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District Magnitude's Effect On Female Representation In U.S. State Legislatures

Researchers concerned with women's access to public office are now studying the effects that electoral institutions have on female representation. Within the United States, a number of scholars have considered the effect of district magnitude on female representation in state legislatures. A controversy exists as to whether women are better represented in systems with multimember districts than in those with single-member districts only. This article presents the theoretical reasons why multimember districts should give women an advantage, reviews the empirical literature, proposes several hypotheses that would reconcile the inconsistent results in the empirical literature, and then tests those hypotheses in two states over a 22-year period. The results provide strong confirmation of the effect of district magnitude and cast serious doubt on those studies which show little effect. In closing, the authors suggest that their findings have important public policy implications for women's representation in state legislatures.

Women make up a majority of the population and the electorate, yet they are greatly underrepresented in elected legislative bodies throughout the world. Only 6% of Congress is female, putting the United States near the very bottom of the list of advanced industrialized countries and behind most developing democracies in the percentage of the national legislature that is female (International Parliamentary Union 1991). While women are better represented in the various state legislatures, at an average of 18% they are still far below their proportion of the population and voting electorate (Darcy 1990). Much of the earliest work aimed at explaining the underrepresentation of women in elected legislatures emphasized social and cultural barriers; more recent work has turned to the effects of institutional mechanisms (Darcy, Welch, and Clark 1987).

Researchers have turned to institutional factors for various reasons. The strongest proponents argue that institutional mechanisms lie at the heart of women's underrepresentation. Darcy, Welch,

and Clark (1987) explicitly refute a number of other explanations for low levels of representation before turning to an institutional explanation. One explanation they refute is that voters are biased against female candidates. Data analysis shows that, once incumbency and party identification are controlled, female candidates run as well as men do (Darcy and Schramm 1977; Darcy, Welch, and Clark 1987). Another hypothesis asserts that males within the party structure conspire to limit women candidates, discouraging women from running and recruiting women only for races where they will be sacrificial lambs. Darcy, Welch, and Clark test these hypotheses and fail to find empirical support. They find that men and women are equally likely to run as sacrificial lambs, that women are more likely to win primary elections (Ambrosius and Welch 1984), and that in general elections women do as well as men. Darcy, Welch, and Clark's explanation for the underrepresentation of women places primary emphasis on an important institutional variable, the power of incumbency. They also point to the underrepresentation of women in the pool from which candidates are recruited and the effects of electoral rules as important factors affecting female representation.

Researchers looking at institutional factors associated with variations in female representation levels have concentrated on electoral systems. Much of this work has been done at the cross-national level, and one consistent finding is that women are better represented in proportional representation systems than in single-member district systems (Duverger 1955; Lakeman 1976; Castles 1981; Norris 1985; Rule 1987). There is, however, no chance the United States will adopt a parliamentary system with proportional representation in the foreseeable future. A more relevant institutional variable in the United States is district magnitude, the number of seats per district.

While the traditional mechanism for electing representatives to Congress is single-member districts, and has been for all of this century, multimember districts have been widely used at the state legislative level. In the 1950s over 40 states used some form of multimember district to elect representatives to their state legislatures. While this number has decreased in recent years, 15 states still use some form of multimember districts in electing state legislators (Niemi, Hill, and Grofman 1985). The remainder of this article lays out the theoretical arguments as to why district magnitude should have an effect on female representation, reviews the existing empirical literature on the topic, develops hypotheses based on a critique of the existing literature, and presents empirical evidence regarding those hypotheses.

District Magnitude

There are three barriers a woman must cross before being elected. A woman must be willing to stand for election, must be acceptable to the party selectorate, and must be approved by the voters (Norris 1985). An increase in district magnitude can lower all of these barriers by changing elections from a zero-sum game to a positive-sum game. Contests in single-member districts are by definition zero-sum games. The change from a zero-sum to a positive-sum game can affect candidates, party officials, and voters.

The positive-sum nature of multimember district elections may affect the individual candidate's willingness to stand for election. Multimember districts allow candidates to concentrate on winning votes for themselves and provide correspondingly less emphasis on attacking one's opponent. To the degree Kirkpatrick's (1974) assertion that women prefer to highlight their own strengths rather than denigrate their opponents is true, women should be more willing to run in multimember districts.

Increases in district magnitude should make it easier for party officials to slate female candidates, for two reasons. First, the party may see the slating of women as a way to appeal to an important group of voters. Second, the costs of slating women are lower in districts with a large magnitude. If district magnitude is one, a female candidate shuts out all male candidates. In districts of a larger magnitude, male candidates who represent powerful intraparty constituencies do not need to be deposed for a female candidate to receive a spot on the party's list. In effect, balancing the ticket is possible when district magnitude is large; it is more difficult when district magnitude is small.

Finally, women may have an advantage in attracting voters in multimember districts. Districts in which several seats are available are likely to attract a large number of candidates. Since female politicians are relatively rare, a woman's gender will distinguish her from the other candidates, making her more visible and more readily noticed by the electorate. In addition, voters who might be hesitant to vote for a woman if she were their only representative may have little hesitation in voting for a woman as one of many candidates.

