Advancing Tobacco Prevention and Control in Rural America

UNIVERSITY OF SOUTHERN MAINE
Muskie School of Public Service

NATIONAL ASSOCIATION OF CHRONIC DISEASE DIRECTORS
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National Network of Public Health Institutes

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About the Muskie School of Public Service at the University of Southern Maine

The Muskie School of Public Service is Maine's distinguished public policy school, combining an extensive applied research and technical assistance portfolio with rigorous undergraduate and graduate degree programs in public health; policy, planning, and management; geography-anthropology; and tourism and hospitality. The school is nationally recognized for applying innovative knowledge to policy and management issues in health and human services and for its work in the area of sustainable development. The Muskie School is home to the Cutler Institute for Health and Social Policy, the Maine Public Health Institute, and the Maine Rural Health Research Center.

Cutler Institute for Health and Social Policy

The Cutler Institute is the research arm of the Muskie School. Cutler staff collaborate with communities and organizations in the United States and throughout the world to find sustainable, practical solutions to critical societal issues.

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The Maine Public Health Institute informs health and public health policy and system development through research, policy analysis, technical assistance, and training. The Institute is committed to effectively integrating the science, tools, and practices of public health and healthcare management to improve access, population health outcomes, and healthcare cost efficiencies.

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Established in 1992, the Maine Rural Health Research Center draws on the multidisciplinary faculty and research resources and capacity of the Cutler Institute within the Muskie School. The Center's mission is to inform healthcare policymaking and the delivery of rural health services through high-quality, policy-relevant research, policy analysis, and technical assistance on rural health issues of regional and national significance.

About NACDD

The National Association of Chronic Disease Directors (NACDD) is a non-profit Public Health organization committed to serve the chronic disease program directors of each state and U.S. jurisdiction. Founded in 1988, NACDD connects more than 6,000 chronic disease practitioners to advocate for preventive policies and programs, encourage knowledge sharing and develop partnerships for health promotion. Since its founding, NACDD has been a national leader in mobilizing efforts to reduce chronic diseases and their associated risk factors through state and community-based prevention strategies.

About NNPHI

The National Network of Public Health Institutes (NNPHI) is a technical, financial, professional, and information network that mobilizes more than 40 member public health institutes—along with university-based public health training centers. We connect more than 8,000 subject-matter experts with organizational partners across the United States and its territories, engaging our member institutes and partners at the local, state, tribal, territorial and national levels in efforts that result in measurable improvements in population health.

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EXECUTIVE SUMMARY

PURPOSE

In the United States, rural communities bear a disproportionate burden of health harms related to commercial tobacco use. In response to this persisting public health problem, rural stakeholders have shown energy and creativity in generating and implementing solutions. Through a Cooperative Agreement with the Centers for Disease Control and Prevention (CDC), the National Network of Public Health Institutes (NNPHI) developed a report entitled *Advancing Tobacco Prevention and Control in Rural America*. Report objectives were to: examine rates and patterns of commercial tobacco use across rural subpopulations and regions; explore aspects of the rural context that may affect tobacco prevention and control efforts; provide an overview of rural tobacco control activities over the past ten years; suggest directions for future research; and offer recommendations for advancing rural tobacco control initiatives.

HIGHLIGHTS FROM KEY FINDINGS

PART I: **The Rural Context for Tobacco Prevention and Control**

Tobacco Use among Rural Subpopulations: Research shows disproportionately high rates of commercial tobacco use in many rural subpopulations. In a national sample of adults, past-month use of tobacco, cigarettes, and smokeless products was higher for rural non-Hispanic Whites, people with any mental illness, people with substance use disorders, and veterans than for their urban counterparts (2015-2016 data). Rural Hispanics, pregnant women, and sexual and gender minorities also showed higher rates than their urban peers on some tobacco use measures (2015-2016 data). Current smoking prevalence for rural adolescents was 7.3%, as compared to 3.8% for their urban peers, and adjusted odds of smoking were 54% higher for rural than for urban youth (2014-2016 data). Relative to other rural racial/ethnic groups, American Indian/Alaska Natives (AI/AN) had the highest rates of current commercial cigarette use (2012-2015 data).

Regional Variations in Tobacco Use: Prevalence and patterns of rural tobacco use varied across regions, with rural-urban disparities appearing in the Northeast, in the South, and among impoverished populations of the Midwest (2012-2013 data). Rural populations showed higher rates of smokeless tobacco use in all four United States Census

Bureau regions (2012-2013 data). Smoking prevalence is elevated in Tobacco Nation, a twelve-state region where rural residents make up over 20% of the population in each state (2015 data).

Sociodemographic Risk Factors for Tobacco Use: Rural-urban differences in tobacco burden are associated with the higher rural prevalence of sociodemographic risk factors, such as non-Hispanic White race/ethnicity and lower levels of educational attainment, employment, and income. However, rural-urban disparities in tobacco use persist even after controlling for sociodemographic characteristics. It is therefore important to consider the potential influences of rural cultures, infrastructure, and policy context on rural tobacco use patterns.

Rural Cultures: Although rural cultures are heterogeneous, some rural communities may share cultural strengths that could support rural tobacco control and prevention. Relevant cultural assets may include strong social networks, high levels of community engagement in mutual aid, and experience in forming cross-sector collaborations to enhance shared quality of life. At the same time, cultural factors in particular rural regions and subpopulations may present obstacles to rural tobacco control efforts. Rural populations, including those in tribal territories, continue to be a target for tobacco industry marketing. Cultural norms favoring tobacco use are prevalent in certain rural areas, including states with historical ties to tobacco cultivation.

Cultural considerations are especially important in addressing commercial tobacco use among tribal populations in rural areas. Experts within the American Indian community recommend an approach to tobacco control that expresses value for the use of sacred traditional tobacco in clearly defined ceremonial contexts, while emphasizing the importance of protecting community members from health harms related to commercial tobacco use.

Rural Infrastructure: Characteristics of rural health infrastructure may pose challenges for tobacco control efforts. For example, recent rural hospital closures could diminish some rural communities' capacity for population health activities including tobacco control. In addition, federal and state formulas for tobacco control funding may disadvantage rural local health departments (LHDs) in relation to their urban peers. Finally, individual rural residents may have greater difficulty accessing tobacco control and prevention services, due to local health care provider shortages, lower incomes, and elevated rates of uninsurance.

Despite the obstacles they face, rural communities can and do mount successful efforts to increase their tobacco control capacity. Rural hospitals, LHDs, Federally Qualified Health Centers (FQHCs), and other stakeholders within and outside the health sector often collaborate closely to conduct community health needs assessments, educate the public about health issues, and lead health improvement initiatives, including tobacco control programs. For example, the Mt. Ascutney Hospital in Windsor, Vermont helped to develop the Mt. Ascutney Preventive Partnership, a community-based public health coalition that uses policy and educational strategies to shift community norms related to tobacco use.

Some rural initiatives have enhanced rural residents' access to tobacco control services through the use of distance technologies such as state quitlines, telemedicine, and mobile phone-based strategies. Innovative, texting-based programs that deliver tobacco cessation support to rural populations include *Every Try Counts*, a campaign of the Food and Drug Administration (FDA), and *This is Quitting*, a program for rural Alaska Native youth sponsored by the Yukon- Kuskokwim Health Corporation, with support from the Truth Initiative.

Tobacco Control Policy Environment: Residents of rural and tribal areas may experience lower levels of tobacco control policy protection than citizens living elsewhere. States with higher proportions of rural residents tend to have less robust smoke-free air and tobacco tax policies, and local tobacco control provisions may be less prevalent in some rural areas. Moreover, state laws regulating commercial tobacco may not apply or be fully enforceable in tribal lands governed by sovereign AI/AN nations. In pursuing policy-oriented tobacco control, rural and tribal stakeholders may confront place-specific challenges, including concerns about disrupting relationships with the tobacco industry and imposing limits on individual freedoms.

In contrast to overall patterns, some predominantly rural states have strong tobacco control policies, and successes in rural tobacco control policy occur at the local level as well. In pursuing local tobacco control policy initiatives, rural stakeholders may advance their aims by engaging youth and ordinary citizens, partnering with local hospitals and LHDs, and presenting stakeholders with data on community members' support for stronger protections. Tribes can help protect their citizens by passing their own commercial tobacco control measures.

PART II: **Tobacco Control and Prevention Interventions in Rural Areas**

Cessation: Successful rural cessation initiatives included policy interventions, media campaigns promoting cessation, and delivery of cessation treatments in both health care and non-clinical settings. Noteworthy countermarketing campaigns with rural and tribal reach included the CDC's *Tips from Former Smokers®* campaign and media initiatives funded by Oklahoma's Tobacco Settlement Endowment Trust (TSET). Rural tobacco cessation interventions were often designed to accommodate their target populations' needs and preferences: Programs were tailored to improve their coordination with other health services and to enhance their cultural appropriateness. Many rural cessation programs addressed obstacles that rural residents sometimes confront in accessing high-quality cessation services. To address geographic access barriers, programs encouraged rural residents' use of quitlines, brought cessation services to rural tobacco users' homes and communities, and employed emerging technologies such as telemedicine, cell phones, and Web-based applications. To mitigate access barriers due to rural workforce shortages, programs employed non-physician providers and lay health advisors to deliver cessation interventions. To address cost barriers faced by some rural residents, programs advocated for improved insurance coverage of cessation, provided free services, and offered financial incentives for quitting tobacco use.

Prevention of Initiation: Successful rural prevention activities used policy strategies and countermarketing campaigns. Policy approaches included restricting tobacco advertising, increasing the unit price of tobacco through taxation, and raising the minimum legal sales age (MLSA). Prevention-oriented policies were adopted in Bethel, Alaska, which raised its excise taxes on cigarettes and smokeless tobacco, and in Chautauqua County, New York, which approved a local 'Tobacco 21' law to raise the MLSA for tobacco use from 18 to 21. Many prevention programs involved cultural tailoring, e.g., incorporating local, rural themes in countermarketing campaigns and working with members of target communities to generate content. Although tailoring was widely used, research suggested that mass media countermarketing campaigns following CDC best practice guidelines could achieve positive results in rural settings even in the absence of extensive adaptation. Countermarketing was effective in preventing initiation among rural youth: Rural adolescents with enhanced exposure to countermarketing were more likely than peers without such exposure to be receptive to anti-tobacco messages. Graphic images of tobacco-related health harms were viewed as highly persuasive by youth in rural areas.

Promotion of Smoke-Free Air: Smoke-free interventions identified in this review were diverse in settings and scope. Many initiatives created smoke-free air policies for particular contexts, such as schools or public parks, whereas others focused more broadly on ordinances covering multiple settings. Many of the smoke-free air interventions included in the report resulted in at least one sustained policy change or recurring smoke-free event, and several ultimately led to multiple smoke-free air policy changes or the eventual passage of a statewide law. Some rural initiatives successfully promoted local smoke-free air policies, even in states that lacked statewide, comprehensive smoke-free laws. Thus, local action helped compensate for weaknesses in state-level protections. Local coalitions made progress in promoting smoke-free air policies even where state law preempted local smoke-free ordinances. Tribes advocated successfully for the passage of smoke-free air protections in tribal communities where state-level smoke free laws did not apply. Rural and tribal communities have built capacity to enact smoke-free policies through participating in state-local collaborations, using technical assistance, and raising community awareness about health harms related to secondhand smoke.

DIRECTIONS FOR FUTURE RESEARCH

- While rural communities may face some similar socioeconomic disadvantages and infrastructure limitations, their tobacco-related social norms and policy climates may vary across states and regions. Therefore, federal and state efforts to support rural tobacco control initiatives should be informed by consultation with rural stakeholders, including leaders of rural hospitals, FQHCs, rural health clinics (RHCs), LHDs, tribal councils, and community-based organizations.
- Community-based participatory research could clarify stakeholders' perspectives on what challenges they face, what strategies they consider productive, and what forms of assistance they need.
- Research is warranted to further explore rural-urban differences in tobacco use within Tobacco Nation.
- More study is needed to determine whether federal health reform and its provisions on tobacco cessation coverage have helped rural people gain access to cessation services.
- Emerging technologies show promise as means for facilitating rural access to cessation services. Further evaluation would be helpful to establish the transferability of these modalities to rural settings.
- Investigators should consider how state-level tobacco control policies including preemption influence local-level policies in rural communities.
- Studies should further examine how state, tribal, and local tobacco control policies affect tobacco use in rural subpopulations.

RECOMMENDATIONS FOR ADVANCING RURAL TOBACCO PREVENTION AND CONTROL

Federal and State Agencies

- Rural hospitals often play key leadership roles in community health improvement initiatives, including tobacco control. The recent wave of rural hospital closures may decrease local capacity for such activities. Federal and state agencies should consider how they can preserve and strengthen health infrastructure in rural communities affected by closures.
- In disbursing tobacco prevention funds to rural health systems and community-based organizations, federal and state agencies should consider allocating resources on the basis of epidemiological burden as well as population impact in order to ensure that rural programs are not systematically underfunded relative to urban ones.
- To increase rural access to cessation services, states could support service provision by non-physicians and lay health advisors, through ensuring that state licensing regulations and Medicaid reimbursement policies accommodate such practices.
- To permit the increased use of emerging technologies in tobacco control and prevention, federal and state agencies should continue to promote the expansion of rural broadband and mobile phone access.
- Given that rural youth respond more strongly to national tobacco countermarketing campaigns as their levels of exposure to campaign messages increase, national campaigns should continue purchasing supplemental advertising in rural television and radio markets, and state tobacco control programs should consider investing in this approach where possible.

Communities, Tribes, and Local Stakeholders

- Given the demonstrated effectiveness of policies such as smoke-free air measures, tobacco excise tax increases, and Tobacco 21 laws in decreasing the prevalence of tobacco use, rural stakeholders may wish to consider advocating for such policies at state, tribal, and local levels.
- Where states preempt the adoption of local tobacco control ordinances, rural programs may achieve progress by educating the public on the adverse impacts of preemption and building community support for the repeal of state preemption laws.
- Tobacco control initiatives may find it useful to leverage rural cultural assets including strong commitments to community engagement and skills in cross-sector collaboration.
- To promote rural communities' involvement in tobacco control and prevention programs, it may be essential to forge partnerships including trusted local leaders from LHDs, health systems, businesses, faith-based organizations, and schools.
- Many communities are more willing to support tobacco control if it is presented as necessary to protect youth. Therefore, young people can be influential tobacco control advocates, and local, rural coalitions should engage their participation.
- To encourage community buy-in, it may also be helpful to involve local stakeholders in developing culturally tailored messages that show how program goals are consistent with core community values.
- Rural health systems can show leadership by implementing evidence-based, system-wide tobacco prevention and control plans. These plans could include:
    - Adopting tobacco-free campus policies
    - Training staff in best practices for the delivery of tobacco cessation services
    - Enhancing linkages to the community by enlisting lay health advisors in service provision
    - Launching quality assurance initiatives that use electronic health records (EHRs) to monitor progress toward tobacco-related population health goals
- As resources permit, rural schools can consider planning and implementing comprehensive tobacco control measures in coordination with their school health programs. Components may include:
    - Adopting 100% tobacco-free campus policies applying to all school facilities and events at all times
    - Linking parents and youth to cessation resources
    - Using evidence-based tobacco prevention curricula
    - Collaborating with LHDs and community agencies to advocate for the adoption of comprehensive tobacco control policies
    - Recruiting youth to lead counter-marketing campaigns targeted to peers
- When rural communities lack resources to tailor their local tobacco prevention campaigns, they can make gains by using existing advertising materials and implementing standard, evidence-based educational programs.
- Given the critical role that parents play in shaping youth norms related to tobacco, rural tobacco control efforts should engage parents as collaborators. Parents could effectively advocate for measures to protect children from secondhand smoke and restrict youth access to tobacco.

INTRODUCTION Tobacco: A Persisting Public Health Concern in Rural America

In the past half-century, the United States has achieved major successes in the realm of commercial tobacco control and prevention. Since the Surgeon General's seminal report on smoking and health first appeared in 1964, adult smoking rates declined from 42% in 1965[1] to 14% in 2017.[2] This overall trend, important as it is, has not yielded equal benefits for all members of society, and tobacco use continues to threaten the well-being of many population groups.[3] In particular, rural communities still experience disproportionate health burdens related to the use of commercial tobacco products. Recent national survey data indicate that rural youth and adults use cigarettes and smokeless tobacco at higher rates than their urban counterparts.[4-6] Further, while urban adults' use of cigarettes declined from 2007 to 2014, cigarette smoking among rural adults did not decrease significantly. As a result, the rural-urban difference in adult smoking prevalence increased over this period.[4]

Elevated rural rates of tobacco use may be responsible in part for a rural-urban gap in mortality.[7,8] A recent study[7] from the Centers for Disease Control and Prevention (CDC) indicated that between 1999 and 2014, rural residents showed higher mortality rates from cancer, stroke, heart disease, and chronic lower respiratory disease—four leading causes of death that are all linked to tobacco use.[9] Moreover, a higher proportion of rural deaths from these causes were identified as potentially preventable,[7] suggesting that a heightened public health focus on rural tobacco use and its consequences could have significant positive impacts. At a moment when rural America's devastating opioid crisis looms large on the national public health agenda,[10-12] potentially obscuring other long-standing rural health problems, the CDC's recent findings on tobacco-related causes of death serve as a timely reminder that rural tobacco control and prevention efforts continue to warrant attention and resources.

The Evidence on Rural Tobacco Control and Prevention Solutions

While tobacco use in rural America remains a formidable public health issue, rural stakeholders have shown energy and creativity in generating and implementing solutions to address the unique needs of their particular communities. Previous reports and resources attest to this fact. Notably, the Rural Health Information Hub (RHIhub)'s *Rural Tobacco Control and Prevention Toolkit*[13] includes a compendium of exemplary, evidence-based programs that have been implemented in rural areas, and the American Legacy Foundation's *Tobacco Control in Rural America*[14] provide case studies of tobacco control initiatives in a broad range of rural communities.

The current report was developed under a Cooperative Agreement between the National Network of Public Health Institutes (NNPHI) and the CDC. It represents the results of a rapid, scoping review[15] of evidence on rural tobacco control and prevention. In Part I, we provide an updated overview of the literature on aspects of the rural context that may have implications for tobacco control initiatives. Here, we focus primarily on findings and developments that have occurred since 2012, the publication date of the American Lung Association (ALA)'s landmark report on tobacco and rural culture, *Cutting Tobacco's Rural Roots*.[16] We consider: tobacco use among rural subpopulations; variations in rural tobacco use across regions; sociodemographic risk factors and their relationships with rural-urban disparities in tobacco use; the influence of cultural factors; rural infrastructure; and the tobacco control policy environment in rural areas.

In Part II, we offer a synthesis of the literature on rural tobacco prevention and control activities over the past ten years. We discuss interventions to encourage cessation, prevent initiation, and promote smoke-free air, characterizing the extent and nature of the evidence base. Throughout, we highlight the many and varied examples of rural successes in this area of endeavor. A collaborator from the National Association of Chronic Disease Directors (NACDD) has enhanced this review by contributing

illustrative reports from the field. On the basis of the evidence we present, we identify areas where further research would be valuable and offer recommendations for advancing rural tobacco control initiatives.

Readers will observe some overlap and cross-referencing between Parts I and II, as we refer at times to interventions in the first part. Discussions of interventions in the two sections differ with respect to their emphasis and purpose. In Part I, we consider interventions as they exemplify how rural contextual factors give rise to and influence tobacco control efforts. In Part II, we categorize interventions according to their objectives and explore common themes within these categories.

METHODS

Overview

In February and March of 2018, we conducted an initial, rapid literature search and extracted elements from items identified in this search. A first draft based on this search was prepared in April and submitted to a Review Committee for comments in May. From February to May, case descriptions from the field were compiled for inclusion in the report. From May to August, we prepared a second draft, completing additional searches and revisions in response to Review Committee comments and integrating case descriptions into the text. In September 2018, the report underwent an additional round of review. Final revisions in response to this feedback were completed from September to December 2018.

Role of Review Committee

From late 2017 through January 2018, NNPHI engaged a 15-member Review Committee (see p. ii for members) to consult with the authors throughout all stages of report development. This Committee comprised experts on tobacco control and rural health from a diverse group of national organizations with state or local representation. The Review Committee helped identify priority topics, contributed to the search strategy, reviewed a draft report, shared feedback on preliminary case descriptions, and recommended relevant resources for inclusion. A small group of Review Committee members met with report authors in January 2018 in Atlanta, GA, and the larger group met in May 2018 in Washington, DC. Throughout the project, Review Committee members shared helpful insights through telephone and e-mail contacts. They also made recommendations regarding a dissemination plan to ensure that the report would reach appropriate audiences.

Search Strategy

Our initial literature search was conducted from February 2 to March 16, 2018. We devised our search process in consultation NNPHI, CDC, the NACDD, and the Review Committee.

In May 2018, we provided the Review Committee with a draft report based on the literature search and case summaries described below. At the in-person meeting in Washington, Review Committee members suggested additional topics to include, recommended new resources to consult, and noted themes that warranted more extended exploration. From May to August, we conducted additional, targeted searches. Results of these searches were integrated into the final version of the report in order to incorporate Review Committee feedback.

We included only English-language material that reported data or information on tobacco use, control, and prevention among rural populations of the United States. In our initial searches relating to rural contextual factors, we included items produced since the 2012 appearance of *Cutting Tobacco's Rural Roots*, the American Lung Association's landmark report on rural tobacco use and control.[16] Thus, the date range for these items was from 2012 to 2018. In initial searches on rural interventions, our date range was 2008 to 2018.

In keeping with the aims of a scoping review, we established inclusion criteria that would yield a very broad range of relevant literature. Thus, we included items representing a wide variety of study designs, from peer-reviewed, randomized controlled trials to unpublished case descriptions. In addition, we included any studies or program descriptions indicating that they investigated or worked with rural populations. As a result of this decision, our review comprises items that use different definitions of rurality. For example, some studies[17,18] applied the federal Office of Management and Budget's county-based category scheme, classifying counties as rural if they were outside the bounds of core metropolitan areas with 50,000 or more population.[19] Others[20,21] used U.S. Census Bureau criteria, designating areas as rural if they were located outside of densely populated Census

blocks or block groups with over 2,500 residents.[22,23] Still others noted simply that their samples or target populations consisted of rural residents.[24-26] All items in the review share a focus on residents of sparsely populated areas that are distant from urban centers.

