup> More information on AIM is available on this CMMI Model's summary page: <https://innovation.cms.gov/innovation-models/aco-investment-model>.

<sup>xlviii</sup> More information on the ET3 Model is available on this CMMI Model's summary page: <https://innovation.cms.gov/innovation-models/et3>.

<sup>xlix</sup> More information on the VBID Model is available on this CMMI Model's summary page: <https://innovation.cms.gov/vbid-extension-fs>

<sup>l</sup> More information on the MCP Model is available on this CMMI Model's summary page: <https://innovation.cms.gov/innovation-models/making-care-primary>.

The models and programs included above reflect the predominance of Medicare and multi-payer-based APMs in rural markets, despite fewer Medicare providers being located in rural or shortage areas.<sup>361</sup> There are fewer APMs or programs under Medicaid and CHIP that target rural providers, although many Medicaid enrollees reside in rural areas.<sup>362</sup> This potentially highlights the need for all or multi-payer models to align financial incentives better for Medicaid and CHIP enrollees or to add additional incentives that target Medicaid and CHIP enrollees. Finally, the included commercial payer models and programs highlight a growing effort in the private sector to improve health care delivery and costs in rural settings.

### **X.B. Eligibility Criteria for Rural Providers**

Eligibility criteria for receipt of financial incentives by rural providers participating in APMs may vary. Few models and programs have separate criteria or flexibility for rural providers to earn financial incentives. Detailed information on the financial incentives designed for rural providers is limited.

The ET3 Model, which is rural-inclusive, provides specific eligibility criteria for receiving financial incentives. While it does not have separate criteria for rural providers, the model does waive one of its criteria for receiving a performance-based payment for low-volume providers. Under the ET3 Model, participating ambulance service providers and suppliers may receive a performance-based payment if they: 1) provide a minimum of 20 properly billed and paid interventions during the current PY; 2) achieve net savings to Medicare (NSM); and 3) do not have outstanding programmatic issues or open corrective actions at the time of performance-based payment calculation. Low-volume participants, which may characterize many rural participants, are exempt from the first criterion. Thus, providers can still be eligible for a performance-based payment if they have fewer than 20 properly billed and paid interventions during the current PY.

### **X.C. Effectiveness of Different Financial Incentives**

Evaluations of some APMs have demonstrated short-term increases in financial stability for rural providers, but these are not clearly tied to financial incentives specifically for rural providers. Information on model impacts on utilization, spending, and quality specifically for rural providers and patients is also limited.<sup>363, 364</sup> A brief summary of rural-relevant findings from selected evaluation reports is provided below.

**PARHM.** Short-term financial stability improved among the 18 participating rural hospitals that shifted to global budget payments, but the impacts on long-term financial and quality outcomes are unknown and will be addressed in future evaluation reports.<sup>365</sup>

**NGACO.** Overall, NGACOs operated in markets with lower percentages of rural beneficiaries. NGACOs operating in rural areas expanded telephonic engagement and embedded care management staff to manage the care needs of their aligned beneficiaries.<sup>366</sup>

**Rural Community Hospital Demonstration.** Participating rural hospitals improved total cost margins compared to non-participating rural hospitals of similar size.<sup>367</sup> This increased financial stability allowed participating hospitals to invest in staff retention and support services that often operate at a loss, such as behavioral health services.<sup>368</sup>

**VTAPM.** Most rural CAHs did not participate in the ACO due to prohibitive up-front costs and financial risk.<sup>369</sup>

**FCHIP.** A higher limit for acute care inpatient beds and increased compensation for telehealth at 101 percent of costs allowed some CAHs to increase bed capacity, and many expanded telehealth encounters. However, a similar increase in telehealth services was observed in CAHs that did not participate in FCHIP.<sup>370</sup>

**MDAPM.** Ten participating rural hospitals in Maryland had global budgets in place under a previous model, Total Patient Revenue (TPR). The impact of the MDAPM and its financial incentives has not been documented for rural providers.<sup>371</sup>

## **XI. PTAC Proposals that Include or Target Rural Participants in Proposed Model Designs**

Eleven of the 35 proposals that were submitted to PTAC between 2016 and 2020 included or targeted rural populations and providers. This section provides a summary of the characteristics of 11 PTAC proposals that have features related to providing health care in rural care settings or rural locations, including: eight PFFM proposals that included rural health care providers in their model design; two PFFM proposals that specifically targeted rural health care providers in their model design; and one other proposal that focused on rural providers.<sup>li</sup> Key activities that may best engage rural providers, such as financial incentives for small practices, mitigation of readmissions to ED and inpatient hospital care, availability of telehealth services, and in-home medical care, are also highlighted. This synthesis describes the types of health care providers that the proposals include or target, the care delivery innovations that may directly benefit rural health care providers, and the payment mechanisms that may incentivize rural providers to participate in the models. One PFFM proposal received a rating of “Meets and Deserves Priority Consideration,” and eight PFFM proposals received a rating of “Meets” on Criterion 7, Integration and Care Coordination. One PFFM proposal did not meet Criterion 7 but emphasized rural participants as the target of the PFFM. The remaining proposal was found not to be applicable for the Secretary’s criteria for PFFMs. The full analysis can be found in Appendix F.

### **XI.A. Types of Rural Providers**

The types of providers included in the PTAC proposals are diverse in their specialties and the patient populations that they serve. Of the 11 proposals included in this synthesis, eight PFFM proposals included rural providers. Six proposals focused on primary care (including family medicine, general practice, geriatric medicine, pediatric medicine, and internal medicine), one proposal addressed palliative care, and one proposal was centered specifically on geriatric care. Two proposals included ED physicians, with one proposal noting that the PFFM could be extended to rural hospitals and CAHs. Two proposals included specialists or specialty practices, including specialists in single or multispecialty practices and nephrologists. For example, the Renal Physicians Association (RPA) proposal included nephrologists and nephrology groups irrespective of size or rurality.

Among the two PFFM proposals that targeted rural providers, one proposal addressed primary care and one proposal included specialists. For example, the University of New Mexico Health Sciences Center (UNMHSC) proposal made neurologists and neurosurgeons available to ED physicians in medically underserved areas to consult via telehealth on cerebral emergent care.

---

<sup>li</sup> PTAC concluded that the criteria for PFFMs established by the Secretary are not applicable to this proposal, Annual Wellness Visit Billing at Rural Health Clinics, submitted by Mercy Accountable Care Organization.

The remaining proposal included suggested changes related to increasing the provision of preventive care and Medicare Annual Wellness Visits (AWVs) to Medicare beneficiaries in RHCs.

### **XI.B. Care Delivery Innovations**

Of the 11 proposals included in this synthesis, six proposals would engage non-physician providers in their models, including physician assistants, nurse practitioners, clinical nurse specialists, clinical social workers, and care coordinators. Five proposals implemented or leveraged telehealth to increase access and extend service availability to patients in rural and/or underserved communities. For example, the Avera Health (Avera) proposal used telemedicine to extend the geographic range of provider expertise. This proposal also noted that there are several federal grant programs that can provide financial assistance to rural practices to implement telemedicine infrastructure. The Icahn School of Medicine at Mount Sinai (Mt. Sinai) proposal leveraged telehealth to provide inpatient level of care to patients in their homes. The UNMHSC proposal included telehealth as a strategy to improve care transitions and access to care in rural areas. This proposed PFPM uses telehealth to connect specialty care providers to ED physicians in underserved and rural areas of the United States.<sup>372</sup> Providers are connected through an online platform, which can be used to request a consultation with a specialist, to provide ED physician to specialist communication, and to virtually review the case and assess the patient. The proposed model specifically aims to expand access to neurological and neurosurgical expertise in rural hospitals through telemedicine, improving care transitions and reducing avoidable transfers through increased communication and access to expertise.<sup>373</sup>

Two proposals engaged rural providers by expanding care networks or forming new entities. For example, the American College of Surgeons (ACS) proposal included flexibilities for rural providers to join with other providers under the umbrella of a new corporate entity or convener group.

Several proposals included care delivery innovations that were specific to the proposed PFPM. One proposal noted that both physicians who were employed or independent were eligible for the PFPM. Another proposal was specifically designed to be accessible to rural providers who may not be able to participate in models with a higher level of risk. A third proposal included flexibilities for rural providers to develop their provider networks under the model over a longer period of time, providing a longer on-ramp to full participation.

**Performance Measurement Features for Rural Providers.** All of the selected PTAC proposals included rural-relevant measures. Comment measurement areas included hospital inpatient readmissions and/or ED revisits (five proposals), hospital inpatient and ED utilization (three proposals), medication documentation and/or reconciliation (three proposals), screenings (two proposals), and patient experience (two proposals). None of the selected PTAC proposals included modifications to measurement, performance-based payments, or benchmarking for rural providers.

### **XI.C. Payment Mechanisms**

Four of the 11 proposals include financial incentives that could specifically enhance rural provider participation in the PFPM. Two of these four proposals included specific payments, such as:

- Up-front payments to support patient-centered care delivery (American Academy of Hospice and Palliative Medicine [AAHPM]); and
- Performance-based payments with no downside risk, which may encourage participation from less financially stable providers, including rural providers (Avera).



One proposal noted that, by bringing in specialist consultants via telehealth (neurology/neurosurgery; UNMHSC), rural providers could retain more patients at their own facility and continue to bill for treatment, thus experience economic gains that outweigh the costs incurred from specialty consultations.

One proposal (Mt. Sinai) noted that the applicant was considering modifications to the payment methodology, such as lower stop-loss/stop-gain levels or upside-only risk to test the PFPM in smaller practices.

## **XII. Use of Telehealth Among Rural Patients and Providers**

Use of telehealth can improve access to and quality of care for rural patients by reducing wait times, increasing appropriate referrals, facilitating diagnostic tests and treatment, and enhancing provider-to-provider communication.<sup>374, 375, 376, 377</sup> Telehealth is particularly important in rural areas to overcome workforce shortages that limit health care access. However, there are concerns that expanded use of telehealth could impose unintended consequences. These consequences may include worsening health care disparities among patients with low socioeconomic status, racial and ethnic minorities, older adults, and those living in rural areas.<sup>378, 379</sup> Such health care disparities may occur because of differences in broadband internet access and digital literacy across population groups.<sup>380</sup> This section describes trends, barriers, and strategies to support telehealth adoption and use. More information about telehealth use can be found in PTAC's *Environmental Scan on Telehealth in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs)*.<sup>381</sup>

### **XII.A. Trends in Adoption and Use Among Rural Patients and Providers**

Historically, telehealth was primarily used as a strategy to expand health care access to patients living in areas with health care provider shortages, such as rural locations. Thus, rural patients and providers tended to use telehealth services more than their urban counterparts.<sup>382, 383</sup> Trends in adoption and use of telehealth services have shifted in recent years, in part because the COVID-19 PHE expanded need for telehealth services outside of rural areas. Telehealth use increased significantly overall after the onset of the COVID-19 PHE,<sup>384</sup> but rural health providers faced more challenges, such as limited broadband internet access, lack of partnering providers, and inadequate time, in expanding telehealth services.<sup>385</sup> As a result, urban patients were more likely to use telehealth services than rural patients in 2019-2020.<sup>386</sup> Similarly, from June-November 2020, urban health centers reported a significantly higher overall average percentage of telehealth visits, compared to rural health centers.<sup>387</sup> Urban hospitals were also significantly more likely to offer the following telehealth services than rural hospitals: consultation and office visits, eICU, stroke care, psychiatric and addiction treatment, and post-discharge remote patient monitoring.<sup>388</sup>

### **XII.B. Barriers to Adoption and Use Among Rural Patients and Providers**

Rural health providers and patients often encounter barriers to using telehealth, most notably limited availability of broadband.<sup>389, 390</sup> More specifically, in 2019, approximately 78 percent of the over 14 million U.S. citizens without internet access were living in rural areas.<sup>391</sup> Other barriers to telehealth disproportionately experienced by rural as compared to urban providers include logistical barriers, such as inadequate space or time and lack of partners or providers.<sup>392</sup> Furthermore, in a survey of 1,594 U.S. health care professionals, rural providers were more likely to be burdened by the cost of

implementation and maintenance of a telehealth platform and more likely to express concern that their patients lack necessary technology (e.g., cellphones, computers) than urban providers.<sup>393, lii</sup>

### **XII.C. Strategies to Support Adoption and Use Among Rural Patients and Providers**

Effective delivery of telehealth services can be challenging under traditional payment models, whereas APMs can be designed to allow providers flexibility to deliver telehealth services in an innovative and efficient manner, such as under bundled payment models. For example, Medicare policy permits ACOs to use telehealth freely, assuming that shared financial risk encourages providers to use telehealth only when it is cost-effective and to adopt higher-value telehealth applications.<sup>394</sup> APMs could also provide bonus payments for rural health providers to develop their telehealth infrastructure, incentives for rural providers to increase their proportion of telehealth visits, and funds to provide rural patients with access to necessary telehealth technology (e.g., cellphones, facilities with tablets). For example, global budgets may provide rural hospitals with a more predictable stream of funds. This financial stability can allow rural hospitals to invest in telehealth infrastructure and budget for telehealth maintenance costs.<sup>395</sup> Funding and resources are also needed to increase access to broadband networks in rural areas.<sup>396, 397</sup> For example, the Rural Broadband Access Loan and Loan Guarantee Program provides funds for development or acquisition of broadband facilities and equipment in rural areas.<sup>398</sup> In addition, federal coordination of broadband expansion efforts is needed, as local and state efforts have been fragmented and overlapping.<sup>399</sup> Reimbursement for audio-only telehealth visits may also improve telehealth adoption and use among rural areas, where broadband internet access remains limited.<sup>400</sup>

### **XIII. Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers**

HIT is integral in achieving cost and quality incentives under APMs.<sup>401</sup> Among ACOs, increased HIT capabilities are associated with disease prevention,<sup>402</sup> care coordination processes,<sup>403</sup> and cost savings.<sup>404</sup> Rural providers can leverage HIT and data analytics to help overcome barriers that disproportionately affect rural patients, thereby increasing their chance of success in APMs. For example, rural providers can increase engagement with hard-to-reach patients with the use of EHRs.<sup>405</sup> Through EHRs, patients can communicate with their providers without in-person visits, receive reminders for follow-up care, find health education materials, and self-manage some of their medical needs.<sup>406</sup> Rural providers can also improve care coordination with provider-to-provider health information exchange<sup>407, 408</sup> and identify high- or rising-risk patients using data analytics.<sup>409</sup> Trends, barriers, and strategies related to adoption and use of HIT and data analytics among rural populations are described below.

#### **XIII.A. Trends in Adoption and Use Among Rural Patients and Providers**

Several studies suggest that rural and urban providers adopt EHRs at similar rates, although actual use of HIT varies by urban-rural status: rural residents are less likely to access their online medical records and manage their health care needs online than urban residents.<sup>410, 411, 412</sup> However, some studies report that both adoption and use of HIT is lower among rural versus urban hospitals. Compared to urban hospitals, rural hospitals were less likely to have EHR systems that allow patients to view their health

---

<sup>lii</sup> For more information on barriers to telehealth adoption and use in general, refer to *Environmental Scan on Telehealth in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs)*, available at: <https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Sep2020TelehealthEnvironmentalScan.PDF>.

information online, compared to urban hospitals.<sup>413, 414</sup> Rural hospitals were also significantly less likely to have integrated HIT systems in place that were compatible with outside providers, resulting in less frequent information exchange than urban hospitals.<sup>415</sup> Data analytics show promise as a tool for rural physicians to identify high- or rising- risk patients using electronic health information;<sup>416</sup> however, research is limited regarding existing trends in adoption and use of data analytics in the U.S.

### **XIII.B. Barriers to Adoption and Use Among Rural Patients and Providers**

Barriers to adoption of HIT among rural providers primarily center around lack of financial resources for HIT infrastructure. Rural health providers frequently lack the interoperable infrastructure needed to communicate and share health information with other health care providers or patients.<sup>417</sup>

Approximately 43 percent of Rural Health Clinics report that costs for HIT improvements prevent their participation in ACOs.<sup>418</sup> Barriers to patient engagement with HIT include lack of broadband<sup>419, 420</sup> and low digital literacy.<sup>421</sup> Individuals living in rural areas are also less likely to have a regular health care provider, making rural patients less likely to be offered access to an online health record.<sup>422</sup> Although research is limited, one noted barrier to use of data analytics among rural providers is lack of education and training about data analysis and decision support systems.<sup>423</sup>

### **XIII.C. Strategies to Support Adoption and Use Among Rural Patients and Providers**

To support adoption and use of HIT among rural providers, HIT infrastructure issues can be addressed through direct HIT infrastructure funding, technical assistance provision, and value-based incentives for HIT engagement. Under the 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act, providers received subsidies for meeting increasingly comprehensive EHR adoption standards, which led to increased adoption of EHRs and investment in HIT infrastructure more generally.<sup>424</sup> Regional extension centers (RECs) provided technical assistance for EHR adoption and use for providers that face barriers to EHR adoption, including rural providers. According to rural providers who have received REC support, such technical assistance has been critical for their development and use of EHRs.<sup>425</sup> Under APMs, value-based incentives for health information exchange (HIE) engagement are associated with HIE diversity, breadth, and depth, suggesting that these incentives may increase investments in more complex HIT infrastructure.<sup>426</sup>

However, as described above, even when rural providers have HIT infrastructure, rural patients may not engage with HIT due to lack of broadband and low digital literacy. Similar to strategies described in Section XII.C., providing funding and resources to increase broadband access could increase use of HIT by rural patients. To improve digital literacy among rural populations, grants could be provided for rural stakeholders and organizations to deliver digital skills trainings.<sup>427</sup> Furthermore, providers play an important role in getting patients to use HIT; when providers encourage patients to use their online health record, patients have approximately 10 times greater odds of actually using their online health record.<sup>428</sup> Thus, APMs could provide bonus payments to rural providers who get their patients to engage with HIT.

## **XIV. Measuring Rural Providers' Performance in APMs**

Performance measurement results inform internal quality improvement efforts, decision-making by patients and their families, and payment incentive programs.<sup>429</sup> Use of appropriate, rural-relevant performance measures will allow rural providers to account for the circumstances they face when delivering care to rural patient populations. This section describes measures that are relevant to rural providers and their patients, and challenges in measuring rural providers' performance.

#### **XIV.A. Measures Relevant to Rural Providers and Their Patients**

The U.S. Department of Health and Human Services (HHS) partnered with NQF to establish a MAP Rural Health Workgroup, a multistakeholder group consisting of both rural providers and residents. This Workgroup created guiding principles for selecting a set of key rural-relevant measures. The Workgroup identified several key criteria for rural-relevant measure selection, including measures that:

- Are NQF-endorsed;<sup>liii</sup>
- Are cross-cutting, such that the measures are not condition- or procedure-specific;
- Are resistant to low case volumes; and
- Address care transitions.<sup>430</sup>

The Workgroup also considered outcome performance measures related to the specific health conditions and services relevant to rural patient populations, including:

- Behavioral health;
- Substance use;
- Medication reconciliation;
- Diabetes, hypertension, and chronic obstructive pulmonary disease (COPD);
- Hospital readmissions;
- Perinatal and pediatric conditions and services;
- Telehealth; and
- Health care system readiness.<sup>431</sup>

These guiding principles informed the Workgroup's initial selection of 20 rural-relevant measures for quality reporting that can be used in hospital and ambulatory settings. Given changes in health care delivery due to the COVID-19 PHE (e.g., an increase in the use of telehealth), as well as the development of the new Medicare REH provider type, the Workgroup reconvened in 2022 to revise the key rural measures list. When revising the list, the Workgroup identified the most important types of condition-specific and cross-cutting topics to add to the key rural measures list. Behavioral and mental health, as well as substance use, were among the most important condition-specific topics to add to the list, whereas telehealth, access to care, and social determinants of health (SDOH) were among the most important cross-cutting topics to add to the list.<sup>432</sup> The current set of key rural measures includes 37 rural-relevant measures. Twenty-one measures were selected for hospital settings and address emergency care, health equity, infectious disease, kidney health, maternal health, mortality, and patient safety. Sixteen measures were selected for ambulatory care settings and address care coordination, dementia, diabetes, hypertension, and preventive care. Measures in both the hospital and ambulatory care setting categories address topics related to admissions, readmissions, and hospital visits; behavioral health and substance use; and patient experience.

**Measures of behavioral health.** Similar to the delivery of other types of health care in rural areas, accessibility, availability, affordability, and acceptability are challenges to behavioral and mental health care delivery in rural areas.<sup>433</sup> The development of and/or modification to existing rural-relevant behavioral health measures will allow providers to evaluate the quality of behavioral health care in rural areas.<sup>434</sup> As previously mentioned in the environmental scan, substance use and misuse is particularly

---

<sup>liii</sup> As announced in April 2023, the PQM oversees CBE evaluation and maintenance of quality measures.

prevalent among patients living in rural areas. Despite the prevalence of substance use disorder in rural areas, the availability of substance use disorder treatment is often limited.<sup>435</sup> As a result, it is recommended that alcohol and drug screening measures are developed to focus on interventions delivered by primary care physicians.<sup>436</sup>

**Measures of SDOH or HRSNs.** As described above, lack of access to transportation, housing instability, and low income can be common experiences among rural patients. Rural-relevant measures may help to address the specific SDOHs and HRSNs relevant to rural areas. Given the potential differences in characteristics between rural and non-rural patients, one strategy to account for rural-relevant SDOHs or HRSNs is to adjust data for rural-relevant sociodemographic characteristics (e.g., housing security, food security, income) and other health care-related factors faced by rural patients (e.g., distance to referral hospital, time traveled to hospital or physician office).<sup>437, 438</sup>

**Measures of access to care.** Access to care is an important barrier many rural patients face and remains a measurement gap because of the challenges associated with appropriately assessing access to care. For example, measuring timeliness of care could provide useful information on rural patients' access to care, but this type of measure could also penalize rural providers when they need to transfer patients to different facilities, which might increase wait times. As a result, the MAP Rural Health Workgroup established by the NQF suggested that measurement approaches to assess access to care in rural areas should be performed with caution to avoid unintended consequences.<sup>439</sup>

**Measures of telehealth.** Related to access to care, there is a need for rural-relevant measures addressing COVID-19 and telehealth. The MAP Rural Health Workgroup's 2022 recommendations identified gaps in measurement, including a need to assess how telehealth impacts access to care for rural patients and understand the impact and cost of telehealth in rural areas.<sup>440</sup> In addition, the workgroup recommended that measures are needed to examine the potential limitations of services delivered via telehealth, as well as any differences in the quality of care provided via in-person versus telehealth visits in rural areas.<sup>441</sup> Some rural patients may not have internet access or the bandwidth necessary for telehealth visits, reducing the utility of telehealth services in rural areas.

**Measures of cost.** Although understanding cost of care is important, the Workgroup established by the NQF suggested that measures of cost should not be included in the key set of rural-relevant measures. The Workgroup's rationale for excluding measures of cost in the key set of measures was due to costs being beyond some rural providers' control. For example, some rural providers do not have access to lower-cost treatment options. In addition, smaller health care settings may have to accept higher supply chain costs if they do not have access to group purchasing organizations.<sup>442</sup>

#### **XIV.B. Challenges in Measuring Rural Providers' Performance**

Providers in rural settings face a number of challenges with participating in performance measurement and quality improvement efforts. The NQF created a multistakeholder Rural Health Committee (advised by the MAP Rural Health Workgroup) tasked with identifying specific challenges rural providers face when participating in performance measurement. Challenges included but were not limited to geographic isolation, small practice size, heterogeneity among rural settings and rural patients, and low case volumes commonly found in rural areas.<sup>443</sup>

Rural health care settings tend to be geographically isolated and small, and have limited staff, funds, and other resources available to participate in performance measurement. Workforce shortages in rural

settings can lead to rural providers taking on multiple responsibilities that compete with performance measurement efforts. Although the sharing of EHR data can be particularly useful to rural facilities as patients transition between rural and non-rural hospitals and/or from specialists to primary care providers, many rural settings have limited broadband access and low adoption rates of HIT, as described in Section XIII. In addition to limited financial resources to invest in HIT infrastructure, some rural areas have few staff members with the experience and expertise necessary to perform data extraction and analysis and to use measurement results to inform quality improvement efforts.<sup>444</sup>

Substantial heterogeneity across rural areas, such as differences in geography, population density, and the proportion of vulnerable patients, impacts performance measurement. The diversity of the patient population in rural areas can also pose challenges for performance measurement. For example, individuals residing in rural areas tend to be disproportionately impacted by health conditions, making comparisons between rural and non-rural settings difficult. These factors reduce the appropriateness of some performance measures for rural providers and patients.<sup>445</sup>

A low population density, characteristic of rural areas, coupled with limited access to health care, can result in low case volumes. Small sample sizes may place limitations on rural providers' ability to calculate reliable and valid performance measurement results. For example, with small sample sizes, performance results can be heavily impacted by extreme cases which can lead to misinterpretation of results. To avoid these issues, some measures have a minimum denominator size, which providers with low case volume may struggle to meet; subsequently, these providers may be excluded from public reporting or pay-for-performance programs, further disadvantaging these providers and the patient populations they serve.<sup>446, 447</sup> In addition, health care services may not be delivered by some rural providers, rendering their performance measures inapplicable.<sup>448</sup> Limitations of low case volumes can challenge the comparison of performance across providers, as well as challenge the measurement of change in quality over time.<sup>449</sup> The challenges that come with lower case volumes in rural areas can hinder rural providers' transition to value-based care.<sup>450</sup>

Several CMS value-based programs exclude or do not incentivize rural hospitals, clinics, and providers to participate in quality reporting. For example, CAHs, RHCs, and FQHCs are excluded from participating in CMS quality programs because they are not paid under Medicare's Prospective Payment System (PPS).<sup>451</sup> In addition, other rural settings are not required to participate in CMS programs, such as MIPS, due to low case volumes. As a result, some rural providers participate in CMS quality programs only on a voluntary basis even though their participation does not impact their Medicare reimbursement.<sup>452</sup> Rural settings' exclusion from these programs puts additional constraints on performance measurement and reporting, affecting both providers and patients. For example, rural providers may not receive financial incentives for their quality improvement efforts and may face less pressure to improve performance. Rural patients may not be able to assess the quality of the providers within their communities because the information is unavailable.<sup>453</sup>

The multistakeholder Rural Health Committee created by the NQF recommended that CMS mandate participation of rural providers in quality measurement and quality improvement programs using a phased approach to full participation. The following list includes several strategies to achieve this goal and mitigate the challenges faced by rural providers when participating in performance measurement:

- Funding the development of measures relevant to rural areas and/or modifying existing measures to address the challenges associated with low case volumes in rural areas.
- Developing a key set of measures for rural providers that are identical across settings, as well as supplying a list of optional measures that can vary depending on the patients served and services delivered.
- Modifying measurement approaches for rural providers; for example, whenever possible, allowing electronic data collection versus collecting data over the telephone to reduce the administrative burden of data collection; in addition, funding work to examine the use of peer groups to ensure fair comparisons of health care quality across rural providers.
- Reconsidering how rural providers are incentivized for quality improvement efforts; for example, developing payment programs for rural providers that include incentives but not penalties to preserve the safety net for providers participating in performance measurement.<sup>454</sup>

The Medicare Rural Hospital Flexibility Program (Flex) is one program available to support quality improvement efforts in rural health care settings. Flex supports rural facilities such as CAHs, EMS, and rural systems of care to work together thereby increasing quality of care. Through Flex, the Medicare Beneficiary Quality Improvement Project (MBQIP) works with CAHs to use quality measure data for quality improvement activities.<sup>455, 456</sup> The MBQIP identified a set of existing quality measures relevant for CAHs, including measures on patient safety, patient engagement, care transitions, and outpatient care.<sup>457</sup>

Supporting rural providers with rural-relevant measures, measurement approaches, and appropriate resources to leverage quality improvement efforts may enhance provider engagement in performance improvement and demonstrate that improvement to payers.

## **XV. Areas Where Additional Information is Needed**

This section includes a summary of some areas for consideration to guide future research on encouraging rural participation in PB-TCOC models. Appendix H further describes additional areas for future exploration and research.

### ***Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Areas***

To date, research has not quantitatively determined the most effective strategy or set of strategies to transform care delivery in rural areas. Future research could potentially use statistical (e.g., qualitative comparative analysis [QCA]) or machine learning methods to identify characteristics for APM design that are best suited for rural areas.

### ***Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers***

Further research could examine adoption and use of data analytics to support care delivery (e.g., patient-centered care innovations, identification of patients with high or rising risk). To provide a more comprehensive assessment of the HIT and data analytics landscape, research could identify barriers in uptake between rural and non-rural providers and evaluate differences between rural and non-rural providers (e.g., systemic challenges influencing propensity for and speed of uptake).

## Appendix A. Research Questions by Environmental Scan Section

Section	Research Questions
<b>Section V. Challenges Affecting Rural Patients and Providers</b>	<ul style="list-style-type: none"> <li>• What are the characteristics and needs of rural Medicare beneficiaries (chronic conditions, other factors, practice patterns)? How many beneficiaries live in the different types of rural areas?</li> <li>• What are the major challenges that affect rural patients and rural providers?</li> <li>• How do the challenges vary for different types of rural areas (e.g., rural areas that don't have a lot of providers versus rural areas that have providers but do not have a lot of competition)?</li> <li>• How do rural beneficiaries' service utilization patterns compare with service utilization patterns of other Medicare beneficiaries (for example, use of specialists and other types of providers)?</li> <li>• What social and other risk factors influence patient populations residing in rural areas, as compared to other geographies?</li> <li>• What disparities exist in care transition management for rural patient populations?</li> </ul>
<b>Section VI. Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Areas</b>	<ul style="list-style-type: none"> <li>• How can rural providers be incentivized to address social risk factors faced by the communities and sub-populations they serve (e.g., including indigenous communities, patients with behavioral health and substance use disorder needs)?</li> <li>• How does the availability of specialty providers vary depending on the type of rural area?</li> <li>• How is the current payment methodology affecting care delivery in rural areas, both positively and negatively?</li> <li>• What types of care are most difficult to provide in rural areas (for example, home health care; hospice and palliative care; behavioral health care; alcohol and substance use disorder services; reproductive, obstetric, and maternal health services)? What strategies can specifically target these types of care for improvement?</li> <li>• What is the impact of issues related to SDOH, HRSNs, equity, and behavioral health in rural areas?</li> </ul>
<b>Section VII. Trends in Rural Providers' Participation in APMs</b>	<ul style="list-style-type: none"> <li>• What have been the trends in participation of rural providers in population-based models (including advanced primary care, MSSP, Medicare Advantage, and others)?</li> <li>• What are the major barriers that hinder rural providers' participation in APMs?</li> <li>• What specific APM eligibility criteria discourage or prevent rural providers' participation in APMs (for example, attributable population size, facility type, facility size, HIT infrastructure requirements)?</li> <li>• What issues affect the participation of FQHCs in population-based models?</li> <li>• What issues affect the participation of solo practitioners in population-based models?</li> <li>• Are there additional barriers that affect rural safety net providers' participation in APMs?</li> </ul>
<b>Section VIII. CMMI Models that Include or Target Rural</b>	<ul style="list-style-type: none"> <li>• What are examples of promising APMs that include or target participation by rural providers (including CMMI Models and other models, such as the MSSP)?</li> <li>• What have been some lessons learned from Medicare Advantage and ACO participation in rural areas?</li> </ul>



Section	Research Questions
<b>Participants in their Model Designs</b>	<ul style="list-style-type: none"> <li>• How do the lessons learned vary for models that have been more rural-focused versus models that included participation of rural providers?</li> <li>• What did participation patterns of rural providers look like? For example, did rural providers exit these APMs? What reasons did they report for exiting the APM? What could have been done, if anything, to prevent them from exiting the APM?</li> </ul>
<b>Section IX. Driving Care Delivery Transformation in Rural Providers</b>	<ul style="list-style-type: none"> <li>• What strategies do these interventions or models include (for example, telehealth services, remote monitoring, patient education and self-management, use of community paramedicine or CHWs, use of FSEDs, screening for and addressing HRSNs)?</li> <li>• What are examples of organizations that have been effective in implementing value-based care delivery models for patients and providers in rural areas? How does the effectiveness of these approaches vary for different kinds of rural providers (such as individual practices versus hospitals versus integrated delivery systems)?</li> <li>• How can care delivery interventions address specific barriers faced by patient populations residing in rural areas (for example, lack of access to care, lack of health care coverage, distance and lack of transportation, provider shortages, lack of communication or trust)?</li> <li>• For instance, should or do rural health care delivery interventions or models focus on specific populations (for example, veterans, persons who identify as American Indians and Alaska Natives [AI/ANs], uninsured populations)?</li> <li>• What kinds of resources have been effective in assisting rural areas and rural providers in developing the infrastructure to support value-based care (e.g., HIT, broadband, care delivery teams)?</li> <li>• What are examples of important federal, state, and local resources?</li> <li>• What are examples of successful initiatives supporting providers and value-based transformation in rural areas?</li> <li>• What care delivery strategies did these rural providers adopt?</li> <li>• Did participating providers offer other person-centered activities (for example, transportation assistance; food and meals; building access to and subsidizing technology, such as broadband internet; affiliation with larger systems or networks; workforce shortages, and staff recruitment and retention)?</li> <li>• Have there been any successful APMs targeting rural providers in areas with the worst health outcomes (e.g., West Virginia, Mississippi, Kentucky, Alabama, Arkansas)? If so, what have been the characteristics of these APMs?</li> <li>• What are examples of effective approaches that providers, ACOs, integrated delivery systems, and payers have developed for addressing SDOH, equity, and behavioral health in rural areas? What is the cost associated with implementing these programs, and what approaches have been used to secure the necessary funding for these programs?</li> <li>• What approaches have hospitals, integrated delivery systems, academic medical centers, and ACOs used to improve care coordination in rural areas?</li> <li>• Rural providers may not have the resources to employ full-time specialty care providers. What strategies (for example, primary care medical home [PCMH] models, affiliating with larger providers or systems) can they adopt to develop specialty care networks?</li> </ul>

Section	Research Questions
	<ul style="list-style-type: none"> <li>• After referral, how can rural providers ensure that patients initiate specialty care?</li> <li>• Can APMs address rural providers’ undesirable payer mix as a barrier to recruiting specialty physicians? If so, how?</li> <li>• What approaches have CAHs used for improving care coordination and management of care transitions in rural areas?</li> <li>• What strategies (for example, remote monitoring, e-consults) can rural providers use to improve care transition management, given barriers in access to care? Are there unforeseen consequences of such strategies?</li> <li>• What programs (for example, swing bed programs) can improve care transitions for rural patient populations?</li> <li>• What alternative care settings can be leveraged for rural patient populations (for example, emergency medical services and ambulance transports to treat patients in place or transfer patients to alternative, non-ED destinations, as appropriate)?</li> <li>• Will it be feasible for rural providers to participate in population-based models with accountability for outcomes, quality and TCOC, and two-sided risk?</li> </ul>
<p><b>Section X. Leveraging Financial Incentives to Improve Rural Health Care</b></p>	<ul style="list-style-type: none"> <li>• What financial incentives are/should be used to increase rural providers’ participation in APMs?</li> <li>• What payers (Medicare FFS, Medicare Advantage, Medicaid, commercial) offer financial incentives to rural providers?</li> <li>• What criteria must rural providers meet to be eligible for these financial incentives?</li> <li>• How can these incentives be leveraged to drive value-based care transformation among rural providers?</li> <li>• What financial risks are associated with APM participation for rural providers (for example, financial insolvency, bankruptcy, closure, Medicare margins)?</li> <li>• What financial incentives were provided to them?</li> </ul>
<p><b>Section XI. PTAC Proposals that Include or Target Rural Participants in Proposed Model Designs</b></p>	<ul style="list-style-type: none"> <li>• What previous PTAC proposals have included or focused on rural providers?</li> <li>• What types of rural providers were included in these proposals?</li> <li>• What care delivery innovations did these proposals include?</li> <li>• Were payment mechanisms (for example, capitation, PBPM payments, bundled payments) specifically used to incentivize rural providers’ participation?</li> <li>• Were any specific quality measures included?</li> </ul>
<p><b>Section XII. Use of Telehealth Among Rural Patients and Providers</b></p>	<ul style="list-style-type: none"> <li>• Do rural providers and patient populations have differential uptake of telehealth services than non-rural providers and patient populations? Why?</li> <li>• How would telehealth expansion benefit rural providers and the populations they serve? What are some potential unintended consequences of telehealth expansion (for example, can it worsen disparities in access to care in some settings)?</li> <li>• What policy levers and payment structures are needed to support telehealth adoption and use among rural providers?</li> </ul>
<p><b>Section XIII. Adoption and Use of HIT and Data Analytics Among</b></p>	<ul style="list-style-type: none"> <li>• How can rural providers leverage HIT and data analytics to improve their chance of success in APMs?</li> <li>• What limitations do rural providers face in using HIT and data analytics (for example, resources, cost, infrastructure)?</li> </ul>

Section	Research Questions
<b>Rural Patients and Providers</b>	<ul style="list-style-type: none"> <li>• Are there any differences in start-up versus ongoing support costs for the HIT infrastructure in rural areas, as compared to non-rural areas?</li> <li>• What approaches have integrated delivery systems, ACOs, and payers used to address infrastructure issues in rural areas?</li> </ul>
<b>Section XIV. Measuring Rural Providers' Performance in APMs</b>	<ul style="list-style-type: none"> <li>• What types of rural-relevant measures are needed to more appropriately measure the performance of rural providers, taking into account their challenges (for example, low volume, small size, geographic isolation)?</li> <li>• How should existing measures be modified to make them more rural-relevant?</li> <li>• How do rural providers differ from non-rural providers in ways that may affect performance measurement (for example, fewer providers in market, lack of HIT, fewer staff, lower volume, limited experience with performance measurement, transfer rates)?</li> <li>• How do rural patient populations differ from non-rural populations in ways that may affect performance measurement (for example, poorer health status at baseline; prevalence and maintenance of chronic conditions, such as diabetes or hypertension; sociodemographic characteristics and preferences)?</li> <li>• How was “success” measured in previous or existing APMs (for example, types of performance measures used, how provider performance was compared)? How does success of rural providers differ from non-rural providers?</li> <li>• How can rural providers deepen their understanding of the impacts of SDOH on their patients?</li> <li>• How does the disproportionate impact of SDOH on rural patient populations impact performance measurement of rural providers within APMs?</li> <li>• What measures of behavioral health (for example, suicide rates and prevention, stress, substance use) are needed to evaluate rural quality of care?</li> <li>• What measures of SDOH are needed to evaluate rural quality of care (for example, health habits, financial status, availability of 24/7 access to services)?</li> </ul>

## Appendix B. Search Strategy

Research Questions	Search Terms
<b>Section V. Challenges Affecting Rural Patient and Providers</b>	
<ul style="list-style-type: none"> <li>• <b>What are the characteristics and needs of rural Medicare beneficiaries (chronic conditions, other factors, practice patterns)? How many beneficiaries live in the different types of rural areas?</b></li> <li>• <b>What are the major challenges that affect rural patients and rural providers?</b></li> <li>• <b>How do the challenges vary for different types of rural areas (e.g., rural areas that don't have a lot of providers versus rural areas that have providers but do not have a lot of competition)?</b></li> <li>• <b>How do rural beneficiaries' service utilization patterns compare with service utilization patterns of other Medicare beneficiaries (for example, use of specialists and other types of providers)?</b></li> <li>• <b>What social and other risk factors influence patient populations residing in rural areas, as compared to other geographies?</b></li> <li>• <b>What disparities exist in care transition management for rural patient populations?</b></li> </ul>	<p>Rural health OR rural health care (AND):</p> <ul style="list-style-type: none"> <li>• Patients</li> <li>• Beneficiaries</li> <li>• Chronic conditions</li> <li>• Chronic diseases</li> <li>• Comorbidities</li> <li>• Challenge</li> <li>• Barrier</li> <li>• Utilization</li> <li>• Market</li> <li>• Competition</li> <li>• Services</li> <li>• Provider</li> <li>• Facility</li> <li>• Primary care</li> <li>• Primary care providers</li> <li>• Specialty care</li> <li>• Specialists</li> <li>• Disparities</li> <li>• Care transitions</li> <li>• Care transition management</li> <li>• Transitional care management</li> <li>• SDOH</li> <li>• HRSN</li> </ul>
<b>Section VI. Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Areas</b>	
<ul style="list-style-type: none"> <li>• <b>How can rural providers be incentivized to address social risk factors faced by the communities and sub-populations they serve (e.g., including indigenous communities, patients with behavioral health and substance use disorder needs)?</b></li> <li>• <b>How does the availability of specialty providers vary depending on the type of rural area?</b></li> <li>• <b>How is the current payment methodology affecting care delivery in rural areas, both positively and negatively?</b></li> <li>• <b>What types of care are most difficult to provide in rural areas (for example, home health care; hospice and palliative care; behavioral health care; alcohol and substance use disorder services; reproductive, obstetric, and maternal health services)? What strategies can specifically target these types of care for improvement?</b></li> </ul>	<p>Rural health OR rural health care (AND):</p> <ul style="list-style-type: none"> <li>• Providers</li> <li>• Incentive</li> <li>• Financial incentive</li> <li>• Behavioral health</li> <li>• Substance use</li> <li>• Substance use disorder</li> <li>• Primary care</li> <li>• Primary care providers</li> <li>• Specialty care</li> <li>• Specialists</li> <li>• Medicare payment</li> <li>• Medicaid payment</li> </ul>

Research Questions	Search Terms
<ul style="list-style-type: none"> <li>• What is the impact of issues related to SDOH, HRSNs, equity, and behavioral health in rural areas?</li> </ul>	<ul style="list-style-type: none"> <li>• Home health care</li> <li>• Hospice</li> <li>• Palliative care</li> <li>• Alcohol use disorder</li> <li>• Obstetric health</li> <li>• Maternal health</li> <li>• SDOH</li> <li>• HRSN</li> <li>• Equity</li> </ul>
<b>Section VII. Trends in Rural Providers’ Participation in APMs</b>	
<ul style="list-style-type: none"> <li>• What have been the trends in participation of rural providers in population-based models (including advanced primary care, MSSP, Medicare Advantage, and others)?</li> <li>• What are the major barriers that hinder rural providers’ participation in APMs?</li> <li>• What specific APM eligibility criteria discourage or prevent rural providers’ participation in APMs (for example, attributable population size, facility type, facility size, HIT infrastructure requirements)?</li> <li>• What issues affect the participation of FQHCs in population-based models?</li> <li>• What issues affect the participation of solo practitioners in population-based models?</li> <li>• Are there additional barriers that affect rural safety net providers’ participation in APMs?</li> </ul>	<p>CMS Program Statistics, and CMS and CMMI websites and associated evaluation and model overview documents</p> <p>Rural health OR rural health care (AND):</p> <ul style="list-style-type: none"> <li>• Provider</li> <li>• Advanced primary care</li> <li>• Medicare Shared Savings Program</li> <li>• Medicare Advantage</li> <li>• ACO</li> <li>• ACO models</li> <li>• Alternative Payment Models</li> <li>• Eligibility</li> <li>• Federally Qualified Health Center</li> <li>• Individual provider/practitioner</li> <li>• Solo provider/practitioner</li> <li>• Challenges</li> <li>• Barriers</li> <li>• Safety net</li> </ul>
<b>Section VIII. CMMI Models that Include or Target Rural Participants in their Model Designs</b>	
<ul style="list-style-type: none"> <li>• What are examples of promising APMs that include or target participation by rural providers (including CMMI Models and other models, such as the MSSP)?</li> <li>• What have been some lessons learned from Medicare Advantage and ACO participation in rural areas?</li> <li>• How do the lessons learned vary for models that have been more rural-focused versus models that included participation of rural providers?</li> </ul>	<p>CMS Program Statistics, and CMS and CMMI websites and associated evaluation and model overview documents</p> <p>Rural health OR rural health care (AND):</p>

Research Questions	Search Terms
<ul style="list-style-type: none"> <li>• <b>What did participation patterns of rural providers look like? For example, did rural providers exit these APMs? What reasons did they report for exiting the APM? What could have been done, if anything, to prevent them from exiting the APM?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Alternative Payment Models</li> <li>• CMMI</li> <li>• Medicare Advantage</li> <li>• ACO</li> <li>• Utilization pattern</li> <li>• Service pattern</li> <li>• Scope/range of services</li> <li>• Provider churn in models</li> <li>• Exiting models</li> </ul>
<b>Section IX. Driving Care Delivery Transformation in Rural Providers</b>	
<ul style="list-style-type: none"> <li>• <b>What strategies do these interventions or models include (for example, telehealth services, remote monitoring, patient education and self-management, use of community paramedicine or CHWs, use of FSEDs, screening for and addressing HRSNs)?</b></li> <li>• <b>What are examples of organizations that have been effective in implementing value-based care delivery models for patients and providers in rural areas? How does the effectiveness of these approaches vary for different kinds of rural providers (such as individual practices versus hospitals versus integrated delivery systems)?</b></li> <li>• <b>How can care delivery interventions address specific barriers faced by patient populations residing in rural areas (for example, lack of access to care, lack of health care coverage, distance and lack of transportation, provider shortages, lack of communication or trust)?</b></li> <li>• <b>For instance, should or do rural health care delivery interventions or models focus on specific populations (for example, veterans, persons who identify as American Indians and Alaska Natives [AI/ANs], uninsured populations)?</b></li> <li>• <b>What kinds of resources have been effective in assisting rural areas and rural providers in developing the infrastructure to support value-based care (e.g., HIT, broadband, care delivery teams)?</b></li> <li>• <b>What are examples of important federal, state, and local resources?</b></li> <li>• <b>What are examples of successful initiatives supporting providers and value-based transformation in rural areas?</b></li> <li>• <b>What care delivery strategies did these rural providers adopt?</b></li> <li>• <b>Did participating providers offer other person-centered activities (for example, transportation assistance; food and meals; building access to and subsidizing technology, such as broadband internet; affiliation with larger systems or</b></li> </ul>	<p>CMS Program Statistics, and CMS and CMMI websites and associated evaluation and model overview documents</p> <p>Rural health OR rural health care (AND):</p> <ul style="list-style-type: none"> <li>• Care delivery</li> <li>• Care delivery transformation</li> <li>• Intervention</li> <li>• Model</li> <li>• Telehealth</li> <li>• Remote monitoring</li> <li>• Patient education</li> <li>• Caregiver education</li> <li>• Self-management</li> <li>• Community</li> <li>• Paramedicine</li> <li>• Community health worker</li> <li>• Freestanding emergency departments</li> <li>• Screening</li> <li>• HRSN</li> <li>• Value-based care</li> <li>• Hospitals</li> <li>• Integrated delivery systems</li> <li>• Barriers</li> <li>• Challenges</li> <li>• Access to care</li> <li>• Health care coverage</li> </ul>

Research Questions	Search Terms
<p>networks; workforce shortages, and staff recruitment and retention)?</p> <ul style="list-style-type: none"> <li>• Have there been any successful APMs targeting rural providers in areas with the worst health outcomes (e.g., West Virginia, Mississippi, Kentucky, Alabama, Arkansas)? If so, what have been the characteristics of these APMs?</li> <li>• What are examples of effective approaches that providers, ACOs, integrated delivery systems, and payers have developed for addressing SDOH, equity, and behavioral health in rural areas? What is the cost associated with implementing these programs, and what approaches have been used to secure the necessary funding for these programs?</li> <li>• What approaches have hospitals, integrated delivery systems, academic medical centers, and ACOs used to improve care coordination in rural areas?</li> <li>• Rural providers may not have the resources to employ full-time specialty care providers. What strategies (for example, PCMH models, affiliating with larger providers or systems) can they adopt to develop specialty care networks?</li> <li>• After referral, how can rural providers ensure that patients initiate specialty care?</li> <li>• Can APMs address rural providers’ undesirable payer mix as a barrier to recruiting specialty physicians? If so, how?</li> <li>• What approaches have CAHs used for improving care coordination and management of care transitions in rural areas?</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation</li> <li>• Distance</li> <li>• Provider shortages</li> <li>• Workforce shortages</li> <li>• Communication</li> <li>• Trust</li> <li>• HIT</li> <li>• Broadband</li> <li>• Internet</li> <li>• Care delivery teams</li> <li>• Care teams</li> <li>• Person-centered care</li> <li>• West Virginia</li> <li>• Mississippi</li> <li>• Kentucky</li> <li>• Alabama</li> <li>• Arkansas</li> <li>• ACOs</li> <li>• Full-time</li> <li>• Referral</li> <li>• Closing the referral loop</li> <li>• Follow-up</li> <li>• Post-discharge</li> <li>• Critical Access Hospitals</li> </ul>
<p><b>Section X. Leveraging Financial Incentives to Improve Rural Health Care</b></p>	
<ul style="list-style-type: none"> <li>• What financial incentives are/should be used to increase rural providers’ participation in APMs?</li> <li>• What payers (Medicare FFS, Medicare Advantage, Medicaid, commercial) offer financial incentives to rural providers?</li> <li>• What criteria must rural providers meet to be eligible for these financial incentives?</li> <li>• How can these incentives be leveraged to drive value-based care transformation among rural providers?</li> <li>• What financial risks are associated with APM participation for rural providers (for example, financial insolvency, bankruptcy, closure, Medicare margins)?</li> <li>• What financial incentives were provided to them?</li> </ul>	<p>Rural health OR rural health care (AND):</p> <ul style="list-style-type: none"> <li>• Financial incentive</li> <li>• Medicare FFS</li> <li>• Medicare Advantage</li> <li>• Medicaid</li> <li>• Commercial</li> <li>• Marketplace</li> <li>• Payer</li> <li>• Provider</li> <li>• Financial risk</li> </ul>
<p><b>Section XI. PTAC Proposals that Include or Target Rural Participants in Proposed Model Designs</b></p>	
<ul style="list-style-type: none"> <li>• What previous PTAC proposals have included or focused on rural providers?</li> <li>• What types of rural providers were included in these proposals?</li> <li>• What care delivery innovations did these proposals include?</li> </ul>	<p>PTAC proposal documents</p>

Research Questions	Search Terms
<ul style="list-style-type: none"> <li>• Were payment mechanisms (for example, capitation, PBPM payments, bundled payments) specifically used to incentivize rural providers' participation?</li> <li>• Were any specific quality measures included?</li> </ul>	
<b>Section XII. Use of Telehealth Among Rural Patients and Providers</b>	
<ul style="list-style-type: none"> <li>• Do rural providers and patient populations have differential uptake of telehealth services than non-rural providers and patient populations? Why?</li> <li>• How would telehealth expansion benefit rural providers and the populations they serve? What are some potential unintended consequences of telehealth expansion (for example, can it worsen disparities in access to care in some settings)?</li> <li>• What policy levers and payment structures are needed to support telehealth adoption and use among rural providers?</li> </ul>	Rural health OR rural health care (AND): <ul style="list-style-type: none"> <li>• Provider</li> <li>• Patient</li> <li>• Patient population</li> <li>• Patient panel</li> <li>• Telehealth</li> <li>• Telehealth expansion</li> <li>• Disparities</li> <li>• Payment</li> <li>• Funding</li> <li>• Technical support</li> <li>• Telehealth policy</li> <li>• COVID-19 public health emergency</li> </ul>
<b>Section XIII. Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers</b>	
<ul style="list-style-type: none"> <li>• How can rural providers leverage HIT and data analytics to improve their chance of success in APMs?</li> <li>• What limitations do rural providers face in using HIT and data analytics (for example, resources, cost, infrastructure)?</li> <li>• Are there any differences in start-up versus ongoing support costs for the HIT infrastructure in rural areas, as compared to non-rural areas?</li> <li>• What approaches have integrated delivery systems, ACOs, and payers used to address infrastructure issues in rural areas?</li> </ul>	Rural health OR rural health care (AND): <ul style="list-style-type: none"> <li>• Provider</li> <li>• Health information technology</li> <li>• Information transfer</li> <li>• Information exchange</li> <li>• Data analytics</li> <li>• Start-up costs</li> <li>• Infrastructure</li> <li>• Integrated delivery systems</li> <li>• ACOs</li> <li>• Payers</li> </ul>
<b>Section XIV. Measuring Rural Providers' Performance in APMs</b>	
<ul style="list-style-type: none"> <li>• What types of rural-relevant measures are needed to more appropriately measure the performance of rural providers, taking into account their challenges (for example, low volume, small size, geographic isolation)?</li> <li>• How should existing measures be modified to make them more rural-relevant?</li> <li>• How do rural providers differ from non-rural providers in ways that may affect performance measurement (for example, fewer providers in market, lack of HIT, fewer staff, lower</li> </ul>	Rural health OR rural health care (AND): <ul style="list-style-type: none"> <li>• Rural-relevant</li> <li>• National Quality Forum</li> <li>• Partnership for Quality Measurement</li> <li>• Low volume</li> <li>• Small size</li> <li>• Geographic isolation</li> </ul>



Research Questions	Search Terms
<p>volume, limited experience with performance measurement, transfer rates)?</p> <ul style="list-style-type: none"> <li>• How do rural patient populations differ from non-rural populations in ways that may affect performance measurement (for example, poorer health status at baseline; prevalence and maintenance of chronic conditions, such as diabetes or hypertension; sociodemographic characteristics and preferences)?</li> <li>• How was “success” measured in previous or existing APMs (for example, types of performance measures used, how provider performance was compared)? How does success of rural providers differ from non-rural providers?</li> <li>• How can rural providers deepen their understanding of the impacts of SDOH on their patients?</li> <li>• How does the disproportionate impact of SDOH on rural patient populations impact performance measurement of rural providers within APMs?</li> <li>• What measures of behavioral health (for example, suicide rates and prevention, stress, substance use) are needed to evaluate rural quality of care?</li> <li>• What measures of SDOH are needed to evaluate rural quality of care (for example, health habits, financial status, availability of 24/7 access to services)?</li> </ul>	<ul style="list-style-type: none"> <li>• Market size</li> <li>• Market competition</li> <li>• Lack of HIT</li> <li>• Staffing</li> <li>• Experience</li> <li>• Risk adjustment</li> <li>• Risk stratification</li> <li>• SDOH</li> <li>• Behavioral health</li> </ul>

## Appendix C. Data Definitions of Rural

Many definitions are available to categorize rural/non-rural locations in the United States. Classification systems vary as to the precision in which they apply definitions (e.g., counties, ZIP codes, Census tracts) and the level of granularity, ranging from a few categories to 10 or more categories. This appendix provides information on several selected definitions that are commonly used in the field of health services research to identify rural/non-rural locations: Rural-Urban Continuum Codes (RUCCs),<sup>liv</sup> Rural-Urban Commuting Area (RUCA) Codes,<sup>lv</sup> Census core based statistical areas (CBSAs),<sup>lvi</sup>, FAR Area Codes, the U.S. Census Bureau, Office of Management and Budget (OMB), and U.S. Health Resources and Services Agency (HRSA).<sup>lvii</sup> For a comparison of rural/non-rural categories across data sources, refer to Exhibits C1 and C2.