District magnitude could also have a positive effect on female representation if larger districts are associated with greater turnover. Districts with many representatives lead to diminished visibility for individual representatives. In addition, representatives from multimember districts tend to do less constituency work than those from single-member districts (Jewell 1982). Both these factors can diminish

the incumbency advantage and lead to higher turnover rates. If conditions change so that women who were previously discriminated against are competing on a level playing field, low turnover rates could impede change and keep representation rates unnecessarily low.

Literature Review

Two studies have been explicitly designed to test for the effect of multimember districts on female representation. Darcy, Welch, and Clark (1985) looked at 14 states that simultaneously had both single-member and multimember districts (some of the cases are historical). In all 14 states, more women were elected from the multimember districts than from the single-member districts. They also looked at seven states where election laws had been changed from multimember districts to single-member districts. In all cases female representation either decreased after the change or increased more slowly than the average increase in female representation nationally. Clark et al. (1984) took a detailed look at the effect of district magnitude in Wyoming. Using MCA analysis and controlling for incumbency, time period, number of candidates, and party identification, they found that female candidates do substantially better in larger districts than in single-member districts.

Two broader studies have considered the effect of district magnitude with several other variables. Carroll (1985) uses discriminant analysis to predict the success of 1,212 women candidates. She finds that running in a multimember district substantially improved a woman's likelihood of winning in state legislative elections. Rule (1990), in testing a large number of variables, found that multimember districts had a significant effect on the proportion of the state legislature that was female.

On the other hand, a more recent study that looked explicitly at district magnitude found very little effect of district magnitude on female representation (Welch and Studlar 1990). Analyzing election results from New Hampshire in 1982 and West Virginia in 1984, Welch and Studlar found no evidence that women are more likely to be candidates in larger districts and very limited evidence that turnover is greater in larger districts. They ran regressions controlling for candidate's party, incumbency, opponent's incumbency, degree of competition, and gender. To test for the effect of district magnitude and gender, they developed interaction terms. In West Virginia they found a weak effect as women were disadvantaged in single-member districts, but there was no advantage for women as district size

increased. In New Hampshire district magnitude had no effect on a woman's vote winning ability.

We are left with a puzzle. In New Hampshire, district magnitude appears to have no effect. In West Virginia, single-member districts hurt women, but there are no gains for increases in district size once one moves beyond two seats. In Wyoming women do better in two- or three-member districts than in single-member districts and do even better in four- or five-member districts. When one tries to sort out why district magnitude should show no effect in one state, a limited effect in another state, and a clear and direct effect in a third state, two suggestions come to mind. First, important district attributes may be controlled in one set of studies but not in the others. Second, important differences between the states may explain the variations in results. Let us review both these possibilities.

The first explanation can be described methodologically as a missing variables problem. It shows up especially well in the Darcy, Welch, and Clark (1985) study. Their study provides the broadest support for the assertion that women do better in multimember districts. While the support is broad, it is not deep. They look at a large number of states, but fail to introduce controls for important competing explanations. All the relationships reported are comparisons of the percentages of female candidates and female elected representatives in single-member and multimember districts. For most of the individual states, the difference in means is insufficient to pass a standard significance test. It is only in the aggregate that one sees all the states are leaning in the same direction and that a compelling case for the effect of district magnitude can be made. As Welch and Studlar point out, however, in many states there is a strong correlation between urbanization and district magnitude. To the degree that urban districts are more hospitable to women candidates, the correlation between district magnitude and female representation may be spurious. Wyoming, the state showing the strongest effect of district magnitude, is one state in which urbanization and district magnitude are correlated. Urbanization therefore stands out as a plausible alternative to the supposed effect of district magnitude.

A second explanation for these inconsistent results is that states differ from each other in important ways that lead to variations in the effect of district magnitude. An interaction between some state-specific feature or features and district magnitude may lead to the differences in effect. At least three factors suggest themselves. The first is variation in political culture across states. Hill (1981) found that traditional political culture was a powerful explanatory factor when

regressed on the proportion of the state legislature that was female. Women did substantially worse in states with a traditional domestic political culture. Clark et al. (1984), on the other hand, found culture did not explain the variations across states in the percentage of the vote won by female candidates. However, if culture primarily affects the recruitment process rather than a candidate's vote total, the effect on female representation could be quite strong and still be consistent with the findings of Clark et al. Certainly culture deserves to be considered as an explanation for the existing inconsistencies in the empirical literature.

Two additional state-specific factors are suggested by studies of the effect of district magnitude in other countries (Engstrom 1987; Rule 1987; Matland 1991). Matland (1991) studied the effect of party magnitude over a 40-year period in Norway. He found that the relationship between party magnitude and female representation changed over time.¹ When the issue of women's representation was not on the agenda, there was no relationship between party magnitude and women's representation. As women started to push for greater representation, a clear and direct relationship between party magnitude and female representation appeared. Once women became well established, however, the relationship disappeared; women attained representation in both large and small districts. Effectively there was a cycle, with larger districts being the first place women were able to break through. As women became better established, however, they were able to win representation in districts of all sizes and party magnitude diminished in importance.

