The Economic Impact of Jacobson Memorial Hospital Care Center and Clinic on Grant County, North Dakota

Prepared by:

National Center for Rural Health Works
Oklahoma State University

August 2017

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Prepared for:

Jacobson Memorial Hospital Care Center and Clinic

and

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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 Jacobson Memorial Hospital Care Center and Clinic on Grant 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 Grant County, North Dakota;
3. Summarize the direct economic activities of Jacobson Memorial Hospital Care Center and Clinic;
4. Present concepts of county economics and multipliers; and
5. Estimate the economic impact of Jacobson Memorial Hospital Care Center and Clinic on Grant 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.

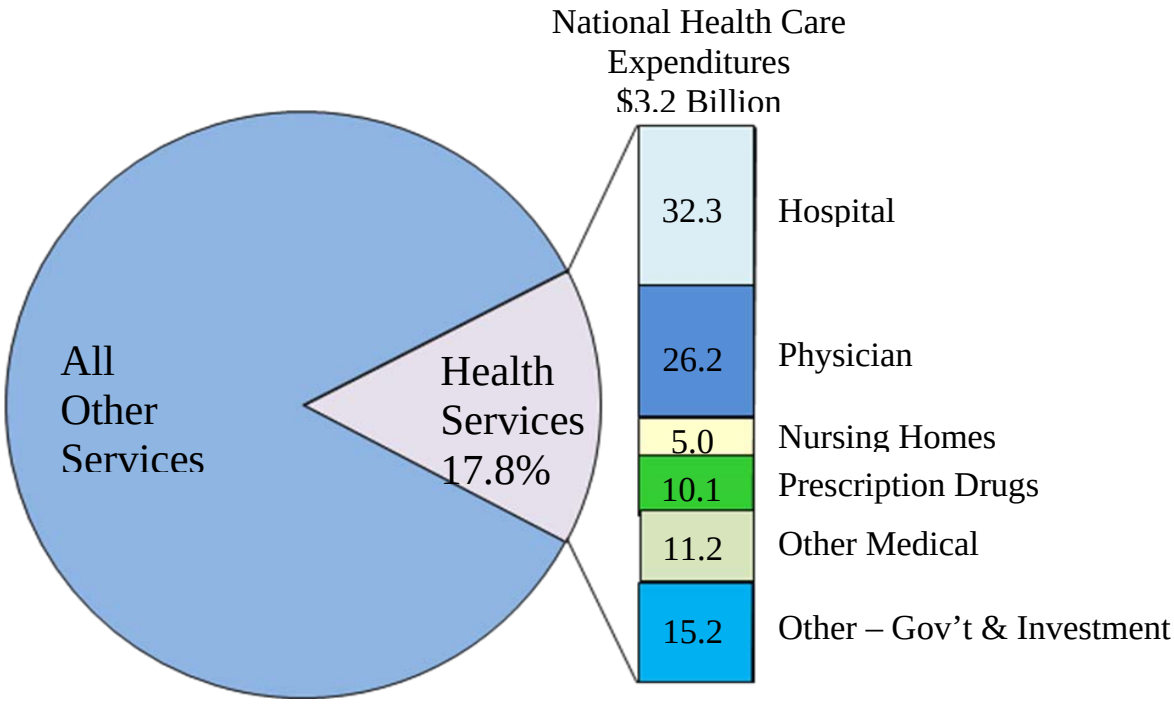
[b] Based on North American Industrial Classification System (NAICS) for health sector employment.

- 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.

Grant County Demographic and Economic Data

Jacobson Memorial Hospital Care Center and Clinic is located in Grant County, North Dakota. **Table 2** illustrates U.S. Census Bureau data with the last two Census populations and the most current population estimates for Grant County, the cities in the county, and North Dakota. There are many small townships also located in the county that are included in the "Rest of County."

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

	2000 Population	2010 Population	2015 Estimate	% Change '00 to '10	% Change '10 to '15
Carson City	319	293	238	-8.2%	-18.8%
Elgin City	659	642	600	-2.6%	-6.5%
New Leipzig City	274	221	248	-19.3%	12.2%
Rest of County	1,589	1,238	1,276	-22.1%	3.1%
County Total	**2,841**	**2,394**	**2,362**	-15.7%	-1.3%
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 Grant County had population of 2,841 in 2000 and 2,394 in 2010, which represents a decrease of 15.7 percent; this compares to North Dakota increasing 4.7 percent over the same time period. The estimated 2015 population was 2,362 for Grant County, a decrease of 1.3 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 Grant 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 decrease for Grant County and to increase for North Dakota over the projected years.

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

	Grant County	North Dakota
2010 Census population	2,394	672,591
2020 Projections	2,299	824,344
2025 Projections	2,258	884,874
2030 Projections	2,207	931,506
2035 Projections	2,150	966,375
2040 Projections	2,089	991,522
% Change 2010-2020	-4.0%	22.6%
% Change 2010-2025	-5.7%	31.6%
% Change 2010-2030	-7.8%	38.5%
% Change 2010-2035	-10.2%	43.7%
% Change 2010-2040	-12.7%	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. (https://www.commerce.nd.gov/census/ [August 2017]).

Tables 4a and 4b show the populations by age group and gender for Grant County, the cities in Grant 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 from 2000 to 2010; the 20-24 age group and the 45-64 age group. The two younger age groups (0-14 and 15-19) decreased considerably (28.8 percent and 43.8 percent) from 2000 to 2010. The state increased in

