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ECONOMIC BASE OF PENNINGTON COUNTY, SOUTH DAKOTA

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Introduction

This report provides demographic information and basic economic analysis for Pennington County, South Dakota. The information provided here is meant to provide useful background information for policy analysis and planning at the local level. It should be noted however, that additional information related to other factors in the community such as quality of life, environmental and social factors cannot be captured at this level of analysis. Additional information from the local community should be used along with the analysis presented here should be used to develop future policies that would be most useful.

The first section of this report provides basic background and demographic information about Pennington County, South Dakota. This information comes primarily from federal government data sources. This is followed by regional economic analysis of the county including a location quotient analysis, a shift-share analysis and information from an input-output model.

Background and Demographic Information

Population and Households

Pennington County is one of the most populous counties in South Dakota. The county's population has been growing at a relatively steady rate since the 1920s. Population growth can often have an effect on local economic growth and planning at the local level, making these trends important considerations for county-level planning. Demographic trends may also affect future growth and may influence future planning efforts. This section provides information on current population and demographic information along with historic trends for the county.

Historically, the population of Pennington County has been increasing from the 1920s until today (Figure 1). Population growth was considerable in early decades, particularly between 1920 and 1970. More recent population growth has been somewhat slower than in the early years, with 9 percent growth between 1990 and 2000, and an additional 7 percent growth between 2000 and 2006. Population growth

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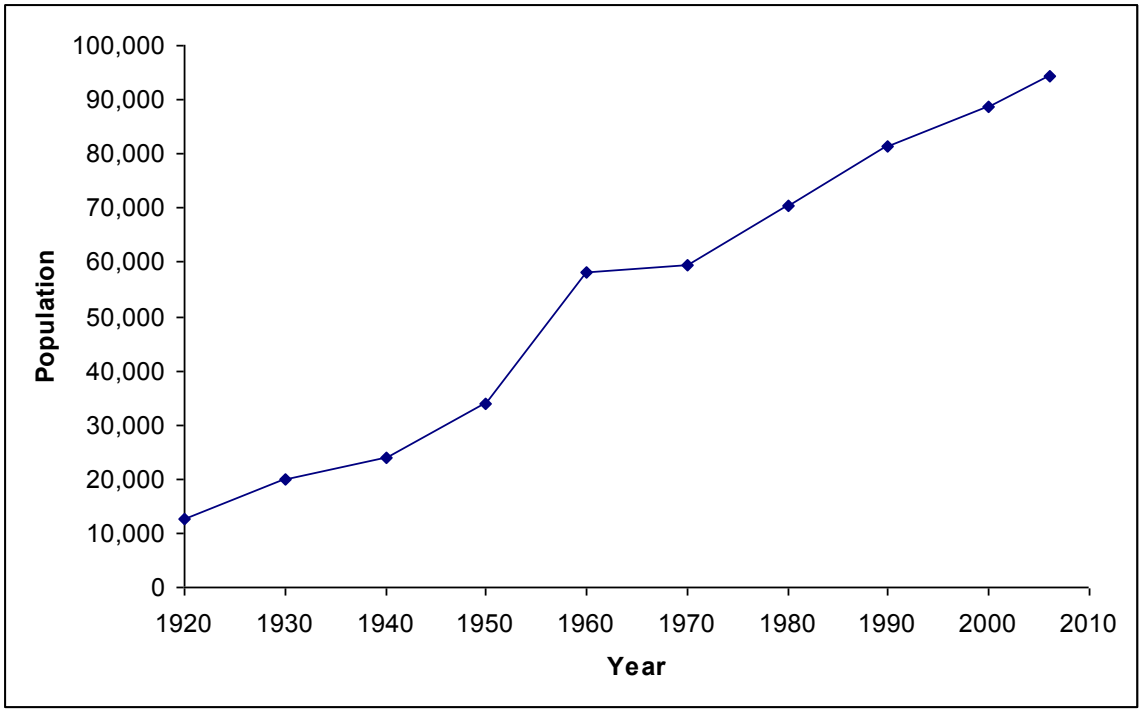

Figure 1: Historic Population Data for Pennington County, South Dakota,

in Pennington County has been greater than the average for the state of South Dakota and for the United States. The estimated population of Pennington County in 2006 was 94,338, up from 88,565 in 2000 and 81,343 in 1990. Based on 2001 data, Pennington County was the second largest county in South Dakota counties in terms of total population size (US Census Bureau 2001).

