MOTOR CARRIER TRANSPORTATION OF NON-AGRICULTURAL PRODUCTS IN NORTH DAKOTA 1969

By

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FOREWARD

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There are three reports which represent research completed under a general research project entitled, "Volume of Commerce Hauled By Motor Trucks in North Dakota."

Ronald Q. Nichols and David C. Nelson, Motor Carrier Transportation of Agricultural Products in North Dakota, 1969, UGPTI Report No. 19 - Research Report No. 16, Upper Great Plains Transportation Institute, North Dakota State University, Fargo, October, 1971.

Gregory R. Binkley and David C. Nelson, Motor Carrier Transportation of Nonagricultural Products in North Dakota, 1969, UGPTI Report No. 20 - Research Report No. 17, Upper Great Plains Transportation Institute, North Dakota State Umiversity, Fargo, November, 1971.

David C. Nelson, Gregory R. Binkley and Ronald Q. Nichols, Statistical Appendix: Motor Carrier Transportation of Agricultural and Nonagricultural Products in North Dakota, 1969, UGPTI Report No. 21 - Statistical Report No. 3, Upper Great Plains Transportation Institute, North Dakota State University, Fargo, December, 1971.

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HIGHLIGHTS

The primary purpose of this study was to estimate the volume of nonagricultural products transported by motor carrier over North Dakota highways.

The specific objectives of this study were:

1. To determine the total volume of nonagricultural products transported by motor carrier to, from, and within North Dakota and to determine the volume of the respective product classes.
2. To determine the value of nonagricultural products by product class and the total value of nonagricultural products transported by motor carrier to, from, and within North Dakota.
3. To determine the total value added by motor carriers to nonagricultural product shipments to, from, and within North Dakota.
4. To identify interregion and intraregion nonagricultural product movements by total volume, product class volume, total value, and value added by motor carrier.
5. To identify nonagricultural product movements over principle routes in North Dakota by total volume, commodity class, volume, total value, and total value added by motor carrier.

Nonagricultural products were divided into the following product classes: (1) North Dakota crude oil; (2) processed oil and gasoline; (3) groceries; (4) durable goods; (5) steel products; (6) building materials; (7) farm equipment; (8) processed agricultural products; (9) mining products; (10) vehicles; and (11) general freight.

Scale tickets for the calendar year 1969 were collected from the 10 North Dakota state weigh stations. The sampled scale tickets provided information regarding: (1) type of product, (2) gross weight of the shipment, (3) origin, (4) destination, (5) route, and (6) interregion and intraregion product flows.

From the information provided on the sampled scale ticket, the value of the commodity shipment and the value added by transportation were determined.

Eight North Dakota economic regions were determined along with 21 national regions. All origins and destinations were placed in their respective regions and a central city was chosen to represent the corresponding region. Freight rates were determined between central cities and the freight rate between central cities represented the freight rate of all origins and destinations in the corresponding regions.

A total of 4,258,018 gross tons of nonagricultural products was transported by motor carrier over North Dakota highways in 1969. The value of these shipments was $809,186,500 and the value added by transportation was $48,895,440.

Processed oil and gasoline had the largest total volume by product class (1,250,361 gross tons). These shipments were valued at $35,329,000 and the value added by transportation was $3,350,000.

The three product classes, processed oil and gasoline, groceries, and general freight, accounted for 62.7 percent of the total volume, 54.0 percent of the total value, and 52.8 percent of the total value added by transportation of nonagricultural product shipments.

The primary routes for motor carrier transportation of nonagricultural products were U.S. highways 2, 52, 81, 83, 85, 94, and 281.

The most important east-west highway in North Dakota is U.S. Interstate 94. All segments of U.S. Interstate 94 had over one million gross tons of nonagricultural product traffic.

The primary north-south highways in North Dakota were U.S. highways 81, 83, and 85. In Western North Dakota U.S. 85 was the primary north-south highway for the transportation of nonagricultural products. In Central North Dakota U.S. 83 was the primary north-south highway for the transportation of nonagricultural products. In Eastern North Dakota U.S. 81 was the primary north-south highway for the transportation of nonagricultural products.