**Geographic Boundaries for Rural Designations** There are several levels of geographic boundaries in the United States, ranging from regions (e.g., Northeast, Northwest, Southeast, Southwest, and Midwest) to census blocks (a small area bounded by visible features as well as nonvisible boundaries such as property lines, city, township, school district, county limits and short line-of-sight extensions of roads).<sup>458</sup> Geographic boundaries at the county, zip code, and census tract levels allow for analysis of population trends at increasingly granular levels. These three levels are often used to categorize areas as either rural or non-rural.<sup>lviii</sup>

For example, the USDA's Rural-Urban Continuum Codes (RUCCs) classify metropolitan (metro) counties by the population size of their metro area, and nonmetropolitan counties by their degree of urbanization and adjacency to a metro area.<sup>459</sup> Unlike census tracts and counties, zip code areas do not always have well-defined geographic boundaries as they are based on postal delivery routes.

OMB's Core Based Statistical Areas (CBSAs) classify counties as metropolitan, micropolitan, and noncore, with rural being defined as all nonmetropolitan counties (i.e., micropolitan and noncore counties).<sup>460</sup>

The U.S. Census Bureau (Census Bureau) creates generalized areal representations of the geographic extent and distribution of ZIP Codes using Census blocks, which allow for more specific comparison of geographic areas.<sup>461</sup>

**Rural-Urban Continuum Codes (RUCCs).** The USDA's RUCCs distinguish metropolitan counties by the population size of their metro area, and nonmetropolitan counties by the degree of urbanization and their adjacency to a metro area.<sup>462</sup> RUCCs range in integers from 1 to 9, with integers 1, 2, and 3 representing non-rural counties, and integers 4, 5, 6, 7, 8, and 9 representing rural counties. The 2013 RUCCs were last updated in December of 2020, with an update planned for mid-2023.

**Rural-Urban Commuting Area (RUCA) Codes.** The USDA's RUCA Codes classify the rurality of U.S. Census tracts using measures of population density, urbanization, and daily commuting.<sup>463</sup> RUCA Codes range in integers from 1 to 10, with integers 1, 2, and 3 representing non-rural Census tracts, and integers 4, 5, 6, 7, 8, 9, and 10 representing rural Census tracts. Secondary RUCA Codes include decimals that enable

---

<sup>liv</sup> Public data file, available at: <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes>.

<sup>lv</sup> Public data file, available at: <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>.

<sup>lvi</sup> Public data file, available at: <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>.

<sup>lvii</sup> Public data file, available at: <https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes/>.

<sup>lviii</sup> Examples of selected definitions of rurality in data are provided in Appendix C.

classification on a more granular scale. Secondary RUCA Codes 1-10 represent urban core (1.0, 1.1), other urban (2.0, 2.1, 3.0, 4.1, 5.1, 7.1, 8.1, 10.1), large rural core (4.0, 4.2), other large rural (5.0, 5.2, 6.0, 6.1), small rural core (7.0, 7.2, 7.3, 7.4), other small rural (8.0, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2), and isolated rural (10.0, 10.2, 10.3, 10.4, 10.5, 10.6) Census tracts.<sup>464,465</sup> The 2010 RUCA Codes were last updated in July of 2019, with a 2020 RUCA Code release date to be determined.<sup>lix</sup>

**Core based statistical areas (CBSAs).** The Office of Management and Budget (OMB) defines counties as metropolitan (metro) and nonmetropolitan (nonmetro, including micropolitan and noncore) statistical areas. Metropolitan statistical areas have “...at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.” Micropolitan statistical areas have “...at least one urban cluster of at least 10,000 but less than 50,000 population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.” Noncore counties are nonmetro counties that do not meet micropolitan statistical area requirements.<sup>466</sup> The CBSAs were last released in July of 2023..

**U.S. Census Bureau.** The Census Bureau’s definitions rely on census blocks and block groups to classify urban and rural areas. Urban areas must have at least 2,000 housing units or a population of at least 5,000. Rural areas consist of all territory, population, and housing units located outside of urban areas.

The Census Bureau classifies rural areas as all population, housing, and territory not included in an urban area (one that is “comprised of a densely settled core of census blocks [the smallest geographic Census unit<sup>467</sup>] that meet minimum housing unit density and/or population density requirements”).<sup>468</sup> Relatively few health care programs use the Census Bureau’s definition for rural program operations. Additionally, although the Census Bureau uses Census blocks in its definition, other entities use Census tracts (small, relatively permanent statistical subdivisions of a county)<sup>469</sup> for their definitions.

The Census Bureau updates its definitions of rural and urban areas after each decennial Census. Its 2020 update to the urban definition includes a minimum threshold of 2,000 housing units or 5,000 people; previously, the definition required a minimum of 2,500 people. The urban definition also now requires Census blocks or aggregation of Census blocks to have a housing unit density of 425 or have a population density of at least 500 people per square mile. Moreover, groups of Census blocks can now meet additional non-residential urban area criteria by having a three-year average of at least 1,000 commuter destinations that are within 0.5 miles of an urban area. Last, the urban definition eliminated the sub-classification of urban areas into Urbanized Areas and Urban Clusters and now calls all qualifying places Urban Areas. .<sup>lx</sup>

**Office of Management and Budget (OMB).** The Office of Management and Budget (OMB) defines rural counties as those with an urban core of 10,000 to 49,000 people or counties outside of non-rural areas. Not-rural counties are those with an urban core of at least 50,000 people.<sup>470</sup>

**U.S. Health Resources and Services Administration (HRSA).** HRSA’s rural definition includes all non-metro counties, metro census tracts with RUCA codes 4-10 (i.e. micropolitan, small town, and rural

---

<sup>lix</sup> Estimated release date is between December 2023 and Fall 2024.

<sup>lx</sup> Census blocks comprise Census block groups, which comprise Census tracts.

areas), large area census tracts of at least 400 square miles in area with population of 35 or less per square mile, and all outlying metro counties without an urbanized area.<sup>471 lxi</sup>

**USDA’s Frontier and Remote (FAR) codes.** ZIP codes were created based on a location’s state, region, and nearest post office. ZIP codes can cross both county and census tract boundaries. An example of ZIP code-level classification is the USDA’s Frontier and Remote (FAR) codes, which categorize each ZIP code as:

- FAR Level 1 (up to 50,000 people who are 60 minutes or more from an urban area of 50,000 or more people);
- Level 2 (up to 25,000 people who are 45 minutes or more from an urban area of 25,000-49,999 people, and 60 minutes or more from an urban area of 50,000 or more people);
- Level 3 (up to 10,000 people who are 30 minutes or more from an urban area of 10,000-24,999, 45 minutes or more from an urban area of 25,000-49,999 people, and 60 minutes or more from an urban area of 50,000 or more people); and
- Level 4 (15 minutes or more from an urban area of 2,500-9,999 people, 30 minutes or more from an urban area of 10,000-24,999 people, 45 minutes or more from an urban area of 25,000-49,999 people, and 60 minutes or more from an urban area of 50,000 or more people).

For residents in ZIP codes designated as FAR Level 1, it may be difficult to access “high order” goods, including advanced medical procedures; for residents in ZIP codes designated as FAR Level 4, it may be difficult to access “low order” goods, including basic health care services.<sup>472</sup>

**Exhibit C1. Rurality Designations by Data Source**

<b>Data File/Designation</b>	<b>Rural</b>	<b>Non-Rural</b>
Rural-Urban Continuum Codes	Codes 4, 5, 6, 7, 8, 9	Codes 1, 2, 3
Rural-Urban Commuting Area Codes	Codes 4, 5, 6, 7, 8, 9, 10	Codes 1, 2, 3
Core Based Statistical Areas	Non-metropolitan	Metropolitan
U.S. Census Bureau	All territory, population, and housing units located outside of urban areas.	An area that has at least 2,000 housing units or a population of at least 5,000.
Office of Management and Budget	Counties with an urban core of 10,000 to 49,000 people and/or outside of non-rural areas.	An urban core of at least 50,000 people.
U.S. Health Resources and Services Administration	All non-metro counties, metro census tracts with RUCAs codes 4-10, large area census tracts of at least 400 square miles	Areas that are not included in the rural definition.

<sup>lxi</sup> Note that HRSA’s definition is used in the Quality Payment Program to assign special rural status to health care entities that are eligible for the Merit-Based Incentive Payment System (MIPS). MIPS rural clinicians are those that practice in an area designated as rural by HRSA, and rural practices are those that have more than 75% of their clinicians located in an area designated as rural by HRSA. For more information, see <https://qpp.cms.gov/mips/special-statuses#rural>

Data File/Designation	Rural	Non-Rural
	with a population of 35 or less per square mile, and all outlying metro counties without an urbanized area.	

**Exhibit C2. Uses and Comparisons of Rural Definitions**

Agency	Geographic Unit Used	Uses	Limitations
U.S. Census Bureau	Census Blocks and Block Groups	Researchers analyzing trends in urban and rural areas	Does not follow city or county boundaries; Overcounts number of people in rural areas (classifies many suburban areas as rural)
OMB	County	Used for CMS designation of Critical Access Hospitals, Medicare Dependent Hospitals and Sole Community Hospitals.	Includes some rural areas in metropolitan areas; undercounts number of people in rural areas
USDA	County (RUCC)	Researchers analyzing trends in nonmetro areas	Some metropolitan counties include rural Census tracts
HRSA	Census Tract (RUCA)	Determining health care providers that are eligible for rural health grant funding or services.	Limits the rural designated providers that can be eligible for HRSA funding.

**Frontier and Remote (FAR) Area Codes.** FAR Area Codes classify ZIP codes by whether they are not frontier and remote or meet one or more levels of frontier and remote. FAR Area Codes categorize each ZIP code as FAR Level 1 (hard to access “high order” goods, including advanced medical procedures), Level 2, Level 3, or Level 4 (hard to access “low order” goods, including basic health care services). FAR Area Codes are nested, meaning that ZIP codes designated as the highest FAR category, Level 4, also meet the qualifications to be designated as Levels 1, 2, and 3; however, a ZIP code designated as the lowest FAR category, Level 1, may not also be designated as Levels 2, 3, or 4 unless it meets the qualifications for each of those designations. Exhibit C3 below presents the FAR codes that refer to frontier and remote areas versus non-frontier and non-remote areas. The 2010 FAR Area Codes Data Files were last updated in April of 2015.

**Exhibit C3. Frontier and Remote Designations**

Frontier and Remote	Non-Frontier and Remote
Variables far1, far2, far3, or far4 = 1	Variables far1, far2, far3, and far4 = 0

Additionally, individual states or regions may have their own definition of “rural.” For example, the Minnesota State Demographer developed four categories to classify counties based on their degree or rurality: entirely rural (14 counties), town/rural mix (35 counties), urban/town/rural mix (25 counties), and entirely urban (13 counties).<sup>473</sup>

## Appendix D. Analysis of Selected Area Health Resource File Variables By RUCC Code and Region

### Additional Details on the AHRF Analysis

The following sections provide additional details on the AHRF analysis, presented in Section V.D., and discuss results additionally stratified by geographic region.

Data sources and methods are described in Section V.D. Additional details on the underlying access to care, utilization of services, and provider supply characteristics are provided in Exhibit D1.

#### Exhibit D1. Variable and Definitions from the AHRF Selected for Analysis

Variable	Definition	Most Recent Year Available
Persons < 65 Years Old without Health Insurance	Number of individuals under age 65 in the county without health insurance. Estimates are based on the American Community Survey.	2019
MD's, Primary Care, Patient Care	Number of MDs in the county providing primary care (including general family medicine, general practice, general internal medicine, and general pediatrics; excluding subspecialties within these specialties). Physicians aged 75 and over are excluded.	2020
Med Spec Tot, Total Patn Care	Total number of medical specialists in the county providing patient care. Included specialties are allergy and immunology; cardiovascular disease; dermatology; gastroenterology; internal medicine, general; internal medicine subspecialties; pediatrics, general; pediatric subspecialties; pediatric cardiology; and pulmonary disease. Number of medical specialists, surgical specialists, and other specialists were summed for the total number of specialists.	2020
Surg Specs Tot, Total Patn Care	Total number of surgical specialists in the county providing patient care. Included specialties are colon/rectal surgery; general surgery; neurological surgery; obstetrics gynecology, general; obstetrics gynecology subspecialties, ophthalmology; orthopedic surgery; otolaryngology; plastic surgery; thoracic surgery; and urology. Number of medical specialists, surgical specialists, and other specialists were summed for the total number of specialists.	2020

Variable	Definition	Most Recent Year Available
Other Spec, Tot, Total Ptn Care	Total number of “other” specialists in the county providing patient care. Included specialties are aerospace medicine; anesthesiology; child and adolescent psychiatry; diagnostic radiology; emergency medicine; forensic pathology; general preventive medicine; medical genetics; neurology; nuclear medicine; occupational medicine; psychiatry; pathology, anatomic/clinical; physical medicine/rehabilitation; public health and general preventive medicine; radiology; radiation oncology; transplant surgery; vascular medicine; and other specialties unspecified. Number of medical specialists, surgical specialists, and other specialists were summed for the total number of specialists.	2020
Cardiovas Dis, Total	Number of cardiovascular disease specialists in the county.	2020
Gastroenterology, Total	Number of gastroenterology specialists in the county.	2020
Neurological Surg, Total	Number of neurological surgery specialists in the county.	2020
Federally Qualified Health Centers	Number of FQHCs in the county.	2021
Rural Health Clinics	Number of RHCs in the county.	2021
Short-Term General Hospital Beds	Number of hospital beds in short-term general hospitals from the American Hospital Association (AHA) survey. Hospital Beds are the number of beds regularly maintained (set up and staffed for use) for inpatients as of the close of the reporting period. Newborn bassinets are excluded. Hospitals normally set up and assign staffed beds based on an expected patient population, and they evaluate this number routinely. Licensed beds are the maximum number of beds that a licensure agency, usually a state or other governing body, allows to have in operation at any given time. This number is sometimes referred to as the hospital’s bed capacity. The number of licensed beds is always greater than the number of staffed beds. AHA focuses on staffed beds because it is the number of beds routinely available to receive patients, and it is highly correlated to other statistics including admissions, inpatient days, expenses, revenue and staffing. While it is not specifically included in the dataset documentation, this definition likely includes swing beds.	2020

Source: AHRF Technical Documentation, 2021-2022

### Results By Geographic Region and RUCC Code

Descriptive statistics on access to health care, utilization of services, and provider supply reported by RUCC in Exhibit 4 were further stratified by U.S. region to produce Exhibit D2. Small sample sizes emerged when assessing some of the selected key variables by both RUCC and region. The criterion of  $n < 30$  was used to suppress categories with small sample sizes on the basis that descriptive statistics may be unreliable. Forty-four categories in Exhibit D2 were suppressed due to small sample sizes. All nine



regions had at least two categories that required suppression. However, the New England, Middle Atlantic, and Pacific regions required the most suppression due to small sample sizes. These regions had either no categories or only one category with sample size  $> 30$ . Results described in this section are relevant to the categories that were not suppressed.

**Exhibit D2. Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply by Geographic Region and Rural-Urban Continuum Code**

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
<b>National</b>	<b>11.94</b> <b>(5.12)</b>	<b>43.45</b> <b>(33.85)</b>	<b>34.63</b> <b>(57.24)</b>	<b>2.27</b> <b>(4.71)</b>	<b>1.38</b> <b>(3.21)</b>	<b>0.62</b> <b>(2.08)</b>	<b>17.20</b> <b>(21.18)</b>	<b>249.41</b> <b>(429.12)</b>
<b>New England</b>	<b>7.03</b> <b>(3.12)</b>	<b>81.64</b> <b>(33.94)</b>	<b>235.14</b> <b>(211.56)</b>	<b>7.02</b> <b>(8.42)</b>	<b>4.18</b> <b>(4.69)</b>	<b>1.37</b> <b>(2.66)</b>	<b>9.64</b> <b>(11.09)</b>	<b>189.29</b> <b>(127.04)</b>
<b>Non-rural</b>	<b>5.55</b> <b>(2.29)</b>	<b>86.59</b> <b>(37.14)</b>	<b>289.81</b> <b>(211.9)</b>	<b>9.34</b> <b>(8.62)</b>	<b>5.45</b> <b>(3.98)</b>	<b>1.99</b> <b>(2.28)</b>	<b>5.33</b> <b>(6.25)</b>	<b>185.11</b> <b>(121.84)</b>
Counties in metro areas of 1 million population or more	4.42 (1.44)	88.24 (39.41)	322.69 (261.23)	11.13 (10.97)	6.24 (4.53)	2.20 (2.52)	2.80 (1.55)	165.63 (112.38)
Counties in metro areas of 250,000 to 1 million population	6.65 (2.18)	78.39 (30.67)	250.62 (142.55)	7.81 (5.53)	4.99 (3.42)	1.43 (1.67)	3.36 (1.25)	175.91 (96.73)
Counties in metro areas of fewer than 250,000 population	6.39 (3.07)	95.70 (43.69)	276.25 (191.27)	7.65 (6.35)	4.38 (3.62)	2.38 (2.66)	14.22 (9.48)	244.10 (171.04)
<b>Rural</b>	<b>8.55</b> <b>(3.16)</b>	<b>76.54</b> <b>(30.00)</b>	<b>178.80</b> <b>(198.90)</b>	<b>4.62</b> <b>(7.62)</b>	<b>2.86</b> <b>(5.05)</b>	<b>0.72</b> <b>(2.91)</b>	<b>14.09</b> <b>(13.17)</b>	<b>193.59</b> <b>(133.94)</b>
Urban population of 20,000 or more, adjacent to a metro area	6.74 (2.18)	71.43 (18.11)	169.22 (39.00)	5.24 (3.24)	3.17 (1.51)	0.56 (0.71)	4.14 (2.95)	194.37 (110.40)
Urban population of 20,000 or more, not adjacent to a metro area	9.35 (.)	179.73 (.)	1236.07 (.)	43.00 (.)	26.46 (.)	16.54 (.)	14.10 (.)	579.99 (.)
Urban population of 2,500 to 19,999, adjacent to a metro area	10.23 (2.53)	74.01 (25.64)	128.26 (58.27)	2.10 (2.79)	0.94 (1.32)	0 (0)	10.31 (6.16)	133.58 (57.46)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Urban population of 2,500 to 19,999, not adjacent to a metro area	8.29 (3.69)	77.36 (25.32)	157.31 (75.97)	4.05 (3.60)	2.83 (4.08)	0 (0)	18.35 (15.42)	213.65 (148.89)
Completely rural or less than 2,500 urban population, adjacent to a metro area	11.07 (3.63)	80.78 (20.98)	131.41 (28.26)	0.96 (1.66)	1.32 (2.28)	0.96 (1.66)	18.53 (9.41)	218.17 (104.78)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	6.35 (0.14)	44.58 (39.95)	79.98 (43.82)	1.73 (2.45)	0 (0)	0 (0)	38.86 (16.65)	90.16 (127.51)
<b>Middle Atlantic</b>	<b>6.63 (1.99)</b>	<b>54.42 (42.75)</b>	<b>177.23 (298.50)</b>	<b>6.18 (8.46)</b>	<b>4.03 (7.51)</b>	<b>1.61 (5.22)</b>	<b>5.73 (9.78)</b>	<b>256.6 (288.4)</b>
<b>Non-rural</b>	<b>6.64 (2.22)</b>	<b>65.00 (48.38)</b>	<b>232.72 (356.65)</b>	<b>8.13 (9.62)</b>	<b>5.34 (8.92)</b>	<b>2.23 (6.38)</b>	<b>3.2 (3.51)</b>	<b>255.68 (323.41)</b>
Counties in metro areas of 1 million population or more	6.67 (2.44)	66.86 (31.52)	244.73 (182.82)	8.73 (6.37)	5.50 (4.50)	1.70 (1.87)	2.72 (3.12)	220.89 (124.60)
Counties in metro areas of 250,000 to 1 million population	6.46 (1.98)	55.67 (23.64)	167.08 (126.89)	6.43 (5.42)	3.76 (2.87)	1.88 (2.57)	3.34 (3.08)	226.49 (136.95)
Counties in metro areas of fewer than 250,000 population	6.83 (2.05)	74.98 (95.35)	305.77 (759.28)	9.22 (18.61)	7.42 (19.11)	4.25 (14.18)	4.28 (4.88)	397.43 (695.37)
<b>Rural</b>	<b>6.60 (1.53)</b>	<b>35.60 (19.48)</b>	<b>78.60 (83.70)</b>	<b>2.71 (4.01)</b>	<b>1.71 (2.68)</b>	<b>0.51 (1.36)</b>	<b>10.22 (14.65)</b>	<b>258.22 (215.28)</b>
Urban population of 20,000 or more, adjacent to a metro area	6.46 (1.48)	37.83 (11.06)	89.77 (50.00)	3.56 (2.54)	2.18 (2.10)	0.47 (1.09)	4.61 (3.50)	275.85 (128.81)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Urban population of 20,000 or more, not adjacent to a metro area	5.01 (.)	68.94 (.)	181.75 (.)	7.52 (.)	5.01 (.)	1.25 (.)	1.26 (.)	318.38 (.)
Urban population of 2,500 to 19,999, adjacent to a metro area	6.63 (1.84)	32.04 (17.50)	61.40 (64.63)	1.90 (4.26)	0.95 (2.03)	0.61 (1.66)	10.42 (11.65)	235.56 (261.01)
Urban population of 2,500 to 19,999, not adjacent to a metro area	6.55 (1.20)	45.52 (31.49)	111.10 (168.30)	2.65 (6.56)	2.13 (4.80)	0.64 (1.81)	20.48 (28.94)	291.37 (273.08)
Completely rural or less than 2,500 urban population, adjacent to a metro area	7.63 (1.04)	14.57 (12.67)	10.23 (9.00)	2.30 (3.98)	0 (0)	0 (0)	8.81 (9.91)	202.28 (350.37)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	7.27 (0.06)	21.27 (30.08)	45.58 (64.47)	0 (0)	3.04 (4.30)	0 (0)	32.67 (5.98)	209.69 (296.54)
<b>East North Central</b>	<b>8.26 (2.25)</b>	<b>43.27 (29.56)</b>	<b>86.58 (112.62)</b>	<b>2.45 (3.97)</b>	<b>1.34 (2.63)</b>	<b>0.61 (1.52)</b>	<b>11.31 (12.11)</b>	<b>182.15 (185.52)</b>
<b>Non-rural</b>	<b>7.61 (1.80)</b>	<b>54.01 (33.82)</b>	<b>140.28 (148.54)</b>	<b>4.21 (4.61)</b>	<b>2.54 (3.36)</b>	<b>1.20 (1.99)</b>	<b>5.51 (8.30)</b>	<b>186.72 (142.02)</b>
Counties in metro areas of 1 million population or more	7.62 (1.94)	52.75 (36.10)	140.54 (152.05)	3.79 (4.38)	2.34 (2.94)	0.94 (1.51)	4.57 (5.97)	147.50 (112.12)
Counties in metro areas of 250,000 to 1 million population	7.39 (1.28)	54.46 (34.49)	153.14 (180.83)	4.34 (5.39)	2.95 (4.48)	1.55 (2.79)	6.10 (11.35)	188.44 (160.40)
Counties in metro areas of fewer than 250,000 population	7.81 (2.03)	55.38 (30.19)	127.31 (103.26)	4.70 (4.11)	2.41 (2.57)	1.24 (1.60)	6.27 (7.66)	241.16 (145.59)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
<b>Rural</b>	<b>8.70</b> <b>(2.41)</b>	<b>36.16</b> <b>(23.91)</b>	<b>51.06</b> <b>(57.94)</b>	<b>1.29</b> <b>(2.97)</b>	<b>0.55</b> <b>(1.57)</b>	<b>0.22</b> <b>(0.92)</b>	<b>15.14</b> <b>(12.70)</b>	<b>179.13</b> <b>(209.60)</b>
Urban population of 20,000 or more, adjacent to a metro area	8.04 (1.81)	38.41 (19.82)	74.90 (69.81)	2.01 (2.89)	0.93 (1.43)	0.43 (0.99)	6.72 (7.32)	183.72 (113.28)
Urban population of 20,000 or more, not adjacent to a metro area	7.99 (1.55)	66.13 (20.01)	159.06 (80.60)	4.10 (4.52)	3.92 (2.58)	1.89 (2.78)	9.90 (6.33)	335.63 (139.73)
Urban population of 2,500 to 19,999, adjacent to a metro area	9.09 (2.68)	35.54 (19.68)	35.76 (33.77)	0.86 (1.82)	0.20 (0.92)	0.07 (0.52)	12.63 (10.57)	163.09 (237.82)
Urban population of 2,500 to 19,999, not adjacent to a metro area	8.62 (2.90)	41.71 (29.13)	60.61 (64.95)	1.44 (3.55)	0.49 (1.93)	0.16 (0.87)	22.93 (13.63)	232.87 (218.47)
Completely rural or less than 2,500 urban population, adjacent to a metro area	9.13 (1.66)	17.33 (17.86)	16.44 (14.70)	0 (0)	0.32 (1.46)	0 (0)	17.75 (10.21)	76.34 (139.16)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	8.49 (1.42)	24.65 (24.20)	29.16 (29.57)	1.22 (4.91)	0.19 (0.93)	0 (0)	25.64 (15.13)	135.95 (236.03)
<b>West North Central</b>	<b>10.62</b> <b>(4.2)</b>	<b>42.02</b> <b>(39.69)</b>	<b>51.44</b> <b>(120.11)</b>	<b>1.14</b> <b>(4.77)</b>	<b>0.63</b> <b>(2.89)</b>	<b>0.42</b> <b>(2.29)</b>	<b>25.44</b> <b>(26.56)</b>	<b>381.70</b> <b>(548.74)</b>
<b>Non-rural</b>	<b>8.84</b> <b>(3.72)</b>	<b>49.73</b> <b>(37.81)</b>	<b>130.00</b> <b>(233.30)</b>	<b>3.86</b> <b>(9.39)</b>	<b>2.60</b> <b>(5.81)</b>	<b>1.52</b> <b>(4.58)</b>	<b>9.12 (11.11)</b>	<b>219.77</b> <b>(241.73)</b>
Counties in metro areas of 1 million population or more	8.76 (3.59)	47.66 (34.53)	130.57 (190.72)	3.20 (4.94)	2.24 (3.65)	1.37 (3.06)	8.18 (12.33)	171.29 (175.93)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Counties in metro areas of 250,000 to 1 million population	8.47 (4.46)	44.71 (29.79)	83.92 (96.90)	2.23 (3.45)	1.37 (2.52)	0.68 (1.37)	11.27 (10.67)	171.99 (150.14)
Counties in metro areas of fewer than 250,000 population	9.07 (3.40)	53.54 (43.15)	153.85 (296.71)	5.10 (12.78)	3.46 (7.68)	2.05 (6.12)	8.54 (10.64)	272.65 (298.45)
<b>Rural</b>	<b>11.08 (4.20)</b>	<b>40.00 (39.96)</b>	<b>30.88 (44.75)</b>	<b>0.43 (1.82)</b>	<b>0.11 (0.67)</b>	<b>0.13 (0.88)</b>	<b>29.71 (27.75)</b>	<b>424.09 (596.84)</b>
Urban population of 20,000 or more, adjacent to a metro area	9.89 (3.49)	51.22 (19.78)	87.17 (48.8)	2.38 (3.40)	0.96 (1.82)	0.42 (1.42)	7.86 (8.00)	238.21 (163.31)
Urban population of 20,000 or more, not adjacent to a metro area	10.80 (4.18)	58.92 (21.39)	124.23 (63.83)	4.29 (4.69)	0.78 (1.48)	1.13 (2.33)	10.97 (10.68)	372.26 (241.88)
Urban population of 2,500 to 19,999, adjacent to a metro area	9.52 (4.00)	42.96 (27.02)	29.34 (27.04)	0.29 (1.43)	0.1 (0.7)	0.14 (0.83)	17.13 (14.43)	254.09 (283.37)
Urban population of 2,500 to 19,999, not adjacent to a metro area	9.99 (3.71)	46.19 (26.03)	39.56 (43.17)	0.25 (1.31)	0.04 (0.44)	0.02 (0.25)	20.60 (17.62)	401.56 (371.60)
Completely rural or less than 2,500 urban population, adjacent to a metro area	11.35 (4.74)	25.42 (30.31)	10.50 (14.15)	0 (0)	0 (0)	0 (0)	37.52 (24.27)	339.36 (574.19)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	12.60 (3.98)	35.51 (53.87)	14.25 (32.91)	0 (0)	0 (0)	0.05 (0.75)	44.12 (33.07)	580.28 (815.98)
<b>South Atlantic</b>	<b>13.33 (4.19)</b>	<b>42.75 (29.55)</b>	<b>99.41 (131.09)</b>	<b>2.85 (4.45)</b>	<b>1.87 (3.10)</b>	<b>0.72 (1.83)</b>	<b>11.87 (15.81)</b>	<b>185.57 (281.93)</b>

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
<b>Non-rural</b>	<b>12.39 (3.91)</b>	<b>51.02 (32.53)</b>	<b>141.48 (162.60)</b>	<b>4.00 (5.06)</b>	<b>2.85 (3.67)</b>	<b>1.25 (2.26)</b>	<b>6.09 (10.10)</b>	<b>173.47 (189.95)</b>
Counties in metro areas of 1 million population or more	11.33 (3.93)	53.89 (30.44)	148.68 (144.20)	3.93 (4.30)	3.02 (3.08)	1.09 (1.71)	2.71 (4.14)	151.51 (160.55)
Counties in metro areas of 250,000 to 1 million population	12.99 (3.12)	54.72 (34.12)	156.90 (197.02)	4.35 (5.62)	3.22 (4.53)	1.54 (2.82)	6.79 (7.53)	185.14 (207.14)
Counties in metro areas of fewer than 250,000 population	13.18 (4.37)	42.70 (32.29)	113.39 (138.08)	3.67 (5.35)	2.19 (3.19)	1.12 (2.19)	10.00 (15.58)	189.87 (204.90)
<b>Rural</b>	<b>14.42 (4.24)</b>	<b>33.56 (22.55)</b>	<b>52.58 (52.57)</b>	<b>1.57 (3.22)</b>	<b>0.79 (1.75)</b>	<b>0.13 (0.82)</b>	<b>18.49 (18.38)</b>	<b>199.04 (357.45)</b>
Urban population of 20,000 or more, adjacent to a metro area	14.94 (3.71)	44.69 (19.48)	100.31 (65.78)	3.54 (3.08)	2.37 (2.03)	0.65 (1.88)	6.69 (6.66)	210.22 (145.29)
Urban population of 20,000 or more, not adjacent to a metro area	13.88 (3.88)	65.88 (23.45)	160.61 (57.95)	8.33 (4.64)	4.46 (2.15)	0.21 (0.57)	12.17 (14.11)	286.93 (167.94)
Urban population of 2,500 to 19,999, adjacent to a metro area	14.37 (4.58)	32.16 (19.03)	47.39 (43.54)	1.39 (3.06)	0.52 (1.53)	0.07 (0.58)	17.24 (14.21)	202.30 (285.46)
Urban population of 2,500 to 19,999, not adjacent to a metro area	14.49 (4.30)	36.76 (19.65)	48.46 (39.97)	0.65 (1.72)	0.54 (1.42)	0 (0)	21.92 (14.61)	282.91 (279.19)
Completely rural or less than 2,500 urban population, adjacent to a metro area	14.00 (3.76)	26.17 (25.57)	26.26 (27.57)	0.47 (1.87)	0 (0)	0 (0)	25.23 (23.87)	149.53 (640.85)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Completely rural or less than 2,500 urban population, not adjacent to a metro area	14.68 (4.41)	24.36 (25.57)	31.14 (38.52)	0.91 (3.87)	0.43 (1.68)	0 (0)	26.68 (29.25)	125.88 (276.34)
<b>East South Central</b>	<b>11.91 (3.4)</b>	<b>36.83 (25.37)</b>	<b>70.98 (98.36)</b>	<b>2.16 (4.27)</b>	<b>1.25 (2.64)</b>	<b>0.53 (1.58)</b>	<b>21.21 (21.46)</b>	<b>280.26 (766.28)</b>
<b>Non-rural</b>	<b>11.14 (3.01)</b>	<b>45.6 (32.46)</b>	<b>117.76 (142.06)</b>	<b>3.64 (5.39)</b>	<b>2.46 (3.47)</b>	<b>1.16 (2.19)</b>	<b>9.00 (11.21)</b>	<b>200.90 (214.35)</b>
Counties in metro areas of 1 million population or more	10.49 (3.16)	42.20 (28.24)	105.02 (145.20)	2.60 (4.25)	2.05 (2.87)	0.85 (2.04)	7.73 (9.32)	154.29 (172.69)
Counties in metro areas of 250,000 to 1 million population	11.33 (2.91)	50.49 (31.72)	141.30 (152.9)	4.89 (6.57)	2.84 (3.78)	1.53 (2.54)	7.78 (9.74)	216.59 (235.09)
Counties in metro areas of fewer than 250,000 population	11.67 (2.87)	43.87 (37.68)	105.20 (124.51)	3.39 (4.89)	2.50 (3.75)	1.09 (1.90)	11.88 (14.21)	236.83 (228.52)
<b>Rural</b>	<b>12.31 (3.52)</b>	<b>32.35 (19.46)</b>	<b>47.11 (51.77)</b>	<b>1.41 (3.33)</b>	<b>0.63 (1.82)</b>	<b>0.21 (1.01)</b>	<b>27.44 (22.74)</b>	<b>320.76 (927.3)</b>
Urban population of 20,000 or more, adjacent to a metro area	13.07 (2.70)	43.69 (14.04)	85.97 (45.48)	3.03 (2.37)	1.38 (1.85)	0.52 (1.16)	9.15 (5.26)	235.97 (197.38)
Urban population of 20,000 or more, not adjacent to a metro area	12.31 (3.60)	62.26 (23.22)	163.9 (79.78)	8.29 (4.29)	4.79 (3.72)	1.82 (2.07)	14.66 (9.14)	442.75 (266.53)
Urban population of 2,500 to 19,999, adjacent to a metro area	12.49 (3.49)	31.98 (15.63)	39.67 (30.33)	0.70 (2.47)	0.32 (1.17)	0 (0)	19.85 (13.13)	206.80 (194.77)



Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Urban population of 2,500 to 19,999, not adjacent to a metro area	12.06 (3.93)	39.63 (18.86)	62.17 (55.95)	2.08 (4.33)	0.84 (2.07)	0.15 (0.81)	31.59 (25.35)	430.79 (299.73)
Completely rural or less than 2,500 urban population, adjacent to a metro area	13.28 (2.98)	19.89 (15.04)	17.93 (16.83)	0.19 (1.19)	0 (0)	0 (0)	31.64 (20.4)	533.95 (2,201.07)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	11.09 (3.58)	22.30 (15.03)	18.69 (19.05)	0.28 (1.34)	0 (0)	0.23 (1.55)	42.33 (29.06)	181.72 (301.83)
<b>West South Central</b>	<b>17.91 (5.97)</b>	<b>33.59 (25.96)</b>	<b>53.12 (82.59)</b>	<b>1.39 (2.8)</b>	<b>0.88 (2.07)</b>	<b>0.42 (1.26)</b>	<b>18.09 (20.11)</b>	<b>192.14 (214.83)</b>
<b>Non-rural</b>	<b>15.81 (5.41)</b>	<b>40.73 (29.55)</b>	<b>103.01 (120.66)</b>	<b>2.76 (3.71)</b>	<b>2.19 (2.88)</b>	<b>1.09 (1.81)</b>	<b>8.47 (11.41)</b>	<b>160.42 (170.69)</b>
Counties in metro areas of 1 million population or more	16.40 (4.55)	42.56 (25.07)	123.72 (135.37)	2.91 (3.79)	2.24 (2.69)	1.13 (1.57)	4.48 (5.03)	112.17 (99.84)
Counties in metro areas of 250,000 to 1 million population	15.61 (6.43)	38.92 (31.28)	92.54 (126.6)	2.30 (3.73)	1.78 (2.87)	1.06 (2.17)	10.17 (14.49)	157.79 (184.28)
Counties in metro areas of fewer than 250,000 population	15.39 (4.68)	41.22 (32.39)	93.32 (86.50)	3.26 (3.59)	2.77 (3.09)	1.11 (1.47)	10.79 (10.66)	224.49 (199.71)
<b>Rural</b>	<b>18.94 (5.97)</b>	<b>30.08 (23.26)</b>	<b>28.57 (34.87)</b>	<b>0.71 (1.90)</b>	<b>0.24 (1.04)</b>	<b>0.09 (0.68)</b>	<b>22.83 (21.72)</b>	<b>207.74 (232.17)</b>
Urban population of 20,000 or more, adjacent to a metro area	18.56 (5.87)	38.61 (14.49)	64.51 (37.83)	2.56 (2.61)	1.17 (1.77)	0.11 (0.39)	10.33 (8.60)	223.89 (140.96)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Urban population of 20,000 or more, not adjacent to a metro area	19.18 (5.12)	40.17 (14.65)	94.74 (43.21)	4.57 (2.48)	1.06 (1.30)	0.91 (2.36)	7.45 (3.41)	336.12 (167.48)
Urban population of 2,500 to 19,999, adjacent to a metro area	18.42 (5.65)	30.04 (17.40)	25.49 (21.56)	0.59 (1.69)	0.10 (0.64)	0.03 (0.27)	18.29 (12.62)	187.97 (148.56)
Urban population of 2,500 to 19,999, not adjacent to a metro area	19.14 (6.78)	38.34 (28.16)	31.71 (42.87)	0.49 (1.86)	0.30 (1.47)	0.09 (0.59)	21.67 (14.64)	208.48 (222.22)
Completely rural or less than 2,500 urban population, adjacent to a metro area	18.60 (4.65)	16.86 (28.31)	10.43 (14.6)	0 (0)	0 (0)	0 (0)	26.66 (20.30)	229.40 (400.97)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	20.08 (6.31)	19.51 (22.25)	10.06 (17.13)	0 (0)	0 (0)	0.11 (0.8)	40.92 (36.35)	204.23 (312.91)
<b>Mountain</b>	<b>12.82 (3.39)</b>	<b>46.44 (32.95)</b>	<b>77.66 (87.75)</b>	<b>1.63 (4.11)</b>	<b>0.81 (1.86)</b>	<b>0.54 (1.58)</b>	<b>21.56 (25.51)</b>	<b>296.35 (434.97)</b>
<b>Non-rural</b>	<b>11.23 (3.17)</b>	<b>51.90 (30.65)</b>	<b>135.46 (102.38)</b>	<b>3.21 (2.79)</b>	<b>2.36 (2.27)</b>	<b>1.50 (1.68)</b>	<b>6.23 (8.39)</b>	<b>179.92 (218.71)</b>
Counties in metro areas of 1 million population or more	9.21 (3.18)	45.77 (37.3)	154.35 (140.21)	2.83 (2.93)	2.60 (2.64)	1.48 (1.62)	3.94 (5.03)	116.56 (91.68)
Counties in metro areas of 250,000 to 1 million population	11.04 (3.43)	47.53 (29.08)	116.87 (106.02)	2.48 (2.79)	1.81 (2.32)	0.90 (1.12)	6.31 (10.76)	117.22 (96.17)
Counties in metro areas of fewer than 250,000 population	12.53 (2.27)	59.02 (27.49)	140.79 (71.87)	4.04 (2.59)	2.71 (1.99)	2.03 (1.96)	7.44 (7.57)	268.53 (302.40)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
<b>Rural</b>	<b>13.29 (3.31)</b>	<b>44.80 (33.51)</b>	<b>60.27 (74.80)</b>	<b>1.16 (4.33)</b>	<b>0.34 (1.43)</b>	<b>0.25 (1.43)</b>	<b>26.17 (27.09)</b>	<b>331.39 (476.26)</b>
Urban population of 20,000 or more, adjacent to a metro area	12.58 (2.34)	50.95 (32.10)	105.30 (123.12)	2.04 (2.61)	0.59 (1.67)	0 (0)	9.70 (8.02)	106.59 (43.77)
Urban population of 20,000 or more, not adjacent to a metro area	12.40 (3.03)	54.61 (20.34)	136.84 (74.65)	3.06 (1.86)	1.92 (1.99)	0.85 (1.86)	5.92 (2.94)	211.91 (101.65)
Urban population of 2,500 to 19,999, adjacent to a metro area	13.71 (3.41)	46.04 (27.63)	52.12 (42.77)	0.81 (2.44)	0.16 (0.94)	0.50 (2.53)	17.87 (11.04)	264.36 (355.75)
Urban population of 2,500 to 19,999, not adjacent to a metro area	13.49 (3.29)	54.74 (28.81)	70.49 (73.25)	1.17 (2.71)	0.40 (1.91)	0.33 (1.52)	19.88 (13.77)	312.79 (282.78)
Completely rural or less than 2,500 urban population, adjacent to a metro area	12.48 (2.02)	21.71 (33.11)	21.30 (22.08)	0 (0)	0 (0)	0 (0)	31.03 (28.45)	272.14 (322.45)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	13.51 (3.85)	34.90 (39.51)	31.31 (60.63)	0.93 (7.19)	0 (0)	0 (0)	46.93 (37.50)	504.69 (758.13)
<b>Pacific</b>	<b>10.07 (3.50)</b>	<b>63.91 (40.76)</b>	<b>114.49 (108.29)</b>	<b>2.37 (2.78)</b>	<b>1.71 (2.27)</b>	<b>0.68 (1.20)</b>	<b>15.60 (23.62)</b>	<b>182.24 (218.78)</b>
<b>Non-rural</b>	<b>8.51 (2.13)</b>	<b>70.02 (29.72)</b>	<b>177.83 (118.33)</b>	<b>4.07 (2.79)</b>	<b>3.26 (2.32)</b>	<b>1.43 (1.40)</b>	<b>6.46 (6.48)</b>	<b>166.01 (97.42)</b>
Counties in metro areas of 1 million population or more	7.32 (1.66)	81.75 (36.95)	245.72 (151.13)	5.17 (3.60)	4.34 (2.71)	1.89 (1.69)	3.49 (2.24)	156.72 (76.39)

Category/Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Counties in metro areas of 250,000 to 1 million population	9.08 (2.20)	65.15 (20.17)	144.17 (74.14)	3.40 (1.89)	2.52 (1.56)	1.05 (1.02)	6.37 (3.96)	162.63 (93.84)
Counties in metro areas of fewer than 250,000 population	9.19 (2.03)	62.59 (26.74)	140.75 (83.26)	3.62 (2.30)	2.90 (2.18)	1.35 (1.33)	9.66 (9.54)	179.72 (121.37)
<b>Rural</b>	<b>11.41 (3.88)</b>	<b>58.63 (47.85)</b>	<b>59.79 (58.05)</b>	<b>0.89 (1.74)</b>	<b>0.37 (1.07)</b>	<b>0.04 (0.28)</b>	<b>23.77 (29.71)</b>	<b>196.27 (284.72)</b>
Urban population of 20,000 or more, adjacent to a metro area	8.79 (1.58)	47.42 (15.64)	84.77 (41.10)	2.07 (2.15)	1.00 (1.63)	0 (0)	13.73 (6.31)	118.95 (71.26)
Urban population of 20,000 or more, not adjacent to a metro area	9.51 (2.67)	73.73 (29.38)	114.55 (35.67)	1.34 (1.47)	1.02 (1.11)	0.41 (0.83)	13.90 (7.73)	173.24 (51.63)
Urban population of 2,500 to 19,999, adjacent to a metro area	11.12 (1.96)	56.81 (44.92)	73.56 (74.15)	0.85 (1.64)	0.24 (0.98)	0 (0)	22.73 (11.58)	182.64 (292.22)
Urban population of 2,500 to 19,999, not adjacent to a metro area	11.64 (3.82)	72.04 (46.64)	71.85 (56.95)	1.20 (2.31)	0.28 (1.21)	0 (0)	15.86 (11.43)	240.13 (157.44)
Completely rural or less than 2,500 urban population, adjacent to a metro area	8.58 (1.86)	24.89 (29.26)	28.72 (28.03)	0 (0)	0 (0)	0 (0)	25.72 (20.70)	388.77 (671.89)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	14.90 (4.48)	61.85 (68.96)	9.43 (18.04)	0 (0)	0 (0)	0 (0)	43.86 (55.44)	155.69 (276.92)

Source: NORC analysis of 2021-2022 AHRF and 2013 RUCCs.

Note: PCP=primary care provider; CVD=cardiovascular disease; FQHC=Federally Qualified Health Center; RHC=rural health clinic.

New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic: New Jersey, New York, Pennsylvania

East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin

West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

East South Central: Alabama, Kentucky, Mississippi, Tennessee

West South Central: Arkansas, Louisiana, Oklahoma, Texas

Mountain: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming

Pacific: Alaska, California, Hawaii, Oregon, Washington

Exhibit D3 summarizes the descriptive statistics on access to health care, utilization of services, and provider supply captured separately in Exhibits 7, 8, and 9.

**Exhibit D3. Descriptive Statistics on Selected Indicators of Access to Care, Utilization of Services, and Provider Supply by Geographic Region**

Category/ Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
<b>National Total</b>	<b>11.94 (5.12)</b>	<b>43.45 (33.85)</b>	<b>34.63 (57.24)</b>	<b>2.27 (4.71)</b>	<b>1.38 (3.21)</b>	<b>0.62 (2.08)</b>	<b>17.20 (21.18)</b>	<b>249.41 (429.12)</b>
<b>New England</b>	<b>7.03 (3.12)</b>	<b>81.64 (33.94)</b>	<b>235.14 (211.56)</b>	<b>7.02 (8.42)</b>	<b>4.18 (4.69)</b>	<b>1.37 (2.66)</b>	<b>9.64 (11.09)</b>	<b>189.29 (127.04)</b>
Non-rural	5.55 (2.29)	86.59 (37.14)	289.81 (211.9)	9.34 (8.62)	5.45 (3.98)	1.99 (2.28)	5.33 (6.25)	185.11 (121.84)
Rural	8.55 (3.16)	76.54 (30.00)	178.80 (198.90)	4.62 (7.62)	2.86 (5.05)	0.72 (2.91)	14.09 (13.17)	193.59 (133.94)
<b>Middle Atlantic</b>	<b>6.63 (1.99)</b>	<b>54.42 (42.75)</b>	<b>177.23 (298.50)</b>	<b>6.18 (8.46)</b>	<b>4.03 (7.51)</b>	<b>1.61 (5.22)</b>	<b>5.73 (9.78)</b>	<b>256.6 (288.4)</b>
Non-rural	6.64 (2.22)	65.00 (48.38)	232.72 (356.65)	8.13 (9.62)	5.34 (8.92)	2.23 (6.38)	3.2 (3.51)	255.68 (323.41)
Rural	6.60 (1.53)	35.60 (19.48)	78.60 (83.70)	2.71 (4.01)	1.71 (2.68)	0.51 (1.36)	10.22 (14.65)	258.22 (215.28)
<b>East North Central</b>	<b>8.26 (2.25)</b>	<b>43.27 (29.56)</b>	<b>86.58 (112.62)</b>	<b>2.45 (3.97)</b>	<b>1.34 (2.63)</b>	<b>0.61 (1.52)</b>	<b>11.31 (12.11)</b>	<b>182.15 (185.52)</b>
Non-rural	7.61 (1.8)	54.01 (33.82)	140.28 (148.54)	4.21 (4.61)	2.54 (3.36)	1.20 (1.99)	5.51 (8.30)	186.72 (142.02)
Rural	8.70 (2.41)	36.16 (23.91)	51.06 (57.94)	1.29 (2.97)	0.55 (1.57)	0.22 (0.92)	15.14 (12.70)	179.13 (209.60)
<b>West North Central</b>	<b>10.62 (4.2)</b>	<b>42.02 (39.69)</b>	<b>51.44 (120.11)</b>	<b>1.14 (4.77)</b>	<b>0.63 (2.89)</b>	<b>0.42 (2.29)</b>	<b>25.44 (26.56)</b>	<b>381.70 (548.74)</b>
Non-rural	8.84 (3.72)	49.73 (37.81)	130.00 (233.3)	3.86 (9.39)	2.60 (5.81)	1.52 (4.58)	9.12 (11.11)	219.77 (241.73)
Rural	11.08 (4.20)	40.00 (39.96)	30.88 (44.75)	0.43 (1.82)	0.11 (0.67)	0.13 (0.88)	29.71 (27.75)	424.09 (596.84)

Category/ Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
<b>South Atlantic</b>	<b>13.33 (4.19)</b>	<b>42.75 (29.55)</b>	<b>99.41 (131.09)</b>	<b>2.85 (4.45)</b>	<b>1.87 (3.10)</b>	<b>0.72 (1.83)</b>	<b>11.87 (15.81)</b>	<b>185.57 (281.93)</b>
Non-rural	12.39 (3.91)	51.02 (32.53)	141.48 (162.60)	4.00 (5.06)	2.85 (3.67)	1.25 (2.26)	6.09 (10.10)	173.47 (189.95)
Rural	14.42 (4.24)	33.56 (22.55)	52.58 (52.57)	1.57 (3.22)	0.79 (1.75)	0.13 (0.82)	18.49 (18.38)	199.04 (357.45)
<b>East South Central</b>	<b>11.91 (3.4)</b>	<b>36.83 (25.37)</b>	<b>70.98 (98.36)</b>	<b>2.16 (4.27)</b>	<b>1.25 (2.64)</b>	<b>0.53 (1.58)</b>	<b>21.21 (21.46)</b>	<b>280.26 (766.28)</b>
Non-rural	11.14 (3.01)	45.6 (32.46)	117.76 (142.06)	3.64 (5.39)	2.46 (3.47)	1.16 (2.19)	9.00 (11.21)	200.90 (214.35)
Rural	12.31 (3.52)	32.35 (19.46)	47.11 (51.77)	1.41 (3.33)	0.63 (1.82)	0.21 (1.01)	27.44 (22.74)	320.76 (927.3)
<b>West South Central</b>	<b>17.91 (5.97)</b>	<b>33.59 (25.96)</b>	<b>53.12 (82.59)</b>	<b>1.39 (2.8)</b>	<b>0.88 (2.07)</b>	<b>0.42 (1.26)</b>	<b>18.09 (20.11)</b>	<b>192.14 (214.83)</b>
Non-rural	15.81 (5.41)	40.73 (29.55)	103.01 (120.66)	2.76 (3.71)	2.19 (2.88)	1.09 (1.81)	8.47 (11.41)	160.42 (170.69)
Rural	18.94 (5.97)	30.08 (23.26)	28.57 (34.87)	0.71 (1.90)	0.24 (1.04)	0.09 (0.68)	22.83 (21.72)	207.74 (232.17)
<b>Mountain</b>	<b>12.82 (3.39)</b>	<b>46.44 (32.95)</b>	<b>77.66 (87.75)</b>	<b>1.63 (4.11)</b>	<b>0.81 (1.86)</b>	<b>0.54 (1.58)</b>	<b>21.56 (25.51)</b>	<b>296.35 (434.97)</b>
Non-rural	11.23 (3.17)	51.90 (30.65)	135.46 (102.38)	3.21 (2.79)	2.36 (2.27)	1.50 (1.68)	6.23 (8.39)	179.92 (218.71)
Rural	13.29 (3.31)	44.80 (33.51)	60.27 (74.80)	1.16 (4.33)	0.34 (1.43)	0.25 (1.43)	26.17 (27.09)	331.39 (476.26)
<b>Pacific</b>	<b>10.07 (3.50)</b>	<b>63.91 (40.76)</b>	<b>114.49 (108.29)</b>	<b>2.37 (2.78)</b>	<b>1.71 (2.27)</b>	<b>0.68 (1.20)</b>	<b>15.60 (23.62)</b>	<b>182.24 (218.78)</b>
Non-rural	8.51 (2.13)	70.02 (29.72)	177.83 (118.33)	4.07 (2.79)	3.26 (2.32)	1.43 (1.40)	6.46 (6.48)	166.01 (97.42)

Category/ Variable	Mean (Standard Deviation)							
	Proportion under age 65 without health insurance, 2019	PCPs per 100,000 population, 2020	Specialists per 100,000 population, 2020	CVD specialists per 100,000 population, 2020	Gastroenterology specialists per 100,000 population, 2020	Neurological surgery specialists per 100,000 population, 2020	FQHCs and RHCs per 100,000 population, 2021	Short-term hospital beds per 100,000 population, 2020
Rural	11.41 (3.88)	58.63 (47.85)	59.79 (58.05)	0.89 (1.74)	0.37 (1.07)	0.04 (0.28)	23.77 (29.71)	196.27 (284.72)

Source: NORC analysis of 2021-2022 AHRF and 2013 RUCCs.