Table 4a
Population by Age Groups and Gender for Grant 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 Grant Co									
Carson City	67	13	13	72	54	100	319	147	172
Elgin City	88	31	16	108	162	254	659	318	341
New Leipzig City	43	20	4	53	66	88	274	131	143
Rest of Co	295	162	35	348	488	261	1,589	853	736
Grant Co Ttl	493	226	68	581	770	703	2,841	1,449	1,392
2000 Co. % Ttl	**17.4%**	**8.0%**	**2.4%**	**20.5%**	**27.1%**	**24.7%**	**100.0%**	**51.0%**	**49.0%**
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 Grant Co									
Carson City	50	16	14	50	82	81	293	138	155
Elgin City	84	29	15	94	192	228	642	292	350
New Leipzig City	23	4	7	28	80	79	221	116	105
Rest of Co	194	78	37	225	447	257	1,238	643	595
Grant Co. Ttls	351	127	73	397	801	645	2,394	1,189	1,205
2010 Co. % Ttl	**14.7%**	**5.3%**	**3.0%**	**16.6%**	**33.5%**	**26.9%**	**100.0%**	**49.7%**	**50.3%**
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 Grant 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 Grant Co									
Carson City	33	16	3	43	83	60	238	119	119
Elgin City	74	31	6	136	149	204	600	286	314
New Leipzig City	21	9	5	22	99	92	248	131	117
Rest of Co	192	92	29	202	463	298	1,276	634	642
Grant Co. Ttls	320	148	43	403	794	654	2,362	1,170	1,192
2015 Co. % Ttl	**13.5%**	**6.3%**	**1.8%**	**17.1%**	**33.6%**	**27.7%**	**100.0%**	**49.5%**	**50.5%**
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	**-28.8%**	**-43.8%**	**7.4%**	**-31.7%**	**4.0%**	**-8.3%**	**-15.7%**	**-17.9%**	**-13.4%**
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	**-8.8%**	**16.5%**	**-41.1%**	**1.5%**	**-0.9%**	**1.4%**	**-1.3%**	**-1.6%**	**-1.1%**
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]).

population for the 20-24, 45-64, and 65+ age groups from 2000 to 2010. The state also decreased in population for the two youngest age groups from 2000 to 2010.

The county increased in population for the 15-19, 25-44, and 65+ age groups from 2010 to 2015. The county decreased by 41.1 percent in the 20-24 age group 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 Grant County.

Tables 5a and **5b** provide population by race groups and Hispanic origin for Grant County and North Dakota. Basically, Grant County and North Dakota are predominantly of the White race group. The Hispanic origin group increased for both the county and the state from 2010 to 2015.

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 Grant County and North Dakota; thus, illustrating how health services employment and payroll grew over time. County health services employment decreased 4.0 percent from 2005 to 2015, while county employment decreased by 5.4 percent. Health services as a percent of total county employment increased from 44.2 percent in 2005 to 44.8 percent in 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 42.8 percent from 2005 to 2015, while the total county payroll increased by 47.7 percent. County health services as a percent of total county payroll decreased from 42.7 percent in 2005 to 41.3 percent in 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 Grant County and North Dakota, 2000, 2010 and 2015

	White	Black	American Indian	Asian	Native HI/ Pacific Isldr	Some Other Race	Two or More Races	Totals[1]	Hispanic Origin
2000 Grant County									
Carson City	309	0	0	0	0	4	6	319	4
Elgin City	640	0	7	2	0	5	5	659	5
New Leipzig City	272	0	2	0	0	0	0	274	0
Rest of County	1,532	0	40	8	0	1	8	1,589	8
County Total	2,753	0	49	10	0	10	19	2,841	17
2000% of Co Total	**96.9%**	**0.0%**	**1.7%**	**0.4%**	**0.0%**	**0.4%**	**0.7%**	**100.0%**	**0.6%**
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 Grant County									
Carson City	291	0	1	0	0	0	1	293	2
Elgin City	631	0	6	0	0	1	4	642	1
New Leipzig City	215	0	2	0	0	0	4	221	0
Rest of County	1,191	1	18	3	0	3	22	1,238	4
County Total	2,328	1	27	3	0	4	31	2,394	7
2010 % of Co Total	**97.2%**	**0.0%**	**1.1%**	**0.1%**	**0.0%**	**0.2%**	**1.3%**	**100.0%**	**0.3%**
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 Grant County and North Dakota, 2000, 2010 and 2015

	White	Black	American Indian	Asian	Native HI/ Pacific Isldr	Some Other Race	Two or More Races	Totals[1]	Hispanic Origin
2015 Grant County									
Carson City	229	0	5	0	0	0	4	238	7
Elgin City	597	0	3	0	0	0	0	600	0
New Leipzig City	242	6	0	0	0	0	0	248	3
Rest of County	1,234	2	18	0	0	10	12	1,276	10
County Total	2,302	8	26	0	0	10	16	2,362	20
2015 % of Co Total	**97.5%**	**0.3%**	**1.1%**	**0.0%**	**0.0%**	**0.4%**	**0.7%**	**100.0%**	**0.8%**
State of N Dakota	640,208	11,872	38,286	8,979	304	5,859	16,132	721,640	20,569
2015 % of State Total	**88.7%**	**1.6%**	**5.3%**	**1.2%**	**0.0%**	**0.8%**	**2.2%**	**100.0%**	**2.9%**
% Change '00 to '10									
County	-15.4%	100.0%	-44.9%	-70.0%	0.0%	-60.0%	63.2%	-15.7%	-58.8%
State	2.1%	103.3%	16.8%	91.6%	39.1%	38.1%	60.2%	4.7%	73.0%
% Change '10 to '15									
County	-1.1%	700.0%	-3.7%	-300.0%	0.0%	150.0%	-48.4%	-1.3%	185.7%
State	5.7%	49.1%	4.6%	30.0%	-5.0%	67.0%	36.1%	7.3%	52.7%

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

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

	Employment			
	Health [1,2]	County	Hlth as % of Ttl Co.	Hlth as % of Ttl State
2005	198	448	44.2%	18.6%
2006	205	452	45.4%	18.4%
2007	200	433	46.2%	17.5%
2008	191	432	44.2%	17.0%
2009	196	414	47.3%	18.0%
2010	212	437	48.5%	18.6%
2011	216	445	48.5%	18.4%
2012	201	425	47.3%	17.4%
2013	175	444	39.4%	17.3%
2014	191	439	43.5%	16.5%
2015	190	424	44.8%	16.2%
% Chg '05 - '15	**-4.0%**	**-5.4%**		
	Payroll ($1,000s)			
	Health [1,2]	County	Hlth as % of Ttl Co.	Hlth as % of Ttl State
2005	3,809	8,911	42.7%	20.7%
2006	3,868	8,960	43.2%	19.9%
2007	4,327	9,447	45.8%	18.6%
2008	4,215	9,535	44.2%	18.4%
2009	4,501	9,965	45.2%	19.5%
2010	4,652	11,115	41.9%	19.5%
2011	4,696	11,643	40.3%	18.7%
2012	4,841	11,917	40.6%	17.0%
2013	4,827	12,938	37.3%	16.6%
2014	5,104	13,319	38.3%	15.7%
2015	5,438	13,160	41.3%	16.6%
% Chg '05 - '15	**42.8%**	**47.7%**		

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).

