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SOUTH DAKOTA GAMING: A REGIONAL ANALYSIS

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Abstract. The referendum and initiative processes were used six times between 1982 and 1994 to address the issue of gaming in South Dakota. Four of the six votes resulted in pro-gaming outcomes. This study examines how and why voters in the state's sixty-six counties varied geographically in their levels of gaming support over time. Five different ways of regionalizing the state are advanced as possible explanations, and then analyzed using maps, analysis of variance tests, and eta correlation coefficients. The popular East River—West River cultural-political divide is found to serve as the best explanation of the geographical distribution of gaming support for only one of the six votes. The other five were better explained by regions delineated by Hogan in the Geography of South Dakota, or by voting regions derived inductively through principal components analysis in the present study.

Under pressure from the Populist movement, South Dakota in 1898 became the first to incorporate referenda and initiative processes into its state constitution (Hahn and Kamieniecki 1987). The Populists wanted referenda and initiatives to provide a broad avenue for lower-status citizens to become more involved in political decision-making (Hahn and Kamieniecki 1987). In practice, referenda and initiatives have most often been used to address issues which are so controversial that the South Dakota Legislature has been leery of acting as the sole decision-maker (Bachrach and Baratz 1970). One such issue is gaming. Gaming is one of the most controversial issues in South Dakota politics, as is evidenced by its placement on the public ballot six times since 1982. The circumstances and political climate surrounding these six referenda and initiatives have varied, with ballot questions ranging from legalizing gaming throughout the state to raising bet limits to one hundred dollars.

South Dakotans are known for seeing state politics as a struggle between those who live east of the Missouri River and those who live west of the Missouri River (Clem 1995) (Fig. 1). East River counties are generally considered less rural and less conservative than West River counties (McLaird
The East River versus West River split can be traced back to the organization of the states of North and South Dakota: "People around here will tell you they got it all wrong when they divided the Dakotas," said State Representative Gordon Pederson, a 'West River' man. 'It should have been West Dakota and East Dakota'" (Johnson 1988:28).

While the East River-West River divide remains a popular perception, study of the political geography of South Dakota reveals both similarities and differences in ideologies on either side of the Missouri River. Early radical tendencies reflected in support for the Populist and Progressive movements have "moderated considerably" (Clem 1967:7). While a few sections of liberal sentiments remain, these are found mostly on the Indian reservations and in two pockets in the northeastern and central parts of the state (Clem 1967) (Fig. 2). The state as a whole has become politically more
conservative with time (Schell 1961). Looking at South Dakota politics today, one pundit joked that "two strains of ideology compete for South Dakota voters: conservative and very conservative" (Johnson 1988:28). The East River region is known for being conservative, and the West River region is known for being very conservative (McLaird 1989).

Previous studies have questioned whether popular partisan votes in federal and state elections, roll-call votes in the South Dakota legislature, and even popular votes on some referenda and initiatives have split along an East River-West River division (Clem 1967, 1969, 1995; McLaird 1989). However, no previous study has followed a specific set of issues over time, to see whether an East River-West River cleavage or perhaps some other division is salient for all relevant votes. Several recent referenda and initiatives on gaming have created the opportunity for such an investigation.
Gaming Referenda and Initiatives

Ballot questions on gaming issues were presented to South Dakota voters in 1982, 1986, 1988, 1992, 1993, and 1994. The citizens of the state took a pro-gaming stance in four of the contests, and an anti-gaming stance in two of the contests (Table 1). The outcomes of these votes warrant attention with respect to levels of voter turnout, degrees of correspondence with county-level partisan affiliation, and geographical patterns of support and opposition.

The 1982 referendum would have legalized gaming statewide and allowed individual counties and municipalities to decide, with authorization from the legislature, whether they wanted gaming (South Dakota Proposed Constitutional Amendment D 1982). The decision was anti-gaming, with 40.2% of participating voters casting ballots in support, and 59.8% voting against the measure. This vote took place at the same time as the 1982 federal congressional election. The voter turn-out on Constitutional Amendment D was 59.7% of the registered voters. Little of the county-level geographical variation could be explained by county-level patterns of party affiliation. Indeed, a coefficient of determination of 0.089 indicates that only 8.9% of the county-level variance in support for Amendment D could be accounted for by county-level variation in Republican voter registration. As represented cartographically, the highest level of support for statewide gaming was found in the western and central parts of the state (Fig. 3).

The 1986 referendum brought the question of a state-run lottery, with the proceeds to be used “for any purpose the Legislature should choose” (South Dakota Proposed Constitutional Amendment B 1986). The vote on this Constitutional Amendment occurred in conjunction with the federal congressional election. The percent of registered voters who voted on the proposed amendment was 63.8%. The decision on the amendment was pro-gaming with 59.6% approval. Republicans again made up the bulk of registered voters (48.8%). But once again, party identification did little to account for gaming support. The variance in registered Republicans by county accounted for 5.6% of the variance in support for the state lottery. Voters in the Black Hills in western South Dakota were the strongest supporters of the measure (Fig. 4).