The population of Pennington County has been ageing in the last few decades. The median age of a county resident increased from 30.1 in 1990 to 35 in 2000. As shown in Figure 2, although the under 20 age group makes up a larger percentage of the population than the other age groups, the growth rates of baby boomers (age 40-54) and those over 65 are much larger than the younger age group. Between 1990 and 2000 the population under 20 years grew by 1 percent, while the 40-54 and 65 and over age groups grew by 56 and 29 percent, respectively. Although the under 20 age group still makes up a large portion of the population, the high population growth rates for baby boomers should be noted as they will necessitate additional planning for older age groups in the future.

According to the 2000 United States Census, the population of Pennington County was 86.7 percent white, 8.1 percent American Indian or Alaska native, 2.7 percent two or more races, with all other racial categories made up less than 1 percent of the total county population. Hispanic or Latino residents made up 2.6 percent of the total county population.

Twelve percent of Pennington County residents age 25 and over do not have a high school diploma, and 25 percent have a college degree or higher (U.S. Census Bureau 2000). Eight percent of county residents have an advanced degree (Master's, professional school or Doctoral degree). The education levels for Pennington County are slightly higher than those for the state of South Dakota, which indicate that 15 percent of state residents over 25 do not have a high school diploma, 22 percent have a college degree or higher and 6 percent have an advanced degree.

There were 34,641 households in Pennington County in the year 2000, with an average of 2.49 people living in each household. Recent estimates indicate that there were 42,208 housing units in the county in 2007. The home-ownership rate in Pennington County was 66.2 percent in the year 2000, which was slightly lower than the rate for South Dakota as a whole at 68 percent. The median value of owner-occupied units in 2000 was $90,900, compared to $79,600 for the state of South Dakota. Rental units (occupied or for rent) made up

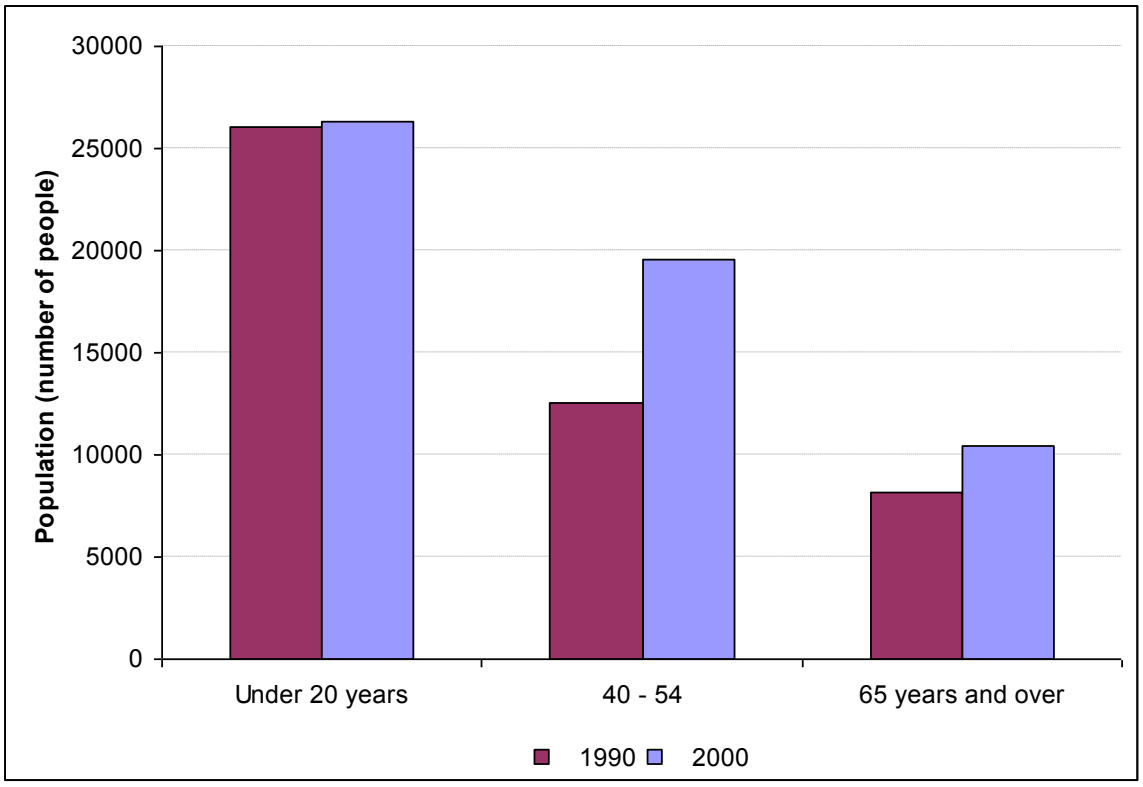

Figure 2: Pennington County Population by Age Group, 1990 and 2000

33.6 percent of total housing units in the county, with a median gross rent of $497.