Note: PCP=primary care provider; CVD=cardiovascular disease; FQHC=Federally Qualified Health Center; RHC=rural health clinic.

New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic: New Jersey, New York, Pennsylvania

East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin

West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

East South Central: Alabama, Kentucky, Mississippi, Tennessee

West South Central: Arkansas, Louisiana, Oklahoma, Texas

Mountain: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming

Pacific: Alaska, California, Hawaii, Oregon, Washington



Descriptive statistics on county and population distribution by RUCC in Exhibit 5 were further stratified by U.S. region to produce Exhibit D4. Similar to Exhibit D3, forty-four categories in Exhibit D4 were suppressed due to small sample sizes. All nine regions had at least two categories that required suppression. However, the New England, Middle Atlantic, and Pacific regions required the most suppression due to small sample sizes. These three regions either had no categories or only one category with sample sizes > 30. Results described in this section are relevant to the categories that were not suppressed.

While non-rural counties are concentrated in the Middle Atlantic region of the U.S., rural counties are concentrated across the East North Central, East South Central, West North Central, West South Central, and Mountain regions of the U.S. Several U.S. regions, including the New England, South Atlantic, West South Central, and Pacific regions, appear to have similar proportions of rural and non-rural counties.

Approximately 20 percent of the U.S. population resides in the South Atlantic, 16 percent in the Pacific, 14 percent in the East North Central, 13 percent in the Middle Atlantic, 12 percent in the West South Central, 8 percent in the Mountain, 7 percent in the West North Central, 6 percent in the East South Central, and 5 percent in the New England region. Roughly 2 to 3 percent of the population resides in rural counties in the North Central (East and West), South Atlantic, and South Central (East and West) regions. Approximately 1 percent of the population resides in rural counties in the Mountain region and fewer than 1 percent resides in rural counties in the New England, Middle Atlantic, and Pacific regions.

Roughly 20 percent of U.S. counties are located in the West North Central region, of which 79 percent are designated as rural by their RUCC. Nineteen percent of counties in the U.S. are located in the South Atlantic region, of which 47 percent are designated as rural by their RUCC. Fifteen percent of counties are located in the West South Central region, of which 67 percent are designated as rural by their RUCC. Fourteen percent of counties are located in the East North Central region, of which 60 percent are designated as rural by their RUCC. Nearly 12 percent of U.S. counties are in the East South Central region, of which 66 percent are designated as rural by their RUCC. Nearly nine percent of counties are located in the Mountain region, of which 77 percent are designated as rural by their RUCC. Approximately five percent of U.S. counties are located in the Pacific and Middle Atlantic regions, and 54 percent and 36 percent of counties, respectively, in each region are designated as rural by their RUCC. Two percent of counties are located in New England, of which 49 percent are designated as rural by their RUCC.

**Exhibit D4. Distribution of Counties and Population by Geographic Region**

**Total, Non-rural and Rural**

Geographic Region	Proportion of U.S. Total Counties (%)			Proportion of U.S. Total Population (%)		
	% of Total Counties	% of Non-rural Counties	% of Rural Counties	% of Total Population	% of Non-rural Population	% of Rural Population
<b>New England</b> (CT, ME, MA, NH, RI, VT)	2.13	2.91	1.67	4.55	4.66	3.86
<b>Middle Atlantic</b> (NJ, NY, PA)	4.78	8.23	2.74	12.68	13.74	6.07
<b>East North Central</b> (IN, IL, MI, OH, WI)	13.91	14.91	13.32	14.22	13.52	18.62
<b>West North Central</b> (IA, KS, MN, MO, NE, ND, SD)	19.64	10.97	24.77	6.52	5.32	13.95
<b>South Atlantic</b> (DE, DC, FL, GA, MD, NC, SC, VA, WV)	18.75	26.99	13.88	20.06	20.76	15.77
<b>East South Central</b> (AL, KY, MS, TN)	11.59	10.54	12.21	5.87	4.68	13.22
<b>West South Central</b> (AR, LA, OK, TX)	14.96	13.28	15.96	12.40	12.25	13.39
<b>Mountain</b> (AZ, CO, ID, NM, MT, UT, NV, WY)	8.95	5.57	10.94	7.61	7.40	8.97
<b>Pacific</b> (AK, CA, HI, OR, WA)	5.28	6.60	4.51	16.08	17.69	6.15
<b>National Total</b>	3,141	1,167	1,974	331,862,228	285,811,156	46,051,072

## Appendix E. Summary of Model Features and Characteristics of 22 Selected CMMI Models that Include or Focus on Rural Providers in their Model Design

The following tables provide specific details on CMMI Model characteristics (i.e., clinical focus, providers, setting, and patient population); components relevant to rural providers (i.e., overall model design features, eligibility criteria, specific requirements for rural providers, flexibilities for rural providers, characteristics of rural provider participation, and rural provider participation challenges addressed); payment design features (i.e., financial incentives to enhance rural provider participation specifically);<sup>lxii</sup> performance measurement features for rural providers (i.e., rural-relevant measures included in model implementation or evaluation, modifications to measures for rural providers, modifications to performance-based payment for rural providers, and modifications to benchmarking for rural providers); and for models that have been evaluated, lessons learned related to rural provider participation. The selected CMMI Models are presented in alphabetical order by CMMI Model name in two categories denoting whether models included or focused on rural providers.

### Overview of Methodology Used to Review the Selected CMMI Models

The available information on each of the 22 selected CMMI Models' summary pages on the Innovation Center website was reviewed. This included an overview of the model, financial operating and performance measurement methodologies, informational webinars, evaluation reports and findings (as applicable), summaries, fact sheets, and press releases. Information found in these materials was used to summarize the models' main themes related to encouraging rural participation and other administrative, payment, and performance measurement characteristics. The categorizations were based on the key information highlighted in these documents and are not exhaustive. Models included in the tables are those that included or focused on rural providers in their model design; are ongoing, under development, or completed within the last five years; and reflect value-based programs appropriate for rural clinicians or health care delivery organizations. The selected models may have elements that fall into additional categories of context, objective, functions, and payment models.

---

<sup>lxii</sup> For more information on the overall payment methodologies used in CMMI Models, refer to *Environmental Scan on Improving Care Delivery and Integrating Specialty Care in Population-Based Models*, available at: <https://aspe.hhs.gov/sites/default/files/documents/b1b55986cfe3016f83b8f48ca2c9b154/PTAC-Mar-2-Escan.pdf>; *Environmental Scan on Issues Related to the Development of Population-Based Total Cost of Care (TCOC) Models in the Broader Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs)*, available at: <https://aspe.hhs.gov/sites/default/files/documents/62d8a7a4d673e659b4c38086f43c7e49/PTAC-TCOC-Escan.pdf>; *Background Information Related to Optimizing Efforts to Address Social Determinants of Health and Equity in the Context of Alternative Payment Models and Physician-Focused Payment Models*, available at: <https://aspe.hhs.gov/sites/default/files/documents/bc3335d23de446d835f6a5617f2cba1e/PTACProposalCMMIModel-Analysis.pdf>; and *Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs)*, available at: <https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Jun-2021-CC-Escan.pdf>.

**Exhibit E1. Characteristics of CMMI Models that Include Rural Providers in their Model Design**

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
<p><b>Accountable Health Communities (AHC) Model</b></p> <p><i>No longer active</i></p> <p>Years active: 2017-2022</p>	<p><b>Clinical Focus:</b> Primary care</p> <p><b>Providers:</b> Community bridge organizations</p> <p><b>Setting:</b> Multiple (e.g., hospitals—inpatient and outpatient, clinical delivery sites, community service provider sites)</p> <p><b>Patient Population:</b> High-risk Medicare and Medicaid beneficiaries</p>	<p><b>Overall Model Design Features:</b> Coordination between health care services and community services organizations</p> <p><b>Eligibility Criteria:</b> Applicants are required to screen at least 75,000 beneficiaries annually.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> Widespread; participating organizations in rural counties comprise at least 10 percent of participating organizations in 10 states (Colorado, Connecticut, Kentucky, Minnesota, New York, Ohio,</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Health status, insurance coverage</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>As of the second evaluation report,<sup>lxiii</sup> 17 of 29 bridge organizations had Geographic Target Areas (GTAs) with no rural counties. Bridge organizations that serve mostly rural populations may have needed larger GTAs and more clinical partners than bridge organizations serving suburban and urban populations to meet eligibility criteria.</p>

<sup>lxiii</sup> <https://innovation.cms.gov/data-and-reports/2023/ahc-second-eval-rpt>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>Oklahoma, Oregon, Tennessee, and West Virginia).</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>			
<p><b>Bundled Payments for Care Improvement Advanced (BPCI-A)</b></p> <p><i>Ongoing</i></p> <p>Years active: 2018-present</p>	<p><b>Clinical Focus:</b> Cross-clinical focus</p> <p><b>Providers:</b> Acute care hospitals, physician group practices, Medicare-enrolled providers</p> <p><b>Setting:</b> Inpatient and outpatient services</p> <p><b>Patient Population:</b> Medicare beneficiaries with certain clinical episodes (29 inpatient, three outpatient)</p>	<p><b>Overall Model Design Features:</b> Voluntary model; a single retrospective bundled payment with one risk track and 90-day clinical episodes. There are eight Clinical Episode Service Lines Groups with 29 inpatient, three outpatient, and two multi-setting Clinical Episode Categories. Payment is tied to performance on quality measures.</p> <p><b>Eligibility Criteria:</b> For purposes of BPCI Advanced, a “participant” is defined as an entity that enters into a Participation Agreement</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Home health payments, readmissions payments, unplanned readmissions, mortality</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking</b></p>	<p>Beneficiaries living in rural ZIP codes had favorable differential outcomes on patient functional status, but were more likely to report unfavorable experiences with care for hospital-initiated episodes.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>with CMS to participate in the model. BPCI Advanced will require downside financial risk of all participants from the outset of the Model Performance Period. Eligible providers include acute care hospitals and physician group practices.</p> <p><b>Specific Requirements for Rural Providers:</b> CAHs, hospitals participating in the Rural Community Hospital Demonstration, and rural hospitals participating in the Pennsylvania Rural Health Model are excluded from the definition of an ACH for purposes of BPCI Advanced.</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> CMS is not placing limitations</p>		<p><b>for Rural Providers:</b> N/A</p>	

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>on applicants based on geographic region (e.g., applicants are not limited to a specific Medicare Administrative Contractor [MAC] jurisdiction), geographic type (e.g., urban, rural), or facility size.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>			
<p><b>Comprehensive Primary Care Plus (CPC+)</b></p> <p><i>No longer active</i></p> <p>Years active: 2017-2021</p>	<p><b>Clinical Focus:</b> Primary care</p> <p><b>Providers:</b> Primary care providers (PCPs)</p> <p><b>Setting:</b> Primary care practice</p> <p><b>Patient Population:</b> All Medicare and Medicaid beneficiaries in participating regions</p>	<p><b>Overall Model Design Features:</b> CPC+ was a national advanced primary care medical home model that aimed to strengthen primary care through regionally based multi-payer payment reform and delivery transformation. The program included two practice tracks with incrementally advanced delivery requirements and various payment options.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Outpatient ED visits, ambulatory primary care visits, ambulatory specialist visits, recommended services for patients with diabetes, breast cancer screening, unplanned readmissions, ED visits following inpatient hospital discharge, ED</p>	<p>N/A; evaluation results did not specifically address considerations for rural providers or patient populations.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Eligibility Criteria:</b>  Fourteen regions were selected for participation for Round 1 based on sufficient interest from multiple payers (measured by covered lives and alignment of proposals). Four additional regions (Louisiana, Nebraska, North Dakota, and the Greater Buffalo Region of New York) were selected for Round 2. On May 27, 2016, CMS opened practice eligibility to allow participation in both MSSP and CPC+. Initial requirements had stated those participating in an MSSP were not eligible.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p>		<p>visits following ED discharge, long-term opioid use, potential opioid overuse</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	



Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Rural Participation:</b> In 2021 there were 2,610 primary care practices participating in CPC+ in 18 regions, supported by 52 aligned payers.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>			
<p><b>Emergency Triage, Treat, and Transport (ET3)</b><sup>lxiv</sup></p> <p><i>Ongoing</i></p> <p>Years active: January 2021-present</p>	<p><b>Clinical Focus:</b> Emergency care</p> <p><b>Providers:</b> Medicare-enrolled ambulance service suppliers and hospital-owned ambulance providers</p> <p><b>Setting:</b> Patient home or alternative setting, including urgent care centers, medical clinics, community mental health clinics (CMHCs), and EDs</p>	<p><b>Overall Model Design Features:</b> With the support of local governments, their designees, or other entities that operate or have authority over one or more 911 dispatches, ambulance suppliers and providers will triage people seeking emergency care based on their presenting needs. The model aims to ensure that Medicare FFS beneficiaries receive the</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> In addition to reimbursement for transport to a hospital or ED, CMS will pay participating ambulance suppliers and providers for transport to an alternative destination (such as a primary care doctor’s office or urgent care clinic), or to provide treatment in</p>	<p><b>Rural-Relevant Measures:</b> N/A</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> Participants are required to provide 20</p>	N/A

<sup>lxiv</sup> CMMI announced that the ET3 Model will end two years early on December 31, 2023. Model participation and the number of ET3 interventions provided under the model were lower than anticipated.

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
	<p><b>Patient Population:</b> Medicare beneficiaries</p>	<p>most appropriate care, at the right time, and in the right place. The model may help make EMS systems more efficient and will provide beneficiaries broader access to the care they need. Beneficiaries who receive treatment from alternative destinations may also save on out-of-pocket costs. An individual can always choose to be brought to an ED if they prefer.</p> <p><b>Eligibility Criteria:</b> The participants of the ET3 Model are Medicare-enrolled ambulance service suppliers and hospital-owned ambulance providers.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Upon arriving</p>	<p>place with a qualified health care practitioner at the scene or via telehealth. Model participants will not receive additional funding beyond model payments for eligible services.</p>	<p>interventions during a PY to be eligible to receive a performance-based payment. Providers that furnish a lower volume of ambulance transports during the prior calendar year, which may include rural providers, are exempt from this criterion and still eligible for a performance-based payment.</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>on the scene of a 911 response, participating ambulance suppliers and providers may triage Medicare FFS beneficiaries to one of the model's interventions. As part of a multi-payer alignment strategy, CMMI encourages ET3 Model participants to partner with additional payers, including state Medicaid agencies, to provide similar interventions to all people in their geographic areas.</p> <p><b>Rural Participation:</b> There are 31 participants that include at least one non-metropolitan county in their service area. Organizations from 36 different states are participating in the ET3 Model.</p>			

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Rural Provider Participation Challenges Addressed:</b> ED utilization as a substitute for primary care-treatable conditions via telehealth interventions</p>			
<p><b>Expanded Home Health Value-Based Purchasing Model (Expanded HHVBP)</b> <i>Ongoing</i> Years active: January 2022-present</p>	<p><b>Clinical Focus:</b> Home health care <b>Providers:</b> Medicare-certified Home Health Agencies (HHAs) <b>Setting:</b> Home health setting <b>Patient Population:</b> Medicare beneficiaries requiring home health services</p>	<p><b>Overall Model Design Features:</b> Under the Expanded HHVBP Model, HHAs receive adjustments to their Medicare fee-for-service payments based on their performance against a set of quality measures, relative to their peers' performance. Performance on these quality measures in a specified year (performance year) impacts payment adjustments in a later year (payment year). <b>Eligibility Criteria:</b> The model includes all Medicare-certified HHAs</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> N/A <b>Modifications to Measures for Rural Providers:</b> Acute care hospitalization during the first 60 days of home health use, ED use without hospitalization during the first 60 days of home health, improvement in management of oral medications <b>Modifications to Performance-</b></p>	N/A

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>in all 50 states, District of Columbia, and the U.S. territories.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> All Medicare-certified HHAs in all states are included.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p><b>Based Payment for Rural Providers:</b> HHAs are assigned to either a nationwide larger-volume cohort or a nationwide smaller-volume cohort to group HHAs that are of similar size and are more likely to receive scores on the same set of measures for purposes of determining payment adjustments.</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> HHAs are assigned to either a nationwide larger-volume</p>	

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
				cohort or a nationwide smaller-volume cohort to group HHAs that are of similar size and are more likely to receive scores on the same set of measures for purposes of setting benchmarks and achievement thresholds.	
<p><b>Global and Professional Direct Contracting (GPDC)/Accountable Care Organization Realizing Equity, Access, and Community Health (ACO REACH)</b></p> <p><i>Participants Announced</i></p> <p>Years active: 2021-</p>	<p><b>Clinical Focus:</b> Primary and specialty care</p> <p><b>Providers:</b> Direct Contracting Entities (DCEs) under GPDC, ACOs under ACO REACH; Participating and Preferred Providers</p> <p><b>Setting:</b> Broad applicability</p>	<p><b>Overall Model Design Features:</b> Supports Standard, New Entrant, and High Needs Population ACOs/DCEs to reduce practices' administrative burden, allowing health care providers greater flexibility in how they deliver care and rewarding them for improving quality (GPDC), as well as advancing health equity, promoting</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> The ACO REACH Model includes a beneficiary-level Health Equity Benchmark Adjustment provided to ACOs serving high proportions of underserved beneficiaries.</p>	<p><b>Rural-Relevant Measures:</b> Patient experience, risk-standardized readmissions, unplanned admissions for patients with multiple chronic conditions (UAMCC), follow-up times after acute exacerbations of</p>	N/A

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
present <sup>lxv</sup>	<p><b>Patient Population:</b> Medicare FFS beneficiaries; patients with complex chronic diseases and serious illnesses</p>	<p>provider leadership and governance, and protecting beneficiaries (ACO REACH)</p> <p><b>Eligibility Criteria:</b> Eligible providers include providers in group practice, networks of individual practices of providers, hospitals employing providers, FQHCs, RHCs, and CAHs. Each Participant Provider and Preferred Provider must be a Medicare-enrolled provider. Participants must develop and implement a health equity plan to identify underserved communities and implement the plan; They must also collect beneficiary-reported demographic and health-related social needs information. At least 75</p>		<p>chronic conditions</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> The ACO REACH Model includes a beneficiary-level Health Equity Benchmark Adjustment provided to ACOs serving high proportions of</p>	

<sup>lxv</sup> The transition from the GPDC Model to the ACO REACH Model was announced on February 24, 2022. The ACO REACH Model began on January 1, 2023.

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>percent control of the ACO's governing body must be held by participating providers or their designated representatives, and there must be at least two beneficiary advocates with voting rights on the board.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> FQHCs, RHCs, and CAHs are potentially eligible participants and may be included in DCE provider networks.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Provides incentives for supporting underserved communities</p>		underserved beneficiaries.	



Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
<p><b>Independence at Home (IAH) Demonstration</b></p> <p><i>Ongoing</i></p> <p>Years Active: 2011-present</p>	<p><b>Clinical Focus:</b> Primary care, chronically ill</p> <p><b>Providers:</b> Primary care providers</p> <p><b>Setting:</b> Home-based</p> <p><b>Patient Population:</b> Medicare beneficiaries with multiple chronic conditions</p>	<p><b>Overall Model Design Features:</b> Provides participating practices with financial incentives for successfully improving care in primary care settings and for beneficiaries with multiple chronic conditions, and reducing costs to the Medicare program</p> <p><b>Eligibility Criteria:</b> Primary care practices must provide documentation regarding experience providing home-based primary care to beneficiaries who are high-cost and have multiple chronic conditions. The practices must be led by physicians or nurse practitioners, be organized for the purpose of providing physician services, and serve at least 200 eligible beneficiaries.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Unplanned readmissions; outpatient ED use; potentially avoidable outpatient ED use</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>N/A; evaluation results did not specifically address considerations for rural providers or patient populations.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>Beneficiaries are eligible if they have two or more chronic conditions, are enrolled in Medicare FFS, need help with two or more functional activities, have had a non-elective inpatient admission in the past year, and have received acute or subacute rehabilitation in the past year.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> All 14 of the original primary care practices were in urban areas; however, seven are in health professional shortage areas and/or medically underserved areas.</p> <p><b>Rural Provider Participation Challenges</b></p>			

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Addressed:</b> Aims to reduce the need for on-site services</p>			
<p><b>Integrated Care for Kids (InCK)</b></p> <p><i>Ongoing</i></p> <p>Years active: 2020-present</p>	<p><b>Clinical Focus:</b> Primary care</p> <p><b>Providers:</b> State Medicaid agencies, Lead Organizations (e.g., health care providers, managed care organizations, and public health departments), and Partnership Councils</p> <p><b>Setting:</b> Managed care organizations</p> <p><b>Patient Population:</b> Children under the age of 21 covered by Medicaid; CHIP beneficiaries; pregnant women over 21 covered by Medicaid</p>	<p><b>Overall Model Design Features:</b> Supports states and local providers to conduct early identification and treatment of children with health-related needs across settings and develop sustainable APMs under which states and local providers will share accountability for cost and outcomes</p> <p><b>Eligibility Criteria:</b> Lead Organizations are existing or newly created Health Insurance Portability and Accountability Act (HIPAA)-covered entities that will work with state Medicaid agencies, including managed care organizations, health care providers, and public health departments.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Initiation and engagement of alcohol and other drug abuse or dependence treatment, screening for clinical depression and follow-up plan, family/caregiver experiences with care coordination</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p>	<p>Some Lead Organizations (North Carolina InCK, Ohio InCK, and Oregon InCK) specifically included rural counties as part of their catchment areas to make sure they were designing an intervention that addressed the service system needs in different population contexts. The lack of provider supply is particularly acute in rural areas, with caregivers and providers reporting a lack of specialty care</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> Of the eight awardees, three have a model service area designated as rural.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Access and integration; telehealth</p>		<p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>and, specifically, behavioral health providers; they reported a range of negative outcomes related to lack of access, including conditions becoming more acute or having to engage law enforcement. Lack of anonymity was also reported as a concern in rural communities.</p>
<p><b>Maryland All-Payer Model (MDAPM)</b></p> <p><i>No longer active</i></p> <p>Years active: 2014-2018</p>	<p><b>Clinical Focus:</b> All hospital services</p> <p><b>Providers:</b> Providers and suppliers enrolled in Medicare</p> <p><b>Setting:</b> Maryland hospitals</p> <p><b>Patient Population:</b> Maryland residents,</p>	<p><b>Overall Model Design Features:</b> Maryland shifted all hospital revenue into global payment models. Improvements in quality of care for Maryland residents are evaluated through both hospital quality and population health measures.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> N/A</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment</b></p>	<p>Hospital leaders in more rural or economically disadvantaged areas reported they would not be able to attract or retain enough hospitalists and certain types of specialists if they did not employ</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
	including Medicare, Medicaid, and Children’s Health Insurance Program (CHIP) beneficiaries	<p><b>Eligibility Criteria:</b> All Maryland hospitals were involved in the model.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> All hospitals in the state operated under global budgeting, and all but one rural hospital in the total patient revenue system remained within the 0.5 percent budget corridor.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p><b>for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	physicians (and in some cases, entire practices). Evaluators conducted site visits, and nearly all of the rural hospitals they visited in 2019 contracted with ED physician practices, generally with performance-based reimbursement. Hospitals in rural or economically disadvantaged areas that were unable to attract and retain physicians sometimes hired physicians temporarily as contract employees when there was a coverage deficit.

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
					This was a major source of financial stress for these hospitals.
<p><b>Maryland Total Cost of Care (MDTCOC)</b></p> <p><i>Ongoing</i></p> <p>Years Active: 2019-present</p>	<p><b>Clinical Focus:</b> Care provided in hospitals</p> <p><b>Providers:</b> Hospitals</p> <p><b>Setting:</b> Maryland hospitals and outpatient settings</p> <p><b>Patient Population:</b> Maryland Medicare patients</p>	<p><b>Overall Model Design Features:</b> A per capita limit on Medicare total cost of care in Maryland, holding the state fully at risk for Medicare beneficiaries</p> <p><b>Eligibility Criteria:</b> All Maryland hospitals, and some doctors' visits and other outpatient services, such as long-term care. Community health care providers can choose whether they want to participate in the model.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> All-cause admissions, outpatient ED visits, potentially preventable admissions, 30-day unplanned readmissions, receipt of timely follow-up after acute exacerbations, non-emergent or primary care-treatable outpatient ED visits, patient satisfaction, population health</p> <p><b>Modifications to Measures for</b></p>	<p>Outcomes and trends in outcomes were similar between rural and non-rural beneficiaries. Although there are no official CAHs in Maryland, several hospitals, particularly in rural areas, function similarly to CAHs.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Rural Participation:</b> All Maryland hospitals, both rural and urban, are included. FQHCs are eligible to participate in the Maryland Primary Care Program.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p><b>Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	
<p><b>Medicare Care Choices Model (MCCM)</b></p> <p><i>No longer active</i></p> <p>Years Active: 2016-2021</p>	<p><b>Clinical Focus:</b> Providing supportive services for hospice/palliative/end-of-life care to Medicare beneficiaries</p> <p><b>Providers:</b> Primary care providers, nurse practitioners, physician assistants, clinical nurse specialists, and physician specialists</p> <p><b>Setting:</b></p>	<p><b>Overall Model Design Features:</b> Participating hospices provided services that were available under the Medicare hospice benefit for routine home care and respite levels of care, but could not be separately billed under Medicare Parts A, B, and D. Model services were available around the clock, 365 calendar days per year.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Inpatient admissions, readmissions, time spent in hospitals between enrollment and death, number of ambulatory visits with primary and specialty care providers</p> <p><b>Modifications to Measures for</b></p>	<p>Beneficiaries were less likely to reside in rural areas. Those that did reside in rural areas may have faced higher travel costs and, therefore, may not have received the same set of services as compared to their non-rural counterparts. However, impact analyses showed</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
	<p>Medicare-certified hospices</p> <p><b>Patient Population:</b> Medicare FFS beneficiaries at the end of life with a diagnosis of cancer, congestive heart failure, chronic obstructive pulmonary disease, or human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS)</p>	<p><b>Eligibility Criteria:</b> MCCM participating providers must be Medicare-certified hospices. Participating hospices represent various geographic areas, both urban and rural, and are of varying sizes and business models. Beneficiaries must not have elected the Medicare (or Medicaid) hospice benefit within the last 30 days prior to enrolling in the model. Other model requirements included living in a traditional home (no institutional care); having Medicare Parts A and B for the 12 months prior to enrolling in the model (no Medicare managed care plan during that 12 months); having a diagnosis of one of the following terminal illnesses: advanced</p>		<p><b>Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>similar outcomes between rural and non-rural beneficiaries.</p>



Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>cancer, chronic obstructive pulmonary disease, congestive heart failure, or HIV/AIDS; and living in the service area of a hospice selected to participate in the model.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> Participants were less likely to reside in rural areas.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>			
<p><b>Medicare Diabetes Prevention Program (MDPP) Expanded Model</b></p> <p><i>Ongoing</i></p>	<p><b>Clinical Focus:</b> Diabetes (Type 2)</p> <p><b>Providers:</b> MDPP coaches (such as trained community health professionals)</p>	<p><b>Overall Model Design Features:</b> MDPP is a performance-based payment model paid by the CMS claims system. This structured behavioral change intervention includes the following</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Cases of diabetes prevented</p> <p><b>Modifications to Measurement</b></p>	<p>N/A</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
Years active: 2018-present	<p><b>Setting:</b> MDPP facility</p> <p><b>Patient Population:</b> Medicare beneficiaries with Type 2 diabetes or prediabetes</p>	<p>components: 1) Core Sessions – MDPP services initiated after the first visit; suppliers paid based on beneficiary attendance, regardless of the beneficiary’s weight loss; 2) Core Maintenance Sessions – Paid in two installments in three-month intervals, based on beneficiary attendance goals; payment is increased if five percent weight loss goal is achieved during the interval; 3) Ongoing Maintenance Sessions – Paid in four installments in three-month intervals only when two ongoing maintenance sessions and five percent weight loss goal are achieved during the interval.</p> <p><b>Eligibility Criteria:</b> Any supplier (rural or other) meeting the</p>		<p><b>for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>requirements may participate.</p> <p><b>Specific Requirements for Rural Providers:</b> RHCs and FQHCs must re-enroll as MDPP suppliers and use the CMS-1500 claim form while filing for reimbursement. MDPP services should be included as non-reimbursable costs on the case report to avoid any possible duplications.</p> <p><b>Flexibilities for Rural Providers:</b> MDPP services do not need to be furnished in a traditional health care setting, but must follow the requirements for MDPP locations, which makes them more accessible to rural areas via virtual make-up sessions. Beneficiaries in rural areas can receive services from a practitioner in a</p>			

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>different location through telehealth.</p> <p><b>Rural Participation:</b> Although the number of MDPP suppliers continues to increase, the first evaluation report (March 2021) indicated that many MDPP supplier locations are clustered around large urban areas (e.g., Boston, Denver, Detroit, Seattle, New York City), with far fewer supplier locations in rural areas. Seven states (Alabama, Nevada, New Mexico, Rhode Island, South Dakota, Vermont, and Wyoming) have no MDPP supplier locations.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Distance to provider as a burden in chronic disease maintenance</p>			

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
<p><b>Million Hearts™</b>  <b>(Million Hearts Cardiovascular Disease (CVD) Risk Reduction Model)</b></p> <p><i>Ongoing</i></p> <p>Years Active: 2012-present</p>	<p><b>Clinical Focus:</b> Heart disease and stroke</p> <p><b>Providers:</b> Cardiologists</p> <p><b>Setting:</b> Outpatient</p> <p><b>Patient Population:</b> Medicare beneficiaries at risk for heart disease and stroke</p>	<p><b>Overall Model Design Features:</b> Randomized controlled trial that sought to bridge a gap in cardiovascular care by providing targeted incentives for health care practitioners to engage in beneficiary cardiovascular disease risk calculation and population-level risk management</p> <p><b>Eligibility Criteria:</b> Participating practices were randomly assigned to be part of a control group or intervention group. The types of providers participating in the model include general/family medicine, internal medicine, geriatric medicine, multi-specialty, nephrology, and cardiovascular care. The types of practices participating in the model include private practices, community health</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Controlling high blood pressure, cholesterol management, smoking cessation, cardiac rehabilitation patient referral from an inpatient or outpatient setting</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>N/A; evaluation results did not specifically address considerations for rural providers or patient populations.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>centers and other community-based clinics, academic/university health centers, hospital-owned physician practices, and hospital/physician organizations.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> Rural providers participated in the model, although they were not the focus of the model.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>			
<p><b>Next Generation Accountable Care Organization (NGACO)</b></p> <p><i>No Longer Active</i></p>	<p><b>Clinical Focus:</b> Primary and specialty care</p> <p><b>Providers:</b> Participating PCPs and specialists</p>	<p><b>Overall Model Design Features:</b> Enable provider groups to assume higher levels of financial risk and reward than available</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Regional efficiency trend adjustments ensured</p>	<p><b>Rural-Relevant Measures:</b> Number of ED visits, number of home health episodes,</p>	<p>NGACOs operated in markets with lower proportions of rural</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
<p>Years active: 2016-2021</p>	<p><b>Setting:</b> Primary and specialty care practices, hospitals, inpatient and outpatient settings</p> <p><b>Patient Population:</b> Original Medicare FFS beneficiaries</p>	<p>under previous ACO models</p> <p><b>Eligibility Criteria:</b> Open to previous participants of the MSSP and Pioneer ACO Model. Alignment-eligible facilities included CAHs billing professional services for outpatient care, FQHCs, and RHCs.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Benefit enhancements, including Telehealth Expansion Waiver and Chronic Disease Management Reward (Gift Card)</p> <p><b>Rural Participation:</b> Widespread; no specific rural focus</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>	<p>that participating providers received adequate compensation for services provided in regions that were experiencing major payment changes beyond their control.</p>	<p>beneficiaries with ambulatory care sensitive condition hospitalizations, beneficiaries with unplanned 30-day readmissions, and beneficiaries with hospital readmissions from skilled nursing facilities</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>beneficiaries. NGACOs serving rural areas reported challenges in addressing needs for their beneficiary populations. These NGACOs relied on different care management strategies, including a mix of telephonic engagement and embedded care management staff. Rural practices did not necessarily endeavor to reduce ED utilization, as EDs were a critical source of after-hours care in rural markets. The model was</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
					associated with larger spending reductions for beneficiaries with multiple chronic conditions and beneficiaries with prior hospitalizations.
<p><b>Part D Enhanced Medication Therapy Management (MTM) Model</b></p> <p><i>No longer active</i></p> <p>Years active: 2017-2021</p>	<p><b>Clinical Focus:</b> Medication management</p> <p><b>Providers:</b> Qualified health care professionals, including pharmacists</p> <p><b>Setting:</b> Participating Prescription Drug Plans</p> <p><b>Patient Population:</b> Medicare FFS Part D beneficiaries</p>	<p><b>Overall Model Design Features:</b> Provides Part D sponsors with additional payment incentives and allows for regulatory flexibilities to target enrollees and offer tailored services</p> <p><b>Eligibility Criteria:</b> Standalone Prescription Drug Plans; existed as a basic plan for at least three years prior to the first year of the model test; minimum enrollment of 2,000 beneficiaries</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Expenditures of ED services, expenditures of ancillary services, hospital inpatient expenditures related to ambulatory care sensitive conditions, ED expenditures related to ambulatory care sensitive conditions, ED visits, Evaluation and Management (E&amp;M) visits, readmissions,</p>	<p>N/A; evaluation results did not specifically address considerations for rural providers or patient populations.</p>



Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Flexibilities for Rural Providers:</b> Regulatory flexibilities allowed for individualized and risk-stratified interventions</p> <p><b>Rural Participation:</b> Widespread; Region 7 (Virginia); Region 11 (Florida); Region 21 (Louisiana); Region 25 (Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Wyoming); Region 28 (Arizona). No specific rural focus was included, though model participants included highly rural states in their covered regions.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p>inpatient admissions related to ambulatory care sensitive conditions, ED visits related to ambulatory care sensitive conditions</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	
<p><b>Primary Care First (PCF) Model Options</b></p> <p><i>Ongoing</i></p>	<p><b>Clinical Focus:</b> Primary care</p> <p><b>Providers:</b> PCPs</p>	<p><b>Overall Model Design Features:</b> Enables primary care practices to offer a broader range of</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Patient experience of</p>	<p>A few practices noted that they used telehealth to address</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
Years active: 2021-present	<p><b>Setting:</b> Primary care practices</p> <p><b>Patient Population:</b> Medicare patients with serious illness/chronic conditions</p>	<p>health care services to meet patient needs, including patients with complex chronic needs</p> <p><b>Eligibility Criteria:</b> Located in one of the 26 selected regions; includes primary care practitioners certified in internal medicine, general medicine, geriatric medicine, family medicine, hospice, and palliative medicine; use 2015 Certified Electronic Health Record Technology (CEHRT), support data exchange with other providers and health systems via Application Programming Interface (API), and connect to their regional health information exchange (HIE); demonstrate a set of advanced primary care delivery capabilities via questions in the Practice Application. Provides</p>		<p>care survey, controlling high blood pressure, diabetes hemoglobin A1c poor control, colorectal cancer screening, advance care planning</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	transportation barriers for patients who live in rural areas.

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>primary care health services to at least 125 attributed Medicare beneficiaries at a particular location; at least 50 percent of collective billing is based on revenue accounted for by primary care services; experience with value-based payment arrangements or payments based on cost, quality, and/or utilization performance.</p> <p><b>Specific Requirements for Rural Providers:</b> FQHCs and RHCs are excluded from participating in PCF.</p> <p><b>Flexibilities for Rural Providers:</b> Model enables PCPs to offer a broader range of health care services that meet the needs of their patients.</p>			

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Rural Participation:</b> Widespread; Alaska, Arkansas, California, Colorado, Delaware, Florida, Greater Buffalo region (New York), Greater Kansas City region (Kansas and Missouri), Greater Philadelphia region (Pennsylvania), Hawaii, Louisiana, Maine, Massachusetts, Michigan, Montana, Nebraska, New Hampshire, New Jersey, North Dakota, North Hudson-Capital region (New York), Ohio and Northern Kentucky region (partial state in Kentucky), Oklahoma, Oregon, Rhode Island, Tennessee, and Virginia</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>			
<b>Value in Opioid Use Disorder Treatment (Value in Treatment)</b>	<b>Clinical Focus:</b> Opioid use disorder (OUD)	<b>Overall Model Design Features:</b> Provides per beneficiary per month	<b>Financial Incentives to Enhance Rural</b>	<b>Rural-Relevant Measures:</b> Patient	N/A

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
<p><b>Demonstration Program</b></p> <p><i>Participants announced</i></p> <p>Years Active: 2021-present</p>	<p><b>Providers:</b> Physicians, hospitals, health centers, treatment programs with OUD services</p> <p><b>Setting:</b> Outpatient OUD treatment facility</p> <p><b>Patient Population:</b> Medicare A and B beneficiaries (not Medicare Advantage) with a current diagnosis for an opioid use disorder</p>	<p>care management fees (CMF) and a performance-based incentive to increase access to opioid use disorder treatment services, improve physical and behavioral health outcomes for these beneficiaries, and reduce Medicare expenditures</p> <p><b>Eligibility Criteria:</b> Entities include physicians, group practices, hospital outpatient departments, FQHCs, RHCs, community mental health centers (CMHCs), opioid treatment programs, CAHs, and clinics certified as community behavioral health clinics. The eligible patient population includes 20,000 beneficiaries who are entitled to or enrolled in benefits under Medicare Part A and enrolled in</p>	<p><b>Provider Participation Specifically:</b> N/A</p>	<p>engagement and retention in treatment</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>benefits under Medicare Part B, are not enrolled in a Medicare Advantage plan under Medicare Part C, and have a current diagnosis for an opioid use disorder.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> Participants are in 36 states and the District of Columbia, and include FQHCs, behavioral health clinics, group practices, RHCs, and opioid treatment programs.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> The program aims to reduce hospitalizations and ED visits, instead providing</p>			

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		care in outpatient settings.			
<p><b>Vermont All-Payer ACO Model (VTAPM)</b></p> <p><i>Ongoing</i></p> <p>Years active: 2017-present</p>	<p><b>Clinical Focus:</b> Broad</p> <p><b>Providers:</b> Primary and specialty care</p> <p><b>Setting:</b> Broad</p> <p><b>Patient Population:</b> Vermont Medicare and Medicaid beneficiaries and commercial insurance plan enrollees</p>	<p><b>Overall Model Design Features:</b> Provides funding for start-up investment to bring together Vermont physicians, hospitals, and other care providers to better coordinate care for patients with Medicare, Medicaid, or commercial insurance. The model aims to incentivize coordination to achieve ACO scale, all-payer and Medicare financial and health outcomes, and quality of care targets.</p> <p><b>Eligibility Criteria:</b> Participation is voluntary for both providers and payers.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> The Innovation Fund provides grant support for innovative evidence-based programs that address behavioral health, vulnerable populations, technology in rural settings, and specific chronic conditions.</p>	<p><b>Rural-Relevant Measures:</b> Deaths related to suicide (per 100,000 population), percentage of adults with personal doctor or care provider, 30-day follow-up after discharge from ED for mental health, 30-day follow-up after discharge for alcohol or other drug dependency, growth in mental health and substance abuse-related ED visits, adults receiving medication-assisted treatment (per 10,000</p>	<p>Most CAHs in Vermont’s rural areas opted not to participate in the Medicare ACO initiative; they noted that the organizational financial reserves required were a barrier to participation. Of the eight CAHs in Vermont, only two participated in the Medicare ACO initiative. Up-front funding, the potential for larger shared losses than in other ACO initiatives, and perceived uncertainty around how the model’s financial</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Rural Participation:</b> Thirteen of Vermont’s 14 hospitals were participating in OneCare Vermont for at least one payer program, six of which are CAHs, as of 2020. Only two of eight CAHs in Vermont are participating in the Medicare program, due to financial constraints. Rural FQHCs and RHCs are eligible, but participation among small practices is limited.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p>population), percentage of Medicaid enrollees aligned to model, prevalence of chronic disease (chronic obstructive pulmonary disease, diabetes, hypertension, high blood pressure), all-cause unplanned admissions for patients with multiple chronic conditions</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p>	<p>requirements align with Medicare cost reporting were cited as barriers to participation. The majority of eligible Medicare beneficiaries and commercial plan enrollees live in rural areas, whereas only two-fifths of eligible Medicaid enrollees do, indicating that the model may need to employ different attribution mechanisms in these populations to achieve scale. Although clinicians support value-based care, there is a lack of trust in OneCare</p>



Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
				<b>Modifications to Benchmarking for Rural Providers: N/A</b>	and the University of Vermont Health Network, especially in more rural areas.

Exhibit E2. Characteristics of CMMI Models that Focus on Rural Providers in their Model Design

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
<p><b>Community Health Access and Rural Transformation (CHART)</b></p> <p><i>Withdrawn</i></p> <p>Years Active: 2021-2023</p>	<p><b>Clinical Focus:</b> Primary care</p> <p><b>Providers:</b> All rural health providers, primary care providers, specialists, and ancillary health care professionals</p> <p><b>Setting:</b> Primary care practices</p> <p><b>Patient Population:</b> Rural communities</p>	<p><b>Overall Model Design Features:</b><sup>lxvi</sup> Enhance beneficiaries’ access to health care services by ensuring that rural providers remain financially sustainable for years to come and can offer additional services such as those that address SDOH, including food and housing</p> <p><b>Eligibility Criteria:</b> A presence in the community one year prior to the publication date of the CHART Notice of Funding Opportunity (NOFO); expertise in rural health issues, including specific diseases, health disparities, barriers to accessing care, policy, and other key factors that significantly influence health outcomes,</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Up-front payments to invest in patient-centered care</p>	<p><b>Rural-Relevant Measures:</b> Inpatient and ED visits for ambulatory care sensitive conditions, hospital readmissions, patient experience with care, use of pharmacotherapy for opioid use disorder, use of opioids at high dosage in persons without cancer, Cesarean birth, contraceptive care – postpartum, influenza vaccination, screening for depression and follow-up plan,</p>	<p>The ACO-based track was terminated in February 2022, and CMMI announced in November 2022 that there was insufficient participation from rural health hospitals to proceed with the first implementation year of the Community Transformation Track of the model.<sup>474</sup> In March 2023, CMMI announced that the CHART Model would end early on September 30, 2023 due to lack</p>

<sup>lxvi</sup> As the CHART Model was not implemented, this text reflects the model’s goals rather than features of the model’s design as implemented.

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>particularly those prevalent in the community; experience, either through direct management or through a partnership, in designing and implementing APMs; received and successfully managed one or several health-related grant(s) or cooperative agreement(s) totaling at least \$500,000 over the last three years; and experience in each of the following areas: 1) engaging and maintaining provider participation in APMs or CMS demonstration projects/models; 2) establishing, modifying as needed, and maintaining agreements between health care providers; and 3) conducting outreach, developing and managing relationships with diverse health care-related stakeholders</p>		<p>continuity of primary care for children with medical complexity</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>of sufficient hospital participation and in response to feedback from Model stakeholders.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> SNF three-day rule waiver, telehealth expansion, care management home visits, waiver of certain Medicare Hospital and/or CAH Conditions of Participation (CoPs), and CAH 96 hours certification rule</p> <p><b>Rural Participation:</b> Four participating entities (State of South Dakota Department of Social Services, Texas Health and Human Services Commission, University of Alabama Birmingham, and Washington State Healthcare Authority)</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Increase</p>			

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		financial stability for rural providers through new reimbursement processes that provide up-front investments and predictable, capitated payments, and remove regulatory burden by providing waivers that increase operational and regulatory flexibility for rural providers			
<p><b>@emiFrontier Community Health Integration Project (FCHIP) Demonstration</b></p> <p><i>Ongoing</i></p> <p>Years Active: 2016-present</p>	<p><b>Clinical Focus:</b> Essential services</p> <p><b>Providers:</b> Participating CAHs</p> <p><b>Setting:</b> Participating CAHs</p> <p><b>Patient Population:</b> Medicare beneficiaries residing in sparsely populated rural counties</p>	<p><b>Overall Model Design Features:</b> CAHs serve as the hubs for health care activities in frontier areas, but they often serve few inpatients. In this demonstration, CMS expects CAHs to increase access to services that are often unavailable in frontier communities with the goal of avoiding expensive transfers to hospitals in larger communities. CMS will evaluate whether providing these services in frontier communities</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b></p> <p>Ambulance Services – participants are reimbursed 101 percent of reasonable costs of furnishing Medicare Part B ambulance services instead of being paid under the Medicare ambulance fee schedule.</p> <p>SNF/NF Care – CAHs can maintain up to 35</p>	<p><b>Rural-Relevant Measures:</b> Ambulance transports, average distance per ambulance transport, length of SNF stay, telehealth encounters, telehealth provider specialty</p> <p><b>Modifications to Measures for Rural Providers:</b> N/A</p>	<p>The demonstration increased payments for Part B ambulance transports and telehealth origination services. Of the three CAHs that increased their beds, only one needed and used the additional capacity. Patient satisfaction with telehealth was very high. While</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>can improve the quality of care received by Medicare beneficiaries, increase patient satisfaction, and reduce Medicare expenditures.</p> <p><b>Eligibility Criteria:</b> Adhere to the requirements of the Rural Hospital Flexibility Program of the Social Security Act; describe intent in meeting community health needs in areas of telehealth, nursing facility care, and ambulance services; be located in a state where at least 65 percent of the counties have six or fewer residents per square mile; limited to CAHs in Montana, Nevada, and North Dakota.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Participation in</p>	<p>inpatient beds in contrast to the 25 currently allowed under Medicare. The 10 additional inpatient beds may be used only to provide SNF/NF levels of care. CAHs continue to receive cost-based reimbursement for inpatient and skilled nursing care delivered in the extra beds.</p> <p>Telehealth Services – As originating sites for telehealth services, participants are paid at 101 percent of cost for overhead, salaries, fringe benefits, and the depreciation value of the telehealth equipment instead of the physician fee schedule fixed fee currently allowed under Medicare. The distant site</p>	<p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>FCHIP telehealth encounters grew rapidly over the three-year period, a similar growth pattern was also found for non-FCHIP CAHs in the same states, suggesting that telehealth would have proliferated without the demonstration.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>one of three interventions for ambulance services, skilled nursing facility (SNF) or nursing facility (NF) care, and telehealth</p> <p><b>Rural Participation:</b> Ten CAHs in three states (Montana, three; Nevada, four; and North Dakota, three) began participating in this demonstration in August 2016. CMS found that ambulance and SNF/NF bed interventions were easily implemented and beneficial. The quality reported was on par with other CAHs, suggesting that telehealth would have proliferated without the demonstration.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Health information technology</p>	<p>practitioners are paid an amount equal to the amount that such practitioners would be paid had such services been furnished without the use of a telecommunications system.</p>		

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		infrastructure, capacity, and financial resources			
<p><b>Pennsylvania Rural Health Model (PARHM)</b></p> <p><i>Ongoing</i></p> <p>Years Active: 2017-present</p>	<p><b>Clinical Focus:</b> Inpatient and outpatient services</p> <p><b>Providers:</b> Primary care physicians and specialists</p> <p><b>Setting:</b> CAHs and acute care hospitals</p> <p><b>Patient Population:</b> Rural Pennsylvania residents</p>	<p><b>Overall Model Design Features:</b> Participating hospitals are paid a fixed amount up front, regardless of patient volume, to invest in high-quality primary and specialty care that addresses community-specific needs.</p> <p><b>Eligibility Criteria:</b> CAHs and acute care hospitals, along with other payers in rural Pennsylvania. For this model, “rural” is defined as &lt;284 people per square mile. Participating hospitals must develop and submit a rural health transformation plan to the Pennsylvania Department of Health and CMMI.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Each year, Pennsylvania prospectively sets an all-payer global budget for each participating hospital. Each participating payer will then pay participating hospitals for all inpatient and outpatient services based on the payer’s respective portion of this global budget. Pennsylvania will also provide funding for hospitals to carry out their rural health transformation plans. Financial incentives for participating hospitals may be determined according to model goals for: 1) increasing access to primary and</p>	<p><b>Rural-Relevant Measures:</b> Inpatient and ED visits for ambulatory care sensitive conditions, hospital-wide all-cause readmission (Medicare), plan all-cause readmission (commercial and Medicaid Managed Care), pharmacotherapy for opioid use disorder, risk of continued opioid use, rate of adults with preventive care visits, follow-up after ED visits for patients with multiple chronic conditions</p>	<p>The creation of the Rural Health Redesign Center Authority (RHRCA) helped foster relationships among participants, payers, and partners. Resource demands and perceived financial risks caused concerns with continued participation. Although global budgets provided stable cash flow, especially during times of uncertainty (e.g., during the COVID-19 PHE), participants and payers found it</p>



Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> Eighteen hospitals in Pennsylvania; this model was developed specifically for rural hospital participation.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Aims to support care delivery design activities for inpatient and outpatient hospital services to improve quality and preventive care tailored to the specific community</p>	<p>specialty care; 2) reducing rural health disparities through improved chronic disease management and preventive screenings; and 3) decreasing deaths from substance use disorder and improving access to treatment for opioid use disorder.</p>	<p><b>Modifications to Measures for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	<p>challenging to monitor global budgets. Under the model, hospital-based physician services are excluded, which may have limited participant ability to transform care. Hospitals engaged in several activities to transform care, including 1) providing patient and staff education; 2) assessing patient social needs; 3) hiring dedicated staff; 4) developing high-risk patient registries; and 5) implementing formalized post-discharge follow-up processes.</p>

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
					Hospitals also partnered with clinical and non-clinical community organizations to improve behavioral health services and food insecurity in their communities. Although participants reported needing real-time, actionable, patient-level data, most hospitals also reported limited capacity and resources to process and analyze data.
<b>Rural Community Hospital Demonstration</b>  <i>Ongoing</i>	<b>Clinical Focus:</b> Inpatient care  <b>Providers:</b> Providers at small, rural hospitals	<b>Overall Model Design Features:</b> To test feasibility and advisability of cost-based reimbursement for small	<b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Payments for both inpatient acute care and swing	<b>Rural-Relevant Measures:</b> Medicare, operating, and total profit margins; days	Relative to eligible non-participant hospitals, both new and continuing

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
Years active: 2004-present	<p><b>Setting:</b> Small, rural hospitals</p> <p><b>Patient Population:</b> Medicare beneficiaries receiving inpatient care</p>	<p>rural hospitals that are too large to be CAHs</p> <p><b>Eligibility Criteria:</b> Located in rural area; fewer than 51 beds; maintain a 24-hour ED; be ineligible for designation as a CAH</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Participation:</b> Under the most recent authorization, hospitals from any state could participate, but those in the 20 least densely populated areas were given priority. As of Interim Report Two (2016-2016), there were 12 new hospitals and 17 continuing hospitals.</p>	bed services are equal to the lesser of two values: current year costs or the hospital's target amount.	<p>cash on hand; long-term debt to capitalization ratio; debt-service coverage ratio; ratio of salaries to net patient revenue; hospital full-time employees per occupied bed; average age of physical plant; Medicare share of inpatient discharges and inpatient days; Medicare swing bed revenue share; additional demonstration payments</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-</b></p>	participant hospitals were largely nonprofit with higher patient volumes in somewhat higher-income areas and had older capital infrastructure than non-participant hospitals.

