The Economic Impact of Sakakawea Medical Center on Mercer County, North Dakota

Prepared by:

National Center for Rural Health Works
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August 2017

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Prepared for:

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Medical facilities have a tremendous medical and economic impact on the community or county in which they are located. This is especially true with health care facilities, such as hospitals and nursing homes. These facilities not only employ a number of people and have a large payroll, but they also draw into the community or county a large number of people from rural areas that need medical services. The overall objective of this study is to illustrate the economic impact of Sakakawea Medical Center on Mercer County, North Dakota. The specific objectives of this report are to:

1. Discuss the importance of health care services to rural development, including national health trend data;
2. Review demographic and economic data for Mercer County, North Dakota;
3. Summarize the direct economic activities of Sakakawea Medical Center;
4. Present concepts of county economics and multipliers; and
5. Estimate the economic impact of Sakakawea Medical Center on Mercer County, North Dakota.

No recommendations will be made in this report.

Health Services and Rural Development

The nexus between health care services and rural development is often overlooked. At least three primary areas of commonality exist. A strong health care system can help attract and maintain business and industry growth, and attract and retain retirees. A strong health care system can also create jobs in the local area.

Services that Impact Rural Development

Type of Growth	Services Important to Attract Growth
Industrial and Business	Health and Education
Retirees	Health and Safety

Studies have found that quality-of-life (QOL) factors are playing a dramatic role in business and industry location decisions. Among the most significant of the QOL variables are health care services, which are important for at least three reasons.

Business and Industry Growth

First, as noted by a member of the Board of Directors of a community economic development corporation, the presence of good health and education services is imperative to industrial and business leaders as they select a community for location. Employees and participating management may offer strong resistance if they are asked to move into a community with substandard or inconveniently located health services.

Secondly, when a business or industry makes a location decision, it wants to ensure that the local labor force will be productive, and a key factor in productivity is good health. Thus, investments in health care services can be expected to yield dividends in the form of increased labor productivity.

The cost of health care services is the third factor that is considered by business and industry in development decisions. Research shows that corporations take a serious look at health care costs in determining site locations. Sites that provide health care services at a lower cost are given higher consideration for new industry than sites with much higher health care costs.

Health Services and Attracting Retirees

A strong and convenient health care system is important to retirees, a special group of residents whose spending and purchasing can be a significant source of income for the local economy. Many rural areas have environments (e.g., moderate climate and outdoor activities) that enable them to be in a good position to attract and retain retirees. The amount of spending embodied in this population, including the purchasing power associated with Social Security, Medicare, and other transfer payments, is substantial. Additionally, middle and upper income retirees often have substantial net worth. Although the data are limited, several studies suggest health services may be a critical variable that influences the location decision of retirees. For example, one study found that four items were the best predictors of retirement locations: safety, recreational facilities, dwelling units, and health care. Another study found that nearly 60 percent of potential retirees said health services were in the "must have" category when considering a retirement community. Only protective services were mentioned more often than health services as a "must have" service.

Health Services and Job Growth

A factor important to the success of rural economic development is and sustainability. ***The health care sector is an extremely fast growing sector, and based on the current demographics, there is every reason to expect this trend to continue.*** Data in **Table 1** provide selected expenditure and employment data for the United States. Several highlights from the national data are:

- In 1970, health care services as a share of the national gross domestic product (GDP) were 6.9 percent and increased to 17.8 percent in 2015;
- Per capita health expenditures increased from $356 in 1970 to $9,990 in 2015;

Table 1
United States Health Expenditures and Employment Data
1970-2015; Projected for 2020-2025

Year	Total Health Expenditures ($Billions)	Per Capita Health Expenditures ($)	Health as % of GDP (%)	Health Sector Employment (0)	Avg Annual Increase in Employment (%)
Historical - Census Years					
1970	$74.6	$356	6.9%	3,052 [a]	
1980	255.3	1,108	8.9%	5,278 [a]	7.3%
1990	721.4	2,843	12.1%	8,211 [a]	5.6%
2000	1,369.7	4,857	13.3%	10,858 [a]	3.2%
2010	2,596.4	8,404	17.4%	13,777 [b]	2.7%
Historical - Most Recent Non-Census Years					
2011	2,687.9	8,638	17.3%	14,026 [b]	1.8%
2012	2,795.4	8,915	17.3%	14,282 [b]	1.8%
2013	2,877.6	9,110	17.2%	14,492 [b]	1.5%
2014	3,029.3	9,515	17.4%	14,677 [b]	1.3%
2015	3,205.6	9,990	17.8%	15,080 [b]	2.7%
				Avg Yrly Increase 2000 to 2015	2.6%
Projections					
2020	4,198.3	12,490	18.7%		
2025	5,631.0	16,032	20.1%		

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics. Available at: www.bls.gov. Accessed: August 2017; U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, "National Health Expenditures 1960-2015" and "National Health Expenditure Projections 2016-2025." Available at: http://www.cms.gov/. Accessed: August 2017.

[a] Based on Standard Industrial Classification (SIC) codes for health sector employment.

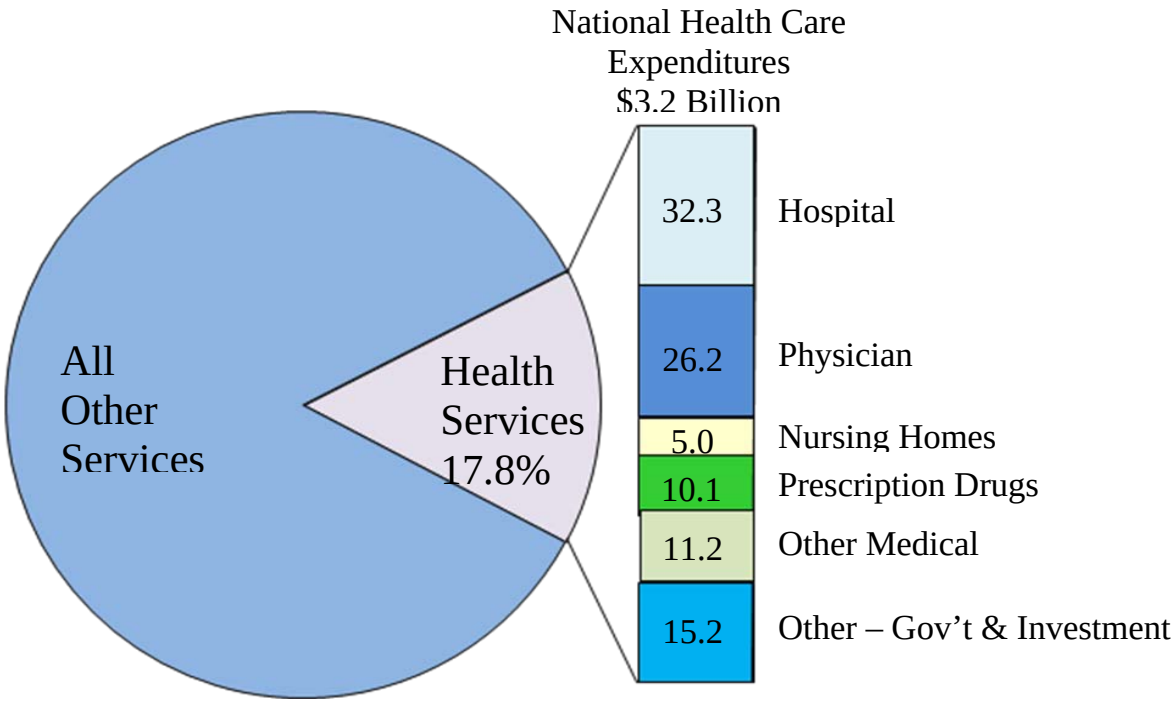
[b] Based on North American Industrial Classification System (NAICS) for health sector employment.

- Employment in the health sector increased 394.1 percent from 1970 to 2015; and
- Employment increased an average annual 2.6 percent from 2000 to 2015.