Employment

Both the type and level of employment in an area can have significant implications for economic development. Unemployment rates and levels of seasonal employment can give an indication of the level of job growth that might be needed in the future. In addition, information about sectoral trends in employment provide information about an area's employment diversity which might indicate economic vulnerability if particular sectors were to experience an economic downturn.

Total full and part-time employment in Pennington County has risen somewhat steadily over the years, increasing from 30,223 in 1969 to 63,428 in 2006. There was a small decrease in employment in the early 1980s. Another decrease occurred between 2000 and 2001, with a drop from the historically high employment level of 66,997 in 2000 to 60,095 in 2001. Over the 37 year period, Pennington County has seen a net increase of 33,205 jobs, with all of this growth coming from wage and salary employment (US Bureau of Economic Analysis 2009). The average annual rate of employment growth over the period was 2.1 percent.

The unemployment rate in Pennington County in 2006 was 3.1 percent, very close to South Dakota's unemployment rate of 3.2 percent, and lower than the US unemployment rate of 4.6 percent. Most workers in Pennington County worked year-round, with 65 percent of workers employed 50 to 52 weeks per year. Of the county residents that worked in 1999, 77 percent were full-time (worked 35 or more hours per week). These statistics seem to indicate that seasonal jobs and the fluctuation in this type of employment is not a significant concern in Pennington County.

Figure 4 shows the top ten NAICS sectors in terms of generating employment in Pennington County. Government and government enterprises make up 17 percent of total county employment, followed by retail trade with 14 percent, health care and social assistance with 13 percent, and accommodation and food services with 11 percent. Other sectors that make up less than 10 percent of total employment include construction with 8 percent, manufacturing and other services, each with