We made several exceptions to our inclusion criteria. First, we included studies reporting data for states with large proportions of rural populations (e.g., Vermont, Montana), even if data were not presented separately for rural and urban subpopulations of these states. Second, because the Review Committee expressed particular interest in tobacco use and control in American Indian/Alaska Native (AI/AN) communities, and because over half of the AI/AN population lives in rural areas,[27] we included studies on these populations, even if they were not identified as rural residents. Third, we included all items recommended to us by the Review Committee as long as they did not duplicate items identified through other means. Finally, in order to respond fully to Review Committee suggestions provided at the May 2018 meeting, we added some items that were outside the date range for the initial search.

We identified material from four sources: the peer-reviewed literature; the grey literature; the *Rural Tobacco Control and Prevention Toolkit,*[13] an online resource produced by the NORC Walsh Center for Rural Health Analysis and disseminated through the RHIhub web site;[28] and recommendations from Review Committee members. Below, we describe the search strategies developed for each of these sources.

Peer-reviewed Literature Search

Using Medical Subject Heading (MeSH) terms along with keywords, we began our search using the PubMed search engine. We selected search terms that would identify material related to the rural tobacco control environment and to the four principal goals of tobacco control (cessation; prevention of initiation; interventions to promote smoke-free air; and reduction of tobacco-related disparities).[29] Examples of the MeSH terms included "tobacco use," "tobacco use cessation," "smoking cessation," "smoking prevention," "tobacco smoke pollution," "rural population," and "health status disparities."

A team of two researchers searched PubMed and several additional databases using the MeSH terms and/or thesaurus terms specific to the database. These databases included Academic Search Complete, Business Search Complete, CINAHL, Google Scholar, HealthEvidence.org, PsycINFO, ScienceDirect, and ToxNet. Unduplicated results of our searchers were entered into an EndNote bibliographic database. In order to allow time for screening and extraction, we discontinued our search of the peer-reviewed literature on February 9, 2018, with the realization that additional relevant articles through a snowball approach might surface after this date. Citations and abstracts were printed for independent initial screening by the principal investigator and project director. Articles without abstracts were screened by title in this initial step, and any disagreements about eligibility were resolved in the second round of full review by four members of the research team.

Grey Literature Search

Our search of the grey literature was conducted by the same team members who completed the peer-reviewed literature search. With the same date limitations, and using the same methods of MeSH terms and keywords, we searched the following sources for studies or documents in the four areas of cessation, prevention, promotion of smoke-free air, and disparity reduction:

- CDC's Guide to Community Preventive Services
- Commonwealth Fund
- County Rankings and Roadmaps: *What Works? Strategies to Improve Rural Health*
- Google and Google Scholar
- Mathematica Policy Research
- National Bureau of Economic Research
- National Institutes of Health (NIH)
- National Cancer Institute's Research Tested Intervention Programs (RTIPs)
- New York Academy of Medicine Grey Literature Report
- PolicyLink.org
- RAND
- RHIhub (excluding items contained in RHIhub's *Rural Tobacco Prevention and Control Toolkit*)
- U.S. Department of Agriculture (USDA) Library (PubAg)

Whenever possible, we located topic guides on tobacco through these sources to retrieve any evidence-based program implementations. Both the CDC's *Guide*

to Community Preventive Services (also known as the *Community Guide*)[30] and the National Cancer Institute's RTIPs website[31] provided helpful topic guides. We did not find any rural-relevant sources in PolicyLink.org, the Commonwealth Fund, or Mathematica. We excluded all peer-reviewed articles retrieved in these searches that had already been identified in our previous search of the published literature. For example, the top hits in our Google searches identified several peer-reviewed articles. Similarly, the USDA Library is a repository of articles published in the *Journal of Rural Health*, and we did not include these duplicated items in our extraction of the grey literature. Our Google searches (using variations of tobacco/smoking prevention, cessation, smoke-free air AND rural keywords) were manually pre-screened by the search team. The items retrieved from grey literature sources were manually cross-checked against items included in RHIhub's *Rural Tobacco Prevention and Control Toolkit*,[13] to avoid double-counting items that appeared both in the *Toolkit* resource and on other pages of the RHIhub site. Further screening was conducted by two members of the team in consultation with the principal investigator, with the resulting selection screened for full-text review and data extraction.

Rural Tobacco Control and Prevention Toolkit

As noted above in the Grey Literature search section, when we searched the RHIhub web site for models, innovations, and resources related to tobacco or smoking, we cross-checked the results against the RHIhub *Rural Tobacco Control and Prevention Toolkit*, which was published in 2017.[13] This *Toolkit* is a major resource for rural tobacco control and prevention strategies, activities, and resources, and it contained many rural interventions that met our inclusion criteria. We focused primarily on the *Toolkit's Program Module 2: Evidence-Based and Promising Tobacco Control and Prevention Program Models* and the programs listed in *Module 3: Program Clearinghouse.*

Review Committee Recommendations

As an additional component of our initial search strategy, we sent a letter to Review Committee members asking them to recommend resources that should be included in our evidence review. We included all recommended items for data extraction. As noted above, we also responded to the Review Committee's comments on draft versions of the report, using this feedback to guide us in preparing the final version.

Extraction of Elements from the Literature

Part I. The Rural Context for Tobacco Prevention and Control

Items relating to the rural context for tobacco control and prevention were grouped within six categories:

- Tobacco use among rural subpopulations
- Regional variations in rural tobacco use
- Sociodemographic risk factors for tobacco use: associations with rural-urban differences
- Rural cultures
- Rural infrastructure
- Tobacco control policy environment in rural areas

Standard elements extracted from items within each category of this first section included the rural subpopulation to which the study or item pertained, specific contextual factors discussed in the item, outcomes measured, key findings, and item type or design (e.g., quantitative, cross-sectional study; qualitative study; case description).

Part II. Tobacco Control and Prevention Interventions in Rural Areas

Items on interventions were assigned to three categories representing goals of tobacco control:[29]

- **Cessation** (e.g., policy-oriented cessation approaches, countermarketing, quitlines, cessation interventions delivered by health care providers)
- **Prevention of Initiation** (e.g., policy-oriented prevention approaches, countermarketing for prevention)
- **Interventions** to promote smoke-free air (e.g., smoke-free air restrictions, policies, or laws)

The reduction of tobacco-related disparities is a fourth major aim of tobacco control.[29] Because we did not locate any interventions whose explicit objectives included decreasing disparities within rural populations, our review did not include a separate category corresponding to this goal. However, we found many programs specifically designed to benefit rural residents who belonged to priority subpopulations described in the CDC report *Health Equity in*

Tobacco Prevention and Control.[32] We nested information from these programs within the three intervention categories. Some interventions belonged to more than one of the three intervention categories, and these items are discussed in all the contexts where they appear.

Data extraction elements for this section included the rural subpopulation to which the item pertained, description of intervention, measures of intervention outcomes, other measures, key findings, and item type or design. Outcome measures included short-term impacts such as changes in tobacco-related knowledge, attitudes, beliefs, or skills as a result of the intervention; intermediate outcomes such as changes in behavior related to the intervention; and long-term population health outcomes. Other measures included any process measures or other indices not directly assessing intervention outcomes. Examples of other measures included the number of referrals to a quitline or the number of smokers enrolled in an intervention program.

CASE DESCRIPTIONS

To identify examples of tobacco prevention approaches unique to rural populations (and not reflected in the literature), a team member from NACDD compiled case descriptions from the field through a review of websites and an invitation to state tobacco program directors to share their recent and current work in tobacco prevention and control in rural populations of their respective states. The NACDD consultant identified promising practices, several of which are included in the final report.

LIMITATIONS

Scoping reviews sometimes involve multiple rounds of searches incorporating iterative refinements of search terms and hand-searching of reference lists in the items retrieved.[15] Because of the limited time frame for this project, our procedure was less formal and less comprehensive. Our initial, rapid review consisted of a single round of searching with one set of search terms, and we did not hand-search reference lists. The literature included in our final report is based on yields from this initial search, supplemented with results of specific searches that we conducted to address comments by the Review Committee.

In addition, as noted above, our inclusion criteria were broad, and the review contains many items that provide limited information on the tobacco intervention programs they describe. Therefore, we were not able to provide a rigorous assessment of the interventions' effectiveness. Instead, we simply categorized items in terms of the outcome information they provided. Thus, we noted whether items were studies with intervention and non-intervention comparison groups; cross-sectional studies; studies or program evaluations reporting on changes in outcomes from baseline to follow-up; reports indicating the adoption of tobacco control policies; case descriptions with anecdotal evidence of positive outcomes; or program descriptions with no outcome measures.

A further limitation of this review is that the project timeline did not permit us to evaluate the evidence base for every intervention discussed. However, as indicated above, a subset of the interventions was described in the *Rural Tobacco Control and Prevention Toolkit*.[13] All of these programs were rural implementations of models that were recommended by the Community Preventive Services Task Force, the U.S. Preventive Services Task Force, and the Substance Abuse and Mental Health Services Administration (SAMHSA) National Registry of Evidence-Based Programs and Practices and rated according to Brennan and colleagues' framework[33] for classifying interventions by the strength of their research support (Alycia Bayne, NORC Walsh Center, personal communication, April 9, 2018).[34] In each of the intervention sections of the review, we indicate which items are also included in the *Toolkit*, so that readers will be able to identify these items as descriptions of evidence-based interventions.

Case descriptions provided in Part II of this report were derived from a convenience sample of interviews with state tobacco program directors. Not all state tobacco program directors were interviewed, and not all examples collected were chosen for final inclusion. Therefore, the case descriptions in the report do not represent all approaches currently being implemented. Rather, they are intended to illustrate current work in rural tobacco control and to complement the literature review.

PART I.

THE RURAL CONTEXT FOR TOBACCO PREVENTION AND CONTROL

Part I provides updated evidence on the context in which rural tobacco prevention and cessation efforts take place. Aspects of the rural environment including patterns of rural tobacco use in subpopulations and regions, sociodemographic risk factors, culture, infrastructure, and policy present both challenges and opportunities for implementing tobacco control interventions. An understanding of this context is essential for stakeholders who hope to impact tobacco use in rural communities.

A. Tobacco Use among Rural Subpopulations

As noted above, recent literature shows that across the country, rates of tobacco use are higher in rural than in urban populations.[4-6,21] For example, using data from the 2012-2013 National Survey on Drug Use and Health (NSDUH), Roberts and colleagues[21] found that among Americans aged 12 and older, rural residents were significantly more likely than their urban counterparts to report past-month use of cigarettes (24.1% versus 21.0%), chewing tobacco (2.2% versus 0.9%), and snuff (5.6% versus 2.3%).

In addition to describing overall rural-urban disparities in tobacco use, studies have examined prevalence and patterns of use in rural subgroups defined by age, race/ethnicity, and other characteristics. We introduce our consideration of this topic with an overview of national prevalence statistics. We begin by presenting results from our own analyses of the 2015-2016 NSDUH. These findings document rural-urban differences within selected adult subpopulations on three measures of tobacco use (see Table, p. 8).[35] We also summarize results from a published study that used data from the 2012-2015 Behavioral Risk Factor Surveillance System (BRFSS) to examine smoking rates among rural subpopulations defined by race/ethnicity.[36]

Next, we provide highlights from the current literature on tobacco use among rural subpopulations. We note that the RHIhub's *Rural Tobacco Control and Prevention Toolkit*[13] reviews research on multiple rural subgroups with high rates of smoking and offers recommendations for implementing tobacco control programs for many of these subgroups. Therefore, to avoid duplication, we focus on those groups for which we were able to locate rural-specific findings and which were not discussed in depth in the *Toolkit*. We refer readers to the *Toolkit* for information on tobacco use among subpopulations including people of low economic status, veterans, working adults, Hispanics, Asians, and Native Hawaiian/Pacific Islanders (NHOPI).[13]

National Prevalence Statistics on Tobacco Use among Rural Adult Subpopulations

2015-2016 National Survey on Drug Use and Health (NSDUH)

We used data from the 2015-2016 NSDUH to explore rural-urban differences in tobacco use within ten adult subpopulations.[35] We assessed past-month use of (a) tobacco products including cigarettes, smokeless tobacco, cigars, and pipes, (b) cigarettes, and (c) smokeless tobacco. We studied racial/ethnic groups including non-Hispanic Whites, non-Hispanic Blacks, Hispanics, Asians, and AI/AN. We did not produce statistics for NHOPI, because we were unable to obtain reliable estimates due

to small cell sizes. In addition to examining rural-urban differences by race/ethnicity, we conducted analyses for people living in poverty, people with any mental illness (AMI) or substance use disorder (SUD), pregnant women, veterans, and lesbian, gay, or bisexual (LGB) people, sometimes identified elsewhere as sexual and gender minorities (SGM) (see Highlights from the Literature on Rural Subpopulations, Sexual and Gender Minorities (SGM), p. 10).

In the nation as a whole, rural adults were more likely than urban adults to report past-month use of tobacco, cigarettes, and smokeless products. In considering rural-urban differences among adult subpopulations, higher rates on all three measures were observed for rural non-Hispanic Whites, people with AMI, people with SUD, and veterans than for their urban counterparts. Rural Hispanics, pregnant women, and LGB also showed higher rates than their urban peers on some tobacco use measures. Results are summarized in the Table on p. 8, and highlights are described below.

- Compared to their urban counterparts, rural non-Hispanic Whites were more likely to report past-month use of tobacco (33.6% versus 26.4%), cigarettes (26.2% versus 21.2%), and smokeless products (8.5% versus 3.8%).
- Among non-Hispanic Blacks and Asians, there were no significant rural-urban differences on any of the three measures.
- For AI/AN, rural and urban groups did not differ significantly on past-month commercial tobacco use or cigarette smoking.
- Rural Hispanics were more likely than their urban peers to report past-month tobacco use (24.3% versus 18.9%) and cigarette use (21.5% versus 16.4%).
- Relative to urban people living in poverty, rural residents in poverty had higher rates on all three measures, including prevalence of past-month tobacco use (46.3% versus 33.5%).
- Similarly, rural residents with AMI experienced higher rates of past-month tobacco, cigarette, and smokeless tobacco use. In particular, 43.8% of rural residents with AMI had used tobacco products in the past month, as compared to 33.7% of urban people with AMI.
- Past-month tobacco, cigarette, and smokeless tobacco use rates were all higher among rural people with SUD than among their urban counterparts. Nearly two-thirds (65.1%) of rural people with SUD used tobacco in the past month, as compared to 53.7% of urban residents with SUD.
- Past-month tobacco use and cigarette smoking were both more prevalent among rural than among urban pregnant women. Over one fifth of rural pregnant women (22.8%) used tobacco in the past month, while the rate among their urban counterparts was 10.5%.
- Rural veterans were more likely than urban peers to report all three forms of tobacco use. Whereas 32.0% of rural veterans used tobacco in the past month, 25.8% of their urban peers did so.
- Among LGB people, rural-urban differences were apparent in past-month rates of tobacco use and cigarette smoking, with 47.5% of rural and 34.5% of urban LGB reporting past-month use of tobacco.

Table. National Prevalence Estimates of Past-Month Tobacco Use for Rural and Urban Adults Aged 18 and Over by Race/Ethnicity and Other Sociodemographic Characteristics, 2015-2016.[35]

	Rural and Urban Adults Aged 18+		
	Rural	**Urban**	**Significance**
Total	14.8% (n=17,398)	85.2% (n=68,788)	
	% (95% C.I.)	% (95% C.I.)	*P* value
OVERALL			
Tobacco Use*	32.8 (31.7-34.0)	24.4 (24.0-24.9)	<0.001
Cigarette Smoking	26.0 (25.0-27.1)	19.9 (19.5-20.4)	<0.001
Smokeless Tobacco Use	7.6 (7.0-8.3)	2.9 (2.7-3.1)	<0.001
RACE/ETHNICITY			
White, Non-Hispanic			
Tobacco Use*	33.6 (32.1-35.2)	26.4 (25.7-27.1)	<0.001
Cigarette Smoking	26.2 (25.0-27.6)	21.2 (20.5-21.9)	<0.001
Smokeless Tobacco Use	8.5 (7.7-9.3)	3.8 (3.5-4.1)	<0.001
Black, Non-Hispanic			
Tobacco Use*	28.3 (24.8-32.2)	27.2 (26.1-28.4)	ns
Cigarette Smoking	24.5 (21.4-27.9)	21.9 (20.9-23.0)	ns
Smokeless Tobacco Use	2.6 (1.6-4.2)	1.3 (1.0-1.7)	ns
Hispanic			
Tobacco Use*	24.3 (20.6-28.4)	18.9 (18.0-19.7)	<0.01
Cigarette Smoking	21.5 (18.0-25.4)	16.4 (15.5-17.3)	<0.01
Smokeless Tobacco Use	2.3 (1.3-4.1)	1.4 (1.0-1.8)	ns
Asian			
Tobacco Use*	9.6 (5.4-16.6)	11.7 (10.1-13.5)	ns
Cigarette Smoking	9.0 (5.0-15.7)	10.3 (8.9-12.0)	ns
Smokeless Tobacco Use	2.3 (1.3-4.1)	1.4 (1.0-1.8)	ns
American Indian / Alaska Native			
Tobacco Use*	45.1 (38.8-51.5)	35.6 (28.7-43.2)	ns
Cigarette Smoking	36.8 (32.0-42.0)	30.5 (24.0-37.9)	ns
Smokeless Tobacco Use	12.8 (9.1-17.8)	##	##
OTHER SOCIODEMOGRAPHIC CHARACTERISTICS			
Living in Poverty			
Tobacco Use*	46.3 (44.3-48.3)	33.5 (32.4-34.7)	<0.001
Cigarette Smoking	41.1 (38.8-43.3)	30.1 (28.9-31.3)	<0.001
Smokeless Tobacco Use	6.0 (4.9-7.3)	2.7 (2.3-3.2)	<0.001
Any Mental Illness			
Tobacco Use*	43.8 (41.3-46.2)	33.7 (32.5-34.9)	<0.001
Cigarette Smoking	38.8 (36.3-41.3)	29.7 (28.7-30.8)	<0.001
Smokeless Tobacco Use	5.9 (4.9-7.1)	3.0 (2.6-3.4)	<0.001
Any Substance Use Disorder			
Tobacco Use*	65.1 (61.6-68.5)	53.7 (52.0-55.4)	<0.001
Cigarette Smoking	57.0 (53.1-60.9)	45.5 (44.2-46.9)	<0.001
Smokeless Tobacco Use	12.4 (10.5-14.5)	7.2 (6.4-8.0)	<0.001
Pregnant			
Tobacco Use*	22.8 (17.2-29.6)	10.5 (8.4-13.1)	<0.01
Cigarette Smoking	22.3 (16.6-29.3)	10.1 (8.1-12.6)	<0.01
Smokeless Tobacco Use	##	##	##
Veterans			
Tobacco Use*	32.0 (28.0-36.2)	25.8 (24.2-27.4)	<0.01
Cigarette Smoking	24.0 (20.5-27.8)	18.5 (16.9-20.2)	<0.01
Smokeless Tobacco Use	8.4 (6.5-10.8)	4.7 (3.9-5.7)	<0.01
Lesbian, Gay or Bisexual			
Tobacco Use*	47.5 (42.5-52.5)	34.5 (32.0-37.1)	<0.001
Cigarette Smoking	43.3 (38.7-48.1)	30.7 (28.4-33.2)	<0.001
Smokeless Tobacco Use	2.3 (1.3-3.9)	1.4 (1.0-2.0)	ns

*'Tobacco use' indicates any past-month use of cigarettes, smokeless tobacco, cigars, or pipes. *Data*: National Survey of Drug Use and Health (NSDUH), 2015-16. *Notes:* C.I.= confidence interval. ns = not significant. ## indicates relative standard error of 30% or larger. Statistics are weighted to population level using weights provided with the NSDUH. Sample size is unweighted.

2012-2015 Behavioral Risk Factor Surveillance System

James and colleagues[36] analyzed the 2012-2015 BRFSS to generate estimates of past and current cigarette smoking prevalence by race/ethnicity for adults in rural areas throughout the nation. The five racial/ethnic groups studied included non-Hispanic Blacks, non-Hispanic Whites, Hispanics, Asian or NHOPI, and AI/AN. The authors compared past and current smoking prevalence among non-Hispanic Whites with rates among the four other groups. Prevalence of past smoking among all rural residents was 23.7%. Compared to the rate of 24.7% for non-Hispanic Whites, past smoking rates for non-Hispanic Blacks (15.9%), Hispanics (21.3%) and Asians or NHOPI (15.1%) were lower, while the rate for AI/AN (23.9%) was not significantly different. For the overall population of rural residents, current cigarette smoking prevalence was 24.1%. Relative to non-Hispanic Whites (24.7%), Hispanics (17.0%) and Asians or NHOPI (10.9%) had lower current smoking rates; non-Hispanic Blacks (23.2%) had a similar rate; and AI/AN (36.7%) had a higher rate.