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 194 people or 23.5 percent of private nonfarm county employment; this compared to the state with 13.0 percent. County health care and social assistance was the largest industry in 2014 with retail trade the second largest and finance and insurance the third largest sector. 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 201 people or 24.3 percent of private nonfarm county employment (**Table 7**); this compared to the state with 13.4 percent. County health care and social assistance was the largest industry in 2015. 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 $6.6 million in total personal income or 22.3 percent of private nonfarm earnings; this compared to the state with 11.8 percent. County health care and social assistance earnings was the largest industry in 2014. 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 Grant County and North Dakota, 2014 and 2015

Categories	2014			2015			'14-'15	'14-'15
	Grant Co.		State	Grant Co.		State	County	State
	No. of Jobs	%	%	No. of Jobs	%	%	% Chg	% Chg
Total FT & PT	1,529	100.0%	100.0%	1,502	100.0%	100.0%	-1.8%	-1.3%
Wage & Salary	740	48.4%	79.1%	711	47.3%	78.4%	-3.9%	-2.1%
Proprietors	789	51.6%	20.9%	791	52.7%	21.6%	0.3%	1.8%
Farm proprs'	452	57.3%	20.9%	447	56.5%	20.3%	-1.1%	-1.1%
Nonfarm proprs' [2]	337	42.7%	79.1%	344	43.5%	79.7%	2.1%	2.5%
By Industry:								
Farm empl	524	34.3%	5.6%	498	33.2%	5.2%	-5.0%	-7.1%
Nonfarm empl	1,005	65.7%	94.4%	1,004	66.8%	94.8%	-0.1%	-0.9%
Private	**826**	**82.2%**	**85.0%**	**826**	**82.3%**	**84.7%**	0.0%	-1.3%
For/fshng/related	22	2.7%	1.0%	22	2.7%	1.0%	n/a	0.7%
Mining	16	1.9%	7.5%	16	1.9%	6.2%	n/a	-17.8%
Utilities	13	1.6%	0.8%	15	1.8%	0.8%	n/a	3.6%
Construction	46	5.6%	9.3%	37	4.5%	9.3%	-19.6%	-1.4%
Manufacturing	57	6.9%	5.6%	55	6.7%	5.6%	-3.5%	-1.6%
Wholesale trade	55	6.7%	5.9%	56	6.8%	5.9%	1.8%	-1.2%
Retail trade	83	10.0%	12.7%	88	10.7%	12.9%	6.0%	0.7%
Transp/wrhsng	54	6.5%	6.0%	53	6.4%	5.7%	n/a	-6.0%
Information	14	1.7%	1.6%	15	1.8%	1.6%	n/a	-2.4%
Finance & ins	59	7.1%	5.4%	58	7.0%	5.6%	-1.7%	0.7%
RE/rent/leasing	28	3.4%	4.8%	29	3.5%	5.0%	3.6%	2.5%
Prof /techn svcs	42	5.1%	4.8%	42	5.1%	5.0%	n/a	2.1%
Mgmt/cos/enterp	0	0.0%	1.2%	0	0.0%	1.2%	0.0%	1.5%
Admin/waste svcs	39	4.7%	4.0%	37	4.5%	4.0%	n/a	-2.0%
Educ svcs	4	0.5%	1.3%	4	0.5%	1.3%	n/a	5.1%
Hlth care/soc asst	194	23.5%	13.0%	201	24.3%	13.4%	n/a	1.9%
Art/entert/rec	10	1.2%	1.6%	10	1.2%	1.6%	0.0%	1.5%
Accom/food svc	43	5.2%	8.0%	39	4.7%	8.1%	-9.3%	0.2%
Other/not pub adm	47	5.7%	5.6%	49	5.9%	5.7%	n/a	0.5%
Govt/govt entrprs	179	17.8%	15.0%	178	17.7%	15.3%	-0.6%	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 Grant County and North Dakota, 2014 and 2015