The U. S. Department of Health and Human Services, Centers for Medicare and Medicaid Services (CMS),[11] also projects that health care expenditures will account for 18.7 percent of GDP by 2020 and increase to 20.1 percent of GDP in 2025. Per capita health care expenditures are projected to increase to $12,490 in 2020 and to $16,032 in 2025. Total health expenditures are projected to increase to over $5.6 trillion in 2025.

Figure 1 illustrates 2015 health expenditures by percent of GDP and by type of health service. Health services represented 17.8 percent of national GDP in 2015. The largest category of health services was hospital care, representing 32.3 percent of the total and the second largest category was physician services with 26.2 percent of the total. Nursing homes represented 5.0 percent of total health expenditures.

Figure 1
National Health Expenditures as a Percent of Gross Domestic Product and by Health Service Type, 2015



SOURCE: U. S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, National Health Expenditures 2015. Available at: http://www.cms.gov/. Accessed: August 2017.

Mercer County Demographic and Economic Data

Sakakawea Medical Center is located in Mercer County, North Dakota. **Table 2** illustrates U.S. Census Bureau data with the last two Census populations and the most current population estimates for Mercer County, the cities in the county, and North Dakota.

Table 2
Population and Percent Change of Mercer County, North Dakota
2000, 2010, & 2015

	2000 Population	2010 Population	2015 Estimate	% Change '00 to '10	% Change '10 to '16
Beulah City	3,152	3,121	3,286	-1.0%	5.3%
Golden Valley City	183	182	277	-0.5%	52.2%
Hazen City	2,457	2,411	2,578	-1.9%	6.9%
Pick City	165	123	124	-25.5%	0.8%
Stanton City	345	366	389	6.1%	6.3%
Zap City	231	237	209	2.6%	-11.8%
Rest of County	2,111	1,984	1,770	-6.0%	-10.8%
County Total	**8,644**	**8,424**	**8,633**	-2.5%	2.5%
North Dakota	**642,200**	**672,591**	**756,928**	4.7%	12.5%

SOURCE: U. S. Census Bureau (www.census.gov [August 2017]).

The data in **Table 2** show Mercer County had population of 8,644 in 2000 and 8,424 in 2010, which represents a decrease of 2.5 percent; this compares to North Dakota increasing 4.7 percent over the same time period. The estimated 2015 population was 8,633 for Mercer County, an increase of 2.5 percent from 2010, compared to North Dakota increasing 12.5 percent from 2010 to 2015. The populations for the cities in the county are also included in the table.

The 2010 Census populations and population projections for Mercer County and North Dakota are illustrated in **Table 3**. The 2010 Census populations are from the U. S. Census Bureau and the population projections are from the "North Dakota Census Office Population

Projections of the State, Regions, and Counties 2016," published January 19, 2016, by the North Dakota Census Office within the North Dakota Department of Commerce. The population projections are shown for 2020 through 2040. The populations are projected to increase for both Mercer County and North Dakota over the projected years.

Table 3
Population and Population Projections for Mercer County and North Dakota, 2010 - 2040

	Mercer County	North Dakota
2010 Census population	8,424	672,591
2020 Projections	9,059	824,344
2025 Projections	9,215	884,874
2030 Projections	9,283	931,506
2035 Projections	9,271	966,375
2040 Projections	9,206	991,522
% Change 2010-2020	7.5%	22.6%
% Change 2010-2025	9.4%	31.6%
% Change 2010-2030	10.2%	38.5%
% Change 2010-2035	10.1%	43.7%
% Change 2010-2040	9.3%	47.4%

SOURCE: Census populations, U.S. Census Bureau (www.census.gov [August 2017]); Population projections, "North Dakota Census Office Population Projections of the State, Regions, and Counties 2016," published January 19, 2016, by the North Dakota Census Office within the North Dakota Department of Commerce. (https://www.commerce.nd.gov/census/ [August 2017]).

Tables 4a and 4b show the populations by age group and gender for Mercer County, the cities in Mercer County, and North Dakota for the 2000 and 2010 Census years and for the 2015 estimates year. The county had two age groups that increased considerably from 2000 to 2010; the 20-24 (86.9 percent) and the 45-64 (42.8 percent) age groups. The 65+ age group also increased but much less (7.7 percent). The two younger age groups (0-14 and 15-19) decreased

Table 4a
Population by Age Groups and Gender for Mercer County and North Dakota, 2000, 2010, and 2015

Area	Age Groups							Gender	
	0-14	15-19	20-24	25-44	45-64	65+	Totals	Male	Female
2000 Mercer Co									
Beulah City	738	289	65	880	709	471	3,152	1,558	1,594
Golden Valley City	23	13	5	37	58	47	183	91	92
Hazen City	556	243	39	686	613	320	2,457	1,215	1,242
Pick City	34	6	7	41	51	27	166	83	83
Stanton City	53	25	10	73	121	63	345	178	167
Zap City	38	19	5	59	77	33	231	116	115
Rest of Co.	490	178	44	605	521	272	2,110	1,106	1,004
Mercer Co Ttl	1,932	773	175	2,381	2,150	1,233	8,644	4,347	4,297
2000 Co. % Ttl	**22.4%**	**8.9%**	**2.0%**	**27.5%**	**24.9%**	**14.3%**	**100.0%**	**50.3%**	**49.7%**
N Dakota Ttls	129,846	53,618	50,503	174,891	138,864	94,478	642,200	320,524	321,676
2000 State % Ttl	**20.2%**	**8.3%**	**7.9%**	**27.2%**	**21.6%**	**14.7%**	**100.0%**	**49.9%**	**50.1%**
2010 Mercer Co									
Beulah City	576	172	148	689	1,071	465	3,121	1,602	1,519
Golden Valley City	25	9	3	36	74	35	182	92	90
Hazen City	435	146	86	529	863	352	2,411	1,209	1,202
Pick City	7	9	2	13	46	46	123	63	60
Stanton City	52	21	16	74	138	65	366	187	179
Zap City	36	13	15	43	92	38	237	128	109
Rest of Co.	313	141	57	359	787	327	1,984	1,063	921
Mercer Co. Ttls	1,444	511	327	1,743	3,071	1,328	8,424	4,344	4,080
2010 Co. % Ttl	**17.1%**	**6.1%**	**3.9%**	**20.7%**	**36.5%**	**15.8%**	**100.0%**	**51.6%**	**48.4%**
N Dakota Ttls	124,461	47,474	58,956	165,747	178,476	97,477	672,591	339,864	332,727
2010 State % Ttl	**18.5%**	**7.1%**	**8.8%**	**24.6%**	**26.5%**	**14.5%**	**100.0%**	**50.5%**	**49.5%**

Table 4b
Population by Age Groups and Gender for Mercer County
and North Dakota, 2000, 2010, and 2015

Area	Age Groups							Gender	
	0-14	15-19	20-24	25-44	45-64	65+	Totals	Male	Female
2015 Mercer Co									
Beulah City	690	204	96	722	1,062	512	3,286	1,615	1,671
Golden Valley City	56	9	15	71	94	32	277	131	146
Hazen City	437	115	203	640	826	357	2,578	1,269	1,309
Pick City	6	13	0	18	42	46	125	63	62
Stanton City	56	18	20	55	132	99	380	196	184
Zap City	34	12	7	41	53	62	209	101	108
Rest of Co.	288	93	63	294	701	339	1,778	1,094	684
Mercer Co. Ttls	1,567	464	404	1,841	2,910	1,447	8,633	4,469	4,164
2015 Co. % Ttl	**18.2%**	**5.4%**	**4.7%**	**21.3%**	**33.7%**	**16.8%**	**100.0%**	**51.8%**	**48.2%**
N Dakota Ttls	145,268	49,673	69,970	200,640	184,020	107,357	756,928	388,152	368,776
2015 State % Ttl	**19.2%**	**6.6%**	**9.2%**	**26.5%**	**24.3%**	**14.2%**	**100.0%**	**51.3%**	**48.7%**
Percent Change '00 to '10									
County	**-25.3%**	**-33.9%**	**86.9%**	**-26.8%**	**42.8%**	**7.7%**	**-2.5%**	**-0.1%**	**-5.1%**
State	**-4.1%**	**-11.5%**	**16.7%**	**-5.2%**	**28.5%**	**3.2%**	**4.7%**	**6.0%**	**3.4%**
Percent Change '10 to '15									
County	**8.5%**	**-9.2%**	**23.5%**	**5.6%**	**-5.2%**	**9.0%**	**2.5%**	**2.9%**	**2.1%**
State	**16.7%**	**4.6%**	**18.7%**	**21.1%**	**3.1%**	**10.1%**	**12.5%**	**14.2%**	**10.8%**

SOURCE: U. S. Census Bureau (www.census.gov [August 2017]).