Highlights from the Literature on Rural Subpopulations

Youth

National estimates indicate a long-term decline in most forms of tobacco use by adolescents over the past four decades.[37,38] However, this improving trend does not appear to have affected rural youth to the same degree as their urban peers. For example, a recent analysis of NSDUH data revealed that although adjusted odds of current smoking declined for both rural and urban adolescents from 2008-2010 to 2014-2016, the decrease was smaller among those in rural areas.[39] As a result, the rural-urban disparity in adolescent smoking increased over time. In 2014-2016, current smoking prevalence for rural adolescents was 7.3%, as compared to 3.8% for their urban peers, and adjusted odds of smoking were 54% higher for rural than for urban youth.[39]

African Americans

In the United States as a whole, about 14.9% of African American adults reported current smoking in 2017.[2] Their overall rate was similar to that observed in non-Hispanic Whites (15.2%) for the same year.[2] As seen in the national 2012-2015 BRFSS data described above, current smoking rates for African Americans and non-Hispanic Whites in rural areas were 24.7% and 23.2%, respectively.[36] Rates for these two rural subgroups did not differ significantly from one another.[36]

Investigations within more specific geographic areas raise the possibility that patterns and prevalence of tobacco use among rural African Americans may differ from those found in national samples.[40,41] For example, in contrast to James and colleagues' finding of similar smoking rates among rural African Americans and Whites,[36] a 2011 study conducted in rural, southern Alabama found that odds of current cigarette smoking were 36% lower for African Americans in this area than for their White neighbors.[41] As noted elsewhere (see Part I. B. Regional Variation in Tobacco Use, p. 13), another group of researchers in Alabama also reported differences by region, observing that young African American men in a southern, rural part of the state smoked at higher rates than those in the same racial/ethnic and age group statewide (2009 data).[40]

Recent research has addressed relationships between psychosocial factors and tobacco use among rural African Americans.[42,43] For example, in a 2017 study of young African Americans in rural Georgia, participants who experienced supportive parenting in early adolescence were less likely to report stress in young adulthood, and their lower levels of perceived stress were, in turn, associated with lower risk of cigarette consumption.[43] An investigation using the 2003 California Health Interview Survey (CHIS) determined that exposure to racial discrimination was linked to increased risk of smoking for rural and urban residents alike, and that African Americans in both rural and urban settings reported higher exposure to discrimination than other racial/ethnic groups.[42]

American Indian/Alaska Natives (AI/AN)

An estimated 54% of AI/AN live in rural or small towns,[27] and across all racial/ethnic groups in the United States, AI/AN have among the highest rates of commercial tobacco use.[44] An analysis of the 2010-2015 NSDUH revealed that 43.3% of urban and rural AI/AN reported

current use of commercial tobacco products, as compared to 27.7% of all non-AI/AN groups combined (other racial/ethnic groups assessed included multiracial, White, NHOPI, Black, Hispanic, and Asian people).[44] Elevated use of commercial tobacco among AI/AN is associated with a disparate burden of tobacco-related morbidity[45] and mortality.[46] Mowery and colleagues[46] found that among men and women aged 35 years and older, the proportion of excess deaths due to smoking-related diseases was higher for AI/AN than for Whites (2001-2009 data).

Available findings suggest that rural AI/AN adults show higher rates of commercial tobacco use than their rural peers of other races/ethnicities. As noted above, national data indicate that the prevalence of current commercial cigarette use among rural AI/AN adults, estimated at 36.7%, is higher than for people of other racial/ethnic groups who reside in rural places (2012-2015 data).[36] Moreover, a California study showed that in both rural and urban areas, AI/AN adults were at higher risk for commercial cigarette use than Latinos; however, the size of this difference in risk was greater in rural than in urban settings (2003 data).[42] Thus, rural AI/AN may face disparities associated with both place and race/ethnicity.[42]

Prevalence of commercial tobacco use among AI/AN varies by geographic region. In one study, rates of current cigarette use were significantly higher among AI/AN in Alaska than in the general U.S. population (2006 national data), while rates among American Indians in the Southwest were lower than national rates.[47] Cigarette use and smokeless tobacco use were both found to be more common among Alaska Natives than among American Indians in the Southwest.[47]

People with Behavioral Health Needs

Behavioral health problems are associated with increased risk for tobacco use[48-50] and for deaths due to tobacco-related disease.[51] According to analyses of the 2015 NSDUH, in the overall United States population, smoking rates were markedly higher among adults with past-year mental illness or substance use disorders than among those without such conditions (34.2% versus 17.1%).[49] Despite the high prevalence of tobacco use among this population, they are assessed and treated for tobacco dependence at relatively low rates.[52] Those who receive services for their behavioral health conditions have higher quit rates than their peers who are not in treatment.[48]

Although behavioral health problems are about as prevalent in rural as in urban populations,[53-55] rural residents with AMI or SUD display markedly higher rates of tobacco use (see Table, p. 8),[35] and resources for addressing mental illness,[56-58] substance use,[59] and tobacco dependence are less available in rural areas.[60-64] Because they have less access to these supports, rural tobacco users with behavioral health diagnoses may be less likely than urban peers to initiate a quit attempt or succeed in cessation.

Pregnant Women

An estimated 13.8% of U.S. pregnant women are current cigarette users (2017 data).[65] Some data suggest that pregnancy smoking rates may be elevated in rural areas.[35,66-68] Our 2015-2016 NSDUH analyses showed that current cigarette use was significantly higher among rural pregnant women compared to their urban peers (22.3% versus 10.1%).[35] In addition, an Appalachian study based on data from 2006-2007 revealed that about one quarter of pregnant participants were current smokers, during a time period when the national prevalence of pregnancy smoking was 12.6%.[66] Pregnancy smokers in this sample were more likely than non-smokers to live in completely rural counties with average incomes of less than $15,000 per year.[66] Further, research on low-income women in Kansas showed that rural women had consistently higher rates of pregnancy smoking than their urban counterparts (2005-2011 data).[67] Shoff & Yang[69] found that higher levels of social capital (e.g., close social networks and norms of reciprocity) reduced the risk of smoking during pregnancy among women residing in rural counties (2007 data).

Sexual and Gender Minorities (SGM)

Sexual and gender minorities (SGM) comprise individuals who identify as lesbian, gay, bisexual, transgender, queer, or gender non-conforming (LGBTQ+). Research suggests that SGM are at elevated risk for smoking[70,71] and for tobacco use in general.[2] Across the nation, about one-fifth of SGM (20.3%) are current cigarette smokers, and 27.3% report current use of

tobacco products (2017 data).[2] A systematic review of 42 studies dating from 1987 to 2007 indicated that the odds of smoking were 50-150% higher for SGM than for non-SGM people.[71]

Although available information on tobacco use among rural SGM is sparse, some investigators have published state-specific research with rural prevalence rates.[72-74] For example, in Missouri, Bennett and colleagues[72] found that 45.9% of rural SGM were current smokers, and that smoking prevalence was similar among rural and urban SGM in the sample, both before and after controlling for sociodemographic factors (2012 data). A North Carolina study of rural immigrant Latino men who have sex with men indicated that lifetime smoking prevalence in this community was 43.8%, whereas rates of current and daily smoking were 36.6% and 6.4%, respectively (2008 data).[74] Our NSDUH analysis showed that 43.3% of rural lesbian, gay, and bisexual people (LGB) had smoked cigarettes in the past month compared to 30.7% of urban LGB.[35]

One qualitative study considered how factors related to rural residence and to SGM status interacted to influence tobacco use. In this interview-based study of lesbian, gay, and bisexual smokers in Appalachian Kentucky, most participants expressed the view that rural tobacco-related norms influenced their smoking behaviors more than any stress they experienced due to their SGM status.[73]

KEY FINDINGS

- In a national sample of adults, past-month use of tobacco, cigarettes, and smokeless products was higher for rural non-Hispanic Whites, people living in poverty, those with any mental illness or substance use disorder, and veterans than for their urban counterparts (2015-2016 data).
    - Rural Hispanics, pregnant women, and lesbian, gay, or bisexual people (LGB) also showed higher rates than their urban peers on some tobacco use measures.
- National estimates of current cigarette use by rural adults showed that compared to non-Hispanic Whites (24.7%), Hispanics (17.0%) and Asian or NHOPI (10.9%) had lower rates of use; non-Hispanic Blacks (23.2%) had a similar rate; and AI/AN (36.7%) had a higher rate (2012-2015 data).
- Nationwide, current smoking prevalence for rural adolescents was 7.3%, as compared to 3.8% for their urban peers, and adjusted odds of smoking were 54% higher for rural than for urban youth (2014-2016 data).
- Region-specific research has addressed relationships between psychosocial factors and tobacco use among rural African Americans.
    - For example, in a 2017 study conducted in rural Georgia, young African Americans who experienced supportive parenting in early adolescence reported less stress in young adulthood, and these lower levels of perceived stress were associated with lower risk of cigarette consumption.
- Relative to other rural racial/ethnic groups, AI/AN had the highest rates of commercial cigarette use (2012-2015 data).
- Compared to their urban counterparts, rural tobacco users with behavioral health issues have less access to resources for addressing mental illness and tobacco dependence.
- According to national data from 2015-2016, 47.5% of rural, LGB adults reported past-month tobacco use.
- The prevalence of pregnancy smoking may be higher in some rural areas than in the nation as a whole.
- The *RHIhub Rural Tobacco Control and Prevention Toolkit* is an important additional resource for information on tobacco use in rural subpopulations including people of low economic status, veterans, working adults, Hispanics, Asians, and Native Hawaiian/Pacific Islanders.

B. Regional Variation in Rural Tobacco Use

Studies of rural tobacco use, and rural health in general, have often defined non-metropolitan[75] counties as rural, and have used data aggregated across all such counties to make generalizations about rural populations and rural-urban disparities.[76] This perspective has yielded valuable insights about macro-level needs and characteristics shared by rural areas, and it is reflected in much of the material reviewed for this report.[4,6,77,78] However, it has long been recognized that rural communities across the country vary greatly on many dimensions including sociodemographic risk factors, culture, infrastructure, and policy environment[14]—all of which could influence tobacco use within regions. Recent investigations acknowledge important regional differences in rural tobacco use by examining variations in rural-urban disparities across different areas of the United States[5,21,79-82] and by focusing on 'Tobacco Nation,' a group of states with high tobacco use.[83]

Regional Variations in Rural-Urban Tobacco-Related Disparities

Several studies within the emerging line of research on regional variations focus specifically on cigarette use. Using the 2012-2013 NSDUH, Roberts and colleagues[21] found that within Census Bureau regions and divisions, significant rural-urban differences in daily cigarette use were identified in the Northeast region, the New England division of the Northeast, the Southern region, and the South Atlantic division within the South. Among impoverished populations in the East North Central division of the Midwest, rural rates of daily cigarette use were more than twice as high as urban rates.[21] Meit and colleagues[80] reported that in the South, Northeast, and Midwest, adolescents in the most rural counties were more likely to smoke than their counterparts more urban counties (2010-2011 data). Tanenbaum and colleagues[82] found that in four out of ten Health and Human Services (HHS) regions,[i] rural residents were more likely to be heavy smokers than their urban peers (2014-2015 data).

Regional patterns of use were likewise assessed for other tobacco products besides traditional cigarettes. For example, in all four Census Bureau regions, past-month use of chewing tobacco and snuff was more widespread in rural than in urban populations,[21] whereas rural residents of the West and Midwest were less likely than their urban counterparts to report past-month use of menthol cigarettes (2012-2013 data).[21] In the Northeast, Midwest, and South, rural residents were more likely than those in urban areas to use multiple types of traditional tobacco products such as cigarettes, menthol cigarettes, smokeless tobacco, pipes, or cigars (2013-2014 data).[5]

Some studies have observed variations within more specific areas. For example, Dilley and colleagues[79] found that while Alaska Natives used commercial cigarettes at high rates in all regions of Alaska, smoking prevalence for this racial/ethnic group was highest in the most remote areas of the state; moreover, use of traditional, smokeless tobacco by Alaska Natives was concentrated in the Yukon-Kuskokwim region of southwestern Alaska (2006-2010 data). Within Appalachia, rural adults were more likely to smoke than their counterparts in large metro areas, and smoking prevalence was especially high in the Central and North Central Appalachian subregions (2014 data).[81]

Findings regarding regional differences in rural and urban patterns of e-cigarette use were mixed. One recent investigation showed that in each of the four Census Bureau regions, the prevalence of e-cigarette use was similar in rural and urban populations (2013-2014 data).[5] In contrast, a study using the 2014-2015 Tobacco Use Supplement to the Current Population Survey (TUS-CPS) revealed that nationwide, e-cigarette use was higher in rural than in urban areas. However, after adjusting for demographics and smoking status, rural residents in four out of ten HHS regions had *lower* odds of e-cigarette use than their urban peers.[84,ii] In other HHS regions, differences between rural and urban prevalence were not significant.[84]

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[i] The four regions were: Region 3 (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia); Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee); Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, Texas); and Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming).

[ii] The four regions were: Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin); Region 7 (Iowa, Kansas, Missouri, Nebraska); Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming); and Region 10 (Alaska, Idaho, Oregon, Washington).

Tobacco Nation States

The Truth Initiative's recent report, *Tobacco Nation*, represents another effort to develop a more geographically nuanced understanding of tobacco-related epidemiology.[83] This 2017 report highlighted characteristic patterns of tobacco use in 'Tobacco Nation,' 12 adjacent states that stretch from the Midwest to the Southern U.S.: Alabama, Arkansas, Indiana, Kentucky, Louisiana, Michigan, Mississippi, Missouri, Ohio, Oklahoma, Tennessee and West Virginia. In this 12-state region, adult smoking prevalence was higher than in other states (22% versus 15%: 2015 data), and residents smoked more cigarette packs per person annually (67 in Tobacco Nation versus 41 in other states: 2015 data).[83] Compared to the rest of the United States population, residents of Tobacco Nation had elevated levels of sociodemographic risk factors for smoking; specifically, they were more likely to be of White race/ethnicity and to have relatively low levels of income, educational attainment, and employment.[83] Tobacco Nation residents also exhibited shorter life expectancy than their fellow citizens elsewhere in the country.[83]

Data from the 2012-2016 American Community Survey[85] indicate that Tobacco Nation is home to many rural residents: in each state of the region, the proportion of the population living in rural areas is over 20%, and in eight states, rural residents comprise over 30% of the population. The smoking risk factors that cluster in this region are also characteristic of rural populations.[16] These observations raise questions as to whether there are rural-urban differences in tobacco use within this twelve-state area, and to what extent the region's elevated rates of smoking are due to the use patterns of its rural residents.

This review did not locate published studies exploring associations between rural residence and tobacco use within the entire 12-state region of Tobacco Nation. However, available research provides insights into patterns of rural tobacco use within specific Tobacco Nation states. For example, in a sample of young adult African American men from rural Alabama, prevalence of current cigarette use was nearly 40%, exceeding the statewide prevalence rate of 15.5% for African American men in this age group in 2009.[40] In Ohio, men living in the state's rural Appalachian region were more likely than their counterparts elsewhere in the state to use smokeless tobacco, whereas the reverse was true for women (2010 data).[86] In a study of high school students in rural northeastern Tennessee, approximately 11% used e-cigarettes currently, while 35% had ever used e-cigarettes; odds of e-cigarette use were higher among those who were current cigarette smokers or smokeless tobacco users (2016 data).[87]

KEY FINDINGS

- Prevalence and patterns of rural tobacco use varied across regions, with rural-urban disparities appearing in New England, the South and South Atlantic, and among impoverished populations of the Midwest.
- Rural populations showed higher rates of smokeless tobacco use in all four Census Bureau regions of the country.
- Smoking prevalence is elevated in Tobacco Nation, a twelve-state region where rural residents make up over 20% of the population in each state.

C. Sociodemographic Risk Factors for Tobacco Use: Associations with Rural-Urban Differences

Previous reports have concluded that rural-urban differences in tobacco burden can be explained in part by the higher prevalence in rural populations of sociodemographic risk factors related to smoking. For example, in *Cutting Tobacco's Rural Roots*, the authors observed that higher rates of tobacco use were associated with lower levels of education, low income, and unemployment, and that these factors were present at higher levels in some rural parts of the country.[16]

In our rapid review of the recent literature, we identified multivariate analyses consistent with this interpretation.[4-6,21,42,78] Researchers using data from California[42] and from national samples[4-6,21,78] reported that before adjusting for other variables related to rurality or tobacco use, smoking[4-6,21,42,78] and use of smokeless products[5,6,21] were more prevalent in rural than in urban populations. In addition, many of these same analyses reported that rurality was linked to risk factors for tobacco use such as low educational attainment,[4,42] lower levels of employment,[42] lower household[4,42] or county median household incomes,[6] and White, non-Hispanic race/ethnicity.[4,42] Further, some investigations reported that after adjusting for these sociodemographic variables, the association between rurality and tobacco use decreased.[4,42] These results suggested that rural-urban differences in the prevalence of tobacco use were to some degree attributable to the fact that sociodemographic risk factors cluster together in rural areas. However, in several instances, rural-urban disparities persisted even after controlling for these covariates.[4,5,42,78]

A study by Doogan and colleagues[4] exemplifies these patterns. Using yearly cross-sectional data from the 2007-2014 NSDUH, the authors used multivariate models to examine linkages between rural residence and smoking prevalence after adjustment for demographics; resource variables such as education, income, employment, and health insurance status; and other factors including anxiety, depression, use of other substances, and outdoor occupation. Results showed that in 2007, higher rural smoking rates were entirely explained by rurality's correlations with other factors included in the model. By 2014, a new pattern had emerged: data for this year showed that rural-urban differences in smoking prevalence remained after accounting for the effects of demographic and psychosocial risk factors. In other words, unmeasured aspects of the rural experience appeared to be associated with the elevated burden of smoking in rural areas. These findings point toward the conclusion that in order to reduce rural-urban disparities related to tobacco, it is important to examine the potential influences of culture, infrastructure, and policy.

KEY FINDINGS

- Rural-urban differences in tobacco burden are associated with the higher rural prevalence of sociodemographic risk factors, such as lower levels of educational attainment, employment, and income, as well as White, non-Hispanic race/ethnicity.
- Some recent studies show that rural-urban differences in tobacco use persist even after controlling for sociodemographic characteristics. It is therefore important to consider the potential influences of rural cultures, infrastructure, and policy context.

D. Rural Cultures

Rural communities across regions and subpopulations vary with respect to their geography, history, economic conditions, racial/ethnic composition, and language, and differences on these dimensions contribute to cultural diversity among rural residents.[14] Just as there is no unitary culture that prevails in all rural communities of the United States, there is no single, rural orientation to community health[88] or tobacco use.[14] Nevertheless, the research literature reveals characteristics that some rural cultures hold in common, and that may have implications for tobacco prevention and control. In this section, we explore key cross-cutting themes in the literature on topics including cultural assets that may advance tobacco control efforts; norms relating to tobacco use; attitudes toward cessation; perceptions about secondhand smoke and

smoking restrictions; and rural communities' relationships with the tobacco industry.

Cultural Assets

Studies on rural communities in the West,[89] Northeast,[88,90] Midwest,[88,91] Appalachia,[88,92] United States/Mexico border region,[88] Alabama Black Belt[93] and Mississippi Delta[88] suggest that rural subgroups share certain cultural assets, which may emerge from their experiences of operating within small, geographically remote social and organizational systems.[88] Investigations exploring health-enhancing resources in rural areas have characterized rural communities in many regions of the country as having close-knit social networks[88,91-94] with overlapping personal and professional connections.[88,89] In addition, rural communities are often described as valuing civic engagement, reciprocity, and mutual aid.[88,90,92-94] This social cohesion and shared investment in collective well-being can form a strong foundation for building coalitions to promote community health initiatives[88,89,92] including tobacco control.[95-97]

Because rural communities often have limited health infrastructure, the health sector may not have optimal capacity to fully address population health issues[80,98-105] (see Part I. E. Rural Infrastructure, p.19). Thus, rural health improvement projects may develop cross-sector collaborations involving partners both within and outside health systems.[88,89,92] This review revealed that faith-based organizations,[88,89,92,93,106] schools,[88,89,92] small businesses,[88] and law enforcement[89,92] fulfill important functions in such coalitions. The active participation of these partners may stimulate innovation and enhance the community's sense of ownership in relation to health improvement efforts.[88]

The creation of broad-based coalitions has been a prominent strategy in successful rural tobacco control and prevention programs occurring in widely varying communities. For example, the CDC funded the Mississippi Delta Health Collaborative (MDHC) as a program that aimed to prevent heart disease, stroke, and related chronic diseases. The initiative was intended to intensify collaboration among the Mississippi Department of Health, existing chronic disease programs (e.g., heart disease and stroke prevention, diabetes, tobacco, nutrition, physical activity), local health departments, other community health care providers (e.g., Federally Qualified Health Centers), local communities, and the CDC. The MDHC joined forces with local churches to create the Delta Alliance for Congregational Health, a coalition that conducts and evaluates community-based stroke prevention activities, including smoking cessation[95] (see also Part II. C. Smoke-Free Air, p.46). In Maine, the Franklin Cardiovascular Health Program (FCHP) served rural Franklin County from 1974 to 2010. Originally established under the auspices of a local non-profit medical practice and a community hospital, the FCHP forged and maintained working relationships with a broad range of participant organizations including businesses, public schools, the local University of Maine campus, and law enforcement. In the course of its long history, FCHP launched multiple anti-smoking initiatives. Activities included promotion of smoke-free policies within local health organizations and businesses, in addition to 'sting' operations, in which high school students worked with law enforcement to test local retailers' compliance with restrictions on selling tobacco products to minors.[97]

Tobacco control efforts in tribal territories have also featured coalition-building. In Minnesota, the Tribal Tobacco Education and Policy Coordinator for the Leech Lake Nation of Ojibwe launched a commercial tobacco control program by working with Local Indian Councils (LICs) that govern each village of the Leech Lake reservation.[96] The LICs supported the coordinator in establishing local Tobacco Advisory Councils, who coordinated smoke-free community events and provided education on the health implications of commercial versus sacred traditional tobacco use.[96]

The strong interpersonal and interorganizational ties in rural communities may be leveraged, not only to help launch tobacco control efforts, but to optimize program impact among participants. In the Appalachian regions of Ohio and Kentucky, and in rural communities within a Western state, adolescent and adult tobacco users were more inclined to attempt cessation if they witnessed valued peers or family members challenging pro-tobacco norms.[86,107,108,109] In addition, rural Montana residents identified support from family and friends as a key factor that could help them sustain their cessation

efforts.[110] These findings indicate that rural tobacco control initiatives may be especially effective if they recruit community members and opinion leaders to act as program advocates.

Social Norms and Attitudes towards Tobacco Use

Below, we present findings on rural cultural practices, beliefs, and attitudes relating to tobacco use, and we consider their potential implications for implementation of tobacco control and prevention.