	2014			2015			'14-15	'14-'15
	Grant Co.		State	Grant Co.		State	County	State
Categories	Income	Percent	Percent	Income	Percent	Percent	% Chg	% Chg
TTl Pers Income	105,932	100.00%	100.0%	100,947	100.00%	100.0%	-4.7%	-1.2%
Ttl by plc of wrk	55,364	52.3%	79.4%	47,592	47.1%	77.7%	-14.0%	-3.3%
Wage/Salary	24,143	43.6%	70.6%	23,206	48.8%	71.3%	-3.9%	-2.3%
Proprs' income[2]	24,926	45.0%	14.5%	18,332	38.5%	13.3%	-26.5%	-11.2%
Other	6,295	11.4%	14.9%	6,054	12.7%	15.4%	-3.8%	-0.2%
By Industry								
Farm	18,378	33.2%	3.5%	9,563	20.1%	1.2%	-48.0%	-67.4%
Nonfarm	36,986	66.8%	96.5%	38,029	79.9%	98.8%	2.8%	-1.0%
Private	29,688	80.3%	84.8%	30,381	79.9%	83.9%	2.3%	-2.0%
For/fishing/related	620	2.1%	0.6%	610	2.0%	0.6%	-1.6%	6.0%
Mining	332	1.1%	14.3%	168	0.6%	11.3%	-49.4%	-22.4%
Utilities	1,025	3.5%	1.7%	1,150	3.8%	1.9%	12.2%	8.4%
Construction	3,094	10.4%	12.6%	2,875	9.5%	12.7%	-7.1%	-0.7%
Manufacturing	3,373	11.4%	6.3%	3,509	11.5%	6.8%	4.0%	7.1%
Wholesale trade	4,071	13.7%	8.5%	4,519	14.9%	8.5%	11.0%	-2.6%
Retail trade	1,603	5.4%	7.7%	1,718	5.7%	8.0%	7.2%	2.0%
Transp/wrhsng	2,362	8.0%	8.8%	2,310	7.6%	8.4%	-2.2%	-5.7%
Information	775	2.6%	1.8%	770	2.5%	1.8%	-0.6%	-2.4%
Finance & ins	1,976	6.7%	4.7%	1,965	6.5%	5.2%	-0.6%	7.4%
RE/rent/leasing	209	0.7%	3.6%	181	0.6%	3.5%	-13.4%	-5.2%
Prof/techn svcs	1,160	3.9%	5.7%	1,101	3.6%	5.9%	-5.1%	0.9%
Mgmt/cos/enterp	0	0.0%	1.7%	0	0.0%	1.9%	0.0%!	5.0%
Admin/waste svcs	825	2.8%	2.6%	770	2.5%	2.6%	-6.7%	-1.5%
Educ svcs	51	0.2%	0.5%	49	0.2%	0.5%	-3.9%	1.8%
Hlth care/soc asst	6,614	22.3%	11.8%	7,103	23.4%	13.0%	7.4%	7.7%
Art/entert/rec	0	0.0%	0.4%	49	0.2%	0.4%	4900.0%	8.0%
Accom/food svcs	503	1.7%	3.2%	434	1.4%	3.2%	-13.7%	-2.5%
Other/not pub adm	1,095	3.7%	3.7%	1,100	3.6%	3.9%	0.5%	3.7%
Govt/govt entrprs	7,298	19.7%	15.2%	7,648	20.1%	16.1%	4.8%	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 hospitals) had $7.1 million or 23.4 percent of private nonfarm county earnings (**Table 8**); this compared to the state with 13.0 percent. County health care and social assistance was the largest earnings industry in 2015, followed by wholesale trade at 14.9 percent and manufacturing at 11.5 percent. 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 of Grant County, North Dakota, and United States economies are illustrated in **Table 9**. Based on BEA data, the 2015 per capita income for Grant County of $42,273 was lower than North Dakota ($55,950) and 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 Grant County was 3.2 percent for 2016, which was the same as the state rate and lower than the national rate of 4.9 percent. In July 2017, the unemployment rate for Grant County decreased to 2.1 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 15.6 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 higher for all three with 18.4 percent for the county, 12.1 percent for the state, and 19.7 percent for the nation.

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 Grant County,
North Dakota and the United States

Indicator	Grant Co.	N. Dakota	U.S.
Total Personal Income (2015)	$100,947,000	$42,349,688,000	$15,553,000,000,000
Per Capita Income (2015)	$42,273	$55,950	$42,392
Employment (2016)	1,248	403,067	151,436,000
Unemployment (2016)	41	13,160	7,751,000
Unemployment Rate (2016)	3.2%	3.2%	4.9%
Employment (Jul 2017)	1,280	416,451	154,470,000
Unemployment (Jul 2017)	28	8,621	7,441,000
Unemployment Rate (Jul 2017)	2.1%	2.0%	4.6%
% of All People in Poverty (2015)	15.6%	10.7%	14.7%
% of Under 18 in Poverty (2015)	18.4%	12.1%	19.7%
Transfer Receipts (2015)	$24,327,000	$5,326,398,000	$2,684,400,000,000
Transfer Receipts as Percentage of Total Personal Income (2015)	24.1%	12.6%	17.3%
Xfer Rcpts Subcategories:			
Medicare (2015)	$7,639,000	$1,099,469,000	$633,700,000,000
% of Total Xfer rcpts	31.4%	20.6%	23.6%
Medicaid (2015)	$4,155,000	$965,701,000	$536,000,000,000
% of Total Xfer rcpts	17.1%	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 24.1 percent; this was higher than the state at 12.6 percent and 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 nation for Medicare and was lower than the state and nation for Medicaid.

Direct Economic Activities of Jacobson Memorial Hospital Care Center and Clinic

Jacobson Memorial Hospital Care Center and Clinic provide 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 patient care services, see **Appendix C**.

Direct Services of Jacobson Memorial Hospital Care Center and Clinic

1. Acute Care: General inpatient acute care services provided to patients available 24 hours per day, 7 days per week.

2. Swing Bed: Long term care services provided in an acute care setting.

3. Observation: Outpatient services provided to patients for periods generally not exceeding 24 hours. Service provided during interim period for provider to fully assess and determine whether or not to admit, refer or send home.

4. Outpatient: Outpatient services provided at JMHCC include but are not limited to the following: observation, physical therapy, occupational therapy, speech therapy, infusion therapy, dressing changes, oxygen therapy, respiratory treatments, and catheter changes.

5. Emergency Room Services—available 24 hours a day, 7 days a week:

6. EKG: Electrocardiogram services for inpatients and outpatients.

7. Physician/Midlevel Services: Available 24 hours per day, 7 days per week; during clinic hours; and on-call 24 hours per day.

8. Nursing Services—available 24 hours a day, 7 days a week

9. Laboratory Services available 24 hours per day, 7 days per week.

10. Radiology: General radiology services provided 24 hours per day, 7 days per week.

11. Restorative Nursing: Service offered Monday through Friday.

12. Cardiac Rehabilitation

13. Activities: Service to provide patients with a meaningful and interesting activity program.

14. Dietary

15. Social services including admission, assessment, care planning, counseling, discharge planning and other social services for patients.

16. Equipment and Supplies

17. Pharmacy: Provided to patients through on-site pharmacy.

Jacobson Memorial Hospital Care Center and Clinic not only impacts the quality of life of their patients, but also impacts the economy of Grant County. The direct economic activities of Jacobson Memorial Hospital Care Center and Clinic include the employees and their wages, salaries, and benefits to provide the health care services. The hospital includes the employment from operations of the hospital and from operations of the Elgin Community Clinic and Glen Ullin Family Medical Clinic (referred to as “clinic” or “clinic sector”). 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 has 72 employees and the clinic has nine employees, for a total of 81 employees. These jobs generate wages, salaries, and benefits and contractual compensation (labor income) in the amount of $3.9 million for the hospital and $0.8 million for the clinic, for a combined total of $4.7 million. These are the direct impacts from the operations of Jacobson Memorial Hospital Care Center and Clinic on the Grant County economy.