(25.3 percent and 33.9 percent) from 2000 to 2010. The state followed a similar pattern with increases and decreases in the same age groups as the county from 2000 to 2010.

The county increased the most (23.5 percent) for the 20-24 age group from 2010 to 2015. The county, in general increased in population from 2010 to 2015. The state gained population in all age groups from 2010 to 2015. Data are also shown for the individual cities in Mercer County. The 65+ age group increased for both the county and state for both time periods.

Tables 5a and **5b** provide population by race groups and Hispanic origin for Mercer County and North Dakota. Basically, Mercer County and North Dakota are predominantly of the White race group. The Hispanic origin group increased for both the county and the state from for both time periods.

Data in **Table 6** are from the U.S. Census Bureau, County Business Patterns. The data compare the employment and payroll for the health services sector to the total of all sectors for both Mercer County and North Dakota; thus, illustrating how health services employment and payroll grew over time. From the data, county health services employment increased 20.1 percent from 2005 to 2015, while county employment increased similarly by 20.2 percent. Health services as a percent of total county employment remained the same at 11.0 percent for 2005 and 2015; this compared to the state health services portion of state employment decreasing from 18.6 percent in 2005 to 16.2 percent in 2015.

County health services payroll grew 88.5 percent from 2005 to 2015, while the total county payroll increased by 90.2 percent. County health services as a percent of total county payroll remained the same at 5.5 percent for 2005 and 2015; this compared to the state health services payroll as a percentage of total state payroll decreasing from 20.7 percent in 2005 to 16.6 percent in 2015.

Table 5a
U.S Census Bureau Population by Race and Hispanic Origin for Mercer County and North Dakota, 2000, 2010 and 2015

Area	White	Black	American Indian	Asian	Native HI/ Pacific Isldr	Some Other Race	Two or More Races	Totals[1]	Hispanic Origin
2000 Mercer County									
Beulah City	3,019	1	53	9	20	5	45	3,152	15
Golden Valley City	182	0	0	0	0	0	1	183	0
Hazen City	2,385	3	43	7	4	2	13	2,457	9
Pick City	145	0	6	0	0	0	15	166	0
Stanton City	330	0	6	2	1	1	5	345	1
Zap City	220	0	9	0	0	0	2	231	0
Rest of County	2,021	0	56	4	8	2	19	2,110	7
County Total	8,302	4	173	22	33	10	100	8,644	32
2000% of Co Total	**96.0%**	**0.0%**	**2.0%**	**0.3%**	**0.4%**	**0.1%**	**1.2%**	**100.0%**	**0.4%**
State of N Dakota	593,181	3,916	31,329	3,606	230	2,540	7,398	642,200	7,786
2000 % of State Total	**92.4%**	**0.6%**	**4.9%**	**0.6%**	**0.0%**	**0.4%**	**1.2%**	**100.0%**	**1.2%**
2010 Mercer County									
Beulah City	2,958	7	72	8	8	23	45	3,121	71
Golden Valley City	177	0	2	2	0	0	1	182	3
Hazen City	2,329	9	43	7	2	7	14	2,411	30
Pick City	122	0	1	0	0	0	0	123	1
Stanton City	356	0	1	1	0	0	8	366	1
Zap City	217	0	7	3	0	0	10	237	1
Rest of County	1,893	1	70	6	2	1	11	1,984	14
County Total	8,052	17	196	27	12	31	89	8,424	121
2010 % of Co Total	**95.6%**	**0.2%**	**2.3%**	**0.3%**	**0.1%**	**0.4%**	**1.1%**	**100.0%**	**1.4%**
State of N Dakota	605,449	7,960	36,591	6,909	320	3,509	11,853	672,591	13,467
2010 % of State Total	**90.0%**	**1.2%**	**5.4%**	**1.0%**	**0.0%**	**0.5%**	**1.8%**	**100.0%**	**2.0%**

Table 5b

U.S Census Bureau Population by Race and Hispanic Origin for Mercer County and North Dakota, 2000, 2010 and 2015

Area	White	Black	American Indian	Asian	Native HI/ Pacific Isldr	Some Other Race	Two or More Races	Totals[1]	Hispanic Origin
2015 Mercer County									
Beulah City	3,273	0	0	0	0	13	0	3,286	101
Golden Valley City	275	0	0	2	0	0	0	277	3
Hazen City	2,436	2	88	13	0	0	39	2,578	68
Pick City	111	0	9	0	0	0	5	125	0
Stanton City	359	0	9	0	0	0	12	380	3
Zap City	203	2	0	4	0	0	0	209	14
Rest of County	1,618	0	145	0	0	0	15	1,778	3
County Total	8,275	4	251	19	0	13	71	8,633	192
2015 % of Co Total	**95.9%**	**0.0%**	**2.9%**	**0.2%**	**0.0%**	**0.2%**	**0.8%**	**100.0%**	**2.2%**
State of N Dakota	667,900	15,681	37,745	10,104	445	6,119	18,934	756,928	26,059
2015 % of State Total	**88.2%**	**2.1%**	**5.0%**	**1.3%**	**0.1%**	**0.8%**	**2.5%**	**100.0%**	**3.4%**
% Change '00 to '10									
County	-3.0%	325.0%	13.3%	22.7%	-63.6%	210.0%	-11.0%	-2.5%	278.1%
State	2.1%	103.3%	16.8%	91.6%	39.1%	38.1%	60.2%	4.7%	73.0%
% Change '10 to '15									
County	2.8%	-76.5%	28.1%	-29.6%	-100.0%	-58.1%	-20.2%	2.5%	58.7%
State	10.3%	97.0%	3.2%	46.2%	39.1%	74.4%	59.7%	12.5%	93.5%

SOURCE: U. S. Census Bureau (www.census.gov [August 2017]).

Table 6
Health Care and Social Assistance[1] Employment and Payroll Comparisons for Mercer County, North Dakota

			Employment	
0.017635135	Health [1,2]	County	Hlth as % of Ttl Co.	Hlth as % of Ttl State
2005	403	3,665	11.0%	18.6%
2006	405	3,700	10.9%	18.4%
2007	392	3,763	10.4%	17.5%
2008	400	3,827	10.5%	17.0%
2009	400	3,892	10.3%	18.0%
2010	450	3,958	11.4%	18.6%
2011	462	4,025	11.5%	18.4%
2012	429	4,094	10.5%	17.4%
2013	471	4,163	11.3%	17.3%
2014	499	4,222	11.8%	16.5%
2015	484	4,404	11.0%	16.2%
% Chg '05 - '15	**20.1%**	**20.2%**		
			Payroll ($1,000s)	
	Health [1,2]	County	Hlth as % of Ttl Co.	Hlth as % of Ttl State
2005	8,900	161,220	5.5%	20.7%
2006	9,756	168,915	5.8%	19.9%
2007	10,303	117,070	8.8%	18.6%
2008	10,470	126,194	8.3%	18.4%
2009	11,321	132,051	8.6%	19.5%
2010	12,515	141,504	8.8%	19.5%
2011	12,652	161,522	7.8%	18.7%
2012	12,254	181,720	6.7%	17.0%
2013	13,776	189,005	7.3%	16.6%
2014	15,157	248,608	6.1%	15.7%
2015	16,773	306,688	5.5%	16.6%
% Chg '05 - '15	**88.5%**	**90.2%**		

SOURCE: U.S. Census Bureau, County Business Patterns; 2005-2015 data based upon NAICS (www.census.gov [August 2017]).