Social and Intergenerational Transmission of Pro-Tobacco Norms

The high prevalence of tobacco use in some rural areas may pose challenges for tobacco control efforts, as it can lead to the normalization and social acceptance of tobacco.[16] Investigations in rural parts of California,[111] Montana,[110] and Alabama[112] indicated that initiation and continued use of tobacco among rural residents was influenced by peers' and family members' use. Moreover, two studies indicated that in some rural communities, adults with permissive attitudes towards tobacco use could facilitate youth access to tobacco products.[108,113] Recent research has further shown that in Georgia, rural middle school and high school students were more likely than urban peers to report that it was easy for them to obtain cigarettes and chewing tobacco.[114] Youth in Appalachian Kentucky observed that adults in their communities signaled their acceptance of young people's tobacco use by ignoring tobacco-free school policies, failing to observe restrictions on sales to minors, and using tobacco with youth.[113]

Attitudes toward Smokeless Tobacco

In some rural regions of the United States, smokeless tobacco use is seen as integral to local traditions of masculinity.[16,86,111] In Appalachia[16,86] and rural California,[111] both adolescents and adult males reported that smokeless tobacco initiation resulted from emulation of a respected male family member or from peer social pressure, and that use of smokeless products was regarded as a rite of passage into adulthood.[86,111] Due to its widespread social acceptability, smokeless products were the preferred form of tobacco for rural male youth in the West[108] and for adolescents living on farms.[115] These observations suggest that in rural communities where smokeless tobacco use is valued, tobacco control programs may need to develop specific messages to counterbalance users' positive associations with smokeless products.

Attitudes toward E-Cigarettes

In a national sample of high school students, rural students were significantly less likely than their urban peers to use e-cigarettes and more likely to use traditional cigarettes, while both urban and rural students perceived e-cigarettes to cause less harm than cigarettes.[77]Attitudes towards e-cigarettes varied by region in the United States, which may explain differing use patterns across regions. In New England, New York, and New Jersey, rural residents who reported ever using e-cigarettes were more likely than their urban counterparts to believe that e-cigarettes could help them quit smoking; however, in Southeastern states (Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, and Florida), this trend was reversed.[84] Further, in parts of the Midwest and West, rural ever-users of e-cigarettes were less likely than their urban counterparts to believe that e-cigarettes were safer than traditional cigarettes.[84] Although findings are mixed, studies indicating favorable perceptions of e-cigarettes among some rural populations are cause for concern.

Attitudes toward Sacred Traditional and Commercial Tobacco among American Indian Peoples

In some American Indian tribes, tobacco has long been used for sacred and healing purposes.[116,117] Unlike commercial tobacco products, the home-grown tobacco traditionally used by American Indians is typically free from chemical additives.[118] Sacred traditional tobacco continues to occupy a central place in the ceremonies of American Indian groups including the Minnesota Ojibwe and Dakota tribes,[119] the tribes of the Northern Plains,[116,117] the Peyote Religion,[118] and the Native American Church.[118]

American Indians who ascribe religious significance to sacred traditional tobacco may perceive tobacco control initiatives as disrespectful if they simply encourage communities to become 'tobacco-free,' without making distinctions between the use of traditional and

commercial products.[119] Public health experts within the Native American community advocate an approach that valorizes the reverent use of sacred traditional tobacco in clearly defined ceremonial contexts, while at the same time underscoring the importance of protecting the community from health harms associated with commercial tobacco use.[118-120] These considerations have relevance for commercial tobacco control efforts in all AI/AN communities, including those in rural areas.

Attitudes toward Tobacco Cessation

Cultural norms and values may be among the factors that influence rural residents' desire to discontinue tobacco use and willingness to participate in formal tobacco cessation programs. Values affecting cessation may vary by age, race/ethnicity, and region. For example, in both a Western[108] and an Appalachian state,[121] rural male youth viewed the use of formal cessation treatment as sign of weakness. In contrast, males aged 40 years and older in rural areas of two Appalachian states were more likely to report a need for increased external supports and resources to quit, perhaps suggesting a cultural shift towards less tobacco-friendly environments in Appalachian communities.[107,121]

In some rural parts of the country, religious faith was viewed as a potential support to cessation. Adults in rural Kentucky reported that faith was a motivating factor to quit smoking,[109] and stated that more anti-tobacco messages should include religious sentiments.[122] In the Mississippi Delta Region of Arkansas, community members expressed the views that the power to abstain from tobacco use comes from God, and that prayer was one of the best tools for cessation.[123] In rural communities where religious affiliations are integral to the culture, tobacco cessation and prevention interventions may be more engaging if they can be portrayed as consistent with faith-based values.[14,109]

Attitudes toward Secondhand Smoke and Smoking Restrictions

Nationwide survey data[77] and studies within specific rural subpopulations[107,108,122,124] have shown that rural residents understand the health risks associated with secondhand smoke. Nevertheless, in rural communities where social acceptance of smoking is widespread, smoke-free policies may encounter resistance from residents who are reluctant to expose their smoking peers to restrictions and perceived negative judgment[16,122] (see also Part I. F. Tobacco Control Policy Environment in Rural Areas, p. 27). Efforts to promote smoke-free air in rural communities may be more successful if they incorporate culturally sensitive messages and refrain from marginalizing or stigmatizing smokers.[107,122] In focus groups including rural Kentucky residents, messages advocating smoke-free air policies were regarded as more effective when they incorporated themes that resonated with the values of the local community.[122,125] Key themes included appeals to religious values, pride in one's home territory, and acceptance of smokers, balanced with an acknowledgment of individuals' rights to experience smoke-free air.[122,125]

Rurality and the Tobacco Industry

Marketing to Rural Populations

It is well established that the tobacco industry directs its marketing to specific groups defined by demographic characteristics.[16,126] Residents of rural areas are among those singled out for tobacco advertising.[6,16,127] Thus, rural tobacco control initiatives must take the extent and nature of these advertising campaigns into consideration when designing their own messaging.

In a national study, rural youth were more likely than their urban counterparts to report exposure to tobacco advertising.[6] In rural areas of Appalachian states, residents indicated that they often encountered pro-tobacco messaging in convenience stores and gas stations, in local television advertising, and at sporting or cultural events such as rodeos, auto races, and concerts.[6,16,127] A rural focus is particularly apparent in the marketing of smokeless tobacco products.[6,128] A recent systematic review found that point-of-sale advertising for smokeless products was more highly concentrated in rural than in urban neighborhoods.[128] The content of this advertising, which often uses images of outdoor scenes and farmland, appears designed to resonate with rural residents who value their traditional ties to agriculture and nature.[16,86,129] Some evidence suggests that targeted tobacco advertising campaigns have had their intended effects of reinforcing pro-tobacco norms in rural

communities.[86] For example, rural smokers residing in an Appalachian state reported that pro-tobacco messaging influenced them to initiate tobacco use in adolescence.[127]

In addition to targeting residents of rural communities, the tobacco industry also intensively promotes tobacco use in subgroups including low-income people, SGM, African-Americans, and AI/AN.[126] Members of these groups who live in rural areas may be doubly vulnerable to the impacts of tobacco advertising. Marketing strategies focusing on AI/AN have been particularly broad-ranging and sophisticated. A common approach has been to incorporate images associated with American Indian culture and spirituality into commercial tobacco advertising, with a view toward encouraging the substitution of commercial products for traditional ones in ceremonial contexts.[130,131] In addition, the industry has deployed marketing practices including price reductions in tribal retail outlets, promotions in tribal casinos, sponsorship of tribal events, and contributions to AI/AN community organizations.[132]

Economic Ties to the Tobacco Industry

As noted in *Cutting Tobacco's Rural Roots*, rural communities with past or current economic ties to the tobacco industry may have positive associations with tobacco cultivation and use. For example, some may regard the tobacco industry as a source of employment and prosperity.[16] In rural Appalachia, certain communities valorize their connections with the industry by displaying marketing logos and holding festivals that celebrate the area's heritage of tobacco production,[113] and residents may describe warm memories related to their experiences in growing tobacco.[125] At the same time, studies have also documented contrasting views among Appalachian residents, with some expressing the belief that tobacco companies exploit tobacco users.[109,121]

Where rural communities continue to feel an allegiance to the tobacco industry, this attitude may be negatively associated with the acceptance of laws and rules related to tobacco control.[133,134] For example, a study on tobacco control in rural Kentucky communities found that towns with higher levels of tobacco production scored lower on measures of readiness to enact smoke-free air laws.[133] In addition, an investigation based on key informant interviews of local tobacco control experts in the Appalachian regions of six states concluded that local traditions of tobacco farming appeared to engender strong resistance to tobacco control policies.[134]

In places with a history of tobacco cultivation, culturally sensitive countermarketing campaigns may be especially important as a means of generating greater support for tobacco control. Focus group participants in Kentucky expressed the view that anti-tobacco advertising should avoid criticizing tobacco growers, placing emphasis instead on issues such as protecting worker health and respecting non-smokers' rights to smoke-free air. This approach could preserve the nostalgia surrounding the tobacco-growing heritage and communicate respect for individual freedoms while conveying essential messages about the significant harms of tobacco use.[125]

KEY FINDINGS

- Although rural cultures are heterogeneous, certain rural subgroups share cultural strengths that could be enlisted to support rural tobacco control and prevention. Relevant cultural assets include:
  - Strong social networks
  - High levels of community engagement and mutual aid
  - Experience and skill in forming cross-sector collaborations to build community capacity and enhance shared quality of life
- In certain regions and subpopulations, norms favoring tobacco use may continue to present obstacles to rural tobacco control efforts.
  - In some rural areas, adults with permissive attitudes toward tobacco use may facilitate youth's access to tobacco products, thus perpetuating the use and acceptance of tobacco in rural culture.
  - In particular rural contexts, male youth may regard smokeless tobacco use as a practice linked with mature masculine identity and male bonding.

- Some American Indians use sacred traditional tobacco for ceremonial and religious purposes. Experts within the American Indian community recommend an approach to commercial tobacco control that expresses value for the use of sacred traditional tobacco in clearly defined ceremonial contexts, while emphasizing the importance of protecting community members from health harms related to commercial tobacco use.
- Views about tobacco cessation vary within rural populations, with some subgroups of prospective quitters (e.g., young rural males) preferring to make quit attempts without assistance, and others (e.g., Appalachian men over 40) expressing more interest in formal cessation services.
- Rural populations, including those in tribal territories, continue to be a target for tobacco industry marketing.
- Although social acceptance of smoking may impede the adoption of secondhand smoke restrictions in some rural communities, rural residents may be more receptive to advertising in support of smoke-free air when messaging incorporates themes that resonate with local values.

E. Rural Infrastructure

In considering aspects of rural infrastructure as they relate to tobacco control, we focus on three major themes emerging in the recent literature. First, we review the challenges that rural communities may face in providing their members with access to health care and tobacco cessation services. Next, we explore how health organizations that serve rural communities can help galvanize efforts to build local tobacco control capacity. Finally, we reflect on the ways in which distance technologies can be used to improve rural access to tobacco control resources.

Challenges to the Provision of Tobacco Prevention and Cessation Services in Rural Areas

Availability and Capacity of Providers

One potential barrier to the provision of tobacco prevention and treatment services among rural residents is the relatively limited supply of health care providers in rural places. Rural communities have fewer primary and specialty care providers per capita than urban areas.[80,99] In comparison to large urban counties, rural counties with no towns of over 10,000 have less than half the number of primary care providers per 100,000 population (47 versus 118).[80] With regard to specialty providers, the rural-urban difference in supply is especially pronounced. The largest, most urban counties have an estimated 263 specialists per 100,000 population compared to only 30 in remote rural counties, a nearly nine-fold difference.[80]

Because of the lower supply of providers in rural communities, rural residents may need to travel farther to obtain health care services.[80,104] The impact of these travel differences on access to care can be exacerbated by transportation challenges. For example, rural residents who lack a driver's license or who have no friends or family to help with transportation are less likely to use both preventive and disease care services.[135] Rural-urban differences in health care provider supply and travel burden may result in poorer rural access to health care and to health system-based tobacco control resources in particular.

Limited evidence suggests that those health care providers who are available to serve rural communities may experience challenges to delivering evidence-based tobacco prevention and treatment services. For example, in a qualitative study of rural smokers, some participants reported that their providers appeared to be too rushed and overburdened to spend adequate time on addressing the topic of smoking.[62] In addition, rural primary care providers in some areas may be less likely than their urban counterparts to adhere to best practices when addressing tobacco cessation with patients who smoke. One study indicated that in a sample of mentally ill veterans, rural residents were less likely than their urban peers to receive advice to quit and cessation counseling from their physicians.[60] In a predominantly rural sample of advanced practice nurses in Kentucky, the majority were unfamiliar with evidence-based tobacco treatment clinical guidelines, and only about one quarter routinely assessed smoking patients' willingness to quit.[64] Additional research is necessary to fully understand the prevalence of this issue, and more work is needed to develop means for ensuring rural providers' adherence to evidence-based guidelines.

One report suggests that improving outcomes for rural smokers will require health system-wide approaches, as opposed to strategies that target only patients or providers.[61]

Although public health systems could be a potential alternative source for tobacco cessation and prevention services, local health departments in rural areas may face difficulties in fulfilling this role. While research is limited and somewhat dated, available studies suggest that public health infrastructure is less robust in rural places.[98,101,102] Rural public health professionals tend to have less specialized public health training than their urban counterparts, and have fewer colleagues with whom they can collaborate to leverage additional knowledge.[101,105] The geographic isolation of many rural public health systems has been cited as a limitation to accessing additional workforce development and training opportunities.[98,105] As a result of these factors, rural public health professionals may have less capacity to implement evidence-based and emerging tobacco prevention initiatives.

The funding structures of rural public health may also pose some impediments to the implementation of broad, population-based initiatives including tobacco prevention. For example, the more limited local tax base leaves many rural public health programs dependent on federal or state funding sources that may not be responsive to the needs of their local communities.[100] Moreover, federal and state funds are often allocated to local health departments (LHDs) with a view toward producing the greatest possible population impact, rather than on the basis of epidemiological burden. As a result, LHDs in high-density urban areas may receive more funding for tobacco control than those in lower-density rural areas with higher rates of tobacco use.[7,136]

Rural Hospital Closures

The rural United States is currently experiencing a wave of hospital closures. Since 2010, 87 rural hospitals have closed,[103] and 44% are vulnerable to closure due to their negative operating margins.[137] Rural hospitals are in poor financial health for a host of reasons, including declining demand for inpatient services,[103] failure to recover from the recession,[103] a case mix skewed toward socioeconomically disadvantaged patients,[138] and the increased use of high deductible health insurance, which can increase hospitals' bad debt burden.[139] Because rural hospitals can play key roles in local population health improvement initiatives,[140] communities that lose their hospitals may have less capacity for tobacco control.

Health Insurance Coverage and Access to Tobacco Prevention and Treatment

Access to a full range of evidence-based tobacco treatment options, including counseling and medications, is critical to the quit success of rural smokers.[141] Research indicates that comprehensive insurance coverage for tobacco treatment modalities is related to increased use of these options and improvements in the long-term health of smokers. For example, comprehensive coverage of tobacco treatment with very low or no patient cost-sharing has been shown to increase participation in cessation treatment and decrease smoking prevalence[141,142] while reducing certain adverse health outcomes such as myocardial infarctions.[143] Yet rural residents face problems with health insurance coverage and health care affordability,[80,144] and these issues may interfere with their ability to access tobacco prevention and treatment services.

Historically, individuals living in rural places have experienced higher uninsured rates than those living in urban areas.[80,144] This pattern has been particularly evident in rural regions of the Southern and Western U.S., where one out of four non-elderly individuals lacked coverage in 2011.[80] Even when rural residents have private health insurance, greater cost-sharing for care and lower incomes combine to create higher "underinsured" rates in rural places.[145] Perhaps as a result of these insurance and income factors, people in rural areas are more likely than their urban counterparts to delay or forego needed health care because of costs.[146-148] Rural uninsurance and underinsurance may also leave rural residents less able to access and afford smoking cessation services, including medications. A qualitative study of rural smokers found that participants reported financial costs to be a substantial barrier to using tobacco cessation supports.[62]

The federal Patient Protection and Affordable Care Act of 2010[149] contained insurance-related provisions that should, in theory, increase rural access to no- or

low-cost, evidence-based tobacco treatment. This health reform legislation expanded Medicaid and increased the availability of subsidized private health insurance, thereby making it possible for more uninsured or underinsured rural residents to gain coverage.[150] Beyond expanding insurance access, federal health reform requires that most public and private health plans cover a range of evidence-based tobacco treatment options.[149,150] Specifically, plans are expected to cover two quit attempts per year, including counseling and all FDA-approved medications for tobacco cessation.[150] In addition, for expanded Medicaid, Medicare, and most private plans, these services must be provided with zero cost-sharing for the patient.[149,150] As a result of these requirements, rural residents who already had insurance or who acquired coverage under health reform should be able to receive evidence-based cessation treatment as a covered benefit.

Analysis indicates that health reform has enabled coverage gains for both rural and urban populations; however, estimates suggest that rural-urban disparities in the uninsured rate have persisted.[151] These findings may reflect the fact that low-income rural adults are more likely to live in states that chose not to expand Medicaid in 2014.[152] Thus, while reforms have likely increased the coverage and affordability of evidence-based tobacco treatment for rural residents, they have probably not eliminated insurance-related access problems faced by those living in rural areas.

Potential Role of Health Sector Organizations in Building Community Capacity for Tobacco Control and Prevention

Despite infrastructure limitations that may make tobacco control and prevention more challenging, rural communities can and do mount successful efforts to increase their tobacco control capacity. As previously discussed, such initiatives often rely on the participation of diverse stakeholders[88] (see Part I. D. Rural Cultures, Cultural Assets, p.15). Given their expertise and resources, organizations within the health sector such as rural hospitals, health departments, Federally Qualified Health Centers (FHQCs), Rural Health Clinics (RHCs), pharmacists, and behavioral health providers may serve as catalysts to tobacco control initiatives that ultimately rely on contributions from multiple sectors.

Hospitals

Rural hospitals, in particular, may be motivated and equipped to assume leadership responsibilities. While hospitals in rural areas have traditionally seen community health improvement as consistent with their mission,[140] aspects of the current policy environment may influence them to expand their commitment to addressing population health issues, including tobacco-related morbidity and mortality among the communities they serve. To begin with, the health care payment system is in the process of shifting away from reimbursement schemes that reward high-volume service delivery and toward value-based payment schemes that reward providers for keeping patients healthy.[153] In response, rural hospitals may determine that there is a business case for increasing their focus on activities designed to promote population health[140] and to decrease the prevalence of behavioral risk factors such as tobacco use.

Federal tax policy may be another driver stimulating rural hospitals' increased attention to community health issues.[140,154] In 2010, the Internal Revenue Service (IRS) created a new rule stating that non-profit hospitals must complete formal community health needs assessments (CHNAs) every three years in order to maintain their tax-exempt status.[155] These CHNAs must include input from public health departments and from community-based organizations representing underserved populations. CHNAs must identify key unmet community health needs and generate strategies to address these areas of need. When CHNAs highlight tobacco use or tobacco-related chronic disease as priority problems, their associated action plans may be designed to further the goals of tobacco cessation, prevention of initiation, promotion of smoke-free air, and reduction of tobacco-related disparities. Stakeholders who cooperated on CHNAs may capitalize on their existing working relationships to implement the tobacco control plans to which they contributed.

Community-oriented activities of the Mt. Ascutney Hospital and Health Center exemplify the ways in which rural hospitals can help to build local tobacco control capacity. Based in Windsor, Vermont and affiliated with the Dartmouth-Hitchcock health system, Mt. Ascutney has provided leadership, staff, and funding to support

the creation of several cross-sector partnerships focused on community health improvement. One of these initiatives is the Mt. Ascutney Preventive Partnership (the Partnership).[140,156] In addition to promoting community members' use of local and statewide tobacco cessation services,[156] the Partnership uses policy and educational strategies to stimulate positive changes in community norms relating to tobacco use.[140,156] In particular, the Partnership trains local youth to educate their peers about the health harms associated with tobacco and tobacco industry advertising tactics.[156]

Local Health Departments

Local health departments may likewise emerge as hubs for organizing rural tobacco control initiatives. Several factors may drive health department participation in such endeavors. First, rural hospitals and other community entities may turn to local health departments as authorities on population health[154] and recruit them to provide consultation on tobacco control projects. In addition, health departments are required to conduct collaborative community health assessments (CHAs) every five years in order to receive and maintain accredited status.[157] As with hospital CHNAs, CHAs conducted by accredited health departments must engage community partners, specify issues of greatest concern, and yield recommendations for community health improvement.[157] Thus, like CHNAs, CHAs that underscore tobacco-related problems may generate baseline data, collaborative infrastructure, and guiding principles that could ground future tobacco control efforts.

Somerset Public Health (SPH) in rural Somerset County, Maine, is one rural health department that has worked extensively with community partners to further goals related to tobacco control. SPH receives funding, office space, staffing, and grants management support from Redington-Fairview General Hospital, a local critical access hospital. A hospital board member also serves on SPH's advisory board. In close cooperation with Redington-Fairview and local business owners, SPH has launched community health improvement efforts such as the *Micro Wellness Project for Small Businesses*. This program assists businesses with 20 employees or less in offering workplace wellness services including substance abuse prevention and tobacco cessation treatment. The *Micro Wellness Project* is active throughout Somerset County.[140]

Primary Care

Rural primary care providers including FQHCs and RHCs may also be key participants in rural tobacco control, and their leadership in these activities may be particularly important in areas where hospitals and health departments are absent. FQHCs are federally funded to provide primary care and other services to medically underserved and uninsured populations.[158] In rural areas, they may embrace capacity building as a component of their role,[159] engaging coalitions of community members, faith-based organizations, schools, municipalities, and others to appraise community health challenges and create strategies for addressing them.[159] Thus, they could be instrumental in focusing stakeholder attention on tobacco-related health issues.