The economic impact of construction activities can also be measured for employment and labor income. These activities only occur during the year of construction, while operations occur each and every year that Jacobson Memorial Hospital Care Center and Clinic continues to operate. In 2017, construction activities were $823,401; the construction generated six jobs with labor income of $234,810. 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 Jacobson Memorial Hospital Care Center and Clinic.

Table 10
Direct Economic Activities
of Jacobson Memorial Hospital Care Center and Clinic, 2017

FROM OPERATIONS		
	Employment	**Labor Income**
Hospital	72	$3,901,699
Clinic	9	$759,910
Total Direct Employment	**81**	**$4,661,609**

FROM CONSTRUCTION			
	Amount	**Employment**	**Labor Income**
2017 Activity	**$823,401**	**6**	**$234,810**

SOURCE: Hospital operations data and total construction data from Jacobson Memorial Hospital Care Center and Clinic, August 2017; Construction employment and labor income derived utilizing IMPLAN data for Grant County North Dakota. August 2017.

The direct impacts of Jacobson Memorial Hospital Care Center and Clinic, measured by employment and labor income, are only a portion of the total impact. There are additional economic impacts created as Jacobson Memorial Hospital Care Center and Clinic 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 Jacobson Memorial Hospital Care Center and Clinic, 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 the clinic and their employees spend money and as the hospital and clinic as businesses 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 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

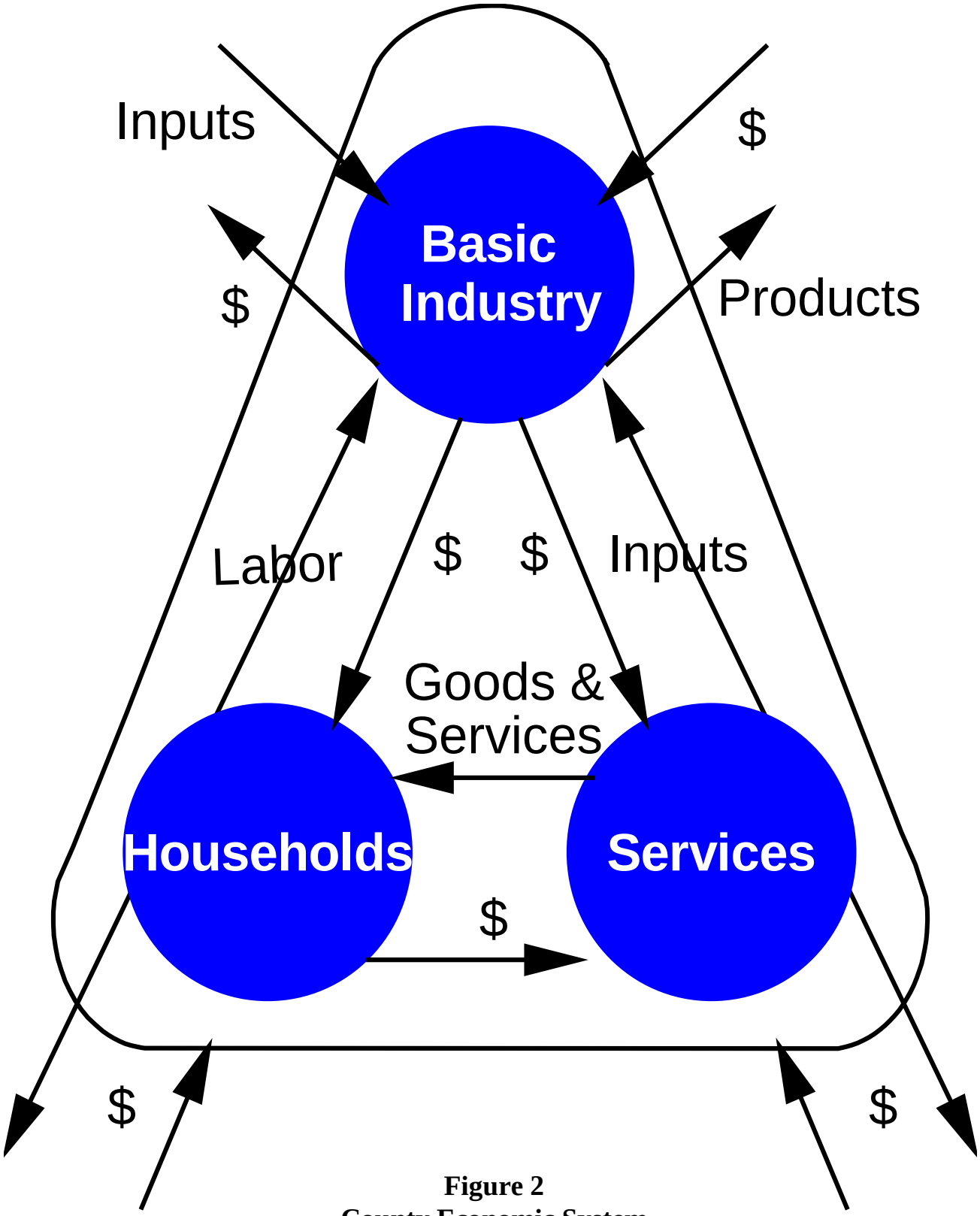


Figure 2
County Economic System

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 Jacobson Memorial Hospital Care Center and Clinic

The impacts of Jacobson Memorial Hospital Care Center and Clinic will be presented in **Table 11**. Direct employment and labor income for operations were obtained from Jacobson Memorial Hospital Care Center and Clinic. The multipliers specific to Grant County, North Dakota, were derived from IMPLAN data.

Employment Impact of Jacobson Memorial Hospital Care Center and Clinic

The hospital employs 72 employees (**Table 11**). The hospital employment multiplier is 1.38; this means for every job in the hospital sector, another 0.38 job is created in other sectors (businesses) in Grant County. The secondary employment generated in Grant County from the hospital sector is estimated to be 27 jobs. The hospital had a total impact of 99 jobs on the local economy of Grant County. With an employment multiplier of 1.38 for the clinic sector, the total clinic employment impact is 12 jobs; this includes direct jobs of nine and secondary jobs of three. The total impact from operations is 111 jobs in Grant County, which includes 81 direct jobs and 30 secondary jobs.