The purpose of the 1988 initiative was to legalize “limited card games and slot machines” in Deadwood in order to promote “historical restoration and preservation” of the town (South Dakota Proposed Constitutional Amendment B 1988). The vote on this initiative occurred in conjunction
TABLE 1
GAMING REFERENDA AND INITIATIVES

<table>
<thead>
<tr>
<th>Gaming Initiative or Referendum</th>
<th>State-wide Percent Pro-Gaming</th>
<th>State-wide Percent Voter Turnout</th>
<th>Election Type</th>
<th>State-wide Percent Registered Republican</th>
<th>County-level Determination: Gaming Support &amp; Republican Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982 Statewide</td>
<td>Anti-gaming</td>
<td>40.2</td>
<td>59.7</td>
<td>Congressional</td>
<td>47.0</td>
</tr>
<tr>
<td>1986 State Lottery</td>
<td>Pro-gaming</td>
<td>59.6</td>
<td>63.8</td>
<td>Congressional</td>
<td>48.8</td>
</tr>
<tr>
<td>1988 Deadwood</td>
<td>Pro-gaming</td>
<td>64.3</td>
<td>67.7</td>
<td>Presidential</td>
<td>49.2</td>
</tr>
<tr>
<td>1992 Video Lottery</td>
<td>Pro-gaming</td>
<td>62.9</td>
<td>73.6</td>
<td>Presidential</td>
<td>48.0</td>
</tr>
<tr>
<td>1993 Higher Limits</td>
<td>Anti-gaming</td>
<td>44.4</td>
<td>37.9</td>
<td>Special</td>
<td>48.1</td>
</tr>
<tr>
<td>1994 Video Lottery</td>
<td>Pro-gaming</td>
<td>52.7</td>
<td>72.4</td>
<td>Congressional</td>
<td>49.2</td>
</tr>
</tbody>
</table>
with the presidential election, thus resulting in a high voter turn-out on the
issue of 67.72%. The decision was pro-gaming with 64.30% in favor of the
initiative. However, only 6.9% of the variance in gaming support could be
accounted for by county-level variance in Republican voter registration.
Sixty-four of the state’s sixty-six counties had a majority in favor of Deadwood
gaming, with the highest levels of support for Deadwood gaming in the
extreme western and eastern parts of South Dakota (Fig. 5).

Most voters were unaware that they were also being asked to approve
gaming on Indian reservations in the state when the 1988 vote on Deadwood
gaming took place. Unbeknownst to most South Dakota voters, the United
States Congress had passed the federal Indian Gaming Regulatory Act just a
month before the vote on the initiative. Among other things, the Act asserted
the authority of tribes to regulate gaming activity on reservations if the state
in which a reservation is located “does not, as a matter of criminal law and public policy, prohibit such gaming activity” (25 U.S.C.A. 270 [5]). Hence, when South Dakotans approved card and slot gaming for Deadwood, they also voted unknowingly in favor of card and slot gaming on nine Indian reservations.

Claiming its authority to do so under the 1986 constitutional amendment which had authorized a state-wide lottery, the South Dakota Legislature enacted legislation to establish video lottery in 1989. In response, JoDene Joy, a woman from Miller, South Dakota, gathered enough signatures to put an initiative on the ballot with the goal of repealing “all statutory provisions authorizing video lottery games” (South Dakota Initiated Measure 4 1992). The vote on the initiative took place in conjunction with the November 1992 U.S. presidential election. Of registered voters, 73.6% cast
ballots on the proposed initiative. The decision was pro-gaming, with 62.9% voting against the repeal. Once again, party identification by county did little to predict gaming support. The variance in registered Republicans accounted for only 4.7% of the variance in gaming support. Most of the support for video lottery in 1992 was found west of the Missouri River (Fig. 6).

In 1993, actor Kevin Costner and his brother Dan, who already owned one casino in Deadwood, proposed building a multi-million dollar casino. At the time, the betting limits in Deadwood were set at $5. The Costners claimed that they could not afford to build the new casino unless the betting limits were increased to $100. The South Dakota Legislature approved the new limits and referred the issue to a public vote. In a special election, 37.9% of registered South Dakotans voted on whether to expand Deadwood gaming by increasing “the maximum limit per bet from $5 to $100” and by increas-
ing the number of gaming devices allowed in an establishment (South Dakota Referred Law 1 1993). The Attorney General’s explanation on the 1993 ballot made it clear that approval of this referred law would also increase bet limits and the number of gaming devices allowed in tribal casinos (South Dakota Referred Law 1 1993). The decision was anti-gaming with 55.5% voting against the measure. In this case, the percent of voters who were registered Republican explained almost none of the variance (0.1%) in gaming support. Citizens in the Black Hills virtually stood alone in support of higher bet limits (Fig. 7).

In June of 1994, the South Dakota Supreme Court ruled that the state-run video lottery was unconstitutional. The Court held that the 1986 constitutional amendment had not explicitly permitted video lottery. In response, the legislature proposed a constitutional amendment to authorize video lottery. The measure was presented to voters in the November 1994 congres-
Figure 7. 1993 vote on Deadwood bet limits.

sional election. Voter turn out on the proposed amendment was 72.4%. The decision was pro-gaming with 52.7% of the vote. It was the tightest vote yet on gaming. Once again, the variance in registered Republicans accounted for a low amount (9.5%) of the variance in gaming support. The highest level of support for video lottery in 1994 followed along the Missouri River and into Northwestern South Dakota (Fig. 8).

**Gaming Regions**

Historian Frederick Jackson Turner was one of the first to examine the political geographical divisions which spring from locational differences in political habits and material interests (Shelley and Archer 1984). Examination of numerous nineteenth and early twentieth century maps of voting
patterns revealed to Turner that “differences of geographical location, like those of material interest or status, can serve as independent sources of differences in political affiliation or allegiance” (Shelley and Archer 1984:8). Turner and others found regional differences in political culture that are resistant to change, and which have exerted lasting influences on popular election outcomes (Shelley and Archer 1989). However, most of the research by Turner and others has focused mainly on presidential elections, so that questions remain about locational patterns to be found for other types of contests, especially at state and local levels.

There have been assertions by journalists (Krantz 1993; Mercer 1993), academics (Clem 1967, 1969, 1995; Schell 1961; and McLaird 1989), and members of the general population (Johnson 1988) that many political issues in South Dakota are decided along an East River-West River divide.
Some observers have even asserted the existence of an East River-West River division specifically on gaming issues (Krantz 1993; Clem 1995; and Johnson 1988). However, these assertions seem to have been based more on casual observation than on systematic cartographic or statistical evidence. Are there two distinct views on gaming, one on either side of the Missouri River? Or are there other regionalizations which offer more effective geographical explanations of the distribution and intensity of gaming support in South Dakota?