RHCs are located in medically underserved rural areas,[160] and receive enhanced reimbursement from the Centers for Medicare and Medicaid Services (CMS) for delivering primary care services to rural Medicare and Medicaid beneficiaries.[160] Although they are not mandated to do so, many RHCs have a history of providing free or discounted services to the uninsured,[161] and their commitment to serving vulnerable, rural populations may sometimes be expressed in efforts to expand the tobacco control and prevention services available in their communities.[162] For example, the Carle Clinic, an RHC in Mattoon, Illinois, launched a smoking cessation intervention combining group counseling and pharmacotherapy. This offering was the first formal cessation program to be made available in the rural county where the RHC is located.[162]

Pharmacies

Recent research suggests that pharmacists often embrace population health promotion as part of their professional identity.[163] In keeping with this orientation, pharmacists in some rural communities have made substantive contributions to local tobacco control initiatives. A study of pharmacies in Iowa and North Dakota determined that rural pharmacists were more likely than their urban counterparts to deliver certain public health services including cessation counseling.[164] In addition, pharmacists have been instrumental in delivering tobacco countermarketing messages to rural smokers[165,166] and providing cessation interventions in underserved, rural areas with high rates of tobacco

use.[166] (For additional details, see descriptions of work by the STRAND association of independent pharmacists in Part II. A. Cessation, Approaches, p.34.)

Providers of Behavioral Health Services

Finally, given that people with behavioral health diagnoses face heightened risk for tobacco-related morbidity and mortality[48,49,51] rural behavioral health providers may have a natural interest in creating new services and infrastructure to address the impact of tobacco on the populations they serve. The Northwest Alabama Mental Health Center (NWAMHC),[167] which has clinics in rural Lamar, Marion, Fayette, and Winston Counties,[167,168] has taken action along these lines by joining the National Behavioral Health Network for Tobacco and Cancer Control (NBHN).[169] Established by the National Council for Behavioral Health with support from CDC, the NBHN provides training, technical assistance, and networking opportunities to assist members in implementing systems-level approaches to tobacco control.[170] Using training, information, and networking opportunities provided by NBHN, the NWAMHC will be working to develop tobacco-free campus policies and to make cessation services available to their patients.[169]

Role of Distance Technologies in Expanding Rural Access to Tobacco Control

As a supplement to any efforts they may make to develop tobacco control capacity through the use of local assets, stakeholders may also be interested in using distance technologies to connect rural residents to tobacco control resources outside of their communities. In particular, the recent rural cessation literature emphasizes the utility of leveraging existing quitlines as a means of overcoming rural smokers' financial and geographic barriers to accessing cessation services.[26,171-174] Every state has a quitline that typically offers cessation interventions statewide at little or no cost to participants; thus, quitlines are a potentially important resource for uninsured or underinsured rural residents.[175] Quitlines eliminate the need to travel and provide a range of tobacco treatment services including education, counseling, referrals, and financial assistance with nicotine replacement therapy and medications.[175]

To enhance their potential reach and impact with rural populations, including specific subpopulations, quitline services can be adapted in ways that increase their visibility, acceptability, and accessibility. For example, the California Medicaid (Medi-Cal) *Incentives to Quit Smoking Program* formed a partnership with the California Rural Indian Health Board to promote quitline use among California's tribal communities through the provision of incentives.[174] (See Part II. A. Cessation, Addressing Rural Infrastructure Challenges, p.36, for more details on this program.) This approach could be adapted for use with other underserved or hard-to-reach rural subgroups to increase their use of state quitlines.

While state quitlines are an important tool for reducing geographic and economic barriers to cessation services, it should be noted that even these broadly available resources may not be fully accessible to some of the most disadvantaged rural populations. For example, a survey of about 800 residents in a largely rural state indicated that more than one-third (35%) lacked private access to a telephone or affordable telephone minutes that would enable confidential participation in counseling via the quitline.[123] Survey respondents also noted that lack of knowledge and/or trust in either local or external tobacco cessation programs could be deterrents to accessing quitline services.[123]

In addition to traditional quitline approaches, emerging technologies are seeing increasing use as means of advancing tobacco control objectives in rural places. Some efforts along these lines rely on high-speed Internet applications. Stakeholders have used advertising via Internet-based social media to increase rural residents' exposure to anti-tobacco messages; two such efforts[176,177] are described in more detail later in this report. (See descriptions of *Down and Dirty*[176] and *Real Cost*[177] campaigns in Part II. B. Prevention of Initiation, p.42.) Further, telemedicine programs have linked rural residents to cessation services including counseling,[172] abstinence monitoring,[178,179] and psychopharmacological consultation.[180] (See Part II. A. Cessation, Addressing Rural Infrastructure Challenges, p.36, for examples such as the *Connect2Quit*,[172] *Contingency Management*,[178,179] and *Abstinence Reinforcement Therapy*[180] programs.)

For the present, rural-urban gaps in high-speed broadband access may limit the implementation of tobacco control interventions that depend on this technology. According to a 2016 report by the Federal Communications Commission (FCC), while over 95% of urban residents had access to fixed, high-speed Internet services at the FCC's benchmark speed (25/3 Mbps), about 60% of those living in rural or tribal areas had such access.[181] Nevertheless, rural broadband capacity is improving steadily.[181,182] Whereas about one-third of rural Americans had home broadband in 2007, this proportion had increased to almost two-thirds by 2016.[182] Moreover, the federal government has further efforts under way to expand rural Internet access. For example, through its *Connect America Fund Phase II Auction*, the FCC will award about $2 billion over 10 years to service providers who commit to achieving specific population coverage targets for voice and broadband services to unserved, high-cost areas.[183] These changes may open up new possibilities for using high-speed Internet applications to address rural tobacco control and prevention.

Mobile phone-based strategies are another promising approach for communicating with rural communities about tobacco control. There is a moderately strong evidence base for mobile phone-based smoking cessation programs using text messages: A 2016 Cochrane review concluded that interventions of this kind had beneficial effects on cessation outcomes measured at six months.[184] Moreover, recent data indicate that text messaging may be accessible to a relatively large proportion of the nation's rural population: More than 90% rural residents own cell phones,[182] and more than three out of four rural cell phone owners send or receive text messages.[182,185] Short message service (SMS) texting offers particular advantages as a tool for overcoming access barriers, as it requires only a cellular network,[186] and may therefore be available in areas where high-speed broadband is lacking. Texting-based interventions to promote tobacco cessation are currently under way in rural areas of the United States. Examples include *Every Try Counts*, a campaign conducted by the Food and Drug Administration,[187] and *This is Quitting*, a program designed for rural Alaska Native youth and sponsored by the Yukon-Kuskokwim Health Corporation, with support from the Truth Initiative.[188] (See Part II. A. Cessation, Addressing Rural Infrastructure Challenges, p.36, for additional details.)

KEY FINDINGS

- Rural residents continue to face multiple structural barriers to using tobacco cessation and prevention services. Barriers include lower availability of health care providers, lower incomes, and higher rates of uninsurance.
- The rural United States is currently experiencing a wave of hospital closures, which could diminish some rural communities' capacity for population health activities including tobacco control.
- Federal and state funds for tobacco control are often allocated to local health departments (LHDs) with a view toward maximizing population impact, rather than on the basis of epidemiological burden. As a result, LHDs in high-density urban areas may receive more funding than those in lower-density rural areas with higher rates of tobacco use.
- Federal health reform has potential for mitigating structural obstacles to tobacco cessation by increasing health insurance coverage and by requiring no- or low-cost tobacco treatment services under private and public health plans.
    - However, given rural-urban differences in health reform implementation, it is unclear whether these changes benefit rural and urban residents to equal degrees.
- Rural communities can and do mount successful efforts to increase their tobacco control capacity.
    - Rural hospitals, LHDs, federally qualified health centers (FQHCs), and other stakeholders within and outside the health sector often collaborate closely to address population health.
    - Health sector organizations frequently work with one another and with community partners to conduct community health needs assessments, educate the public about health issues, and lead health improvement initiatives, including tobacco control programs.
- Distance technologies offer means to help rural residents overcome geographic barriers to obtaining cessation services.
    - State quitlines can be adapted to increase their visibility, acceptability, and accessibility to rural residents.
    - The use of emerging technologies including telemedicine and mobile phone-based strategies may also help diminish rural access barriers.

F. Tobacco Control Policy Environment in Rural Areas

Tobacco control policies are a critical component of population-based efforts to reduce tobacco-related morbidity and mortality.[29] Enacting smoke-free air laws and regulations,[189,190] increasing the unit price of tobacco,[9,190-192] raising the minimum legal sales age,[193,194] and restricting the advertising and sale of tobacco products[195-198] have all proven to be effective in advancing the goals of tobacco control. Another fundamental aspect of policy is ensuring that tobacco control initiatives are adequately financed: State spending on tobacco control and prevention is positively associated with declines in youth and adult smoking.[9,190,192,199,200]

Local tobacco control policy climates arise from the combined effects of federal, state, tribal, and local policies that are simultaneously in force in a given community. Because of the ways in which policy variables interact in rural and tribal areas, residents of these places may often experience lower levels of protection. Nevertheless, some predominantly rural states, tribes, and rural communities have implemented strong tobacco control policies. In this section, we set the stage for our discussion of rural tobacco control policy with a brief overview of factors contributing to policy variations across states. We then describe tobacco control policy contexts at the state, tribal, and local levels, and we reflect on potential challenges and facilitators to policymaking at each of these levels.

Federal- and State-Level Influences on Local Tobacco Control Policy Environments

Federal laws and rules regulate the manufacture, use, marketing, and distribution of commercial tobacco products within states and territories.[192] The federal government uses a broad range of tobacco control policy levers. For example, it prohibits smoking in settings including federal work places, airlines,[192] and federally funded public housing;[201] imposes an excise tax on tobacco products;[192] and prohibits the sale of cigarettes and smokeless tobacco to people under 18.[192] It also places restrictions on advertising and sales; many of these measures, like the prohibition on self-service tobacco sales, are primarily intended to protect youth.[192] In addition, federal agencies are an important source of tobacco control funding: The CDC provides resources for tobacco control efforts in all U.S. states, tribes, and territories,[202] and offers guidance to states on the level of investment they should make in order to sustain effective tobacco control programs.[29]

Localities across the country may be exposed to widely varying tobacco control contexts as a result of policy decisions made at the state or tribal levels. State and tribal governments have discretion in several areas that are important in shaping the policy environment. For example, they may adopt their own tobacco taxes, smoke-free laws, youth possession restrictions, and restrictions on sales and distribution.[192,203-205]

In addition, states and tribes determine their own levels of tobacco control spending, and their investments vary.[201,206] Research suggests that more affluent states and those with ties to the tobacco industry tend to devote fewer resources to tobacco control, while states with strong education and medical interest groups spend more.[207] In fiscal year 2018, three states (Alaska, California, and North Dakota) funded their tobacco control programs at 50% or more of CDC-recommended levels. Twenty-four states spent between 10% and 49.9% of recommended amounts, and 23 states spent less than 10%.[206]

Further, states may preempt the authority of local governments to enact their own tobacco control measures. Preemption may appear in different forms: State legislatures may prohibit localities from imposing tobacco-related regulations of any kind, or prevent them from adopting laws that are more strict than state laws.[204] State-level preemption may impede progress toward tobacco control goals in multiple domains including the restriction of youth access, the imposition of tobacco taxes, retail restrictions, and promotion of smoke-free air.[204] For this reason, Healthy People 2020, the 10-year national health agenda established by the federal Office of Disease Prevention and Health Promotion, includes an objective of eliminating state laws that preempt stronger local tobacco control laws.[208] As of 2018, 14 states had some type of law preempting local smoke-free air ordinances;[209] eight of these states had populations that were over 25% rural.[85]

State-Level Tobacco Control Policy in Rural Areas

In the following discussion, we reflect on linkages between state-level policy and rurality. We begin by describing overall patterns, noting exceptions to these trends. We then identify possible reasons for the relative weakness of tobacco control in some states with substantial rural populations. In conclusion, we describe Maine's experience as an illustration of successful policymaking in a rural state.

Relationships between Strength of State-Level Policies and Rurality

Previous reports have concluded that tobacco control policies at the state level tend to be weaker in more rural states.[14,16] To explore associations between state-level tobacco policy and rurality, we reviewed ratings assigned in the ALA's 2018 *State of Tobacco Control* report[201] to states' performance in selected domains of tobacco control, and we considered how these ratings related to the proportion of rural residents in each state. We examined ALA ratings of states' smoke-free policies, tobacco excise taxes, age restrictions, and tobacco control expenditures. Estimates of each state's percentage rural population[iii] were obtained from the 2016 American Community Survey (ACS).[85]

The ALA gave each state an overall smoke-free policy score. This score, which ranged from 1 to 44, depended on the number of environments covered (e.g., workplaces, schools, hospitality venues, stores); the comprehensiveness of the restriction (e.g., whether smoking is banned altogether or allowed in smoking rooms with ventilation); and the strength of enforcement mechanisms (e.g., whether 'no smoking' signs are required). Letter grades of 'A' were awarded to states with scores in the top of the range (40 or above for states with casinos and 36 or above for those without).[201] We found a negative correlation between smoke-free air scores and the state's percentage of rural population.[iv] In other words, more rural states tended to receive lower scores for their smoke-free air policies. There were some exceptions to this overall pattern. Nine states with rural populations over 25% earned 'A' grades.[202,v] Two of these nine states (Maine and Vermont) were the nation's most rural states, with rural populations over 60%.[85]

The ALA's ratings for state tobacco excise tax policies were based on the dollar amount of the tax imposed on cigarettes and the extent to which taxes on other tobacco products were comparable to those for cigarettes. Scores ranged from 0 to 40 points, and 'A' grades were awarded for scores above 36.[201] Like smoke-free air scores, tax scores were lower in states with higher proportions of rural residents.[vi] No state with a rural population over 25% received a grade of 'A'.[201]

In assessing states' age restrictions on tobacco sales, ALA assigned grades of 'A' to states only if they had passed 'Tobacco 21' laws establishing 21 as the Minimum Legal Sale Age (MLSA) for all tobacco products, without exempting any categories of purchasers such as active duty military personnel.[201] Relatively few United States residents, whether they live in rural or urban areas, are covered by this type of state-level policy. Predominantly rural Maine was one of only four states receiving 'A' grades for their age restriction policies.[201,vii]

ALA grades for tobacco control expenditures reflected the extent to which a state's spending corresponded to the level recommended for it by the CDC.[201] Most states, including those with substantial rural populations, performed poorly on this measure. Forty-one states and the District of Columbia (DC) received grades of 'F', indicating that they funded their tobacco control

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[iii] These estimates of percentage rural population used the U.S. Census Bureau's definition of rurality. The Census Bureau designates as 'rural' all areas outside of urbanized area (UAs) and urban clusters (UCs). UAs have populations of at least 50,000; they consist of core Census blocks or block groups with population density of at least 1,000 people per square mile, along with adjacent Census blocks with population density of 500 per square mile. UCs have populations between 2,500 and 50,000, and meet the same density criteria as UAs. See: https://www.census.gov/geo/reference/urban-rural.html and Ratcliffe M. et al.. *Defining Rural at the U.S. Census Bureau*. Washington DC: U.S. Census Bureau; 2016. ACSGEO-1.

[iv] Pearson's r based on data from all states and the District of Columbia (DC) was equal to -0.36 ($df = 49$, $p < 0.01$), which indicated a moderate negative correlation between rurality and smoke-free air score. We repeated the calculation after examining a scatter plot and removing outliers (DC, Maine, Vermont, and Wyoming). The second calculation yielded a value of -0.50 ($df = 45$, $p < 0.001$), also a moderate correlation.

[v] Iowa, Kansas, Maine, Minnesota, Montana, Nebraska, North Dakota, Vermont, Wisconsin

[vi] Initial calculation of Pearson's r using data from all states and DC was equal to -0.32 ($df = 49$, $p < 0.05$), indicating a moderate negative association between rurality and tax score. After outliers DC, Maine, and Vermont were removed, Pearson's r was equal to -0.51 ($df = 48$, $p < 0.001$), which was also moderate.

[vii] Other states with 'A' grades were Hawaii, New Jersey, and Oregon.

programs at less than 50% of CDC-recommended levels.[201] Of these states, 22 had rural populations of 25% or more[viii] However, Alaska, a state whose population is 34% rural, was one of only two states to receive an 'A' grade for funding its tobacco control spending, and the only state to exceed CDC standards in this domain, funding its programs at over 100% of the recommended level.[201]

In sum, the strength of state-level smoke-free air and tobacco tax policies appeared to be lower in states with higher proportions of rural residents. In general, states with relatively large rural populations resembled more urban states in having suboptimal policies on age restrictions and tobacco control expenditures. Vermont, Maine, and Alaska, which all have rural populations over 25%, were noteworthy for receiving 'A' grades on one or more of the policy dimensions considered. In particular, Maine's high performance in the realms of smoke-free air and MLSA policies set it apart from most other rural and urban states.

Challenges to Adoption of State-Level Policies in Rural Areas

Further research may help to clarify the influences accounting for the apparent negative association between rurality and the use of state-level tobacco control policies. Available qualitative evidence suggests that rural residents may have concerns about top-down strategies, both because tobacco use is socially accepted in their areas,[16,122] and because they anticipate that the extension of state powers could lead to loss of freedoms for individuals and small communities.[134,210] In addition, state governments in tobacco-producing states may be reluctant to disrupt long-standing economic relationships with the tobacco industry.[16]

State-Level Policy Successes: The Case of Maine

Maine is a prime example of a rural state with a record of outstanding achievements in state-level tobacco control policy, and its experiences may help guide other states' efforts to promote a tobacco control agenda to rural stakeholders. Maine's smoke-free law covers workplaces, restaurants, bars, outdoor dining areas, cars transporting children, and outdoor areas of state parks and historic sites.[211] The state's Tobacco 21 law went into effect in July, 2018.[212] These tobacco control policies are the product of a public health effort beginning in the 1970s and spanning four decades. An essential ingredient in this initiative's success was its ability to develop and sustain a multisector coalition, which comprised health systems, rural and Indian health centers, faith-based organizations, labor unions, businesses and municipalities. This coalition forged alliances across all districts and parties in the state.[211] This regional and political diversity was likely important in enlisting rural partners' investment and engagement. Another key strategy contributing to the coalition's attainment of its goals was its emphasis on protecting youth from tobacco. This focus helped build a broad base of support, and led to the creation of Maine's comprehensive tobacco control program in the late 1990s.[211]

Tobacco Control Policy in Tribal Areas

Strength of Policy in Tribal Contexts

The relationship between state and tribal authority affects the level of tobacco control protection experienced by communities in tribal areas. State tobacco control laws may not apply to tribes as sovereign nations.[132,213] Retailers on tribal lands may not collect state tobacco excise taxes from tribal members.[132,213] As a result of these exemptions, people living in tribal lands may not benefit from state-level provisions, and may have less protection than other residents of their states.[132,213] On the other hand, sovereignty offers unique opportunities for tribes within states that preempt local-level tobacco control laws: Even if states restrict local governments' ability to adopt tobacco control measures, tribes may enact their own policies.[205]

Challenges to Adoption of Policies in Tribal Areas

Several factors have inhibited tribes from embracing policy approaches to tobacco control. To begin with, some AI/AN public health experts observe that the very concept

[viii] Alabama, Arkansas, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, North Carolina, South Carolina, South Dakota, Tennessee, West Virginia, Wisconsin

of policy may have negative connotations for tribes, who have historically been the target of state and federal policy actions designed to impoverish and subjugate their communities.[214] Some of these initiatives penalized valued traditions including the use of sacred traditional tobacco.[119] Moreover, the tobacco industry has worked for decades to influence the regulatory environment on tribal lands, extending financial contributions to AI/AN organizations in an effort to coopt communities and garner support for pro-tobacco policies.[132]

Policy Successes in Tribal Areas

Despite these barriers, tribes are becoming increasingly open to the use of policy levers as a means of protecting their members from the health effects of commercial tobacco. The National Native Network, an association of tribes, tribal organizations, and health programs with a mission to decrease AI/AN commercial tobacco use, has been instrumental in helping tribes to implement effective and culturally appropriate policies.[215] Part II of this report describes several examples of tribal policy initiatives. The Nottawaseppi Huron Band of the Potawatomi in Michigan[216] and the Cheyenne River Sioux in South Dakota developed comprehensive commercial tobacco control plans for tribal lands[217] (see Part II. B Prevention of Initiation, Approaches, Promotion of Tobacco Control Policies Supporting Prevention, p.40 and Part II. C. Smoke-Free Air, p.45). In North Dakota, the Standing Rock Sioux Tribe and the Turtle Mountain Band of the Chippewa in North Dakota adopted tobacco excise taxes[218] (see Part II. A. Cessation, p.32).

Local Tobacco Control Policies in Rural Areas

Policy activity at the local level is a major driver of progress in tobacco prevention and control.[192,211] In states that do not preempt municipalities' authority to regulate tobacco, local laws and rules can be stronger than state provisions, and can thus be used to shore up gaps in the protections provided by higher levels of government. Local policy efforts are also important as a means of drawing attention to tobacco use and its health harms. A single initiative can stimulate broader conversations about tobacco, both in the local community and in neighboring towns; these discussions, in turn, may strengthen public support for the enactment of tobacco regulations in municipalities and at the state level.[192,211]

Below, we review research on the prevalence and strength of local tobacco control policies in rural communities, focusing on comprehensive smoke-free laws and clean outdoor air regulations. Next, we describe qualitative research that delineates challenges and opportunities for rural efforts at the local level. Finally, we direct readers to examples of local-level policy achievements described in Part II.

Prevalence and Strength of Local Tobacco Control Policies in Rural Communities

Smoke-Free Laws. *Cutting Tobacco's Rural Roots* suggested that local smoke-free ordinances might be less prevalent in rural areas.[16] This conclusion was based primarily on state and regional data from Appalachia. For example, a 2010 study conducted in Kentucky showed that rural communities had fewer smoke-free laws than their urban counterparts, and that the likelihood of adopting smoking restrictions declined as the size of the community decreased.[18] Another investigation from the same year showed that in six largely rural Appalachian states, fewer than 20% of communities had passed comprehensive clean indoor air ordinances.[219] Although these findings are consistent with the hypothesis that rurality is negatively associated with the prevalence of local smoke-free laws, this review located no studies examining how this relationship may vary across regions and state-level policy environments. Further research on these issues would be valuable.

Recent literature on locally imposed smoke-free laws evaluated the effectiveness of such measures in rural and urban hospitality venues. Two studies, one in Kentucky[220] and one in North Dakota,[221] determined that in rural and urban communities alike, smoking prohibitions in restaurants and bars were associated with improved indoor air quality. Thus, even though pro-smoking social norms may present challenges to the adoption and enforcement of smoking restrictions in rural areas,[16,122] these studies point toward the conclusion that local smoke-free laws in rural places can be implemented effectively to protect the public from secondhand smoke exposure.