[1] The Health Care and Social Assistance NAICS sector comprises establishments providing health care and social assistance for individuals. The sector includes both health care and social assistance because it is sometimes difficult to distinguish between the boundaries of these two activities. Industries in this sector are arranged on a continuum starting with those establishments providing medical care exclusively, continuing with those providing health care and social assistance, and finally finishing with those providing only social assistance. The services provided by establishments in this sector are delivered by trained professionals. All industries in the sector shared this commonality of process, namely, labor inputs of health practitioners or social workers with the requisite expertise. Many of the industries in the sector are defined based on the educational degree held by the practitioners included in the industry.

[2] Data are excluded for self-employed persons, employees of private households, railroad employees, agricultural production workers, and for most government employees (except for those working in wholesale liquor establishments, retail liquor stores, Federally-chartered savings institutions, Federally-chartered credit unions, and hospitals).

Estimated health employment based on CBP data showing a range from 2,500-4,999.

Estimated health payroll; CBP did not disclose data to ensure individual company's privacy.

Data from U.S. Department of Commerce, Regional Economic Information System, Bureau of Economic Analysis (BEA) are in **Tables 7** and **8**. These tables demonstrate the importance of health services as compared to other industries in the county and state economies.

BEA data for full- and part-time employment by type of employment and major industry are presented in **Table 7**. In 2014, the county health care and social assistance sector (which includes hospitals) employed 216 people or 3.7 percent of private nonfarm county employment; this compared to the state with 13.0 percent. The health care and social assistance sector was estimated and there could be some margin of error in the numbers. In 2014, the state health care and social assistance sector was the largest state industry at 13.0 percent, with retail trade second with 12.7 percent.

In 2015, the county health care and social assistance sector (which includes hospitals) employed 210 people or 3.6 percent of private nonfarm county employment (**Table 7**); this compared to the state with 13.4 percent. Again, the health care and social assistance sector was estimated by the author. In 2015, the state health care and social assistance sector was the largest state industry at 13.4 percent and retail trade was second with 12.9 percent.

BEA data for personal income ($1,000s) by major source and industry are presented in **Table 8**. In 2014, the county health care and social assistance earnings sector (which includes hospitals) had $6.8 million in total personal income or 1.7 percent of private nonfarm earnings; this compared to the state with 11.8 percent. County health care and social assistance earnings were estimated. In 2014, the state health care and social assistance earnings sector was the third largest state industry at 11.8 percent, with mining first at 14.3 percent and construction second at 12.6 percent.

Table 7

Full- and Part-Time Employment by Type of Employment and by Major Industry[1] for Mercer County and North Dakota, 2014 and 2015

Categories	2014			2015			'14-'15	'14-'15
	Mercer Co.		State	Mercer Co.		State	County	State
	No. of Jobs	%	%	No. of Jobs	%	%	% Chg	% Chg
Total FT & PT	6,831	100.0%	100.0%	6,962	100.0%	100.0%	1.9%	-1.3%
Wage & Salary	5,343	78.2%	79.1%	5,453	78.3%	78.4%	2.1%	-2.1%
Proprietors	1,488	21.8%	20.9%	1,509	21.7%	21.6%	1.4%	1.8%
Farm proprs'	380	25.5%	20.9%	375	24.9%	20.3%	-1.3%	-1.1%
Nonfarm proprs' [2]	1,108	74.5%	79.1%	1,134	75.1%	79.7%	2.3%	2.5%
By Industry:								
Farm empl	428	6.3%	5.6%	409	5.9%	5.2%	-4.4%	-7.1%
Nonfarm empl	6,403	93.7%	94.4%	6,553	94.1%	94.8%	2.3%	-0.9%
Private	5,762	90.0%	85.0%	5,904	90.1%	84.7%	2.5%	-1.3%
For/fshng/related	309	5.4%	1.0%	311	5.3%	1.0%	0.6%	0.7%
Mining	860	14.9%	7.5%	804	13.6%	6.2%	-6.5%	-17.8%
Utilities	1,326	23.0%	0.8%	1,420	24.1%	0.8%	7.1%	3.6%
Construction	774	13.4%	9.3%	936	15.9%	9.3%	20.9%	-1.4%
Manufacturing	52	0.9%	5.6%	48	0.8%	5.6%	-7.7%	-1.6%
Wholesale trade	137	2.4%	5.9%	141	2.4%	5.9%	2.9%	-1.2%
Retail trade	539	9.4%	12.7%	547	9.3%	12.9%	1.5%	0.7%
Transp/wrhsng	189	3.3%	6.0%	137	2.3%	5.7%	-27.5%	-6.0%
Information	112	1.9%	1.6%	102	1.7%	1.6%	-8.9%	-2.4%
Finance & ins	199	3.5%	5.4%	201	3.4%	5.6%	1.0%	0.7%
RE/rent/leasing	148	2.6%	4.8%	147	2.5%	5.0%	-0.7%	2.5%
Prof /techn svcs	133	2.3%	4.8%	135	2.3%	5.0%	1.5%	2.1%
Mgmt/cos/enterp	0	0.0%	1.2%	0	0.0%	1.2%	0.0%	1.5%
Admin/waste svcs	125	2.2%	4.0%	123	2.1%	4.0%	-1.6%	-2.0%
Educ svcs	18	0.3%	1.3%	16	0.3%	1.3%	-11.1%	5.1%
Hlth care/soc asst	216	3.7%	13.0%	210	3.6%	13.4%	-2.8%	1.9%
Art/entert/rec	55	1.0%	1.6%	57	1.0%	1.6%	3.6%	1.5%
Accom/food svc	325	5.6%	8.0%	322	5.5%	8.1%	-0.9%	0.2%
Other/not pub adm	245	4.3%	5.6%	247	4.2%	5.7%	0.8%	0.5%
Govt/govt entrprs	641	10.0%	15.0%	649	9.9%	15.3%	1.2%	1.4%

SOURCE: U.S. Department of Commerce, Regional Economic Information System, Bureau of Economic Analysis (www.bea.gov [August 2017]).

1 The estimates are based on the North American Industry Classification System (NAICS).

2 Excludes limited partners

Original BEA data was not provided to ensure privacy; the author has provided estimates.

Table 8
Personal Income ($1,000s) by Major Source and Industry[1]
for Mercer County and North Dakota, 2014 and 2015

