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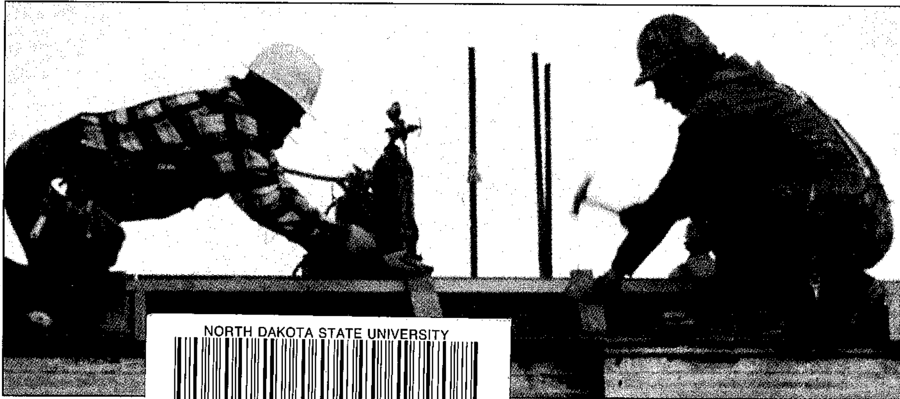

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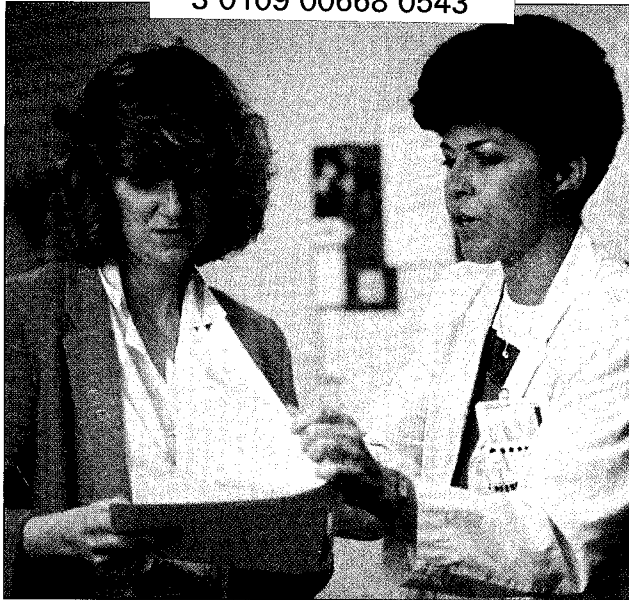

The Economic Impact of North Dakota's Health Care Industry on the State's Economy in 1991

Rita R. Hamm, JoAnn M. Thompson,
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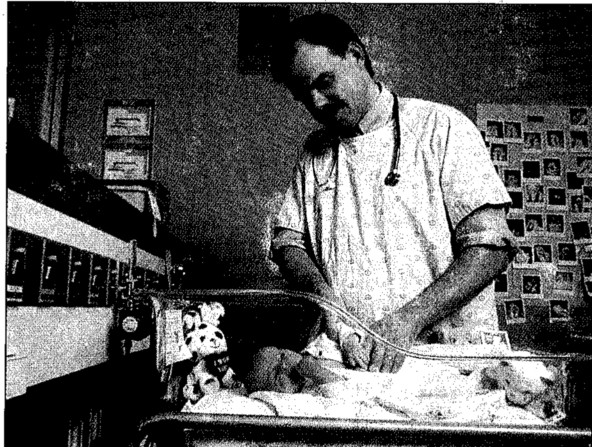

Institute for Business and Industry Development
and Department of Agricultural Economics
North Dakota State University, Fargo, ND 58105

Abstract

The health care industry's far-reaching economic influence within North Dakota is the focus of this report. An input-output model is used to estimate the economic impact of hospitals and long-term care nursing facilities. The analysis shows that nearly 8 percent of the state's total business activity, nearly 10 percent of the state's total retail sales, and nearly 19 percent of the state's total employment in 1991 were attributable to hospitals and long-term care nursing facilities. In addition, these facilities generated nearly $41 million of tax revenues for the state in 1991.

The Economic Impact of North Dakota's Health Care Industry on the State's Economy in 1991

Rita R. Hamm, JoAnn M. Thompson, Randal C. Coon, and F. Larry Leistritz[1]

The rising cost of health care in the United States is a major policy issue. At the same time, the American ideal that *everyone* in the country should have access to quality health care regardless of cost remains strongly entrenched in our thinking. As costs rise, however, the health care delivery system are changes, like it or not. Hard hit is the health care delivery system in rural America. In 1988, the U.S. Senate Subcommittee on Aging estimated that 22 percent of the nation's rural hospitals were at the risk of closure. Since then, the cost of health care has only continued to rise.