If the effect of district magnitude on female representation follows a cycle—in which district magnitude is most important when women move from being a few scattered representatives to being a substantial portion of a legislative body and then diminishes in effect—it would hardly be surprising that New Hampshire does not show district magnitude having an effect. Historically, New Hampshire has been an outlier on female representation. Throughout the 1980s New Hampshire led the nation in female representation, with over 30% of the legislators being female. Thus, Welch and Studlar's finding that female representation is not affected by district magnitude may be largely an artifact of the year and state they used. New Hampshire may already be on the down side of the cycle.

Additional studies in Europe emphasize the incentives to the party for balancing its ticket. These studies show that a rational process of slotting candidates both to maximize votes and to maintain party unity will often lead to more representation of women in larger

districts. In larger districts a party can provide seats for its strongest interests and still have candidate slots available for women. In smaller districts only the most powerful interests in the party are represented and women are often shut out. This description of the process emphasizes the party's central role in choosing candidates. The power of state and local parties to select candidates is much weaker in the United States, but there is significant variation across state and local parties. If local party strength varies across states, we might expect the effects of district magnitude on female representation to be most apparent in states with powerful parties, given that the party perceives having women candidates as being in its interest.

This review indicates that the effect of district magnitude on female representation is still an open question. The existing studies report contradictory findings, and there are plausible reasons why each of them may be either incorrect or, more likely, incomplete in their explanations of the effect of district magnitude. A set of hypotheses based on this critique is presented in the next section and tested in the data analysis section.

Hypotheses

H1) If urbanization is controlled for, district magnitude will fail to have a statistically significant effect. The general assumption is that a better-specified model will reveal that the effect of district magnitude is spurious. Urbanization is the most obvious missing variable, but other variables will be added to increase the accuracy of model estimation. Urbanization is likely to be a proxy for many factors that should affect female representation. Urban areas have higher female labor force participation rates than rural areas. An extensive literature shows a clear connection between work outside the home and political activity. Another factor for candidate recruitment is that in cities a pool of well-educated female professionals (especially lawyers) is readily available from which candidates can be drawn. In urban settings, a female candidate is also more likely to have independent resources on which she can draw—in particular, local chapters of the League of Women Voters, the National Organization of Women, the National Women's Political Caucus, and the Women's Professional and Business Association. These provide both informal training grounds for future female candidates and resources to women when they run.

H2) The relationship between district magnitude and female representation will vary with state political culture. The moralist political culture emphasizes elective office as a civic duty and promotes

inclusiveness (Elazar 1966). The expectation is that women would be encouraged to run or at least would not be actively opposed because of their gender. The traditionalist culture emphasizes a stable social order and is skeptical of the intrusion of new voices. This culture is expected to oppose women generally. The individualistic political culture emphasizes personal gain as a legitimate end of the political process. This type of culture is not as negative towards women as the traditionalist culture, but a female candidate like any candidate, could be seen as a threat to those already in power and would therefore be opposed. Interestingly, when one considers the direct effect of either the traditionalist or the individualistic political culture, the predicted effect is negative. The effect of an interaction term between traditionalist and district magnitude, however, would be positive. Women are generally opposed in a traditionalist culture; as the delegation size increases, however, a female candidate becomes only one of many legislators chosen and therefore is not as likely to be seen as a threat to traditional powers. The same logic should hold for the individualistic culture, in which women might be seen as less of a direct threat in multimember districts because of the non-zero-sum nature of elections. In a moralist culture there should be no interaction; women are already seen as legitimate participants even in single-member districts.

H3) The effect of district magnitude will vary over time, being of greatest significance when women are getting established as a force in state politics. To the degree that the effect of district magnitude changes over time, the different findings may simply be due to the various states being at different points on a time continuum. The assumption is that it will be easiest for women to break into politics in those districts with the greatest number of seats. Over time, as women become an established part of the political scenery, however, the effect of district magnitude will diminish as women begin to be seen as legitimate candidates in all districts.

H4) The relationship between district magnitude and female representation will be strongest in those states or districts where parties have the greatest control over candidate selection. The assumption is that female candidates represent a relevant interest inside the party but not the most powerful interest. When the party organization has substantial control over the nomination process and there are several seats available, the party can maintain unity by giving all factions within the party, including women, a place on the party ballot. Local party leaders may also see it in their interest to nominate women when they have a large slate, to prove that they are sincere in their claims to represent all of the people. In states or districts where the party has lit-

tle control over this process the party leaders would not be able to enforce their desires for balance even if the districts were large.

Data and Methods

We decided to consider the effect of district magnitude over time in individual states rather than across states. While this decision makes it more difficult to test one of the hypotheses proposed above, it does provide important controls. Considering just one state allows us to assume that several important variables are held constant across all cases and to concentrate on those factors which vary across districts.

Multimember districts are used primarily for elections to the state assembly or state house of representatives; therefore our study concentrates on the lower house. While there are 15 states that use multimember districts for electing some of their state representatives, several were deemed inappropriate for this study. Georgia, Alaska, and Idaho use multimember districts, but individuals must declare for a specific seat, making the seat effectively a single-member district. Arizona, New Jersey, and Washington have multimember districts, but there are no single-member districts to which the multimember district can be compared. In Hawaii, Indiana, and Maryland the number of seats per district varies very little. The remaining states with both single-member and multimember districts are New Hampshire, North Carolina, North Dakota, South Dakota, West Virginia, and Wyoming.