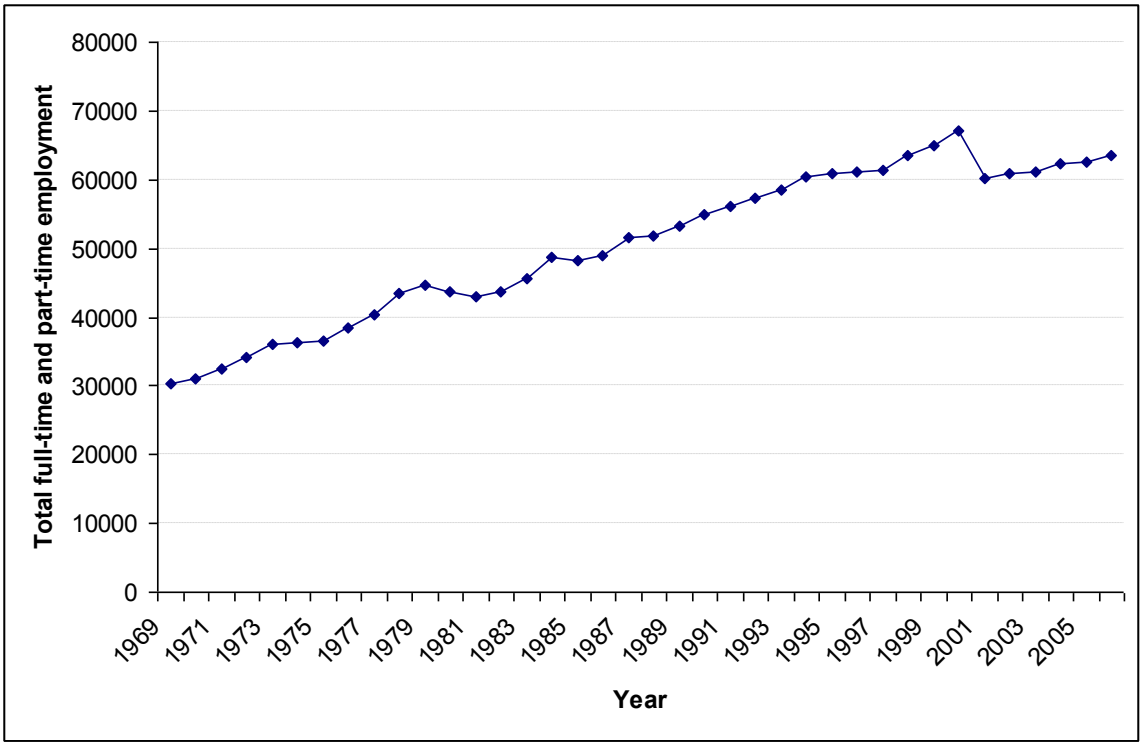

Figure 3. Pennington County full and part-time employment, 1969-2006

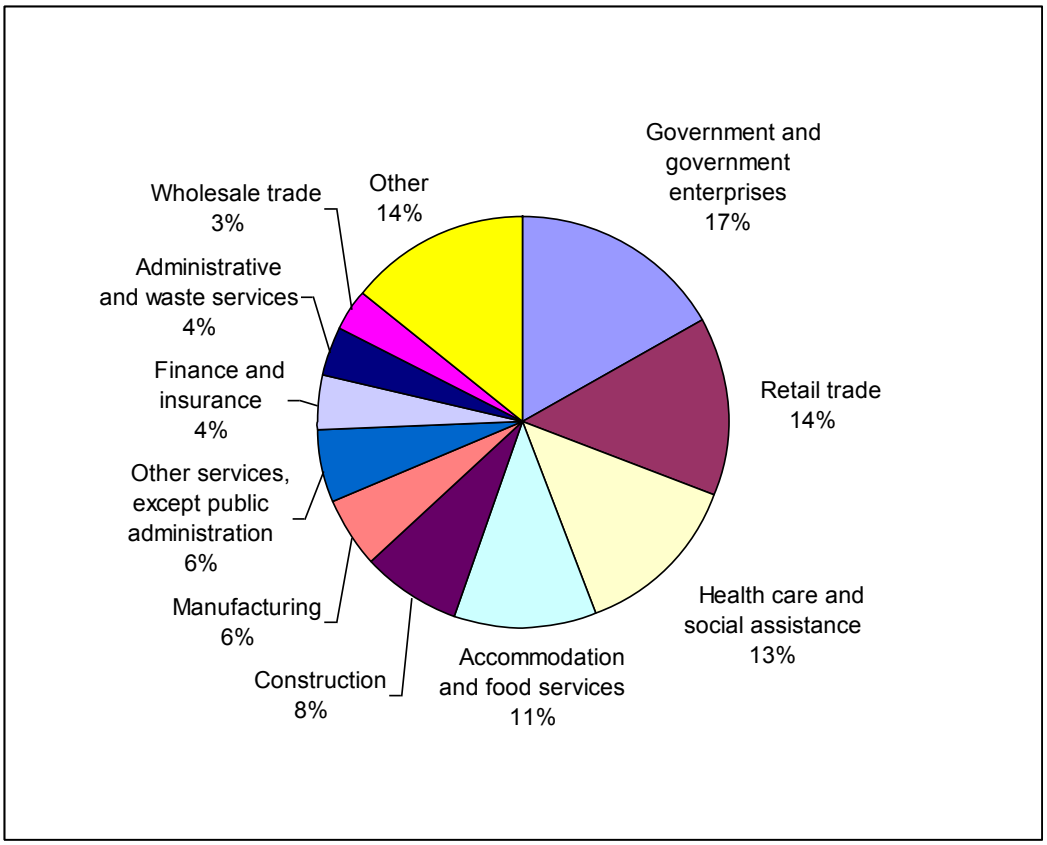

Figure 4. Top ten NAICS sectors for full and part-time employment

6 percent, finance and insurance, and administrative and waste services, each with 4 percent, and wholesale trade with 3 percent. As indicated by these statistics, services and related jobs tend to be the largest employers in Pennington County, with construction and manufacturing making up the largest percentage of non-service employment.

The economy of Pennington County is somewhat diverse compared to counties across the United States. The index of specialization, which measures the degree of specialization in an area, was 822 for Pennington County compared to 961 for the United States (a larger number indicates a greater level of specialization in the county economy).

Commuting

Most residents of Pennington County remain in the county for work, with 95 percent of all county residents working within the county. Around 3 percent of county residents work from home. Ninety-three percent of residents commute to work by automobile, with only 10 percent of those carpooling and the remaining 83 percent driving alone. Two percent of county residents walked to work.

Income

Income levels help to give an idea of the general well-being of residents in the county. Per capita and median household income levels can help to give an idea of the average economic well-being; they are unable to provide information about distribution of income. We provide several measures of local personal and household income in this section to give a better idea of economic well-being in Pennington County.

Per capita personal income in Pennington County was estimated at $33,478 in 2006, slightly higher than the state of South Dakota at $32,030, and slightly lower than the United States average of $36,714. Historically, per capita personal income in Pennington County has increased over time (Figure 5). Per capita income rose from $17,353 in 1969 to $33,478 in 2006 (historic income figures are given in 2006 dollars). Annual growth in per capita income was generally larger early in the period, with larger growth rates in the 1970s and lower growth in the 1980s. Growth picked up slightly in the mid-1990s and has slowed again in recent years.