	2014			2015			'14-15	'14-'15
	Mercer Co.		State	Mercer Co.		State	County	State
Categories	Income	Percent	Percent	Income	Percent	Percent	% Chg	% Chg
TTl Pers Income	457,769	100.0%	100.0%	487,094	100.0%	100.0%	6.4%	-1.2%
Ttl by plc of wrk	440,429	96.2%	79.4%	482,080	99.0%	77.7%	9.5%	-3.3%
Wage/Salary	328,618	74.6%	70.6%	359,052	74.5%	71.3%	9.3%	-2.3%
Proprs' income[2]	23,860	5.4%	14.5%	29,120	6.0%	13.3%	22.0%	-11.2%
Other	87,951	20.0%	14.9%	93,908	19.5%	15.4%	6.8%	-0.2%
By Industry								
Farm	5,176	1.2%	3.5%	7,367	1.5%	1.2%	42.3%	-67.4%
Nonfarm	435,253	98.8%	96.5%	474,713	98.5%	98.8%	9.1%	-1.0%
Private	407,722	93.7%	84.8%	445,504	93.8%	83.9%	9.3%	-2.0%
For/fishing/related	9,000	2.2%	0.6%	9,300	2.1%	0.6%	3.3%	6.0%
Mining	85,997	21.1%	14.3%	81,785	18.4%	11.3%	-4.9%	-22.4%
Utilities	167,424	41.1%	1.7%	185,862	41.7%	1.9%	11.0%	8.4%
Construction	65,579	16.1%	12.6%	91,329	20.5%	12.7%	39.3%	-0.7%
Manufacturing	1,750	0.4%	6.3%	1,427	0.3%	6.8%	-18.5%	7.1%
Wholesale trade	9,580	2.3%	8.5%	9,293	2.1%	8.5%	-3.0%	-2.6%
Retail trade	13,643	3.3%	7.7%	14,744	3.3%	8.0%	8.1%	2.0%
Transp/wrhsng	12,519	3.1%	8.8%	9,179	2.1%	8.4%	-26.7%	-5.7%
Information	7,049	1.7%	1.8%	7,266	1.6%	1.8%	3.1%	-2.4%
Finance & ins	5,719	1.4%	4.7%	6,272	1.4%	5.2%	9.7%	7.4%
RE/rent/leasing	2,293	0.6%	3.6%	1,353	0.3%	3.5%	-41.0%	-5.2%
Prof/techn svcs	4,352	1.1%	5.7%	5,018	1.1%	5.9%	15.3%	0.9%
Mgmt/cos/enterp	0	0.0%	1.7%	0	0.0%	1.9%	0.0%	5.0%
Admin/waste svcs	2,910	0.7%	2.6%	3,520	0.8%	2.6%	21.0%	-1.5%
Educ svcs	325	0.1%	0.5%	315	0.1%	0.5%	-3.1%	1.8%
Hlth care/soc asst	6,800	1.7%	11.8%	6,850	1.5%	13.0%	0.7%	7.7%
Art/entert/rec	417	0.1%	0.4%	449	0.1%	0.4%	7.7%	8.0%
Accom/food svcs	5,299	1.3%	3.2%	5,174	1.2%	3.2%	-2.4%	-2.5%
Other/not pub adm	7,066	1.7%	3.7%	6,368	1.4%	3.9%	-9.9%	3.7%
Govt/govt entrprs	27,531	6.3%	15.2%	29,209	6.2%	16.1%	6.1%	4.9%

SOURCE: U. S. Department of Commerce, Regional Economic Information System, Bureau of Economic Analysis (www.bea.gov [August 2017]).

[1] The estimates are based on the North American Industry Classification System (NAICS).

[2] Proprietors' income includes the inventory valuation.

Original BEA data was not provided to ensure privacy; the author has provided estimates.

In 2015, the county health care and social assistance earnings sector (which includes rural health clinics) had $6.9 million or 1.5 percent of private nonfarm county earnings (**Table 8**); this compared to the state with 13.0 percent. County health care and social assistance was again estimated. In 2015, the state health care and social assistance earnings sector was the largest state industry at 13.0 percent; construction was second with 12.7 percent and mining was the third largest with 11.3 percent.

Basic economic indicators for Mercer County, North Dakota and United States economies are illustrated in **Table 9**. Based on BEA data, the 2015 per capita income for Mercer County of $55,020 was lower than North Dakota ($55,950) and higher than the United States ($42,392). The employment and labor force data are from the U.S. Department of Labor, Bureau of Labor Statistics. The unemployment rate for Mercer County was 4.6 percent for 2016, which was higher than the state rate (3.2 percent) and lower than the national rate (4.9 percent). In July 2017, the unemployment rate for Mercer County decreased to 3.3 percent, which was higher than the state (2.0 percent) and lower than the nation (4.6 percent).

From the U. S. Census Bureau, the percent of all people in poverty in the county was 7.2 percent in 2015, as compared to 10.7 percent for the state and 14.7 percent for the nation (**Table 9**). However, the percent of children under age 18 in poverty was lower for the county at 7.0 percent, and higher for both the state (12.1 percent) and the nation (19.7 percent).

Transfer receipts are the state and federal government payments that are paid within an entity; i.e., county, state, or nation. Transfer receipts include social security, Medicare, Medicaid, unemployment, etc. This percent is an indication of how many people rely on federal and state funds for personal income. From BEA 2015 data, transfer receipts as a percentage for total

Table 9
Economic Indicators for Mercer County,
North Dakota and the United States

Indicator	Mercer Co.	N. Dakota	U.S.
Total Personal Income (2015)	$457,094,000	$42,349,688,000	$15,553,000,000,000
Per Capita Income (2015)	$55,020	$55,950	$42,392
Employment (2016)	4,420	403,067	151,436,000
Unemployment (2016)	212	13,160	7,751,000
Unemployment Rate (2016)	4.6%	3.2%	4.9%
Employment (Jul 2017)	4,570	416,451	154,470,000
Unemployment (Jul 2017)	155	8,621	7,441,000
Unemployment Rate (Jul 2017)	3.3%	2.0%	4.6%
% of All People in Poverty (2015)	7.2%	10.7%	14.7%
% of Under 18 in Poverty (2015)	7.0%	12.1%	19.7%
Transfer Receipts (2015)	$68,012,000	$5,326,398,000	$2,684,400,000,000
Transfer Receipts as Percentage of Total Personal Income (2015)	14.9%	12.6%	17.3%
Xfer Rcpts Subcategories:			
Medicare (2015)	$15,189,000	$1,099,469,000	$633,700,000,000
% of Total Xfer rcpts	22.3%	20.6%	23.6%
Medicaid (2015)	$11,003,000	$965,701,000	$536,000,000,000
% of Total Xfer rcpts	16.2%	18.1%	20.0%

SOURCES: Bureau of Labor Statistics (www.bls.gov [August 2017]); U.S. Department of Commerce, Regional Economic Information System, Bureau of Economic Analysis (www.bea.gov [August 2017]); U.S. Census Bureau (www.census.gov [August 2017]).

personal income for the county were 14.9 percent; this was higher than the state at 12.6 percent and lower than the nation at 17.3 percent (**Table 9**). Two subcategories of transfer receipts (Medicare and Medicaid) are also shown in **Table 9**; the county had a higher percent than the state and a lower percent than the nation for Medicare and the county had a lower percent than both the state and nation for Medicaid.

Direct Economic Activities of Sakakawea Medical Center

Sakakawea Medical Center provides a wide array of services. A general listing of direct services offered are provided here. For a more detailed and more comprehensive listing of all services, see **Appendix C**.

General and Acute Services

- Allergy, flu and pneumonia shots
- Blood pressure checks
- Cardiac rehab
- Care Coordination
- Convenience Clinic
- Education - patient
- Education – staff
- Emergency room
- Hospital (acute care)
- Infection control
- Mole/wart/skin lesion removal
- Nutrition counseling
- Pharmacy/Pharmacist
- Pulmonary rehab
- Respite care
- Sports medicine
- Surgical services
- Swing bed services
- Trauma care

Screening/Therapy Services

- Chronic disease management
- EKG
- Functional capacity evaluations
- Functional dry needling
- Holter monitoring
- Laboratory services
- Lower extremity circulatory assessment
- Occupational therapy
- Pediatric services
- Physical therapy
- Respiratory care
- Sleep studies
- Social services
- Speech therapy
- Stress testing

Radiology Services

- Bone density
- CT scan
- 3.3D mammography
- Echocardiograms
- General x-ray
- Nuclear medicine (mobile unit)
- MRI (mobile unit)
- Ultrasound

Laboratory Services

- Hematology (automated)
- Blood banking and transfusion services
- Chemistry (automated)
- Coagulation

- Third party collection site for DOT & Non DOT drug screens
- Serology
- Urinalysis

Other/Additional Services

- Health screenings
- Home health care
- Hospice care
- Licensed basic care facility
- Respiratory home services
- Wellness

Sakakawea Medical Center not only impacts the quality of life of their patients, but also impacts the economy of Mercer County. The direct economic activities of Sakakawea Medical Center include the employees and their wages, salaries, and benefits to provide the health care services. The hospital includes the employment and labor income from operations of the hospital (including the Senior Suites). Construction impact will be provided for 2017, the most recent year of construction activities.

From **Table 10**, the total direct employment includes the total full-time, part-time, and contractual employees. The hospital had 138 employees. These jobs generated wages, salaries, and benefits and contractual compensation (labor income) in the amount of $7.5 million. These are the direct impacts from the operations of Sakakawea Medical Center on the Mercer County economy and continue each and every year that Sakakawea Medical Center is in operation.