The employment and labor income impacts from the 2017 estimated construction activities of Jacobson Memorial Hospital Care Center and Clinic are also shown in **Table 11**. Estimated direct employment of six jobs from the $823,401 in construction activities were derived from IMPLAN data. With a construction employment multiplier of 1.24, the construction activities will generate six direct employment impact, one secondary employment impact and seven total employment impact.

The combined construction and operations employment impact was 87 direct employees, 31 secondary employees and 118 total employment impact for Jacobson Memorial Hospital Care Center and Clinic in 2017. Construction impacts are only during the year of construction, while

Table 11
Impact of Jacobson Memorial Hospital Care Center and Clinic, 2017

	Employment Impact			
	Direct Impact	***Multiplier***	***Secondary Impact***	***Total Impact***
Operations				
Hospital	72	1.38	27	99
Clinic	9	1.38	3	12
Operations Total	81		30	**111**
Construction				
From 2017	6	1.24	1	**7**
Combined Total	87		31	**118**

	Labor Income Impact*			
	Direct Impact	***Multiplier***	***Secondary Impact***	***Total Impact***
Operations				
Hospital	$3,901,699	1.14	$546,238	$4,447,937
Clinic	$759,910	1.09	$68,391	$828,301
Operations Total	$4,661,609		$614,629	$5,276,238
Construction				
From 2017	$234,810	1.16	$37,570	$272,380
Combined Total	$4,896,419		$652,199	**5,548,618**

Total State and Local Tax Impact from Hospital and Clinic	
	Total Impact
State and Local Sales Tax Impact	$35,616
State and Local Property Tax Impact	$58,321
State and Local Motor Vehicle License Impact	$9,557
All Other State and Local Tax Impacts	$219,902
Total State and Local Tax Impacts	**$323,396**

Total Federal Tax Impact from Hospital and Clinic	
	Total Impact
Total Federal Tax Impacts	**$1,260,021**

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

operation impacts continue each and every year the Jacobson Memorial Hospital Care Center and Clinic remains operating.

Labor Income Impact of Jacobson Memorial Hospital Care Center and Clinic

Data obtained from Jacobson Memorial Hospital Care Center and Clinic indicate that direct labor income for the hospital was $3.9 million. Using the hospital labor income multiplier of 1.14 derived from IMPLAN, Jacobson Memorial Hospital Care Center and Clinic generated secondary labor income impact of $0.5 million and total labor income impact of $4.4 million. Using the physician clinic labor income multiplier, the clinic sector had direct labor income impact of $759,910, secondary labor income impact of $68,391, and total labor income impact of $828,301. For the hospital and clinic combined, Jacobson Memorial Hospital Care Center and Clinic had direct labor income impact of $4.7 million, secondary labor income impact of $0.6 million, and total labor income impact of $5.3 million.

In 2017, the construction activities are estimated to generate $234,810 direct labor income impact, $37,570 secondary labor income impact, and $272,380 total labor income impact. Combining the operations and construction labor income impacts resulted in combined direct labor income impact of $4.9 million, combined secondary labor income impact of $0.7 million, and combined total labor income impact of $5.5 million.

Tax Impacts of Jacobson Memorial Hospital Care Center and Clinic

IMPLAN now provides data on the state and local tax impacts and the federal tax impacts for a particular business/organization. For Jacobson Memorial Hospital Care Center and Clinic, state and local sales tax impact was $35,616, state and local property tax impact was $58,321, state and local motor vehicle license impact was $9,557, and all other state and local taxes were $219,902. ***The total state and local tax impacts were $323,396 from the Jacobson Memorial***

Hospital Care Center and Clinic. The total federal tax impacts from the Jacobson Memorial Hospital Care Center and Clinic were $1.3 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 Jacobson Memorial Hospital Care Center and Clinic have an impact on the economy of Grant County. Often overlooked are the economic impacts created from construction activities. This report measures the impact that Jacobson Memorial Hospital Care Center and Clinic had on the Grant 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 occurs only during the construction year.

Jacobson Memorial Hospital Care Center and Clinic reported direct employment of 72 full-time, part-time, and contractual employees, and had $3.9 million in direct labor income (wages, salaries, and benefits and contract labor income) for the hospital operations. The clinic operations had nine direct employees and labor income of $759,910. When the secondary impacts are included, the total combined operations employment impact was 111 jobs and the total labor income impact was $5.3 million.

Construction impact can be measured in the year the construction occurs; these impacts only occur only during the construction period. During 2017, Jacobson Memorial Hospital Care Center and Clinic had construction of $823,401. The direct employment impact from this construction was six employees, with direct labor income impact of $234, 810.
The total from operations and construction were 87 direct employment impact, 31 secondary employment impact, and 118 total employment impact. For labor income, the combined

operations and construction impacts results in direct labor income impact of $4.9 million, secondary labor income impact of $0.7 million, and total labor income impact of $5.5 million. From both operations and construction, the total state and local tax impacts generated were $323,396 and the total federal tax impacts, $1.3 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 Jacobson Memorial Hospital Care Center and Clinic operates in the future; these are long term economic benefits of Jacobson Memorial Hospital Care Center and Clinic. These construction impacts only occur during the year of construction.

The impacts generated by Jacobson Memorial Hospital Care Center and Clinic contribute to the local economy of Grant County. The hospital and clinic generate revenues in the local economy. The hospital and clinic spend revenues in the local economy and pay their employees. The hospital and clinic and their employees spend money in Grant County and generate a secondary impact. The hospital and clinic and their employees also generate a tremendous amount of state and local and federal taxes in Grant County. If the hospital and clinic increase or decrease in size, the medical health of Grant County residents as well as the economic health of Grant County can be affected. For the attraction of industrial firms, businesses, and retirees, the local area should have quality hospital and physician services. A quality hospital and physician sector can contribute to the overall economic health of Grant County, as well as the overall medical health of the Grant County residents. Given this, not only does Jacobson Memorial Hospital Care Center and Clinic contribute to the health and wellness of the local residents but Jacobson Memorial Hospital Care Center and Clinic also contributes to the overall economic strength of Grant 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
Huntersville, NC 28078

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 Jacobson Memorial Hospital Care Center and Clinic