Model Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<b>Rural Provider Participation Challenges Addressed:</b> Reimbursement under IPPS or SNF PPS		<b>Based Payment for Rural Providers: N/A</b>  <b>Modifications to Benchmarking for Rural Providers: N/A</b>	

## **Appendix F. Summary of Model Features and Characteristics of 11 Proposals Reviewed by PTAC as of September 2020 that Include or Focus on Rural Providers in their Model Design**

The following tables provide specific details on PTAC proposal characteristics (i.e., clinical focus, providers, setting, and patient population); components relevant to rural providers (i.e., overall model design features, eligibility criteria, specific requirements for rural providers, flexibilities for rural providers, and rural provider participation challenges addressed); payment design features (i.e., financial incentives to enhance rural provider participation specifically); and performance measurement features for rural providers (i.e., rural-relevant measures, modifications to measures for rural providers, modifications to performance-based payment for rural providers, and modifications to benchmarking for rural providers) for 11 selected PTAC proposals.

Selected proposals were those that received a rating of “Meets and Deserves Priority Consideration” (one proposal) or “Meets” (eight proposals) on Criterion 7, Integration and Care Coordination, and reflect PFPMs appropriate for rural clinicians or health care delivery organizations. Also included in the tables is one proposal that did not meet Criterion 7, but included components related to facilitating transitions and coordinating care across settings; and one proposal that was found to be not applicable for Criterion 7, but included components relevant to rural providers. This criterion may be particularly relevant to rural health care. Care coordination and integration may be more challenging in rural areas, and may require innovative approaches to care delivery. The selected PTAC proposals are presented in alphabetical order by the proposal submitter’s name in three categories denoting whether the proposed models included or focused on rural providers, and whether the criteria for PFPMs established by the Secretary were found to be applicable to the proposal.

### **Overview of Methodology Used to Review the Proposals**

The following information was reviewed for each submitter’s proposal, where available: proposal and related documents, Preliminary Review Team (PRT) Report, and Report to the Secretary (RTS). Information found in these materials was used to summarize the proposals’ main themes related to encouraging rural participation and other administrative, payment, and performance measurement characteristics. The categorizations were based on the key information highlighted in these documents and are not exhaustive. Proposals may have elements of their proposed models that fall into additional categories of context, objective, functions, and payment models.

**Exhibit F1. Characteristics of PTAC PFPM Proposals that Include Rural Providers in their Model Design**

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
<p><b>American Academy of Family Physicians (AAFP)</b></p> <p><i>(Provider association/ specialty society)</i></p> <p><u>Advanced Primary Care: A Foundational Alternative Payment Model (APC-APM) for Delivering Patient-Centered, Longitudinal, and Coordinated Care</u></p> <p>Recommended for limited-scale testing, 12/19/2017</p>	<p><b>Clinical Focus:</b> Primary Care</p> <p><b>Providers:</b> All physicians with a primary specialty of family medicine, general practice, geriatric medicine, pediatric medicine, or internal medicine</p> <p><b>Setting:</b> Primary care practices</p> <p><b>Patient Population:</b> PCPs' patient panels</p>	<p><b>Overall Model Design Features:</b> Primary care medical homes work closely with patients' other health care providers to coordinate and manage care transitions, referrals, and information exchange.</p> <p><b>Eligibility Criteria:</b> To account for differences in rural practice patterns, E&amp;M visits used for attribution can be provided in multiple settings, not only ambulatory and/or office-based settings.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Applicable to physicians who</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Appropriate care for diabetes, preventive screenings, medication reconciliation, depression remission</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		are employed or independent		
<p><b>American Academy of Hospice and Palliative Medicine (AAHPM)</b></p> <p><i>(Provider association/specialty society)</i></p> <p><u>Patient and Caregiver Support for Serious Illness (PACSSI)</u></p> <p>Recommended for limited-scale testing, 3/26/2018</p>	<p><b>Clinical Focus:</b> Serious illness and palliative care</p> <p><b>Providers:</b> Palliative care teams (PCT)</p> <p><b>Setting:</b> Inpatient; outpatient; other palliative care settings</p> <p><b>Patient Population:</b> Patients with serious illness</p>	<p><b>Overall Model Design Features:</b> Two-track structure: Payment Incentives or Shared Savings and Shared Risk</p> <p><b>Eligibility Criteria:</b> Capability to perform assessments and delivery services through interdisciplinary team; capability to respond on 24/7 basis to manage issues associated with patient’s health conditions and functional limitations (may use telehealth)</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Non-billing clinicians can be included on the PCT. Telehealth can be used to deliver more efficient care.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Up-front payments allow for “robust delivery of needs- and preference-based palliative care services to patients”</p>	<p><b>Rural-Relevant Measures:</b> Percentage of patients who died and did not have any days in an ICU during the 30 days before death</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		<p><b>Rural Provider Participation Challenges</b>  <b>Addressed:</b> Model is designed to be accessible to rural providers who may not be able to participate in models with a higher level of risk.</p>		
<p><b>American College of Emergency Physicians (ACEP)</b>   <i>(Provider association/ specialty society)</i>   <u>Acute Unscheduled Care Model (AUCM): Enhancing Appropriate Admissions</u>   Recommended for implementation, 09/06/2018</p>	<p><b>Clinical Focus:</b> Emergency department (ED) services   <b>Providers:</b> ED physicians   <b>Setting:</b> ED   <b>Patient Population:</b> Patients with qualifying ED visits</p>	<p><b>Overall Model Design Features:</b> The proposal calls for facilitating appropriate discharge, informing patients of treatment options, managing unscheduled care episodes by protocol, and arranging post-discharge home visits.   <b>Eligibility Criteria:</b> Eligible clinical staff include ED physicians, physician assistants, nurse practitioners, clinical nurse specialists, and clinical social workers. Although not designed for rural providers,</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Percentage of eligible cases where an unscheduled ED revisit, hospitalization, or death did not occur within 30 days, compared to the prior reference period   <b>Modifications to Measurement for Rural Providers:</b> N/A   <b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p>



Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		<p>the model can be implemented in rural hospitals and CAHs.</p> <p><b>Specific Requirements for Rural Providers:</b> Rural hospitals would have to focus on appropriate transfers to other facilities.</p> <p><b>Flexibilities for Rural Providers:</b> Model can be integrated into other APMs, and can be used regardless of employment model.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p><b>Modifications to Benchmarking for Rural Providers:</b> N/A; performance is benchmarked at the facility level so that measures of impact are measurable and actionable.</p>
<p><b>The American College of Surgeons (ACS)</b></p> <p><i>(Provider association/ specialty society)</i></p> <p><u>The ACS-Brandeis Advanced</u></p>	<p><b>Clinical Focus:</b> Cross-clinical focus</p> <p><b>Providers:</b> Single/multispecialty practices; groups of small provider practices</p>	<p><b>Overall Model Design Features:</b> The proposed episode model is based on shared accountability, integration, and care coordination as fundamental building blocks. The episode grouper, a software algorithm that organizes claims data into episodes of</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Tobacco screening and cessation intervention, screening for high blood pressure and follow-up documented, unplanned hospital readmission within 30 days of principal procedure</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
<p><u>Alternative Payment Model (APM)</u></p> <p>Recommended for limited-scale testing, 4/11/2017</p>	<p><b>Setting:</b> Inpatient, outpatient, ambulatory</p> <p><b>Patient Population:</b> Broad (includes 100+ conditions or procedures)</p>	<p>care, automatically identifies most of the clinicians who are participating in the care for a patient during a defined episode of care.</p> <p><b>Eligibility Criteria:</b> MIPS-eligible clinicians</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Rural providers can join with other providers under the umbrella of a new corporate entity or convener group.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>
<p><b>Avera Health (Avera)</b></p> <p><i>(Regional/local multispecialty)</i></p>	<p><b>Clinical Focus:</b> Primary care (geriatricians) in skilled nursing facilities (SNFs)</p>	<p><b>Overall Model Design Features:</b> Telemedicine and multidisciplinary team allow expertise to be shared over a wide geography.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Performance-based payment allows for smaller practices who may not be able to</p>	<p><b>Rural-Relevant Measures:</b> Percentage of short-stay residents who have had an outpatient ED visit, SNF</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
<p><i>practice or health system)</i></p> <p><u>Intensive Care Management in Skilled Nursing Facility Alternative Payment Model (ICM SNF APM)</u></p> <p>Recommended for implementation, 3/27/2018</p>	<p><b>Providers:</b> Geriatrician Care Teams (GCTs)</p> <p><b>Setting:</b> SNFs and NFs</p> <p><b>Patient Population:</b> SNF Residents</p>	<p><b>Eligibility Criteria:</b> Dually eligible beneficiaries are eligible for this model. Participants would be expected to carry out geriatric care management activities (e.g., development of care plans for high-risk residents, medication management in coordination with the PCP, behavioral health support, advance care planning, medication reconciliation, and transitional care follow-up) and provide timely access to care (i.e., 24/7 telemedicine access to a physician or advance practice provider [APP] on the GCT who has real-time access to the resident’s medical records and real-time provider response to a resident’s change in health status).</p>	<p>“weather the financial risk” in models with shared losses.</p>	<p>30-day all-cause readmission measure, percentage of long-stay residents who received an antianxiety or hypnotic medication, percent of short-stay residents who are newly administered antipsychotic medication</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A; measures are sourced from Medicare Care Compare data for nursing homes, which excludes low-volume providers from measurement.</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		<p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Smaller practices can increase their participation slowly over time as they recruit partner nursing facilities. Telemedicine allows for sharing expertise over wide geography.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> To implement telemedicine infrastructure in rural practices, there are several federal grant programs that can provide financial assistance.</p>		<p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>
<p><b>Icahn School of Medicine at Mount Sinai (Mt. Sinai)</b></p> <p><i>(Academic institution)</i></p>	<p><b>Clinical Focus:</b> Inpatient services in home setting</p> <p><b>Providers:</b> Physicians; HaH Plus providers</p>	<p><b>Overall Model Design Features:</b> Multidisciplinary care around an acute care event; goal of reducing complications and readmissions</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Considering modifications to the payment methodology, such as lower stop-loss/stop-gain levels or upside-</p>	<p><b>Rural-Relevant Measures:</b> Inpatient readmissions, post-acute ED visits, medication documentation,</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
<p><u>"HaH-Plus" (Hospital at Home-Plus): Provider-Focused Payment Model</u></p> <p>Recommended for implementation, 9/17/2017</p>	<p><b>Setting:</b> Patient home</p> <p><b>Patient Population:</b> Eligible patients in one of 44 diagnosis-related groups (DRGs) for acute conditions</p>	<p><b>Eligibility Criteria:</b> Targeted toward involving physicians and nurse practitioners. Core services include physician and nurse practitioner services in the home; registered nurse services in the home; social work throughout the entire episode; community paramedics for urgent assessments in the home; physical, occupational, and speech therapy as needed to preserve functional status; home health aide support for activities of daily living; and administrative support and program oversight.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Flexibility to accommodate non-participating physician consultants, using</p>	<p>only risk to test the PFPM in smaller practices</p>	<p>medication reconciliation</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		<p>hospitalists if physicians in home care are scarce, and leveraging telehealth</p> <p><b>Rural Provider Participation Challenges Addressed:</b> To achieve critical mass of patient, services, staff, propose maximizing intake hours by staggering staff hours and developing policies (e.g., stocking own medications) for services dependent on vendors with delivery limitations; instituting HaH at Night, recruiting patients after hours and holding them in the ED or observation unit until the morning when home services can more readily be arranged; expanding the range of services provided; having program variants and flexibility in the payment model.</p>		

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
<p><b>Personalized Recovery Care (PRC)</b></p> <p><i>(Regional/local single specialty practice)</i></p> <p><u>Home Hospitalization: An Alternative Payment Model for Delivering Acute Care in the Home</u></p> <p>Recommended for implementation, 3/26/2018</p>	<p><b>Clinical Focus:</b> Inpatient services in home setting</p> <p><b>Providers:</b> Admitting physician at facility receiving PRC payments; On-Call Physician; Recovery Care Coordinators</p> <p><b>Setting:</b> Patient home</p> <p><b>Patient Population:</b> Commercial and Medicare Advantage patients with acute conditions, based on approximately 150 DRGs</p>	<p><b>Overall Model Design Features:</b> Hospital-level care being received at home mitigates risk to patients that typically occurs upon discharge from acute care facility.</p> <p><b>Eligibility Criteria:</b> Commercial and Medicare Advantage patients meeting clinical requirements; model applies to many physicians and eligible clinical professionals</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Network approach may reduce concerns with adequate patient volume</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Percentage of episodes with follow-up PCP appointment scheduled within seven days, percentage of episodes with medication reconciliation</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		without unnecessarily admitting patients.		
<p><b>Renal Physicians Association (RPA)</b></p> <p><i>(Provider association/specialty society)</i></p> <p><u>Incident ESRD Clinical Episode Payment Model</u></p> <p>Recommended for implementation, 12/18/2017</p>	<p><b>Clinical Focus:</b> End-stage renal disease (ESRD)</p> <p><b>Providers:</b> Nephrologists, PCPs</p> <p><b>Setting:</b> Dialysis centers</p> <p><b>Patient Population:</b> Patients with chronic condition (incident ESRD)</p>	<p><b>Overall Model Design Features:</b> Condition-specific, episode-of-care payment model (Clinical Episode Payment—CEP) for incident dialysis patients</p> <p><b>Eligibility Criteria:</b> Medicare beneficiaries with ESRD requiring transition to dialysis therapies; nephrologists and nephrology groups of all sizes, in rural and non-rural areas</p> <p><b>Specific Requirements for Rural Providers:</b> This CEP requires little additional infrastructure creation that renders it feasible in rural regions.</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Advance care planning, home dialysis percentage</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>



Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		<p><b>Rural Provider Participation Challenges Addressed:</b>  Physician-provided, Medicare-covered services are reimbursed as they have been traditionally, under the current physician fee schedule payment methodology.</p>		

Exhibit F2. Characteristics of PTAC PFPM Proposals that Focus on Rural Providers in their Model Design

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
<p><b>Jean Antonucci, MD (Dr. Antonucci)</b></p> <p><i>(Independent individual)</i></p> <p><u>An Innovative Model for Primary Care Office Payment</u></p> <p>Recommended for limited-scale testing, 9/6/2018</p>	<p><b>Clinical Focus:</b> Primary care</p> <p><b>Providers:</b> Primary care providers, nurse practitioners</p> <p><b>Setting:</b> Primary care practices</p> <p><b>Patient Population:</b> Medicare beneficiaries</p>	<p><b>Overall Model Design Features:</b> Applies features of the Patient-Centered Medical Home model to a capitation model for outpatient services</p> <p><b>Eligibility Criteria:</b> Any primary care physician or independent nurse practitioner could participate, irrespective of practice size or geographic restrictions.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Patient panel sizes would be limited to no more than 1,500 patients per physician; thus, under the proposed</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Patient-reported experience with care</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		model, small practices would have the resources to expand, and all practices would have the resources to provide e-visits and telehealth.		
<p><b>The University of New Mexico Health Sciences Center (UNMHSC)</b></p> <p><i>(Academic institution)</i></p> <p><u>ACCESS Telemedicine: An Alternative Healthcare Delivery Model for Rural Emergencies</u></p> <p>Recommended for implementation, 9/16/2019</p>	<p><b>Clinical Focus:</b> Cerebral emergent care; telemedicine</p> <p><b>Providers:</b> Neurologists and neurosurgeons; providers in rural and community systems</p> <p><b>Setting:</b> Inpatient; outpatient; or emergency department</p> <p><b>Patient Population:</b> Patients with neurological emergencies</p>	<p><b>Overall Model Design Features:</b> Rural EDs can consult neurologists via tele-consultation and assess patients' condition when they present at the hospital ED. The model reduces costs in hospital transfers and ambulatory medicine.</p> <p><b>Eligibility Criteria:</b> Attending physicians at EDs in medically underserved areas</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> N/A</p> <p><b>Rural Provider Participation Challenges Addressed:</b></p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> By keeping more patients at their own facility to continue and bill for treatment, the rural hospitals are able to experience economic gains that significantly outweigh consulting service costs.</p>	<p><b>Rural-Relevant Measures:</b> Average cost savings per patient from transportation, average cost savings per patient from improved health, inpatient admission rate, imaging results for acute stroke patients within 45 minutes, timeliness of emergency medicine care, hospital-wide all-cause unplanned readmissions, patient satisfaction with telehealth</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		<p>Rural and underserved community hospitals cannot employ full-time neurology specialists. Under the model, these facilities have access to neurological specialists via telehealth. The model also reduces up-front cost burden by using a payment model that requires rural hospitals to pay only for service on a per-episode basis, and reimburses neurologists and neurosurgeons at the fair market value for their services provided.</p>		<p><b>Modifications to Performance-Based Payment for Rural Providers: N/A</b></p> <p><b>Modifications to Benchmarking for Rural Providers: N/A</b></p>

**Exhibit F3. Characteristics of Other PTAC Proposals that Focus on Rural Providers in their Model Design**

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
<p><b>Mercy Accountable Care Organization (Mercy)</b></p> <p><i>(Regional/local multispecialty practice or health system)</i></p> <p><a href="#">Annual Wellness Visit Billing at Rural Health Clinics (RHCs)</a></p> <p>12/18/2017: The criteria for PFPMs established by the Secretary are not applicable to this proposal</p>	<p><b>Clinical Focus:</b> Primary/preventive care</p> <p><b>Providers:</b> Rural health clinic (RHC) providers</p> <p><b>Setting:</b> Outpatient</p> <p><b>Clinical Focus:</b> Primary care</p> <p><b>Patient Population:</b> Medicare beneficiaries</p>	<p><b>Overall Model Design Features:</b> Improve preventive care screening, increase the number of Medicare Annual Wellness Visits (AWVs) delivered to rural beneficiaries, and reduce burden on physicians. Provide a separate payment for this service.</p> <p><b>Eligibility Criteria:</b> RHCs</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Relax Medicare physician supervision rules in this setting to allow non-practitioners including Registered Nurses (RNs) to provide these newly separately paid AWV services without the involvement of a physician or non-physician practitioner.</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Beneficiaries Utilizing Free Preventive Services</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers
		<p><b>Rural Provider Participation Challenges Addressed:</b>            Inability of RHCs to receive reimbursement for the AWW in conjunction with another service provided on the same day; and requirement that a patient be seen by an RHC practitioner (physician, nurse practitioner, physician assistant, certified nurse midwife, clinical psychologist, or certified social worker).</p>		

## **Appendix G. Summary of Model Features and Characteristics Related to Rural Providers' Participation in Other Federal Programs**

The following table provides specific details on the Hospital-Acquired Condition Reduction Program (HACRP), Hospital Readmissions Reduction Program (HRRP), the Hospital Value-Based Purchasing Program (Hospital VBP), and the Medicare Shared Savings Program (MSSP), including characteristics (i.e., clinical focus, providers, setting, and patient population); components relevant to rural providers (i.e., overall program design features, eligibility criteria, specific requirements for rural providers, flexibilities for rural providers, characteristics of rural provider participation, and rural provider participation challenges addressed); payment design features (i.e., financial incentives to enhance rural provider participation specifically); performance measurement features for rural providers (i.e., rural-relevant measures, modifications to measures for rural providers, modifications to performance-based payment for rural providers, and modifications to benchmarking for rural providers); and lessons learned related to rural provider participation. The selected programs are presented in alphabetical order by program name.

### **Overview of Methodology Used to Review the Selected Federal Programs**

The available information on each of the four selected federal programs' summary pages on the CMS website was reviewed, in addition to financial operating and performance measurement methodologies, informational webinars, summaries, fact sheets, and press releases. Information found in these materials was used to summarize the programs' main themes related to encouraging rural participation and other administrative, payment, and performance measurement characteristics. The categorizations were based on the key information highlighted in these documents and are not exhaustive. Programs included in the table reflect value-based programs for which rural clinicians or health care delivery organizations are eligible. The selected programs may have elements that fall into additional categories of context, objective, functions, and payment programs.

**Exhibit G1. Characteristics of Other Federal Programs that Include Rural Providers in their Model Design**

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
<p><b>Hospital-Acquired Condition Reduction Program (HACRP)</b></p> <p><i>Ongoing</i></p> <p>Years active: 2014-present</p>	<p><b>Clinical Focus:</b> Hospital-acquired conditions</p> <p><b>Providers:</b> N/A</p> <p><b>Setting:</b> Inpatient hospitals</p> <p><b>Patient Population:</b> Medicare FFS beneficiaries</p>	<p><b>Overall Model Design Features:</b> Medicare value-based purchasing program that reduces payments to hospitals based on how they perform on measures of hospital-acquired conditions</p> <p><b>Eligibility Criteria:</b> Minimum number of discharges for quality measure calculation (e.g., for the patient safety composite measure, must have one or more component patient safety indicator [PSI] measures with at least 25 eligible discharges or seven or more component PSI measures with at least three eligible discharges each). Excludes CAHs, rehabilitation hospitals and units, long-term care hospitals (LTCHs), psychiatric hospitals and</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Patient safety and adverse events, central line-associated bloodstream infection (CLABSI), catheter-associated urinary tract infection (CAUTI), surgical site infection (SSI) for abdominal hysterectomy and colon procedures, methicillin-resistant Staphylococcus aureus (MRSA) bacteremia, Clostridium difficile Infection (CDI)</p>	<p>Hospitals that served higher proportions of racial/ethnic minority patients or low socioeconomic (SES) status patients, or received high Disproportionate Share Hospital (DSH) payments, had higher odds of receiving a penalty.<sup>476</sup></p>



Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>units, children’s hospitals, PPS-exempt cancer hospitals, Veterans Affairs (VA) hospitals, short-term acute care hospitals in U.S. territories, and religious nonmedical health care institutions.</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> Extraordinary Circumstances Exception (ECE) and IPPS Measure Exception<sup>lxvii</sup></p> <p><b>Rural Participation:</b> Although rural IPPS hospitals can participate, participant hospitals are disproportionately urban (62 percent of urban hospitals versus 39 percent of rural hospitals).<sup>475</sup></p>		<p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> N/A</p>	

<sup>lxvii</sup> Hospitals are exempt from the CLABSI and CAUTI measures if they have no applicable locations for the measures (e.g., no ICUs or adult or pediatric medical wards, surgical wards, or medical/surgical wards). Hospitals are exempt from the SSI measure if they perform a combined total of nine or fewer abdominal hysterectomies and specified colon surgeries in the calendar year before the year for which they are requesting a reporting exemption.

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<b>Rural Provider Participation Challenges Addressed:</b> N/A			
<b>Hospital Readmissions Reduction Program (HRRP)</b>  <i>Ongoing</i>  Years Active: 2012-present	<b>Clinical Focus:</b> Hospital readmissions  <b>Providers:</b> N/A  <b>Setting:</b> Inpatient hospitals  <b>Patient Population:</b> Medicare FFS beneficiaries	<b>Overall Model Design Features:</b> Medicare value-based purchasing program that encourages hospitals to improve communication and care coordination to better engage patients and caregivers in discharge plans and, in turn, reduce avoidable readmissions  <b>Eligibility Criteria:</b> All IPPS hospitals, excluding CAHs; hospitals must have a minimum of 25 cases per applicable condition to have an excess readmission ratio calculated.  <b>Specific Requirements for Rural Providers:</b> N/A  <b>Flexibilities for Rural Providers:</b> N/A	<b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A	<b>Rural-Relevant Measures:</b> Condition or procedure-specific 30-day risk-standardized unplanned readmission measures for acute myocardial infarction (AMI), COPD, heart failure (HF), pneumonia, coronary artery bypass graft (CABG) surgery, and elective primary total hip arthroplasty and/or total knee arthroplasty (THA/TKA)  <b>Modifications to Measurement</b>	The methodology was revised in FY 2019 to avoid disproportionately penalizing hospitals that serve vulnerable and safety net populations.

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p><b>Rural Participation:</b> Although rural IPPS hospitals can participate, participant hospitals are disproportionately urban (65 percent of urban hospitals versus 40 percent of rural hospitals)<sup>477</sup></p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p><b>for Rural Providers:</b> CMS' updated methodology calculates the payment adjustment factor using a stratified methodology, assigning hospitals to one of five peer groups for comparison based on the hospital's portion of dual eligible beneficiaries (beneficiaries that are eligible for Medicare and Medicaid).</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p>	

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
				Modifications to Benchmarking for Rural Providers: N/A	
<p><b>Hospital Value-Based Purchasing (<u>Hospital VBP</u>) Program</b></p> <p><i>Ongoing</i></p> <p>Years Active: 2012-present</p>	<p><b>Clinical Focus:</b> Hospital quality</p> <p><b>Providers:</b> N/A</p> <p><b>Setting:</b> Inpatient hospitals</p> <p><b>Patient Population:</b> Medicare FFS beneficiaries</p>	<p><b>Overall Model Design Features:</b> Rewards acute care hospitals with incentive payments for the quality of care provided in the inpatient hospital setting; adjusts payments to hospitals under the IPPS based on the quality of care they deliver</p> <p><b>Eligibility Criteria:</b> All IPPS hospitals, excluding CAHs</p> <p><b>Specific Requirements for Rural Providers:</b> N/A</p> <p><b>Flexibilities for Rural Providers:</b> ECE</p> <p><b>Rural Participation:</b> Although rural IPPS hospitals can participate, participant hospitals are</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> N/A</p>	<p><b>Rural-Relevant Measures:</b> Mortality and complications, health care-associated infections, patient experience with care</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking</b></p>	<p>In FY 2019, rural hospitals had a higher average total performance score relative to urban hospitals and, subsequently, a higher than average payment adjustment.</p>

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>disproportionately urban (59 percent of urban hospitals versus 36 percent of rural hospitals)<sup>478</sup></p> <p><b>Rural Provider Participation Challenges Addressed:</b> N/A</p>		<p><b>for Rural Providers:</b> N/A</p>	
<p><b>Medicare Shared Savings Program (MSSP)</b></p> <p><i>Ongoing</i></p> <p>Years Active: 2012-present</p>	<p><b>Clinical Focus:</b> Total care</p> <p><b>Providers:</b> Providers and suppliers (e.g., physicians, hospitals, and others involved in patient care) that create an ACO</p> <p><b>Setting:</b> Broad</p> <p><b>Patient Population:</b> Medicare FFS beneficiaries</p>	<p><b>Overall Model Design Features:</b> Offers providers and suppliers (e.g., physicians, hospitals, and others involved in patient care) an opportunity to create an ACO that agrees to be held accountable for the quality, cost, and experience of care of an assigned Medicare FFS beneficiary population; has different participation options (tracks) that allow ACOs to select an arrangement that makes the most sense for their organization; an APM that promotes accountability for a</p>	<p><b>Financial Incentives to Enhance Rural Provider Participation Specifically:</b> Different tracks with varying levels of risk. AIPs are up-front payments to build infrastructure, encouraging ACOs to form in rural and underserved areas.</p>	<p><b>Rural-Relevant Measures:</b> Patient experience with care, hospital readmissions, ambulatory care sensitive condition admissions, medication reconciliation, tobacco use assessment and cessation, depression screening, colorectal cancer screening, mammography screening, blood</p>	<p>Regional adjustments to benchmarks penalize rural ACOs, which have a higher percentage of the area's Medicare beneficiaries in their plans; MSSP can give newly forming, smaller ACOs that treat patients in rural or underserved areas an on-ramp to participation by providing up-front payments that can be used to hire staff or address</p>

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>patient population, coordinates items and services for Medicare FFS beneficiaries, and encourages investment in high-quality and efficient services.</p> <p><b>Eligibility Criteria:</b> All providers or suppliers enrolled in Medicare that bill for items and services furnished to Medicare FFS beneficiaries under a Medicare billing number assigned to the taxpayer identification number (TIN) of an ACO participant in accordance with applicable Medicare regulations; must have at least 5,000 attributed Medicare FFS patients, meet all other eligibility criteria, and agree to participate for at least five years. FQHCs, RHCs, and CAHs are eligible to join an ACO under MSSP; FQHCs, RHCs, and some</p>		<p>pressure screening, recommended care for diabetes, percentage of beneficiaries whose chronic conditions are poorly controlled</p> <p><b>Modifications to Measurement for Rural Providers:</b> N/A</p> <p><b>Modifications to Performance-Based Payment for Rural Providers:</b> N/A</p> <p><b>Modifications to Benchmarking for Rural Providers:</b> Different confidence intervals to set the minimum savings rate for</p>	<p>patient-centered care needs. Growth of net patient revenue may encourage rural hospitals to remain in the program.<sup>479</sup> Downside risk can discourage providers that have less APM experience or serve rural populations from participation. Longer on-ramps with one-sided risk options may encourage rural providers to join and stay in the program.</p>

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>CAHs are eligible to become their own ACO under MSSP.</p> <p><b>Specific Requirements for Rural Providers:</b> ACOs that are formed by or include FQHCs and RHCs are required to submit attestation listing their physician national provider identifiers (NPIs) that provide direct patient primary care services (i.e., the physicians that deliver the FQHC's/RHC's primary care services). This attestation is needed to supplement their claims data as required for assignment.</p> <p><b>Flexibilities for Rural Providers:</b> The two-step assignment process may be helpful in rural areas with fewer providers. Beneficiaries will be assigned to an ACO if</p>		<p>shared savings are used in smaller and larger ACOs, improving smaller ACOs' ability to achieve shared savings.</p>	

Program Name	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Rural Providers	Payment Design Features	Performance Measurement Features for Rural Providers	Lessons Learned Related to Rural Provider Participation
		<p>they receive at least one primary care service from a physician within the ACO or if they receive a plurality of primary care services from physicians and certain non-physician practitioners (nurse practitioners, clinical nurse specialists, and physician assistants) within the ACO.</p> <p><b>Rural Participation:</b> As of January 2023, 467 CAHs and 2,240 RHCs were participating in an MSSP ACO.</p> <p><b>Rural Provider Participation Challenges Addressed:</b> Telehealth expansion</p>			



## Appendix H. Areas for Future Exploration and Research

Please note the items listed below may be better addressed through the Request for Input (RFI), Subject Matter Expert (SME) discussions or listening sessions, roundtable panel discussions, or another research approach. They are captured here for further exploration.

- What are the best approaches to measure health care system readiness and sustainability among rural providers?
- What considerations should be considered to improve rural providers' participation in APMs (for example, lower risk or one-sided risk, benchmark adjustment, additional infrastructure payments, salary support, patient privacy concerns)?
- What considerations should be made regarding economies of scale issues and the potential need for low-volume adjustments?
- Should there be a focus on specific types of rural providers in APMs (for example, CAHs, RHCs)? What is the potential impact of the new Rural Emergency Hospital provision in the Consolidated Appropriations Act (CAA) of 2021?
- What care delivery interventions are most effective in driving value-based care transformation in rural areas?
- What has been the experience regarding the development of PCMHs in rural areas? What are some lessons learned and best practices for expanding patient-centered care in rural areas?
- What financial incentives have the most potential to improve rural providers' participation in APMs?
- What kinds of payment model design features are likely to be most important for encouraging rural participation in population-based models (e.g., up-front investments, predictable revenue streams, increasing risk)?
- What considerations should be made when measuring performance (quality of care and outcomes) for rural providers? How can rural providers' performance most appropriately be linked to payment?
- Conversely, are there specific measures or types of measures that should not be used to evaluate rural providers' performance?
- Should performance measures be tailored by types of rural providers or health care services that they offer (for example, behavioral health, substance use disorder, medication reconciliation)?
- How should risk adjustment account for differences in risk factors within and across rural providers' patient populations (for example, risk factors specific to rural populations and sub-populations, such as indigenous communities)?
- What strategies are most effective for improving care coordination in rural areas, particularly in underserved areas with greater reliance on solo primary care providers and limited access to specialists and emergency care?

## Appendix I. Annotated Bibliography

Abt Associates. Evaluation of the Accountable Care Organization Investment Model Final Report; 2020. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2020/aim-final-annrpt>

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities, Trends in Rural Providers' Participation in APMs, CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Report

**Objective:** To evaluate the effect of the Accountable Care Organization Investment Model (AIM) on ACO formation, risk taking and sustainability; participant experiences; and impacts on health care.

**Main Findings:** There was a net reduction in Medicare spending throughout the AIM performance years. This reduction was not only for Medicare Parts A and B, but also Part D. Additionally, the reduction was not associated with any decreases in quality of care. Lastly, there was no specific factor that could explain the differential reductions in spending among ACOs.

**Strengths/Limitations:** Key finding passed the parallel trends test when ACOs were pooled, which gives strength to the quasi-experimental design. However, some ACOs failed individually for specific years, which limits ACO-level estimates.

**Generalizability to Medicare Population:** Strong; the paper evaluates a CMS innovation model involving Medicare ACOs, and CMS strives to have all Medicare beneficiaries aligned to an ACO by the end of the decade.

**Methods:** Quantitative and qualitative methods were used. They conducted interviews and surveys with ACO representatives, ACO physicians, and model leads. A difference-in-difference framework was used for regressions.

Abt Associates. Evaluation of the Oncology Care Model: Performance Periods 1-9. 2023. <https://innovation.cms.gov/data-and-reports/2023/ocm-evaluation-pp1-9>

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Report

**Objective:** To evaluate the Oncology Care Model (OCM)

**Main Findings:** The study found that OCM reduced total episode payments by 1.7 percent, which was driven by savings in higher-risk episodes, given the lack of change in payments for lower risk episodes. Payment reductions were largely attributable to reductions in spending on non-chemotherapy drug payments, which accounted for approximately half of the overall relative reductions generated by OCM. The OCM resulted in cumulative net losses, but greater payment reductions in more recent performance periods are beginning to generate savings sufficient to cover MEOS payments.

**Strengths/Limitations:** The difference-in-difference designs allows for more robust assertions with respect to program causal effects.

**Generalizability to Medicare Population:** Strong; the report evaluates the OCM, an APM which provides enhanced services for eligible Medicare beneficiaries.

**Methods:** The study uses a difference-in-differences evaluation approach to measure any changes over the course of the model in the comparison group or the OCM group and incorporated primary data collection, including patient surveys and case-study interviews, to evaluate OCM's impact on quality of care, patient satisfaction, and perceptions of clinical changes and quality that resulted from the model.

ACCESS Telemedicine: An Alternative Healthcare Delivery Model for Rural Emergencies. The University of New Mexico Health Sciences Center. Published February 2019. Accessed July 15, 2023.

<https://aspe.hhs.gov/sites/default/files/private/pdf/255906/ProposalUNMHSC.pdf>.

**Subtopic(s):** PTAC Proposals that Include or Target Rural Participants in Proposed Model Designs

**Type of Source:** PTAC Proposal

**Objective:** To describe expansion of the ACCESS Telemedicine model to include additional specialties beyond emergency care for patients with cerebral conditions.

**Main Findings:** The ACCESS Telemedicine model aims to impact patients living in geographically rural and economically disparate areas in need of emergent care. The model addresses barriers related to geographic proximity and a limited pool of specialists by providing rural providers consulting services through the use of telemedicine technology.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Strong; the ACCESS Telemedicine program was funded by CMS and proposed to become an alternative physician-focused payment model for Medicare patients.

**Methods:** N/A

Albright BB, Lewis VA, Ross JS, Colla CH. Preventive Care Quality of Medicare Accountable Care Organizations: Associations of Organizational Characteristics With Performance. *Medical Care*. 2016;54(3):326-335. doi:10.1097/MLR.0000000000000477

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To develop composite measures of preventive care quality and connect these measures to features of Medicare ACOs.

**Main Findings:** Upfront investment in ACOs increased preventive care quality performance. Vaccine and cancer screening performance among ACOs is affected more by organizational structure and characteristics than annual wellness exam performance. Disease prevention performance was associated with greater electronic health record capabilities, a larger primary care workforce, fewer minority beneficiaries, and the inclusion of a hospital.

**Strengths/Limitations:** Quality data was available from the full population of Medicare ACOs, but the sample size of survey data was limited. Additionally, the cross-sectional design limits conclusions, especially since ACOs may be in different stages of development.

**Generalizability to Medicare Population:** Strong; the paper investigates preventive care in Medicare ACOs, which is important to the Medicare population, since CMS strives to have all Medicare beneficiaries aligned to an ACO by the end of the decade.

**Methods:** They use a cross-sectional design, data linking, exploratory factor analysis, and regressions.

American College of Emergency Physicians. Freestanding Emergency Departments. April 2020.

<https://www.acep.org/patient-care/policy-statements/freestanding-emergency-departments>

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Policy statement

**Objective:** To explain the context behind freestanding emergency departments and promote the policy direction backed by the American College of Emergency Physicians.

**Main Findings:** There are two types of freestanding emergency departments: hospital outpatient departments and independent freestanding emergency centers. The American College of Emergency Physicians believes that states should have regulations for freestanding emergency departments, with the implication that these regulations must be followed before

there is reimbursement from Medicare, Medicaid, and third-party payers. The American College of Emergency Physicians believes that these regulations should be similar to those of hospital-based emergency department. Some of the proposed regulations include providing 24/7 availability, staffing departments appropriately, following the intent of EMTALA, and facilitating transfer of care.

**Strengths/Limitations:** This policy statement is clear and concise. It provides straightforward actions and direction. However, the rationale behind each claim is limited. There is no evidence linked that supports the organization's arguments.

**Generalizability to Medicare Population:** Weak; Medicare is only mentioned as a payment method that should be accepted once freestanding emergency departments adhere to regulations that states ought to set.

**Methods:** Methods are not described.

American Hospital Association. AHA Report: Rural hospital closures threaten patient access to care. September 2022. <https://www.aha.org/news/headline/2022-09-08-aha-report-rural-hospital-closures-threaten-patient-access-care>

**Subtopic(s):** Key Highlights, Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients, Challenges Affecting Rural Patients and Providers

**Type of Source:** Report

**Objective:** To explain the current landscape of rural hospitals and promote sustainable solutions.

**Main Findings:** Recently, there has been a large increase in rural hospital closures, which is a significant health equity concern. Rural hospitals struggle with issues such as poor patient volume/health, low reimbursement rates, and staffing shortages, all of which were amplified even further by the COVID-19 pandemic. To help rural hospitals overcome these issues, the American Hospital Association promotes solutions such as Medicaid expansion, partnerships, relief from outdated regulations, and extending to MDH program.

**Strengths/Limitations:** This article is clear and provides significant background. However, it is not based on original research.

**Generalizability to Medicare Population:** Weak; Medicare is only mentioned in the context of its low reimbursement rates, which are contributing to low revenue for rural hospitals.

**Methods:** Methods are not described, but there is evidence of a literature review.

Asche K. *The State of Rural Minnesota, 2021*. Center for Rural Policy and Development; 2021. <https://www.ruralmn.org/wp-content/uploads/2021/12/State-of-rural-2021-1.pdf>

**Subtopic(s):** Appendix C. Data Definitions of Rural

**Type of Source:** Report

**Objective:** To provide a brief update on economic and demographic data pertaining to rural Minnesota.

**Main Findings:** Currently, population growth in Minnesota is concentrated in larger metropolitan-designated counties and the most urban areas of the state have seen the most significant population increases. Rural Minnesota is projected to continue losing population, and while the largest gains in earnings have occurred outside of the most urban counties, they have not been sufficient to close the wage gap between rural regions and the rest of the state.

**Strengths/Limitations:** The analysis relies on analysis of publicly available data and does not introduce independent analysis.

**Generalizability to Medicare Population:** Weak; the report does not specifically address the Medicare population.

**Methods:** Analysis of demographic and census data.

Balio CP, Apathy NC, Danek RL. Health Information Technology and Accountable Care Organizations: A Systematic Review and Future Directions. eGEMs. 2019;7(1):24. doi:10.5334/egems.261

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To conduct a systematic review of research concerning the intersection between accountable care organizations and health information technology and provide recommendations for future research directions.

**Main Findings:** The formation of accountable care organizations is associated with higher information technology capabilities. However, research on the association between information technology capabilities and accountable care organization performance is mixed. Future research should focus on quasi-experimental research designs, quality and process outcomes, dataset development, and data linkage.

**Strengths/Limitations:** This article seeks to answer a clear and specific research question. However, the lack of quantitative analysis limits this research.

**Generalizability to Medicare Population:** Moderate; the paper investigates ACOs, and CMS strives to have all Medicare beneficiaries aligned to an ACO by the end of the decade. However, the paper does not directly discuss implications to the Medicare population.

**Methods:** They utilized both PubMed and MEDLINE and then conducted snowball reference reviews. They used a qualitative analytic approach.

Benjenk I, Franzini L, Roby D, Chen J. Disparities in Audio-only Telemedicine Use Among Medicare Beneficiaries During the Coronavirus Disease 2019 Pandemic. Medical Care. 2021;59(11):1014-1022. doi:10.1097/MLR.0000000000001631

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To determine whether being offered audio-only telemedicine during the COVID-19 pandemic corresponded to patient access to technology or behavior of providers.

**Main Findings:** Among those offered telemedicine during the COVID-19 pandemic, 35 percent were offered audio-only telemedicine. Dual eligible, non-primary English speaking, non-metro, Black, and Hispanic Medicare beneficiaries were most likely to be exclusively offered audio-only telemedicine. This implies that the disparities were not only impacted by beneficiary access to technology, but also provider behavior. The implications of this disparity are not fully known since there has not been adequate research on the effect of audio-only telemedicine.

**Strengths/Limitations:** The research question is very relevant. However, the survey was entirely patient-reported and could not break down patients by reason for visit nor detect community level characteristics.

**Generalizability to Medicare Population:** Strong; this study was conducted among Medicare beneficiaries because Medicare granted coverage for audio-only telemedicine toward the beginning of the COVID-19 pandemic. The article discusses whether this coverage should outlive the pandemic.

**Methods:** They utilized a cross-sectional analysis of surveys and incorporated multivariable logistic models.

Bhatnagar S, Harris J, Hartnett T, et al. The Impact of COVID-19 on the Rural Health Care Landscape. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>

**Subtopic(s):** Key Highlights, Trends in Rural Providers' Participation in APMs, CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Report

**Objective:** To explain the current context of rural hospitals after COVID-19 and provide policy recommendations for moving forward.

**Main Findings:** Rural hospitals have significant financial issues. Funding was helpful during the COVID-19 pandemic, but the end of the Public Health Emergency may leave rural hospitals in a poor financial situation. This has the potential to increase rural hospital closures, which could have dire implications for health equity. Policy recommendations include immediate stabilization for rural hospitals, strengthening of the Rural Emergency Hospital model, incentives for an adequate rural health care workforce, and access to virtual care in rural communities.

**Strengths/Limitations:** The research is evidence-based and collected from interviews. However, there is no quantitative analysis, and interviewees could have bias.

**Generalizability to Medicare Population:** Moderate; Medicare is mostly mentioned in the context of its low reimbursement rates, which are contributing to low revenue for rural hospitals. Medicare is also mentioned in the context of other proposed solutions.

**Methods:** They conducted interviews with rural hospital leaders from eight states.

Blue Cross Blue Shield of Massachusetts. Expanding the scope of value-based payment. 2019 Annual Report. Published 2019. Accessed July 18, 2023. <https://aboutus.bluecrossma.com/annual-report-2019/power-of-partnerships/expanding-the-scope-of-value-based-payment>

**Subtopic(s):** Leveraging Financial Incentives to Improve Rural Health Care

**Type of Source:** Report

**Objective:** To describe the impact of the Alternative Quality Contract (AQC) on improving quality of care, health outcomes, and curbing the rate of medical spending, specifically citing Firefly Health as an example.

**Main Findings:** AQCs resulted in lower medical claim amounts than physician groups not using an AQC. Furthermore, it was found that AQCs resulted in higher quality of care, specifically for the management of chronic disease. Additionally, the AQC model can now include smaller physician groups as opposed to traditionally large groups.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak; AQCs are pioneered by Blue Cross Blue Shield of Massachusetts, a private payer.

**Methods:** N/A

Burns M, Bailit M. *Alternative Payment Models and the Case of Safety Net Providers in Massachusetts*. Blue Cross Blue Shield of Massachusetts Foundation; 2015. Accessed August 3, 2023. <https://bailit-health.com/publications/2015-0318-bhp-bcbs-apm.pdf>

**Subtopic(s):** Key Highlights, CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Report

**Objective:** To provide a comprehensive review of the landscape of payment reform in Massachusetts and its effects on safety net providers.

**Main Findings:** Use of global payments is expanding in Massachusetts in both the commercial and the Medicaid managed care market. Safety net providers in Massachusetts newly entering into global payment arrangements have needed to make internal investments in clinical and

business operations, typically using internal funds and some publicly available funding to build care coordination, data, and patient stratification structures. Supporting safety net providers could involve establishing specific learning communities, developing educational seminars, supporting data infrastructure and analytics capacities, and offering technical assistance.

**Strengths/Limitations:** The report is focused only on Massachusetts safety net providers and as such may not be generalizable to other locations or populations.

**Generalizability to Medicare Population:** Moderate; the report addresses Massachusetts payment reform efforts impacting the Medicare population, as well as the Medicaid and commercial populations.

**Methods:** Telephone and in-person interviews with Massachusetts-based payers, providers, and provider-interest organization and analysis of publicly available data on health care performance.

Casey MM, Moscovice I, McCullough J. Rural Primary Care Practices and Meaningful Use of Electronic Health Records: The Role of Regional Extension Centers: Rural Primary Care Practices and Meaningful Use. *The Journal of Rural Health*. 2014;30(3):244-251. doi:10.1111/jrh.12050

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To determine whether Regional Extension Centers are helpful in encouraging rural providers to adopt and utilize Electronic Health Records,

**Main Findings:** Overall, regional extension centers have been helpful in encouraging rural providers to adopt Electronic Health Records. However, rural providers still need ongoing assistance achieving “meaningful use” which must be met by 2015 to avoid reductions in Medicare physician fees schedule amounts. This is likely too short of a timeline for many rural providers, even with assistance from regional extension centers.

**Strengths/Limitations:** Both qualitative and quantitative analyses were used. Case studies were limited and not randomized.

**Generalizability to Medicare Population:** Weak; This article specifically discusses Medicare requirements for providers, but it is outdated and may now be less relevant to the Medicare population.

**Methods:** They used county-level regressions with ordinary least squares. They controlled for regional economic differences. In addition to quantitative analysis, they did two case studies and interviewed a variety of stakeholders.

Catalog of Value-Based Initiatives for Rural Providers. Rural Health Value; 2023.

<https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>

**Subtopic(s):** Trends in Rural Providers’ Participation in APMs, Driving Care Delivery Transformation in Rural Providers

**Type of Source:** Catalog

**Objective:** To show rural leaders/communities which Department of Health and Human Services value-based programs may be available and appropriate for rural areas.

**Main Findings:** There are a plethora of programs available for rural communities. Each listing includes the program name, summary, eligibility requirements, timeline, funding, current rural participation, and website information. Some examples of listed programs are Accountable Care Organization Realizing Equity, Access, and Community Health (ACO REACH), Bundled Payments

for Care Improvement Advanced (BPCI Advanced), and Comprehensive Care for Joint Replacement (CJR).

**Strengths/Limitations:** The catalog is very thorough and updated regularly. The breadth of programs could be overwhelming for smaller rural provider groups.

**Generalizability to Medicare Population:** Moderate; many of the models listed are Medicare innovation models.

**Methods:** This is a summary of available information on the listed programs using publicly available details from CMMI.

Centers for Medicare & Medicaid. Advancing Rural Health Equity: Fiscal Year 2022 Year in Review. Centers for Medicare and Medicaid Services; 2022:39. <https://www.cms.gov/files/document/advancing-rural-health-equity-11-2022.pdf>

**Subtopic(s):** Leveraging Financial Incentives to Improve Rural Health Care

**Type of Source:** Report

**Objective:** To provide a summary of everything that the Centers for Medicare and Medicaid Services (CMS) has accomplished in the past year to serve those in rural, tribal, and geographically isolated areas. **Main Findings:** CMS hopes to improve health care in rural areas in order to improve health equity. Currently, rural areas suffer from considerable health disparities, especially in cancer, heart disease, unintentional injury, suicide, stroke, and chronic lower respiratory disease. CMS has taken action to alleviate these inequities. Notable programs include the Community Health Access and Rural Transformation model, postpartum coverage expansion, and a variety of quality initiatives.

**Strengths/Limitations:** This is a thorough summary report, but it does not include significant quantitative data.

**Generalizability to Medicare Population:** Moderate; Medicare is not the focus of this report, but there is a section dedicated to programs directed at the Medicare population in rural communities.

**Methods:** This is largely a summary of relevant programs and a review of relevant literature.

Chen J, Amaize A, Barath D. Evaluating Telehealth Adoption and Related Barriers Among Hospitals Located in Rural and Urban Areas. *The Journal of Rural Health*. 2021;37(4):801-811. doi:10.1111/jrh.12534

**Subtopic(s):** Key Findings, Use of Telehealth Among Rural Patients and Providers, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To compare telehealth adoption and telehealth capabilities among hospitals located in rural and urban areas.

**Main Findings:** Rural and urban areas have significant differences in telehealth adoption. Indeed, telehealth adoption rates increase with urbanicity. Additionally, rural hospitals are less likely to have telehealth patient engagement capabilities. These include patients being able to view their health information online and electronically transfer medical information to third parties.

**Strengths/Limitations:** This research investigates specific telehealth capabilities. Limitations include measurement error, recall bias, and unobserved factors.

**Generalizability to Medicare Population:** Weak; Medicare is not mentioned.

**Methods:** They utilized state fixed effects multivariate analyses and Oaxaca decomposition.



Chernew ME, Conway PH, Frakt AB. Transforming Medicare's Payment Systems: Progress Shaped By The ACA. *Health Affairs*. 2020;39(3):413-420. doi:10.1377/hlthaff.2019.01410

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Journal article

**Objective:** To investigate whether Alternative Payment Models have been successful in generating savings without decreasing quality of care.

**Main Findings:** Determining whether Alternative Payment Models have been successful is a difficult task. Appropriate counterfactuals are hard to find, evaluation metrics can be too narrow, and concurrent health system changes make it difficult to detect impacts. Some programs have been deemed successful; indeed, ACO models have increased savings without negatively impacting quality. Other programs, like the Comprehensive Primary Care Plus program, have resulted in high expenditures without established quality improvements. Based on mixed evidence from all Alternative Payment Models, it is recommended that future models impose downside risk with caution, separate future spending targets from past performance, and focus episode-based payment models on smaller groups of conditions. Reducing the number of concurrent payment models is also recommended.

**Strengths/Limitations:** This article is helpful for looking at the big picture regarding Alternative Payment Models. However, nuances of individual models are lost in this high-level summary.

**Generalizability to Medicare Population:** Strong; this article focuses on Medicare payment models, which have the potential to impact the direction of Medicare and affect all Medicare beneficiaries.

**Methods:** They conducted a literature review and generated summaries.

Clarke MA, Skinner A, McClay J, Hoyt R. Rural health information technology and informatics workforce assessment: a pilot study. *Health Technol*. 2023;13(3):427-435. doi:10.1007/s12553-023-00750-6

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To determine the health informatics workforce needs of Nebraska critical access hospitals and use this information to develop a curriculum in health informatics.

**Main Findings:** Most hospital leaders surveyed requested more education focused on organization learning, analytical tools, interoperability, and decision support systems. Less than half of hospital leaders surveyed requested more education focused on management of health information systems and electronic health records.

**Strengths/Limitations:** The findings are clear, but the research is limited to Nebraska. Also, only the article's abstract is accessible.

**Generalizability to Medicare Population:** Weak; the article does not mention Medicare and is geographically limited.

**Methods:** They created and analyzed surveys.

Coaston A, Lee SJ, Johnson J, Hardy-Peterson M, Weiss S, Stephens C. Mobile Medical Clinics in the United States Post-Affordable Care Act: An Integrative Review. *Population Health Management*. 2022;25(2):264-279. doi:10.1089/pop.2021.0289 ;

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Journal article

**Objective:** To summarize and critique the literature on mobile medical clinics since the Affordable Care Act.

**Main Findings:** There was variation in study design, quality, location, and health needs addressed. Mobile medical clinics therefore provide care across a large area of the United States. They help in prevention, treatment, and management of chronic illnesses. By improving chronic disease management, decreasing lengths of hospital stays, and preventing emergency room visits, mobile medical clinics provide a return on investment.

**Strengths/Limitations:** This is a very relevant article, but merely 12 studies were reviewed and only the article's abstract is accessible.

**Generalizability to Medicare Population:** Weak; the article does not mention Medicare.

**Methods:** They utilized integrative review methodology, Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and the Mixed Methods Appraisal Tool (MMAT).

Cortelyou-Ward K, Atkins DN, Noblin A, Rotarius T, White P, Carey C. Navigating the Digital Divide: Barriers to Telehealth in Rural Areas. *Journal of Health Care for the Poor and Underserved*. 2020;31(4):1546-1556. doi:10.1353/hpu.2020.0116

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To discuss the barriers to telehealth access for rural communities and provide policy recommendations.

**Main Findings:** Telehealth is being adopted at a slower pace in rural areas. This is concerning because rural areas are underserved and most in need of telehealth access. This article discusses broadband access by state, state adoption of telehealth parity laws, and Interstate Medical Licensure Compacts.