Methodologically, data for territorial units usually must be used as the basis of analysis when examining voting outcomes for evidence of locational or sectional patterns. An investigation of gaming votes in South Dakota could use either precinct-level or county-level data. But voting precincts in the state have changed rather considerably over time, while the sixty-six counties have remained relatively stable in configuration. In addition, county-level data on party registration, voter turn-out, and gaming support were readily available from the South Dakota Legislative Research Council and the South Dakota Secretary of State. In contrast, precinct-level data would need to be gathered from each county one at a time. Counties were therefore chosen as the territorial units for this study. However, it might be that a similar study which used precincts as the base territorial units would derive differently bounded regions than those explored here. As a general rule, geographical research results are specific to a given scale of investigation.

**A Priori Regional Models**

A region can be defined as a homogeneous area based upon one or more criteria, including location, terrain, soils, vegetation, economics, human occupancy, culture, or politics. In order to understand how and why gaming support was distributed as it was throughout the state for each referendum or initiative, it is appropriate to test alternative regional partitions. By assigning each county and its respective voting data to a region, it is possible to assess generalizations about the geographical patterns associated with each vote. In effect, each alternative regionalization represents a specific testable hypothesis about how best to generalize the voting patterns. These comparisons should uncover how places differed in their gaming support over time. In addition, the comparisons could point to why counties differed in their support of gaming from vote to vote, keeping in mind that party identification could not account for those differences. To be sure, there are thousands of possible ways that the sixty-six counties of South
Dakota could be broken into regions. Some are more plausible than others, however. The remainder of this paper will explore five alternative regionalizations of South Dakota, two based on non-statistical a-priori methods and three based on inductive statistical methods. Statistical tests are used to assess the relative success of these alternative regionalizations as hypothesized explanations of the geographical distributions of gaming support on each of the six referenda and initiatives.

**East River-West River Regions**

When the 1993 referendum to increase bet limits in Deadwood failed in 1993, the Mayor of Deadwood blamed the referendum’s loss on the oppressive policies that the more populous East River has forced on the more rural West River. The Mayor proclaimed that “Obviously, we do dance to the east river tune” (Mercer 1993:A9). Some ordinary citizens of the state also noted an east-west divide. Donna Haefs, a waitress in Deadwood, described her own perception when she stated, “We think the East River people are snobs. And they think we’re rednecks” (Johnson 1988:28).

Alan Clem (1995) found in his study of the 1994 statewide elections that East River-West River confrontation was a “significant factor” in both the video lottery vote and in the congressional election which was held that November. Through further analysis in which Clem examined selected gubernatorial and congressional elections as far back as 1894 for potential differences between the East River and West River regions, Clem concluded that the East River-West River regionalization was not always stable:

To sum up the inquiry into East River/West River and Minnehaha/Pennington County differences as to party preferences in major statewide races, it may be said that differences appear occasionally but they are not large or persistent from one contest to another or from one time period to another. We do not find in South Dakota the level or consistency of difference that occur between recognized regions in some other states, such as New York, Illinois, Tennessee, Ohio, or California. Regional differences were notable in the early decades of statehood, seemed to decline to the point of disappearing in the middle decades of the Twentieth Century, and have returned in several key races for national offices and ballot issues in the 1980s and 1990s (Clem 1995:6).
If the East River-West River divide has not always been consistent in representational elections, can we expect that these regions have been consistently evident in gaming votes?

To test for significant differences between gaming support levels on either side of the Missouri River, a one-way analysis of variance test (ANOVA) was employed for each vote (Bryman and Cramer 1990; Taylor 1977). In the ANOVA tests, the levels of gaming support by county for a specific referenda or initiative was the dependent variable, while the East-West regionalization was the explanatory factor. The ANOVA tests uncovered highly significant differences in the mean votes between East and West River for all of the referenda and initiatives except the 1988 vote to legalize gaming in Deadwood. The high level of support for Deadwood gaming in 64 of the 66 counties could help explain why the East-West regionalization was not seen in this vote. Clem (1995) found that the East River-West River divide resurfaced in the 1980s and 1990s. This statistical evidence supports his conclusion that some important ballot issues such as gaming could in part be explained by the East River-West River divide.¹

**Hogan’s Regions**

It is tempting to look first for conspicuous physical landscape features which might serve as distinct cultural boundaries. While the Missouri River does emerge as an identifiable and statistically salient boundary, such a single-factor division can obscure important but more subtle geographical patterns. A more sensitive way to regionalize South Dakota might be to examine collectively the physiographic, economic, and human distinctions in the state. A somewhat impressionistic regionalization of South Dakota based on these features has been proposed by the State Geographer, Edward Hogan (1991, 1995).

Hogan divided the state into three regions, which include the Black Hills, the Great Plains, and the Agricultural Interior (Fig. 9). According to Hogan, each of these regions is unique and coherent. Physiographically, the mountainous landscape of the Black Hills is a stark contrast to more level and rolling topography of the rest of the state. The mountains are a sacred area to the Lakota Indians who once lived there, and now offer a wealth of mining opportunities to the miners who displaced them (Hogan 1995). Since the arrival of non-Indians to the Black Hills, the economy of this region has depended on mining, forestry, and tourism (Hogan 1995).
The Great Plains region in South Dakota has long been the home to many plains Indians (Hogan 1995). Most of this region was once part of the Great Sioux Reservation. At the turn of the century, non-Indian farmers and ranchers from the east and west coasts of the United States moved onto the Great Plains. The climate and soils of the Great Plains are not as fertile as those found to the east, and the economy of this region has therefore relied mainly on ranching and wheat production (Hogan 1995). Today, the American Indian population in South Dakota is highly concentrated in the Great Plains. The Rosebud, Pine Ridge, Lower Brule, Crow Creek, Standing Rock, and Cheyenne River Indian Reservations are all found in this region.