APPENDIX B - Detailed Description of State and Local Tax Impacts from Jacobson Memorial Hospital Care Center and Clinic

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	TOTALS
Dividends					$1,457	$1,457
Social Ins Tax- Employee Contribution	$4,134					$4,134
Social Ins Tax- Employer Contribution	$8,353					$8,353
Tax on Production and Imports: Sales Tax			$35,616			$35,616
Tax on Production and Imports: Property Tax			$56,095			$56,095
Tax on Production and Imports: Motor Vehicle Lic			$1,880			$1,880
Tax on Production and Imports: Severance Tax			$125,605			$125,605
Tax on Production and Imports: Other Taxes			$3,760			$3,760
Tax on Production and Imports: S/L NonTaxes			$2,815			$2,815
Corporate Profits Tax					$8,528	$8,528
Personal Tax: Income Tax				$50,561		$50,561
Personal Tax: NonTaxes (Fines-Fees				$7,466		$7,466
Personal Tax: Motor Vehicle License				$7,677		$7,677
Personal Tax: Property Taxes				$2,226		$2,226
Personal Tax: Other Tax (Fish/Hunt)				$7,223		$7,223
Total State and Local Tax Impact	$12,487	$0	$225,771	$75,153	$9,985	**$323,396**

APPENDIX B - Detailed Description of Federal Tax Impacts from Jacobson Memorial Hospital Care Center and Clinic

Description	Employee Compensation	Proprietor Income	Tax on Production and Imports	Households	Corporations	TOTALS
Social Ins Tax- Employee Contribution	$386,145	$14,480				$400,625
Social Ins Tax- Employer Contribution	$376,944					$376,944
Tax on Production and Imports: Excise Taxes			$9,019			$9,019
Tax on Production and Imports: Custom Duty			$3,396			$3,396
Tax on Production and Imports: Fed NonTaxes			$551			$551
Corporate Profits Tax					$64,226	$64,226
Personal Tax: Income Tax				$405,260		$405,260
Total Federal Tax	$763,089	$14,480	$12,966	$405,260	$64,226	**$1,260,021**

Appendix C

Jacobson Memorial Hospital Care Center and Clinic

Directory of Patient Care Services

Updated August 2, 2017

Appendix C
Jacobson Memorial Hospital Care Center and Clinic
Directory of Patient Care Services
Updated August 2, 2017

The following overviews the patient care services provided through the CAH directly by JMHCC or through arrangement or agreement.

Direct Services

18. Acute Care: General inpatient acute care services with all direct and contracted services provided to patients available 24 hours per day, 7 days per week.

19. Swing Bed: Long term care services provided in an acute care setting. All direct and contracted services provided to patients. Generally long term care provided to those patients eligible for Medicare Part A benefits.

    a. Skilled Rehabilitation Services, i.e., physical, occupational and speech therapies

    b. Skilled Nursing Services to include infusion therapy, wound care bladder and/or bowel training, respiratory services, restorative therapy.

    c. Social Work services

    d. Referrals to Grant County Social Services

    e. Consultant Dietician Services to provide nutritional evaluations and planning

    f. Individualized Activity Programming

    g. Consultant Psychiatry Services

20. Observation: Outpatient services provided to patients for periods generally not exceeding 24 hours. Service provided during interim period for provider to fully assess and determine whether or not to admit, refer or send home.

21. Outpatient: Medical services provided to patients on an outpatient basis.

    Outpatient services provided at JMHCC include both direct and contracted services, and include but not limited to the following: observation, physical therapy, occupational therapy, speech therapy, infusion therapy, dressing changes, oxygen therapy, respiratory treatments, and catheter changes.

22. Emergency Room Services—available 24 hours a day, 7 days a week:

a. Assessment, triage and treatment of medical emergencies within the practitioners scope of practice

b. Stabilization and transfer of patients requiring tertiary care as provided per hospital protocol and physician services.

c. Emergency trauma care

d. Emergency and non-emergency airway management

e. Wound care

f. Foreign body removal

g. Poison Control consultation and treatment

h. Immobilization of fractures

i. Emergency cardiac care including resuscitation, defibrillation, cardiac monitoring, EKG's and ACLS treatment protocols.

j. Gastric lavage

k. Emergency obstetrical deliveries only

l. Burn stabilization with referral to a tertiary enter

m. Phlebotomy services

n. Report to law enforcement agencies information required by law

o. Laboratory and radiology services

23. EKG: Electrocardiogram services for inpatients and outpatients.

24. Physician/Midlevel Services: Available 24 hours per day, 7 days per week; during clinic hours; and on-call 24 hours per day. Includes but not limited to the following:

a. Complete medical history and physical exam
b. Diagnose and treatment
c. Ordering treatment and diagnostic services
d. Interpreting diagnostic results
e. Consultation with other health care professionals
f. Minor diagnostic procedures
g. Minor surgical procedures
h. Advocate primary health care and health maintenance for individuals of all ages

i. Providing first response care for common-life threatening injuries and illness
j. Furnish diagnostic and therapeutic services
k. Perform health status assessment
l. Treat medical conditions
m. Application of casts
n. Interpreting xrays
o. Arrange for referral

25. Nursing Services—available 24 hours a day, 7 days a week

a. Supervise all aspects of patient care

b. Ongoing nursing assessment

c. Respiratory treatments

d. Medication administration and monitoring

e. Therapeutic treatments

f. Developing, implementing and keeping all patient care plans current

g. Providing direct patient care to meet the needs of patients at the JMHCC-CAH

h. Pulse Oximetry

i. Patient therapy

j. IV fluids and medications

k. Critical Care Services provided include: cardiac monitoring, thrombolytic therapy, electrocardiagrams, resuscitation according to ACLS guidelines

26. Laboratory Services available 24 hours per day, 7 days per week. Include the following:

a. Hematology: complete blood count, white blood count, red blood count, hemoglobin, hematocrit, automated 3 part differential, manual differential
b. Chemistry: comprehensive metabolic panel, CRP, Anylase, Lipase, Mag, Phos, Digoxin
c. Cardiac Profile: CI, CK-MB, myoglobin, troponin, BNP

d. Urinalysis: leukocytes, nitrite, urobilinogen, protein, Ph, blood, ketone, bilirubin, glucose, specific gravity
e. Coagulation: prothrombin time
f. Serology: group A strep, hCG, mononucleosis, H.phlori, Influenze A and B, RSV,

occult iFOB

g. Miscellaneous: culture collection and set up, and urine drug screen.