Total personal income, measured as private earnings plus income from government and government

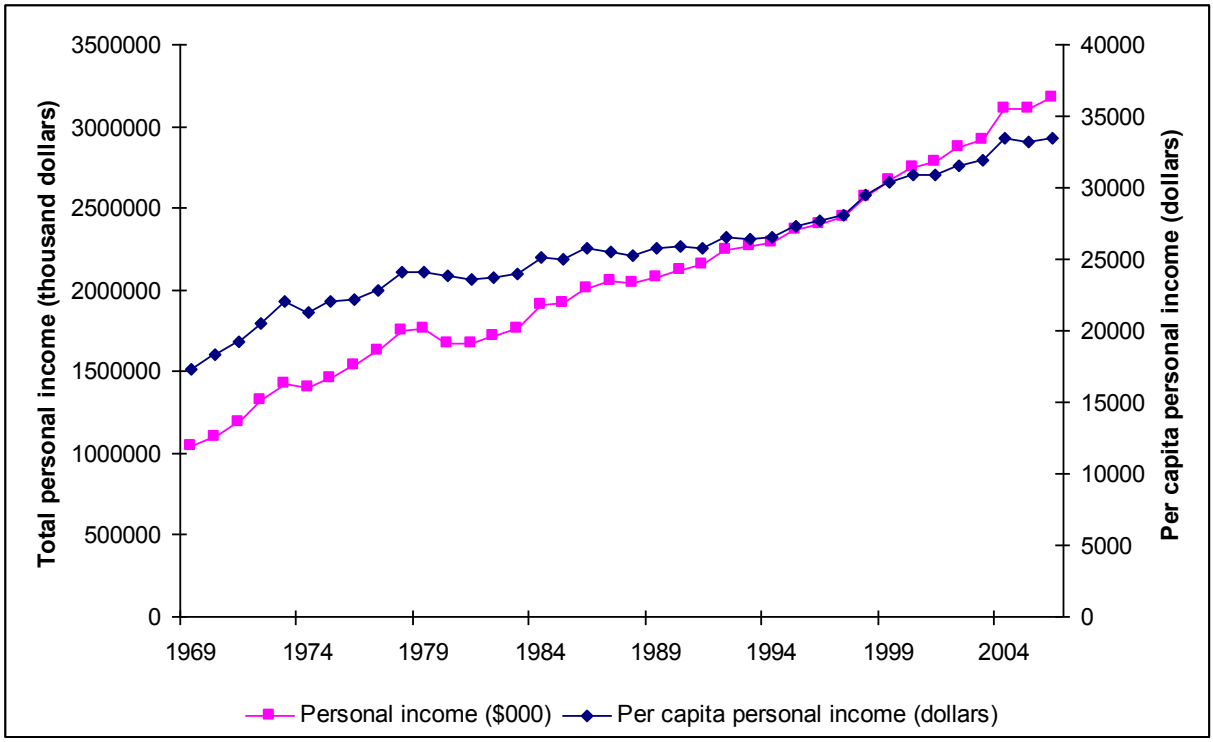

Figure 5: Total Personal Income and Per Capita Personal Income in Pennington County, 1969-2006

enterprises, dividends, interest, and rent, and transfer payments plus adjustments for residence minus personal contributions for social insurance, has also increased in Pennington County since 1969. Beginning in 1969, total personal income for the county was around $1 billion (in 2006 dollars). By 2006, this had increased to around $3.2 billion. As with per capita income levels, total personal income growth rates tended to be larger in the 1970s, fell during the 1980s, increased again in the mid-1990s, and slowed somewhat after 2000.

From this data, we can see that not only is total income in the county rising, but income per capita is rising also. This indicates that although there is some increase in total income due to population growth, the average income per person has also been increasing in Pennington County. In other words, on average, residents of Pennington County are better off now than they were in previous year.

Most households in Pennington County had incomes less than $50,000 in 1999. Sixty-seven percent of households had incomes less than $50,000, while the remaining 33 percent had incomes of $50,000 or greater. As shown in Figure 6, the largest percentage of households was in the $35,000 to $49,999 category, with 20 percent of households falling in this range. The rate of poverty in Pennington County in 2007 was 12.4 percent, slightly lower than the rate for South Dakota at 13.2 percent (US Census Bureau 2009).

Regional Economic Analysis

Different types of regional economic analysis can provide additional information beyond what is provided in basic economic and demographic trends for a county. This section provides results from three different types of regional economic analysis: a location quotient analysis, a shift share analysis, and an input-output analysis. These analyses provide information about growth of the economy in different sectors in terms of local employment that may be useful for future planning efforts.