The economic impact of construction activities can also be measured for employment and labor income. These only occur during the year of construction. In 2017, construction activities were $30.0 million; this construction generated 136 jobs with labor income of $11.3 million. The employment and labor income were estimated based on ratios and coefficients derived from IMPLAN data. These are the direct impacts from construction activities of Sakakawea Medical Center.

Table 10
Direct Economic Activities
of Sakakawea Medical Center, 2017

FROM OPERATIONS			
		Employment	**Labor Income**
Hospital		138	$7,546,198
FROM CONSTRUCTION			
	Amount	**Employment**	**Labor Income**
2017 Activity	$30,000,000	**136**	**$11,341,577**

SOURCE: Hospital operations data and total construction data from Sakakawea Medical Center; Construction employment and labor income derived utilizing IMPLAN data for Mercer County North Dakota.

The direct impacts of Sakakawea Medical Center, measured by employment and labor income, are only a portion of the total impact. There are additional economic impacts created as Sakakawea Medical Center and its employees spend money. These are known as secondary impacts and are measured by multipliers using an input-output model and data from IMPLAN (the model and data are further discussed in **Appendix A**). This model is widely used by economists and other academics across the U. S. A brief description of the input-output model and the multiplier effect is included here.

Concepts of County Economics and Multipliers

The direct impacts of Sakakawea Medical Center, measured by output, employment and labor income, are only a portion of the total impact. There are additional economic impacts created as the hospital and its employees spend money and as the hospital as a business spends money. These are known as secondary impacts and are measured by multipliers using an input-output model and data from IMPLAN (the model and data are further discussed in **Appendix A**). This model is widely used by economists and other academics across the U. S.

A brief description of the input-output model and the multiplier effect is included and illustrated in **Figure 2**. **Figure 2** illustrates the major flows of goods, services, and dollars of any economy. The businesses which sell some or all of their goods and services to buyers outside of the county are the foundation of a county's economy. Such a business is a basic industry. The flow of products out of, and dollars into, a county are represented by the two arrows in the upper right portion of **Figure 2**. To produce these goods and services for "export" outside of the county, the basic industry purchases inputs from outside of the county (upper left portion of **Figure 2**), labor from the residents or "households" of the county (left side of **Figure 2**), and inputs from service industries located within the county (right side of **Figure 2**). The flow of labor, goods, and services in the county is completed by households using their earnings to purchase goods and services from the county's service industries (bottom of **Figure 2**). It is evident from the interrelationships shown in **Figure 2** that a change in any one segment of a county's economy will have reverberations throughout the entire economic system of the county.

Consider, for instance, the closing of a hospital. The services sector will no longer pay employees and the dollars going to households will stop. Likewise, the hospital will not purchase

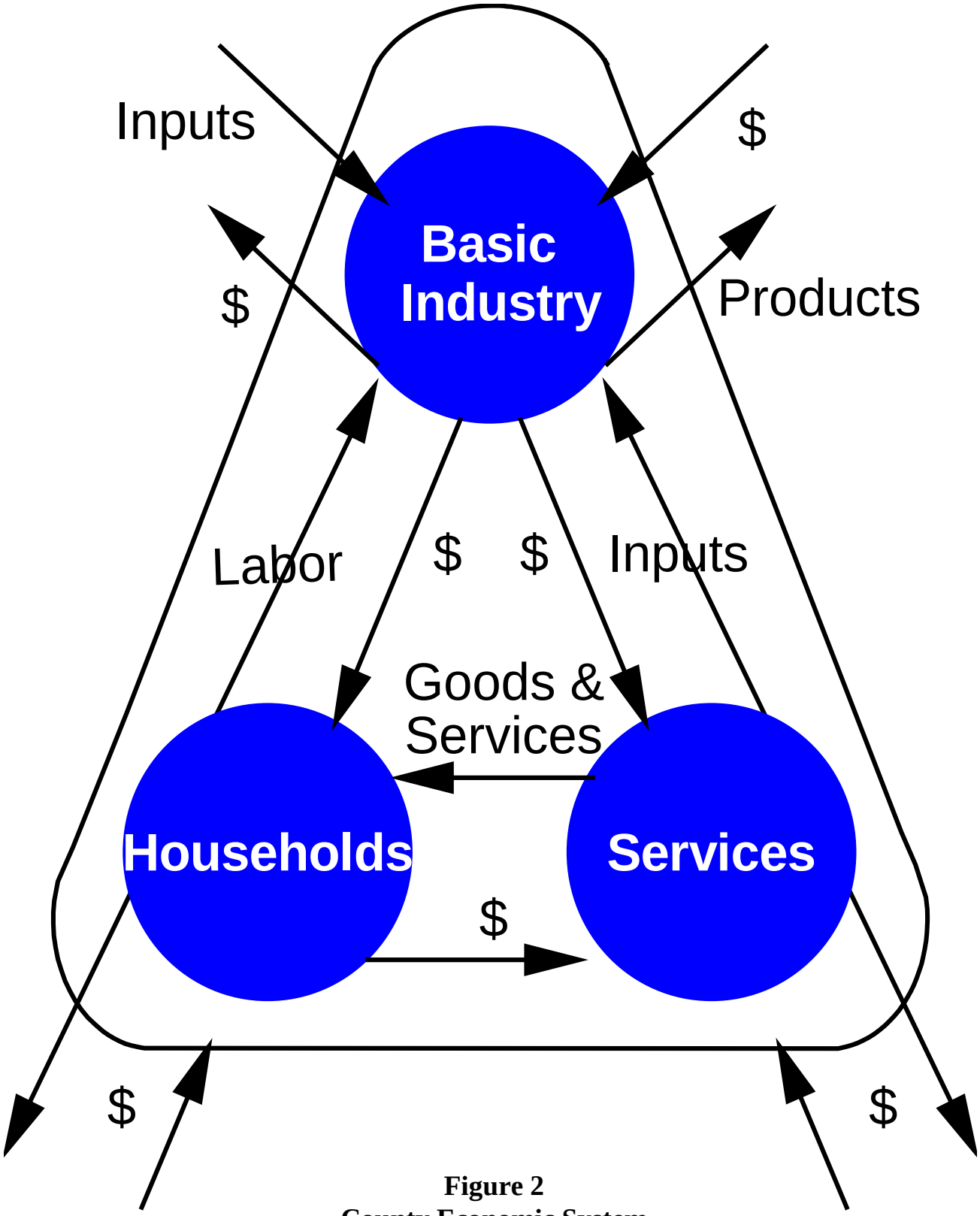


Figure 2
County Economic System

goods from other businesses, and the dollar flow to other businesses will stop. This decreases income in the "households" segment of the economy. Since earnings would decrease, households decrease their purchases of goods and services from businesses within the "services" segment of the economy. This, in turn, decreases these businesses' purchases of labor and inputs. Thus, the change in the economic base works its way throughout the entire local economy.

The total impact of a change in the economy consists of direct, indirect, and induced impacts. Direct impacts are the changes in the activities of the impacting industry, such as the closing of a hospital. The impacting business, such as the hospital, changes its purchases of inputs as a result of the direct impact. This also produces an indirect impact in the business sectors. Both the direct and indirect impacts change the flow of dollars to the county's households. The households alter their consumption accordingly. The effect of this change in household consumption upon businesses in a county is referred to as an induced impact.

A measure is needed that yields the effects created by an increase or decrease in economic activity. In economics, this measure is called the multiplier effect. Multipliers are used in this report. An employment multiplier is defined as:

> ***"…the ratio between direct employment, or that employment used by the industry initially experiencing a change in final demand and the direct, indirect, and induced employment."***

An employment multiplier of 3.0 indicates that if one job is created by a new industry, 2.0 jobs are created in other sectors due to business (indirect) and household (induced) spending. The same concept applies to labor income and output multipliers.