11. Radiology: General radiology including abdomen, thorax, head and neck, spines, pelvis, upper and lower extremities. Mammography: screening and diagnostic. CT: abdomen, pelvis, chest, head and neck, upper and lower extremities.

12. Restorative Nursing: Service offered Monday through Friday. Services performed by certified nursing assistants with additional skills and insights in the therapeutic area. They work under the supervisor of a licensed therapist. Services include: range of motion; gait training, Nu-Step, strengthening exercises and other.

13. Cardiac Rehabilitation: Assist people who have experienced a cardiac event in the past. Improve health status to obtain optimal physical, mental, social and vocational activities; monitor exercise and provide emotional support; educate patients and family on individual functional capacity, safe limit functions, disease process, and lifestyle modification.

14. Activities: Service to provide patients with a meaningful and interesting activity program to: meet physical, mental, psychosocial well-being of each patient; use available resources and promote interdisciplinary communication and teamwork; coordinate broad range of activity programs to meet interests and needs; protect and promote patient rights; recruit and train volunteers; and other.

15. Dietary: Dietary department provides the following services to patients: dietary assessments; care planning participation; meal preparation; menu planning; services of consulting dietician; special diets; and other related to an institutional dietary program.

16. Social: Social Service Designee, supported by a Social Worker consultant provide social services including: admission, assessment, care planning, counseling, discharge planning and other social services for patients.

17. Equipment and Supplies: JMHCC provides, stocks or makes arrangements for needed equipment, supplies, preventative maintenance to accommodate needs of patients.

18. Pharmacy: Pharmacy services are provided to patients through on-site pharmacy managed by Chuck Oien, Pharmacist; and Curt McGarvey, Consulting Pharmacist for chart reviews.

<u>Services by Arrangement or Agreement</u>

1. Physician/Midlevel - Dr. Alan Lindemann; Carey Rivinius FNP-C; Lesley Kling FNP-C; Lori Hill, FNP-C, Carrie Gerving, FNP-C, and Other: Contracted physician and midlevel services for family medicine , pathology and/or same day surgery.

2. Occupational Therapy - Lisa Dreiske: Service generally offered 2 days per week, with additional days per arrangement per patient needs. Services include: ADL assessment/training; positioning evaluations; upper extremity functioning assessments with therapeutic exercises; cognitive assessments and training; wheelchair evaluations; adaptive equipment assessments; hand therapy; ergonomic assessments; home assessments and modification recommendations; feeding evaluations; splinting; arthritis assessment and treatment; therapeutic exercises; therapeutic activities; manual therapy; work reintegration; ultrasound; electrical stimulation; paraffin bath; contrast bath; joint mobilization; and patient education.

3. Physical Therapy - Mark Bogert: Service generally offered 3 days per week (Monday, Wednesday and Friday), with additional days by arrangement. Services include: cervical traction; contrast baths, cryotherapy, electrical stimulation; gait training; Jobst Intermittent Pressure; paraffin bath; therapeutic exercise; transcutaneous electrical nerve stimulation; ultrasound; patient education; balance training; manual therapy; joint mobilization; positioning evaluations; and wheelchair evaluations.

4. Speech Therapy: Misty Stockert. Service is offered on an as needed basis. Services include: evaluates and treats disorders in the area of speech, language, cognition, and swallowing.

5. Pharmacy Services – Chuck Oien: Pharmacist generally responsible for pharmacy services at JMHCC. Distributes drugs prescribed by practitioner; answers questions about medications; advises Medical Staff on selection and effects of drugs; mixes IV solutions, antibiotics, creams, and sterile medications for acute care; monitors adverse effects; advises on formulary; manages pharmacy services.

6. Laboratory Reference Labs – Northern Plains Laboratory: Services as primary reference laboratory for JMHCC. Provides: services of a consulting pathologist (medical director) and technical supervisor; pathology and biochemical analysis, and perform tests not available at JMHCC.

7. Laboratory Reference Labs – North Dakota Department of Health: Provides testing for reportable diseases.

8. Laboratory Blood Services – United Blood Services: Provides blood product and blood bank reagents.

9. Radiology Mobile Services – DMS Ultrasound: Provides weekly onsite ultrasound exams to JMHCC and Glen Ullin Clinic.

10. Radiology Mobile Services – DMS Bone Densitometry: Provides bimonthly onsite bone dexa scans at JMHCC and Glen Ullin Clinic.

11. Radiology Mobile Services – Northland MRI Services: Provides biweekly onsite MRI scanning.

12. Radiology Mobile Services – DMS CT Services: Provides biweekly onsite CT scanning at Glen Ullin Clinic.

13. Radiology Teleradiography Services – St. Alexius Medical Center: Provides radiologists to read and dictate reports for electronically transmitted,, or film radiographic exams; transcription services to produce reports; provides link to a PAC's system to archive radiological exams; provides a RIS system link and technical support for RIS.

14. Consulting Dietician – CHI St. Alexius Health: Provides services onsite once a month and available for consultation via telephone/fax. Services include: initial and quarterly assessments for residents; dietary education for staff quarterly and residents; nutritional assessments and interventions; and quality assurance activities.

15. Consulting Health Information Management (Medical Records) – Koble Group: Provides a minimum of quarterly visits meeting with medical records, administration, and other staff addressing billing, coding, medical records, and related.

16. Consulting Dentist – Dr. John Sanderson: Consulting dentist on JMHCC Medical Staff; reviews patient/resident dental care policies; provides annual nursing inservice on dental care; and routine and emergency dental services as needed.

17. Organ Procurement – LifeSource: Organ procurement and tissue services organization.

18. Organ Procurement - ND Lion's Eye Bank: Eye tissue services organization coordinated through LifeSource.

19. Social Worker Consultant – CHI St. Alexius Health: Consultant provides professional services on-site in support of Social Services Designee and other health care professionals, patients/residents and families. Services include: quarterly visits to review charts, policies, procedures, care plans, address special needs and other.