Location Quotient

A location quotient (LQ) measures an area's level of specialization in a given industry. It is used to assess the level of industry specialization in an area compared to a given standard, such as the national economy or the economy of a selected state. A LQ analysis can be useful because it provides additional information beyond what would be given in a simple analysis of the industry breakdown in a local economy. An employment IQ

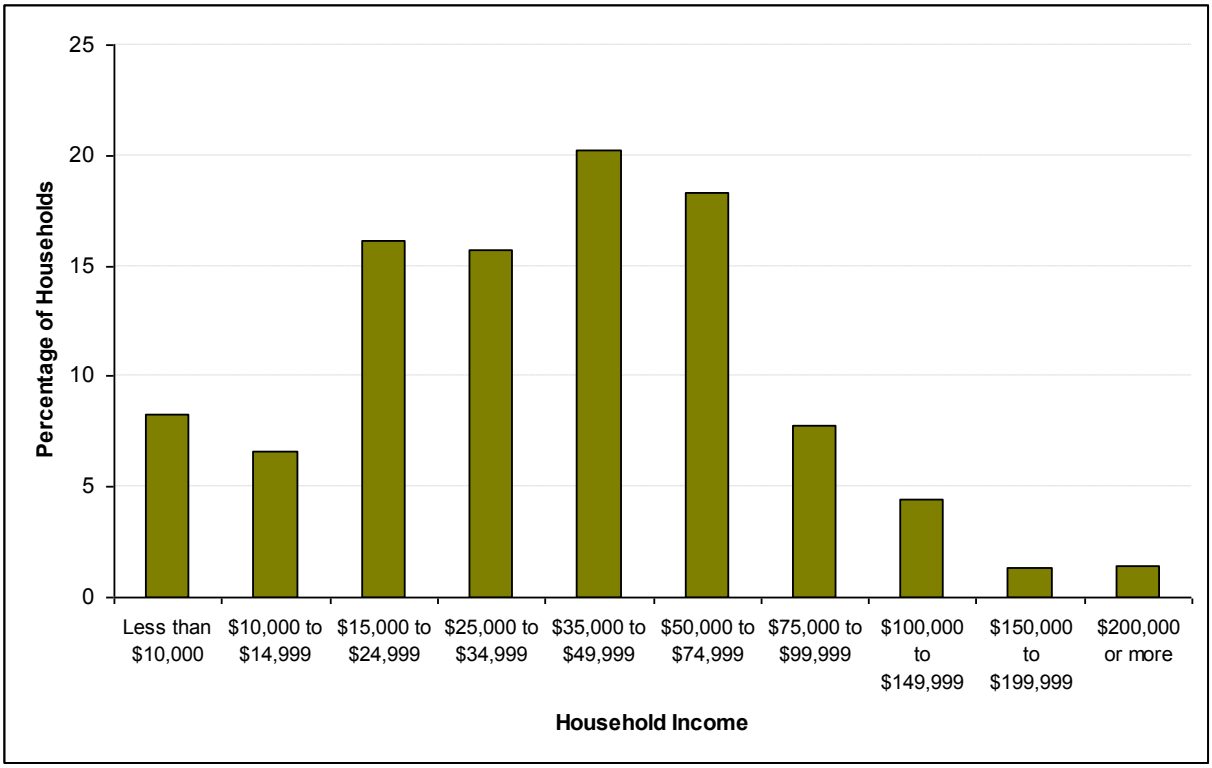

Figure 6: Pennington County Household Income Distribution, 1999

is calculated as the ratio of the percentage of employment in a given industry in a specific area to the comparable percentage in a benchmark area.

In this analysis, the LQ is calculated for Pennington County as a ratio of the percentage of employment in a particular industry in the county to the percentage of employment in that same industry for the United States. The LQ can be interpreted as follows: a value of one means that the percentage of employment in the selected industry is the same in Pennington County and the United States, a value of less than one indicates that Pennington County has lower percentage employment in the industry than the percentage in the United States as a whole, and a value of greater than one means that the Pennington County has a larger percentage employment in the industry than at the national level.

As shown in Table 1, five industries in Pennington County have a LQ greater than one, meaning that these industries make up a greater percentage of employment in Pennington County than in the United States as a whole. The utilities sector has the highest LQ of 2.47, followed by accommodation and food services at 1.67, health care and social assistance at 1.38, retail trade at 1.33, and construction at 1.22. The other services category is identical to the percentage for the U.S. total, with a LQ of 1. All other sectors have a LQ of less than one indicating that the percentage employment in these areas is less than the percentage for the U.S. This would indicate that outside of the utilities and construction sectors, most of the sectors in Pennington County with a larger percentage of employment compared to the U.S. as a whole are service and retail sectors.