**Strengths/Limitations:** Only the article's abstract is accessible, and it does not explain the results or policy recommendations.

**Generalizability to Medicare Population:** Weak; the article does not mention Medicare.

**Methods:** N/A

Cyr ME, Etchin AG, Guthrie BJ, Benneyan JC. Access to specialty healthcare in urban versus rural US populations: a systematic literature review. *BMC Health Serv Res*. 2019;19(1):974. doi:[10.1186/s12913-019-4815-5](https://doi.org/10.1186/s12913-019-4815-5)

**Subtopic(s):** Key Highlights, Challenges Affecting Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To summarize existing literature and expand upon the facilitators and barriers to accessing rural specialty health care versus urban health care in the United States.

**Main Findings:** Across the ten-dimension care access conceptual framework used, this systematic review found that the dimensions on *availability and accommodation* and *appropriateness* were most represented among the system-centric dimensions across both rural

and urban health care. The *ability to perceive* patient-centric dimension was also among the most represented dimensions overall. Additionally, four new dimensions were found, such as *government and insurance policy, health organization and operations influence, stigma, and primary care and specialist influence.*

**Strengths/Limitations:** A limitation included possible inconsistencies in the geographic designations, as rural versus urban was defined by each article's authors. Additionally, select results did not directly fit into one of the ten dimensions in the conceptual framework used.

**Generalizability to Medicare Population:** Weak; the paper does not reference Medicare specifically, however some of the rural populations receiving specialty care included senior patients.

**Methods:** Using a total of five databases, which includes CINAHL, Medline, PubMed, PsycInfo, and ProQuest Social Sciences, a systematic review of literature was conducted. The results were then organized into a ten-dimension care access conceptual framework.

Davis K, Doty MM, Shea K, Stremikis K. Health information technology and physician perceptions of quality of care and satisfaction. *Health Policy.* 2009;90(2-3):239-246.

doi:10.1016/j.healthpol.2008.10.002

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To understand the relationship between information system capacity and quality of care in health care provider offices across seven different countries.

**Main Findings:** This study found significant differences in the quality of health care between offices with low information system capacity and those with high information system capacity. Specifically, medical practices with high information system capacity were significantly better in the quality of care for patients with multiple chronic conditions. Additionally, certain health care providers with higher information system capacities experienced high satisfaction with the quality of care provided in their practices.

**Strengths/Limitations:** Some limitations include a low-response rate from select countries included in the study as well as the inability to conclude causality due to the study's cross-sectional design.

**Generalizability to Medicare Population:** Weak; the paper does not reference Medicare or Medicare beneficiaries.

**Methods:** Survey data from the 2006 Commonwealth Fund International Health Policy Survey of Primary Care Physicians; a multi-variate analysis was done on this survey data collected in seven countries.

Demeke HB, Merali S, Marks S, et al. Trends in Use of Telehealth Among Health Centers During the COVID-19 Pandemic — United States, June 26–November 6, 2020. *MMWR Morb Mortal Wkly Rep.* 2021;70(7):240-244. doi:10.15585/mmwr.mm7007a3

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Report

**Objective:** To describe the trends in the use of telehealth services among 245 Health Resources and Services Administration (HRSA)-funded health centers during a select period of the COVID-19 pandemic.

**Main Findings:** This report found a 25% decrease in the overall percentage of the weekly health care visits that used telehealth during the study period due to a decline in COVID-19 cases. The report also found that Southern and rural health centers consistently reported lower average percentages of visits using telehealth than other regions and urban health centers due to

barriers in implementing telehealth services. Majority of HRSA-funded health centers that consecutively responded to the survey were in urban settings, the Northeast, and the West. **Strengths/Limitations:** This study only included HRSA-funded health centers that consecutively reported their data, which limits its generalizability to and representation of all health centers. **Generalizability to Medicare Population:** Weak; the paper does not reference Medicare or Medicare beneficiaries. **Methods:** Data was collected from a survey, specifically the HRSA Health Center COVID-19 Survey; percentage of weekly telehealth visits were calculated among HRSA-funded health centers.

DesRoches CM, Worzala C, Joshi MS, Kralovec PD, Jha AK. Small, Nonteaching, And Rural Hospitals Continue To Be Slow In Adopting Electronic Health Record Systems. *Health Affairs*. 2012;31(5):1092-1099. doi:10.1377/hlthaff.2012.0153

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To assess the use of electronic health record (EHR) systems in U.S. hospitals from 2008 to 2011 and to describe any characteristic differences.

**Main Findings:** Utilizing data from the American Hospital Association (AHA) annual survey on health information technology, this study found increases, from 2010 to 2011, in the proportion of U.S. hospitals that utilized EHR systems. Additionally, there was an increase, from 2010-2011, in the share of U.S. hospitals using a fully complete EHR system. However, small, nonteaching, rural hospitals, specifically, faced slow rates of EHR system implementation.

**Strengths/Limitations:** Limitations of this study include a possible overestimation of the proportion of hospitals with an EHR system due to the study's methodological adjustments and the use of a broad measure of qualifying for "meaningful use." There were a few yearly changes to the AHA survey, which created difficulty in attributing changes to external causes.

**Generalizability to Medicare Population:** Strong; the study references the criteria for displaying "meaningful use" in the Medicare incentive payment program and the Medicare or Medicaid EHR incentive program.

**Methods:** Collected data via the AHA annual survey of health information technology from 2008-2011; Calculated proportions for outcome variables, using a regression model to create weights for non-response.

Devine J. Leveraging data analytics and statistical programming for rural health. In: *APHA 2021 Annual Meeting and Expo*; 2021.

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Presentation

**Objective:** To evaluate the Indiana Rural Health Association (IRHA)'s implementation of big data tools and guides as well as staff time in data analytics.

**Main Findings:** Implementing and providing guides on how to properly use and integrate R, REDcap, and GitHub in rural health care delivery. The researchers found that this change can reduce staff time in projects. Additionally, while REDcap has been completely adopted among IRHA data coordinators, R is a programming tool that is being added to increase the availability of data analysis tools.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak; the abstract does not reference Medicare or Medicare beneficiaries.

**Methods:** Mixed-methods approach to analyze the effects of using R, REDcap, and GitHub among IRHA data coordinators and project directors.

Done N, Herring B, Xu T. The effects of global budget payments on hospital utilization in rural Maryland. *Health Serv Res.* 2019;54(3):526-536. doi:10.1111/1475-6773.13162

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Journal article

**Objective:** To evaluate the results and effect of the 2010 shift to global budget payments on rural hospital utilization at the population level in Maryland.

**Main Findings:** Regarding admissions overall, the study did not find a statistically significant difference between the rural hospitals with global budget payments and the control samples. Additionally, the study results found a reduction in all outpatient visits for rural hospitals with a global budget payment system. The authors attributed this specific reduction to a significant decrease in visits not to the Emergency Department (ED).

**Strengths/Limitations:** The study could be underpowered to detect effects of policy due to the aggregation of data to the population-level. The evaluation also notes limitations in the validity of the measures of preventable utilization as such measures are solely validated based on data that is currently available. Additionally, changes in the demand for hospital utilization could have differentially affected both groups.

**Generalizability to Medicare Population:** Moderate; while this study used all payers' data, the authors note Medicare involvement, specifically with the expansion of global budget payment to all Maryland hospitals.

**Methods:** Quantitative approach; used a difference-in-differences analysis to analyze utilization data, both discretionary and non-discretionary, over time in 125 ZIP Code Tabulation Areas and two control hospital areas. The data includes measures on inpatient and outpatient care, as well as population and county-level data from different data sources.

Douglas MD, Xu J, Heggs A, Wrenn G, Mack DH, Rust G. Assessing Telemedicine Utilization by Using Medicaid Claims Data. *PS.* 2017;68(2):173-178. doi:10.1176/appi.ps.201500518

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To describe the utilization of telemedicine among Medicaid beneficiaries across different factors, such as demographics, geography, enrollment type, eligibility category, and health conditions.

**Main Findings:** There was a low utilization of telemedicine among the Medicaid enrollees studied. When telemedicine was used, most of these visits were used for assessing behavioral health. Certain groups, such as rural residents, individuals aged 45-64, white enrollees, male enrollees, managed care users, and blind, disabled, and aged groups were more likely to receive telemedicine for health care. Additionally, the variation in the use of telemedicine services among the states in this study was high.

**Strengths/Limitations:** The study could not account for certain unique telehealth modifier codes and submitted claims without telemedicine codes due to reimbursement concerns. The high variance in telemedicine utilization among states could have resulted in skewed data. Lastly, it is possible that health care providers may not have sought out reimbursement for telemedicine in specific instances, thus this would not be reflected in the study's data.

**Generalizability to Medicare Population:** Weak; the study used Medicaid claims data from Medicaid beneficiaries.

**Methods:** Quantitative analyses using 2008-2009 Medicaid claims data. A Chi-square analysis was done to compare rates of telemedicine utilization, and a one-way analysis of variance was conducted to analyze mean differences in telemedicine utilization among all subgroups.

Edmiston KD, AlZubi J. *Trends in Telehealth and Its Implications for Health Disparities*. Kansas City, MO: Center for Insurance Policy & Research, National Association of Insurance Commissioners; 2022.

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Report

**Objective:** To examine the recent developments in telehealth to describe the potential to improve health equity, implications on exacerbating health disparities, and possible regulatory interventions.

**Main Findings:** Telehealth has the most significant impact on improving access to care given the wide geographic distribution of health care providers and systems in the U.S., calling for a need for transportation. However, telehealth may also create new disparities in access to care due to the need for broadband access, technology, and digital literacy, of which many racial and ethnic populations face a lack of access. As such, solutions include the creation of stable infrastructure and educative resources to support telehealth implementation for practices to reach cost-effectiveness, provision of equipment and technical support, and reliable regulations to increase the flexibility of telehealth services.

**Strengths/Limitations:** Available research on the impact of utilizing telehealth to help alleviate health disparities is very limited, thus a larger evidence base must be created.

**Generalizability to Medicare Population:** Moderate; the report noted the use of specific telehealth interventions for Medicare beneficiaries.

**Methods:** Large literature search of the PubMed database; analysis of data on health disparities.

Erfani P, Figueroa JF, Lam MB. Reforms to the Radiation Oncology Model: Prioritizing Health Equity. *International Journal of Radiation Oncology, Biology, Physics*. 2021;110(2):328-330.

doi:10.1016/j.ijrobp.2021.01.029

**Subtopic(s):** Key Highlights, Trends in Rural Providers' Participation in APMs, CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Editorial

**Objective:** To describe the current pitfalls of the Radiation Oncology (RO) alternative payment model (APM) and outline certain reforms to alleviate the negative impact of the RO APM on select populations and providers.

**Main Findings:** The authors describe three main concerns and three potential solutions. Previous research finds that incentivizing value puts providers, who care for high-risk populations, at risk. Additionally, the RO model may create disparities in palliative radiation care. Lastly, the RO model may create barriers in access to radiation therapy in rural regions. Thus, the authors state the need to advance health equity efforts through piloting the RO model in less disease sites, including the peer review mandate in rural areas, and redefining the measurement of quality of care to properly reimburse physicians with high-risk patients.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Moderate; some populations of this RO-specific APM include Medicare beneficiaries and dual eligible beneficiaries.

**Methods:** N/A

European Network for Rural Development. Smart Villages – How to Ensure That Digital Strategies Benefit Rural Communities. 2015.

[https://ec.europa.eu/enrd/sites/default/files/enrd\\_publications/smart-villages\\_orientations\\_digital-strategies.pdf](https://ec.europa.eu/enrd/sites/default/files/enrd_publications/smart-villages_orientations_digital-strategies.pdf)

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Briefing Document

**Objective:** To describe the positive digital strategies used in Europe to benefit rural areas.

**Main Findings:** The findings of this briefing document fall into two categories: findings on overcoming digital divides in rural areas and findings on ensuring digital strategies benefit rural areas. Regarding the former, this document found the importance in creating broadband infrastructure linked to socioeconomic benefits, promoting community uptake of digital services through bottom-up initiatives, and providing educative resources to improve digital literacy. Regarding the latter collection of findings, this report concluded the importance of integrating help from varied stakeholders to support broadband infrastructure, for instance. More so, the report found the need to use local or regional staff to provide telehealth training. Lastly, to create broadband infrastructure, there must be the implementation of a digital ecosystem and shared services, coordinated governance, labs to pilot digital strategies, and digital hubs.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak; this report does not mention Medicare or Medicare beneficiaries. However, as digital literacy is addressed, select sections of this report could be relevant, especially for a senior population.

**Methods:** Used information collected from a workshop on Multilevel Strategies for Digitizing Agriculture and Rural Areas from 2018 as well as additional data from a combination of different sources, from web pages to other reports.

Families USA. Making the Most of Accountable Care Organizations (ACOs): What Advocates Need to Know. 2012. <https://familiesusa.org/wp-content/uploads/2012/01/ACO-Basics.pdf>

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Briefing Document

**Objective:** To examine the challenges advocates in ACOs may face and to provide advice on further involvement in ACOs.

**Main Findings:** This brief found that advocates should focus on verifying and ensuring that the ACO meets community needs, informs patients of participation in an ACO, and prevents from limiting choice of providers. The brief also found that advocates must ensure that the specific ACO meets measures of quality of care and ensures proper coordination of care between providers and patients. Lastly, the brief also found that advocates in ACOs can have a role in ensuring that patients and providers are the decision-makers in health care, not the insurance companies or insurance providers.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Strong; this brief is mainly about Medicare's ACO model.

**Methods:** Utilized online resources such as web pages.

Federal Communications Commission. *Fourteenth Broadband Deployment Report*; 2021.  
<https://www.fcc.gov/reports-research/reports/broadband-progress-reports/fourteenth-broadband-deployment-report>

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Report

**Objective:** To evaluate the reliability and rate of the deployment of advanced telecommunications capability to all Americans.

**Main Findings:** Advanced telecommunications capability is being deployed to all Americans in an appropriate and timely manner. The authors of this report also found that, in response to the COVID-19 pandemic, there is intending to be continued efforts and support to ensure access to broadband internet. However, there is a need to improve the deployment of advanced telecommunications capability in rural and tribal areas, specifically.

**Strengths/Limitations:** There are limitations in the Federal Communications Commission (FCC) Form 477 mobile data regarding reporting 5G deployment.

**Generalizability to Medicare Population:** Weak; no mention of Medicare or Medicare beneficiaries.

**Methods:** Used FCC Form 477 deployment data for broadband reach and to measure mobile network coverage at the geographic level; to assess such deployment in school systems, FCC utilized public data in the Connection Nation's *2020 Connect K-12 Report*.

Fontanella CA, Hiance-Steelesmith DL, Phillips GS, et al. Widening Rural-Urban Disparities in Youth Suicides, United States, 1996-2010. *JAMA Pediatrics*. 2015;169(5):466–473.

doi:10.1001/jamapediatrics.2014.3561

**Subtopic(s):** Challenges Affecting Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To describe the rural-urban disparity in US suicide mortality among adolescents and young adults.

**Main Findings:** Rural suicide rates were approximately doubled than urban suicide rates, for both genders. Furthermore, there was an increase, over time, in the rural-urban suicide gap. Additionally, across both genders and county types, the rate of change in suicide death, due to firearms, decreased, but increased for death due to hanging or suffocation.

**Strengths/Limitations:** This study did not incorporate other factors that could have varied in rural and urban areas due to a lack of access to relevant data.

**Generalizability to Medicare Population:** Weak; no mention of Medicare or Medicare beneficiaries.

**Methods:** Utilized county-level national data on mortality, later linked to the 2003 Rural-Urban Continuum Codes measure; regarding statistical analyses, the authors utilized negative binomial regression models to estimate incidence rate ratios and suicide incidence rates that were age adjusted.

Ford S, Buscemi J, Hirko K, et al. Society of Behavioral Medicine (SBM) urges Congress to ensure efforts to increase and enhance broadband internet access in rural areas. *Translational Behavioral Medicine*.

2020;10(2):489-491. doi:10.1093/tbm/ibz035

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To provide recommendations on improving access to broadband internet in rural regions.



**Main Findings:** SBM has found that there is a need for more funding and action from individual states to improve access to high-speed broadband internet for rural areas. Furthermore, SBM calls for physicians and health care providers to define what is needed to implement telehealth services and to participate in such conversations, such that it can be reflected in adjustments to policy and funding. All these changes have been recommended to occur through supporting and enhancing the National Broadband Plan legislation.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak; this report does not mention Medicare or Medicare beneficiaries.

**Methods:** Description and review of the funding and state-level implementation of broadband internet resources.

Fraze TK, Fisher ES, Tomaino MR, Peck KA, Meara E. Comparison of Populations Served in Hospital Service Areas With and Without Comprehensive Primary Care Plus Medical Homes. *JAMA Network Open*. 2018;1(5):1-7. doi:10.1001/jamanetworkopen.2018.2169

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Journal article

**Objective:** To describe the types of practices that joined Comprehensive Primary Care Plus (CPC+) program.

**Main Findings:** The study found that out of the eligible service areas, there were more practices that had one or more CPC+ practice. Areas without CPC+ practices served populations with a lower median income and higher proportion of mean uninsured residents, to name a few characteristics.

**Strengths/Limitations:** The use of secondary data sources or databases could have led to the inclusion of possible errors.

**Generalizability to Medicare Population:** Strong; CPC+ programs are used in Medicare and the study also uses data from Medicare fee-for-service enrollees.

**Methods:** Comparative cross-sectional study; used data from IMS Health Care Organization Services data.

Frequently asked questions. The Office of the National Coordinator for Health Information Technology (ONC). Published July 8, 2019. Accessed July 15, 2023. <https://www.healthit.gov/faq/what-electronic-health-record-implementation-issues-are-unique-rural-settings>.

**Subtopic(s):** Key findings, Challenges Affecting Rural Patients and Providers

**Type of Source:** Web Page

**Objective:** To address frequently asked questions (FAQs) on barriers to implementation of electronic health records (EHRs) in rural health care settings.

**Main Findings:** Several barriers to the implementation of EHRs in rural health care settings include the prohibitive cost of EHR systems, limited access to EHR technical assistance, difficulty with obtaining broadband access in rural areas, and difficulty obtaining community buy-in.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Moderate; the FAQ does not reference Medicare specifically, however understanding barriers to implementing EHRs in rural health care settings is applicable within the context of Medicare.

**Methods:** N/A

Furukawa MF, King J, Patel V, Hsiao CJ, Adler-Milstein J, Jha AK. Despite Substantial Progress In EHR Adoption, Health Information Exchange And Patient Engagement Remain Low In Office Settings. *Health Affairs*. 2014;33(9):1672-1679. doi:10.1377/hlthaff.2014.0445

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To describe the adoption of interoperable electronic health record (EHR) systems by physicians over time.

**Main Findings:** The authors found a high rate of EHR systems adoption in 2013 among office-based physicians. Nevertheless, the results also indicated an inconsistent adoption of EHR systems among solo-practicing physicians and non-primary care specialties. Additionally, electronic health information exchange (HIE) by physicians to other providers was limited.

**Strengths/Limitations:** Respondents to this survey were most likely physicians or health care practices that supported and adopted an EHR system, leading to a bias. The authors also noted a potential underestimation of the number of physicians due to survey measurement. Additionally, there was an inability to understand the amount of HIE occurring as such data was not measured. Lastly, there could have been variability in respondents' answers to the specific question on "routine use" of ensuring patient engagement.

**Generalizability to Medicare Population:** Weak; the study notes the incentive payments from the Centers for Medicare and Medicaid Services as one of the efforts to increase the implementation of electronic health record systems overall.

**Methods:** Survey data from 2009 National Ambulatory Medical Care Survey and 2009-2013 Electronic Health Records Survey; univariate descriptive statistics of collected data.

Gale JA, Croll ZT, Coburn AF. Rural Health Clinic Participation in the Merit-Based Incentive System and Other Quality Reporting Initiatives: Challenges and Opportunities. Maine Rural Health Research Center. 2018. <https://digitalcommons.usm.maine.edu/cgi/viewcontent.cgi?article=1012&context=clinics>

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Briefing Document

**Objective:** To assess the involvement of the Merit-Based Incentive Payment System (MIPS) in Rural Health Clinics (RHCs) quality reporting programs and to describe the ways in which RHCs can participate in MIPS.

**Main Findings:** This briefing document reported the challenges of RHCs participating in quality reporting, such as a lack of guidance or additional work and costs associated with such an implementation. Thus, the authors found the need to promote the adoption of electronic health record systems in RHCs, to encourage RHCs to participate in the Patient-Centered Medical Home model, adjust the current coding protocol in RHCs, and the creation of quality measures. More so, the authors have suggested the need for support and assistance in this transition.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Moderate; Rural Health Clinics provide health care for both rural Medicare and Medicaid beneficiaries, so this briefing document is not solely intended for Medicare beneficiaries.

**Methods:** Both a literature review of extensive sources and interviews.

Greenberg AJ, Haney D, Blake KD, Moser RP, Hesse BW. Differences in Access to and Use of Electronic Personal Health Information Between Rural and Urban Residents in the United States: ePHI Use in Rural and Urban Patients. *The Journal of Rural Health*. 2018;34:s30-s38. doi:10.1111/jrh.12228

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To analyze the use of four Health Information Technology tools in rural and urban areas.

**Main Findings:** They found a difference between urban and rural uses of health information technology. The researchers mainly found that rural patients are less likely to use email to communicate with their physicians and have lower odds of managing their health information online.

**Strengths/Limitations:** They were unable to assess follow-up questions regarding personal health information or health information technology tools as they were not asked in the survey.

**Generalizability to Medicare Population:** Weak; the paper does not mention Medicare patients specifically.

**Methods:** Conducted bivariate analyses and logistic regressions using data from the National Cancer Institute's Health Information National Trends Survey (HINTS)

Guzman G, Posey K., Bishaw A., Benson C. Differences in Income Growth Across U.S. Counties. United States Census Bureau. 2018. <https://www.census.gov/library/stories/2018/12/differences-in-income-growth-across-united-states-counties.html>

**Subtopic(s):** Key Highlights, Challenges Affecting Rural Patients and Providers

**Type of Source:** Blog Post

**Objective:** To summarize the rural and urban county results of the 2013-2017 five-year estimates from the American Community Survey (ACS)

**Main Findings:** Urban areas tend to have higher median incomes while rural areas have lower median incomes. Poverty rates are also higher in rural areas. Poverty rates declined in rural and urban areas from 2008-2012 to 2013-2017.

**Strengths/Limitations:** Succinctly summarizes and organizes results of the ACS.

**Generalizability to Medicare Population:** Weak; Does not mention Medicare patients.

**Methods:** N/A

Health Resources and Services Administration. Strengthening the Rural Health Workforce to Improve Health Outcomes in Rural Communities. April 2022.

<https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/graduate-medical-edu/reports/cogme-april-2022-report.pdf>

**Subtopic(s):** Key Highlights, Challenges Affecting Rural Patients and Providers

**Type of Source:** Report

**Objective:** To recommend methods of improving access to health care in rural areas as well as strengthening the rural workforce

**Main Findings:** The report recommends increasing federal funding for an assessment of rural health care; increasing investment in training, ensuring a return on investment especially in rural areas; investing in sustainable solutions; incentivizing health education while reducing financial barriers and; testing alternative payment models

**Strengths/Limitations:** The authors provide very detailed, multi-pronged recommendations.

**Generalizability to Medicare Population:** Strong; The recommendations made will directly impact Medicare populations if enacted.

**Methods:** N/A

Heisey-Grove DM. Variation In Rural Health Information Technology Adoption And Use. *Health Affairs*. 2016;35(2):365-370. doi:10.1377/hlthaff.2015.0861

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To understand the use of Health Information Technology (HIT) in rural areas with regards to the Medicare and Medicaid Electronic Health Records (EHR) Incentive Program.

**Main Findings:** The study found that initially, rural providers had higher rates of integrating and using HIT, joining EHR incentive program. However, they were less likely to continue their participation in the program in subsequent years. They also found that receiving support from a Regional Extension Center was strongly associated with meaningful use of technology, as well as provider type, specialty, and practice size. The inconsistent adoption of EHR can make providing quality care in rural areas difficult.

**Strengths/Limitations:** The authors utilized three different data sources for their study.

**Generalizability to Medicare Population:** Strong; directly impacts Medicare populations as they use Medicare attestation data.

**Methods:** Regression analysis of data from 2013 National Electronic Health Records Survey and 2014 Medicare attestation data.

Henriksen M, Walizer N, Blanke A. Learning from the Past, Building the Future. January 2015.

[https://icahn.org/wp-content/uploads/2018/10/ICAHN-](https://icahn.org/wp-content/uploads/2018/10/ICAHN-Illinois_Critical_Access_Hospital_Program_LongReport_update_2-25-15.pdf#page=9)

[Illinois\\_Critical\\_Access\\_Hospital\\_Program\\_LongReport\\_update\\_2-25-15.pdf#page=9](https://icahn.org/wp-content/uploads/2018/10/ICAHN-Illinois_Critical_Access_Hospital_Program_LongReport_update_2-25-15.pdf#page=9)

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Report

**Objective:** To outline the successes, lessons and future of the Illinois Critical Access Hospital (CAH) program.

**Main Findings:** This document provides an overview of the Illinois Critical Access Hospital program. They note that health care is a major driver of economic growth in rural communities and that CAH program is vital to maintaining and attracting businesses in rural Illinois. No CAH's have closed since 2005 and they have created self-sustaining systems that ensure success. Most CAH's have financial indicators that demonstrate improvements over the years. CAHs in Illinois are above the national average in all but two quality measures.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Moderate; Critical Access Hospitals serve Medicare patients therefore their progress directly impacts Medicare beneficiaries.

**Methods:** N/A

Houston R, Smithey A, Brykman K. Medicaid Population-Based Payment: The Current Landscape, Early Insights, and Considerations for Policymakers. Center for Health Care Strategies. 2022.

**Subtopic(s):** Leveraging Financial Incentives to Improve Rural Health Care

**Type of Source:** Report

**Objective:** To summarize the current landscape of Medicaid payments and provide recommendations.

**Main Findings:** Population-based payments help in (1) reducing the cost of health care; (2) improving quality; (3) improving patient experience; (4) improving provider experience; and (5) advancing health equity. The report explores the PBP models in Colorado, Maryland, Massachusetts, New York, Pennsylvania, and Washington State. PBP models have the following strengths: Aligned financial incentives, flexibility, predictability, stability and straightforward

designs. However, PBP models can also be challenging to implement including barriers to entry, financial risk mitigation, limited participation, potential for perverse incentives and short-term administrative burden. Population-based payment models are still fairly new, however their progress could indicate a new, emerging option for states.

**Strengths/Limitations:** The analysis of PBP models is limited to Medicaid.

**Generalizability to Medicare Population:** Weak; This focuses on Medicaid populations.

**Methods:** N/A

Huang H, Zhu X, Ullrich F, MacKinney AC, Mueller K. The impact of Medicare shared savings program participation on hospital financial performance: An event-study analysis. *Health Serv Res.* 2023;58(1):116-127. doi:10.1111/1475-6773.14085

**Subtopic(s):** Trends in Rural Providers' Participation in APMs, Summary of Model Features and Characteristics Related to Rural Providers' Participation in Other Federal Programs

**Type of Source:** Journal article

**Objective:** To evaluate the financial impact of the Medicare Shares Savings Program (MSSP)

**Main Findings:** Researchers found that participation in the MSSP differentially increased hospital net patient revenue, Medicare revenue, inpatient revenue share, and Medicare revenue share. There was a slight increase in Medicare revenue after participating in MSSP which could have an impact on hospital financial status in the long term. The additional net patient revenue is highly beneficial to rural hospitals as many have had to close over the past few years due to financial strains. However, there was no increase observed in operating margins.

**Strengths/Limitations:** The authors were unable to control for the impact of other health policies on the hospitals participating in MSSP.

**Generalizability to Medicare Population:** Strong; This directly affects Medicare populations

**Methods:** Conducted a differences in differences analysis on data from CMS Hospital Cost Reports and MSSP Accountable Care Organizations (ACO) Provider-Level Research Identifiable File.

Jaffe DH, Lee L, Huynh S, Haskell TP. Health Inequalities in the Use of Telehealth in the United States in the Lens of COVID-19. *Population Health Management.* 2020;23(5):368-377. doi:10.1089/pop.2020.0186

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To analyze any inequalities in the use of telehealth.

**Main Findings:** The onset of the COVID-19 pandemic did cause an increase in the use of telehealth. However, researchers found that older adults (44-46 versus 18-24) were more likely to use telehealth. Additionally, if an individual had depression or anxiety, they were more likely to use telehealth. Individuals living in rural areas were less likely to use telehealth.

**Strengths/Limitations:** Utilized data from a self-reported survey which could lead to biases in responses.

**Generalizability to Medicare Population:** Moderate; While Medicare patients use telehealth this article does not specifically examine Medicare populations.

**Methods:** Logistic regression models

Joynt KE, Nguyen N, Samson LW, Snyder JE, Lechner WA, Ogunwumiju O. Rural Hospital Participation and Performance in Value-Based Purchasing and Other Delivery System Reform Initiatives. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation; 2016. <https://www.claritygrp.com/hubfs/Rural%20Hospitals%20HHS%20Report%202016.pdf>

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Report

**Objective:** To provide a comprehensive review rural health care, specifically hospitals, performance in delivery system performance efforts and delivery system reform.

**Main Findings:** Rural health care is difficult to access as patients have to travel long distances to receive care; additionally there is a shortage of professionals in rural areas. In addition, rural hospitals have low occupancy rates and low margins. One strength that many rural hospitals have is that they often provide multiple different specialties under one roof making it easier to provide a wider range of services and making the transition of care easier. There are many programs to support rural hospitals including the Medicare Shared Savings Program, Health Care Innovation Awards, State Innovation Models Initiatives and other CMS and HRSA programs. Lastly, the report authors suggest that rural hospitals can improve measure and program design to support their systems, as well as receiving technical assistance from Medicare's Quality Improvement Organizations (QIO) to improve infrastructure.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Strong; rural Medicare populations are directly impacted by these programs.

**Methods:** Literature review and analysis of Medicare program data.

JP Sharp, JD, MPH, Patrick H. Conway, MD, MSc, Rahul Rajkumar, MD, JD. Engineering a Rapid Shift to Value-Based Payment in North Carolina: Goals and Challenges for a Commercial ACO Program. *Catalyst Carryover*. 2019;5(1). doi:10.1056/CAT.19.0021

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Journal article

**Objective:** To introduce the Blue Premier program and discuss the implementation of the program.

**Main Findings:** The Blue Premier program is an ACO program with a multiyear glide path to two-sided risk, incorporating a partnership with Aledade, strong incentives with a TCOC focus, earned shared savings, regional trends and efficiency adjustments, and benchmarking linked to clinical data exchange and quality metrics.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak; the article discusses an ACO initiative for the Blue Cross Blue Shield of North Carolina commercial population.

**Methods:** N/A

Kalata S, Nathan H, Ibrahim AM. Understanding Community Health Access and Rural Transformation Reform—Implications for Rural Surgical Care. *JAMA Surg*. 2023;158(5):437. doi:10.1001/jamasurg.2022.6834

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Blog Post

**Objective:** To understand rural surgical care as a result of Community Health Access and Rural Transformation (CHART) Reform.

**Main Findings:** Global budgets can be helpful for rural hospitals as the CHART model will help build infrastructure and investments into communities can directly impact those local areas and

specific hospitals. Global budgets will help rural hospitals financially; they will also help facilitate referral processes for complex surgeries due to the revenue from prospective payments. And lastly global budgets provide a level of financial stability that can ensure high-quality care for surgical patients. However, the authors also note that outpatient care must be monitored as it is can sometimes not included in budget, etc thus a global budget could inadvertently lead to higher costs.

**Strengths/Limitations:** Provides comprehensive background on rural health and CHART Reform

**Generalizability to Medicare Population:** Strong; directly applies to Medicare patients in rural areas

**Methods:** N/A

Kelley E, Lipscomb R, Valdez J, Patil N, Coustasse A. Medicare Access and CHIP Reauthorization Act and Rural Hospitals. *The Health Care Manager*. 2019;38(3):197. doi:10.1097/HCM.0000000000000267

**Subtopic(s):** Key Highlights, Trends in Rural Providers' Participation in APMs

**Type of Source:** Journal article

**Objective:** To review the Medicare Access and CHIP Reauthorization Act (MACRA) of 2015 and its implementation to assess the policy's financial impact on rural hospitals.

**Main Findings:** : The article indicated that the majority of small and independent practices were projected to be impacted negatively by MACRA. They anticipated that MACRA would cause a significant decrease in hospital reimbursement due to the transition from volume-based payment to value-based reimbursement. However, physicians participating in eligible APMs would have the potential to earn favorable reimbursement rates and bonus payment; these 159 APM eligible physicians would have to take more financial risks than Merit-based Incentive Payment System (MIPS) providers.

**Strengths/Limitations:** This article thoroughly described literature inclusion requirements. However, long-term effects of MACRA were yet to be analyzed and therefore were not included in the study.

**Generalizability to Medicare Population:** Strong; discuss impacts of MACRA on rural hospitals

**Methods:** Literature review

Komaromy M, Duhigg D, Metcalf A, et al. Project Echo (Extension for Community Healthcare Outcomes): A New Model for Educating Primary Care Providers about Treatment of Substance Use Disorders. *Substance Abuse*. 2016;37(1):20-24. doi:10.1080/08897077.2015.1129388

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To evaluate the success of Extension for Community Healthcare Outcomes model for physician training regarding behavioral health.

**Main Findings:** There has been significant growth in the TeleECHO Clinic over its duration. The program has also led to an increase in buprenorphine-waivered physicians going from thirteenth in the state to fourth.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak; there is no direct relation to Medicare populations as discussed in this article.

**Methods:** Calculated descriptive statistics data using Substance Abuse and Mental Health Services Administration and teleECHO clinic attendance data.

Krakow M, Hesse BW, Oh A, Patel V, Vanderpool RC, Jacobsen PB. Addressing Rural Geographic Disparities Through Health IT: Initial Findings From the Health Information National Trends Survey. *Medical Care*. 2019;57(Suppl 2):S127-S132. doi:10.1097/MLR.0000000000001028

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To understand the use of technology in rural versus urban areas

**Main Findings:** There were limited differences among rural and urban populations in regard to providers maintaining and using EHRs, however. rural physicians were less likely to recommend to patients to access records online, rural patients were less likely to access their EHRs

**Strengths/Limitations:**

**Generalizability to Medicare Population:** Moderate; Does not directly relate to Medicare populations but this work could impact Medicare patient care in rural areas

**Methods:** Statistical analysis for descriptive statistics

Kushner J, Tracy K, Lind B, Renfro S, Rowland R, McConnell J. Evaluation of Oregon's 2012-2017 Medicaid Waiver. *Oregon Health Authority*. Published online 2017. <https://www.oregon.gov/oha/HPA/ANALYTICS/Evaluation%20docs/Summative%20Medicaid%20Waiver%20Evaluation%20-%20Final%20Report.pdf>

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Report

**Objective:** To evaluate the effectiveness of Oregon's 2012-2017 Medicaid demonstration waiver through an assessment of Oregon Health Authority's (OHA) and coordinated care organization's (CCO) activities to transform Medicaid and an analysis of the waiver's effects on health care access, quality, spending and more.

**Main Findings:** Within the first three years of Oregon's 2012-2017 waiver, it was found OHA implemented successful CCO-level reforms and systems for sharing innovations and best practices. CCOs made progress on activities to improve care coordination and increase efficiency. CCOs made less progress on activities to implement APMs, integrate care, and use flexible services. CCOs were connected to reductions in spending growth due to reductions in inpatient facility spending. Quality measures in the domains of prevention and wellness for children and adolescents, emergency department and hospital use, and avoiding low-value care all generally improved. Experience of care measures and self-reported health status also improved.

**Strengths/Limitations:** Due to the data available at the time of the evaluation, the report was only able to evaluate activities and outcomes from 2013-2015, the first three years of the waiver.

**Generalizability to Medicare Population:** Moderate; the report does not focus on Medicare specifically, however many of the quality measures and higher level approaches outlined in the report are applicable within the context of Medicare (e.g., Medicare ACOs).

**Methods:** The report used activity measures to assess OHA's and CCO's progress transforming health care delivery and payment and conducted interviews with CCO's about their use of flexible services. Pre-post analysis and comparison group analysis were used to evaluate the waiver's effect on health care access, quality, and spending.



Lewis VA, Colla CH, Carluzzo KL, Kler SE, Fisher ES. Accountable Care Organizations in the United States: Market and Demographic Factors Associated with Formation. *Health Services Research*. 2013;48(6pt1):1840-1858. doi:10.1111/1475-6773.12102

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Journal article

**Objective:** To determine how many ACOs are in the United States, where they are located, and what characteristics are associated with ACO formation.

**Main Findings:** The article identified 227 ACOs across the United States with 55 percent of the population residing in areas served by these ACOs. It was found that ACOs are more likely to form in high-cost areas that perform higher on quality measures and have fewer primary care physician groups. ACOs are less likely to form in high-poverty regions and rural areas.

**Strengths/Limitations:** Many of the characteristics examined related to ACO formation are likely more important at a provider or organizational level than the regional level that the article utilized.

**Generalizability to Medicare Population:** Strong; the study focused specifically on Medicare ACOs and where they are located.

**Methods:** Cross-sectional study of all ACOs established by August 2012, multivariate logistical regression.

Liaw WR, Jetty A, Petterson SM, Peterson LE, Bazemore AW. Solo and Small Practices: A Vital, Diverse Part of Primary Care. *The Annals of Family Medicine*. 2016;14(1):8-15. doi:10.1370/afm.1839

**Subtopic(s):** Key Highlights, Trends in Rural Providers' Participation in APMs

**Type of Source:** Journal article

**Objective:** To determine the percentage of family physicians in solo and small practices and the characteristics of services they provide.

**Main Findings:** The study found that family physicians working in solo and small practices outnumber those working in medium and large size practices. Small practices made up the largest group in the sample and were most likely to be located in rural areas. The likelihood of having a care coordinator or medical home certification increased with practice size. The broadest scope of services was found in small and medium-sized practices.

**Strengths/Limitations:** Survey results were self-reported; therefore, practitioners may have responded to questions describing the size of their immediate practice while others may have described their practice as part of a larger structure even if they are a smaller practice.

**Generalizability to Medicare Population:** Strong; the Primary Care Extension Program is being tested by CMS through the Transforming Clinical Practices Initiative.

**Methods:** 10,888 family physicians sitting for the American Board of Family Medicine Maintenance of Certification examination completed a demographic survey in 2013. The study then calculated descriptive statistics for the demographic and practice characteristics and conducted bivariate analysis by practice size. Two logistical regression models were developed, one to assess predictors of practicing in a solo small practice and one to assess predictors of practicing in a solo practice.

Lin CC, Dievler A, Robbins C, Sripipatana A, Quinn M, Nair S. Telehealth In Health Centers: Key Adoption Factors, Barriers, And Opportunities. *Health Affairs*. 2018;37(12):1967-1974.

doi:10.1377/hlthaff.2018.05125

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To examine factors associated with the use of telehealth in federally funded health centers and barriers to the adoption of telehealth.

**Main Findings:** The study found that almost half of federally funded health centers were in rural areas and served a higher proportion of patients with Medicaid or who were uninsured than those with Medicare. Health centers in rural areas had a higher probability of using telehealth than health centers in urban areas. Almost all the centers were in a state where Medicaid reimburses some kind of live video, increasing the probability of health centers using telehealth. Thirty-eight percent of health centers reported using telehealth, with almost half reporting using it for mental health. The study found common barriers to health centers implementing telehealth, including issues with broadband, technical issues, cost and reimbursement, patient population, policies, lack of partners and providers, and unclear barriers.

**Strengths/Limitations:** This article came out two years prior to the COVID-19 pandemic which accelerated our use of technology and virtual meeting platforms. It is possible the adoption rate of telehealth is much higher in the five years now since this article was published.

**Generalizability to Medicare Population:** Moderate; while the study found health centers serving higher percentages of Medicaid patients were more likely to adopt telehealth services, Medicare enrollees can still benefit from the use of telehealth.

**Methods:** Mixed methods approach analyzing 2016 data from the Uniform Data System, statistical modeling to identify factors associated with telehealth adoption, and qualitative analysis to example reasons why health centers are not using telehealth.

Lite S, Gordon WJ, Stern AD. Association of the Meaningful Use Electronic Health Record Incentive Program With Health Information Technology Venture Capital Funding. *JAMA Netw Open*.

2020;3(3):e201402. doi:10.1001/jamanetworkopen.2020.1402

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To determine if the passage of the Health Information Technology for Economic and Clinical Health (HITECH) Act was associated with an increase in measures of health care IT entrepreneurship.

**Main Findings:** The study found that after requiring providers and hospitals to certify that they met standards of the Meaningful Use program for EHR systems to qualify for subsidy payments under the HITECH Act, investments in IT and EHR-related companies increased much faster than venture capital (VC) rates as a whole. VC investments in seed-stage companies also increased compared with trends in broader VC investments.

**Strengths/Limitations:** The study focused on VC investments meaning it was unable to examine other funding sources that companies may have used to invest in EHR and other technologies.

**Generalizability to Medicare Population:** Weak; the study discusses the adoption of EHR technologies but does not focus on how insurance relates to the use of these technologies or how they will impact Medicare enrollees.

**Methods:** Evaluation of VC activity from 2000-2019, difference-in-difference analysis to compare investments in health care IT companies with companies in other VC transaction categories.

Lukens J. Freestanding Emergency Departments: An Alternative Model for Rural Communities. 2016. <https://www.ruralhealthinfo.org/rural-monitor/freestanding-emergency-departments/>

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Article

**Objective:** To describe freestanding emergency departments (FSED) and a model utilizing two versions of FSEDs to increase access to immediate care in rural communities.

**Main Findings:** FSED are separate entities from a hospital that provide emergency care. There are two types of FSED, independent freestanding emergency centers (IFECs) and hospital-based off-campus emergency departments (OCEDs). Most FSED are OCEDs and about a third of IFECs are independently run and not affiliated with a hospital system. FSEDs run under an affiliate hospital must comply with the same CMS rules and regulations that make them eligible for Medicare reimbursements for facility fees. Medicare reimbursements are regulated at the federal level while FSED licensure are regulated at the state level. Reimbursements methods do not cover all the costs of operating an FSED therefore FSED able to find additional funding sources like grants and taxes have a greater opportunity to succeed. FSED require the right combination of patient volume, outpatient services, and community support to be successful.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Strong; the article explores Medicare reimbursement methods and their impact on FSED.

**Methods:** N/A

McCullough JS, Parente ST, Town R. Health information technology and patient outcomes: the role of information and labor coordination. *The RAND Journal of Economics*. 2016;47(1):207-236.

doi:10.1111/1756-2171.12124

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To measure the impact of using different types of health information technology (IT) on clinical outcomes for Medicare patients using a difference-in-differences identification strategy and detailed patient data.

**Main Findings:** The study found that Health IT does improve outcomes for patients with high-severity, complex diagnoses but there was no relationship between health IT and quality for the average patient. The study also found no relationship between health IT and readmissions or length of stay. Health IT improves quality through clinical coordination and communication across providers rather than through rules-based decision support systems, and this coordination most benefits high-risk patients. Finally, health IT was found to more effective for among low-income and low-education populations.

**Strengths/Limitations:** The study does not capture all the potential benefits of health IT. For example, health IT may improve quality of care and patient experience without affecting readmissions or length of stay.

**Generalizability to Medicare Population:** Strong; the study was focused on clinical outcomes for Medicare patients specifically and utilizes Medicare fee-for-service admissions data.

**Methods:** The study combined hospital IT data and hospital and patient level data from 2002-2007. The study estimated the impact of health IT on patient outcomes for patients with varying diagnoses and levels of severity. Parameters were estimated using linear probability models and used a difference-in-differences identification strategy based on variation in adoption timing. Effects were measured by analyzing interactions between patient severity measures and health IT adoption.

Medicaid and rural health. The Medicaid and CHIP Payment and Access Commission. Published April 2021. Accessed July 15, 2023. <https://www.macpac.gov/wp-content/uploads/2021/04/Medicaid-and-Rural-Health.pdf>.

**Subtopic(s):** Challenges Affecting Rural Patients and Providers

**Type of Source:** Issue Brief

**Objective:** To summarize the role of Medicaid in rural health.

**Main Findings:** Relative to Medicaid beneficiaries living in urban areas, Medicaid beneficiaries living in rural areas tend to have lower incomes, have higher poverty rates, be less likely to have private insurance, and have worse health outcomes. Seventeen percent of all Medicaid beneficiaries live in rural areas. Medicaid coverage rates are typically higher in rural areas compared to other areas. Non-emergency medical transportation and telehealth are two important Medicaid-covered services that facilitate access to care for rural residents.

**Strengths/Limitations:** One limitation includes the limited amount of data on characteristics of Medicaid beneficiaries living in rural areas.

**Generalizability to Medicare Population:** Strong; the information was focused on Medicaid beneficiaries living in rural areas.

**Methods:** N/A

Mehrotra A, Wang B, Snyder G. Telemedicine: What Should the Post-Pandemic Regulatory and Payment Landscape Look Like? Commonwealth Fund; 2020. Accessed August 13, 2020. <https://www.commonwealthfund.org/publications/issue-briefs/2020/aug/telemedicine-post-pandemic-regulation>

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Issue brief

**Objective:** To provide a framework for how to evaluate telemedicine policies and offer recommendations for future telemedicine guidelines.

**Main Findings:** Payments should be limited to specific selected payment populations and health conditions, or to services from providers that are paid via alternative payment models. In order to balance the goals of increasing access to care and limiting overuse and fraud, so regulatory barriers should be eliminated but there should not be payment parity.

**Strengths/Limitations:** As an issue brief, the piece does not rely on an additional independent research.

**Generalizability to Medicare Population:** Moderate; the brief is general but can be applied to the Medicare population.

**Methods:** N/A.

Mendel P, Buttorff C, Chen PG, et al. Perspectives of Physicians in Small Rural Practices on the Medicare Quality Payment Program. RAND Corporation; 2019. [https://www.rand.org/content/dam/rand/pubs/research\\_reports/RR2800/RR2882/RAND\\_RR2882.pdf](https://www.rand.org/content/dam/rand/pubs/research_reports/RR2800/RR2882/RAND_RR2882.pdf)

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Report

**Objective:** To collect feedback on the initial implementation of the QPP and understand the program's initial rollout and flexibility provisions.

**Main Findings:** Small rural practices are struggling to participate in the QPP. Some changes to the QPP and Medicare policy, such as clarifying and specifying program requirements, reducing the frequency of program policy changes, delaying program implementation for small practices, developing better methods for assessing quality of care of small practices, providing additional information technology support for small rural practices, and enabling greater engagement of

rural physicians by policy makers would help improve the ability of small rural practices to join the program.

**Strengths/Limitations:** Response rates to recruitment calls were relatively low, and the short time frame of the research impacted follow-up efforts. Given the higher response rates for practices referred by technical assistance providers, there was likely some bias related to increased likelihood of engagement in preparation for the QPP and more knowledge of MACRA.

**Generalizability to Medicare Population:** Strong; the report reviews a Medicare patient program.

**Methods:** Qualitative interviews with a total of 20 physicians in small rural practices.

Mueller K, MacKinney C, Lundblad J, Weng K. How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report. Rural Health Value; 2020.

<https://ruralhealthvalue.public-health.uiowa.edu/files/Rural%20VBC%20Summit%20Report.pdf>

**Subtopic(s):** Key Highlights, Trends in Rural Providers' Participation in APMs

**Type of Source:** Report

**Objective:** To discuss elements of VBC payment models that are important to rural participants.

**Main Findings:** A number of themes focused on model design, implementation, and operation can facilitate or hinder rural participation and success in VBC models, including rural-oriented design, model and program alignment, upfront infrastructure investment, rural-relevant planning and care delivery, flexibility and timing, and information technology and data.

**Strengths/Limitations:** As the report is based on findings from a limited number of participants in virtual summit conversations, there may be bias in the findings.

**Generalizability to Medicare Population:** Strong; the rural providers included in the conversations included participants in Medicare APMs and programs and the recommendations can be applied to future Medicare programs.

**Methods:** Summary of findings from virtual discussion conversations between rural VBC summit participants.

Mueller K, Ullrich F. Spread of Accountable Care Organizations in Rural America. RUPRI Center for Rural Health Policy Analysis; 2016. [https://rupri.public-](https://rupri.public-health.uiowa.edu/publications/policybriefs/2016/Spread%20of%20ACOs%202016.pdf)

[health.uiowa.edu/publications/policybriefs/2016/Spread%20of%20ACOs%202016.pdf](https://rupri.public-health.uiowa.edu/publications/policybriefs/2016/Spread%20of%20ACOs%202016.pdf)

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Policy Brief

**Objective:** To monitor the spread of Medicare ACOs in rural U.S. counties.

**Main Findings:** Medicare ACOs operate in 41.8 percent of all non-metropolitan counties and 73.2 percent of metropolitan counties. The number of Medicare ACOs participating in non-metropolitan counties is growing.

**Strengths/Limitations:** The brief only reports the participation data for Medicare ACOs, and does not review literature or provide original research on the explanations for the spread of ACOs.

**Generalizability to Medicare Population:** Strong; the brief focuses explicitly on MSSP ACOs.

**Methods:** Analysis of ACO data from web-based public reports, the 2015 Accountable Care Directory, a database with information on provider locations developed by Levitt Partners, LLC, and telephone contact.

Mueller KJ, Potter AJ, MacKinney AC, Ward MM. Lessons From Tele-Emergency: Improving Care Quality And Health Outcomes By Expanding Support For Rural Care Systems. *Health Affairs*. 2014;33(2):228-234. doi:10.1377/hlthaff.2013.1016

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To understand the impacts of tele-emergency services on rural hospitals and discuss potential policy implications and barriers for the use of tele-emergency services.

**Main Findings:** Providers were satisfied with tele-emergency care, felt that it was an important part of health care in their community, decreased the burden at the hospital, improved clinical quality, improved the timeliness of providing patient care, helped provide the appropriate level of patient care, and increased capacity, among other results.

**Strengths/Limitations:** The qualitative methods used may be impacted by non-response bias, increasing the positive perceptions included in the study.

**Generalizability to Medicare Population:** Moderate; the study discusses Medicare's role in tele-emergency medicine coverage, but is not explicitly focused on the Medicare population,

**Methods:** Systematic literature, user survey to 71 hospitals using a tele-emergency service, and follow-up telephone interviews and site visits with clinicians and administrators.

National Quality Forum. 2022 key rural measures: An updated list of measures to advance rural health priorities. National Quality Forum; 2022.

**Subtopic(s):** Key Highlights, Measuring Rural Providers' Performance in APMs

**Type of Source:** Report

**Objective:** To describe the selection criteria and processes used to generate the NQF's key rural measures list, and to summarize the new additions and subtractions to the updated 2022 list of key rural measures.

**Main Findings:** The Rural Health Advisory Group identified a 37-measure list of key rural measures, including 21 measures for the hospital setting and 16 measures for the ambulatory care setting. The measures include 17 new measures that address priority topics, such as substance use, access to care, transitions of care, kidney care, dementia, health equity and SDOH, infectious disease, and emergency care.

**Strengths/Limitations:** The new measures address priority concerns and gaps in previous measure development. Limitations include that measures identified only included those that had been endorsed since 2018 and did not include any measures that had previously been reviewed and excluded by the Rural Health Advisory Group in 2017 and 2018. Measures that were not at the clinician, facility, or population level were excluded.

**Generalizability to Medicare Population:** Strong; the measures developed were developed with the goal of developing measures to be used by CMS in future programs.

**Methods:** Environmental scan, literature review, review of statistics, and discussion by the Rural Health Advisory Group.

National Quality Forum. A core set of rural-relevant measures and measuring and improving access to care: 2018 recommendations from the MAP Rural Health Workgroup. National Quality Forum; 2018.

**Subtopic(s):** Key Highlights, Measuring Rural Providers' Performance in APMs

**Type of Source:** Report

**Objective:** To describe the selection criteria and processes used to create a core set of rural-relevant measures by the MAP Rural Health Workgroup and offer recommendations on access to care from a rural perspective.

**Main Findings:** As part of CMS's Rural Health Strategy, CMS asked NQF to develop a MAP Rural Health Workgroup. The workgroup was tasked with identifying rural-relevant measures to

address the needs of rural populations and provide recommendations from a rural perspective on measuring and improving access to care. The Workgroup recommended 20 measures, 9 for hospitals and 11 for ambulatory settings. The Workgroup also identified measurement gaps including access to care, disparities in care, and differing perceptions of health care value among patients and providers. The Workgroup then shared recommendations on access to care from a rural perspective focused on three domains: availability, accessibility, and affordability.

**Strengths/Limitations:** While the Workgroup had a diverse group of stakeholders with rural perspectives, there were no consumers of rural health care present.