Clean Outdoor Air Policies. Two of the studies in this review examined the prevalence of clean outdoor air laws as a function of place. One of these investigations reported that across the United States, the odds of having a smoke-free park policy were lower in rural than in urban or suburban counties.[222] Another national study explored geographic variations in local smoke-free policies applying to school grounds and playgrounds: Results showed that only 39% of the population in the Northeast and 3% of those elsewhere in the country were protected by these policies.[223] Moreover, communities were less likely to be covered if they had lower levels of racial/ethnic diversity.[223] Given that rural areas tend to be more racially and ethnically homogeneous than the nation as a whole,[27] this finding implies that smoke-free school grounds and playgrounds may be less common in rural areas than elsewhere.

Challenges to the Adoption of Local Tobacco Control Policies in Rural Areas

Qualitative findings suggest that rural communities may be wary of local anti-tobacco initiatives for the same reasons that they regard state-level approaches with skepticism: As with state tobacco control laws, local-level ordinances may also be experienced as potential intrusions on individual rights.[134,210] In addition, local officials may hesitate to embrace tobacco control on the grounds that it might require communities to assume burdensome enforcement responsibilities, and that restrictions could have negative economic impacts on local businesses.[210] Findings from a quantitative study indicated that in rural tobacco-growing communities, lower readiness to implement local smoke-free policies was associated with lower population density, greater amounts of tobacco produced, and higher smoking rates.[133]

Keys to Policy Success at the Local Level

Building Local Coalitions. Like state-level policy initiatives,[211] local tobacco control efforts may enhance their chances of success by enlisting the collaboration of certain key constituencies.[17,134,210] According to some local advocates,[210] the most influential premise related to tobacco control regulations is that they are needed to safeguard children and youth. Therefore, engagement of young people in local campaigns is viewed as critically important. Advocates also recommend involving ordinary citizens in order to demonstrate that the impetus for change comes from within the community and not from professional experts or outsiders.[134] Qualitative evidence further suggests that stakeholders are more likely to perceive communities as ready to accept tobacco control policies if local hospitals set an example for the community by enacting smoke-free campus policies and if LHDs voice their support of tobacco control measures.[17] In communities where LHDs are present, they may be especially valuable allies due to their experience as health advocates: Harris and colleagues[224] found that 68% of rural LHDs were actively involved in tobacco control advocacy.

Addressing Stakeholders' Concerns About Tobacco Control Measures. Satterlund and colleagues[210] reported that leaders of local initiatives identified a range of strategies for addressing community opposition to proposed ordinances. To begin with, they recommended communicating to stakeholders that if public education and appropriate signage accompany new regulations, enforcement is not likely to be burdensome, as police intervention should not be necessary to ensure compliance with tobacco control policies.[210] Advocates also suggested providing evidence that tobacco control ordinances do not typically lead to negative economic impacts.[210] Finally, local leaders stressed that, whenever possible, tobacco control coalitions should assess community members' support for new ordinances, and should present data on the experiences of similar municipalities where tobacco control measures have been accepted and implemented.[210]

Part II describes a range of cases in which rural communities enacted tobacco control regulations at the local level, including smoke-free air laws[225] (see Part II. C. Smoke-Free Air, p.44); excise taxes[226] (see Part II. B. Prevention, p.40); increases in the MLSA for tobacco[227] (see Part II. B. Prevention of Initiation, p.41); and local advertising restrictions (see case description in Part II. C. Smoke-Free Air, p.40). For examples of rural initiatives pursuing smoke-free policies in the presence of state-level preemption, see discussions of the Communities of Excellence in Tobacco Control (CX) program in Oklahoma[228] (Part II. C. Smoke-Free Air, p.45) and the South Dakota High School Rodeo project (case description in Part II. C. Smoke-Free Air, p.46).

KEY FINDINGS

- States with higher proportions of rural residents tend to have less robust smoke-free air and tobacco tax policies.
- Most states—rural states included—have weak policies on tobacco control spending and age of sale restrictions.
- In contrast to overall patterns, some rural states are outstanding for the strength of their tobacco control policies:
    - Maine and Vermont both have comprehensive smoke-free air laws.
    - Maine passed a law raising the minimum legal sales age (MLSA) to 21 (Tobacco 21).
    - Alaska is the only state to exceed CDC standards for tobacco control funding.
- Limited evidence suggests that local tobacco control policies are less prevalent in some rural areas.
- State laws regulating commercial tobacco may not apply or be fully enforceable in tribal lands governed by sovereign AI/AN nations.
    - Tribes can help protect their citizens by passing their own commercial tobacco control measures.
- In some instances, rural stakeholders may find it challenging to advocate for state- and local-level tobacco control policies due to resistance from rural constituencies who regard such measures as infringements on individual freedoms.
- In rural tobacco growing areas and tribal territories, concerns about disrupting relationships with the tobacco industry may also discourage policy-oriented tobacco control.
- Local tobacco control policy initiatives may advance their aims by engaging youth and ordinary citizens; partnering with local hospitals and LHDs; and presenting stakeholders with data on community members' support for stronger protections.

PART II.

TOBACCO CONTROL AND PREVENTION INTERVENTIONS IN RURAL AREAS

Here, we summarize and evaluate evidence on rural interventions for cessation, prevention of initiation, and promotion of smoke-free air. For each category of intervention, we assess where initiatives occurred; what products they targeted; what outcomes data were provided; and what approaches were used. Although parallel in these respects, the three sections of Part II also contain some structural differences. First, because descriptions of cessation and prevention programs often included information on how programs were targeted and tailored for subpopulations, we address these themes in our sections for these two types of interventions. Second, the cessation section includes a discussion on programs' approaches for overcoming rural infrastructure limitations, as this theme was prominent in the cessation literature.

In each of the three sections, we include one or more case descriptions from the field. These stories offer deeper insights into the ways that rural stakeholders select and implement tobacco control strategies to conform to place-specific circumstances.

A. Cessation

This review located over 70 reports of tobacco cessation interventions implemented with rural populations. [20,24-26,95,97,140,156,162,166,167,170-174,178-180,187,188,218,226,229-289] A subset of these interventions were delivered as part of comprehensive or multi-component tobacco control programs addressing additional goals such as prevention of initiation or promotion of smoke-free air.[95,218,230,260,269,271]

Geographic Distribution

One of the interventions identified in our search was the *CDC's Tips from Former Smokers®* campaign: This program is a national mass media campaign implemented in all 50 states, the District of Columbia, Puerto Rico, and Guam to promote smoking cessation among a range of adult populations, including rural residents and AI/AN.[245,288] The remaining programs were located in states within all four United States Census Bureau regions (Northeast, Midwest, South, and West). Rural tobacco cessation initiatives were active in areas with significant rural-urban differences in tobacco use,[21,80] such as the South [20,95, 166,167,169,178-180,187,232-235,238,241,243,247,256-259,266,271,274,276,278,281,284,285,287,289,290] and South Atlantic,[20,166,179,180,233,235,241,247,271,278,285,287] the Midwest, [24,26,96,162,171,172,178,179,218,232,235,239,246,249, 251,253,264,268,269,286] and the New England states of the Northeast.[97,140,156,237,283] Available items also offered details on programs operating in the West[174,187,188,226,229-232,244,252,260,262,265,267,270,279] and in non-New England Northeastern states.[173,187,232,242,272] In addition, the literature documented rural cessation initiatives in Tobacco Nation [20,95,166,167,169,171,178,179,187,232,234,238,243,247,251, 257-259,264,266,271,274,276,281,286,287,289,290] and in tribal territories[96,174,188,218,229,230,232,257,258,260,264-267,270]—both regions where rates of tobacco use exceed the national average.[83,248] Thus, evidence indicates that in some parts of the country where rural tobacco use is widespread and of particular concern, cessation has been a focus of rural stakeholders' attention and efforts.

Tobacco Products Targeted

The majority of the rural cessation interventions identified in the literature were designed primarily to help participants quit smoking [24-26,95-97,162,166,171-174,178-180,187,218,229,233,235-238,241-244,247,249,251-253,256,267,269,274, 285, 286, 288-291] A subset of items described programs that promoted tobacco cessation in general; [140,156,167,169,230,234,246,252,259,260,262,264-266,268,276,278,279,281-284,287]

Several programs mentioned focusing on e-cigarettes, or smokeless tobacco products[20,188,226,230,232,257,258,260,268,270] and one identified smokeless tobacco as its primary target.[271] In light of pronounced rural-urban disparities in smokeless tobacco use,[21] programs with an emphasis on smokeless tobacco cessation may be of particular interest to rural communities.

Available Information on Outcomes of Rural Cessation Programs

Although the items included in this review varied greatly with respect to their methodological rigor and purpose, many of the rural cessation programs described here generated some evidence of positive outcomes, as indicated by measurable changes in tobacco-related knowledge, attitudes, beliefs or skills, shifts in tobacco-related behaviors, or enhancements in local tobacco control environments. A subset of programs showed differences in outcomes between an intervention group and a non-intervention control group, or a comparison group that received an alternative treatment.[97,171,172,179,238,239,249,286,289,292] All of these examples were described in peer-reviewed journal articles. Additional peer-reviewed studies showed positive associations between exposure to a cessation intervention and desired outcomes.[241,243,288,293] Items from both the peer-reviewed[20,26,173,178,247,251,253,258,274,284,288] and the grey literature[95,162,166,167,169,218,226,229,230,235,257,260,267,271,276,279] documented desired changes in tobacco-related outcomes from pre-intervention baseline to post-intervention follow-up. In some instances, reported outcomes included the adoption of tobacco control policies.[95,167,169,218,226,230,235,244,246,260,267,271,276,279,283]

For a substantial proportion of the programs included in this review, we found no information on rural cessation outcomes. The reports we located provided either process measures alone or no measures of any kind on the cessation components of the programs they described.[174,180,234,252,256,259,260,262,264-266,278,281,282,285,287,290] However, the RHIhub *Toolkit* determined that some of these programs were examples of evidence-based or promising models.[230,252,259,262,278,282,285]

Approaches

Rural cessation programs emerging from this review used a range of modalities. Some efforts focused on the promotion or implementation of policy changes to increase rates of cessation.[95,97,167,169,218,226,235,241,244,260,267,269,271,276,283] Other approaches included media campaigns [174,187,218,237,243,246,257,264,269,271,288] and education.[96,97,287] The majority of initiatives included cessation treatment programs involving behavioral counseling, which could be provided via telephone,[24-26,171-174,178,180,218,230-232,237,249,251,257,260,262,267,270,279] in individual face-to-face sessions,[97,173,229,231,238,242,246,256,259,262,266,267,270-272,274,276,279,286,289] in group formats,[20,97,162,267,274,284,285,290] or through emerging technologies such as telemedicine, the Internet, cell phones, or smart phones.[172,178-180,187,188,239] Programs frequently offered pharmacotherapy in conjunction with counseling.[20,25,26,162,166,171,172,174,180,218,230,249,251,257-260,262,271,279,284-286,290] Cessation interventions were delivered by health care providers,[20,24,26,97,178-180,231,239,242,247,249,251,256,259,262,264,266,267,279,284] pharmacists,[166] quitline staff,[26,171,173,174,187,218,230-232,251,257,260,266,267,276,279] and lay health advisors or health educators.[95,97,173,231,238,244,274,286,290] In the discussion that follows, we present examples of different approaches.

Policy Change

Tobacco control policies such as increases in the unit price of tobacco[191] and smoke-free air laws[189] show strong associations with tobacco cessation and prevalence of use. Some of the rural interventions in this review aimed to promote cessation through achieving policy changes such as increased taxes on tobacco products[226] and smoking restrictions in businesses or churches.[95] For example, the Standing Rock and Turtle Mountain reservations in North Dakota each raised the per-package tax on cigarettes to levels more aligned with those imposed by the state.[218] The RHIhub *Toolkit* describes the experiences of communities in Alaska[226] and Mississippi[95] that advocated successfully for the adoption of policies to advance both cessation and prevention goals.

Countermarketing Campaigns

Mass-reach, anti-tobacco countermarketing campaigns are a well-supported, highly effective technique for increasing quit attempts and successful tobacco

cessation.[294] This review contains several noteworthy examples of countermarketing programs intended to support cessation among rural residents and AI/AN.[165,218,243,245,257,258] Perhaps the most far-reaching of these initiatives is the CDC-sponsored *Tips from Former Smokers® (Tips)* campaign.[245] As noted previously, *Tips* operates throughout the country: The campaign purchases television advertising through national cable networks in all United States media markets, and supports these television messages with coordinated radio, online, print, and billboard communications.[293] Initial implementation of *Tips* in 2012 was associated with increases in quitline calls in 46 states and DC.[288] In addition, increases in the dosage of exposure to *Tips* messaging were related to increased quit attempts[292,293] and intentions to quit among current smokers.[293]

Tips complements its nationwide efforts with more focused strategies to ensure that campaign messaging reaches rural and tribal communities who experience tobacco-related disparities. As one of these targeted activities, the campaign conducts supplemental, local-level media buys[293] to increase the dose of *Tips* advertising in rural regions with high smoking prevalence (Michelle Johns, CDC, personal communication, September 25, 2018). These local buys typically include advertising on television and other media. They may also incorporate 'geo-fencing' techniques, which deliver campaign content to cell phones within a certain geographic radius for a specified time frame. Geo-fencing has allowed the *Tips* campaign to direct its messaging toward cultural events (e.g., rodeos, automobile races, or concerts) that are likely to attract smokers from rural or tribal areas (Michelle Johns, CDC, personal communication, September 25, 2018).

As a further measure to enhance the impact of its messaging on rural and tribal populations, *Tips* partners with local organizations to develop appropriate dissemination strategies for target communities. For example, the campaign has joined forces with STRAND, an association of independent pharmacists, to air ten *Tips* television advertisements in 65 stores where pharmacists are available to provide tobacco cessation supports.[165] Some pharmacies participating in this initiative are located in rural areas, including towns in West Virginia (Michelle Johns, CDC, personal communication, September 25, 2018). *Tips* has also worked closely on dissemination with AI/AN stakeholders including Indian Health Service (IHS) clinics. As one outcome of this collaboration, many IHS clinics display *Tips* posters and air the campaign's television ads as looped videos in their waiting rooms (Michelle Johns, CDC, personal communication, September 25, 2018). (For information on cultural adaptations of the *Tips* program for AI/AN, see II. B. Prevention of Initiation, p.42.)

At the state level, the Oklahoma Settlement Endowment Trust (TSET) has crafted a countermarketing program with components that promote the use of the Oklahoma Tobacco Helpline (OTH) by rural residents and members of tribes.[257,258] One of these TSET-funded media initiatives was specifically aimed at rural users of smokeless tobacco products.[257] In the first two weeks of this initiative, calls to the OTH by smokeless tobacco users rose by 265%, and the number of such users completing an OTH intervention increased by 47.7%.[257] To raise awareness and increase the use of the OTH among American Indians, TSET partnered with representatives of tribal nations to create persuasive, culturally sensitive media messages about OTH resources[258] and to place these messages where they would reach tribal members.[295] As part of the dissemination strategy for this targeted campaign, the Southern Plains Tribal Health Board agreed to install culturally tailored signage to advertise the OTH at tribal travel plazas and other tribal retail locations.[295]

Tobacco Cessation Treatment

United States Public Health Service clinical practice guidelines specify that tobacco dependence can be effectively treated with cessation counseling and with medications including nicotine replacement therapies, bupropion, and varenicline. These approaches can be used successfully by themselves, but a combination of counseling and medication is more effective than either alone.[141] Many rural cessation programs that reported positive outcomes were clinical interventions consisting of cessation counseling or combined counseling and pharmacotherapy.[20,26,166,173,229,238,239,247,249,274,284,286,289] Some of these treatments were delivered by health care practices or health systems to clinical populations.[26,229,238,239,247,249,251,274,284,286,289] One such

initiative, conducted by Wewers and colleagues,[286] was a nurse-managed, lay-led smoking cessation intervention for socioeconomically disadvantaged women smokers in Appalachian Ohio. The protocol included eight in-person counseling sessions plus nicotine replacement therapy (NRT). Results of a randomized controlled trial indicated that six months after treatment, the seven-day point prevalence of abstinence from tobacco was higher for intervention participants than for controls, using both self-report (21.8% intervention versus 5.8% control) and cotinine-validated measures (14.3% intervention versus 4.5% control). Rates of prolonged abstinence at six months post-treatment were likewise higher in the intervention group than in the control group. Whereas 16.3% of intervention participants reported prolonged abstinence, no members of the control group did. Similarly, cotinine-validated measures reflected significant between-group differences on the proportion of participants achieving prolonged abstinence (12.9% intervention versus 0% control).[286]

Treatment interventions that engaged participants outside of traditional clinical settings also exhibited favorable outcomes.[165,166,173] In one instance of this approach, the STRAND organization of pharmacists cooperated with the CDC Office of Smoking and Health and the West Virginia Department of Tobacco Control to launch a 10-week, pharmacist-led smoking cessation pilot program in five rural areas with high smoking prevalence.[165,166] The program used mass media and geographically targeted social media advertising to recruit 50 adult smokers.[166] The cessation intervention included over-the-counter NRT, in-person counseling by pharmacists, and telephone quitline counseling.[166] By the end of the program, 40% of participants had quit smoking, and at 24 weeks post intervention, 33% remained abstinent from cigarettes.[165] After the successful pilot, an additional eight rural pharmacies joined the program and enrolled 110 new participants. Twenty-seven percent of this cohort had quit smoking after receiving the intervention for 12 weeks.[165]

In rural Pennsylvania, Zanis and colleagues[173] used street outreach to connect with low-income, young adult smokers and recruit them into a study that compared the effects of two interventions—a five-minute, face-to-face tobacco counseling session and a quitline referral. The majority of those invited (91%) agreed to participate. Researchers found that after 90 days, 19.6% of those who received counseling and 10.2% of those referred to a quitline reported 30-day point-prevalence tobacco quit rates.[173]

Cherokee Challenge Campaign, CDC Media Campaign Resource Center

Targeting and Tailoring Cessation Interventions to Rural Subpopulations

A large proportion of the cessation interventions in this review incorporated a focus on rural subgroups with additional characteristics that heightened their risk for tobacco use or for tobacco-related health harms. These priority subpopulations included groups defined by race/ethnicity or other characteristics, such as AI/AN,[96,174,188,218,229,230,232,257,258,260,264-267,270] African Americans,[95,233,241,281] and Hispanic farm workers;[231,244] people of low socioeconomic status[20,24,95,173,174,231,233,237,242-244,246,251,259,274,276,281,283,286] or low educational attainment;[287] people with medical or behavioral health conditions;[26,169,229,240,247,260,284] adult smokers who tried unsuccessfully to quit in the past year;[187] pregnant women;[24,178,229,236,238,242,246,270,289] and youth.[97,179,188,218,226,230,233,234,260] A large proportion of these targeted programs were tailored to improve their fit to the needs and preferences of the intended recipients.

Tailoring to Improve Coordination of Other Services with Tobacco Cessation

In view of the fact that underserved rural populations who use tobacco may be coping with multiple psychosocial challenges and risk factors, some interventions offered tobacco cessation in the context of coordinated health care, behavioral health treatment, and support services. For example, certain programs designed for rural pregnant women aimed to address participants' needs, not only for tobacco cessation, but for additional forms of assistance[24,229,238] including behavioral health or substance abuse counseling,[229,238] nutritional support,[238]

housing,[238] transport,[238] and smoking cessation referrals for family members.[238] After implementing one such integrated cessation program in Tennessee, Bailey and colleagues[238] found that 28.1% of participants quit smoking by the end of the second trimester of pregnancy and maintained biochemically verified abstinence until delivery. In contrast, only 9.8% of pregnant women in a historical control group achieved such outcomes. Programs for rural residents with chronic diseases or behavioral health problems provided additional instances of this integrated approach.[97,247,256] One residential veterans' substance abuse treatment program in Virginia incorporated group tobacco cessation classes and NRT into its menu of offerings for patients,[284] and a cessation program using telephone counseling plus NRT provided additional consultation on depression, risky alcohol use, and weight gain for participating veterans who identified concerns in these areas.[26]

Tailoring for Cultural Appropriateness or Relevance to Target Populations

Most of the interventions in this review were modified to increase their cultural appropriateness or perceived relevance. Some prevention scientists have argued that cultural adaptation may enhance the acceptability of programs intended to promote health behavior change.[296-298] The tailored programs cited here were designed specifically for rural cultures,[243,271,290] AI/AN,[96,174,188,218,230,232,245,258,260,264,267,270] other racial/ethnic groups;[95,231,244,262,281] young people,[188,230,234] pregnant women,[24,229,238,260,289] adults with histories of failed quit attempts,[187] and people with low literacy.[287] Several different strategies were used to ensure that cessation programs were relevant to the populations served. In some instances, individuals or organizations from the target population developed content or designed messaging.[174,218,243,258,267,299] For example, in a program for smokers in rural Kentucky,[243] researchers conducted focus groups with local residents, who generated anti-smoking messages emphasizing locally resonant themes such as the importance of family and faith as reasons to quit. Participants also used a traditional art form (quilting) to create a symbolic representation of key themes. Community members exposed to the intervention were more likely to speak to their health care providers about smoking and to plan a quit attempt in the next six months. In addition, a team of researchers working with New England manufacturing workers recruited individuals at the intervention site to provide culturally appropriate materials for the educational campaign that they designed.[299]

A second approach, sometimes used in conjunction with the first, was for trusted community members to take the lead in promoting the participation of their counterparts in cessation interventions.[218,230,234,260,271] For example, in North Dakota, four tribal nations created television advertisements featuring local tribal members to promote use of the state quitline among American Indian citizens; the proportion of American Indian adults using the quitline increased following the campaign.[218] Similarly, the Arkansas Department of Health sponsored an initiative in which rural youth designed and delivered peer-to-peer presentations on tobacco cessation and prevention in their communities.[234]

As another tailoring strategy, programs involved members of the community in the delivery of cessation services. In some cases, community stakeholder groups have offered education on cultural competence to health care providers.[95,218,264,267] The California Rural Indian Health Board (CRIHB) provided this type of assistance to the Sonoma County Indian Health Project (SCIHP), a clinic serving AI/AN people in Sonoma County, California. CRIHB trained clinic staff in *Second Wind*, a curriculum designed specifically to help AI/AN community members discontinue the use of commercial tobacco.[267] Since SCIHP's implementation of *Second Wind*, the quit rate among clinic patients referred to cessation services increased from 4% to 10%.[267] An additional variation of this approach is for individuals from the population of interest to provide tobacco cessation interventions themselves. Programs for primary care patients in Appalachian Ohio[286] and Alaska[270] employed lay health advisors from their respective communities to teach smoking cessation classes.