Three of these states have been considered by previous authors. Rather than duplicate their work, we decided to concentrate our initial testing on a state that had not been analyzed previously. North Carolina is an interesting state for several reasons. First, there are enough districts that multivariate analysis is possible. Second, there is a wide spread of district sizes. Third, extensive data are available in the biannual *North Carolina Manual*, including pictures of the candidates. Finally, even though North Carolina is a single state, it does provide an opportunity to test the effect of political culture, since Elazar (1966) argues there are two separate political cultures in North Carolina.²

Data on the legislators were culled from the *North Carolina Manual* and the Council of State Government's publication *State Elective Officials and the Legislatures*. In addition, the *State Legislative Election Returns in the United States, 1968-86* dataset collected by the Inter-university Consortium for Political and Social Research was used to develop variables and check the validity of the other data

sources. This dataset provides election data on state elections in all 50 states from 1968 to 1986.

The apparent choice for the dependent variable is the proportion of each legislative district's delegation which is female. This variable provides a direct measure of how well women are represented in districts of varying sizes. There are, however, methodological problems with using simple proportions as a dependent variable, the most obvious ones being ceiling and floor effects.³ To deal with these problems, both Cohen and Cohen (1975) and Weisberg (1980, 122-125) suggest using the arcsine transformation of the square root of the proportion rather than the raw proportions. Therefore the dependent variable we used in the regressions is the arcsine of the square root of the proportion of the district delegation that is female.⁴ This transformation stretches out the tails of the distribution. In addition to transforming the dependent variable, the cases are weighted by the number of representatives sent to the state house of representatives. This procedure insures that an eight-seat district (weight=8) is afforded the same weight as eight single-member districts in the calculation of regression coefficients.

Urbanization is defined as occurring in cities larger than 50,000. Those districts that had cities of between 50,000 and 100,000 inhabitants were given a 1 on the urbanization scale and those that had cities larger than 100,000 were given a 2 on the urbanization scale. If the first hypothesis is correct, this factor should have a statistically significant effect on the proportion of the delegation that is female, and the effect of district magnitude should become nonsignificant.

Elazar describes North Carolina as predominantly a traditionalistic political culture, but he notes that there is a cultural split between the highlands of western North Carolina and the coastal land of eastern North Carolina. The highlands in the west are significantly influenced by the moralistic culture, due to differential migrating patterns. The Piedmont area in the middle of North Carolina is an amalgam of both cultures. The coastal areas of eastern North Carolina are solidly in the traditional political culture. To measure traditional culture, we included a dummy variable, coded 1 for districts in eastern North Carolina. If political culture is relevant, the dummy variable for traditional culture should have a negative effect; the interaction measure between district magnitude and traditional culture should have a positive effect.

To test the third hypothesis, that the effect of district magnitude changes over time, successive cross-sectional regressions are run for election results for each year from 1968 to 1990. The statistical sig-

nificance of the district magnitude coefficient should change over time if the third hypothesis proves correct, starting as insignificant and then moving to statistically significant and back to insignificance again. Because measures of variation in local party strength across districts were not available, it is not possible to test the fourth hypothesis directly.

Finally, Democratic party dominance of a district is used as a control variable. For those years in which actual vote totals are available by district (1970–84), the votes received by Democratic candidates for state house seats is divided by the vote total for all candidates.^{5,6} For those years in which vote totals do not exist, we use the percentage of the district's delegation that is Democratic. While there may be some concern that this variable overstates Democratic dominance, a couple of factors allay that fear. Inspection of the voting results shows North Carolina to be very close to a one-party state. In many districts there are no Republican candidates running. In addition, the Democratic percentage of the legislative delegation tracks very well with the vote variable for those years in which we have both variables. The average correlation between the two variables is .63. There is no strong expectation that either Democrats or Republicans at the local district level are more likely to elect women. This control has been used in several other studies, however, and its effect is a question of empirical interest.

Data Analysis: First Cut

The last two lines of Table 1 report the total number of women serving in the North Carolina House of Representatives and the percentage of the House that was female. These numbers show substantial movement over the 22-year period. In 1968 only one woman served in the 120-member North Carolina House. Female representation increased markedly during the 1970s, reaching 19 women (15.8%) in 1980. In the 1980s the number of women in the House inched up to the point at which it now stands—21 women, which is 17.5% of the House members. This is an increase of only 1.7% for the 1980s, following a 14.1% increase in the previous decade. Although at 21 of 120 members women are far from represented in proportion to their numbers in the public at large, North Carolina is extremely close to the national average for women in the lower house of state legislatures (17.9%). North Carolina is also at the very top of the list of southern states, which traditionally have had lower levels of female representation than the rest of the nation.