MOTOR CARRIER TRANSPORTATION OF NONAGRICULTURAL PRODUCTS IN NORTH DAKOTA, 1969

Gregory R. Binkley and David C. Nelson*

INTRODUCTION

An efficient transportation system broadens the market for products and allows for regional specialization and division of labor. All areas and people are not equally endowed; resources, climate, arts, and skills vary. These variations cause different regions to specialize production. Thus, the principle of comparative advantage operates only when transportation is possible.[1]

North Dakota has a comparative advantage in the production of many agricultural commodities. In contrast, North Dakota is a net importer of many nonagricultural commodities. Therefore, there is a flow of agricultural commodities out of North Dakota and a flow of nonagricultural commodities into North Dakota. These commodity flows are dependent upon transportation.

An analysis of commodity movements within an economic unit, e.g., the state of North Dakota, allows empirically based estimates of the total freight bill and, therefore, the value added by transportation to be made. Information concerning origin, destination, type of commodity, type of motor carrier, and routes is essential to the analysis. This information is important for these reasons.

1. It is necessary for decision makers at the policy and program level to have an inventory of distribution patterns.

2. Regulations concerning distribution cannot be intelligently implemented or changed without a basic knowledge of where or why.

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*Binkley is former Graduate Assistant and Nelson is Director, Upper Great Plains Transportation Institute, North Dakota State University, Fargo.

[1]Sampson, Roy J. and Farris, Martin T., Domestic Transportation, Houghton-Mifflin Company, Boston, 1966, p. 6.

3. Highways and service roads cannot be planned and built properly without a basic knowledge of commodity movement patterns.

4. Economic planning and development are more successful when improved knowledge about the flow of commodities is available.[2]

Objectives

The primary purpose of this study is to estimate the volume of nonagricultural commodities transported by motor carrier to, from, and within North Dakota. The specific objectives are:

1. To determine the total volume of nonagricultural products transported by motor carrier to, from, and within North Dakota, and to determine the volume of the respective commodity classes.

2. To determine the value of nonagricultural products by commodity class and the total value of nonagricultural products transported by motor carrier to, from, and within North Dakota.

3. To determine the total value added by motor carriers of nonagricultural commodity shipments to, from, and within North Dakota.

4. To identify interregion and intraregion nonagricultural commodity movements by total volume, commodity class volume, total value, and value added by motor carrier.

5. To identify nonagricultural commodity movements over principle routes in North Dakota by total volume, commodity class volume, total value, and total value added by transportation.

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[2] Nichols, Ronald Q., Motor Carrier Transportation of Agricultural Products in North Dakota, unpublished M.S. Thesis, Department of Agricultural Economics, North Dakota State University, Fargo, May, 1971, p. 2.

Methodology and Source of Data

Motor carriers are required by state law to weigh at state weigh stations. A weigh ticket is completed and a copy is issued to the driver and another copy is maintained on file at the weigh station. Only one ticket per commodity load is filled out, even though the motor carrier must continue to weigh at additional stations. Therefore, a legal shipment by motor carrier in North Dakota is represented by only one corresponding scale ticket.

A scale ticket contains the gross weight, destination, state license, type of commodity, and the name of the motor carrier.

The scale tickets from June 1, 1969, through May 31, 1970, were collected from weigh stations at Fargo, Grand Forks, Ellendale, Devils Lake, Hague, Bismarck, Bowman, and Minot. Due to damages in the 1969 scale tickets, the Beach and Williston tickets were from January 1, 1970, to December 31, 1970.

The scale tickets from each weigh station were examined separately. The scale tickets for nonagricultural commodities were identified and stratified into four general sampling classes: (1) oil and gas shipments with gross weights greater than 35,000 pounds from which a 5 percent sample was taken, (2) grocery shipments with gross weights greater than 35,000 pounds from which a 5 percent sample was taken, (3) miscellaneous shipments with gross weights greater than 35,000 pounds from which a 10 percent sample was taken, and (4) all shipments with gross weights less than 35,000 pounds from which a 10 percent sample was taken.[3]

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[3]Every twentieth ticket was selected to represent the 5 percent sample and every tenth ticket was selected to represent the 10 percent sample. The 5 percent sample group was determined because of the regular distribution patterns that exist for these two commodities. The 10 percent sample group was determined in view of available funds and time. The use of 35,000 pound gross weight was arbitrarily chosen to separate tractor-trailer carriers from nontractor-trailer carriers.