The eastern portion of South Dakota is on the western edge of the Agricultural Interior of the United States. The glaciation of this region during the Wisconsin Stage left behind rich soils (Hogan 1995). The main
cash crops have been “corn, soybeans, hay, oats, and rye” (Hogan 1995:162). Farming and ranching remain productive in the rural portions of this region, but the urban centers now have economies based more on manufacturing and commerce. The more diverse economy of the Agricultural Interior section of South Dakota hosts the state’s largest urban agglomerations, such as Sioux Falls and Aberdeen. The region also includes the Lake Traverse, Flandreau, and Yankton Indian Reservations.

Because Hogan’s regionalization looks beyond the river to the people, land, and economy of the state, it was theorized that his geographical partition might better explain the geography of voting behavior in the state. One-way ANOVA again was used for each vote as the dependent variable, with the Hogan regionalization acting as the factor. The tests revealed that the mean votes of the three regions were significantly different for all six gaming referenda and initiatives. For each, the F-value was statistically significant at the 0.01 or 1% level of confidence.

**Statistically-Derived Regional Models**

While regions can be derived visually or impressionistically, there are also analytical methods which can be used to help delineate regions. Political geographers have turned to a statistical technique called principal components analysis to let data speak for and regionalize itself. Archer and Taylor (1981) used principal components analysis to find voting regions in the United States in their book *Section and Party*. The regions inductively derived by statistically examining state-level presidential voting patterns from 1872 to 1980 divided the United States into the Northeast, the West, and the South (Archer and Taylor 1981). Since then, there have been other studies by political geographers which have employed principal components analysis to uncover voting regions using county-level election returns (Shelley and Archer 1984; Archer and Shelley 1986; Shelley and Archer 1989).

With principal components analysis, several interval level variables are reduced to a smaller number of underlying factors which together account for a large proportion of the original variance in the data. One type of principal components analysis, S-mode analysis, in effect examines variables for each territorial unit and groups territorial units which are most similar together. Each of these groups is called a factor. These factors can be mapped to reveal regions as groups of territorial units which are similar for those variables (Taylor 1977; Archer and Taylor 1981)
Social Status Regions

Hahn and Kamieniecki (1987) used the census measure of median housing value and found that social status was inversely related to support for gaming in several metropolitan settings. Support for gaming was higher in residential areas of lower social status. However, the mixture of urban and rural areas in South Dakota make the sole use of median housing value as an indicator of social status questionable. Instead, several variables which indicate social status were analyzed using an S-mode principal components analysis to derive social status regions. These variables for each county included percent employed in manufacturing, percent attaining a high school degree, percent below the poverty line, percent employed in service industry, percent employed in retail, percent attaining a college education, and median income (U.S. Department of Commerce 1990). The number of video lottery terminals per person per county was also included as an index of economic dependence on gambling.

S-mode principal components analysis yielded two factors which accounted for 96.6% of the total variance. The first factor accounted for 58.9% of the total variance. The second factor accounted for 37.7% of the total variance. Through S-mode principal components analysis, each county was assigned a factor loading value which describes how closely it is related to each of the mathematically derived regional factors. Each of the counties ends up loading highest on one of the two derived factors, so that the regions thus identified could be mapped (Fig. 10).

The counties which loaded highest on Factor 1 generally had diverse economies and relatively high levels of educational attainment. Most of these counties are located outside of the state’s Indian Reservations. Generalizations about an S-mode derived region can be made by examining the county which loaded highest on that regional factor. In this case, Lincoln County loaded the highest on Factor 1, with a squared loading of 0.972. That indicates that for the eight social status variables considered, 97.2% of the data variance for Lincoln County was accounted for by Factor 1. The people in Lincoln County are employed in a diversity of economic sectors, have a relatively high median income level ($28,543), and are relatively well-educated. The social status region defined by Factor 1 can be described as a Diverse Economy and High Education region.

Many of the counties which loaded highest on Factor 2 are within Indian Reservations. The county which loaded highest on Factor 2 was Todd County. Todd County is located on the Rosebud Indian Reservation. The
poverty rate there was 49.6% in 1990 and the median income level was only $13,327. The educational attainment level in Todd County was noticeably lower than that of Lincoln County. The counties identified by Factor 2 can be described as comprising a Relatively Poor region.

Since Hahn and Kamieniecki (1987) found that social status was inversely related to gaming support, such a hypothesis was tested for the six gaming referenda and initiatives in South Dakota. The notion that gaming in South Dakota is economically-related is not without foundation. Gaming has created jobs and brought money into the state’s economy. These effects were initially underestimated. Economists predicted that gaming in Deadwood would bring in 100 new jobs and $2 million in bets in the first year; in fact, Deadwood gaming resulted in 1,183 new jobs and $93 million in bets wagered in the first six months (Sioux Falls Argus Leader 1990).
Deadwood, gaming has improved some reservation economies and video lottery has brought wealth to individual investors.

An attempt was made in the social status principal components analysis to account for the dependence of a county’s economy on video lottery by including a variable which gives the number of video lottery terminals per person in the county. The greatest proportion of video lottery terminals were located in the most populated counties, Minnehaha and Pennington. Additionally, Union County, located just north of Sioux City, Iowa, had a high proportion of video lottery terminals. Thus, the urban areas of the state (all three mentioned here are part of Factor 1) have most likely benefitted more economically from video lottery than the rural areas.

In order to test whether the Social Status regions had exhibited different levels of gaming support, a series of ANOVAs was performed. The ANOVAs revealed that there were no significant differences between the mean gaming support of the two Social Status regions for five of the six votes. The exception was that in 1988 there was a significant difference in the mean level of support for Deadwood gaming between the two regions. But in contrast to the results of Hahn and Kamieniecki’s (1987) study, the mean level of gaming support by voters in the Relatively Poor region was actually 3% lower than the mean level of gaming support by voters in the Diverse Economy region. Hence, for five of the votes examined here, the two social status regions produced through principal components analysis did not differentiate significantly different levels of voter support on gaming issues, and in the remaining instance the relationship was exactly the opposite of that found in an earlier study.