TABLE 1
 Successive Cross-Sectional Regressions on Female Proportion of
 Legislative Delegation, 1968-90, North Carolina
 (standard errors in parentheses)

Variable	1968	1970	1972	1974	1976	1978	1980	1982	1984	1986	1988	1990
District Magnitude	.00 (.02)	.05 (.04)	.20*** (.04)	-.04 (.06)	.05 (.06)	.18*** (.04)	.13*** (.04)	.13*** (.04)	.12 (.09)	.16* (.09)	.17* (.09)	.19** (.09)
Urban	-.00 (.04)	-.11 (.07)	-.07 (.09)	.32** (.14)	.24* (.13)	.06 (.09)	.33*** (.09)	.16* (.09)	.33*** (.09)	.37*** (.10)	.35*** (.09)	.26** (.09)
Traditional Culture	.14* (.08)	-.05 (.15)	.59*** (.17)	.21 (.28)	-.22 (.27)	-.51*** (.19)	-.13 (.18)	-.62** (.24)	-.32 (.33)	-.32 (.34)	-.31 (.34)	-.22 (.34)
Interaction of District Magnitude and Culture	-.04 (.03)	.06 (.05)	-.16 (.05)	.03 (.07)	.01 (.07)	.07 (.05)	-.04 (.04)	.14** (.07)	.00 (.14)	-.02 (.15)	-.02 (.14)	-.04 (.14)
Percentage of Delegation Democratic	-.00 (.04)	-.02 (.08)								.08 (.20)	.12 (.19)	.02 (.20)
Democratic Percentage of State Legislative Vote			-.05 (.20)	-.98** (.50)	.08 (.42)	.22 (.25)	.48** (.23)	-.07 (.26)	-.17 (.35)			

TABLE 1
(continued)

Variable	1968	1970	1972	1974	1976	1978	1980	1982	1984	1986	1988	1990
Constant	-0.00 (.05)	-0.08 (.10)	-.43*** (.16)	.97*** (.36)	.31 (.32)	-.16 (.20)	-.40** (.17)	.23 (.21)	.32 (.34)	.20 (.28)	.12 (.26)	.17 (.27)
Adjusted R ²	.00	.07	.32	.14	.20	.56	.62	.34	.15	.16	.16	.12
F	1.05	2.81	12.33	4.92	6.90	31.00	39.75	13.10	5.27	5.50	5.61	4.18
Significance Level	.39	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
N (weighted)	120	120	120	120	120	120	120	120	120	120	120	120
N (unweighted)	49	49	45	45	45	45	45	53	72	72	70	70
Total Number of Women	1	2	8	13	19	17	19	19	17	21	20	21
Percentage of Legislature Female	0.8	1.7	6.7	10.8	15.8	14.2	15.8	15.8	14.2	17.5	16.7	17.5

* $p \leq .10$.

** $p \leq .05$.

*** $p \leq .01$.

The number of districts and their magnitudes were adjusted several times in the 22-year period being studied. For most of the 1970s and the early 1980s, North Carolina had 45 districts with district magnitude ranging from one to eight seats per district. Districts followed county lines, and the largest districts were in counties with large cities. Before the 1984 election a major redistricting eliminated all the largest districts. Large cities were converted into single-member districts, and the result was a system of 72 districts with magnitudes ranging from 1 to 4 representatives. The elimination of large districts may have helped slow the gains in female representation in North Carolina. During the 1980s, while the rest of the country averaged a 7% increase in the number of women in state legislatures, North Carolina showed a meager 1.7% gain.

The upper half of Table 1 presents the unstandardized regression coefficients for a model in which the dependent variable is the arcsine transformation of the proportion of the district delegation that is female. The same model was run in each of the years to test for changes in effects over time. In the earliest years, no patterns appear. Most of the variables are insignificant, some variables appear with signs that are the opposite of those predicted, and overall model fit is poor. These results are not too surprising. Since there were very few women in the legislature, idiosyncratic factors that appeared in a single district could have been important in explaining the election of women representatives to the state house. These very localized conditions are not included in the model, and therefore model fit is poor. As we move into the late 1970s and the 1980s, however, the model starts to perform better. At this point there are enough women in the legislature that we can begin to expect some patterns rather than completely idiosyncratic processes. Rather than discuss each regression individually, we will look at the results in the framework of the hypotheses suggested above. In passing, we briefly note that the control variable aimed at indicating Democratic party strength shows no consistent effect across the regressions. In North Carolina, Democratic and Republican districts do not differ in their propensity to elect women to the state legislature.

The first hypothesis predicted that if an urban variable was included in the model the effect of district magnitude on female representation would disappear. The prediction that urban areas are more sympathetic towards women candidates proves correct. Being an urban area has a statistically significant effect (at the .05 level) on the dependent variable for five of the six elections since 1980. Apparently the argument that there is a larger candidate pool and greater access to

campaign resources for women in urban areas is a reasonable one. The effect of district magnitude, however, was not eliminated when an urban variable was included in the analysis. Even after controlling for urban areas, district magnitude has a statistically significant effect (at the .05 level) for four of the seven elections after 1978 and fails to reach at least a .10 level of significance only in the 1984 election. As we noted previously, special circumstances surround the 1984 election: a major redistricting in which the largest districts were split into single-member districts. While the 1984 regression shows that women tended to do as well in small districts as in large districts, the individual cases show that four of the six women who won in single-member districts in 1984 (an increase from 0 in 1982) were incumbents who had previously been elected in large districts and who were forced to run in single-member districts because of the redistricting. As we move farther away from the 1984 elections (and as those incumbent women in small districts leave the legislature), district magnitude starts to reassert its importance. By 1990 district magnitude has again become statistically significant at the .05 level. Faced with the consistent finding of statistical significance across several regressions, even after urbanization is controlled for, we reject the first hypothesis, which posited that district magnitude's effect is a spurious one.