Addressing Rural Infrastructure Challenges

Many of the cessation interventions included in this review were designed with a view toward decreasing obstacles often faced by rural tobacco users in accessing cessation assistance (see Part I. E. Rural Infrastructure, p.19). Programs incorporated strategies to minimize travel burden on intended recipients, to mitigate the impact of health care work force shortages on the provision of

cessation services, to support providers' use of cessation best practices, and to increase the availability of services for rural residents with limited financial resources or insurance coverage.

Quitlines and Telephone Counseling

Delivery of quitline services was emphasized as a means of overcoming geographic access barriers. To this end, several programs focused on encouraging the use of state quitlines among vulnerable rural subgroups.[174,232,246,257] For example, Ringgold County, Iowa, used support from the CDC's *Communities Putting Prevention to Work* program to develop a system for offering quitline referrals to tobacco users in the county's Special Supplemental Nutrition Program for Women, Infants and Children.[246] To promote quitline utilization, the California Rural Indian Health Board and Medi-Cal *Incentives to Quit Smoking* program used monetary incentives and free NRT packages mailed to the homes of Medi-Cal patients who called the quitline.[174] Several primary care-based programs also delivered cessation counseling via telephone.[178,249,251]

Outreach

Another approach to making cessation geographically accessible was to bring interventions out of health care settings and into the community. Some programs established partnerships with rural church congregations, working with them to deliver group cessation counseling at local places of worship.[95,290] In providing cessation counseling to women smokers in Midwest Appalachia, Wewers and colleagues[286] offered participants the opportunity to choose when and where they would receive services.

Emerging Technologies

Some programs relied on emerging technologies such as telemedicine and cellular phones to improve access to intervention components. In the Kansas-based *Connect2Quit* program, remote providers with tobacco cessation expertise delivered counseling to patients located in rural primary care offices.[172] The *Contingency Management Smoking Cessation* program in Appalachian Kentucky also involved an innovative application of technology. In this program, participants were asked to verify that they had quit smoking by first making video recordings of themselves as they provided breath samples and then uploading these videos to the Internet.[178,179] Another initiative, the *Abstinence Reinforcement Therapy* program of the Veterans' Affairs Medical Center in Durham, North Carolina, combined cognitive behavioral telephone counseling, access to NRT through a telemedicine clinic, and a component in which patients used smart phones to record and transmit videos showing that they had provided breath samples.[180]

As noted in Part I, mobile phone-based programs are also being used to deliver tobacco cessation resources to rural residents. For example, the Truth Initiative has cooperated with the Yukon-Kuskokwim Health Corporation (YKHC), a regional tribal health care system, to develop a mobile cessation intervention for Alaska Native adolescents and young adults living in a remote area of southwest Alaska. The program, a version of the Truth Initiative's *This is Quitting* campaign, is tailored to conform to the target population's cultural norms relating to tobacco. In particular, it addresses the use of iqmik, a form of chewing tobacco unique to the region. Individuals who enroll in *This Is Quitting* receive text messages that support them in their quit attempts, and they may also send messages of encouragement to other participants in the program. This text messaging component makes the program accessible to those without Internet or smart phone access. Users who can connect to the Internet are offered the option of installing a companion mobile application, which provides additional information on cessation services available in the area.[188]

The FDA's *Every Try Counts* campaign also incorporates mobile phone use and text messaging. This program targets adult smokers aged 25-54 who have made recent, unsuccessful quit attempts. It currently operates in 35 high-need counties, 13 of which are rural. In addition to reaching potential users through digital and radio announcements, the campaign places messages in gas stations and convenience stores where cigarettes are often sold. Campaign advertisements direct smokers to a web site where they can enroll in a text message program, download a mobile quit guide application, contact cessation coaches, and obtain information about cessation medications.[187]

As mentioned previously, rural use of digital technology has grown dramatically over the past decade.[182] However, in some parts of the country, persisting rural-

urban disparities in digital access may represent a barrier to the expansion of tobacco cessation programs that rely on digital systems and tools.[182,300] For example, one study found that rural AI/AN college students in Montana had less access to cell phones, smart phones, computers, and Internet than college students in the nation as a whole.[301] Some programs such as the *Contingency Management Smoking Cessation* program in Rural Appalachia offered loaner equipment to overcome access limitations: participants who lacked computers, Internet service, or both were given laptops and provided with wireless or satellite access to the Internet.[179]

Building Health System Capacity

In addition to addressing geographic access problems, rural stakeholders have taken health systems and workforce issues into consideration when designing cessation interventions. Some efforts at building capacity have focused on ensuring that rural primary care providers use cessation best practices. For example, tobacco prevention and control programs in rural Utah[279] and in Ringgold County, Iowa[246] offered training in cessation treatment for providers.

RHCs have also created quality assurance protocols that use electronic health records (EHRs) to track health care professionals' provision of tobacco screening and counseling.[256,265] For example, one RHC developed an EHR tracking system to monitor the percentage of adult patients who were assessed for tobacco use and the proportion of identified tobacco users who received a tobacco cessation intervention within 24 months of their last provider encounter.[265] Another RHC used its EHR system to identify patients with a history of smoking and a diagnosis of coronary artery disease (CAD). Through chart auditing, staff were then able to determine if eligible patients received smoking cessation therapy within a specified timeframe following their CAD diagnosis.[256]

In addition to using EHRs to implement quality assurance relating to cessation, rural health systems have also leveraged their EHRs as a tool to make quitline referrals, thus ensuring that more patients have access to cessation services. The Case Description on p. 38 describes how the Oregon Health Authority collaborated with central Oregon health systems to develop an EHR-based quitline referral mechanism.

Non-Physician Providers

Recognizing that rural primary care physicians may lack the time to deliver tobacco cessation interventions at optimal levels of volume and intensity, some rural programs have sought to increase the availability of cessation services by recruiting non-physicians to serve as tobacco treatment specialists.[166,238,240,274,286,290] For example, *HeartBeat Connections* of Minnesota used non-physician staff including registered nurses and dietitians to provide telephone cessation counseling, with a view toward offering participants more frequent contacts at lower cost than physician-provided services would have allowed.[239,240] Other programs have successfully used lay health advisors to deliver effective cessation services.[274,286] The Arkansas Department of Public Health opted to disseminate an evidence-based cognitive behavioral intervention that could be taught to and delivered by individuals with a high school education.[274]

Mitigating Cost Barriers

A further focus of rural cessation programs has been to ensure that economically disadvantaged rural residents do not encounter cost barriers to accessing cessation services. Rural initiatives may provide free cessation counseling and/or NRT services themselves[246,274,290] or promote rural residents' use of free state quitlines to obtain treatment.[171,174,230,232] Some programs have also offered financial incentives to participants who take part in biometric monitoring to confirm smoking abstinence[178]—an approach that may have particular appeal for smokers with limited incomes.[178-180] For example, the *Contingency Management Cessation* program, which targeted rural Appalachian adolescents and provided financial incentives based on successful smoking cessation, found a greater decrease in the number of cigarettes the active treatment group smoked each day compared to the control group.[178] The problem of limited health insurance coverage for cessation has received attention as well: Cherokee Nation Community Health Promotion negotiated with Oklahoma's Medicaid program to ensure that Medicaid providers received reimbursement for offering cessation counseling using the Five A's (**Asking** the patient to describe their smoking use; **Advising** the patient to quit; **Assessing** the willingness of the patient to quit; **Assisting** the member with referrals and plans to quit; and **Arranging** for follow-up).[266]

CASE DESCRIPTION: CENTRAL OREGON

In rural, Central Oregon, tobacco use rates were higher than the state average, but quitline services were underutilized, with less than 1% of tobacco users accessing the quitline. To increase referrals to the Oregon Tobacco Quitline for cessation services, the Oregon Health Authority implemented an electronic referral (e-referral) system across nine health systems in three counties: Deschutes, Crook, and Jefferson. In partnership with several Central Oregon agencies, Deschutes County Health Services received funding from their Coordinated Care Organization (CCO) to make e-referrals to the Oregon Tobacco Quitline and to enable the Quitline contractor to accept referrals via the Epic EHR system, which was common across the participating health systems. The e-referrals are 'closed loop', in that the referral is communicated back to providers, with any prescriptions for cessation medications imported into the patient's electronic health record. Before the pilot, only fax referrals could be made to the quitline. This pilot project has demonstrated a significant increase in referrals to the quitline in these three counties. During the pilot period, 207 referrals were made compared with five during the same time period in the prior year. The Oregon Health Authority is promoting this opportunity to partners across the state with the intent of integrating e-referral capacity into every Oregon health system.

KEY FINDINGS

- Cessation initiatives have been a focus of stakeholders' attention and efforts in rural areas throughout the country, including regions where tobacco use is widespread and of particular concern (e.g., the South and South Atlantic, the Midwest, tribal areas, and many Tobacco Nation states).
- To address the pronounced rural-urban disparity in the use of smokeless tobacco, some cessation efforts specifically targeted these products.
- Rural programs reporting positive outcomes took a variety of forms: these included policy interventions; media campaigns promoting cessation; and delivery of cessation treatments in both health care and non-clinical settings.
- Rural tobacco cessation interventions were often adapted to target populations' needs and preferences.
    - Programs were tailored to improve their coordination with other health services.
    - Tailoring to enhance appropriateness or relevance to target populations was also common: tailoring strategies included recruiting members of the target population to develop content, promote use of cessation programs, or deliver cessation interventions.
- Many cessation programs were designed to decrease the obstacles that rural residents often confront in accessing high-quality cessation services.
    - To address geographic access barriers, programs used strategies such as encouraging rural tobacco users' use of quitlines; bringing cessation services to users' homes and communities; and employing emerging technologies such as telemedicine, smart phones, and Web-based applications.
    - To mitigate access barriers due to rural workforce shortages, programs used non-physician providers and lay health advisors to provide cessation interventions.
    - To help ensure rural providers' use of best practices in tobacco cessation, health systems offered trainings and implemented quality assurance tracking systems using EHRs.
    - To address cost barriers faced by some rural residents, programs used strategies such as advocating for improved insurance coverage of cessation, providing free services, and offering financial incentives to target populations for quitting tobacco use.

B. Prevention of Initiation

Our search located over 20 rural prevention programs,[96,97,156,176,177,216,218,226,227,230,244,245,257,260,264,268,269,271,278,281,287,302-309] several of which were implemented in the context of broader tobacco control initiatives.[230,260,269,271,278] The review yielded less information on rural-focused interventions designed to prevent the initiation of tobacco use than on rural cessation efforts. This observation may be due to the fact that, in comparison to prevention interventions, cessation trials can generally be completed in shorter time frames, and outcomes are more straightforward to measure. For these reasons, more cessation research may reach the peer-reviewed literature.

Geographic Distribution

Among the prevention interventions we identified, three were mass media efforts with multi-state or nationwide reach: the CDC's *Tips from Former Smokers®* campaign,[245] mentioned previously, the FDA's *Real Cost* campaign,[177] which targets rural male adolescents at risk for smokeless tobacco use; and an initiative sponsored by the American Legacy Foundation[304] (see also *Countermarketing Campaigns*, p.32). Other programs were located in over 20 states and in all four Census Bureau regions.[96,97,156,176,216,218,226,227,230,244,257,260,264,268,269,271,278,281,287,302-309]

As was the case for rural cessation programs, the review documented prevention initiatives occurring in areas with marked rural-urban disparities related to tobacco. In particular, reports described programs operating in the Midwest[96,216,218,264,268,269,304,306,309] and the South,[176,234,257,271,278,281,287,302,304,307] with several[176,271,278,287] active in the South Atlantic states of Florida, Virginia, and West Virginia. Among initiatives occurring in the Northeast,[97,156,176,227,303,308] five took place in the New England states of Maine, Massachusetts, and Vermont.[97,156,176,303,308] Some reports offered details on prevention programs located in Tobacco Nation states,[216,234,257,264,271,281,287,302,307] and others provided information on efforts in tribal territories.[96,216,218,230,257,264,309] Programs were also found in Western states.[226,230,244,260,304,305]

Tobacco Products Targeted

Many rural prevention programs located in the review indicated that their goal was to prevent initiation of tobacco in any form.[156,216,218,227,234,244,264,278,281,287,302,305,306,310] Others explicitly noted that they included a focus on smokeless tobacco products.[176,177,226,257,271,307,309] Some programs stated that they were concerned with preventing e-cigarette use,[260,269,305,307] and several focused primarily on smoking.[96,97,245] One initiative indicated that its aims included raising awareness about the dangers of flavored tobacco.[303]

Available Information on Outcomes of Rural Prevention Programs

We located three peer-reviewed journal articles examining the outcomes of rural programs to prevent initiation.[304,309,311] One of these examined a mass media countermarketing campaign, and indicated that participants receiving the intervention achieved better outcomes than those in a non-intervention control group.[304] Other peer-reviewed studies showed positive associations between exposure to media campaigns and desired outcomes related to tobacco initiation.[309,311]

Among rural prevention programs documented in the grey literature, several reported the adoption of prevention-related tobacco control policies,[216,218,226,227,230,269,306] and two provided data or anecdotal evidence showing favorable changes in tobacco-related outcomes during or after intervention implementation.[278,308] Many grey literature items were case studies without information on rural prevention outcomes.[96,156,176,234,244,257,260,264,271,281,302,305,307] It should be noted, however, that five case studies[176,244,260,271,305] described rural implementations of models that were deemed evidence-based or promising by RHIhub *Toolkit* authors.[13]

Approaches

In the following discussion, we delineate the major prevention approaches used by rural programs in this review. When describing programs that exemplify each approach, we note whether positive outcomes were reported.

Promotion of Tobacco Control Policies Supporting Prevention

As indicated above (see Part I. F. Tobacco Control Policy Environment in Rural Areas, p.25), policies such as restricting tobacco advertising,[195-198,312] increasing the unit price of tobacco through taxation,[190,192,312] and raising the minimum legal sales age[193,194] are among the most effective, high-impact measures for preventing initiation of tobacco use. Some stakeholders identified in this review pursued policy change as a prevention strategy.[216,227,230,257,260,269,306] A subgroup of programs focused on policies relating to advertising and point-of-sale marketing of tobacco products.[216,257,305] For example, when the Nottawaseppi Huron Band of the Potawatomi in Michigan[216] enacted a comprehensive tobacco control policy applying to all tribal public spaces and private work sites, they incorporated restrictions designed to discourage tobacco initiation, including multiple provisions to protect youth and adults from exposure to tobacco advertising. In particular, the policy prohibited tribal groups from accepting tobacco industry sponsorship for community activities and specified that tribal employees on duty were not permitted to wear or use items bearing tobacco company logos at school or community events. The tribe's policy also banned tobacco advertising outside of commercial outlets and stated that tribal government locations were not allowed to sell candy designed to resemble tobacco products.

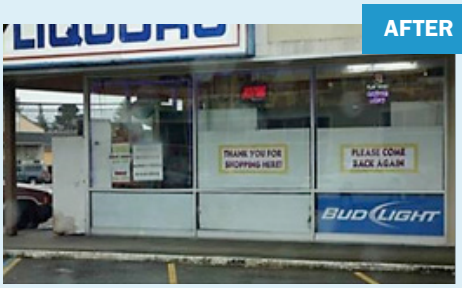
Crescent City, California, provides a further example of a rural community that used a policy approach to restrict tobacco advertising and protect youth. Their strategy is described in the Case Description below.

CASE DESCRIPTION: CRESCENT CITY, CA

Crescent City, California, located in Del Norte County, shows how small investments in tobacco control in a rural community can have a meaningful and visible impact on preventing tobacco uptake among youth. As part of Del Norte County, Crescent City, population 7,600, is funded by the California Tobacco Control Program (CTCP). Through its Healthy Stores for a Healthy Community initiative, a campaign that promotes policy development to decrease the availability, affordability, or marketing of tobacco and other unhealthy products, Crescent City adopted a policy that restricts the amount of store windows that can be covered by any advertising, including tobacco advertisements, to no more than 10% of the window space. The policy fulfills a CTCP objective of preventing youth initiation and was designed with the knowledge that exposure to retail marketing increases the uptake of tobacco products by youth. The content-neutral advertising ordinance was a result of a needs assessment conducted by the local health department and effective partnerships with community leaders. This prevention-oriented policy change greatly reduced Crescent City youth exposure to tobacco marketing.

BEFORE

AFTER



Although few states[ix] give local governments the authority to tax tobacco, rural communities in these states may use tobacco excise tax increases as a policy lever to promote prevention and cessation.[226] For example, motivated by community concerns about teen access to tobacco, the city council in Bethel, Alaska, doubled the tax on cigarettes and imposed a 45% tax increase on smokeless products.[226]

In addition to imposing regulations on tobacco advertising and using taxation to increase tobacco prices, rural stakeholders engaged in policy-related efforts to restrict youth access to tobacco.[216,227,269,306] Some programs successfully promoted the adoption of Tobacco 21 laws[227,306] that increased the legal age for tobacco sales. Advocacy by the Roswell Park Cancer Institute and Tobacco-Free Western New York led the legislature of Chautauqua County, New York, to approve a local law to raise the legal age limit for tobacco use from 18 to 21. Chautauqua was the first county in its state outside of New York City to enact such a measure.[227] In North Dakota, local public health units working with Breathe ND, the state's comprehensive tobacco control program, helped secure the passage of 24 city ordinances restricting youth access to e-cigarettes.[269] Enhanced enforcement of existing laws was also an emphasis for some programs. For example, the Nottawaseppi tribal policy addressed enforcement, specifying penalties for youth and adults and clarifying the responsibilities of Tribal Police with respect to tobacco control.[216]

Finally, several states with large rural populations promoted the broad adoption of smoke-free school policies to develop anti-tobacco norms and discourage initiation among youth. These efforts were components of comprehensive state tobacco control programs.[230,257,260,269] The Oklahoma Department of Health advocated for policies prohibiting any use of tobacco in schools 24 hours per day and seven days per week.[257] Alaska[230] and Montana[260] both reported that over 70% of their public school districts had tobacco-free policies, and 73% of schools in North Dakota were tobacco-free in 2017.[269]

These rural policy initiatives to prevent initiation are noteworthy, given that past research underscores weaknesses in the rural tobacco control policy environment (see Part I. F. Tobacco Control Policy Environment in Rural Areas, p.25) and highlights rural norms that might hinder efforts along these lines (see Part I. D. Rural Cultures, p.16). Although the successes described here attest to the skills of rural stakeholders in advancing the interests of tobacco prevention and control, available reports do not convey in detail what challenges programs faced in implementing policy change, and what strategies they used to overcome barriers. In addition, this review uncovered limited information on the factors that might influence rural tobacco prevention programs to choose policy approaches or to opt for other strategies in their stead. Future qualitative research with local rural health departments and other rural stakeholders across the country might yield important insights into these issues, providing state and federal organizations with a better basis for any projects or policies designed to support rural communities in implementing tobacco control.

Countermarketing Campaigns

Like policy interventions, mass media countermarketing campaigns are powerful means of preventing tobacco initiation,[294] especially when they are delivered in the context of comprehensive tobacco control programs.[29,312] This review located several implementations of mass media campaigns designed to convey tobacco countermarketing messages to rural youth.[177,230,264,271,278,304,305,307,309] Some studies reported on the effects of media campaigns as a stand-alone intervention.[304,309] For example, the American Legacy Foundation (now known as the Truth Initiative) developed a project to address the fact that rural adolescents were exposed less frequently than youth nationwide to the anti-tobacco messages of the Foundation's *Truth* campaign.[304] In this CDC-funded intervention, the Foundation tested impacts of increasing rural youths' exposure. The organization created an intervention group by purchasing

[ix] Alaska, Colorado, Louisiana, New York, Ohio, Pennsylvania, and Virginia permit local authority to tax tobacco. Twenty-one states explicitly prohibit the imposition of tobacco excise taxes, and 23 have laws that are unclear on this point. See:Tobacco Control Legal Consortium. *U.S. Local Tobacco Tax Authority: A 50-State Review*. St. Paul, MN: Tobacco Control Legal Consortium;2016.

supplemental advertising in rural television and radio markets that had received campaign messages at lower rates than the national average. Researchers found that, relative to youth in comparable rural markets that did not receive enhanced exposure, those in the intervention group were more likely to perceive the campaign as persuasive, and their receptivity to anti-tobacco messages increased as their exposure increased. In another study of a rural-focused mass media intervention, Vogeltanz-Holm and colleagues[309] aired a selection of anti-tobacco television and radio advertisements from the CDC in a Northern Plains state, with the goal of assessing which messaging approaches were most effective with White and American Indian adolescents. This team of researchers found that youth in both racial/ethnic groups were likely to perceive messaging as persuasive if advertisements contained graphic depictions of health harms related to tobacco use. Taken together, findings from these studies suggest that CDC best practice guidelines for mass media countermarketing, which recommend high-frequency messaging and use of graphic images,[29] apply equally well to rural youth.