Ancestral Regions

The first attempt to legalize gaming in South Dakota, a referendum in 1982, was met with a vehement reaction from the South Dakota Association of Christian Churches (Sioux Falls Argus Leader 1982). The pastor at the Christian Reformed Church in Sioux Falls was quoted as saying, “The Bible says games of chance don’t fit into the providence of God and how God will take care of us” (Walker 1982:A2). Based on religious and ethnic political cultures, gaming became a moral issue to some voters.

The state of South Dakota can be broken into ancestral regions based on religious affiliation and ethnic data. The data used in the S-mode principal components analysis included thirteen ethnic variables derived from the U.S. Census (U.S. Department of Commerce 1990), and twelve religious
variables taken from a Glenmary Research Center publication titled *Churches and Church Membership in the United States 1990* (Bradley et al. 1992) for a total of twenty-five variables. Each chosen ethnic and religious variable involved at least five percent of the population of at least one county.

Five factors which accounted for a total of 93.2% of the variance in the selected ancestral and ethnic data were derived through S-mode principal components analysis. Each of the sixty-six counties loaded highest on one of the five factors. The resulting groupings of counties were mapped as ancestral regions (Fig. 11).

Factor 1 accounted for 35.7% of the total variance. Analysis of the Factor 1 region was facilitated by looking at Kingsbury County, which loaded highest on Factor 1. The squared loading for Kingsbury County on Factor 1 was 0.909. In looking back at the original data, it was found that
51.4% of religious adherents in Kingsbury County were members of the Evangelical Lutheran Church of America (ELCA). There were twenty seven counties which loaded highest on Factor 1. In twenty of these twenty seven counties, most of the people were members of the ELCA. Adherence to the ELCA was the second most common in all of the other seven counties which loaded highest on this factor. In addition to membership in the ELCA, adherence to the United Church of Christ was also common among the counties with high loadings of Factor 1. These two churches are known for being more liberal than most Protestant churches. The population of Kingsbury County was also highly Norwegian. Based on these characteristics, the Factor 1 region was named a Protestant Norwegian factor.

Factor 2 accounted for 33.1% of the total variance in ancestral and ethnic data. The county which loaded the highest on Factor 2 was Sully County, with a squared loading of 0.767. In looking at the original data, the population of Sully County was 17.8% Catholic, 17% Missouri Synod Lutheran, and 18.7% United Methodist. Other ancestral and ethnic variables which were evident in the Factor 2 region included membership in the Reformed Church in America and in the Christian Reformed Church, as well as Irish, German, Dutch, and Hutterite ancestral ties. After examining these features, Factor 2 was named as a Conservative factor.

Factors 3, 4, and 5 were more difficult to interpret than the first two. Many counties associated with these factors are located in or near Indian reservations. Factor 3 included eight counties with high populations of Catholic adherents. Todd County, on the Rosebud Reservation, had the highest squared loading on Factor 3, or 0.943. Todd County was 52.1% Catholic. Factor 4 included three counties, all of which had relatively high proportions of Catholic adherents. Mellette County, which used to be part of the Rosebud Reservation, had the highest squared loading on Factor 4, 0.567. Mellette County was 16.9% Catholic. Factor 5 had two counties which loaded highest. Ziebach County, located within the Cheyenne River Reservation, had the highest squared loading on Factor 5 (0.450). In 1990, Ziebach County had a population that was 16.7% Catholic and 15.1% Episcopalian. Corson County, the other county that loaded highest on Factor 5, is within the Standing Rock Reservation and had a population that was 33.7% Episcopalian and 29.3% Catholic in 1990. Aside from religious data, there were some differences in the proportion of non-Indian ethnicities among these three factors. Corson County had a large, 36%, German population, where 20% of the population of Mellette County was German, and only 8% of the population in Todd County had German heritage. Even though small
differences such as these were evident, it was still difficult to make distinctions among these three factors. Relevantly, Rummel (1970:477) has noted that some of the smaller factors derived through principal components analysis can be strange and “difficult to interpret,” perhaps as a result of random sampling error or missing data. Because no data were missing, the distinctions among these three factors perhaps were due to somewhat haphazard locational associations among less numerous ethnic backgrounds.

The next step was to test whether these ancestral regions could be used to help explain the geographical patterns of variations in gaming support. One-way ANOVAs again were employed, with ancestral regions as the independent or explanatory categorical variable and the levels of gaming support were treated as the dependent variables. For five of the six referenda and initiatives there were no significant differences in the mean levels of gaming support among the ancestral regions. Only the 1994 vote in support of video lottery had significant differences in gaming support means among the ancestral regions. Even in that case, however, the F-value was significant only at the 0.05 or 5% critical level. Hence, the statistically derived ancestral regions did little to explain the distribution of gaming support at county-level.

Voting Regions

Since neither the social status regions nor the ancestral regions were very effective in explaining differences in the mean levels of gaming support for the referenda and initiatives, the votes themselves were used as regionalizing indicators. It was anticipated that regionalizing the votes could help uncover underlying political sections, as implied by Archer, Shelley, and Taylor (Archer and Taylor 1981; Archer and Shelley 1986). Following their work, it is possible to envision a graph of gaming support levels over time for each of the sixty-six counties. Through principal components analysis, these graphs are conceptually assigned to piles so that the counties in a given pile are similar to each other in their fluctuation in gaming support over time. Each of these piles can be seen as a factorial region. In this case, four piles or regional factors were derived.