When a rural hospital closes, it impacts the medical care of the community's residents, and it strikes hard at the economic base of the entire area (Doeksen and Altobelli 1990; Fettig 1991). Many rural hospitals are among the counties' largest employers (Christianson and Faulkner 1981; Litchy et al. 1986). In effect, rural hospitals provide more than health care, they are part of the economic lifeblood of rural America (Fettig 1991).

The purpose of this report is to better define the economic contribution of the health care system to North Dakota in terms of the number of jobs created, expenditures made, and state revenues generated. *The Economic Impact of Health Care in North Dakota* follows publication of *Medical Services in North Dakota* (Hamm et al. 1993). The *Services* report describes the availability and utilization of physicians (by type), community hospitals, long-term nursing care and basic care facilities, home health agencies, and hospice operations in the state.

All hospitals and long-term care facilities operating in the state in 1991 are included in this report. The previous report, *Medical Services in North Dakota,* included only community hospitals, but not Indian, Air Base, Veterans or State Hospitals--those hospitals from which the general population is ordinarily excluded. In this present report, these hospitals were *included* because of their economic impact on the state, regardless of their ownership or exclusive clientele. This report excludes basic care facilities; the reasons for exclusion are that (1) basic care facilities are merely an extension of the health care system and do not provide medical care *per se* and (2) unlike hospitals

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[1]The authors are socioeconomic research specialist, Institute for Business and Industry Development; research assistant, research specialist, and professor, respectively, Department of Agricultural Economics, NDSU.

and nursing facilities, basic care facilities do not receive federal transfer payments--Medicare/Medicaid; their contribution to the economy is primarily from in-state sources. Clinics, physician offices and other components of the health care system such as home health agencies are also not included simply because the data to do so was neither available nor easily attainable. Thus, the results reported here are only a portion of the economic impacts of the health care industry in North Dakota. If all components of the health care system could have been included, the impacts reported here would be greater.

Data Sources and Methods

Data on hospital expenditures and full-time equivalent (FTE) workers are taken from the American Hospital Association *Guide to the Health Care Field* (1991). The percentage of expenditures by economic sector is based on the response to a one-page, mailed survey (see Appendix). Forty-five of the 57 hospitals in North Dakota responded to the survey. In order to estimate the economic contribution of the total number of hospital facilities on the state's economy, the distribution of expenditures by sector for those hospitals that did not respond to the survey were assigned the average of all hospitals that did respond.

The North Dakota Long-term Care Association, under the direction of Shelly Warner, executive director, gathered similar information (expenditures by sector) for the state's 83 long-term nursing facilities. All 83 facilities returned completed questionnaires. A copy of the questionnaire sent to the hospitals is included in the Appendix of this report. The questionnaire mailed to the long-term care facilities is identical, except "hospitals" was replaced by "long-term care nursing facilities."

Input-output analyses are one of the methods economists use to estimate the linkages or interdependencies among the *sectors*[2] of a state's economy. The North Dakota Input-Output Model, employed in many previous studies, is used for this analysis. In this model, the state's economy is divided into seventeen sectors. Table 1 shows the hospital and nursing facilities' 1991 expenditures, as reported on the questionnaires by category and as applied to the model by sector. These are not the total expenditures for these facilities; they only include what was spent in North Dakota. Out-of-state expenditures are not analyzed by the North Dakota Input-Output Model.

[2]A sector is a group of similar economic units--retail trade, transportation, etc. For example, the household sector is made up of all households; personal income is allocated to the household sector in the North Dakota Input-Output Model.

Table 1
1991 Hospital and Long-term Nursing Facility Expenditures in North Dakota and Allocation to the North Dakota Input-Output Model Economic Sectors

Type of Expenditure	Hospitals	Nursing Facilities	Total	Model Sector
Utilities	$14,514,910	$5,384,458	$19,899,368	Communication and Public Utilities
Supplies	63,758,210	18,035,523	81,793,733	Retail Sales
Insurance	5,025,050	2,970,254	7,995,304	Finance, Insurance and Real Estate
Contract Services*	48,688,460	4,589,916	53,278,376	Professional and Social Services
Payroll	346,754,490	108,738,116	455,492,606	Households
Construction**	13,578,720	4,063,058	17,641,778	Construction
Interest	4,485,050	4,101,091	8,586,141	Finance, Insurance and Real Estate
Other	86,486,640	10,121,404	96,608,044	Business and Personal Services
TOTAL	$583,291,530	$158,003,820	$741,295,350	