The second hypothesis was that cultural differences between the states were responsible for differences in the effects of district magnitude. This hypothesis can be tested in North Carolina, because North Carolina exhibits two cultural influences, both a moralistic and a traditionalistic influence. There is limited support for the proposition that traditional political culture has a direct negative effect on female representation. The coefficients are negative, as expected, for all elections from 1976 on, and are statistically significant in two cases. There is, however, very little support for the assertion that this effect is largely reserved for traditional districts. The interaction term switches sign with disturbing regularity and is statistically significant in only 1 of 12 cases. Even in that one case, after culture and the possible interaction are controlled for, district magnitude continues to have a strong independent effect. Because of these findings, the second hypothesis should be rejected.

The third hypothesis argues that the effect of district magnitude follows a cycle, with district magnitude becoming important just as women are starting to break into the state legislature and ceasing to be significant once they are well established. The first half of the cycle appears, district magnitude shows little consistent effect in the earliest years when there were few women in the legislature, but then shows a

consistent effect as women start to be represented in larger numbers. The second half of the prediction is not borne out, however. The effect does not diminish over time. In fact, as the size of the unstandardized regression coefficient indicates, the effect of district magnitude increases throughout the 1980s.

In evaluating the third hypothesis, we need to ask whether female representation has reached a level at which we can expect the effect of district magnitude to diminish. Other studies indicate that this effect disappears after representation breaks the 20% barrier (Matland 1991). North Carolina has not crossed that barrier, and therefore it is reasonable to claim that hypothesis three has yet to be proved or disproved. The next section considers hypothesis three further.

Data Analysis: Second Cut

To find a good test of the third hypothesis, the life cycle theory of district magnitude, we need a state in which women are already well established politically. Ideally such a state would have levels of female representation well above the 20% barrier. Of the states which employ multimember districts to elect representatives to the legislature, New Hampshire is the state where women are best represented. Women have constituted over 30% of the lower house of the New Hampshire legislature since the mid-1970s. New Hampshire takes on added interest because it is the only state in which previous studies have failed to find a positive effect of district magnitude on female representation. With the results from our initial data analysis, detailed individual state studies find that multimember districts do have a positive effect on female representation in North Carolina, West Virginia, and Wyoming. Our second cut at data analysis provides a closer inspection of New Hampshire. Regressions are run for successive cross-sections from 1968 to 1990 for New Hampshire using the same dependent variable we used in the North Carolina case—that is, the arcsine transformation of the square root of the proportion of the delegation that is female.

Data for the second set of regressions were primarily taken from the ICPSR State Legislative Election Returns dataset. These were augmented with data from the *New Hampshire Manual for the General Court* and the Council of State Government's publication *State Elective Officials and the Legislatures*. The independent variables used are similar to those used in the North Carolina study. District magnitude is measured as the number of representatives elected from each dis-

trict; this number varies from 1 to 11. Urbanization is scaled as 1 for districts in cities larger than 50,000 (no New Hampshire city is larger than 100,000) and 0 for all other districts. Since New Hampshire has only one political culture, both of the culture variables are dropped. Two political control variables are used. The Democratic party's percentage of the vote within the district is used as one control variable. Finally, party competitiveness is included as a control variable, measured as the absolute difference between the Democratic and the Republican percentage of the legislative district vote subtracted from 100.⁷ If a district is perfectly competitive, it scores 100 [$100 - (50 - 50)$]. If the district is strictly a one-party district, it scores 0 [$100 - (100 - 0)$]. Increases in the variable indicate increases in district competitiveness. Following Key's argument, we expect that where elections are competitive and the party out of power sees an opportunity to win seats in the next round, it will reach out to groups that have traditionally been excluded and try to build a winning coalition. As women are traditionally excluded, party competitiveness should have a positive effect on female representation.

The results of the regressions are presented in Table 2. The last two lines show the percentage of the legislature that was female and the absolute number of women in the lower house. As is immediately obvious, women have been much more extensively represented in New Hampshire than in North Carolina (or in the rest of the country for that matter). Our data analysis looks at what factors affect variations in representation within this environment, which has been traditionally favorable to women.

Before getting to district magnitude, let us briefly consider the other variables. Surprisingly, urbanization has a statistically significant negative effect in a couple of elections. One possible explanation for this result is that many of the districts in southern New Hampshire, which are within commuting distance of the Boston area, are more suburban than rural. They are strongly influenced by a large urban area, yet they are defined for purposes of this study as being rural, since they are not in the two cities greater than 50,000 in New Hampshire—Manchester or Nashua. Another possibility is that it is merely a random occurrence; it shows up only twice in 12 elections, and for most of the other elections the effect is positive but not significant.