The Economic Impact of Sakakawea Medical Center

The impacts of Sakakawea Medical Center are presented in **Table 11**. Direct employment and labor income from operations were obtained from Sakakawea Medical Center. The multipliers specific to Mercer County, North Dakota, were derived from IMPLAN data.

Employment Impact of Sakakawea Medical Center

The hospital employs 138 employees (**Table 11**). The hospital employment multiplier is 1.32; this means for every job in the hospital sector, another 0.32 job is created in other sectors (businesses) in Mercer County. The secondary employment generated in Mercer County from the hospital sector is estimated to be 44 jobs. The hospital had a total impact of 182 jobs on the local economy of Mercer County.

The employment and labor income impacts from the 2017 estimated construction activities of Sakakawea Medical Center are also shown in **Table 11**. Estimated direct employment of 138 jobs from the $30.0 million in construction activities were derived from IMPLAN data. With a construction employment multiplier of 1.29, the construction activities will generate an estimated 136 direct employment impact, 39 secondary employment impact and 175 total employment impact.

The combined construction and operations employment impact was 274 direct employees, 83 secondary employees and 357 total employment impact for Sakakawea Medical Center in 2017. Construction impacts occur only during the year of construction, while operation impacts continue each and every year the Sakakawea Medical Center remains operating.

Labor Income Impact of Sakakawea Medical Center

Data obtained from Sakakawea Medical Center indicate that direct labor income for the hospital was $7.5 million. Using the hospital labor income multiplier of 1.14 derived from

Table 11
Impact of Sakakawea Medical Center on Mercer County, North Dakota, 2017

	Employment Impact			
	Direct Impact	***Multiplier***	***Secondary Impact***	***Total Impact***
Operations				
Hospital	138	1.32	44	182
Construction				
2017	136	1.29	39	175
Combined Total	274		83	**357**
	Labor Income Impact*			
	Direct Impact	***Multiplier***	***Secondary Impact***	***Total Impact***
Operations				
Hospital	$7,546,198	1.14	$1,056,468	$8,602,666
Construction				
From 2017	$11,341,577	1.12	$1,360,989	$12,702,566
Combined Total	$18,887,775		$2,417,457	**$21,305,232**

Total State and Local Tax Impact from Sakakawea Medical Center on Mercer County, ND

Category	***Total Impact***
State and Local Sales Tax Impact	$140,626
State and Local Property Tax Impact	$67,640
State and Local Motor Vehicle License Impact	$31,114
All Other State and Local Tax Impacts	$693,048
Total State and Local Tax Impacts	**$932,428**

Total Federal Tax Impact from Sakakawea Medical Center on Mercer County, ND

Category	***Total Impact***
Total Federal Tax Impacts	**$4,715,285**

SOURCES: Direct operations impacts from Sakakawea Medical Center, August 2017; Construction employment and labor income, all multipliers and state and local and federal tax impacts from IMPLAN (www.implan.com [August 2017]).

IMPLAN, Sakakawea Medical Center generated secondary labor income impact of $1.1 million and total labor income impact of $8.6 million.

In 2017, the construction activities are estimated to generate $11.3 million in direct labor income impact, $1.4 million in secondary labor income impact, and $12.7 million in total labor income impact. Combining the operations and construction labor income impacts resulted in combined direct labor income impact of $18.9 million, combined secondary labor income impact of $2.4 million, and combined total labor income impact of $21.3 million.

Tax Impacts of Sakakawea Medical Center

IMPLAN now provides data on the state and local tax impacts and the federal tax impacts for a particular business/organization. For Sakakawea Medical Center, state and local sales tax impact was $140,626, state and local property tax impact was $67,640, state and local motor vehicle license impact was $31,114, and all other state and local taxes were $693,048. ***The total state and local tax impacts were $932,428 from the Sakakawea Medical Center. The total federal tax impacts from the Sakakawea Medical Center were $4.7 million.*** More detailed information on the state and local and federal tax impacts are included in **Appendix B**.

Summary

Both the operation activities and construction activities of Sakakawea Medical Center have an impact on the economy of Mercer County. Often overlooked are the economic impacts created from construction activities. This report measures the impact that Sakakawea Medical Center had on the Mercer County economy for both operations and construction, based on data for the latest fiscal year. The operating impact occurs every year; whereas, when construction occurs, the construction impact is only during the construction year.

Sakakawea Medical Center reported direct employment of 138 full-time, part-time, and contractual employees, and had $7.5 million in direct labor income (wages, salaries, and benefits and contract labor income) for the hospital operations. The total employment impact from hospital operations was $8.6 million, with $1.1 million in secondary employment impact.

Construction impact can also be measured in the year the construction occurs; these impacts only occur only during the construction period. During 2017, Sakakawea Medical Center had construction of $30.0 million. The direct employment impact from this construction was 136 employees, with direct labor income impact of $11.3 million.

The combined totals for operations and construction were 274 direct employment impact, 83 secondary employment impact, and 357 total employment impact. For labor income, the combined operations and construction impacts resulted in direct labor income impact of $18.9 million, secondary labor income impact of $2.4 million, and total labor income impact of $21.3 million.

From both operations and construction, the total state and local tax impacts generated were $0.9 million and the total federal tax impacts, $4.7 million. The employment impact, and labor income impact, and a portion of the state and local and federal taxes from operating activities are annual and will continue each and every year that Sakakawea Medical Center operates in the future; these are long term economic benefits of Sakakawea Medical Center. The construction impacts only occur during the year of construction.

The impacts generated by Sakakawea Medical Center contribute to the local economy of Mercer County. The hospital generates revenues in the local economy. The hospital spends money in the local economy and pays its employees. The hospital and its employees spend money in Mercer County and generate a secondary impact. The hospital and its employees also

generate a tremendous amount of state and local and federal taxes in Mercer County. If the hospital increases or decreases in size, the medical health of Mercer County residents as well as the economic health of Mercer County can be affected. For the attraction of industrial firms, businesses, and retirees, the local area should have quality hospital services. A quality hospital sector can contribute to the overall economic health of Mercer County, as well as the overall medical health of the Mercer County residents. Given this, not only does Sakakawea Medical Center contribute to the health and wellness of the local residents but Sakakawea Medical Center also contributes to the overall economic strength of Mercer County.

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Appendix A

IMPLAN Software and Data:

Model and Data Used to Derive Multipliers

APPENDIX A
IMPLAN Software and Data from IMPLAN Group, LLC: Model and Data Used to Derive Multipliers

A Review of Input-Output Analysis

Input-output (I/O) (Miernyk, 1965) was designed to analyze the transactions among the industries in an economy. These models are largely based on the work of Wassily Leontief (1936). Detailed I/O analysis captures the indirect and induced interrelated circular behavior of the economy. For example, an increase in the demand for health services requires more equipment, more labor, and more supplies, which, in turn, requires more labor to produce the supplies, etc. By simultaneously accounting for structural interaction between sectors and industries, I/O analysis gives expression to the general economic equilibrium system. The analysis utilizes assumptions based on linear and fixed coefficients and limited substitutions among inputs and outputs. The analysis also assumes that average and marginal I/O coefficients are equal.

Nonetheless, the framework has been widely accepted and used. I/O analysis is useful when carefully executed and interpreted in defining the structure of an area, the interdependencies among industries, and forecasting economic outcomes.

The I/O model coefficients describe the structural interdependence of an economy. From the coefficients, various predictive devices can be computed, which can be useful in analyzing economic changes in a state, an area or a county. Multipliers indicate the relationship between some observed change in the economy and the total change in economic activity created throughout the economy.

The basis of IMPLAN was developed by the U. S. Forest Service to construct input/output accounts and models. The complexity of this type of modeling had hindered practitioners from constructing models specific to a community requesting an analysis. The University of Minnesota utilized the U.S. Forest Service model to further develop the methodology and expand the data sources to form the model known as IMPLAN. The founders of IMPLAN, Scott Lindall and Doug Olson, joined the University of Minnesota in 1984 and, as an outgrowth of their work with the University of Minnesota, entered into a technology transfer agreement with the University of Minnesota that allowed them to form Minnesota IMPLAN Group, Inc. (MIG).