**Generalizability to Medicare Population:** Strong; the Workgroup was developed by request of CMS and discusses barriers to care rural Medicare enrollees experience.

**Methods:** N/A

National Quality Forum. Performance measurement for rural low-volume providers. National Quality Forum; 2015.

**Subtopic(s):** Measuring Rural Providers' Performance in APMs

**Type of Source:** Report

**Objective:** To summarize the results of the NQF multistakeholder Committee convening including their recommendations for mitigating challenges for rural health care providers.

**Main Findings:** In 2014, HHS asked NQF to create a multistakeholder Committee to identify challenges in health care performance measurement for rural providers and make recommendations to address the challenges, particularly in CMS pay-for-performance programs. The overarching recommendation was to make CMS quality measurement and quality improvement programs mandatory for rural providers through a phased approach and address low case volume. The Committee also recommended funding the development of rural-relevant measures, including rural-relevant sociodemographic factors in risk adjustment approaches and composite measures.

**Strengths/Limitations:** The Committee was made up of a wide range of stakeholders including rural providers, private insurance providers, Medicaid program staff, and consumers.

**Generalizability to Medicare Population:** Strong; the committee was developed to identify challenges for rural providers who accept Medicare and recommend remedies to address these barriers.

**Methods:** 20-member multistakeholder Committee made up of appointed members based on their experience in statistical methodology, delivery of health care in rural areas, and/or implementation of quality performance and measurement programs. The committee conducted an environmental scan of current measures and efforts and held a two-day meeting to deliberate and develop recommendations.

National Quality Forum. Rural-relevant quality measures for testing of statistical approaches to address low case-volume. 2020.

**Subtopic(s):** Key Highlights, Measuring Rural Providers' Performance in APMs

**Type of Source:** Report

**Objective:** To summarize the recommendations from the NQF MAP Rural Health Workgroup on which rural-relevant measures should be prioritized and tested.

**Main Findings:** In 2019, building on past efforts, NQF was asked to identify a list of high-priority, rural-relevant measures susceptible to low case volume challenges for future testing of Technical Expert Panel recommended statistical approaches. The Workgroup prioritize six topics: access to care, vaccinations, cancer screening, stroke, health care-associated infections, and emergency department use. They then prioritized four measure attributes: NQF endorsement, outcome measures, cross-cutting measures, and measures used in multiple

federal programs. The Workgroup then prioritized 15 measures for future testing to address low case-volume.

**Strengths/Limitations:** The Workgroup was comprised of a wide variety of stakeholders including rural consumers of health care.

**Generalizability to Medicare Population:** Strong, the report focuses on rural-relevant quality measures included in Medicare quality reporting and value-based purchasing programs.

**Methods:** Environmental scan on 250 rural-relevant measures, Workgroup then deliberated and completed a survey to rate the importance of each measure and each measure was given a composite score.

Nielsen M, D'Agostino D, Gregory P. Addressing Rural Health Challenges Head On. *Mo Med*. 2017 Sep-Oct;114(5):363-366. PMID: 30228634; PMCID: PMC6140198.

**Subtopic(s):** Challenges Affecting Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To describe Kansas City University of Medicine and Biosciences' (KCU) plan to offer students training and rotation opportunities in rural settings.

**Main Findings:** KCU is the first medical school to open in Missouri in nearly 50 years and aims to train and retain physicians in Missouri. Rural communities face unique challenges and KCU hopes to instill and understanding and appreciation of these challenges to improve health in the region and state. Challenges include health professional shortages, limited training opportunities, population health challenges, and delayed care. The school will use a person-centered approach to services.

**Strengths/Limitations:** The article only discusses on school which may or may not be relevant to other rural areas outside of Missouri.

**Generalizability to Medicare Population:** Weak; the article discusses a new medical school in a rural part of Missouri and hope that this school will increase the number of providers in the rural area.

**Methods:** N/A

NORC at the University of Chicago. Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs). 2021. <https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Jun-2021-CC-Escan.pdf>

**Subtopic(s):** Driving Care Delivery Transformation in Rural Providers

**Type of Source:** Environmental Scan

**Objective:** To provide background information to assist PTAC in understanding perspectives on the role of care coordination in optimizing health care delivery and value-based transformation, in the context of APMs and PFPMs.

**Main Findings:** The environmental scan found there is no universal definition of care coordination, though there are several common functional domains associated with care coordination. The scan found that states often differ in their approaches to care coordination in Medicaid/Medicare programs. Most CMMI payment models include care coordination, however, they vary in how the services are reimbursed.

**Strengths/Limitations:** There is limited research on care coordination and time span of care for patients with chronic conditions.

**Generalizability to Medicare Population:** Strong; the environment scan provides and overview of care coordination's effectiveness for CMS programs, providers, and enrollees.

**Methods:** A high-level list of research questions related to care coordination was drafted and then a literature review was conducted to answer the questions.



NORC at the University of Chicago. *Environmental Scan on Telehealth in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs)*. 2020.

<https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Sep2020TelehealthEnvironmentalScan.PDF>

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Report

**Objective:** To report on the current context of the role of telehealth in the optimization of health care delivery and value-based transformation in the context of APMs and PFPMs, as well as review proposals received by PTAC for novel alternative payment schemes.

**Main Findings:** This report provides information on the role of telehealth and telehealth issues in APMs, including: the definition of telehealth, coverage and reimbursement for telehealth, effectiveness of telehealth interventions, telehealth and APMs, and issues and opportunities for optimizing telehealth.

**Strengths/Limitations:** This environmental scan is a summary of existing literature and findings, and as such does not introduce any new research findings.

**Generalizability to Medicare Population:** Strong; the environmental scan reviews the context of telehealth for Medicare-focused APMs and PFPMs.

**Methods:** Literature review, document review and content analysis of discussions with PTAC members and subject matter experts.

NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: First Evaluation Report. 2021. <https://innovation.cms.gov/data-and-reports/2021/vtapm-1st-eval-full-report>

**Subtopic(s):** CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Evaluation Report

**Objective:** to evaluate the Vermont All-Payer Accountable Care Organization Model (VTAPM) to assess its implementation and impact.

**Main Findings:** In the first two years, the VTAPM failed to achieve its all-payer and Medicare scale goals. Just over half of providers participating in VTAPM participated in all three payer initiatives. All but two hospitals participated in VTAPM ACO initiatives but only half participated in Medicare ACO initiatives in the second performance year, which reduced the number of practitioners and attributed Medicare beneficiaries. Despite minor progress in achieving scale, the VTAPM achieved significant cumulative Medicare spending reductions. The VTAPM also proved to be a way to strengthen relationships between hospitals, community organizations, mental health agencies, and other providers. There were challenges engaging practitioners and the public and for care delivery transformation there needs to be a more comprehensive transition to value-based payment and a focus on upstream investments that address SDOH and factors that affect public health.

**Strengths/Limitations:** The report only includes analyses of VTAPM on the Medicare fee-for-service population due to the limited uptake of the Medicare ACO initiative, which resulted in a limited understanding of the impact of the model.

**Generalizability to Medicare Population:** Strong; the report was evaluating an ACO model that can apply to Medicare ACOs.

**Methods:** Mixed methods, qualitative and quantitative analyses, difference-in-difference design.

NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtapm-2nd-eval-full-report>

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities, Trends in Rural Providers' Participation in APMs

**Type of Source:** Evaluation Report

**Objective:** To evaluate Vermont All-Payer Accountable Care Organization Model (VTAPM) performance on spending, utilization, and quality outcomes in the first three performance years (2018-2020).

**Main Findings:** Model participation was similar to performance year 2, with approximately half of eligible hospitals participating in the Medicare ACO initiative (one fewer than in PY2). However, most rural critical access hospitals opted out due to financial constraints. The care coordination infrastructure supported by the Model assisted communities during the COVID-19 pandemic, however Medicare utilization saw a steep decline compared to PY2. Medicare saw gross spending reductions at the state and ACO levels, as well as spending reductions at the state level.

**Strengths/Limitations:** This report only includes analyses of VTAPM on the Medicare fee-for-service population which may limit generalizability.

**Generalizability to Medicare Population:** Strong; the report was evaluating a model that can apply to Medicare ACOs.

**Methods:** Mixed methods, qualitative and quantitative analyses, difference-in-differences analysis.

NORC at the University of Chicago. Fourth Evaluation Report: Next Generation Accountable Care Organization (NGACO) Model Evaluation. 2021. <https://innovation.cms.gov/data-and-reports/2021/nextgenaco-fourthevalrpt>

**Subtopic(s):** Leveraging Financial Incentives to Improve Rural Health Care

**Type of Source:** Evaluation Report

**Objective:** To evaluate the Next Generation Accountable Care Organization (NGACO) model in terms of spending, utilization, and quality of care through December 2021 (PY1-4).

**Main Findings:** The NGACO Model was associated with reduced gross Medicare Parts A and B spending in PY4 and cumulatively through PY4. However, after factoring in the shared savings and other payouts, the model was associated with net increases in Medicare spending. On average, NGACOs with higher per capita Medicare Parts A and B expenditures achieved higher spending reductions as they worked to improve efficiency. The total spending reductions were similar across organizational affiliation but differed by care setting. For example, physician practice affiliated NGACOs reduced acute care spending, while NGACOs affiliated with hospitals or integrated delivery systems (IDS) reduced spending for professional services.

**Strengths/Limitations:**

**Generalizability to Medicare Population:** Strong; the report evaluated Medicare Parts A and B

**Methods:** Qualitative and quantitative analyses

NORC at the University of Chicago. Supplement to the Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs). September 2021.

<https://aspe.hhs.gov/sites/default/files/documents/c8b594360fbaf5172df0f2a684c06642/CC-EScan-Supplement-Innovative-Approaches.pdf>

**Subtopic(s):** Driving Care Delivery Transformation in Rural Providers

**Type of Source:** Environmental scan

**Objective:** To assist the Physician-Focused Payment Model Technical Advisory Committee (PTAC) in preparation for a theme-based discussion on care coordination in Alternative Payment Models (APMs) and physician-focused payment models (PFPMs).

**Main Findings:** The environmental scan supplements a prior environmental scan on care coordination to provide additional context on the role of care coordination in optimizing health care delivery and value-based transformation under APMs. Care models with success included a trained care coordinator as a communication leader to coordinate across the care team, responsiveness and feedback, particularly for high-needs patients. Shared decision-making can result in the best health care decisions as it incorporates evidence-based information about available care, provider expertise and patient's priorities and preferences. A variety of strategies, including the use of telehealth/telepsychiatry, data analytics, and artificial intelligence have helped integrate primary care and behavioral health. California and North Carolina have developed approaches to incorporating social determinants of health (SDOH) into their care coordination models. PTAC has also received 16 proposals that "meet" the Secretary's "Integration and Care Coordination" Criterion.

**Strengths/Limitations:** Range of sources from peer-reviewed articles to gray literature

**Generalizability to Medicare Population:** Moderate; the environmental scan includes findings applicable to, but not limited to Medicare populations.

**Methods:** Literature search

NORC at the University of Chicago. The Pennsylvania Rural Health Model: First Annual Report. 2021.

<https://innovation.cms.gov/data-and-reports/2021/parhm-ar1-full-report>

**Subtopic(s):** Key Highlights, CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Evaluation Report

**Objective:** Evaluation of the Pennsylvania Rural Health Model in PY1 (2019) and participating payers in PY1 (2019) and PY2 (2020).

**Main Findings:** the Pennsylvania Rural Health Model (PARHM) is the first CMMI Model that provides rural hospitals with the opportunity to test if global budgets can improve financial viability, while providing flexibility to address community health needs and reduce overall health spending. The Model includes a range of participants, including a variety of hospital types, however model participation has been low overall, and has not met model targets.

**Strengths/Limitations:** Cohort 1 only includes five hospitals, making most comparisons to eligible nonparticipations or national or statewide benchmarks infeasible.

**Generalizability to Medicare Population:** Moderate; the evaluation includes but is not limited to the Medicare population.

**Methods:** Mixed-methods, qualitative analysis, quantitative/claims analysis

Ogundeji Y, Clement F, Wellstead D, Farkas B, Manns B. Primary care physicians' perceptions of the role of alternative payment models in recruitment and retention in rural Alberta: a qualitative study. *CMAJ Open*. 2021;9(3):E788-E794. doi:10.9778/cmajo.20200202

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Journal article

**Objective:** To examine the perspectives of rural primary care physicians regarding the factors that attract and retain physicians in rural areas, and the potential role of alternative payment models (APMs).

**Main Findings:** Five themes were identified: factors that attract physician to rural practice, barriers and challenges associated with rural practices, the potential role of APMs in recruitment and retention, factors that physicians consider in deciding to change payment models, and physician perceptions of APMs vs FFS models. The 14 physicians interviewed expressed interest in exploring APMs, given professional, family-related and personal concerns were addressed.

**Strengths/Limitations:** Only 14 physicians were included in the study, limiting the generalizability of the findings; study included physicians in FFS models or an APM in Alberta, Canada; direct comparison of FFS and APM models

**Generalizability to Medicare Population:** Weak; study involved physicians practicing under FFS models and APMs in rural Alberta, Canada

**Methods:** Qualitative study with in-depth interviews

Okobi OE, Ajayi OO, Okobi TJ, Anaya IC, Fasehun OO, Diala CS, Evbayekha EO, Ajibowo AO, Olateju IV, Ekabua JJ, Nkongho MB, Amanze IO, Taiwo A, Okorare O, Ojinnaka US, Ogbeifun OE, Chukwuma N, Nebuwa EJ, Omole JA, Udoete IO, Okobi RK. The Burden of Obesity in the Rural Adult Population of America. *Cureus*. 2021 Jun 20;13(6):e15770. doi: 10.7759/cureus.15770. PMID: 34295580; PMCID: PMC8290986.

**Subtopic(s):** Key Highlights, Challenges Affecting Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To understand the causes, disease burden, and potential prevention and management approaches to reduce mortality from obesity in rural America.

**Main Findings:** Over one-third of Americans, 65 years and over, and over 60 million rural residents are affected by obesity. This literature review identified diet, lifestyle, access to health care, income, and education as risk factors, however additional research is needed to support a rural-focused approach to obesity.

**Strengths/Limitations:** Potential study bias, and limited available research articles

**Generalizability to Medicare Population:** Weak; Medicare population was briefly mentioned but was not the focus of the article

**Methods:** Literature review

Oregon Health Authority. Coordinated Care Organizations: Frequently Asked Questions.  
<https://www.kff.org/wp-content/uploads/sites/2/2012/05/cco-faq.pdf>

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Web page

**Objective:** To provide information about a recently passed bill (House Bill 3650) that proposes a statewide system of Coordinated Care Organizations (CCOs). It explains what was proposed, and what it means for Oregon Health Plan members and Oregon providers.

**Main Findings:** House Bill 3650 proposes Coordinated Care Organizations administer and manage all health care (mental, physical, and dental care) for Oregon Health Plan members. The proposal incentivizes local providers to work together for the population they serve, and provides greater flexibility for preventive care, chronic disease management, and culturally competent care. The CCO would manage a global budget and providers share the savings if they meet performance standards.

**Strengths/Limitations:** High-level summary of policy changes and effects

**Generalizability to Medicare Population:** Moderate; Medicare population is not specifically mentioned but many of the terms and concepts apply

**Methods:** N/A

Ortiz J, Bushy A, Zhou Y, Zhang H. Accountable care organizations: benefits and barriers as perceived by Rural Health Clinic management. *RRH*. Published online June 28, 2013. doi:10.22605/RRH2417

**Subtopic(s):** Key Highlights, Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To better understand the benefits and barriers to rural health clinic (RHC) participation in accountable care organizations (ACOs).

**Main Findings:** Using survey research, focus groups, and phone interviews to gather the opinions of RHCs, it was found that most were unfamiliar with the ACO model. Approximately 48 percent of survey respondents reported having little knowledge of ACOs. Among those who were aware of ACOs, 58 percent cited improved patient quality of care as the primary potential benefit and 54 percent indicated the focus on the patient was beneficial. In comparison, 53 percent cited financial barriers for RHC participation in ACOs, 43 percent reported inadequate capital to improve their information technology systems, and 51 percent indicated legal and regulatory barriers.

**Strengths/Limitations:** Study was limited to 8 study states located in Southeastern USA and California as the comparison state. The survey response rate was also low, at 8.1 percent, and the focus group/interview-participant group was small. Analysis specifically addressing ACOs in rural settings.

**Generalizability to Medicare Population:** Moderate; Medicare population is not specifically mentioned but many of the terms and concepts apply

**Methods:** Qualitative and quantitative analyses, focus groups, phone interviews, analysis of variance, Pearson's chi squared and likelihood chi squared tests

Ouayogodé MH, Frazee T, Rich EC, Colla CH. Association of Organizational Factors and Physician Practices' Participation in Alternative Payment Models. *JAMA Network Open*. 2020;3(4):e202019. doi:10.1001/jamanetworkopen.2020.2019

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Journal article

**Objective:** To examine the association of organizational characteristics, ownership, and integration with intensity of participation in alternative payment models (APMs) among physician practices.

**Main Findings:** Nearly half (49.2 percent) of practices reported participating in 3 or more APMs, most of which participated in pay-for-performance and accountable care organization models. The study found operating within a health care system, greater clinical and function integration, and being located in the Northeast were associated with greater APM participation.

**Strengths/Limitations:** The study relied on practices serving greater than 3 primary care physicians, limiting the generalizability outside this population. Analysis specifically targeting benefits/challenges of APMs.

**Generalizability to Medicare Population:** Moderate; Medicare population is not specifically mentioned but many of the terms and concepts apply

**Methods:** Cross-sectional descriptive study, covariate-adjusted logistic and proposal odds regression models, sensitivity analyses

Park S, Meyers DJ, Langellier BA. Rural Enrollees In Medicare Advantage Have Substantial Rates Of Switching To Traditional Medicare. *Health Affairs*. 2021;40(3):469-477. doi:10.1377/hlthaff.2020.01435

**Subtopic(s):** CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Journal article

**Objective:** To understand the enrollment patterns of traditional Medicare and Medicare Advantage enrollees along with levels of satisfaction/dissatisfaction with care.

**Main Findings:** Enrollees were more likely to switch from Medicare Advantage to traditional Medicare in both rural and non-rural settings, than vice versa. Switching from Medicare Advantage to traditional Medicare was more common among rural enrollees (10.5 percent) compared with non-rural enrollees (5 percent), particularly among rural enrollees who were high cost or high needs. Eleven care satisfaction variables were examined, and dissatisfaction with care access was the main cause for switching plans.

**Strengths/Limitations:** Direct comparison of enrollment in rural vs non-rural areas.

**Generalizability to Medicare Population:** Strong; analysis conducted using the 2010-2016 Medicare Current Beneficiary Survey (MCBS).

**Methods:**

Pennsylvania Rural Health Model. Rural Health Redesign Center. Accessed July 12, 2023.

<https://www.rhrco.org/parhm>

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Web page

**Objective:** To summarize the Pennsylvania Rural Health Model (PARHM), preliminary results, project team members, and model participants.

**Main Findings:** PARHM aims to transform health care in rural Pennsylvania to deliver value-based care by transitioning rural hospitals from fee-for-service to global budget payments. The three main goals set forth by CMMI are to improve access to care, improve population health, and decrease deaths due to substance abuse disorder. With 18 participant hospitals, approximately 1.3 million Pennsylvanians, or approximately 10 percent of the state, are effected

by the PARHM. Preliminary results show the Medicare spend per member per month continues to be below the rural spend by beneficiary for PARHM hospitals compared to the national rural average and among hospitals with applicable data, 80 percent improved avoidable utilization, 83 percent improved HAC scores, and 100 percent maintained their CMS readmission rates.

**Strengths/Limitations:** High-level Model summary and findings with no details of methodology.

**Generalizability to Medicare Population:** Moderate; Medicare population is not specifically mentioned but many of the terms and concepts apply.

**Methods:** N/A

Peterson MR, Bridging The Gap Between Ancillary Health Professions And Rural Community Health Needs. 2022. Occupational Therapy Capstones. 516. <https://commons.und.edu/ot-grad/516>

**Subtopic(s):** Key Highlights, Challenges Affecting Rural Patients and Providers

**Type of Source:** Report

**Objective:** To see what research exists related to the demographic and predicted trends, person factors, and studies related to the recruitment of ancillary health service providers in rural areas.

**Main Findings:** Education plays an important role in preparing the future workforce, and should include curricular topics specific to rural health, providing quality clinical placements, and having discussions with students about the positive aspects of rural practice. Flexible and individualized recruitment strategies should be used to recruit ancillary health professionals (AHPs), and maintained support is essential. Continued research is needed to investigate specific recruitment and retention strategies as well as assess workforce demographics and trends.

**Strengths/Limitations:** Evaluation specifically addressed existing recruitment and retention strategies for rural AHPs and rural challenges, however author ran into challenges with ambiguous and undefined language.

**Generalizability to Medicare Population:** Weak; considers articles from other countries and not specific to Medicare population.

**Methods:** Literature review

Pollard K and Martinez M. Digital Divide in High-Speed Internet Access Leaves Rural Areas Behind. December 2021. Population Reference Bureau. <https://www.prb.org/articles/digital-divide-in-high-speed-internet-access-leaves-rural-areas-behind/>

**Subtopic(s):** Challenges Affecting Rural Patients and Providers; Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Web Page

**Objective:** To describe county-level access to broadband internet with a focus on rural areas.

**Main Findings:** Broadband access was especially low in rural areas due to both lack of infrastructure and higher subscription rates.

**Strengths/Limitations:** ACS data provides characteristics associated with lack of internet access (not available vs. unaffordable). The study is descriptive and cross-sectional, limiting the ability to understand causal relationships or trends over time.

**Generalizability to Medicare Population:** Moderate; No focus on Medicare population but rural populations may be more likely to be Medicare beneficiaries.

**Methods:** Descriptive geographical analysis using 2015-2019 American Community Survey data.

Prescott GM, Prescott WA. Health information technology utilization and impact on COVID-19 vaccination. *Journal of the American Pharmacists Association*. 2021;61(4):e230-e232. doi:10.1016/j.japh.2021.03.020

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To describe inequitable access to health information technology during the COVID-19 pandemic among patients with social determinants of health such as poverty and low health literacy.

**Main Findings:** Vaccination efforts, including providing information and engaging community partners, should be combined with health information technology to improve equitable access to the COVID-19 vaccine. Two suggested strategies relevant for rural communities are community health center organized vaccine delivery and mobile clinics and “hotline” scheduling.

**Strengths/Limitations:** Identified vaccination strategies for various populations, such as rural communities, older adults, veterans and Native Americans. This was a commentary, not original research.

**Generalizability to Medicare Population:** Moderate; No use of claims data but the focus of the commentary was on populations who may be more likely to be on Medicare.

**Methods:** Descriptive commentary and literature review. No data analysis.

Ralston JD, Hirsch IB, Hoath J, Mullen M, Cheadle A, Goldberg HI. Web-Based Collaborative Care for Type 2 Diabetes. *Diabetes Care*. 2009;32(2).

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To evaluate the effectiveness of a web-based care management program compared to usual care on change in glycemic control among patients with type 2 diabetes.

**Main Findings:** The web-based care management program improved glycemic control in type 2 diabetes over the 12-month study period.

**Strengths/Limitations:** Strength is the randomized controlled trial design. Limitation is generalizability to other health centers and settings and more diverse patient populations.

**Generalizability to Medicare Population:** Weak; No focus on Medicare population and the study sample included adults aged 18 to 75 years old and was predominantly non-Hispanic white.

**Methods:** Single center parallel group randomized controlled design with intention to treat and sensitivity analyses.

Report to Congress: Rural Community Hospital Demonstration. Centers for Medicare and Medicaid Services. 2018. <https://innovation.cms.gov/files/reports/rch-rtc.pdf>

**Subtopic(s):** Leveraging Financial Incentives to Improve Rural Health Care

**Type of Source:** Report

**Objective:** To summarize the findings from the Rural Community Hospital Demonstration.

**Main Findings:** Prior to joining the RCHD, participants had relatively low Medicare inpatient margins, but tended to be in better overall financial condition than similarly-sized non-participant hospitals. Participation in the RCHD improved total margins for participants and increased payments on a per-hospital per-year basis, with the average increase of 41 percent during FY 2005-2009 and 42 percent during FY 2011-2013. Participants noted that RCHD payments helped maintain and support services, staff retention, and staff recruitment, but the demonstration had little quantifiable impact on quality for Medicare beneficiaries.



**Strengths/Limitations:** The report covers the impacts of the RCHD from a qualitative and quantitative perspective.

**Generalizability to Medicare Population:** Strong; the report discusses a Medicare demonstration.

**Methods:** Qualitative analysis of hospital operations, environmental contexts, challenges, goals, use of funds, quality of care, and community benefits; financial analysis of hospital performance on costs and margins; and market analysis of census and ZIP code level discharge data.

Rogan E and Lewis J. Rural health care: Big challenges require big solutions. American Hospital Association. 2020. <https://www.aha.org/news/insights-and-analysis/2020-01-28-rural-health-care-big-challenges-require-big-solutions>

**Subtopic(s):** Challenges Affecting Rural Patients, Facilities, and Providers; Challenges Affecting Rural Patients and Providers

**Type of Source:** Web Page

**Objective:** To describe the troubling trend of rural hospital closures and the efforts of AHA's Future of Rural Health Care Task Force to create a policy roadmap to tackle this issue.

**Main Findings:** Rural hospitals face unique financial and organizational challenges that can be addressed through strategic policy work that aligns short-term and long-term goals.

**Strengths/Limitations:** Highlights the work of AHA in this area but no specific policy recommendations given and no data analysis.

**Generalizability to Medicare Population:** Moderate; No use of claims data but the issues are relevant to rural Medicare populations.

**Methods:** Descriptive commentary of rural health care challenges and the key role of policy.

Rossiter, K. Understanding Geographic Relationships: Counties, Places, Tracts and More. 2014. <https://www.census.gov/newsroom/blogs/random-samplings/2014/07/understanding-geographic-relationships-counties-places-tracts-and-more.html>

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Web Page

**Objective:** To define standard census geographic entities and their relationships to facilitate analysis.

**Main Findings:** Provides visual hierarchy of geographic entities and text definitions focused on ZIP code tabulation areas, county subdivisions and school districts.

**Strengths/Limitations:** Provides concise definitions of geographies relevant to classifying or identifying rural data. Limited information on its own.

**Generalizability to Medicare Population:** Weak; no direct connection to Medicare population.

**Methods:** Description of available geographic data provided by the U.S. Census Bureau. No data analysis.

RTI International. Frontier Community Health Integration Project (FCHIP) Demonstration Evaluation: Final Evaluation Report. RTI International; 2020:119. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt>

**Subtopic(s):** Leveraging Financial Incentives to Improve Rural Health Care

**Type of Source:** Report

**Objective:** To evaluate FCHIP through the performance year three (end of July 2019).

**Main Findings:** The ambulance intervention allowed CAHs (Critical Access Hospitals) to increase stipends for volunteer EMTs and associated training classes and equipment. The ambulance intervention also decreased ambulance transports by 25 percent over the 3-year

demonstration, but this was likely due to normal variation in demand. The SNF/NF bed expansion intervention allowed CAHs to increase visibility of their commitment to treating patients in the community. One CAH used the additional SNF beds, but others had declining SNF admissions due to lower demand. The telehealth intervention increased billing of telehealth services by CAHs; allowed CAHs to improve aspects of the telehealth experience as well as relationships with distant site providers. There was no evidence that the demonstration led to increased access to telehealth. The main challenges for participating CAHs were their low patient volume and demand for services.

**Strengths/Limitations:** Mixed methods analysis. Limited sample sizes due to the small size of CAHs and the small number of participating CAHs weakens generalizability outside of FCHIP participants.

**Generalizability to Medicare Population:** Strong; The model evaluated directly served Medicare beneficiaries in rural counties.

**Methods:** Key informant interviews. Descriptive analysis of counts and rates of the provision of select health services using Medicare claims data for each analytic year. Multivariable difference-in-differences regression at the Medicare beneficiary level.

Scarpati LM, McWilliams JM, McPherson H, Fout BT, Trombley MJ. "How ACOs In Rural And Underserved Areas Responded To Medicare's ACO Investment Model," Health Affairs Blog, November 10, 2020. doi:10.1377/forefront.20201104.974760

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Blog Post

**Objective:** To highlight findings from an evaluation of the AIM ACO implementation in rural and underserved areas through performance year three (2018).

**Main Findings:** On average, the AIM model reduced spending among rural and underserved participants enough to offset the upfront investment, even using a one-sided model with upside risk only. Some AIM ACOs reported that management companies helped support the operational and administrative duties involved in their transition to and implementation of the new ACO. The degree of geographic distribution of providers within an AIM ACO did not affect their ability to achieve cost savings.

**Strengths/Limitations:** This blog post summarizes the key findings from a three-year evaluation that employed qualitative and quantitative methods. The authors suggest that future evaluations should consider the long-term impact of benchmarking and risk adjustment in rural and underserved settings.

**Generalizability to Medicare Population:** Strong; the model evaluated directly served Medicare beneficiaries and providers.

**Methods:** This blog post described the main findings of a multi-year mixed methods evaluation.

Schadelbauer R. Anticipating Economic Returns of Rural Telehealth. The Rural Broadband Association; 2017. [https://www.ntca.org/sites/default/files/documents/2017-12/SRC\\_whitepaper\\_anticipatingeconomicreturns.pdf](https://www.ntca.org/sites/default/files/documents/2017-12/SRC_whitepaper_anticipatingeconomicreturns.pdf)

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Report

**Objective:** To describe and evaluate the economic benefits of telehealth in rural areas for states and the nation.

**Main Findings:** Telemedicine may offer significant cost savings and nonquantifiable benefits depending on the medical facility and the state context. The main obstacles to building the infrastructure for telemedicine are the availability of reliable and affordable fiber-based

broadband service; Medicare and Medicaid reimbursement restrictions; upfront implementation costs; and navigating patient privacy and licensing. Investing in the expansion of fiber-based services in each state is crucial to the future success of rural telemedicine.

**Strengths/Limitations:** The report offers state-level estimates of specific cost savings and increases to pharmacy and lab revenues. The report is authored by a representative of the NTCA-Rural Broadband Association, whose members may have a conflict of interest. Methods and limitations are not discussed in detail.

**Generalizability to Medicare Population:** Moderate; the report is focused on rural populations that may be covered by Medicare and/or Medicaid, but there is no direct analysis of claims data.

**Methods:** The author developed forecasting models for estimating direct benefits and opportunity costs for implementing telemedicine at the state level. These models were based on methods described in a peer-reviewed article and used publicly available data.

Schoenhaus R, Lustig A, Rivas S, Monrreal V, Westrich KD, Dubois RW. Using an Electronic Medication Refill System to Improve Provider Productivity in an Accountable Care Setting. *JMCP*. 2016;22(3):204-208. doi:10.18553/jmcp.2016.22.3.204

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To describe the design, implementation, and rollout of the Sharp Rees-Stealy Medical Group's (SRSMG) fully electronic medication refill system.

**Main Findings:** Integrating pharmacists into a primary care electronic medication therapy management system may help reduce the workload of primary care providers (PCPs) in an accountable care environment. The electronic medication refill service described in this article provided an estimated 20 to 30 minutes of time savings per day for PCPs.

**Strengths/Limitations:** The article highlights key factors in the success of a novel electronic medication therapy management program in a large integrated health care delivery network in San Diego, however, there is no quantitative evaluation of the program.

**Generalizability to Medicare Population:** Moderate; the program benefits are discussed in the context of ACOs, many of which involve Medicare populations and providers.

**Methods:** Qualitative description of the design, implementation, and rollout of an electronic medication therapy management system.

Smith A and Trevelyan E. In Some States, More Than Half of Older Residents Live In Rural Areas. Census Bureau. 2021. <https://www.census.gov/library/stories/2019/10/older-population-in-rural-america.html#:~:text=More%20than%201%20in%205,to%2013.8%25%20in%20urban%20areas>.

**Subtopic(s):** Key Findings: Challenges Affecting Rural Patients, Facilities, and Providers

**Type of Source:** Web Page

**Objective:** To highlight key findings from a U.S. Census Bureau authored report using ACS data, *The Older Population in Rural America: 2012-2016*, that describes the geographic distribution of older Americans.

**Main Findings:** The largest proportion of the U.S. population aged 65 years and older in rural counties is highest in the middle of the country, ranging from North Dakota to Texas. At the state level, Vermont and Maine have the largest percentage of the older rural population, whereas the District of Columbia, New Jersey and California have the smallest percentage. Rural areas tend to have residents of older age and more men than women, compared to urban areas.

**Strengths/Limitations:** Provides valuable information on the geographic distribution of the older adult population in the U.S., in rural versus urban areas at the state and county levels; and the relative age and gender distribution of the older adult rural and urban populations.

**Generalizability to Medicare Population:** Moderate; no direct analysis of Medicare data but focus on rural populations aged 65 years and older.

**Methods:** Description of findings from a report that provided descriptive statistics quantifying the distribution of older adults in rural and urban areas at both the county and state levels, overall and according to age and gender.

Strong K, Gilbert M, and Harris J, et al. Achieving Behavioral Health Care Integration in Rural America. Bipartisan Policy Center; 2023:59. Accessed July 11, 2023.

<https://bipartisanpolicy.org/report/behavioral-health-rural-integration/>

**Subtopic(s):** Leveraging Financial Incentives to Improve Rural Health Care **Type of Source:** Report

**Objective:** To explain the current barriers to integrating behavioral health care in rural areas and provide policy recommendations for overcoming these barriers.

**Main Findings:** There is a significant shortage of behavioral health specialists in rural areas. This is especially concerning since the COVID-19 pandemic amplified the need for more behavioral health services, especially for rural communities. Policy initiatives should focus on better integration between primary care and behavioral health care. Policy recommendations also include payment reform, delivery system reform, and better support for veterans, tribal communities, and individuals with high individual needs.

**Strengths/Limitations:** Interviews included a wide variety of stakeholders. However, there is no quantitative analysis.

**Generalizability to Medicare Population:** Moderate; Medicare is mentioned in the context of its low reimbursement rates, which are contributing to low revenue for rural hospitals. Medicare is also mentioned in the context of other proposed solutions.

**Methods:** They conducted interviews with stakeholders, such as providers, federal/state leaders, academics, and rural policy experts.

Temple, KM. Understanding the rural swing bed: More than just a reimbursement policy. Rural Health Information Hub. Published August 11, 2021. Accessed July 15, 2023.

<https://www.ruralhealthinfo.org/rural-monitor/swing-beds/>.

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Web Page

**Objective:** To provide an overview of the swing bed program, including its history and impact.

**Main Findings:** A swing bed is a change in reimbursement status from billing acute care services to billing post-acute skilled nursing care services. The patient-centered program has allowed rural hospitals to continue to serve their communities. For Medicare beneficiaries, several advantages of the program include but are not limited to keeping subacute care close to patients' homes, encouraging continuity of care within the same hospital and with the same hospital staff, and enhancing transitions of care.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Strong; the swing bed program provides Medicare patients access to post-acute skilled nursing facility care.

**Methods:** N/A

Telehealth in rural communities. The Centers for Disease Control and Prevention. Published September 8, 2022. Accessed July 15, 2023.

<https://www.cdc.gov/chronicdisease/resources/publications/factsheets/telehealth-in-rural-communities.htm>.

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Web Page

**Objective:** To provide an overview of the telehealth projects supported by the Centers for Disease Control and Prevention to increase rural residents' access to specialist care as well as chronic disease prevention and management programs.

**Main Findings:** CDC-funded projects aim to promote the use of telehealth to reduce heart disease and stroke risk factors in rural areas, to improve rural residents' diabetes self-management, to increase screening for eye disease in rural areas, to provide tobacco cessation services in rural areas, and to reduce barriers to care for rural residents with epilepsy.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Moderate; the web page does not reference Medicare specifically, however increasing access to care through the use of telehealth services is applicable within the context of Medicare.

**Methods:** N/A

Telehealth Impact Study: Physician Survey. The COVID-19 Healthcare Coalition. Published November 16, 2020. Accessed July 10, 2023. <https://c19hcc.org/telehealth/physician-survey-analysis/>.

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Report

**Objective:** To understand physicians and other clinicians' experiences and attitudes regarding the provision of telehealth services during the COVID-19 pandemic.

**Main Findings:** Use of telehealth increased substantially during the COVID-19 pandemic. Many health care providers used a mix of telehealth modalities including audio-only visits as well as interactive video-based visits. Providers suggested the usage of telehealth allowed them to provide quality care during the pandemic. Many providers planned to increase the usage of telehealth in their practices.

**Strengths/Limitations:** Whereas one strength of the project was the large sample size, one limitation is that responses were collected online, potentially introducing response bias.

**Generalizability to Medicare Population:** Moderate; the study does not reference Medicare specifically, however understanding rural clinicians' experiences and attitudes about telehealth services is applicable within the context of Medicare.

**Methods:** The survey was developed by the COVID-19 Telehealth Impact Study Work Group of the COVID-19 Healthcare Coalition. The survey was available online between July 13, 2020 through August 15, 2020. A total of 1,594 physicians and other clinicians across the United States responded to the survey. The frequencies of survey responses were broken down by urban, suburban, and rural providers.

The Lewin Group. *Comprehensive End-Stage Renal Disease Care (CEC) Model: Performance Year 4 Annual Evaluation Report*. 2021. <https://innovation.cms.gov/data-and-reports/2021/cec-annrpt-py4>

**Subtopic(s):** CMMI Models that Include or Target Rural Participants in their Model Designs

**Type of Source:** Report

**Objective:** To summarize findings of the impact of the Comprehensive End-Stage Renal Disease (ESRD) Care (CEC) Model.

**Main Findings:** The CEC Model is an Advanced Alternative Payment Model (APM) that provides financial incentives for Medicare providers to coordinate care for Medicare beneficiaries with

ESRD. Qualitative and quantitative findings focused on the first four performance years of the CEC Model (October 1, 2015 through December 31, 2019). Overall findings suggested the CEC Model made modest improvements on several quality and health care utilization measures, such as decreased catheter use, decreased opioid overutilization, reduced hospitalizations, and reduced readmissions. Evidence also suggested the CEC Model decreased total Medicare Part A and Part B Payments. The size of the improvements were strongest during the first two years of the model and weakest during the last two years of the model.

**Strengths/Limitations:** Participation in the CEC Model was voluntary which may have reduced generalizability of the findings; the participating ESRD Seamless Care Organizations (ESCOs) may not have been representative of the population of Medicare dialysis providers. Another limitation included the approach used to match CEC facilities with comparison facilities; the characteristics selected for matching purposes may not have adequately accounted for all differences between the CEC and comparison facilities and their beneficiaries.

**Generalizability to Medicare Population:** Strong; the report focused on ESRD specifically in Medicare beneficiaries.

**Methods:** A dialysis facility dataset was constructed based on CMS data sets: 2015 Dialysis Facility Compare database; a summary of 2012-2014 Medicare claims; market-level characteristics from 2014 based on the Area Health Resource Files; Census American Community Survey. In addition, site visits with interviews and focus groups were conducted at 11 participating ESCOs to assess each facility's implementation of ESCO-related programs. Both quantitative and qualitative analyses were conducted to understand the model's impact on quality and health care utilization as well as cost.

The MITRE Corporation. *Alternative Payment Model (APM) Framework*. Health Care Payment Learning and Action Network; 2017. <https://hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf>

**Subtopic(s):** Challenges Affecting Rural Patients and Providers, Opportunities for APMs and PB-TCO Models to Address Challenges in Rural Communities

**Type of Source:** White Paper

**Objective:** To update the previous Alternative Payment Model (APM) Framework.

**Main Findings:** The APM Framework is used to implement APMs and evaluate progress toward health care payment reform. A multi-stakeholder advisory group met to update the 2016 APM Framework's principles based on changes that took place since the original publication of the framework. The previous version of the framework needed to be updated due to several changes that took place since publication, such as the publication of CMS' final rule on the Merit-based Incentive Payment System (MIPS) and Advanced APMs under the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA).

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Strong; the white paper discussed a framework that supports implementation and evaluation of APMs which are directly relevant to Medicare beneficiaries.

**Methods:** N/A

Totten AM, Hansen RN, Wagner J, et al. Telehealth for acute and chronic care consultations. *Agency for Healthcare Research and Quality*. 2019. doi:10.23970/AHRQEPCCER216

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Report

**Objective:** To review and summarize the available evidence on the effectiveness of telemedicine consultations.

**Main Findings:** Findings suggested telehealth consultation either improves outcomes or there is no difference in outcomes compared to comparators in the studied settings and clinical indications. Specifically, the evidence suggested remote intensive care unit consultations may reduce mortality, specialty telehealth consultations may reduce patient time in the emergency department, telehealth consultations in emergency services may reduce heart attack mortality, and remote consultations for outpatient care may improve access and clinical outcomes.

**Strengths/Limitations:** One limitation of the review is the exclusion of articles that solely focused on implementation of telemedicine, assessment of telemedicine technology, or diagnostic concordance without reporting outcomes (e.g., clinical outcomes, costs, satisfaction). In addition, the meta-analysis was conducted using a small sample size.

**Generalizability to Medicare Population:** Moderate; the systematic review did not focus specifically on existing studies examining outcomes for Medicare beneficiaries, however understanding the impact of telemedicine on patient outcomes is applicable within the context of Medicare.

**Methods:** The systematic review extracted existing studies published between 1996 and May 2018 using Ovid MEDLINE®, the Cochrane Central Register of Controlled Trials (CCRCT), and the Cumulative Index to Nursing and Allied Health Literature (CINAHL®). Two-hundred thirty-three published articles met the study's inclusion criteria. Quantitative and qualitative analysis was used to synthesize findings across publications.

Rural connections: Challenges and opportunities in America's heartland. TRIP. Published May 2020. Accessed July 15, 2023. [https://tripnet.org/wp-content/uploads/2020/04/TRIP\\_Rural\\_Roads\\_Report\\_2020.pdf](https://tripnet.org/wp-content/uploads/2020/04/TRIP_Rural_Roads_Report_2020.pdf)

**Subtopic(s):** Key Highlights, Challenges Affecting Rural Patients and Providers

**Type of Source:** Report

**Objective:** To provide an overview of the reliance of the United States's economy on the quality of rural transportation systems, including roads, highways and bridges.

**Main Findings:** The United States's rural transportation network faces many deficiencies including safety, deficient road and bridge connections, and connectivity. Many of the deficiencies in the rural and urban transportation systems could be addressed with additional funding.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak; the report focused on rural transportation systems and did not focus on transportation as it relates to health care access.

**Methods:** N/A

U.S. Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618, Published: Nov. 17, 2021. Publicly Released: Nov. 17, 2021

**Subtopic(s):** Key Highlights, Challenges Affecting Rural Patients and Providers, Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities, Trends in Rural Providers' Participation in APMs, CMMI Models that Include or Target Rural Participants in their Model Designs, Leveraging Financial Incentives to Improve Rural Health Care

**Type of Source:** Report

**Objective:** To describe: 1) participation in Advanced APMs by providers in rural or shortage areas; 2) challenges providers in rural, shortage, or underserved areas face in transitioning to APMs, including Advanced APMs; and 3) actions CMS has taken to help these providers transition to APMs.

**Main Findings:** A smaller percentage of providers eligible to participate in Advanced APMs

(eligible providers) in rural or health professional shortage areas participated in them each year from 2017 through 2019 compared to providers not located in these areas. Providers in rural, shortage, or medically underserved areas face financial, technology, and other challenges in transitioning to APMs, including Advanced APMs.

**Strengths/Limitations:** The most recent data analyzed were from 2019.

**Generalizability to Medicare Population:** Strong; Medicare beneficiaries are included in Advanced APMs.

**Methods:** Mixed methods analysis, including interviews with CMS officials and representatives from 18 stakeholder organizations

U.S. Senate Committee on Commerce, Science, & Transportation. Senate and House Members Introduce PLAN for Broadband Act. Published online August 4, 2022. Accessed July 10, 2023.

<https://www.commerce.senate.gov/2022/8/senate-and-house-members-introduce-plan-for-broadband-act>

**Subtopic(s):** Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Web Page

**Objective:** To report on legislation being introduced to the Senate on improving broadband access for Americans.

**Main Findings:** The Proper Leadership to Align Networks (PLAN) for Broadband Act is a legislative act that asks the President to develop and implement a strategy to close the digital divide among Americans.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Moderate. No specific reference to Medicare population but legislation to close the digital divide will improve access to telehealth as an alternative method to get care.

**Methods:** N/A

United States of Care. Coordinated Care Organizations (CCOs) in Oregon: How they Work and Future Opportunities. Accessed July 19, 2023. <https://unitedstatesofcare.org/wp-content/uploads/2022/04/CCO-Oregon-Overview.pdf>

**Subtopic(s):** Opportunities for APMs and PB-TCOC Models to Address Challenges in Rural Communities

**Type of Source:** Report

**Objective:** To describe Oregon's Coordinated Care Organizations (CCOs) under the state's 1115 Medicaid waiver.

**Main Findings:** CCOs are designed to contain costs, cover health-related services and account for Social Determinants of Health as well as engage stakeholders and involve the community. The CCO model is a value-based payment models which has evolved over time following its successful implementation in 2018. Four key areas were targeted for improvement in CCO 2.0: behavioral health and care integration, pay-for-performance, social determinants of health, and sustainable cost growth. In 2022, Oregon passed HB 4035 which authorizes a "Bridge Plan" to cover Oregonians just above the Medicaid eligibility threshold and which must be offered through existing Medicaid CCOs.

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Moderate. CCOs were developed under a state innovation model grant from the Center for Medicare and Medicaid Innovation.

**Methods:** N/A



Velasquez D, Mehrotra A. Ensuring The Growth Of Telehealth During COVID-19 Does Not Exacerbate Disparities In Care. *Health Affairs Forefront*. Published online May 8, 2020.

doi:10.1377/forefront.20200505.591306

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Blog Post

**Objective:** To describe ways to decrease the digital divide to ensure equitable access to telehealth in future public health emergencies.

**Main Findings:** There are three primary overlapping barriers to accessing telehealth and which exacerbate disparities in care: the absence of technology, digital literacy, and reliable internet coverage. Studies show that people of color who are older are more likely to have these barriers as opposed to younger, white people thereby compounding access to care for a population which are also at a higher risk for health complications due to COVID-19. Possible solutions included encouraging policy makers to prioritize rural and low-income communities as a part of bills passed to improve digital access and to reinstate programs like the Community Technology Centers which expanded spaces to provide disadvantaged residents from low-income urban and rural communities with “access to information technology and the training to use it.”

**Strengths/Limitations:** Provides possible federal solutions.

**Generalizability to Medicare Population:** Moderate. Disparities in access to telehealth are greatest among older people who are not white.

**Methods:** N/A

Ward MM, Jaana M, Natafji N. Systematic review of telemedicine applications in emergency rooms.

*International Journal of Medical Informatics*. 2015;84(9):601-616. doi:10.1016/j.ijmedinf.2015.05.009

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To review telemedicine applications for hospital-based care and understand its impact on patients, providers, organizations and health systems.

**Main Findings:** Telemedicine applications have the potential to make important impacts on the needs of small and rural hospitals, particularly in emergency situations which require specialist care. Technical quality and user satisfaction was found to be generally positive in tele-emergency studies. The technology is evolving quickly, meaning that it is hard to glean meaningful findings from studies of a particular application before a new application is developed.

**Strengths/Limitations:** Telehealth is generally useful to improve access issues for rural settings, however generalizability of findings is difficult due to the wide variability of clinical settings, scope and technology.

**Generalizability to Medicare Population:** Weak. This was a systematic review, so while it did not focus primarily on Medicare populations, many of the applications are applicable to their care.

**Methods:** Systematic review utilizing PubMed, CINAHL, EMBASE and the Cochrane Database. Keywords related to telemedicine and telehealth were used to identify relevant articles and were narrowed down based upon three inclusion/exclusion criteria as well as additional criteria leaving 38 studies to be included.

Werner RM, Emanuel E, Pham HH, Navathe AS. The Future of Value-Based Payment: A Road Map to 2030. University of Pennsylvania Leonard Davis Institute of Health Economics; 2021.

[https://ldi.upenn.edu/wp-content/uploads/2021/07/PennLDI-Future-of-Value-Based-Payment-WhitePaper.pdf?\\_ga=2.79419796.161174588.1689192367-1142174748.1689192367](https://ldi.upenn.edu/wp-content/uploads/2021/07/PennLDI-Future-of-Value-Based-Payment-WhitePaper.pdf?_ga=2.79419796.161174588.1689192367-1142174748.1689192367)

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** White Paper

**Objective:** To assess the impact of alternative based payment models on the US health care system and recommend what the future of value-based payment models looks like.

**Main Findings:** Over the ten years since the passage of the Affordable Care Act, there have been many alternative payment models piloted across the country in an effort to transform the U.S. health care system to one that prioritizes value over volume. These models however have not been widely adopted, and many of their methodologies overlap, causing administrative burden. Additionally, they have not been particularly successful at reducing health disparities among racial or socioeconomic lines. To improve and continue the progress of prioritizing value, the Leonard Davis Institute recommends better alignment of models, simplification of the payment landscape, encouraging risk-bearing models, provide incentives to move providers away from fee-for-service payment and set a goal for achieving health equity.

**Strengths/Limitations:** Illustrates the many positives gleaned from a decade of pilot programs and uses lessons learned to make recommendations for the future.

**Generalizability to Medicare Population:** Strong. APMs arise from CMS initiatives and thus a high proportion of Medicare patients are participants in these models.

**Methods:** Analysis of APM landscape.

Wilcock AD, Rose S, Busch AB, et al. Association Between Broadband Internet Availability and Telemedicine Use. *JAMA Intern Med.* 2019;179(11):1580. doi:10.1001/jamainternmed.2019.2234

**Subtopic(s):** Key Highlights, Use of Telehealth Among Rural Patients and Providers

**Type of Source:** Research Letter

**Objective:** To understand how broadband accessibility is connected to telemedicine use.

**Main Findings:** Rural counties with lower broadband access were associated with lower telehealth visits per capita compared to rural counties with higher broadband access. The same association was not found when looking at metropolitan counties that had rural residents or nonmetropolitan counties that had smaller towns or cities. Results were consistent when differentiating between Medicare and commercial rates.

**Strengths/Limitations:** The authors noted that their analysis was limited to only wired broadband availability and only took into account telehealth visits that were billed as such.

**Generalizability to Medicare Population:** Moderate. Sample included Medicare Advantage enrollees.

**Methods:** Quantitative analysis including regression modeling.

Wu FM, Shortell SM, Rundall TG, Bloom JR. The role of health information technology in advancing care management and coordination in accountable care organizations. *Health Care Manage Rev.* 2017;42(4):282-291. doi:10.1097/HMR.000000000000123

**Subtopic(s):** Adoption and Use of HIT and Data Analytics Among Rural Patients and Providers

**Type of Source:** Journal article

**Objective:** To understand how Health information technology (HIT) improves ACO performance and specifically whether that performance varies by level of coordination.

**Main Findings:** The authors categorized HIT functionalities by coordination level (information capture, provision, or exchange) and found that they were additive, meaning that higher levels of functionality included lower levels as well. Information exchange was the most highly

associated HIT functionality ACO care management processes. The authors questioned whether development of HIT drove improvement in ACOs or if increased provision of care management processes necessitated development of HIT and could not determine the direction of causality.

**Strengths/Limitations:** The majority of ACOs had either all of the HIT functionalities or none at all, making comparisons difficult.

**Generalizability to Medicare Population:** Strong. The study focused on ACO care management processes.

**Methods:** Retrospective cross-sectional analysis

Yu SWY, Hill C, Ricks ML, Bennet J, Oriol NE. The scope and impact of mobile health clinics in the United States: a literature review. *Int J Equity Health*. 2017 Oct 5;16(1):178. doi: 10.1186/s12939-017-0671-2. PMID: 28982362; PMCID: PMC5629787.

**Subtopic(s):** Background: Defining Rural in the Context of Health Care Systems, Settings/Providers, and Patients

**Type of Source:** Journal article

**Objective:** To review the literature to understand how well Mobile Health Clinics deliver health care and what impact they can have on improving health disparities in vulnerable populations.

**Main Findings:** Mobile Health Clinics are an important “stepping stone” between the community and the clinical setting and are powerful tools to improve both population and individual health outcomes. Further research is needed to fully integrate Mobile Health Clinics into the greater health care system including gathering data to support their impact on the community and help them become more cost effective.

**Strengths/Limitations:** Mobile health care clinics have a potential to improve costs of health care delivery and reach vulnerable populations.

**Generalizability to Medicare Population:** Moderate. ACOs are mentioned and generally mobile health clinics aim to reach chronically ill patients and vulnerable populations like those on Medicare who are otherwise unable to make it to a traditional clinical setting.

**Methods:** Systematic review utilizing PubMed, and MobileHealthMap.org, an online collaborative research network of mobile clinics. Keywords related to Mobile Health Clinics were used to identify relevant articles. The only limitation was that quantitative and qualitative data must have been collected in the last 20 years.