In North Carolina there was no difference between Democrats and Republicans in their tendency to elect women. In the 1970s New Hampshire exhibits no such difference, but in the 1980s districts with a strong Democratic vote are more likely to elect women. For the last

TABLE 2
 Successive Cross-Sectional Regressions on Female Proportion of
 Legislative Delegation, 1968-90, New Hampshire
 (standard errors in parentheses)

Variable	1968	1970	1972	1974	1976	1978	1980	1982	1984	1986	1988	1990
District Magnitude	-.01 (.04)	-.05 (.04)	-.05* (.02)	-.06** (.03)	.09*** (.03)	.11*** (.03)	.09*** (.03)	.03 (.02)	.06** (.03)	.09*** (.02)	.05** (.02)	.05* (.02)
Urban	.04 (.15)	.14 (.15)	.18 (.12)	.13 (.12)	.10 (.14)	.01 (.14)	.21 (.14)	-.47*** (.15)	-.13 (.15)	-.29** (.15)	-.19 (.15)	.16 (.15)
Party	.11 (.14)	.03 (.15)	-.17 (.13)	.20 (.13)	.21 (.17)	.31** (.14)	.03 (.19)	.42*** (.15)	.29** (.14)	.51*** (.13)	.20 (.14)	.13 (.14)
Democratic Percentage of State Legislative Vote	-.10 (.18)	-.29 (.18)	-.07 (.18)	.23 (.17)	.13 (.20)	-.05 (.16)	.07 (.19)	.26 (.17)	.66*** (.18)	.60*** (.16)	.65*** (.16)	.60*** (.17)
Constant	.65*** (.13)	.90*** (.13)	.97*** (.11)	.87*** (.12)	.48*** (.18)	.46*** (.14)	.70*** (.18)	.47*** (.14)	.56*** (.12)	.83 (.13)	.54 (.12)	.531*** (.12)
Adjusted R ²	-.01	.00	.01	.01	.03	.07	.03	.07	.07	.12	.05	.05
F	.22	1.11	2.45	2.51	4.30	8.39	3.59	8.60	8.14	14.56	6.70	5.73
Significance Level	.92	.35	.05	.04	.00	.00	.01	.00	.00	.00	.00	.00
N (weighted)	400	400	400	401	400	400	399	400	400	400	400	400
N (unweighted)	193	193	160	163	161	161	161	158	175	175	175	175
Total Number of Women	77	82	93	113	120	123	130	117	136	132	133	126
Percentage of Legislature Female	19.3	20.5	23.3	28.2	30.0	30.8	32.6	29.3	34.0	33.3	33.3	31.5

* $p \leq .10$.
 ** $p \leq .05$.
 *** $p \leq .01$.

four elections there is a statistically significant positive effect of the Democratic percentage of the state legislative vote on the female proportion of the legislative delegation.

Finally, while party competition did not show an effect in the early to mid-1970s, in the late 1970s and early 1980s it had a strong effect on female representation. Competitive districts had a positive effect on the number of women in the district delegation for four of the five elections from 1978 to 1986. The effect has since appeared to tail off. The lack of any effect in the 1970s is consistent with Rule's finding (1981) at the interstate level for that period, while the strong effect for the early 1980s indicates a change in conditions.

The New Hampshire results are especially interesting when contrasted with earlier work on women in New Hampshire politics. Diamond (1977) attributes women's success in New Hampshire politics to a moralist political culture and to low levels of competition for legislative seats caused by the low prestige of the state legislature. She also notes that women legislators were primarily Republican. Our data show that, while this picture may have been accurate in an earlier time, there have been significant changes recently. In the 1970s a district's party leanings had no effect on female representation. By the late 1980s, however, women did distinctly better in Democratic districts. Carroll (1985) argues that, as Democratic party officials have become conscious of the gender gap, they have moved towards supporting issues that concern women and have tried to position themselves as the party of choice for women. The data in New Hampshire certainly supports that hypothesis. The data in both New Hampshire and North Carolina cast doubt on Rule's (1990) finding at the interstate level that Democratic dominance of legislatures is negatively correlated with female representation. We suspect the Rule finding is an example of an ecological fallacy.

We can now turn our attention to the effect of district magnitude. The regressions show that district magnitude has a strong and abiding positive effect on female representation throughout most of the period being considered. The effect shows up in the mid-1970s and runs through the 1980s. After female representation rose well over 20% and even broke the 30% barrier, district magnitude continued to be of statistical significance. For the third hypothesis, the life cycle theory of district magnitude, the data from New Hampshire provide only weak support. The size of the unstandardized regression coefficient does diminish over the 1980s, as the third hypothesis predicts, but the coefficient remains statistically significant even after women became a substantial proportion of the legislature.