As a caution, the small number of votes used in the rotated principal components analysis was worrisome since principal components analysis is usually not recommended for so few cases (Taylor 1977). However, in this instance all relevant popular votes were included, so that there was no reasonable correction for the relatively small size of the data set.
The four factors together accounted for 98.35% of the total variance. The highest loading for each county was then mapped (Fig. 12). Factor 1 accounted for 40.26% of the variance. The county which had the highest squared loading on Factor 1 was Minnehaha County, with a squared loading of 0.887. An inspection of the original data was necessary to understand the trends in voting over the six votes for Minnehaha County (Fig. 13). Voters in the county did not support the 1982 legalization of gaming, the 1993 increase in bet limits, or the 1994 vote to legalize video lottery. The county had a high level of support for the 1986 vote on the state lottery, the 1988 vote for gaming in Deadwood, and the 1992 vote for video lottery. The other counties in the first factorial region had similar fluctuations in gaming support.

Based on the assumptions that low levels of gaming support were related to moral concerns or deleterious gaming experiences and that high
levels of gaming support were related to state revenue, economic benefit or entertainment value, the 1982, 1993, and 1994 gaming votes were moral issues for voters in Minnehaha County, while the 1986, 1988, and 1992 gaming votes were state revenue issues. The 1982 vote was most likely perceived as a moral issue because it would have legalized gaming statewide, which was probably too much for voters in Minnehaha County. The 1986 vote in favor of a state-run lottery was probably seen by Minnehaha County voters as a morally acceptable level of gaming and an effective way to generate revenue for the state. The 1988 vote to legalize gaming in Deadwood was probably seen by these voters in the same light. The 1992 vote on video lottery was supported by 56.8% of the population in Minnehaha County, compared to the 1994 vote on video lottery in which only 45.5% of the county supported video lottery.

This change over two years did not happen only in Minnehaha County. In 1992, 62.9% of the entire state voted in favor of video lottery. In 1994, only 52.7% of the voters in the state favored video lottery. Based on computation of the coefficient of determination between the 1992 and 1994 video
lottery votes, support for gaming in 1992 accounted for 71.8% of the variance in support for gaming in 1994. This high correlation highlights a statewide decrease of about 10% in video lottery support between 1992 and 1994. In two years, the essence of the video lottery issue evidently changed for counties that loaded highest on Factor 1. Between the 1992 vote and the 1994 vote, Minnehaha County considered increasing bet limits in Deadwood in 1993 and overwhelmingly decided against the increase (only 38.94% voted in favor of higher limits). The low level of gaming support in 1993 points to the conclusion that the higher bet limits exceeded a morally “acceptable” level of gaming and possibly a morally “acceptable” geographic extent since Indian reservations were included. Factor 1 was thus descriptively called a State Revenue/Moral factor.

Factor 2 accounted for 30.3% of the total variance. Corson County loaded highest on Factor 2, with a squared loading of 0.754. Corson County is a rural county in west river South Dakota on the Standing Rock Sioux Indian Reservation. The voters of Corson County voted in favor of the state lottery, gaming in Deadwood, and video lottery in both the 1992 and 1994 votes. They voted against the legalization of gaming statewide in 1982 and against the increase in bet limits in 1993. These voting trends are especially interesting on the video lottery issue because Corson County had high levels of support for video lottery in both 1992 and 1994, 63.5% and 69.8% respectively.

The population in the counties which loaded highest on Factor 2 most likely perceived the 1982 and 1993 votes as moral questions. The population in these counties may have perceived gaming in the other years as an entertainment or economic development issue. The high level of support for video lottery in both 1992 and 1994 could mean that residents of these rural counties are attracted to video lottery for entertainment or that the economies of these counties have improved from increased tourism to the Black Hills, jobs to facilitate the video lottery industry, and gaming on reservations. Hence, Factor 2 descriptively was called an Entertainment/Economic factor.

Factor 3 accounted for 17.4% of the total variance. The county which loaded highest on Factor 3 was Shannon county with a squared loading of 0.986. Shannon County is a rural county on the Pine Ridge Indian Reservation in western South Dakota. The voters of Shannon County took the pro-gaming stance in six referenda and initiatives at a level higher than 50%. Although the level of support for video lottery decreased from 68.7% in 1992 to 57.3% in 1994, the county still had a majority taking the pro-gaming stance. Shannon County also supported higher bet limits in Deadwood in
1993 with 68.0% support. The consistently high levels of gaming support in these counties was most likely related to economics. The counties loading highest on Factor 3 are located right around the Black Hills. Perhaps the increased tourism in these counties stemming from gaming in the Black Hills pushed the voters in these counties to assume a pro-gaming stance. This factor was called a Pro-Gaming factor, since the counties loading on this factor even supported statewide legal gaming in 1982.

Factor 4 accounted for 10.5% of the total variance. There were only three counties that loaded highest on Factor 4. Edmunds County loaded the highest with a squared loading of 0.580. Edmunds County had a low level of support for statewide gaming in 1982 (36.8%) and for the state lottery in 1986 (35.4%). The voters of Edmunds County voted in favor of Deadwood gaming in 1988 (57.1%) and the video lottery in 1992 (58.5%). In 1993, 41.3% of the voters supported increased limits in Deadwood, and in 1994, 49.5% of the voters supported video lottery. This factor was the most difficult to interpret. Gaming seemed to be a moral issue in 1982 and even in 1986 on the state lottery. The level of gaming support increased in 1988 and 1992 and decreased again in 1993 and 1994. The three counties loading highest on Factor 4 were against gaming, then decided to try it, and then decided it was not worth it. Descriptively this factor could be called a Tried It/Did Not Like It factor. The interspersion of these three counties in eastern South Dakota created no clear pattern or region. These counties may have a variable in common that was not considered in this analysis, such as activism by an energetic concerned citizen. JoDene Joy, who spearheaded anti-gaming efforts in South Dakota, resides in Hand County which is within the Factor 4 region.