Zhu X, Huang H, MacKinney AC, Ullrich F, Mueller K. Medicare accountable care organization characteristics associated with participation in 2-sided risk. *The Journal of Rural Health*. 2023;39(1):302-308. doi:10.1111/jrh.12672

**Subtopic(s):** Key Highlights, Trends in Rural Providers' Participation in APMs

**Type of Source:** Journal article

**Objective:** To determine how different ACO characteristics make it more or less likely that they will participate in 2-sided risk tracks.

**Main Findings:** Early ACOs (2012-2017) were extremely unlikely to participate in 2-sided risk tracks. As they grew and gained affiliations with supporting organizations, they were more likely to switch to 2-sided risk tracks. Rural ACOs were less likely than urban ACOs to switch to 2-sided risk tracks.

**Strengths/Limitations:** Based on this study, the authors made the assumption that as participation in SSP becomes more widespread, there will be an increase in adoption of care management and other strategies that may promote high-value care. Due to this, they recommend targeting policies to promote small and rural ACOs to participate.

**Generalizability to Medicare Population:** Strong. The focus of the article is on Medicare ACOs explicitly.

**Methods:** Logistic regression and survival analysis were used to determine the association between ACO characteristics and the probability of ACOs participating in 2-sided risk tracks.

Zhu X, Shrestha M, Ullrich F, Mueller K. Financial Risk Acceptance among Rural Health Care Providers Participating in the Quality Payment Program. RUPRI Center for Rural Health Policy Analysis. 2023;(10). Accessed July 5, 2023. <https://rupri.public-health.uiowa.edu/publications/policybriefs/2023/Financial%20Risk%20Assumption%20in%20QPP.pdf>

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Policy Brief

**Objective:** To summarize non-metropolitan and metropolitan health care providers' participation in the CMS Quality Payment Program.

**Main Findings:** In 2018, a lower proportion of non-metropolitan providers and specialist providers participated in Medicare advanced APMs with two-sided risk models compared to metropolitan and primary care providers. Non-metropolitan providers accepting no financial risk served fewer Medicare beneficiaries than non-metropolitan providers accepting financial risk. In contrast, metropolitan providers accepting no financial risk served more Medicare beneficiaries than metropolitan providers accepting financial risk

**Strengths/Limitations:**

**Generalizability to Medicare Population:** Strong; the piece

**Methods:** Statistical analysis of proportion of different types of providers accepting different types of financial risk, using MIPS eligibility and APM participation data, RUCA codes to identify

Zogg CK, Thumma JR, Ryan AM, Dimick JB. Medicare's Hospital Acquired Condition Reduction Program Disproportionately Affects Minority-Serving Hospitals: Variation by Race, Socioeconomic Status, and Disproportionate Share Hospital Payment Receipt. *Ann Surg*. 2020;271(6):985-993. doi:10.1097/SLA.0000000000003564

**Subtopic(s):** Trends in Rural Providers' Participation in APMs

**Type of Source:** Journal article

**Objective:** To assess the impacts of race, socioeconomic status, and safety net status on hospital-acquired condition reduction program (HACRP) scores and penalty receipt.

**Main Findings:** Minority-serving hospitals are being disproportionately negatively impacted by the HACRP, with worse HACRP scores as percentages of Black patients increased. The authors noted similar increases for safety net and low-SES serving hospitals.

**Strengths/Limitations:** The study relies on Medicare claims, which may be incomplete, misreported, and/or lacking in details. Additionally, the study used 2013-2014 claims data to determine hospital characteristics, which may not be the same as when hospitals received HACRP penalties in FY2017.

**Generalizability to Medicare Population:** Strong; the study evaluates a Medicare program and uses Medicare claims data.

**Methods:** Multi-level mixed-effects regression of differences in FY2017 HACRP scores/penalties and analysis of Medicare FFS claims from 2013-2014.

## Appendix J. References

- <sup>1</sup> Rural Health Information Hub. What is Rural. January 2022. <https://www.ruralhealthinfo.org/topics/what-is-rural>
- <sup>2</sup> Guzman, G, Posey, K., Bishaw, A., and Benson, C. Differences in Income Growth Across U.S. Counties. United States Census Bureau. December 2018. <https://www.census.gov/library/stories/2018/12/differences-in-income-growth-across-united-states-counties.html>
- <sup>3</sup> Rural Health Information Hub. Barriers to Transportation in Rural Areas. <https://www.ruralhealthinfo.org/toolkits/transportation/1/barriers>
- <sup>4</sup> Centers for Disease Control and Prevention. Health, United States – Data Finder. Table 039. <https://www.cdc.gov/nchs/hus/data-finder.htm?year=2017&table=Table%20039>
- <sup>5</sup> Smith, A., and Trevelyan, E. In Some States, More Than Half of Older Residents Live In Rural Areas. Census Bureau. October 2021. <https://www.census.gov/library/stories/2019/10/older-population-in-rural-america.html#:~:text=More%20than%201%20in%205,to%2013.8%25%20in%20urban%20areas>.
- <sup>6</sup> Okobi OE, Ajayi OO, Okobi TJ, Anaya IC, Fasehun OO, Diala CS, Evbayekha EO, Ajibowo AO, Olateju IV, Ekabua JJ, Nkongho MB, Amanze IO, Taiwo A, Okorare O, Ojinnaka US, Ogbeifun OE, Chukwuma N, Nebuwa EJ, Omole JA, Udoete IO, Okobi RK. The Burden of Obesity in the Rural Adult Population of America. *Cureus*. 2021 Jun 20;13(6):e15770. doi: 10.7759/cureus.15770. PMID: 34295580; PMCID: PMC8290986.
- <sup>7</sup> Rural Health Information Hub. Substance Use and Misuse in Rural Areas. <https://www.ruralhealthinfo.org/topics/substance-use>
- <sup>8</sup> Rural Health. CMS Office of Minority Health. Accessed August 3, 2023. <https://www.cms.gov/about-cms/agency-information/omh/health-equity-programs/rural-health>
- <sup>9</sup> About Rural Health. Centers for Disease Control and Prevention. Published May 9, 2023. Accessed August 3, 2023. <https://www.cdc.gov/ruralhealth/about.html>
- <sup>10</sup> Rural Health. U.S. Food & Drug Administration. Published June 22, 2021. Accessed August 3, 2023. <https://www.fda.gov/consumers/minority-health-and-health-equity-resources/rural-health>
- <sup>11</sup> TRIP. Rural Connections: Challenges and Opportunities in America’s Heartland. May 2020. [https://tripnet.org/wp-content/uploads/2020/04/TRIP\\_Rural\\_Roads\\_Report\\_2020.pdf](https://tripnet.org/wp-content/uploads/2020/04/TRIP_Rural_Roads_Report_2020.pdf)
- <sup>12</sup> Rogan, E. and Lewis, J. Rural health care: Big challenges require big solutions. American Hospital Association. January 2020. <https://www.aha.org/news/insights-and-analysis/2020-01-28-rural-health-care-big-challenges-require-big-solutions>
- <sup>13</sup> Cyr, M.E., Etchin, A.G., Guthrie, B.J. et al. Access to specialty healthcare in urban versus rural US populations: a systematic literature review. *BMC Health Serv Res* 19, 974 (2019). <https://doi.org/10.1186/s12913-019-4815-5>
- <sup>14</sup> Agency for Healthcare Research and Quality. Health IT in Small and Rural Communities. <https://digital.ahrq.gov/health-it-small-and-rural-communities>
- <sup>15</sup> The Office of the National Coordinator for Health Information Technology (ONC). Frequently Asked Questions. <https://www.healthit.gov/faq/what-electronic-health-record-implementation-issues-are-unique-rural-settings>
- <sup>16</sup> Rural Health Information Hub. Rural Data Explorer. <https://www.ruralhealthinfo.org/data-explorer?id=204>
- <sup>17</sup> Peterson, McKenzie Rae, "Bridging The Gap Between Ancillary Health Professions And Rural Community Health Needs" (2022). Occupational Therapy Capstones. 516. <https://commons.und.edu/ot-grad/516>
- <sup>18</sup> Health Resources and Services Administration. Strengthening the Rural Health Workforce to Improve Health Outcomes in Rural Communities. April 2022. <https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/graduate-medical-edu/reports/cogme-april-2022-report.pdf>
- <sup>19</sup> The MITRE Corporation. *Alternative Payment Model (APM) Framework*. Health Care Payment Learning and Action Network; 2017. <https://hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf>
- <sup>20</sup> Medicaid and CHIP Payment and Access Commission. Access in Brief: Rural and Urban Health Care. October 2018. <https://www.macpac.gov/wp-content/uploads/2018/10/Rural-Access-In-Brief.pdf>
- <sup>21</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.

- 
- <sup>22</sup>Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>23</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>24</sup> Gale JA, Croll ZT, Coburn AF. *Rural Health Clinic Participation in the Merit-Based Incentive System and Other Quality Reporting Initiatives: Challenges and Opportunities*. Maine Rural Health Research Center; 2018. <https://digitalcommons.usm.maine.edu/cgi/viewcontent.cgi?article=1012&context=clinics>
- <sup>25</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>26</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>27</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>28</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>29</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtspm-2nd-eval-full-report>
- <sup>30</sup> Zhu X, Huang H, MacKinney AC, Ullrich F, Mueller K. Medicare accountable care organization characteristics associated with participation in 2-sided risk. *The Journal of Rural Health*. 2023;39(1):302-308. doi:[10.1111/jrh.12672](https://doi.org/10.1111/jrh.12672)
- <sup>31</sup> Kelley E, Lipscomb R, Valdez J, Patil N, Coustasse A. Medicare Access and CHIP Reauthorization Act and Rural Hospitals. *The Health Care Manager*. 2019;38(3):197. doi:[10.1097/HCM.0000000000000267](https://doi.org/10.1097/HCM.0000000000000267)
- <sup>32</sup> Biniek, J., F., Clerveau, G. et al. Medicare Advantage Enrollment, Plan Availability and Premiums in Rural Areas. Kaiser Family Foundation. September 2023. <https://www.kff.org/medicare/issue-brief/medicare-advantage-enrollment-plan-availability-and-premiums-in-rural-areas/>
- <sup>33</sup> Hill T. CMMI Value-based Health Care Models and ACOs. Presented at: DRCHSD Summit; September 29, 2021. <https://www.ruralcenter.org/sites/default/files/CMMI%20Health%20Care%20Models%20ACO%20Progression.pdf>
- <sup>34</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>35</sup> Bhatnagar S, Harris J, Hartnett T, et al. *The Impact of COVID-19 on the Rural Health Care Landscape*. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>
- <sup>36</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>37</sup> Zhu X, Huang H, MacKinney AC, Ullrich F, Mueller K. Medicare accountable care organization characteristics associated with participation in 2-sided risk. *The Journal of Rural Health*. 2023;39(1):302-308. doi:[10.1111/jrh.12672](https://doi.org/10.1111/jrh.12672)
- <sup>38</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>39</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>40</sup> Liaw WR, Jetty A, Petterson SM, Peterson LE, Bazemore AW. Solo and Small Practices: A Vital, Diverse Part of Primary Care. *The Annals of Family Medicine*. 2016;14(1):8-15. doi:[10.1370/afm.1839](https://doi.org/10.1370/afm.1839)

- 
- <sup>41</sup> Kelley E, Lipscomb R, Valdez J, Patil N, Coustasse A. Medicare Access and CHIP Reauthorization Act and Rural Hospitals. *The Health Care Manager*. 2019;38(3):197. doi:[10.1097/HCM.0000000000000267](https://doi.org/10.1097/HCM.0000000000000267)
- <sup>42</sup> Erfani P, Figueroa JF, Lam MB. Reforms to the Radiation Oncology Model: Prioritizing Health Equity. *Int J Radiat Oncol Biol Phys*. 2021;110(2):328-330. doi:10.1016/j.ijrobp.2021.01.029
- <sup>43</sup> NORC at the University of Chicago. The Pennsylvania Rural Health Model: First Annual Report. 2021. <https://innovation.cms.gov/data-and-reports/2021/parhm-ar1-full-report>
- <sup>44</sup> Erfani P, Figueroa JF, Lam MB. Reforms to the Radiation Oncology Model: Prioritizing Health Equity. *Int J Radiat Oncol Biol Phys*. 2021;110(2):328-330. doi:10.1016/j.ijrobp.2021.01.029
- <sup>45</sup> Burns M, Bailit M. *Alternative Payment Models and the Case of Safety Net Providers in Massachusetts*. Blue Cross Blue Shield of Massachusetts Foundation; 2015. Accessed August 3, 2023. <https://bailit-health.com/publications/2015-0318-bhp-bcbs-apm.pdf>
- <sup>46</sup> Bhatnagar S, Harris J, Hartnett T, et al. *The Impact of COVID-19 on the Rural Health Care Landscape*. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>
- <sup>47</sup> Bhatnagar S, Harris J, Hartnett T, et al. *The Impact of COVID-19 on the Rural Health Care Landscape*. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>
- <sup>48</sup> Centers for Medicare & Medicaid Services. Pennsylvania Rural Health Model (PARHM) Evaluation of Performance Years 1-2 (2019-2020). <https://innovation.cms.gov/data-and-reports/2022/parhm-ar2-aag>
- <sup>49</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>50</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>51</sup> Centers for Medicare & Medicaid Services. ACO REACH Model Fast Facts. Innovation Models. Published March 24, 2023. <https://innovation.cms.gov/media/document/aco-reach-model-fast-facts>
- <sup>52</sup> Centers for Medicare & Medicaid Services. Shared Savings Program Fast Facts – As of January 1, 2023. <https://www.cms.gov/files/document/2023-shared-savings-program-fast-facts.pdf>
- <sup>53</sup> Totten AM, Hansen RN, Wagner J, et al. Telehealth for Acute and Chronic Care Consultations. Agency for Healthcare Research and Quality; 2019. doi:10.23970/AHRQEPCCER216
- <sup>54</sup> Mueller KJ, Potter AJ, MacKinney AC, Ward MM. Lessons From Tele-Emergency: Improving Care Quality And Health Outcomes By Expanding Support For Rural Care Systems. *Health Affairs*. 2014;33(2):228-234. doi:10.1377/hlthaff.2013.1016
- <sup>55</sup> Ward MM, Jaana M, Natafji N. Systematic review of telemedicine applications in emergency rooms. *International Journal of Medical Informatics*. 2015;84(9):601-616. doi:10.1016/j.ijmedinf.2015.05.009
- <sup>56</sup> Komaromy M, Duhigg D, Metcalf A, et al. Project Echo (Extension for Community Healthcare Outcomes): A New Model for Educating Primary Care Providers about Treatment of Substance Use Disorders. *Substance Abuse*. 2016;37(1):20-24. doi:10.1080/08897077.2015.1129388
- <sup>57</sup> Velasquez D, Mehrotra A. Ensuring The Growth Of Telehealth During COVID-19 Does Not Exacerbate Disparities In Care. *Health Affairs Forefront*. Published online May 8, 2020. doi:10.1377/forefront.20200505.591306
- <sup>58</sup> Edmiston KD, AlZubi J. *Trends in Telehealth and Its Implications for Health Disparities*. National Association of Insurance Commissioners Center for Insurance Policy and Research; 2022. Accessed August 3, 2023. <https://content.naic.org/sites/default/files/Telehealth%20and%20Health%20Disparities.pdf>
- <sup>59</sup> Centers for Medicare & Medicaid Services. Information on Medicare Telehealth.; 2018. <https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/Information-on-Medicare-Telehealth-Report.pdf>
- <sup>60</sup> Douglas MD, Xu J, Heggs A, Wrenn G, Mack DH, Rust G. Assessing Telemedicine Utilization by Using Medicaid Claims Data. *PS*. 2017;68(2):173-178. doi:10.1176/appi.ps.201500518



- 
- <sup>61</sup> Centers for Medicare & Medicaid Services. COVID-19 Frequently Asked Questions on Medicare Fee-for-Service (FFS) Billing. <https://www.cms.gov/files/document/medicare-telehealth-frequently-asked-questions-faqs-31720.pdf>
- <sup>62</sup> Wilcock AD, Rose S, Busch AB, et al. Association Between Broadband Internet Availability and Telemedicine Use. *JAMA Intern Med.* 2019;179(11):1580. doi:10.1001/jamainternmed.2019.2234
- <sup>63</sup> The COVID-19 Healthcare Coalition. Telehealth Impact Study: Physician Survey.; 2020. Accessed July 10, 2023. <https://c19hcc.org/telehealth/physician-survey-analysis/>
- <sup>64</sup> Lin CC, Dievler A, Robbins C, Sripipatana A, Quinn M, Nair S. Telehealth In Health Centers: Key Adoption Factors, Barriers, And Opportunities. *Health Affairs.* 2018;37(12):1967-1974. doi:10.1377/hlthaff.2018.05125
- <sup>65</sup> The COVID-19 Healthcare Coalition. Telehealth Impact Study: Physician Survey.; 2020. Accessed July 10, 2023. <https://c19hcc.org/telehealth/physician-survey-analysis/>
- <sup>66</sup> Mehrotra A, Wang B, Snyder G. Telemedicine: What Should the Post-Pandemic Regulatory and Payment Landscape Look Like?; 2020. Accessed August 13, 2020. <https://www.commonwealthfund.org/publications/issue-briefs/2020/08/telemedicine-post-pandemic-regulation>
- <sup>67</sup> Kalata S, Nathan H, Ibrahim AM. Understanding Community Health Access and Rural Transformation Reform— Implications for Rural Surgical Care. *JAMA Surg.* 2023;158(5):437. doi:10.1001/jamasurg.2022.6834
- <sup>68</sup> Federal Office of Rural Health Policy. Telehealth Network Grant Program. U.S. Health Resources & Services Administration; 2020. <https://www.hrsa.gov/grants/find-funding/HRSA-20-036>
- <sup>69</sup> Ford S, Buscemi J, Hirko K, et al. Society of Behavioral Medicine (SBM) urges Congress to ensure efforts to increase and enhance broadband internet access in rural areas. *Transl Behav Med.* 2020;20(10):489-491. doi:10.1093/tbm/ibz035
- <sup>70</sup> Erikson CE. Will new care delivery solve the primary care physician shortage?: A call for more rigorous evaluation. *Healthcare.* 2013;1(1-2):8-11. doi:10.1016/j.hjdsi.2013.04.008
- <sup>71</sup> Greenberg AJ, Haney D, Blake KD, Moser RP, Hesse BW. Differences in Access to and Use of Electronic Personal Health Information Between Rural and Urban Residents in the United States: ePHI Use in Rural and Urban Patients. *The Journal of Rural Health.* 2018;34:s30-s38. doi:10.1111/jrh.12228
- <sup>72</sup> The National Advisory Committee on Rural Health and Human Services. The 2006 Report to the Secretary: Rural Health and Human Service Issues. 2006.
- <sup>73</sup> Ralston JD, Hirsch IB, Hoath J, Mullen M, Cheadle A, Goldberg HI. Web-Based Collaborative Care for Type 2 Diabetes. *Diabetes Care.* 2009;32(2).
- <sup>74</sup> Krakow M, Hesse BW, Oh A, Patel V, Vanderpool RC, Jacobsen PB. Addressing Rural Geographic Disparities Through Health IT: Initial Findings From the Health Information National Trends Survey. *Medical Care.* 2019;57(Suppl 2):S127-S132. doi:10.1097/MLR.0000000000001028
- <sup>75</sup> Furukawa MF, King J, Patel V, Hsiao CJ, Adler-Milstein J, Jha AK. Despite Substantial Progress In EHR Adoption, Health Information Exchange And Patient Engagement Remain Low In Office Settings. *Health Affairs.* 2014;33(9):1672-1679. doi:10.1377/hlthaff.2014.0445
- <sup>76</sup> Greenberg AJ, Haney D, Blake KD, Moser RP, Hesse BW. Differences in Access to and Use of Electronic Personal Health Information Between Rural and Urban Residents in the United States: ePHI Use in Rural and Urban Patients. *The Journal of Rural Health.* 2018;34:s30-s38. doi:10.1111/jrh.12228
- <sup>77</sup> Chen J, Amaize A, Barath D. Evaluating Telehealth Adoption and Related Barriers Among Hospitals Located in Rural and Urban Areas. *The Journal of Rural Health.* 2021;37(4):801-811. doi:10.1111/jrh.12534
- <sup>78</sup> Ortiz J, Bushy A, Zhou Y, Zhang H. Accountable care organizations: benefits and barriers as perceived by Rural Health Clinic management. *RRH.* Published online June 28, 2013. doi:10.22605/RRH2417
- <sup>79</sup> Heisey-Grove DM. Variation In Rural Health Information Technology Adoption And Use. *Health Affairs.* 2016;35(2):365-370. doi:10.1377/hlthaff.2015.0861
- <sup>80</sup> Krakow M, Hesse BW, Oh A, Patel V, Vanderpool RC, Jacobsen PB. Addressing Rural Geographic Disparities Through Health IT: Initial Findings From the Health Information National Trends Survey. *Medical Care.* 2019;57(Suppl 2):S127-S132. doi:10.1097/MLR.0000000000001028
- <sup>81</sup> Prescott GM, Prescott WA. Health information technology utilization and impact on COVID-19 vaccination. *Journal of the American Pharmacists Association.* 2021;61(4):e230-e232. doi:10.1016/j.japh.2021.03.020

- 
- <sup>82</sup> Lite S, Gordon WJ, Stern AD. Association of the Meaningful Use Electronic Health Record Incentive Program With Health Information Technology Venture Capital Funding. *JAMA Netw Open*. 2020;3(3):e201402. doi:10.1001/jamanetworkopen.2020.1402
- <sup>83</sup> Casey MM, Moscovice I, McCullough J. Rural Primary Care Practices and Meaningful Use of Electronic Health Records: The Role of Regional Extension Centers. *The Journal of Rural Health*. 2014;30(3):244-251. doi:10.1111/jrh.12050
- <sup>84</sup> Lin SC, Hollingsworth JM, Adler-Milstein J. Alternative Payment Models and Hospital Engagement in Health Information Exchange. Published online 2019.
- <sup>85</sup> European Network for Rural Development. Smart Villages – How to Ensure That Digital Strategies Benefit Rural Communities. Orientations for Policy-Makers and Implementers.; 2015:1-8. [https://ec.europa.eu/enrd/sites/default/files/enrd\\_publications/smart-villages\\_orientations\\_digital-strategies.pdf](https://ec.europa.eu/enrd/sites/default/files/enrd_publications/smart-villages_orientations_digital-strategies.pdf)
- <sup>86</sup> National Quality Forum. Rural-relevant quality measures for testing of statistical approaches to address low case-volume. 2020.
- <sup>87</sup> National Quality Forum. A core set of rural-relevant measures and measuring and improving access to care: 2018 recommendations from the MAP Rural Health Workgroup. National Quality Forum; 2018.
- <sup>88</sup> National Quality Forum. 2022 key rural measures: An updated list of measures to advance rural health priorities. National Quality Forum; 2022. [https://www.qualityforum.org/Publications/2022/08/2022\\_Key\\_Rural\\_Measures\\_An\\_Updated\\_List\\_of\\_Measures\\_to\\_Advance\\_Rural\\_Health\\_Priorities.aspx](https://www.qualityforum.org/Publications/2022/08/2022_Key_Rural_Measures_An_Updated_List_of_Measures_to_Advance_Rural_Health_Priorities.aspx)
- <sup>89</sup> National Quality Forum. 2022 key rural measures: An updated list of measures to advance rural health priorities. National Quality Forum; 2022. [https://www.qualityforum.org/Publications/2022/08/2022\\_Key\\_Rural\\_Measures\\_An\\_Updated\\_List\\_of\\_Measures\\_to\\_Advance\\_Rural\\_Health\\_Priorities.aspx](https://www.qualityforum.org/Publications/2022/08/2022_Key_Rural_Measures_An_Updated_List_of_Measures_to_Advance_Rural_Health_Priorities.aspx)
- <sup>90</sup> National Quality Forum. Rural-relevant quality measures for testing of statistical approaches to address low case-volume. 2020.
- <sup>91</sup> Rural Health Information Hub. Rural healthcare payment and reimbursement. Published October 20, 2022. Accessed July 14, 2023. <https://www.ruralhealthinfo.org/topics/healthcare-payment>
- <sup>92</sup> <https://www.ruralhealthinfo.org/topics/what-is-rural>
- <sup>93</sup> Rural Health Information Hub. Health and Healthcare in Frontier Areas. November 2022. <https://www.ruralhealthinfo.org/topics/frontier>
- <sup>94</sup> Rossiter, K. Understanding Geographic Relationships: Counties, Places, Tracts and More. 2014. <https://www.census.gov/newsroom/blogs/random-samplings/2014/07/understanding-geographic-relationships-counties-places-tracts-and-more.html>
- <sup>95</sup> Rural-Urban Continuum Codes. USDA Economic Research Service. Last updated December 10, 2020. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>
- <sup>96</sup> Office of Management and Budget. *2020 Standards for Delineating Core Based Statistical Areas*. 2021. 86 FR 37770. Accessed August 3, 2023. <https://www.federalregister.gov/documents/2021/07/16/2021-15159/2020-standards-for-delineating-core-based-statistical-areas>
- <sup>97</sup> United States Health Resources & Services Administration. Defining Rural Population. March 2022. <https://www.hrsa.gov/rural-health/about-us/what-is-rural>
- <sup>98</sup> Long, J. Delamater, P. L., Holmes, and G. M. Which Definition of Rurality Should I Use?: The Relative Performance of 8 Federal Rural Definitions in Identifying Rural-Urban Disparities. *Medical Care* 59():p S413-S419, October 2021. | DOI: 10.1097/MLR.0000000000001612
- <sup>99</sup> United States Health Resources & Services Administration. Defining Rural Population. March 2022. <https://www.hrsa.gov/rural-health/about-us/what-is-rural>
- <sup>100</sup> Rural Health Information Hub. What is Rural? January 2022. <https://www.ruralhealthinfo.org/topics/what-is-rural>
- <sup>101</sup> Pipa, A., and Geismar, N. The new 'rural'? The implications of OMB's proposal to redefine nonmetro America. Brookings Institute. March 2021. <https://www.brookings.edu/articles/the-new-rural-the-implications-of-ombs-proposal-to-redefine-nonmetro-america/>

- 
- <sup>102</sup> Krause, J. R., Wink, L. A., and Snow, D. H. The Medicare Chess Game: New Moves for Some Urban Hospitals. Hall Render. April 2016. <https://www.hallrender.com/2016/04/27/medicare-chess-game-new-moves-urban-hospitals/>
- <sup>103</sup> About Rural Health Care. National Rural Health Association. Accessed August 3, 2023. <https://www.ruralhealth.us/about-nrha/about-rural-health-care>
- <sup>104</sup> Rural Health Information Hub. Critical Access Hospitals (CAHs). <https://www.ruralhealthinfo.org/topics/critical-access-hospitals>
- <sup>105</sup> Centers for Medicare & Medicaid Services. CMS Manual System. August 30, 2013. <https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/Downloads/R90SOMA.pdf>
- <sup>106</sup> Centers for Medicare & Medicaid Services. CMS Manual System. August 30, 2013. <https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/Downloads/R90SOMA.pdf>
- <sup>107</sup> Temple, Kay Miller. Understanding the Rural Sing Bed: More than Just a Reimbursement Policy. August 2021. <https://www.ruralhealthinfo.org/rural-monitor/swing-beds/>
- <sup>108</sup> Centers for Medicare & Medicaid Services. Critical Access Hospitals. <https://www.cms.gov/medicare/provider-enrollment-and-certification/certificationandcompliance/cahs>
- <sup>109</sup> Henriksen, M., Walizer, N., and Blanke, A. Learning from the Past, Building the Future. January 2015. [https://icahn.org/wp-content/uploads/2018/10/ICAHN-Illinois\\_Critical\\_Access\\_Hospital\\_Program\\_LongReport\\_update\\_2-25-15.pdf#page=9](https://icahn.org/wp-content/uploads/2018/10/ICAHN-Illinois_Critical_Access_Hospital_Program_LongReport_update_2-25-15.pdf#page=9)
- <sup>110</sup> National Rural Health Resource Center. Technical Assistance & Service Center. <https://www.ruralcenter.org/programs/tasc>
- <sup>111</sup> Rural Health Information Hub. Critical Access Hospitals (CAHs). <https://www.ruralhealthinfo.org/topics/critical-access-hospitals>
- <sup>112</sup> Rural Health Information Hub. Federally Qualified Health Centers (FQHCs) and the Health Center Program. <https://www.ruralhealthinfo.org/topics/federally-qualified-health-centers>
- <sup>113</sup> Rural Health Information Hub. Federally Qualified Health Centers (FQHCs) and the Health Center Program. <https://www.ruralhealthinfo.org/topics/federally-qualified-health-centers>
- <sup>114</sup> Kaiser Family Foundation. Primary Care Health Professional Shortage Areas (HPSAs). September 2022. <https://www.kff.org/other/state-indicator/primary-care-health-professional-shortage-areas-hpsas/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>
- <sup>115</sup> Rural Health Information Hub. Rural Health Clinics (RHCs). <https://www.ruralhealthinfo.org/topics/rural-health-clinics>
- <sup>116</sup> Rural Health Information Hub. Rural Health Clinics (RHCs). <https://www.ruralhealthinfo.org/topics/rural-health-clinics>
- <sup>117</sup> Rural Health Information Hub. Rural Health Clinics (RHCs). April 2021. <https://www.ruralhealthinfo.org/topics/rural-health-clinics#:~:text=Provider%2Dbased%20RHCs%20are%20owned,based%20RHCs%20are%20hospital%20owned.>
- <sup>118</sup> MedPac. Federally Qualified Health Center and Rural Health Clinic Payment Systems. October 2022. [https://www.medpac.gov/wp-content/uploads/2021/11/MedPAC\\_Payment\\_Basics\\_22\\_FQHC\\_FINAL\\_SEC.pdf](https://www.medpac.gov/wp-content/uploads/2021/11/MedPAC_Payment_Basics_22_FQHC_FINAL_SEC.pdf)
- <sup>119</sup> Centers for Medicare & Medicaid Services. Update to Rural Health Clinic (RHC) Payment Limits. May 2021. <https://www.cms.gov/files/document/mm12185.pdf#:~:text=The%20RHC%20payment%20limit%20per%20visit%20over%20an,per%20visit%20in%202027%2C%20at%20%24178%20per%20visit>
- <sup>120</sup> MedPac. Federally Qualified Health Center and Rural Health Clinic Payment Systems. October 2022. [https://www.medpac.gov/wp-content/uploads/2021/11/MedPAC\\_Payment\\_Basics\\_22\\_FQHC\\_FINAL\\_SEC.pdf](https://www.medpac.gov/wp-content/uploads/2021/11/MedPAC_Payment_Basics_22_FQHC_FINAL_SEC.pdf)
- <sup>121</sup> Government Accountability Office. Medicare: Information on Medicare-Dependent Hospitals. February 2020. <https://www.gao.gov/assets/gao-20-300.pdf>
- <sup>122</sup> Government Accountability Office. Medicare: Information on Medicare-Dependent Hospitals. February 2020. <https://www.gao.gov/assets/gao-20-300.pdf>
- <sup>123</sup> University of North Carolina Cecil G. Sheps Center for Health Services Research. Communities Served by Rural Medicare Dependent Hospitals. <https://www.shepscenter.unc.edu/product/communities-served-by-rural-medicare-dependent-hospitals/>

- 
- <sup>124</sup> Thomas, S., Homes, M., and Pink, G. Differences in Community Characteristics of Sole Community Hospitals. November 2017. North Carolina Rural Health Research Program. [https://www.shepscenter.unc.edu/wp-content/uploads/dlm\\_uploads/2017/11/SCHs\\_Differences\\_in\\_Community\\_Characteristics.pdf](https://www.shepscenter.unc.edu/wp-content/uploads/dlm_uploads/2017/11/SCHs_Differences_in_Community_Characteristics.pdf)
- <sup>125</sup> American Hospital Association. Medicare Payment for Rural or Geographically Isolated Hospitals. August 2022. <https://www.aha.org/fact-sheets/2022-08-30-fact-sheet-rural-hospital-support-act-s4009-assistance-rural-community>
- <sup>126</sup> Centers for Medicare & Medicaid Services. Rural Emergency Hospitals. <https://www.cms.gov/medicare/quality-safety-oversight-guidance-laws-regulations/hospitals/rural-emergency-hospitals>
- <sup>127</sup> Centers for Medicare & Medicaid Services. Rural Emergency Hospitals. <https://www.cms.gov/medicare/quality-safety-oversight-guidance-laws-regulations/hospitals/rural-emergency-hospitals>
- <sup>128</sup> American Hospital Association. AHA Report: Rural hospital closures threaten patient access to care. September 2022. <https://www.aha.org/news/headline/2022-09-08-aha-report-rural-hospital-closures-threaten-patient-access-care>
- <sup>129</sup> Rural Health Information Hub. Rural Emergency Hospitals. <https://www.ruralhealthinfo.org/topics/rural-emergency-hospitals>
- <sup>130</sup> 42 CFR 412. 103. <https://www.ecfr.gov/current/title-42/chapter-IV/subchapter-B/part-412/subpart-G/section-412.103>
- <sup>131</sup> Rural Health Information Hub. Mobile Clinics. <https://www.ruralhealthinfo.org/toolkits/transportation/2/models-to-overcome-barriers/mobile-clinics>
- <sup>132</sup> Coaston A, Lee SJ, Johnson J, Hardy-Peterson M, Weiss S, Stephens C. Mobile Medical Clinics in the United States Post-Affordable Care Act: An Integrative Review. *Population Health Management*. 2022;25(2):264-279. doi:10.1089/pop.2021.0289;
- <sup>133</sup> Yu SWY, Hill C, Ricks ML, Bennet J, Oriol NE. The scope and impact of mobile health clinics in the United States: a literature review. *Int J Equity Health*. 2017 Oct 5;16(1):178. doi: 10.1186/s12939-017-0671-2. PMID: 28982362; PMCID: PMC5629787.
- <sup>134</sup> Lukens, J. Freestanding Emergency Departments: An Alternative Model for Rural Communities. November 2016. <https://www.ruralhealthinfo.org/rural-monitor/freestanding-emergency-departments/>
- <sup>135</sup> American College of Emergency Physicians. Freestanding Emergency Departments. April 2020. <https://www.acep.org/patient-care/policy-statements/freestanding-emergency-departments>
- <sup>136</sup> Lukens, J. Freestanding Emergency Departments: An Alternative Model for Rural Communities. November 2016. Rural Health Information Hub. <https://www.ruralhealthinfo.org/rural-monitor/freestanding-emergency-departments/>
- <sup>137</sup> American College of Emergency Physicians. Freestanding Emergency Departments. April 2020. <https://www.acep.org/patient-care/policy-statements/freestanding-emergency-departments>
- <sup>138</sup> Iowa Health. Iowa's Rural Health Priorities: Supporting Access to Essential Health Care Services in Iowa's Rural Communities. <https://govaffairs.unitypoint.org/rural-health/>
- <sup>139</sup> Families USA. Making the Most of Accountable Care Organizations (ACOs): What Advocates Need to Know. February 2012. <https://familiesusa.org/wp-content/uploads/2012/01/ACO-Basics.pdf>
- <sup>140</sup> National Rural Health Association. About Rural Health Care. <https://www.ruralhealth.us/about-nrha/about-rural-health-care>
- <sup>141</sup> The Medicaid and CHIP Payment and Access Commission. Medicaid and Rural Health. April 2021. <https://www.macpac.gov/wp-content/uploads/2021/04/Medicaid-and-Rural-Health.pdf>
- <sup>142</sup> Rural Policy Research Institute. An Insurance Profile of Rural America: Chartbook. <https://rupri.public-health.uiowa.edu/publications/other/Rural%20Insurance%20Chartbook.pdf>
- <sup>143</sup> Guzman, G, Posey, K., Bishaw, A., and Benson, C. Differences in Income Growth Across U.S. Counties. United States Census Bureau. December 2018. <https://www.census.gov/library/stories/2018/12/differences-in-income-growth-across-united-states-counties.html>

- 
- <sup>144</sup> The Medicaid and CHIP Payment and Access Commission. Medicaid and Rural Health. April 2021. <https://www.macpac.gov/wp-content/uploads/2021/04/Medicaid-and-Rural-Health.pdf>
- <sup>145</sup> TRIP. Rural Connections: Challenges and Opportunities in America's Heartland. May 2020. [https://tripnet.org/wp-content/uploads/2020/04/TRIP\\_Rural\\_Roads\\_Report\\_2020.pdf](https://tripnet.org/wp-content/uploads/2020/04/TRIP_Rural_Roads_Report_2020.pdf)
- <sup>146</sup> Pollard, K., and Martinez, M. Digital Divide in High-Speed Internet Access Leaves Rural Areas Behind. December 2021. Population Reference Bureau. <https://www.prb.org/articles/digital-divide-in-high-speed-internet-access-leaves-rural-areas-behind/>
- <sup>148</sup> Centers for Disease Control and Prevention. Health, United States – Data Finder. Table 039. <https://www.cdc.gov/nchs/hus/data-finder.htm?year=2017&table=Table%20039>
- <sup>149</sup> Smith, A., and Trevelyan, E. In Some States, More Than Half of Older Residents Live In Rural Areas. Census Bureau. October 2021. <https://www.census.gov/library/stories/2019/10/older-population-in-rural-america.html#:~:text=More%20than%201%20in%205,to%2013.8%25%20in%20urban%20areas.>
- <sup>150</sup> Okobi OE, Ajayi OO, Okobi TJ, et al. The Burden of Obesity in the Rural Adult Population of America. *Cureus*. 2021;13(6):e15770. doi:[10.7759/cureus.15770](https://doi.org/10.7759/cureus.15770)
- <sup>151</sup> Rural Health Information Hub. Substance Use and Misuse in Rural Areas. <https://www.ruralhealthinfo.org/topics/substance-use>
- <sup>152</sup> Fontanella CA, Hiance-Steelesmith DL, Phillips GS, et al. Widening Rural-Urban Disparities in Youth Suicides, United States, 1996-2010. *JAMA Pediatr*. 2015;169(5):466–473. doi:10.1001/jamapediatrics.2014.3561
- <sup>153</sup> Rogan, E. and Lewis, J. Rural health care: Big challenges require big solutions. American Hospital Association. January 2020. <https://www.aha.org/news/insights-and-analysis/2020-01-28-rural-health-care-big-challenges-require-big-solutions>
- <sup>154</sup> Cyr, M.E., Etchin, A.G., Guthrie, B.J. et al. Access to specialty healthcare in urban versus rural US populations: a systematic literature review. *BMC Health Serv Res* 19, 974 (2019). <https://doi.org/10.1186/s12913-019-4815-5>
- <sup>155</sup> Barker, A., McBride, T., Mueller, K., and Huntzberry, K. The Market Mechanism and Health Insurance in Rural Places: Lessons Learned from an Economics and Policy Perspective. February 2019. <https://rupri.public-health.uiowa.edu/publications/policypapers/Market%20Structures%20in%20Rural.pdf>
- <sup>156</sup> American Hospital Association. AHA Report: Rural hospital closures threaten patient access to care. September 2022. <https://www.aha.org/news/headline/2022-09-08-aha-report-rural-hospital-closures-threaten-patient-access-care>
- <sup>157</sup> University of North Carolina's Cecil G. Sheps Center for Health Services Research. Rural Hospital Closures. <https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/>
- <sup>158</sup> Agency for Healthcare Research and Quality. Health IT in Small and Rural Communities. <https://digital.ahrq.gov/health-it-small-and-rural-communities>
- <sup>159</sup> The Office of the National Coordinator for Health Information Technology (ONC). Frequently Asked Questions. <https://www.healthit.gov/faq/what-electronic-health-record-implementation-issues-are-unique-rural-settings>
- <sup>160</sup> Nielsen M, D'Agostino D, Gregory P. Addressing Rural Health Challenges Head On. *Mo Med*. 2017 Sep-Oct;114(5):363-366. PMID: 30228634; PMCID: PMC6140198.
- <sup>161</sup> Rogan, E. and Lewis, J. Rural health care: Big challenges require big solutions. American Hospital Association. January 2020. <https://www.aha.org/news/insights-and-analysis/2020-01-28-rural-health-care-big-challenges-require-big-solutions>
- <sup>162</sup> Rural Health Information Hub. Rural Data Explorer. <https://www.ruralhealthinfo.org/data-explorer?id=204>
- <sup>163</sup> Peterson, McKenzie Rae, "Bridging The Gap Between Ancillary Health Professions And Rural Community Health Needs" (2022). Occupational Therapy Capstones. 516. <https://commons.und.edu/ot-grad/516>
- <sup>164</sup> Health Resources and Services Administration. Strengthening the Rural Health Workforce to Improve Health Outcomes in Rural Communities. April 2022. <https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/graduate-medical-edu/reports/cogme-april-2022-report.pdf>
- <sup>165</sup> American Hospital Association. Hospitals' contract labor costs surge amid workforce shortages. March 2023. <https://www.aha.org/news/headline/2023-03-08-hospitals-contract-labor-costs-surge-amid-workforce->

---

shortages#:~:text=Contract%20labor%20expenses%20for%20hospitals%20and%20health%20systems,hospitals%20and%20health%20systems%20by%20AHA%20and%20Syntellis.

<sup>166</sup> Rural Health Research & Policy Centers. Ambulance Deserts. May 2023.

<https://digitalcommons.usm.maine.edu/cgi/viewcontent.cgi?article=1013&context=ems>

<sup>167</sup> Rural Health Information Hub. Health and Healthcare in Frontier Areas.

<https://www.ruralhealthinfo.org/topics/frontier>

<sup>168</sup> Rural Health Information Hub. Health and Healthcare in Frontier Areas.

<https://www.ruralhealthinfo.org/topics/frontier>

<sup>169</sup> Rural Health Information Hub. Health and Healthcare in Frontier Areas.

<https://www.ruralhealthinfo.org/topics/frontier>

<sup>170</sup> Rural Health Information Hub. Health and Healthcare in Frontier Areas.

<https://www.ruralhealthinfo.org/topics/frontier>

<sup>171</sup> Rural Health Information Hub. Health and Healthcare in Frontier Areas.

<https://www.ruralhealthinfo.org/topics/frontier>

<sup>172</sup> Cyr, M.E., Etchin, A.G., Guthrie, B.J. et al. Access to specialty healthcare in urban versus rural US populations: a systematic literature review. *BMC Health Serv Res* 19, 974 (2019). <https://doi.org/10.1186/s12913-019-4815-5>

<sup>173</sup> McDonald, T. W., Curtis-Schaeffer, A. K., Theiler, A. A., & Howard, E. K. M. (2014). Providers' perceptions of prevalent mental and behavioral health problems: Differences and similarities across urban, rural, and frontier areas. *Journal of Rural Mental Health*, 38(1), 36–49. <https://doi.org/10.1037/rmh0000009>

<sup>174</sup> Mueller, K., MacKinney, C.I., Lundblad, J., and Weng, K. How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report. Rural Health Value Team. December 2020.

<https://ruralhealthvalue.public-health.uiowa.edu/files/Rural%20VBC%20Summit%20Report.pdf>

<sup>175</sup> United States Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. November 2021.

<https://www.gao.gov/assets/gao-22-104618.pdf>

<sup>176</sup> Centers for Medicare & Medicaid Services. Making Care Primary (MCP) model. August 2023.

<https://innovation.cms.gov/innovation-models/making-care-primary>

<sup>177</sup> Barker, A., MacKinney, C., and McBride, T. Policy Implications of Fixed-to-Total-Cost Ratio Variation Across Rural and Urban Hospitals. RUPRI Center for Rural Health Policy Analysis. May 2023.

<https://doi.org/10.1111/jrh.12767>

<sup>178</sup> University of North Carolina Cecil G Sheps Center for Health Services Research. Association of CMS-HCC Risk Scores with Health Care Utilization among Rural and Urban Medicare Beneficiaries.

<https://www.shepscenter.unc.edu/product/association-of-cms%e2%80%90hcc-risk-scores-with-health-care-utilization-among-rural-and-urban-medicare-beneficiaries/>

<sup>179</sup> Zhu X, Huang H, MacKinney AC, Ullrich F, Mueller K. Medicare accountable care organization characteristics associated with participation in 2-sided risk. *The Journal of Rural Health*. 2023;39(1):302-308.

doi:[10.1111/jrh.12672](https://doi.org/10.1111/jrh.12672)

<sup>180</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.

<sup>181</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021.

<https://www.gao.gov/assets/720/717649.pdf>

<sup>182</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021.

<https://www.gao.gov/assets/720/717649.pdf>

<sup>183</sup> The MITRE Corporation. *Alternative Payment Model (APM) Framework*. Health Care Payment Learning and Action Network; 2017. <https://hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf>

<sup>184</sup> The MITRE Corporation. *Alternative Payment Model (APM) Framework*. Health Care Payment Learning and Action Network; 2017. <https://hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf>

- 
- <sup>185</sup> Hill T. CMMI Value-based Health Care Models and ACOs. Presented at: DRCHSD Summit; September 29, 2021. <https://www.ruralcenter.org/sites/default/files/CMMI%20Health%20Care%20Models%20ACO%20Progression.pdf>
- <sup>186</sup> Ogundeji Y, Clement F, Wellstead D, Farkas B, Manns B. Primary care physicians' perceptions of the role of alternative payment models in recruitment and retention in rural Alberta: a qualitative study. *CMAJ Open*. 2021;9(3):E788-E794. doi:[10.9778/cmajo.20200202](https://doi.org/10.9778/cmajo.20200202)
- <sup>187</sup> Chernew ME, Conway PH, Frakt AB. Transforming Medicare's Payment Systems: Progress Shaped By The ACA. *Health Affairs*. 2020;39(3):413-420. doi:[10.1377/hlthaff.2019.01410](https://doi.org/10.1377/hlthaff.2019.01410)
- <sup>188</sup> Centers for Medicare & Medicaid Services. ACO Investment Model. Last updated 2022. <https://innovation.cms.gov/innovation-models/aco-investment-model>
- <sup>189</sup> Abt Associates. *Evaluation of the Accountable Care Organization Investment Model Final Report*; 2020. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2020/aim-final-annrpt>
- <sup>190</sup> Mueller K, Ullrich F. *Spread of Accountable Care Organizations in Rural America*. RUPRI Center for Rural Health Policy Analysis; 2016.
- <sup>191</sup> Scarpati LM, McWilliams JM, McPheron H, Fout BT, Trombley MJ. How ACOs In Rural And Underserved Areas Responded To Medicare's ACO Investment Model. *Health Affairs Forefront*. doi:[10.1377/forefront.20201104.974760](https://doi.org/10.1377/forefront.20201104.974760)
- <sup>192</sup> Abt Associates. *Evaluation of the Accountable Care Organization Investment Model Final Report*; 2020. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2020/aim-final-annrpt>
- <sup>193</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>194</sup> Done N, Herring B, Xu T. The effects of global budget payments on hospital utilization in rural Maryland. *Health Serv Res*. 2019;54(3):526-536. doi:[10.1111/1475-6773.13162](https://doi.org/10.1111/1475-6773.13162)
- <sup>195</sup> Pennsylvania Rural Health Model. Rural Health Redesign Center. Accessed July 12, 2023. <https://www.rhrco.org/parhm>
- <sup>196</sup> Maryland Primary Care Program: Care Transformation Organization (CTO) Information. Maryland Department of Health. Accessed July 27, 2023. <https://health.maryland.gov/mdpcp/Pages/default.aspx>
- <sup>197</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>198</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>199</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtapm-2nd-eval-full-report>
- <sup>200</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer accountable Care Organization Model: Third Evaluation Report. 2023. <https://innovation.cms.gov/data-and-reports/2023/vtapm-3rd-eval-full-report>
- <sup>201</sup> United States of Care. Coordinated Care Organizations (CCOs) in Oregon: How they Work and Future Opportunities. Accessed July 19, 2023. <https://unitedstatesofcare.org/wp-content/uploads/2022/04/CCO-Oregon-Overview.pdf>
- <sup>202</sup> Oregon Health Authority. Coordinated Care Organizations: Frequently Asked Questions. <https://www.kff.org/wp-content/uploads/sites/2/2012/05/cco-faq.pdf>
- <sup>203</sup> Kushner J, Tracy K, Lind B, Renfro S, Rowland R, McConnell J. *Evaluation of Oregon's 2012-2017 Medicaid Waiver*. Oregon Health Authority; 2017. <https://www.oregon.gov/oha/HPA/ANALYTICS/Evaluation%20docs/Summative%20Medicaid%20Waiver%20Evaluation%20-%20Final%20Report.pdf>
- <sup>204</sup> Kushner J, Tracy K, Lind B, Renfro S, Rowland R, McConnell J. *Evaluation of Oregon's 2012-2017 Medicaid Waiver*. Oregon Health Authority; 2017. <https://www.oregon.gov/oha/HPA/ANALYTICS/Evaluation%20docs/Summative%20Medicaid%20Waiver%20Evaluation%20-%20Final%20Report.pdf>

- 
- <sup>205</sup> Sharp J, Conway PH, Rajkumar R. Engineering a Rapid Shift to Value-Based Payment in North Carolina: Goals and Challenges for a Commercial ACO Program. *Catalyst Carryover*. 2019;5(1). Accessed August 3, 2023. <https://catalyst.nejm.org/doi/full/10.1056/CAT.19.0021>
- <sup>206</sup> Blue Cross and Blue Shield of North Carolina. Blue Cross NC Program with Providers Improves Quality and Saves \$153 Million in Costs in First Year. Published August 13, 2020. Accessed July 19, 2023. <https://mediacenter.bcbsnc.com/news/blue-cross-nc-program-with-providers-improves-quality-and-saves-153-million-in-costs-in-first-year>
- <sup>207</sup> Blue Cross and Blue Shield of North Carolina. Caravan Health Collaborate to Expand Blue Premier to Community and Rural Hospitals for Better Quality, Lower Costs. Published October 29, 2020. Accessed July 19, 2023. <https://mediacenter.bcbsnc.com/news/blue-cross-nc-caravan-health-collaborate-to-expand-blue-premier-to-community-and-rural-hospitals-for-better-quality-lower-costs>
- <sup>208</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>209</sup> National Rural Health Association. About Rural Health Care. <https://www.ruralhealth.us/about-nrha/about-rural-health-care>.
- <sup>210</sup> Bhatnagar S, Harris J, Hartnett T, et al. *The Impact of COVID-19 on the Rural Health Care Landscape*. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>
- <sup>211</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>212</sup> Liaw WR, Jetty A, Petterson SM, Peterson LE, Bazemore AW. Solo and Small Practices: A Vital, Diverse Part of Primary Care. *The Annals of Family Medicine*. 2016;14(1):8-15. doi:[10.1370/afm.1839](https://doi.org/10.1370/afm.1839)
- <sup>213</sup> Kelley E, Lipscomb R, Valdez J, Patil N, Coustasse A. Medicare Access and CHIP Reauthorization Act and Rural Hospitals. *The Health Care Manager*. 2019;38(3):197. doi:[10.1097/HCM.0000000000000267](https://doi.org/10.1097/HCM.0000000000000267)
- <sup>214</sup> Zhu X, Huang H, MacKinney AC, Ullrich F, Mueller K. Medicare accountable care organization characteristics associated with participation in 2-sided risk. *The Journal of Rural Health*. 2023;39(1):302-308. doi:[10.1111/jrh.12672](https://doi.org/10.1111/jrh.12672)
- <sup>215</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtapm-2nd-eval-full-report>
- <sup>216</sup> Kelley E, Lipscomb R, Valdez J, Patil N, Coustasse A. Medicare Access and CHIP Reauthorization Act and Rural Hospitals. *The Health Care Manager*. 2019;38(3):197. doi:[10.1097/HCM.0000000000000267](https://doi.org/10.1097/HCM.0000000000000267)
- <sup>217</sup> Centers for Medicare & Medicaid Services. Pennsylvania Rural Health Model. Last updated 2022. <https://innovation.cms.gov/innovation-models/pa-rural-health-model>
- <sup>218</sup> Centers for Medicare & Medicaid Services. Community Health and Rural Transformation (CHART) Model. Last updated 2022. <https://innovation.cms.gov/innovation-models/chart-model>
- <sup>219</sup> Centers for Medicare & Medicaid Services. ACO Investment Model. Last updated 2022. <https://innovation.cms.gov/innovation-models/aco-investment-model>
- <sup>220</sup> Centers for Medicare & Medicaid Services. Pennsylvania Rural Health Model. Last updated 2022. <https://innovation.cms.gov/innovation-models/pa-rural-health-model>
- <sup>221</sup> Centers for Medicare & Medicaid Services. Community Health and Rural Transformation (CHART) Model. Last updated 2023. <https://innovation.cms.gov/innovation-models/chart-model>
- <sup>222</sup> Centers for Medicare & Medicaid Services. Community Health and Rural Transformation (CHART) Model. Last updated 2023. <https://innovation.cms.gov/innovation-models/chart-model>
- <sup>223</sup> Centers for Medicare & Medicaid Services. Community Health and Rural Transformation (CHART) Model. Last updated 2023. <https://innovation.cms.gov/innovation-models/chart-model>
- <sup>224</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>