One question that inevitably arises is, if our data analysis shows that district magnitude has a powerful effect in New Hampshire, why did Welch and Studlar fail to get similar results? A fairly direct explanation is that Welch and Studlar analyzed only one election year. That year, 1982, is the one election year in the past 16 years in which our data analysis shows that district magnitude failed to have a statistically significant effect. Why district magnitude was not significant in 1982 is hard to determine. When the results in 1982 are placed in the context of significant effects for several years both before and after, however, the finding for 1982 looks like random noise; the much stronger effect is the consistent finding that district magnitude matters. Methodologically the obvious point is that, even when hundreds of candidates are considered, a single election is still just one data point. Whenever possible, researchers should look at a number of elections to make sure findings are consistent and not idiosyncratic to the one year they are evaluating.⁸

Conclusion

This article set out to synthesize the inconsistent findings in the existing empirical literature on the effect of district magnitude on female representation in state legislatures. Four plausible hypotheses were suggested that reconcile these findings: 1) district magnitude had a spurious effect caused by its correlation with urban centers; 2) district magnitude had a positive effect only in traditionalistic political cultures; 3) the effect of district magnitude follows a life cycle, starting as insignificant, becoming significant as women start to gain access to the legislature, and then decreasing in importance as women became well established; and 4) district magnitude has a positive effect in those states where the parties have significant control over the recruiting of political candidates but not in states where the parties are weak. The results from North Carolina indicated that the effect of district magnitude was not caused by a spurious correlation with urbanization. The North Carolina results also showed that differences in political culture did not explain the differences in effect. With the first two hypotheses eliminated, we moved on to New Hampshire to test the third hypothesis. The New Hampshire results provided weak support for the third hypothesis, that the effect of district magnitude follows a life cycle.

We were unable to test the fourth hypothesis, but the New Hampshire results provided another explanation for the inconsistent results. That explanation is that the empirical results showing district magnitude had no effect were based on insufficient data.

Looking at this effect over a 22-year period in New Hampshire, we found that: in New Hampshire it is not weak; it is strong and consistent. Considered in conjunction with previous work, which showed a positive effect of district magnitude in West Virginia and Wyoming, the results from these two states provide us with something approaching a consensus. The preponderance of evidence stacks up on the side of district magnitude truly affecting the proportion of the state legislature that is female. This evidence is taken from states that differ radically from each other in culture, party dominance, and the number of women who have served. Yet, under all these radically varying circumstances, the effect of district magnitude holds up. Therefore, we are increasingly confident that specific policy recommendations can be based on this body of research. From a policy perspective, maintaining multimember districts at the state legislative level should help achieve the goal of more equitable representation of women.

While the focus of this paper has been on district magnitude, several other findings deserve mention. The North Carolina data provided some support, albeit weak, for a direct effect of political culture. The North Carolina data also provide some fairly strong evidence that women candidates do better in urban districts. While this conclusion is not supported by the New Hampshire results, the lack of support may be a function of the way urbanization is defined. The New Hampshire data suggest that more intrastate studies are needed to determine the effects of party. At present the literature shows a variety of effects. This study found that in New Hampshire by the 1980s women did best in Democratic districts; in North Carolina there were no differences between Republican and Democratic districts. Yet Rule's (1990) interstate study found a negative correlation between the Democratic vote and the percentage of women in the state legislature. The finding in New Hampshire that party competition is significantly related to female representation also deserves greater consideration. In looking at the findings for both states, we are struck by the clear changes over time. The 1980s show patterns of influence that are distinctly different from those of the 1970s. We agree with Nechemias (1987), who argues that there have been significant changes in the factors influencing women's access to state legislatures and that social scientists need to reevaluate theories of access. We would argue that reevaluation should place greater emphasis on institutional factors.

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NOTES

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1. The study found that party magnitude, the number of seats a party held, was a more powerful explanatory factor than district magnitude, the total number of seats in a district. While the difference between the two concepts can be important in a multiparty system, district magnitude and party magnitude are expected to be very highly correlated in the United States and therefore district magnitude will continue to be used.

2. This is a particularly good opportunity to test the effects of culture; in most studies traditional culture is confounded with being a southern state. The two are so highly correlated that it is usually impossible to extract what effects are caused by traditional culture and what effects are caused by other traits unique to southern states. By choosing one state with two cultures, the effects of southernness are held constant and one can get a better view of the effects of culture.

3. See Cohen and Cohen (1975, 254–59) for a more detailed discussion on transformations.

4. Cohen and Cohen suggest making a logit transformation of the dependent variable as a second possibility. Regressions run using this form did not materially change the results. Only the arcsine results are reported in the paper.

5. These data are taken from the State Legislative Election dataset collected by ICPSR.

6. Niemi, Jackman, and Winsky (1991) suggest that party dominance can be measured if pseudo-districts are created by matching candidates within a multimember district. This approach may be appropriate when the level of analysis is the individual candidate, but this study uses the district as the level of analysis. We have therefore chosen to pool the votes of all Democratic and Republican candidates to calculate these variables.

7. It had been our intention to use this control variable in North Carolina. When we studied our data, however, we found that there were serious problems of multicollinearity. The one-party nature of North Carolina politics became obvious when party competitiveness and the Democratic percentage of the vote were correlated at greater than .95 for most years. We therefore dropped party competitiveness from the North Carolina regressions. For New Hampshire the two measures are correlated at much lower levels, below .20 in 10 of the 12 elections and never above .45. Therefore, in New Hampshire, no problems of multicollinearity exist for these variables.

8. In Welch and Studlar's defense, we should note that our data analysis would not have been possible without the State Election Results dataset, which was not available when they were doing their study. Welch and Studlar had to go to the original data source and code data for all candidates in New Hampshire; all that information was readily available to us in the ICPSR dataset.

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