In looking at this voting regionalization, the inclusion of the Black Hills counties of Pennington and Custer in the State Revenue/Moral region rather than in either the Entertainment/Economic region or the Pro-Gaming region stood out. Examination of the rotated factor solution revealed that the loadings of these counties on the State Revenue/Moral factor were not that much higher than their loadings on the Entertainment/Economic factor. In addition to Pennington and Custer, other counties stood out. Some counties which consistently voted against all gaming were included in the State Revenue/Moral region. For instance, Douglas County, which in each vote had one of the lowest levels of support for gaming, loaded highest on the State Revenue/Moral factor. Examination of the voting pattern of Douglas County confirmed that gaming support fluctuated much the same way as support in Minnehaha County did. Douglas County, with a population which
is predominately Dutch and mainly adheres to the Reformed Church of America and the Christian Reformed Church, had its highest levels of gaming support for those referenda that were related to raising state revenue (the 1986, 1988, and 1992 votes) and its lowest levels of support for the votes that were related to moral issues (the 1982, 1993, and 1994 votes).

Despite the fact that caution needs to be used when performing principal components analysis with so few cases, the results of this S-mode principal components analysis were at the very least interesting. Each of the four regions displayed unique fluctuations in gaming support.

These regions were tested to see if there were significant differences in the mean level of gaming support among these regions. A series of ANOVAs were again employed. For four of the votes (1986, 1992, 1993, and 1994), the mean differences among the voting regions were highly significant at the 0.01 or 1% level, and for a fifth vote (1982) the mean differences were significant at the 0.05 or 5% level. Much like the other four regionalizations, these voting regions did not uncover significant differences among the mean levels of gaming support for the 1988 vote on Deadwood gaming.

**Eta Correlation Analysis**

Although ANOVAs showed whether or not there were significant differences in the mean votes of two or more regions, the ANOVA results did not directly identify the proportion of the variance in gaming support that was accounted for by a given regionalization. For this purpose, squared eta correlation coefficients can be used to indicate the proportions of variance statistically explained by the alternative regional divisions. The eta coefficient is appropriate when a dependent variable is measured on an interval scale, such as percent support for gaming, and an independent variable is measured on a nominal or ordinal scale, such as region (Bryman and Cramer 1990). When an eta correlation coefficient is squared, that value can be interpreted as “the proportion of the total variability in the dependent variable that is accounted for by variation in the independent variable” (SPSS for Windows 1995).

The squared eta coefficients help to show which of the five proposed regionalizations accounts for the most county-level variance associated with each referendum or initiative (Table 2). County-level variation in voter support for the failed 1982 referendum to legalize gaming statewide was best accounted for by Hogan’s regions, as indicated by a squared eta coefficient of 28.7%. The map showing the distribution of support for this referendum
indicated one cluster of high support in the Black Hills as well as another cluster of high support in the Great Plains region, which helps to account for why the squared eta coefficient for Hogan’s regions is much larger than that for the East River-West River division. The lowest levels of support in 1982 were in the Agricultural Interior. The Social Status and Ancestral regionalizations were the weakest in attempting to account for the 1982 results.

The voting regions were found to account for the most variance, 24.7%, in the approved 1986 referendum for a state-run lottery. The counties in the State Revenue/Moral region showed high levels of support for the state lottery, with an average of over half the voters supporting the measure. The counties in the Entertainment/Economic region also had relatively high levels of support. However, voters in counties within the Pro-Gaming region supported the measure with nearly two-thirds of their votes. Social Status and Ancestral regionalizations were least effective in accounting for the 1986 referendum.

By a substantial margin, Hogan’s regions accounted for the most variance, 19.5%, in voter support for the approved 1988 initiative on Deadwood gaming. In this case, the highest level of approval, by an average of two-thirds of voters, was found in the Black Hills region. The Agricultural Interior also had a high average level of support. There was majority approval even in the Great Plains region which averaged the lowest level of voter approval. None of the other four regionalizations could account for more than 7.3% of the variance in approval of the Deadwood gaming initiative. But even the Hogan’s regions division failed to account for as much as one-fifth of the variance. These statistical results likely were prompted by the rather uniformly high level of support for the Deadwood measure throughout the state.

From among the tested regionalizations, the successful 1992 initiative in support of video lottery was most strongly patterned according to an East River-West River cleavage, according to the squared eta coefficients. The East River-West River regionalization accounted for 42.2% of the county-level variance in voter support for video lottery. Indeed, the map of the 1992 vote suggests a rather clear break along the river. On average, nearly seven in ten voters west of the river supported the measure, compared with an average of about six in ten east of the Missouri River. Hogan’s regions and the Voting regions were also rather effective in summarizing the patterns of voting on the video lottery measure, with the Social Status regions and the Ancestral regions once again performing poorly.
### TABLE 2
SQUARED ETA CORRELATION COEFFICIENTS: PRO-GAMING VOTES AND REGIONAL DIVISIONS