- 
- <sup>225</sup> Centers for Medicare & Medicaid Services. Community Health and Rural Transformation (CHART) Model. Last updated 2023. <https://innovation.cms.gov/innovation-models/chart-model>
- <sup>226</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>227</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>228</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>229</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>230</sup> Centers for Medicare & Medicaid Services. Vermont All-Payer ACO Model. Last updated 2023. <https://innovation.cms.gov/innovation-models/vermont-all-payer-aco-model>
- <sup>231</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtspm-2nd-eval-full-report>
- <sup>232</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>233</sup> Maryland Health Services Cost Review Commission. Maryland's Total Cost of Care Model. Accessed August 31, 2023. <https://hscrc.maryland.gov/Pages/tccocmodel.aspx>
- <sup>234</sup> Centers for Medicare & Medicaid Services. Maryland Total Cost of Care Model. Last updated 2023. <https://innovation.cms.gov/innovation-models/md-tccm>
- <sup>235</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>236</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>237</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>238</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>239</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>240</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>241</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>242</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>243</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>244</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>245</sup> Lewis VA, Colla CH, Carluzzo KL, Kler SE, Fisher ES. Accountable Care Organizations in the United States: Market and Demographic Factors Associated with Formation. *Health Services Research*. 2013;48(6pt1):1840-1858. doi:[10.1111/1475-6773.12102](https://doi.org/10.1111/1475-6773.12102)
- <sup>246</sup> Ouayogodé MH, Frazee T, Rich EC, Colla CH. Association of Organizational Factors and Physician Practices' Participation in Alternative Payment Models. *JAMA Network Open*. 2020;3(4):e202019. doi:[10.1001/jamanetworkopen.2020.2019](https://doi.org/10.1001/jamanetworkopen.2020.2019)
- <sup>247</sup> Frazee TK, Fisher ES, Tomaino MR, Peck KA, Meara E. Comparison of Populations Served in Hospital Service Areas With and Without Comprehensive Primary Care Plus Medical Homes. *JAMA Network Open*. 2018;1(5):e182169. doi:[10.1001/jamanetworkopen.2018.2169](https://doi.org/10.1001/jamanetworkopen.2018.2169)

- 
- <sup>248</sup> Zhu X, Shrestha M, Ullrich F, Mueller K. Financial Risk Acceptance among Rural Health Care Providers Participating in the Quality Payment Program. *RUPRI Center for Rural Health Policy Analysis*. 2023;(10). Accessed July 5, 2023. <https://rupri.public-health.uiowa.edu/publications/policybriefs/2023/Financial%20Risk%20Assumption%20in%20QPP.pdf>
- <sup>249</sup> Zhu X, Huang H, MacKinney AC, Ullrich F, Mueller K. Medicare accountable care organization characteristics associated with participation in 2-sided risk. *The Journal of Rural Health*. 2023;39(1):302-308. doi:10.1111/jrh.12672
- <sup>250</sup> Abt Associates. *Evaluation of the Accountable Care Organization Investment Model Final Report*; 2020. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2020/aim-final-annrpt>
- <sup>251</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>252</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>253</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>254</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>255</sup> Rural Health Information Hub. Rural Health Clinics (RHCs). April 2021. <https://www.ruralhealthinfo.org/topics/rural-health-clinics>
- <sup>256</sup> Hostetter, M., and Klein, S. The Perils and Payoffs of Alternative Payment Models for Community Health Centers. Commonwealth Fund. January 2022. <https://www.commonwealthfund.org/publications/2022/jan/perils-and-payoffs-alternate-payment-models-community-health-centers#:~:text=Community%20health%20centers%2C%20or%20federally,beneficiaries%20and%20several%20million%20Medicare>
- <sup>257</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>258</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>259</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>260</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>261</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>262</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>263</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>264</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>

- 
- <sup>265</sup> Medicaid and CHIP Payment and Access Commission. Access in Brief: Rural and Urban Health Care. October 2018. <https://www.macpac.gov/wp-content/uploads/2018/10/Rural-Access-In-Brief.pdf>
- <sup>266</sup> Mueller K, MacKinney C, Lundblad J, Weng K. *How to Design Value-Based Care Models for Rural Participant Success: A Summit Findings Report*. Rural Health Value; 2020.
- <sup>267</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtapm-2nd-eval-full-report>
- <sup>268</sup> Zhu X, Huang H, MacKinney AC, Ullrich F, Mueller K. Medicare accountable care organization characteristics associated with participation in 2-sided risk. *The Journal of Rural Health*. 2023;39(1):302-308. doi:[10.1111/jrh.12672](https://doi.org/10.1111/jrh.12672)
- <sup>269</sup> Kelley E, Lipscomb R, Valdez J, Patil N, Coustasse A. Medicare Access and CHIP Reauthorization Act and Rural Hospitals. *The Health Care Manager*. 2019;38(3):197. doi:[10.1097/HCM.0000000000000267](https://doi.org/10.1097/HCM.0000000000000267)
- <sup>270</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>271</sup> Mendel P, Buttorff C, Chen PG, et al. *Perspectives of Physicians in Small Rural Practices on the Medicare Quality Payment Program*. RAND Corporation; 2019. [https://www.rand.org/content/dam/rand/pubs/research\\_reports/RR2800/RR2882/RAND\\_RR2882.pdf](https://www.rand.org/content/dam/rand/pubs/research_reports/RR2800/RR2882/RAND_RR2882.pdf)
- <sup>272</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>273</sup> Gale JA, Croll ZT, Coburn AF. *Rural Health Clinic Participation in the Merit-Based Incentive System and Other Quality Reporting Initiatives: Challenges and Opportunities*. Maine Rural Health Research Center; 2018. <https://digitalcommons.usm.maine.edu/cgi/viewcontent.cgi?article=1012&context=clinics>
- <sup>274</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>275</sup> Government Accountability Office. Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>276</sup> Gale JA, Croll ZT, Coburn AF. *Rural Health Clinic Participation in the Merit-Based Incentive System and Other Quality Reporting Initiatives: Challenges and Opportunities*. Maine Rural Health Research Center; 2018. <https://digitalcommons.usm.maine.edu/cgi/viewcontent.cgi?article=1012&context=clinics>
- <sup>277</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtapm-2nd-eval-full-report>
- <sup>278</sup> NORC at the University of Chicago. Evaluation of the Vermont All-Payer Accountable Care Organization Model: Second Evaluation Report. 2022. <https://innovation.cms.gov/data-and-reports/2023/vtapm-2nd-eval-full-report>
- <sup>279</sup> Werner RM, Emanuel E, Pham HH, Navathe AS. *The Future of Value-Based Payment: A Road Map to 2030*. University of Pennsylvania Leonard Davis Institute of Health Economics; 2021. [https://ldi.upenn.edu/wp-content/uploads/2021/07/PennLDI-Future-of-Value-Based-Payment-WhitePaper.pdf?\\_ga=2.79419796.161174588.1689192367-1142174748.1689192367](https://ldi.upenn.edu/wp-content/uploads/2021/07/PennLDI-Future-of-Value-Based-Payment-WhitePaper.pdf?_ga=2.79419796.161174588.1689192367-1142174748.1689192367)
- <sup>280</sup> National Association of ACOs. *Fixing the Rural Glitch*. Accessed July 27, 2023. <https://www.naacos.com/assets/docs/pdf/2021/RuralGlitchExplainer.pdf>
- <sup>281</sup> Bhatnagar S, Harris J, Hartnett T, et al. *The Impact of COVID-19 on the Rural Health Care Landscape*. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>
- <sup>282</sup> Werner RM, Emanuel E, Pham HH, Navathe AS. *The Future of Value-Based Payment: A Road Map to 2030*. University of Pennsylvania Leonard Davis Institute of Health Economics; 2021. [https://ldi.upenn.edu/wp-content/uploads/2021/07/PennLDI-Future-of-Value-Based-Payment-WhitePaper.pdf?\\_ga=2.79419796.161174588.1689192367-1142174748.1689192367](https://ldi.upenn.edu/wp-content/uploads/2021/07/PennLDI-Future-of-Value-Based-Payment-WhitePaper.pdf?_ga=2.79419796.161174588.1689192367-1142174748.1689192367)

- 
- <sup>283</sup> Erfani P, Figueroa JF, Lam MB. Reforms to the Radiation Oncology Model: Prioritizing Health Equity. *International Journal of Radiation Oncology, Biology, Physics*. 2021;110(2):328-330. doi:[10.1016/j.ijrobp.2021.01.029](https://doi.org/10.1016/j.ijrobp.2021.01.029)
- <sup>284</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>
- <sup>285</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>286</sup> Abt Associates. *Evaluation of the Oncology Care Model: Performance Periods 1-9*. 2023. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2023/ocm-evaluation-pp1-9>
- <sup>287</sup> Joynt KE, Nguyen N, Samson LW, Snyder JE, Lechner WA, Ogunwumiju O. *Rural Hospital Participation and Performance in Value-Based Purchasing and Other Delivery System Reform Initiatives*. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation; 2016. <https://www.claritygrp.com/hubfs/Rural%20Hospitals%20HHS%20Report%202016.pdf>
- <sup>288</sup> Jacobs D. RHCs & the Medicare Shared Savings Program - What You Need to Know. Presented at: Rural Health Clinic Technical Assistance Webinar. March 7, 2023. Accessed September 1, 2023. <https://www.narhc.org/News/29801/RHCs--the-Medicare-Shared-Savings-Program---What-You-Need-to-Know>
- <sup>289</sup> Zogg CK, Thumma JR, Ryan AM, Dimick JB. Medicare's Hospital Acquired Condition Reduction Program Disproportionately Affects Minority-Serving Hospitals: Variation by Race, Socioeconomic Status, and Disproportionate Share Hospital Payment Receipt. *Ann Surg*. 2020;271(6):985-993. doi:[10.1097/SLA.0000000000003564](https://doi.org/10.1097/SLA.0000000000003564)
- <sup>290</sup> Huang H, Zhu X, Ullrich F, MacKinney AC, Mueller K. The impact of Medicare shared savings program participation on hospital financial performance: An event-study analysis. *Health Serv Res*. 2023;58(1):116-127. doi:[10.1111/1475-6773.14085](https://doi.org/10.1111/1475-6773.14085)
- <sup>291</sup> Government Accountability Office. *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. GAO-22-104618. 2021. <https://www.gao.gov/assets/720/717649.pdf>
- <sup>292</sup> Erfani P, Figueroa JF, Lam MB. Reforms to the Radiation Oncology Model: Prioritizing Health Equity. *Int J Radiat Oncol Biol Phys*. 2021;110(2):328-330. doi:[10.1016/j.ijrobp.2021.01.029](https://doi.org/10.1016/j.ijrobp.2021.01.029)
- <sup>293</sup> NORC at the University of Chicago. *The Pennsylvania Rural Health Model: First Annual Report*. 2021. <https://innovation.cms.gov/data-and-reports/2021/parhm-ar1-full-report>
- <sup>294</sup> NORC at the University of Chicago. *Evaluation of the Vermont All-Payer Accountable Care Organization Model: First Evaluation Report*. 2021. <https://innovation.cms.gov/data-and-reports/2021/vtapm-1st-eval-full-report>
- <sup>295</sup> Erfani P, Figueroa JF, Lam MB. Reforms to the Radiation Oncology Model: Prioritizing Health Equity. *Int J Radiat Oncol Biol Phys*. 2021;110(2):328-330. doi:[10.1016/j.ijrobp.2021.01.029](https://doi.org/10.1016/j.ijrobp.2021.01.029)
- <sup>296</sup> Burns M, Bailit M. *Alternative Payment Models and the Case of Safety Net Providers in Massachusetts*. Blue Cross Blue Shield of Massachusetts Foundation; 2015. Accessed August 3, 2023. <https://bailit-health.com/publications/2015-0318-bhp-bcbs-apm.pdf>
- <sup>297</sup> Bhatnagar S, Harris J, Hartnett T, et al. *The Impact of COVID-19 on the Rural Health Care Landscape*. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>
- <sup>298</sup> Bhatnagar S, Harris J, Hartnett T, et al. *The Impact of COVID-19 on the Rural Health Care Landscape*. Bipartisan Policy Center; 2022. Accessed July 13, 2023. <https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/04/BPC-Rural-Hospital-Report-4-22-22.pdf>
- <sup>299</sup> Abt Associates. *Evaluation of the Accountable Care Organization Investment Model Final Report*. 2020. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2020/aim-final-annrpt>
- <sup>300</sup> Abt Associates. *Evaluation of the Accountable Care Organization Investment Model Final Report*. 2020. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2020/aim-final-annrpt>
- <sup>301</sup> Abt Associates. *Evaluation of the Accountable Care Organization Investment Model Final Report*. 2020. Accessed July 13, 2023. <https://innovation.cms.gov/data-and-reports/2020/aim-final-annrpt>

- 
- <sup>302</sup> The Lewin Group. *Comprehensive End-Stage Renal Disease Care (CEC) Model: Performance Year 4 Annual Evaluation Report*. 2021. <https://innovation.cms.gov/data-and-reports/2021/cec-annrpt-py4>
- <sup>303</sup> Park S, Meyers DJ, Langellier BA. Rural Enrollees In Medicare Advantage Have Substantial Rates Of Switching To Traditional Medicare. *Health Affairs*. 2021;40(3):469-477. doi:[10.1377/hlthaff.2020.01435](https://doi.org/10.1377/hlthaff.2020.01435)
- <sup>304</sup> Park S, Meyers DJ, Langellier BA. Rural Enrollees In Medicare Advantage Have Substantial Rates Of Switching To Traditional Medicare. *Health Affairs*. 2021;40(3):469-477. doi:[10.1377/hlthaff.2020.01435](https://doi.org/10.1377/hlthaff.2020.01435)
- <sup>305</sup> Biniek, J., F., Clerveau, G. et al. Medicare Advantage Enrollment, Plan Availability and Premiums in Rural Areas. Kaiser Family Foundation. September 2023. <https://www.kff.org/medicare/issue-brief/medicare-advantage-enrollment-plan-availability-and-premiums-in-rural-areas/>
- <sup>306</sup> Centers for Medicare & Medicaid Services. ACO REACH. Innovation Models. Published June 30, 2023. <https://innovation.cms.gov/innovation-models/aco-reach>
- <sup>307</sup> Centers for Medicare & Medicaid Services. ACO REACH. Innovation Models. Published June 30, 2023. <https://innovation.cms.gov/innovation-models/aco-reach>
- <sup>308</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>309</sup> Centers for Medicare & Medicaid Services. CHART Model. Innovation Models. Published March 17, 2023. <https://innovation.cms.gov/innovation-models/chart-model>
- <sup>310</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>311</sup> Centers for Medicare & Medicaid Services. CHART Model. Innovation Models. Published March 17, 2023. <https://innovation.cms.gov/innovation-models/chart-model>
- <sup>312</sup> Centers for Medicare & Medicaid Services. Pennsylvania Rural Health Model. Innovation Models. Published January 20, 2023. <https://innovation.cms.gov/innovation-models/pa-rural-health-model>
- <sup>313</sup> Centers for Medicare & Medicaid Services. Pennsylvania Rural Health Model. Innovation Models. Published January 20, 2023. <https://innovation.cms.gov/innovation-models/pa-rural-health-model>
- <sup>314</sup> Centers for Medicare & Medicaid Services. Pennsylvania Rural Health Model (PARHM) Evaluation of Performance Years 1-2 (2019-2020). <https://innovation.cms.gov/data-and-reports/2022/parhm-ar2-aag>
- <sup>315</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>316</sup> Centers for Medicare & Medicaid Services. Frontier Community Health Integration Project (FCHIP) Evaluation of Model (2016-2019). Findings at a Glance. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt-fg>
- <sup>317</sup> Centers for Medicare & Medicaid Services. Frontier Community Health Integration Project (FCHIP) Evaluation of Model (2016-2019). Findings at a Glance. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt-fg>
- <sup>318</sup> Centers for Medicare & Medicaid Services. Accountable Health Communities Model 2018-2021. <https://innovation.cms.gov/data-and-reports/2023/ahc-second-eval-rpt-fg>
- <sup>319</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>320</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>321</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>322</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>323</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>324</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>325</sup> Centers for Medicare & Medicaid Services. ACO Investment Model (AIM) Evaluation of the First Two AIM Performance Years. <https://innovation.cms.gov/files/reports/aim-second-annrpt-fg.pdf>

- 
- <sup>326</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>327</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>328</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>329</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>330</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>331</sup> Centers for Medicare & Medicaid Services. Emergency Triage, Treat, and Transport (ET3) Model. Published June 28, 2023. <https://innovation.cms.gov/innovation-models/et3>
- <sup>332</sup> Centers for Medicare & Medicaid Services. Emergency Triage, Treat, and Transport (ET3) Model. Published June 28, 2023. <https://innovation.cms.gov/innovation-models/et3>
- <sup>333</sup> Centers for Medicare & Medicaid Services. Participants Selected for Part D Enhanced Medication Therapy Management Model. CMS. Published October 3, 2016. <https://www.cms.gov/newsroom/fact-sheets/participants-selected-part-d-enhanced-medication-therapy-management-model>
- <sup>334</sup> Centers for Medicare & Medicaid Services. Participants Selected for Part D Enhanced Medication Therapy Management Model. CMS. Published October 3, 2016. <https://www.cms.gov/newsroom/fact-sheets/participants-selected-part-d-enhanced-medication-therapy-management-model>
- <sup>335</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>336</sup> Centers for Medicare & Medicaid Services. The Rural Community Hospital Demonstration (RCHD) Interim Report 2, Fiscal Years 2016-2018. Findings at a Glance. <https://innovation.cms.gov/data-and-reports/2023/rchd-2nd-interim-report-aag>
- <sup>337</sup> NORC at the University of Chicago. Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPs). May 2021
- <sup>338</sup> CMS. Second Annual Report Findings at a Glance: Pennsylvania Rural Health Model (PARHM). Accessed July 2023. <https://innovation.cms.gov/data-and-reports/2022/parhm-ar2-aag>
- <sup>339</sup> CMS. Second Annual Report Findings at a Glance: Pennsylvania Rural Health Model (PARHM). Accessed July 2023. <https://innovation.cms.gov/data-and-reports/2022/parhm-ar2-aag>
- <sup>340</sup> NORC at the University of Chicago. Supplement to the Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician Focused Payment Models (PFPs). September 2021 <https://aspe.hhs.gov/sites/default/files/documents/c8b594360fbaf5172df0f2a684c06642/CC-EScan-Supplement-Innovative-Approaches.pdf>
- <sup>341</sup> NORC at the University of Chicago. Supplement to the Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPs). September 2021 <https://aspe.hhs.gov/sites/default/files/documents/c8b594360fbaf5172df0f2a684c06642/CC-EScan-Supplement-Innovative-Approaches.pdf>
- <sup>342</sup> Hohman, S. New Details on Medicare Coverage of Marriage and Family Therapists and Mental Health Counselors in RHCs. National Association of Rural Health Clinics. August 2023. <https://www.narhc.org/News/30052/New-Details-on-Medicare-Coverage-of-Marriage-and-Family-Therapists-and-Mental-Health-Counselors-in-RHCs>
- <sup>343</sup> 1. Rep. Connolly GE [D V 11. Text - H.R.2617 - 117th Congress (2021-2022): Consolidated Appropriations Act, 2023. Published December 29, 2022. Accessed September 5, 2023. <https://www.congress.gov/bill/117th-congress/house-bill/2617/text>
- <sup>344</sup> NORC at the University of Chicago. Supplement to the Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPs). September 2021

---

<https://aspe.hhs.gov/sites/default/files/documents/c8b594360fbaf5172df0f2a684c06642/CC-EScan-Supplement-Innovative-Approaches.pdf>

<sup>345</sup> *Quick Guide on Payments for Behavioral Health Integration Services: Federally Qualified Health Centers and Rural Health Clinics*. AIMS Center at the University of Washington; 2022. Accessed August 3, 2023.

[https://aims.uw.edu/sites/default/files/Quick%20Guide%20CMS%20FQHC%20RHC%202023\\_0.pdf](https://aims.uw.edu/sites/default/files/Quick%20Guide%20CMS%20FQHC%20RHC%202023_0.pdf)

<sup>346</sup> Medicare Learning Network Matters, *Care Coordination Services and Payment for Rural Health Clinics (RHCs) and Federally-Qualified Health Centers (FQHCs)*. Centers for Medicare & Medicaid Services; 2017. Accessed August 3, 2023. <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/downloads/MM10175.pdf>

<sup>347</sup> CMS. Frontier Community Health Integration Project (FCHIP) Evaluation of Model (2016-2019). Findings at a Glance. Accessed July 2023. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt-fg>

<sup>348</sup> CMS. Frontier Community Health Integration Project (FCHIP) Evaluation of Model (2016-2019). Findings at a Glance. Accessed July 2023. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt-fg>

<sup>349</sup> CMS. Frontier Community Health Integration Project (FCHIP) Evaluation of Model (2016-2019). Findings at a Glance. Accessed July 2023. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt-fg>

<sup>350</sup> CMS. Frontier Community Health Integration Project (FCHIP) Evaluation of Model (2016-2019). Findings at a Glance. Accessed July 2023. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt-fg>

<sup>351</sup> NORC at the University of Chicago. Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPs). May 2021.

<https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Jun-2021-CC-Escan.pdf>

<sup>352</sup> NORC at the University of Chicago. Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPs). May 2021.

<https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Jun-2021-CC-Escan.pdf>

<sup>353</sup> Rural Healthcare Payment and Reimbursement Overview - Rural Health Information Hub. Accessed July 10, 2023. <https://www.ruralhealthinfo.org/topics/healthcare-payment>

<sup>354</sup> Mueller KJ, Alfero C, Coburn AF, et al. *Insuring Rural America: Health Insurance Challenges and Opportunities*. RUPRI Health Panel; 2018.

<sup>355</sup> Maryland Department of Health. *The Maryland All-Payer Model Progression Plan*. Maryland Department of Health; 2018:64. <https://hscrc.maryland.gov/Documents/Modernization/05-30-18%20Maryland%20All-Payer%20Model%20Progression%20Plan%27.pdf>

<sup>356</sup> Centers for Medicare & Medicaid. *Advancing Rural Health Equity: Fiscal Year 2022 Year in Review*. Centers for Medicare & Medicaid Services; 2022:39. <https://www.cms.gov/files/document/advancing-rural-health-equity-11-2022.pdf>

<sup>357</sup> National Conference of State Legislatures. *Improving Rural Health: State Policy Options for Increasing Access to Care*. NCSL. Published June 23, 2020. Accessed July 5, 2023. <https://www.ncsl.org/health/improving-rural-health>

<sup>358</sup> Blue Cross Blue Shield of Michigan. *2023 Hospital Pay for Performance Program*. Blue Cross Blue Shield of Michigan; 2022:29. <https://www.bcbsm.com/amslibs/content/dam/public/providers/documents/value/2023-hospital-pay-performance-program.pdf>

<sup>359</sup> Expanding the scope of value-based payment. BCBS MA 2019 Annual Report. Published 2019. Accessed July 18, 2023. <https://aboutus.bluecrossma.com/annual-report-2019/power-of-partnerships/expanding-the-scope-of-value-based-payment>

<sup>360</sup> CCPN to Participate in Blue Premier Value-Based Program | Community Care Physician Network. Community Care Physician Network. Accessed July 19, 2023. <https://www.communitycarephysiciannetwork.com/ccpn-news/ccpn-to-participate-blue-premier-value-based-program>

<sup>361</sup> *Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas*. United States Government Accountability Office; 2021. Accessed July 5, 2023. <https://www.gao.gov/assets/gao-22-104618.pdf>

- 
- <sup>362</sup> Bipartisan Policy Center. *Achieving Behavioral Health Care Integration in Rural America | Bipartisan Policy Center*. Bipartisan Policy Center; 2023:59. Accessed July 11, 2023. <https://bipartisanpolicy.org/report/behavioral-health-rural-integration/>
- <sup>363</sup> "Report to Congress: Rural Community Hospital Demonstration." Centers for Medicare & Medicaid Services, October 2018.
- <sup>364</sup> Houston, Rob, Anne Smithey, and Kelsey Brykman. "Medicaid Population-Based Payment: The Current Landscape, Early Insights, and Considerations for Policymakers." Center for Health Care Strategies, November 2022.
- <sup>365</sup> Bijelic E, Knudson A. *The Pennsylvania Rural Health Model (PARHM): Second Annual Evaluation Report*. NORC at the University of Chicago; 2022.
- <sup>366</sup> NORC at the University of Chicago. *Fourth Evaluation Report: Next Generation Accountable Care Organization (NGACO) Model Evaluation*. 2021:167.
- <sup>367</sup> *Report to Congress: Rural Community Hospital Demonstration*. Centers for Medicare & Medicaid Services; 2018.
- <sup>368</sup> "Report to Congress: Rural Community Hospital Demonstration." Centers for Medicare & Medicaid Services, October 2018.
- <sup>369</sup> NORC at the University of Chicago. *Evaluation of the Vermont All-Payer Accountable Care Organization Model (VTAPM): Second Evaluation Report*. 2022:118. <https://innovation.cms.gov/data-and-reports/2023/vtapm-2nd-eval-full-report>
- <sup>370</sup> RTI International. *Frontier Community Health Integration Project (FCHIP) Demonstration Evaluation: Final Evaluation Report*. RTI International; 2020:119. <https://innovation.cms.gov/data-and-reports/2020/fchip-final-eval-rpt>
- <sup>371</sup> Haber S, Beil H, Morrison M, et al. *Evaluation of the Maryland All-Payer Model Volume I: Final Report*. RTI International; 2019:278. <https://downloads.cms.gov/files/md-allpayer-finalevalrpt.pdf>
- <sup>372</sup> The University of New Mexico Health Sciences Center. ACCESS Telemedicine: An Alternative Healthcare Delivery Model for Rural Emergencies. Accessed July 2023 <https://aspe.hhs.gov/sites/default/files/private/pdf/255906/ProposalUNMHSC.pdf>
- <sup>373</sup> The University of New Mexico Health Sciences Center. ACCESS Telemedicine: An Alternative Healthcare Delivery Model for Rural Emergencies. Accessed July 2023 <https://aspe.hhs.gov/sites/default/files/private/pdf/255906/ProposalUNMHSC.pdf>
- <sup>374</sup> Totten AM, Hansen RN, Wagner J, et al. Telehealth for Acute and Chronic Care Consultations. Agency for Healthcare Research and Quality; 2019. doi:10.23970/AHRQEPCCER216
- <sup>375</sup> Mueller KJ, Potter AJ, MacKinney AC, Ward MM. Lessons From Tele-Emergency: Improving Care Quality And Health Outcomes By Expanding Support For Rural Care Systems. *Health Affairs*. 2014;33(2):228-234. doi:10.1377/hlthaff.2013.1016
- <sup>376</sup> Ward MM, Jaana M, Natafagi N. Systematic review of telemedicine applications in emergency rooms. *International Journal of Medical Informatics*. 2015;84(9):601-616. doi:10.1016/j.ijmedinf.2015.05.009
- <sup>377</sup> Komaromy M, Duhigg D, Metcalf A, et al. Project Echo (Extension for Community Healthcare Outcomes): A New Model for Educating Primary Care Providers about Treatment of Substance Use Disorders. *Substance Abuse*. 2016;37(1):20-24. doi:10.1080/08897077.2015.1129388
- <sup>378</sup> Velasquez D, Mehrotra A. Ensuring The Growth Of Telehealth During COVID-19 Does Not Exacerbate Disparities In Care. *Health Affairs Forefront*. Published online May 8, 2020. doi:10.1377/forefront.20200505.591306
- <sup>379</sup> Cortelyou-Ward K, Atkins DN, Noblin A, Rotarius T, White P, Carey C. Navigating the Digital Divide: Barriers to Telehealth in Rural Areas. *Journal of Health Care for the Poor and Underserved*. 2020;31(4):1546-1556. doi:10.1353/hpu.2020.0116
- <sup>380</sup> Edmiston KD, AlZuBi J. *Trends in Telehealth and Its Implications for Health Disparities*. National Association of Insurance Commissioners Center for Insurance Policy and Research; 2022. Accessed August 3, 2023. <https://content.naic.org/sites/default/files/Telehealth%20and%20Health%20Disparities.pdf>



- 
- <sup>381</sup> NORC at the University of Chicago. *Environmental Scan on Telehealth in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs)*. 2020. <https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Sep2020TelehealthEnvironmentalScan.PDF>
- <sup>382</sup> Centers for Medicare & Medicaid Services. Information on Medicare Telehealth.; 2018. <https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/Information-on-Medicare-Telehealth-Report.pdf>
- <sup>383</sup> Douglas MD, Xu J, Heggs A, Wrenn G, Mack DH, Rust G. Assessing Telemedicine Utilization by Using Medicaid Claims Data. *PS*. 2017;68(2):173-178. doi:10.1176/appi.ps.201500518
- <sup>384</sup> Jaffe DH, Lee L, Huynh S, Haskell TP. Health Inequalities in the Use of Telehealth in the United States in the Lens of COVID-19. *Population Health Management*. 2020;23(5):368-377. doi:10.1089/pop.2020.0186
- <sup>385</sup> Lin CC, Dievler A, Robbins C, Sripipatana A, Quinn M, Nair S. Telehealth In Health Centers: Key Adoption Factors, Barriers, And Opportunities. *Health Affairs*. 2018;37(12):1967-1974. doi:10.1377/hlthaff.2018.05125
- <sup>386</sup> Jaffe DH, Lee L, Huynh S, Haskell TP. Health Inequalities in the Use of Telehealth in the United States in the Lens of COVID-19. *Population Health Management*. 2020;23(5):368-377. doi:10.1089/pop.2020.0186
- <sup>387</sup> Demeke HB, Merali S, Marks S, et al. Trends in Use of Telehealth Among Health Centers During the COVID-19 Pandemic — United States, June 26–November 6, 2020. *MMWR Morb Mortal Wkly Rep*. 2021;70(7):240-244. doi:10.15585/mmwr.mm7007a3
- <sup>388</sup> Chen J, Amaize A, Barath D. Evaluating Telehealth Adoption and Related Barriers Among Hospitals Located in Rural and Urban Areas. *The Journal of Rural Health*. 2021;37(4):801-811. doi:10.1111/jrh.12534
- <sup>389</sup> Schadelbauer R. Anticipating Economic Returns of Rural Telehealth. The Rural Broadband Association; 2017. [https://www.ntca.org/sites/default/files/documents/2017-12/SRC\\_whitepaper\\_anticipatingeconomicreturns.pdf](https://www.ntca.org/sites/default/files/documents/2017-12/SRC_whitepaper_anticipatingeconomicreturns.pdf)
- <sup>390</sup> Wilcock AD, Rose S, Busch AB, et al. Association Between Broadband Internet Availability and Telemedicine Use. *JAMA Intern Med*. 2019;179(11):1580. doi:10.1001/jamainternmed.2019.2234
- <sup>391</sup> Federal Communications Commission. Fourteenth Broadband Deployment Report.; 2021. <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/fourteenth-broadband-deployment-report>
- <sup>392</sup> Lin CC, Dievler A, Robbins C, Sripipatana A, Quinn M, Nair S. Telehealth In Health Centers: Key Adoption Factors, Barriers, And Opportunities. *Health Affairs*. 2018;37(12):1967-1974. doi:10.1377/hlthaff.2018.05125
- <sup>393</sup> The COVID-19 Healthcare Coalition. Telehealth Impact Study: Physician Survey Analysis.; 2020. Accessed July 10, 2023. <https://c19hcc.org/telehealth/physician-survey-analysis/>
- <sup>394</sup> Mehrotra A, Wang B, Snyder G. Telemedicine: What Should the Post-Pandemic Regulatory and Payment Landscape Look Like? 2020. Accessed August 13, 2020. <https://www.commonwealthfund.org/publications/issue-briefs/2020/aug/telemedicine-post-pandemic-regulation>
- <sup>395</sup> Kalata S, Nathan H, Ibrahim AM. Understanding Community Health Access and Rural Transformation Reform— Implications for Rural Surgical Care. *JAMA Surg*. 2023;158(5):437. doi:10.1001/jamasurg.2022.6834
- <sup>396</sup> Federal Office of Rural Health Policy. Telehealth Network Grant Program. U.S. Health Resources & Services Administration; 2020. <https://www.hrsa.gov/grants/find-funding/HRSA-20-036>
- <sup>397</sup> Ford S, Buscemi J, Hirko K, et al. Society of Behavioral Medicine (SBM) urges Congress to ensure efforts to increase and enhance broadband internet access in rural areas. *Transl Behav Med*. 2020;20(10):489-491. doi:10.1093/tbm/ibz035
- <sup>398</sup> Rural Health Information Hub. Telehealth Use in Rural Healthcare. Published online July 1, 2021. Accessed July 10, 2023. <https://www.ruralhealthinfo.org/topics/telehealth#funding>
- <sup>399</sup> U.S. Senate Committee on Commerce, Science, & Transportation. Senate and House Members Introduce PLAN for Broadband Act. Published online August 4, 2022. Accessed July 10, 2023. <https://www.commerce.senate.gov/2022/8/senate-and-house-members-introduce-plan-for-broadband-act>
- <sup>400</sup> Benjenk I, Franzini L, Roby D, Chen J. Disparities in Audio-only Telemedicine Use Among Medicare Beneficiaries During the Coronavirus Disease 2019 Pandemic. *Medical Care*. 2021;59(11):1014-1022. doi:10.1097/MLR.0000000000001631
- <sup>401</sup> Balio CP, Apathy NC, Danek RL. Health Information Technology and Accountable Care Organizations: A Systematic Review and Future Directions. *eGEMs*. 2019;7(1):24. doi:10.5334/egems.261

- 
- <sup>402</sup> Albright BB, Lewis VA, Ross JS, Colla CH. Preventive Care Quality of Medicare Accountable Care Organizations: Associations of Organizational Characteristics With Performance. *Medical Care*. 2016;54(3):326-335. doi:10.1097/MLR.0000000000000477
- <sup>403</sup> Wu FM, Shortell SM, Rundall TG, Bloom JR. The role of health information technology in advancing care management and coordination in accountable care organizations. *Health Care Manage Rev*. 2017;42(4):282-291. doi:10.1097/HMR.000000000000123
- <sup>404</sup> Schoenhaus R, Lustig A, Rivas S, Monrreal V, Westrich KD, Dubois RW. Using an Electronic Medication Refill System to Improve Provider Productivity in an Accountable Care Setting. *JMCP*. 2016;22(3):204-208. doi:10.18553/jmcp.2016.22.3.204
- <sup>405</sup> Greenberg AJ, Haney D, Blake KD, Moser RP, Hesse BW. Differences in Access to and Use of Electronic Personal Health Information Between Rural and Urban Residents in the United States: ePHI Use in Rural and Urban Patients. *The Journal of Rural Health*. 2018;34:s30-s38. doi:10.1111/jrh.12228
- <sup>406</sup> Ralston JD, Hirsch IB, Hoath J, Mullen M, Cheadle A, Goldberg HI. Web-Based Collaborative Care for Type 2 Diabetes. *Diabetes Care*. 2009;32(2).
- <sup>407</sup> Davis K, Doty MM, Shea K, Stremikis K. Health information technology and physician perceptions of quality of care and satisfaction. *Health Policy*. 2009;90(2-3):239-246. doi:10.1016/j.healthpol.2008.10.002
- <sup>408</sup> McCullough JS, Parente ST, Town R. Health information technology and patient outcomes: the role of information and labor coordination. *The RAND Journal of Economics*. 2016;47(1):207-236. doi:10.1111/1756-2171.12124
- <sup>409</sup> Devine J. Leveraging data analytics and statistical programming for rural health. In: *APHA 2021 Annual Meeting and Expo*; 2021.
- <sup>410</sup> Krakow M, Hesse BW, Oh A, Patel V, Vanderpool RC, Jacobsen PB. Addressing Rural Geographic Disparities Through Health IT: Initial Findings From the Health Information National Trends Survey. *Medical Care*. 2019;57(Suppl 2):S127-S132. doi:10.1097/MLR.0000000000001028
- <sup>411</sup> Furukawa MF, King J, Patel V, Hsiao CJ, Adler-Milstein J, Jha AK. Despite Substantial Progress In EHR Adoption, Health Information Exchange And Patient Engagement Remain Low In Office Settings. *Health Affairs*. 2014;33(9):1672-1679. doi:10.1377/hlthaff.2014.0445
- <sup>412</sup> Greenberg AJ, Haney D, Blake KD, Moser RP, Hesse BW. Differences in Access to and Use of Electronic Personal Health Information Between Rural and Urban Residents in the United States: ePHI Use in Rural and Urban Patients. *The Journal of Rural Health*. 2018;34:s30-s38. doi:10.1111/jrh.12228
- <sup>413</sup> Chen J, Amaize A, Barath D. Evaluating Telehealth Adoption and Related Barriers Among Hospitals Located in Rural and Urban Areas. *The Journal of Rural Health*. 2021;37(4):801-811. doi:10.1111/jrh.12534
- <sup>414</sup> DesRoches CM, Worzala C, Joshi MS, Kralovec PD, Jha AK. Small, Nonteaching, And Rural Hospitals Continue To Be Slow In Adopting Electronic Health Record Systems. *Health Affairs*. 2012;31(5):1092-1099. doi:10.1377/hlthaff.2012.0153
- <sup>415</sup> Chen J, Amaize A, Barath D. Evaluating Telehealth Adoption and Related Barriers Among Hospitals Located in Rural and Urban Areas. *The Journal of Rural Health*. 2021;37(4):801-811. doi:10.1111/jrh.12534
- <sup>416</sup> Devine J. Leveraging data analytics and statistical programming for rural health. In: *APHA 2021 Annual Meeting and Expo*; 2021.
- <sup>417</sup> Chen J, Amaize A, Barath D. Evaluating Telehealth Adoption and Related Barriers Among Hospitals Located in Rural and Urban Areas. *The Journal of Rural Health*. 2021;37(4):801-811. doi:10.1111/jrh.12534
- <sup>418</sup> Ortiz J, Bushy A, Zhou Y, Zhang H. Accountable care organizations: benefits and barriers as perceived by Rural Health Clinic management. *RRH*. Published online June 28, 2013. doi:10.22605/RRH2417
- <sup>419</sup> Krakow M, Hesse BW, Oh A, Patel V, Vanderpool RC, Jacobsen PB. Addressing Rural Geographic Disparities Through Health IT: Initial Findings From the Health Information National Trends Survey. *Medical Care*. 2019;57(Suppl 2):S127-S132. doi:10.1097/MLR.0000000000001028
- <sup>420</sup> Heisey-Grove DM. Variation In Rural Health Information Technology Adoption And Use. *Health Affairs*. 2016;35(2):365-370. doi:10.1377/hlthaff.2015.0861
- <sup>421</sup> Prescott GM, Prescott WA. Health information technology utilization and impact on COVID-19 vaccination. *Journal of the American Pharmacists Association*. 2021;61(4):e230-e232. doi:10.1016/j.japh.2021.03.020

- 
- <sup>422</sup> Krakow M, Hesse BW, Oh A, Patel V, Vanderpool RC, Jacobsen PB. Addressing Rural Geographic Disparities Through Health IT: Initial Findings From the Health Information National Trends Survey. *Medical Care*. 2019;57(Suppl 2):S127-S132. doi:10.1097/MLR.0000000000001028
- <sup>423</sup> Clarke MA, Skinner A, McClay J, Hoyt R. Rural health information technology and informatics workforce assessment: a pilot study. *Health Technol*. 2023;13(3):427-435. doi:10.1007/s12553-023-00750-6
- <sup>424</sup> Lite S, Gordon WJ, Stern AD. Association of the Meaningful Use Electronic Health Record Incentive Program With Health Information Technology Venture Capital Funding. *JAMA Netw Open*. 2020;3(3):e201402. doi:10.1001/jamanetworkopen.2020.1402
- <sup>425</sup> Casey MM, Moscovice I, McCullough J. Rural Primary Care Practices and Meaningful Use of Electronic Health Records: The Role of Regional Extension Centers. *The Journal of Rural Health*. 2014;30(3):244-251. doi:10.1111/jrh.12050
- <sup>426</sup> Lin SC, Hollingsworth JM, Adler-Milstein J. Alternative Payment Models and Hospital Engagement in Health Information Exchange. Published online 2019.
- <sup>427</sup> European Network for Rural Development. Smart Villages – How to Ensure That Digital Strategies Benefit Rural Communities. Orientations for Policy-Makers and Implementers.; 2015:1-8. [https://ec.europa.eu/enrd/sites/default/files/enrd\\_publications/smart-villages\\_orientations\\_digital-strategies.pdf](https://ec.europa.eu/enrd/sites/default/files/enrd_publications/smart-villages_orientations_digital-strategies.pdf)
- <sup>428</sup> Krakow M, Hesse BW, Oh A, Patel V, Vanderpool RC, Jacobsen PB. Addressing Rural Geographic Disparities Through Health IT: Initial Findings From the Health Information National Trends Survey. *Medical Care*. 2019;57(Suppl 2):S127-S132. doi:10.1097/MLR.0000000000001028
- <sup>429</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>430</sup> National Quality Forum. *A core set of rural-relevant measures and measuring and improving access to care: 2018 recommendations from the MAP Rural Health Workgroup*. National Quality Forum; 2018.
- <sup>431</sup> National Quality Forum. *2022 key rural measures: An updated list of measures to advance rural health priorities*. National Quality Forum; 2022. [https://www.qualityforum.org/Publications/2022/08/2022\\_Key\\_Rural\\_Measures\\_An\\_Updated\\_List\\_of\\_Measures\\_to\\_Advance\\_Rural\\_Health\\_Priorities.aspx](https://www.qualityforum.org/Publications/2022/08/2022_Key_Rural_Measures_An_Updated_List_of_Measures_to_Advance_Rural_Health_Priorities.aspx)
- <sup>432</sup> National Quality Forum. *2022 key rural measures: An updated list of measures to advance rural health priorities*. National Quality Forum; 2022. [https://www.qualityforum.org/Publications/2022/08/2022\\_Key\\_Rural\\_Measures\\_An\\_Updated\\_List\\_of\\_Measures\\_to\\_Advance\\_Rural\\_Health\\_Priorities.aspx](https://www.qualityforum.org/Publications/2022/08/2022_Key_Rural_Measures_An_Updated_List_of_Measures_to_Advance_Rural_Health_Priorities.aspx)
- <sup>433</sup> Rural Health Information Hub. Rural mental health. Published October 20, 2021. Accessed July 14, 2023. <https://www.ruralhealthinfo.org/topics/mental-health>
- <sup>434</sup> National Quality Forum. *2022 key rural measures: An updated list of measures to advance rural health priorities*. National Quality Forum; 2022. [https://www.qualityforum.org/Publications/2022/08/2022\\_Key\\_Rural\\_Measures\\_An\\_Updated\\_List\\_of\\_Measures\\_to\\_Advance\\_Rural\\_Health\\_Priorities.aspx](https://www.qualityforum.org/Publications/2022/08/2022_Key_Rural_Measures_An_Updated_List_of_Measures_to_Advance_Rural_Health_Priorities.aspx)
- <sup>435</sup> Rural Health Information Hub. Substance use and misuse in rural areas. Published June 28, 2023. Accessed July 14, 2023. <https://www.ruralhealthinfo.org/topics/substance-use>
- <sup>436</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>437</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>438</sup> National Quality Forum. *A core set of rural-relevant measures and measuring and improving access to care: 2018 recommendations from the MAP Rural Health Workgroup*. National Quality Forum; 2018. [https://www.qualityforum.org/Publications/2018/08/MAP\\_Rural\\_Health\\_Final\\_Report\\_-\\_2018.aspx](https://www.qualityforum.org/Publications/2018/08/MAP_Rural_Health_Final_Report_-_2018.aspx)

- 
- <sup>439</sup> National Quality Forum. *A core set of rural-relevant measures and measuring and improving access to care: 2018 recommendations from the MAP Rural Health Workgroup*. National Quality Forum; 2018. [https://www.qualityforum.org/Publications/2018/08/MAP\\_Rural\\_Health\\_Final\\_Report\\_-\\_2018.aspx](https://www.qualityforum.org/Publications/2018/08/MAP_Rural_Health_Final_Report_-_2018.aspx)
- <sup>440</sup> Rural Health Quality: How CMS initiatives improve how we measure and address gaps in care. Centers for Medicare & Medicaid Services (CMS) webinar. May 4, 2022. Accessed July 19, 2023. [https://www.youtube.com/watch?v=zmt\\_R1IQ-Ug](https://www.youtube.com/watch?v=zmt_R1IQ-Ug)
- <sup>441</sup> National Quality Forum. *2022 key rural measures: An updated list of measures to advance rural health priorities*. National Quality Forum; 2022. [https://www.qualityforum.org/Publications/2022/08/2022\\_Key\\_Rural\\_Measures\\_An\\_Updated\\_List\\_of\\_Measures\\_to\\_Advance\\_Rural\\_Health\\_Priorities.aspx](https://www.qualityforum.org/Publications/2022/08/2022_Key_Rural_Measures_An_Updated_List_of_Measures_to_Advance_Rural_Health_Priorities.aspx)
- <sup>442</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>443</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>444</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>445</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>446</sup> Centers for Medicare & Medicaid Services. Nursing Home Care Compare and Provider Data Catalog – Consolidated Data Dictionary. Published online 2023. [https://data.cms.gov/provider-data/sites/default/files/data\\_dictionaries/nursing\\_home/NH\\_Data\\_Dictionary.pdf](https://data.cms.gov/provider-data/sites/default/files/data_dictionaries/nursing_home/NH_Data_Dictionary.pdf)
- <sup>447</sup> Centers for Medicare & Medicaid Services. Design for Care Compare Nursing Home Five-Star Quality Rating System: Technical Users’ Guide. Published online July 2023. <https://www.cms.gov/medicare/provider-enrollment-and-certification/certificationandcompliance/downloads/usersguide.pdf>
- <sup>448</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>449</sup> National Quality Forum. *Rural-relevant quality measures for testing of statistical approaches to address low case-volume*. 2020.
- <sup>450</sup> Rural Health Information Hub. Rural healthcare payment and reimbursement. Published October 20, 2022. Accessed July 14, 2023. <https://www.ruralhealthinfo.org/topics/healthcare-payment>
- <sup>451</sup> Rural Health Information Hub. Rural healthcare quality. Published December 19, 2022. Accessed July 14, 2023. <https://www.ruralhealthinfo.org/topics/health-care-quality>
- <sup>452</sup> Rural Health Information Hub. Rural healthcare quality. Published December 19, 2022. Accessed July 14, 2023. <https://www.ruralhealthinfo.org/topics/health-care-quality>
- <sup>453</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>454</sup> National Quality Forum Rural Health Committee. *Performance Measurement for Rural Low-Volume Providers*. National Quality Forum; 2015. Accessed July 19, 2023. [https://www.qualityforum.org/Publications/2015/09/Rural\\_Health\\_Final\\_Report.aspx](https://www.qualityforum.org/Publications/2015/09/Rural_Health_Final_Report.aspx)
- <sup>455</sup> Health Resources & Services Administration. Medicare Rural Hospital Flexibility Program (Flex). Published December 2022. Accessed July 13, 2023. <https://www.hrsa.gov/rural-health/grants/rural-hospitals/flex>
- <sup>456</sup> Rural Health Information Hub. Rural healthcare quality. Published December 19, 2022. Accessed July 14, 2023. <https://www.ruralhealthinfo.org/topics/health-care-quality>

- 
- <sup>457</sup> Rural Health Quality: How CMS initiatives improve how we measure and address gaps in care. Centers for Medicare & Medicaid Services (CMS) webinar. May 4, 2022. Accessed July 19, 2023. [https://www.youtube.com/watch?v=zmt\\_R1lQ-Ug](https://www.youtube.com/watch?v=zmt_R1lQ-Ug)
- <sup>458</sup> Rossiter, K. Understanding Geographic Relationships: Counties, Places, Tracts and More. 2014. <https://www.census.gov/newsroom/blogs/random-samplings/2014/07/understanding-geographic-relationships-counties-places-tracts-and-more.html>
- <sup>459</sup> Rural-Urban Continuum Codes. USDA Economic Research Service. Last updated December 10, 2020. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>
- <sup>460</sup> Office of Management and Budget. *2020 Standards for Delineating Core Based Statistical Areas*. 2021. 86 FR 37770. Accessed August 3, 2023. <https://www.federalregister.gov/documents/2021/07/16/2021-15159/2020-standards-for-delineating-core-based-statistical-areas>
- <sup>461</sup> United States Census Bureau. Zip Code Tabulation Areas (ZCTAs). August 2023. <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/zctas.html>
- <sup>462</sup> Rural-Urban Continuum Codes. USDA Economic Research Service. Last updated December 10, 2020. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>
- <sup>463</sup> Rural-Urban Commuting Area Codes. USDA Economic Research Service. Last updated March 22, 2023. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>
- <sup>464</sup> Rural Classifications: Overview. USDA Economic Research Service. Last updated November 29, 2022. Accessed August 3, 2023. <https://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/>
- <sup>465</sup> Rural Urban Commuting Area Codes Maps. RUCA Rural Health Research Center. Accessed August 3, 2023. <https://depts.washington.edu/uwruca/ruca-maps.php>
- <sup>466</sup> Metropolitan and Micropolitan. United States Census Bureau. Last updated March 8, 2023. <https://www.census.gov/programs-surveys/metro-micro.html>
- <sup>467</sup> United States Census Geography. ESRI. Accessed August 3, 2023. <https://learn.arcgis.com/en/related-concepts/united-states-census-geography.htm#:~:text=A%20block%20group%20is%20a,the%20smallest%20geographic%20census%20unit.>
- <sup>468</sup> United States Census Bureau. Urban and Rural. September 2022. <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html#:~:text=Rural%20encompasses%20all%20population%2C%20housing,and%2For%20population%20density%20requirements>
- <sup>469</sup> United States Census Bureau. Census Tracts. <https://www2.census.gov/geo/pdfs/education/CensusTracts.pdf>
- <sup>470</sup> Health Resources and Services Administration. Defining Rural Population. March 2022. <https://www.hrsa.gov/rural-health/about-us/what-is-rural>
- <sup>471</sup> United States Health Resources & Services Administration. Defining Rural Population. March 2022. <https://www.hrsa.gov/rural-health/about-us/what-is-rural>
- <sup>472</sup> Frontier and Remote Area Codes. USDA Economic Research Service. Last updated August 20, 2019. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes/>
- <sup>473</sup> Asche K. *The State of Rural Minnesota, 2021*. Center for Rural Policy and Development; 2021. <https://www.ruralmn.org/wp-content/uploads/2021/12/State-of-rural-2021-1.pdf>
- <sup>474</sup> *Catalog of Value-Based Initiatives for Rural Providers*. Rural Health Value; 2023. <https://ruralhealthvalue.public-health.uiowa.edu/files/Catalog%20Value%20Based%20Initiatives%20for%20Rural%20Providers.pdf>
- <sup>475</sup> Joynt KE, Nguyen N, Samson LW, Snyder JE, Lechner WA, Ogunwumiju O. *Rural Hospital Participation and Performance in Value-Based Purchasing and Other Delivery System Reform Initiatives*. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation; 2016. <https://www.claritygrp.com/hubfs/Rural%20Hospitals%20HHS%20Report%202016.pdf>
- <sup>476</sup> Zogg CK, Thumma JR, Ryan AM, Dimick JB. Medicare's Hospital Acquired Condition Reduction Program Disproportionately Affects Minority-Serving Hospitals: Variation by Race, Socioeconomic Status, and Disproportionate Share Hospital Payment Receipt. *Ann Surg*. 2020;271(6):985-993. doi:[10.1097/SLA.0000000000003564](https://doi.org/10.1097/SLA.0000000000003564)

---

<sup>477</sup> Joynt KE, Nguyen N, Samson LW, Snyder JE, Lechner WA, Ogunwumiju O. *Rural Hospital Participation and Performance in Value-Based Purchasing and Other Delivery System Reform Initiatives*. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation; 2016.

<https://www.claritygrp.com/hubfs/Rural%20Hospitals%20HHS%20Report%202016.pdf>

<sup>478</sup> Joynt KE, Nguyen N, Samson LW, Snyder JE, Lechner WA, Ogunwumiju O. *Rural Hospital Participation and Performance in Value-Based Purchasing and Other Delivery System Reform Initiatives*. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation; 2016.

<https://www.claritygrp.com/hubfs/Rural%20Hospitals%20HHS%20Report%202016.pdf>

<sup>479</sup> Huang H, Zhu X, Ullrich F, MacKinney AC, Mueller K. The impact of Medicare shared savings program participation on hospital financial performance: An event-study analysis. *Health Services Research*. 2023;58(1):116-127. doi:[10.1111/1475-6773.14085](https://doi.org/10.1111/1475-6773.14085)