* *Attorney fees and other professional service fees, not part of salaries and wages (payroll)*
***Construction includes remodeling and repair costs*

For each sector, model developers compute interdependence coefficients (sometimes called *multipliers*) that indicate the total effect (economic impact) of an additional dollar of income earned by the sector. Hertsgaard et al. (1984) and Coon et al. (1985 and 1989) give a complete explanation of the model and the conceptual basis for the interdependence coefficients used in the model.

To help explain interdependence coefficients in simple terms, we provide this example: a single dollar from a hospital employee's paycheck (personal income/household sector) may be spent for bread at a local store; the store (retail trade sector) uses part of that dollar to pay for the next shipment of bread (transportation and agricultural processing sectors) and part to pay the store employee who shelved the bread or sold the bread (households sector); the bread supplier uses part of that dollar to pay for the grain (agricultural crops sector). . . and so on. In short, one sector uses some fraction of its income to buy something from other sectors of the state's economy and these sectors, in turn, use some fraction of that income to buy something from other sectors, and so on. The interdependence coefficients in the North Dakota Input-Output Model quantify this cycle of spending and respending for the 17 basic sectors of the state's economy.

For the analysis reported here, the North Dakota Input-Output Model interdependence coefficients were applied to the hospital and long-term nursing care expenditures by sector to arrive at the total business activity generated or the gross business volume for each of the state's 17 economic sectors (Table 2).

Table 2

Total Business Activity Generated in North Dakota by North Dakota Hospitals and Long-term Care Nursing Facilities, 1991

Sector	Hospitals	Nursing Facilities	Total
	--$000--	*--$000--*	*--$000--*
Agriculture--Livestock	$36,743	$10,363	$47,106
Agriculture--Crops	14,425	4,119	18,545
Nonmetal Mining	3,264	910	4,174
Construction	57,955	16,489	74,444
Transportation	5,848	1,564	7,412
Communications/Public Utilities	73,359	21,197	94,554
Ag Processing/Misc. Manufacturing	22,451	6,466	28,917
Retail Trade	429,284	120,357	549,642
Finance, Insurance & Real Estate	91,803	30,085	121,888
Business & Personal Service	116,942	18,619	135,561
Professional/Social Service	95,878	17,763	113,642
Households	708,001	203,371	911,372
Government	54,118	15,148	69,267
Coal Mining	0	0	0
Electric Generation	0	0	0
Petroleum Exploration/Extraction	0	0	0
Petroleum Refining	0	0	0
TOTAL	$1,710,072	$466,451	$2,176,523

In addition to determining the gross business volume an industry or development generates, the Input-Output Model estimates the additional employment (secondary jobs; in this analysis, employment outside the hospitals and long-term care facilities, but employment that is dependent on the existence of the health care industry) and the state tax revenues likely to result from the activity.

Analysis

North Dakota health care facilities spent nearly $830 million in 1991. Of this amount, $741.3 million (or 89%) was spent within the state for supplies, services, and payrolls. Distribution of these in-state expenditures to sectors of the input-output model is presented in Tables 1 and 3. Expenditures to the household sector for payrolls accounted for $455.5 million in 1991, almost 62 percent of the total in-state expenditures.

Table 3

Estimated North Dakota Expenditures by Hospital and Long-term Care Nursing Facilities for Operations and Capital Improvements, 1991

	Expenditures		
Sector	Hospitals	Long-term	Total
	- - - - - - - - *million dollars* - - - - - - - -		
Construction	13.6	4.1	17.7
Communications & Public Utilities	14.5	5.4	19.9
Retail	63.8	18.0	81.8
Finance, Insurance & Real Estate	9.4	7.1	16.5
Business & Personal Services	86.5	10.1	96.6
Professional & Social Services	48.7	4.6	53.3
Households	346.8	108.7	455.5
Total *(All Sectors)*	583.3	158.0	741.3

Business activity generated from the health care industry's expenditures totaled $2,176.6 million for 1991 (Tables 2 and 4). This figure was nearly 8 percent of the state's total business activity in 1991. The resulting personal income was estimated to be $911.4 million or about 10.5 percent of total state personal income. The level of retail trade activity associated with this industry amounted to $549.7 million, almost 10 percent of total state retail trade.