While the programs described above used media campaigns as the sole intervention modality, other rural initiatives coordinated mass media countermarketing with local community engagement,[176,264,271,305,307] as recommended by the CDC.[29] Departments of Health in Mississippi,[307] Vermont,[176] and Virginia[176] implemented the *Down and Dirty* campaign, an anti-tobacco marketing program geared toward rural teens who identify with a 'country' lifestyle that involves traditionally rural outdoor activities.[176] *Down and Dirty* provides a package that includes advertising designed for traditional, social, and Web-based media, and uses branding to relate this advertising campaign to its sponsorship of local events popular with adolescents in the target demographic. The Inter-Tribal Council of Michigan also mounted an anti-tobacco campaign including mass media messaging and community events such as an anti-smoking art contest for students, whose artwork was disseminated in calendars and billboards linked to the campaign.[264]

Targeting and Tailoring Prevention Interventions to Rural Subpopulations

As might be expected, most of the rural prevention programs described here indicated a major or exclusive focus on forestalling initiation of tobacco use among children and adolescents.[97,156,176,177,216,218,226,227,230,234,257,260,264,269,278,303-309] Some of these youth-oriented initiatives targeted smaller subsets of rural young people, including American Indian youth[218,264] and adolescents identifying with traditionally rural outdoor activities like hunting, fishing, or rodeo.[177,260,307] Among those prevention programs that did not place an explicit emphasis on reaching youth, several noted that they were designed to help specific rural subpopulations such as African Americans,[281] American Indians,[96] Latinos,[244,302] or people with low literacy.[287]

Many prevention programs specifying a target demographic also reported that they tailored their offerings to increase their cultural resonance with the rural residents they intended to serve.[96,97,156,176,177,230,234,244,264,271,305,307,309] Methods of tailoring took several forms. To begin with, certain mass media countermarketing campaigns incorporated culturally specific images, settings, themes, and/or spokespersons to convey the message that abstinence from tobacco was consistent with the values and goals of the subpopulations targeted[176,177,245] For example, in internet video advertisements produced by the *Real Cost* and *Down and Dirty* initiatives, rural youth were shown speaking out against tobacco use, while at the same time voicing strong loyalty to their rural hometowns and engaging in pursuits that are valued in some rural communities (e.g., fishing, hunting, all-terrain vehicle sports, agricultural work).[176,177] The CDC's *Tips From Former Smokers®* campaign provided another notable instance of tailored countermarketing. This campaign produced advertisements in which American Indian or Alaska Native individuals described how commercial tobacco use or secondhand smoke exposure had harmed them and advised viewers to protect themselves from commercial tobacco's adverse health consequences.[245] These culturally adapted campaign materials were placed on television and radio, as well as in print, digital, and social media.[245]

In addition, as indicated above, some rural prevention efforts elicited input from target groups to help increase the relevance and credibility of their messaging.[96,230,234,264,305,307] Campaigns using this approach typically recruited local youth to generate and disseminate anti-tobacco education to peers and other community members. Programs sponsored by REACT Montana,[305] the Inter-Tribal Council of Michigan,[264] and state departments of health in Alaska,[230] Arkansas,[234] and Mississippi[307] all included activities along these lines.

Although adapting prevention messages to rural cultures and subgroups may be helpful as a means of communicating effectively and respectfully with target audiences,[29,32,313] it should also be noted that preventive interventions can show positive results in rural settings even in the absence of significant tailoring.[304] For example, when American Legacy Foundation researchers conducted their initiative to increase rural youth's exposure to anti-tobacco education, they disseminated advertisements that had been used in the nationwide *Truth* campaign, and they determined that rural youth were about as likely as adolescents in nationally representative samples to find these messages convincing.[304] This observation suggests that in instances when rural communities lack resources or expertise to conduct extensive tailoring of their local tobacco prevention campaigns, they may be able to achieve progress in prevention of initiation by using existing materials.[29]

KEY FINDINGS

- Rural prevention activities were identified in all four Census Bureau regions, with most programs in the South and Midwest.
- Some rural prevention programs included an explicit focus on smokeless products.
- Policy-oriented interventions and countermarketing campaigns achieved positive results.
- A large proportion of the prevention programs in this review used tailoring, e.g., incorporating culturally specific themes in countermarketing campaigns and working with members of target communities to generate content.
- Peer-reviewed studies suggest that mass media countermarketing campaigns following CDC best practice guidelines can achieve positive results in rural settings even in the absence of significant tailoring.
    - Rural adolescents with enhanced exposure to countermarketing were more likely than peers without such exposure to be receptive to anti-tobacco messages.
    - Graphic images of tobacco-related health harms were viewed as highly persuasive by rural youth.
    - The inclusion of rural themes in mass media advertisements did not appear to affect their impact.

C. Smoke-Free Air

As noted elsewhere in this report (see Part I. F. Tobacco Control Policy Environment in Rural Areas, p.25), a strong evidence base attests to the essential contribution of smoke-free air policies to the improvement of population health outcomes related to smoking. Smoke-free air laws and rules have been shown to decrease indoor air pollution, secondhand smoke exposure, youth smoking initiation, and hospital admissions related to cardiovascular events and asthma, while at the same time reducing tobacco consumption and increasing cessation rates among tobacco users.[189] Smoke-free air policies are also associated with anti-smoking social norms.[314,315]

This review located over 20 interventions to reduce or eliminate exposure to secondhand smoke in rural settings,[95,96,167,169,216-218,228,230,235,244,246,259,260,263,267,271,279,302,303,305,316-321] some of which were conducted in coordination with multi-component tobacco control initiatives.[95,228,234,260]

Geographic Distribution

The smoke-free air interventions we identified were implemented in Southern,[95,167,169,228,235,257,259,271,302,317,319,321] Midwestern,[96,216-218,235,246,263,318] Western,[230,244,260,267,279,305,316,320] and Northeastern[303] Census Bureau regions,[322] with some taking place in Tobacco Nation states,[95,167,169,216,228,259,271,302,317,321] and in tribal territories.[96,216-218,228,230,260,267]

About half of the interventions occurred in states that received ALA grades of 'A'[201] for their smoke-free policies,[96,218,235,244,246,260,263,279,303,305,316,318,320] and roughly one third were conducted in states with ALA grades of 'F'.[95,167,169,201,230,235,259,317,319] This observation suggests that strong state-level policies may be related to rural implementation of smoke-free air initiatives, while at the same time demonstrating that some rural communities can make progress toward smoke-free air goals even when the state environment is not conducive to their efforts.

Tobacco Products Targeted

Given that the interventions addressed here were designed to reduce secondhand smoke exposure, all were focused, by definition, on combustible tobacco products. A subset of initiatives also explicitly targeted electronic nicotine delivery systems (ENDS) or e-cigarettes.[217,230,260,305,320,323]

Available Information on Outcomes of Rural Smoke-Free Air Initiatives

Many of the smoke-free air interventions in this review indicated that their activities led to the adoption of smoke-free air restrictions, policies, or laws.[95,96,167,169,216,217,228,230,235,244,246,257,260,263,267,271,279,316,318-320] Some programs also reported other types of positive outcomes, including financial benefits to multi-unit housing property owners,[235] adoption of local ordinances restricting e-cigarettes,[217,260] and decreases in the number of people smoking and litter observed in communities where initiatives were under way.[320]

Approaches

Settings and Scope

The smoke-free interventions that emerged from the review were diverse in settings and scope. Many initiatives focused on effecting changes in specific types of settings not fully covered by comprehensive smoke-free laws (e.g., schools,[230,260] workplaces,[216,244,260,271,316-318] tribal lands,[96,216-218,230,260,267] hospitality settings including restaurants, bars, and casinos,[218,317,318] health care settings,[167,169,259,260,267,279] parks and other outdoor areas,[246,260,316,320] recurring public events,[260] and multi-unit housing).[230,235,260,316] For example, a rural community health center in Utah implemented a smoke-free campus policy to support and coordinate with a broader tobacco control plan that included components to help patients quit or maintain abstinence.[279] Another program targeting a single type of setting was the North Carolina Tobacco-Free Schools project.[319] The project's goal of implementing 100% tobacco-free school policies statewide grew out of a teen summit sponsored in 2000 by the North Carolina Department of Health and Human Services Tobacco Prevention and Control Branch. Following the summit, high school students began advocating for their local boards of education to adopt 100% tobacco-free policies that would apply to students, school staff, parents, and visitors, as well as to school-sponsored events on and off campus. The next year, the state used money from its tobacco settlement agreement to create a trust fund to support *Tobacco.Reality.Unfiltered* (TRU) clubs for teens. TRU club members received advocacy training and

began working toward policy change in numerous school districts. In 2007, over half of the schools in the state had adopted 100% smoke-free policies, and the next year saw the enactment of a statewide law that required all public schools to have a 100% tobacco-free policy.[319]

This review also identified rural programs intended to achieve policy changes in multiple types of settings.[97,216,228,263,316,317] Work by the Montana Tobacco Use Prevention Program (MTUPP) adopted this wider focus: MTUPP collaborated with partners to establish ongoing tobacco-free policies for local events, high school rodeos, medical campuses, and parks.[260] The activities of the Canli Coalition at the Cheyenne River Reservation in South Dakota provide another example of an effort to promote broadly applicable policy change.[217,323] Concerned about the fact that their communities were not covered by state smoke-free laws due to tribal sovereignty, tribal citizens formed the Coalition to work toward the enactment of a tribal smoke-free policy. In collaboration with the Public Health Law Center at the Mitchell Hamline School of Law, the Coalition drafted a smoke-free ordinance that would protect tribe members from the health harms of commercial tobacco while exempting the use of traditional tobacco.[217] The culturally tailored ordinance prohibited the use of commercial cigarettes and e-cigarettes in all public indoor spaces, and it required smokers to move at least 50 feet away from public building entrances. After several years of advocacy work by the Coalition, the tribal council unanimously passed the proposed law in 2015.[217,323]

Implementation Strategies

In their efforts to promote smoke-free air, rural communities used a range of strategies including state-local collaborations,[95,228,230,260] activities to build readiness or capacity to adopt smoke-free laws,[95,230,235,260,319] and education.[72,215,263,317,318]

State-Local Partnerships. Many successful rural initiatives involved cooperation between state tobacco programs and local stakeholders or grantees.[228,230,235,260,307,319] For example, with funding from the state's tobacco industry settlement, the Mississippi Office of Tobacco Control worked with the Mississippi Municipal League to engage local governments in promoting smoke-free air ordinances. Towns worked with their state-level tobacco control partners to educate citizens and elected officials about the dangers of secondhand smoke.[225] As of 2018, there are 150 smoke-free municipalities in Mississippi, 110 of which have local ordinances that incorporate restrictions on e-cigarettes.[324] Many of the state's smoke-free communities are in rural counties of the Mississippi Delta region.[168,324] This progress at the local level was a particularly important achievement in Mississippi, which lacks comprehensive state-level smoke-free laws.[201,325]

The Oklahoma *Communities of Excellence in Tobacco Control (CX)* program further illustrates how rural communities can advance smoke-free air policies through participating in larger, state-level tobacco control initiatives. The *CX* program, which was sponsored by the Oklahoma State Department of Health (OSDH)'s comprehensive tobacco control and prevention program, provided rural and urban counties with grant funding to engage in tobacco control efforts at the local level. From 2004 to 2013, 33 grantees were funded to conduct tobacco control work in 50 counties, and 85% of the state's citizens lived in a funded community.[228]

Although Oklahoma preempted municipalities from passing ordinances that were more stringent than state smoke-free laws, many *CX* counties successfully advocated for alternative tobacco control measures that were permitted under state law. These included local regulations that made city-owned properties smoke-free and local ordinances that mirrored state-level smoking restrictions.[326] *CX* grantees supplemented their policy activities with work to promote community awareness and use of the Oklahoma state quitline.

Over nine years, grantees succeeded in implementing 831 legislated and voluntary policies. All *CX* counties achieved increases in the proportion of smokers who reported awareness of the state quitline. However, these gains were larger in rural than in urban counties. Moreover, in rural *CX* counties, the percentage of smokers with home smoking restrictions rose significantly, whereas changes on this outcome were not significant in urban counties.[228]

Some state-local campaigns achieved favorable outcomes by leveraging connections to organizations with strong ties to local cultures. This approach was

adopted by the Mississippi Delta Health Collaborative (MDHC).[95] The MDHC, a partnership between the CDC and the Mississippi State Department of Health and the Office of Preventive Health, aims to lower the risk of heart disease and stroke through health education, new policy, and environmental and system changes among priority populations in the Delta. Through collaborations with community and faith-based groups, the Delta Alliance has worked to pass 40 ordinances. Thirty-five churches have voluntarily adopted smoke-free policies covering church grounds, and 17 barbershops chose to become smoke-free.[95]

In another instance of state collaboration with rural constituencies, South Dakota's tobacco control program is working with the statewide high school rodeo association - an organization with a largely rural membership—to make youth rodeos tobacco-free (see Case Description below).

CASE DESCRIPTION: SOUTH DAKOTA

South Dakota pursued a novel approach to promoting smoke-free air for the benefit of rural youth. Cigarette and smokeless tobacco prevalence among South Dakota adults and youth have historically exceeded national prevalence estimates. All but two of South Dakota's 66 counties are classified as rural or frontier, so the state tobacco program's work serves a population that is considered "all rural." A cornerstone of the state's approach to reducing youth initiation of cigarette and smokeless tobacco is a partnership with the South Dakota High School Rodeo Association (SDHSRA) to directly reach the target population of high school rodeo participants and patrons. Rodeos are an integral part of these rural communities, and they provide an environment that the commercial tobacco industry has utilized to perpetuate tobacco culture. Strict state tobacco preemption laws prohibit state and local governments from restricting tobacco use, but the SDHSRA has jurisdiction over tobacco use policies at its events. The SDHRSA has proposed a policy to eliminate tobacco use inside the arena, embracing the restriction of advertising and exposure to tobacco products as part of statewide efforts to dissuade children from initiation of tobacco use. State-wide comprehensive tobacco control efforts such as this have contributed to an overall decline in youth smoking prevalence from 23.1% in 2011 to 10.1% in 2018.

Building Readiness. Some communities with smoke-free air success stories worked to build community readiness for policy change through partnerships with state or local health and human services departments[95,230,235,260,319] or other consultants.[216,217,317] In Kentucky, where state-level smoke-free laws are absent[201] and local smoke-free ordinances cover about one-third of the population,[327] communities used technical assistance to increase their capacity for making smoke-free policies.[317] The impact of this assistance was assessed in a five-year controlled intervention study.[317] In nineteen rural counties, expert consultants advised local tobacco control coalitions on how to develop advocacy skills within their own organizations; leverage scarce financial resources; educate elected officials; and build public demand for smoke-free laws. Researchers reported that at the end of the project period, intervention counties were more likely than non-intervention comparison counties to indicate that their communities were aware of issues relating to secondhand smoke; that community norms were conducive to policy implementation; and that smoke-free policies had support from political leaders. In addition, intervention counties implemented significantly more smoke-free policies and covered larger portions of their populations.[317]

Educating Stakeholders. Education was another common thread among successful rural smoke-free initiatives and was intended to increase demand for smoke-free policies. Smoke-free campaigns sought to provide rural stakeholders with information on the health harms of secondhand smoke,[263,317,318] with some programs emphasizing connections between secondhand smoke exposure and chronic disease.[95,244] In addition, educational messages could include an economic argument for policy change as a means of addressing concerns about possible adverse financial consequences of smoke-free policies: One campaign to promote smoke-free housing provided landlords with information indicating that multi-unit rental properties with smoke-free rules had lower maintenance costs and similar occupancy rates relative to properties that lacked such restrictions.[235]

For tribal communities, the educational components of smoke-free air initiatives acknowledged the cultural importance of using sacred traditional tobacco for prayer and healing, while drawing distinctions between these traditions and the use of commercial tobacco.[216-218,318]

In Florida, the Tobacco Free Partnership of Gilchrist County collaborated with *Students Working Against Tobacco (SWAT)* to increase community awareness of the health hazards of tobacco use and secondhand smoke and to protect people from secondhand smoke exposure. With grant funding from the state, these groups inspired and facilitated the implementation of a tobacco-free policy at Otter Springs Park and Campground, a venue leased by a veterans' group. (See Case Description below)

CASE DESCRIPTION: FLORIDA

Tobacco Free Florida (TFF) program is a comprehensive tobacco control program that follows CDC best practice guidelines. TFF provides grants to county partnerships, which are responsible for working with other local programs and agencies to promote adoption of tobacco control policies. TFF also sponsors a youth-led movement called *Students Working Against Tobacco (SWAT)*.

The Tobacco Free Partnership of Gilchrist County and the local chapter of *SWAT* have worked together to educate the local community and to protect people from secondhand smoke through smoke-free environments. Their joint efforts prompted the management of Otter Springs Park and Campground, currently under a 99 year lease with For Vets, Inc., to consider a tobacco free policy. The Partnership and *SWAT* worked with the park management team to develop a policy and an implementation plan that covers all grounds and facilities. The implementation plan includes disseminating information about TFF's cessation services to new and returning park patrons. The tobacco-free policy at Otter Spring inspired adoption of a similar policy at the Trenton Quilt Festival, also in Gilchrist County.

KEY FINDINGS

- Smoke-free interventions identified in this review were diverse in settings and scope. Many initiatives created smoke-free air policies for particular settings, such as schools or public parks, whereas others focused more broadly on ordinances covering multiple settings.
- Many of the smoke-free air interventions included here resulted in at least one sustained policy change or recurring smoke-free event. Several interventions ultimately resulted in multiple smoke-free air policy changes or in the eventual passage of a statewide law.
- Rural initiatives successfully promoted local smoke-free air policies, even in states that lacked statewide, comprehensive smoke-free laws. Thus, local action helped compensate for weaknesses in state-level protections.
- Local coalitions made progress in promoting smoke-free air policies even where state law preempted local smoke-free ordinances.
- Tribes advocated successfully for the passage of smoke-free air protections. Tribal initiatives forged local coalitions, sought legal consultation, and explicitly focused their efforts on restricting commercial tobacco.
- Rural communities have built capacity to enact smoke-free policies through participating in state-local collaborations, using technical assistance, and raising community awareness about health harms related to secondhand smoke.

RECOMMENDATIONS FOR FUTURE RESEARCH

- While rural communities may face some similar socioeconomic disadvantages and infrastructure limitations, their tobacco-related social norms and policy climates may vary across states and regions. Therefore, federal and state efforts to support rural tobacco control initiatives should be informed by consultation with rural stakeholders, including leaders of rural hospitals, FQHCs, RHCs, LHDs, tribal councils, and community-based organizations.
- Community-based participatory research could clarify stakeholders' perspectives on what challenges they face, what strategies they consider productive, and what forms of assistance they need.
- Research is warranted to further explore rural-urban differences in tobacco use within Tobacco Nation.
- More study is needed to determine whether federal health reform and its provisions on tobacco cessation coverage have helped rural people gain access to cessation services.
- Emerging technologies show promise as means for facilitating rural access to cessation services. Further evaluation would be helpful to explore the feasibility and impact of these modalities to rural settings.
- It would be useful for investigators to consider how state-level tobacco control policies, including preemption, influence local-level policies in rural communities.
- Studies should further examine how state, tribal, and local tobacco control policies affect tobacco use in rural subpopulations.

RECOMMENDATIONS FOR ADVANCING RURAL TOBACCO PREVENTION AND CONTROL

Federal and State Agencies

- Rural hospitals often assume key leadership responsibilities in community health improvement initiatives, including tobacco control. The recent wave of rural hospital closures may decrease local capacity for such activities. Federal and state agencies should consider how they can preserve and strengthen health infrastructure in rural communities affected by closures.
- In disbursing tobacco prevention funds to rural health systems and community-based organizations, federal and state agencies should consider allocating resources on the basis of epidemiological burden as well as population impact in order to ensure that rural programs are not systematically underfunded relative to urban ones.
- To increase rural access to cessation services, states could support service provision by non-physicians and lay health advisors, through ensuring that state licensing regulations and Medicaid reimbursement policies accommodate such practices.
- To permit the increased use of emerging technologies in tobacco control and prevention, federal and state agencies should continue to promote the expansion of rural broadband and mobile phone access.
- Given that rural youth respond more strongly to national tobacco countermarketing campaigns as their levels of exposure to campaign messages increase, state tobacco control programs should consider increasing their purchases of supplemental advertising in rural television and radio markets.

Communities, Tribes, and Local Stakeholders

- Given the demonstrated effectiveness of policies such as smoke-free air measures, tobacco excise tax increases, and Tobacco 21 laws in decreasing the prevalence of tobacco use, rural stakeholders may wish to consider advocating for such policies at state, tribal, and local levels.
- Where states preempt the adoption of local tobacco control ordinances, rural programs may achieve progress by:
    - Promoting the voluntary adoption of tobacco control measures by local businesses, organizations, and school districts
    - Educating the public on the adverse impacts of preemption
    - Building community support for repeal of state preemption laws
- Tobacco control initiatives may find it useful to leverage rural cultural assets including strong commitments to community engagement and skills in cross-sector collaboration.
- To promote rural communities' involvement in tobacco control and prevention programs, it may be essential to forge partnerships including trusted local leaders from LHDs, health systems, businesses, faith-based organizations, and schools.
- Many communities are more willing to support tobacco control if it is presented as necessary to protect youth. Therefore, young people can be influential tobacco control advocates, and local coalitions should engage their participation.
- To encourage community buy-in, it may also be helpful to involve local stakeholders in developing culturally tailored messages that show how program goals are consistent with core community values.

- Rural health systems including hospitals can show leadership by implementing evidence-based, system-wide tobacco prevention and control plans. These plans could include:
    - adopting tobacco-free campus policies
    - training staff in best practices for the delivery of tobacco cessation services
    - enhancing linkages to the community by enlisting lay health advisors in service provision
    - launching quality assurance initiatives that use EHRs to monitor progress toward tobacco-related population health goals
- As resources permit, rural schools can consider planning and implementing comprehensive tobacco control measures in coordination with their school health programs. Components may include:
    - Adopting 100% tobacco-free campus policies applying to all school facilities and events at all times
    - Linking parents, staff, and youth to cessation resources
    - Providing developmentally appropriate education on tobacco use and prevention
    - Collaborating with LHDs and community agencies to advocate for the adoption of comprehensive tobacco control policies
    - Recruiting youth to lead countermarketing campaigns targeted to peers
- When rural communities lack resources to tailor their local tobacco prevention campaigns, they can make gains by using existing advertising materials and implementing standard, evidence-based educational programs.
- Given the critical role that parents play in shaping youth norms related to tobacco, rural tobacco control efforts should engage parents as collaborators. Parents could effectively advocate for measures to protect children from secondhand smoke and restrict youth access to tobacco.

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