In 2013, Minnesota IMPLAN Group, Inc. was purchased by IMPLAN Group, LLC. In 2015, IMPLAN Group, LLC became IMPLAN and relocated to:

IMPLAN
16905 Northcross Drive, Suite 120
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IMPLAN support can be reached by phone at 800-507-9426 or by email on their web page at: http://implan.com/company/contact-us/.

IMPLAN Software and Data

At first, IMPLAN focused on database development and provided data that could be used in the Forest Service version of the software. In 1995, IMPLAN took on the task of writing a new version of the IMPLAN software from scratch that extended the previous Forest Service version by creating an entirely new modeling system – an extension of input-output accounts and resulting Social Accounting Matrices (SAM) multipliers. Version 2 of the new IMPLAN software became available in May of 1999. The latest development of the software is now available, IMPLAN Version 3 Software System, the new economic impact assessment software system.

With IMPLAN Version 3 software, the packaging of products has changed. Version 3 utilizes 2007 or later data. When data are ordered, the data cost plus shipping are the only costs. Version 3.0 software is included in the cost of the data. There are no additional fees to upgrade to IMPLAN Version 3.0. Data files are subject to licensing restrictions. Version 2 is no longer compatible with 2008 and later data sets.

Version 3 allows the user to do much more detailed analyses. Users can continue to create detailed economic impact estimates. Version 3.0 takes the analysis further, providing a new method for estimating regional imports and exports is being implemented - a trade model. IMPLAN can construct a model for any state, region, area, county, or zip code area in the United States by using available national, state, county, and zip code level data. Impact analysis can be performed once a regional input/output model is constructed.

IMPLAN online is an additional feature offered, allowing users to subscribe to online availability of the data and software. To purchase IMPLAN online, contact the company. Model economic impacts can be done from anywhere by utilizing IMPLAN online. IMPLAN online subscribers always have access to the latest data releases and most current software updates. Plus, subscribers also receive access to historical datasets (back to 2010) in addition to the data year of their selection.

Users should note that there are two different versions of the software available. One is referred to as IMPLAN online (available anywhere on the cloud) and is available at a monthly cost. The other version is called IMPLAN PRO (or desktop version) and is available on an individual computer. The cost is for the data. There are several differences in the two versions available and a user should determine through consultation with IMPLAN which version is appropriate for their needs. Be sure to check this thoroughly so the data you purchase will fulfill your needs.

IMPLAN Data

Five different sets of multipliers are estimated by IMPLAN, corresponding to five measures of regional economic activity. These are: total industry output, personal income, total income, value added, and employment. Two types of multipliers are generated. Type I multipliers measure the impact in terms of direct and indirect effects. Direct impacts are the changes in the activities of the focus industry or firm, such as the closing of a hospital. The focus business changes its purchases of inputs as a result of the direct impacts. This produces indirect impacts in other business sectors. However, the total impact of a change in the economy consists of direct,

indirect, and induced changes. Both the direct and indirect impacts change the flow of dollars to the households. Subsequently, the households alter their consumption accordingly. The effect of the changes in household consumption on businesses in a community is referred to as an induced effect. To measure the total impact, a Type II (or Type SAM) multiplier is used. The Type II multiplier compares direct, indirect, and induced effects with the direct effects generated by a change in final demand (the sum of direct, indirect, and induced divided by direct).

IMPLAN also provide an additional feature that shows the state and local tax impacts and the federal tax impacts for a particular industry or a scenario for a specific employer.

Appendix B

IMPLAN Data:

Details of State and Local Tax Impacts

and Federal Tax Impacts

for Sakakawea Medical Center

APPENDIX B - Detailed Description of State and Local Tax Impacts from Sakakawea Medical Center on Mercer County, ND

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	TOTALS
Dividends					$14,731	$14,731
Social Ins Tax- Employee Contribution	$3,931					$3,931
Social Ins Tax- Employer Contribution	$7,943					$7,943
Tax on Production and Imports: Sales Tax			$140,626			$140,626
Tax on Production and Imports: Property Tax			$63,996			$63,996
Tax on Production and Imports: Motor Vehicle Lic			$4,558			$4,558
Tax on Production and Imports: Severance Tax			$308,944			$308,944
Tax on Production and Imports: Other Taxes			$20,341			$20,341
Tax on Production and Imports: S/L NonTaxes			$3,743			$3,743
Corporate Profits Tax					$90,159	$90,159
Personal Tax: Income Tax				$177,299		$177,299
Personal Tax: NonTaxes (Fines-Fees				$29,203		$29,203
Personal Tax: Motor Vehicle License				$26,556		$26,556
Personal Tax: Property Taxes				$3,644		$3,644
Personal Tax: Other Tax (Fish/Hunt)				$36,754		$36,754
Total State and Local Tax Impact	$11,874	$0	$542,208	$273,456	$104,890	**$932,428**

APPENDIX B - Detailed Description of Federal Tax Impacts from Sakakawea Medical Center on Mercer County, ND

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	TOTALS
Social Ins Tax- Employee Contribution	$1,201,666	$50,242				$1,251,908
Social Ins Tax- Employer Contribution	$1,173,031					$1,173,031
Tax on Production and Imports: Excise Taxes			$142,495			$142,495
Tax on Production and Imports: Custom Duty			$53,648			$53,648
Tax on Production and Imports: Fed NonTaxes			$8,711			$8,711
Corporate Profits Tax					$679,017	$679,017
Personal Tax: Income Tax				$1,406,475		$1,406,475
Total Federal Tax	$2,374,697	$50,242	$204,854	$1,406,475	$679,017	**$4,715,285**

Appendix C

Services Offered by:

Sakakawea Medical Center

Appendix C
Services Offered by Sakakawea Medical Center (CAH)
General and Acute Services

1. Allergy, flu and pneumonia shots
2. Blood pressure checks
3. Cardiac rehab
4. Care Coordination
5. Convenience Clinic
5. Education - patient
6. Education – staff
7. Emergency room
8. Hospital (acute care)
9. Infection control
10. Mole/wart/skin lesion removal
11. Nutrition counseling
12. Pharmacy/Pharmacist
13. Pulmonary rehab
14. Respite care
15. Sports medicine
16. Surgical services
17. Swing bed services
18. Trauma care

Screening/Therapy Services

1. Chronic disease management
2. EKG
3. Functional capacity evaluations
4. Functional dry needling
5. Holter monitoring
6. Laboratory services
7. Lower extremity circulatory assessment
8. Occupational therapy
9. Pediatric services
10. Physical therapy
11. Respiratory care
12. Sleep studies
13. Social services
14. Speech therapy
15. Stress testing

Radiology Services

1. Bone density
2. CT scan
3.3D mammography
4. Echocardiograms
5. General x-ray
6. Nuclear medicine (mobile unit)
7. MRI (mobile unit)
8. Ultrasound

Laboratory Services

1. Hematology (automated)
2. Blood banking and transfusion services
3. Chemistry (automated)
4. Coagulation
5. Third party collection site for DOT & Non DOT drug screens
6. Serology
7. Urinalysis

Other/Additional Services

1. Health screenings
2. Home health care
3. Hospice care
4. Licensed basic care facility
5. Respiratory home services
6. Wellness

Contracted Services

1. Avera eEmergency
2. Bismarck State College – Nursing Student Clinical
3. Bismarck Radiology Associates
4. CHI Virtual ePharmacy
5. Great Plains Rehab Services
6. Life Source
7. Lions Eye Bank
8. North Dakota Public Health Laboratories
9. Northern Plains Laboratory
10. Pathology Consultants
11. Pharmacist
12. Speech Therapy
13. United Blood Services
14. Virtual Radiology

Additional Services offered by OTHER providers/organizations

1. Ambulance
2. Audiology
3. Chiropractic services
4. Dental services
5. Employee assistance
6. Homemaking Services
7. Massage therapy
8. NDSU Extension Services
9. Nursing Home
10. Optometric/vision services
11. Public Health Nursing/Services
12. Respite Services