Another use of Location Quotients is the estimation of export employment. If a region's LQ is greater than one, more workers in the region are employed in a given industry than would be expected given the baseline case (the United States in our calculations). In this case, the additional workers in the industry in question are likely producing goods for sale outside the region. In the alternative situation, when the LQ is less than

Table 1. Location Quotient Analysis for Major Industries in Pennington County

Industry	Location Quotient	Self Sufficient	Actual Employment	Import/ Export
Forestry, fishing & related activities	0.49	349	170	-179
Mining	0.17	305	52	-253
Utilities	2.47	197	487	290
Construction	1.22	3983	4840	857
Manufacturing	0.70	5077	3543	-1534
Wholesale trade	0.92	2251	2080	-171
Retail trade	1.33	6604	8810	2206
Transportation and warehousing	0.70	1983	1379	-604
Information	0.87	1241	1084	-157
Finance and insurance	0.94	2913	2747	-166
Real estate and rental and leasing	0.45	2651	1192	-1459
Professional and technical services	0.51	4024	2043	-1981
Management of companies and enterprises	0.35	650	228	-422
Administrative and waste services	0.68	3680	2520	-1160
Educational services	0.91	1272	1158	-114
Health care and social assistance	1.38	6060	8344	2284
Arts, entertainment, and recreation	0.84	1244	1041	-203
Accommodation and food services	1.67	4114	6888	2774
Other services, except public administration	1.00	3493	3484	-9

one, less of the good is produced locally than would be expected and the good is purchased from outside the region. If the LQ is equal to one, all goods are produced locally and the economy is said to be self-sufficient.

Self-sufficiency can be assessed as the percentage of employment in a given industry compared to employment in that industry in the United States as a whole times total employment in the region. This value can then be compared to the actual employment in that industry in the region to obtain import or export values. In the last column of Table 1, exports are shown as positive values and imports are negative values. As shown in Table 1, Pennington County is a net exporter of utilities, construction, retail trade, health care and social assistance and accommodation and food services.

Pennington County is a net importer in many other industries as shown in Table 1. Sectors with particularly large net imports include professional and technical services, manufacturing, real estate rental and leasing, and administrative and waste services. This means that current production in these sectors cannot meet local demands and goods and services from these sectors must be imported from outside the region. The county may have a comparative disadvantage in these sectors compared to other areas around the country or these could be industries to consider for future expansion.

Shift-Share Analysis

Another type of regional economic analysis that is often used to assess historic employment growth is a shift-share analysis. A shift-share analysis looks at employment growth over time and breaks the growth down into a national component, a mix component and a competitive component. The national component is the part of growth that is due to economic growth at the national level. The mix component is based on the proportion of different industries in a region. If a region has a larger percentage of fast growing industries, this would be shown in the mix component. The competitive component reflects the comparative advantage of a region due to natural or other advantages related to a given industry.

The national component shows what would have happened if employment in the industry in question had grown at the U.S. average. The growth rate as shown in Table 2 was 9 percent average across all industries between 1990 and 2000 for the United States. The national component reflects this increase, with a value that is 9 percent greater than the employment level in each industry in 1990.

Table 2. Shift Share Analysis for Pennington County

	Pennington County Employment			United States Employment (thousands)			Shift Share Analysis			
Industry	1990	2000	% Change	1990	2000	% Change	Total Shift	National	Mix	Competitive
Agriculture Services, Forestry, Fishing	390	605	55.1	1,454	1,930	32.7	215	36	91	87
Mining	476	156	-67.2	1,044	496	-52.5	-320	44	-294	-70
Construction	3134	4643	48.1	7,262	8,802	21.2	1509	292	372	845
Manufacturing	4568	4885	6.9	19,694	18,286	-7.2	317	426	-753	644
Transportation and Public Utilities	2207	2749	24.6	6,551	6,740	2.9	542	206	-142	478
Wholesale Trade	2432	2718	11.8	6,721	4,667	-30.6	286	227	-970	1029
Retail Trade	10397	14214	36.7	22,886	15,222	-33.5	3817	970	-4452	7299
Finance, Insurance and Real Estate	2957	4946	67.3	10,715	8,935	-16.6	1989	276	-767	2480
Services	14460	20898	44.5	38,671	60,648	56.8	6438	1349	6869	-1780
Total	41021	55814	36	114,996	125,725	9	14793	3827	-46	11012

The mix component shows the difference in employment growth in a particular industry compared to national growth in that industry. Positive numbers indicate that growth in the industry was faster in the region than the U.S. average and negative numbers indicate that local growth was slower. The mix component was positive for three industries in Pennington County: services, construction and agriculture services forestry and fishing. Negative mix components are shown for mining, manufacturing, transportation and public utilities, wholesale trade, retail trade and finance, insurance and real estate, with the largest negative number in the retail trade sector. The overall mix component across all industries was -46, signifying that Pennington County had greater levels of employment in slow growing industries compared to the rest of the United States.