Other economic indicators estimated from the input-output analysis include state tax revenues for sales and use ($25.5 million), personal income ($11.8 million), and corporate income ($2.87 million) (Table 5). Hospitals and long-term care facilities generated nearly $42 million total state taxes in 1991.

Table 4

Estimated Economic Activity From North Dakota Hospitals and Long-term Care Nursing Facilities, 1991

Item	Economic Activity		
	Hospitals	Long-term	Total
	- - - - - - - - million dollars - - - - - - - -		
Personal Income	708.0	203.4	911.4
Retail Sales	429.3	120.4	549.7
Business Activity for All Business Sectors*	896.8	233.5	1,130.3
Total Business Activity	1,710.1	466.5	2,176.6

* Includes all sectors except agriculture (livestock and crops), households, and government.

Table 5

Estimated State Tax Revenue Resulting From Activities of North Dakota Hospitals and Long-term Care Nursing Facilities, 1991

Tax	Hospitals	Long-term	Total
	- - - - - - - million dollars - - - - - - -		
Sales and Use	19.9	5.6	25.5
Personal Income	9.2	2.6	11.8
Corporate Income	2.8	0.7	3.5
Total Taxes	31.9	8.9	40.8

Table 6 presents the full-time employment associated with hospitals and long-term care facilities in North Dakota. Over 19,300 jobs are directly associated with this industry. In addition, nearly 36,000 indirect or secondary full-time equivalent positions are estimated to be related to hospitals and long-term care nursing facilities.

Table 6

Estimated Direct and Secondary Employment From North Dakota Hospitals and Long-term Care Nursing Facilities, 1991

Category	Hospitals	Long-term	Total
Direct	12,893	6,437	19,330
Secondary	29,436	6,556	35,992

Summary

This analysis shows that hospitals and long-term care nursing facilities contribute a substantial amount of business activity to the state's economy--nearly 8 percent of the state's total business activity generated in 1991 and nearly 10 percent of the state's total retail sales. In addition, a high percentage of the industry's total expenditures are made within the state. This maximizes its economic contribution to the state.

Perhaps even more important to the individuals and families in the state are the nearly 36,000 indirect and over 19,300 direct jobs created by this industry. Together, these direct and secondary jobs were nearly 19 percent of the state's total employment in 1991. On average, the 19,300 full-time equivalent positions earned a salary of $23,564 in 1991. This figure is well above the state's average annual earnings of $18,132 that Job Service reported for that year (Job Service 1992). Thus, not only does this industry provide a substantial number of jobs, the jobs it provides pay, on average, a wage that compares favorable with the state's average annual wage.

In addition to business activity and employment, the hospitals and long-term care nursing facilities contribute to the state's tax revenues, generating nearly $41 million of revenues in 1991. Finally, hospitals and long-term care facilities are located throughout the state, not just in the state's largest cities. Consequently, they generate economic activity and jobs for many areas of the state.

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Appendix

9 November 1992

*, Administrator
*, Hospital
address
City, ND ZIP

Dear M/M *,

We are preparing a study of the economic impact of health care facilities on the State of North Dakota. In order to do this, we need information from hospitals on the *percent of their expenditures spent for different goods and services.* Would you help us by supplying the information for * Hospital? All of the information we received will be reported in the aggregate; no hospital will be identified by name. A one-page questionnaire and self-addressed post-paid envelope are enclosed for your convenience.

We believe the results of this effort will be enlightening to both the general public and policy makers in this state; we hope you will find use for the results as well. Please let us know if you would like to receive a summary of our findings.

Thank you for your cooperation.

Sincerely,

1991 Hospital Expenditure Survey

Location of Facility ______________________ ______________________
(city) (county)

Number of Beds ______________

Please *estimate* the PERCENT of this hospital's 1991 total expenditures spent both instate and out-of-state for the following:

	North Dakota		Out of State	
Utilities	______%		______%	
Supplies	______		______	
Insurance	______		______	
Contract services	______		______	
Payroll	______		______	
Taxes	______		______	
Construction	______		______	
Interest payments	______		______	
Other (specify)	______		______	
TOTAL	______%	+	______%	= 100%

NOTE: *Contract services* includes attorney fees/other professional service fees, not part of salaries/wages (payroll); *Construction* includes remodeling/repair costs.

Thank you for your response. If you would like to receive a copy of our study results, please put your name and the complete mailing address of your facility on the reverse side of this form. (PLEASE BE ASSURED, THE NAME OF THE FACILITY WILL NOT BE RELEASED IN CONNECTION WITH THE DATA WE RECEIVE.)

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