<table>
<thead>
<tr>
<th>Gaming Initiative or Referendum</th>
<th>East River-West River</th>
<th>Hogan's Regions</th>
<th>Social Status</th>
<th>Ancestral Regions</th>
<th>Voting Regions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982 Statewide</td>
<td>0.186</td>
<td>0.287</td>
<td>0.009</td>
<td>0.094</td>
<td>0.118</td>
</tr>
<tr>
<td>1986 State Lottery</td>
<td>0.147</td>
<td>0.216</td>
<td>0.010</td>
<td>0.031</td>
<td>0.247</td>
</tr>
<tr>
<td>1988 Deadwood</td>
<td>0.008</td>
<td>0.195</td>
<td>0.073</td>
<td>0.064</td>
<td>0.073</td>
</tr>
<tr>
<td>1992 Video Lottery</td>
<td>0.422</td>
<td>0.292</td>
<td>0.018</td>
<td>0.121</td>
<td>0.350</td>
</tr>
<tr>
<td>1993 Higher Limits</td>
<td>0.388</td>
<td>0.513</td>
<td>0.001</td>
<td>0.082</td>
<td>0.421</td>
</tr>
<tr>
<td>1994 Video Lottery</td>
<td>0.315</td>
<td>0.248</td>
<td>0.040</td>
<td>0.166</td>
<td>0.426</td>
</tr>
<tr>
<td>Average Squared Eta</td>
<td>0.244</td>
<td>0.292</td>
<td>0.025</td>
<td>0.093</td>
<td>0.273</td>
</tr>
</tbody>
</table>
Regarding the failed 1993 referendum to increase bet limits in Deadwood, a weighty 51.3% of the variance in support—or rather opposition—to the measure was accounted for by Hogan's regions. Although the much discussed East River-West River divide accounted for 38.8% of the variance, it is apparent that Hogan’s regions offer a decidedly more effective statistical explanation of the county-level voting pattern. On average, voters in the Black Hills supported the measure with six in ten of their votes. But average support levels were under five in ten voters in both the Great Plains and in the Agricultural Interior. Indeed, the average level of opposition reached nearly six in ten voters in the skeptically resistant eastern Agricultural Interior region of the state.

The 1994 referendum on video lottery was the most closely contested of the approved measures, being adopted by barely 52.7% of the state-wide vote. In addition, the pattern of voter support for this measure was rather weakly configured along an east-west axis, since the East River-West River and Hogan’s regions divisions were able to account for only 31.5 and 24.8% of the variance, respectively. The Voting regions derived via principal components analysis proved the most effective, accounting for 42.6% of the county-level variance in voter approval of the 1994 video lottery measure. The highest levels of voter support were in the Entertainment/Economic and the Pro-Gaming regions, where an average of about six out of ten voters approved of the measure. In contrast, the support level was barely five out of ten in the more resistant State Revenue/Moral region as described above.

**Conclusion**

Overall, the Social Status and the Ancestral regions must be deemed to have been generally unsuccessful as attempts to statistically describe county-level patterns of gaming support in South Dakota. Over the six measures, the Social Status regions explained an average of less than 3%, and the Ancestral regions explained an average of less than 10% of county-level variance. The other three regionalizations were more successful, though it is notable that the popular East River-West River cleavage turned out to be somewhat weaker than the two remaining regionalizations. The East River-West River divide was the best in the case of the 1992 video lottery vote, and averaged 24.4% of variance explained overall. The Voting regions division, which was derived inferentially from the voting patterns themselves via principal components analysis, was the best in the cases of the 1986 state lottery and the 1994 video lottery votes, and explained an average of 27.3% of variance for all six contests. The strongest overall performance was offered by Hogan’s
regions, which proved to be best as an explanation of the votes on three occasions, in 1982, 1988, and 1993, and which accounted for the highest average of 29.2% of variance explained for all six votes considered at once.

Hence, a geographical division of the state into a western Black Hills region, a central Great Plains region, and an eastern Agricultural Interior region emerges as a better overall general description of issue voting in South Dakota than the more commonly noted East River-West River division. Nevertheless, the East River-West River cleavage was discernable. By implication, voting variations indeed tend to differentiate east Dakota from west Dakota. But in the central portion of the state, the Missouri River seems to oscillate between dividing or unifying roles in relation to the interests, attitudes, and ballot behavior of voters. On some occasions, the Missouri River is indeed the most conspicuous line of demarcation in the state's politics. But on other—and seemingly more frequent—occasions, voters near but nevertheless on either side of the river tend to agree more among themselves than with voters further to the east or further to the west. In a sense, then, there are two major sets of competing geographical cleavages in South Dakota: a two region, East River-West River cleavage; and a three region, Black Hills-Great Plains-Agricultural Interior cleavage. In any given instance, the outcome of a referendum or of an initiative can hinge on the geographically more general question of which of these cleavages best describes how the voters line up on election day.

The East River-West River explanation is probably too entrenched in the minds of South Dakotans to simply disappear. As Donna Haefs, a waitress from Deadwood, asserted “‘Brothels, waste sites, you name it, those East River people vote against everything’” (Johnson 1988:28). But the overall outcome may depend far more on whether the voters in the center of the state clench fists or join hands along the shores of the Missouri River.

Acknowledgments

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Notes

1. Some analysts of South Dakota politics argue that the East River-West River divide is broken along the James River, near the 100th meridian, instead of along the Missouri River. Considering that argument, I ran ANOVAs for each of the votes with the James River regions as the factor. While some of the F-values with the James River regions were highly significant (1992, 1993, 1994) and one was significant (1982), the Missouri River regions were more significant. The James River regions were only a better predictor ($F = .674$) for the 1988 Deadwood vote than the Missouri River regions ($F = .510$) for that vote. Nonetheless, neither of these F-values was a significant predictor for the 1988 Deadwood vote. As a result, I did not consider the James River regions within the text of this study.

2. S-mode principal components analysis was used three times in this study. In all three cases, the matrix was transposed so that the sixty-six counties became the variables instead of the cases. Each of the analyses underwent varimax rotation of components with eigenvalues greater than one. Only the third analysis of voting regions wavered from this methodology. In that case, five factors were derived initially, but since no county loaded highest on the fifth factor S-mode analysis was recomputed with only four factors, following suggestions by Rummel (1970).

3. The religious variables included were: Baptist General Conference, Catholic Church, Christian Reformed Church, Evangelical Lutheran Church of America, Episcopal Church, Missouri Synod Lutheran Church, Hutterian Brethren, Presbyterian Church, Reformed Church in America, United Church of Christ, United Methodist Church, and the Wesleyan Church. The ethnic variables included were: German, Irish, Norwegian, Polish, Swedish, American, Hispanic, Czechoslovakian, Danish, Dutch, English, Unclassified, and Other. The last two categories were included because in some counties of the state there has been enough intermarriage among ethnic groups to make classification impossible or too complex to reduce to one ethnic group.

References


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