The competitive component compares the local growth to the national growth for a given industry. In Pennington County, all industries had a positive competitive component except mining and services. This indicates that for most industries in Pennington County, growth is higher than the national average. Overall, Pennington County is estimated to have an additional 11,012 jobs than would be expected if industries grew at the national average growth rates.

The total shift, or overall job growth, in Pennington County was 14,793 from 1990 to 2000. The sectors with the largest job growth were services and retail trade. In terms of the three components of the shift share analysis, we see that the largest impact comes from the competitive component, followed by the national component, while the mix component had a small negative effect overall.

Input-Output Modeling

Another type of regional economic analysis that is used to show the linkages between different sectors in an economy is called Input-Output (I-O) analysis. I-O models are often used to show the effect of a particular event or policy shock in a particular area. These effects are often described as a "ripple effect" in the sense that these effects are not only measured in the sector where the direct effect occurs, but also in the other sectors that are related to the affected sector through the purchase of inputs or outputs. The effects that occur in the regional economy are broken down into three types: direct, indirect and induced effects.

Direct effects are the change in production or employment that occurs directly to the sector in question due to the policy shock or other event. Indirect effects occur when sectors purchase or provide inputs to one another. These linkages between sectors allow shocks or events in one sector to be felt in other sectors that provide inputs or use outputs from the affected industry. Induced effects are based on linkages between industrial sectors and households. These effects occur when households purchase goods and services from sectors or provide labor to certain sectors. The linkages between households and other industries can cause additional impacts from a policy shock. For example, if a factory in a particular sector must reduce its production, this might in turn result in decreased wages to households employed in the sectors and thus a decrease in household spending in other sectors.

The total regional economic impact due to a particular shock would be the sum of these direct, indirect and induced effects. IMPLAN is an I-O modeling software that allows researchers to assess policy shocks in a particular economy. IMPLAN uses data on employment, payroll and output and estimates indirect and induced effects by using economic multipliers between sectors. Multipliers are calculated based on information about where an industry makes its purchases and allow researchers to estimate the effects that occur due to the linkages between industries.

Table 3 shows 2007 baseline data for several sectors in Pennington County. The total output across all industries for 2007 was $7.2 billion. The manufacturing sector had the largest output with $3.65 million, followed by professional, scientific and technical services with $869,000, transportation and warehousing with $781,000 and construction with $675,000. County employment was also largest in the manufacturing sector, followed by the professional, scientific and technical services, transportation and warehousing, and information sectors.

Summary

Pennington County, South Dakota has been growing in terms of population throughout the last several decades and was ranked the second highest populated county in South Dakota in 2001. Recent growth has also resulted in a demographic shift in the county, with older age groups growing more quickly than younger groups. Future planning may need to consider this demographic shift in terms of the services that are needed and tax revenues that are collected for the changing population.

Table 3. Output, Employment and Value Added Summary from Input-Output Model

	Industry Output*	Employment	Employee Compensation*	Proprietor Income*	Other Property Income*	Indirect Business Tax*	Total Value Added *
Ag, Forestry, Fish & Hunting	86	881	6	5	18	3	31
Mining	19	162	5	3	4	0	12
Utilities	294	449	53	2	103	31	189
Construction	675	5002	192	15	39	4	250
Manufacturing	3652	26001	927	67	527	199	1719
Wholesale Trade	32	181	9	0	4	1	15
Transportation & Warehousing	781	7921	372	63	56	6	498
Retail trade	204	3517	64	10	30	14	118
Information	422	7293	140	3	37	21	201
Finance & insurance	98	2100	59	0	-2	1	59
Real estate & rental	83	421	22	0	10	0	32
Professional-scientific & tech services	869	10143	641	0	227	0	869
Totals	7,216	64069	2490	168	1054	281	3994

*Millions of dollars

Per capita income in the county is slightly higher than the state average and slightly lower than the national average. Local residents are better off economically than in the past, since both total income and per capita income have been increasing during the past few decades. Employment in the county is largest in the government, retail, health services and accommodation and food services sectors. Regional economic analysis points to retail, health services, accommodation and food services and construction as being important economic sectors for employment in the county. Attention should be paid to the sectors in which the county is currently not self-sufficient as potential areas for future expansion.

It should be noted that although this report provides background information that may be useful to the community, community planning should be inclusive of all stakeholder, and efforts should be made to reach collaborative decisions about community goals and objectives for future development. Other additional factors not included in this report such as quality of life and environmental quality should also be considered in any long term planning process.

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