The distribution of products was categorized by: (1) type of commodity, (2) destination, (3) origin, (4) route, and (5) type of motor carrier. Other information was determined from this basic categorization.[4]

The origin of the shipment was determined by examining the state license and the name of the motor carrier. If the state license was other than North Dakota, the given state was determined as the origin. The exit highways to the given states were recorded for route purposes. If the state license was a North Dakota license, the name of the motor carrier was examined and compared with regional telephone directories, the Directory of North Dakota Common Carriers,[5] and conversations with weigh station operators.

The name of the motor carrier was compared with the Directory of North Dakota Common Motor Carriers to determine whether the carrier was a private or a common carrier.

The value of the shipments was determined by interviews with wholesalers and retailers.[6] The gross weight, therefore, represented a corresponding wholesale value.

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[4]Origin, value, and value added.

[5]Directory and Scope of Authority for Special and Class A Common Motor Carriers Operating in Intrastate Commerce Within the State of North Dakota, September 1, 1970, Motor Carrier Division, Public Service Commission, Bismarck, North Dakota.

[6]The commodity, personnel interviewed, and respective company are: (1) oil and gas, sales manager, Standard Oil Company, Mandan, North Dakota, (2) grocery, sales manager, Super Valu, Incorporated, general office, Fargo, North Dakota, (3) durables, manager, Furniture City, Fargo, and manager, Bristol Distributing Company, Fargo, North Dakota, (4) steel, sales manager, Fargo Foundry, Fargo, North Dakota, (5) building materials, manager, Simonson Lumber Company, Fargo, and Builders Supply, Fargo, North Dakota, (6) equipment and machinery, manager, Dakota Tractor and Equipment Company, and manager, Dakota Tractor and Equipment Company, Fargo, North Dakota, (7) processed agricultural products, sales manager, Gold Label Feeds, and manager, Interstate Seed and Grain Company, Fargo, North Dakota, (8) mining, manager, Ames Sand and Gravel, and manager, Kjorlie Watson, Incorporated, Fargo, North Dakota, (9) vehicles, sales personnel, Hustad and Sons, Fargo, North Dakota, (10) general freight, traffic manager, Midwest Motor Express, Fargo, North Dakota, (11) North Dakota crude oil, sales manager, Standard Oil Company, Mandan, North Dakota.

The value added by motor carrier was determined by examining the origin and destination of the shipment. Each origin and destination was associated with either the eight North Dakota Economic Regions (Figure 1) or the 21 National Regions (Figure 2).

Within each region, a point was selected to represent that region. The sum of the deviations on either side of the central point is equal to zero; that is, the sum of the positive distances is equal to the sum of the negative distances. A distance is considered positive or negative depending upon whether the point is above or below the central point.[7] Therefore, the central point represents the average of all points in that region.

The freight rate between central points represented all respective interregion freight rates.[8] Eight intraregion freight rates were determined to represent North Dakota intraregion shipments.

The routes of the shipments were determined by examining the origin and destination and taking the most reasonable route. Twelve North Dakota highways were identified and from these highways 26 routes were examined in regard to volume, value, and value added (Figure 3).[9]

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[7]Li, Jerome C. R., Statistical Inference, Edwards Brothers, Incorporated, Ann Arbor, 1964, p. 291. See Appendix A for list of central points and corresponding regions.

[8]Four freight rate classes were determined: (1) oil and gas freight rates were determined from conversations with representatives of Dan Dugan Transportation Company, Fargo, North Dakota, (2) grocery freight rates were determined from conversations with the traffic manager of the Super Valu Company, Fargo, North Dakota, (3) miscellaneous shipments weighing less than 35,000 pounds gross weight, and (4) miscellaneous shipments weighing more than 35,000 pounds gross weight, both determined from conversations with the traffic director of Midwest Motor Express, Fargo, North Dakota.

[9]The routes were determined by examining the 1969 Traffic Flow Map of North Dakota prepared by the North Dakota State Highway Department, in regard to volume of traffic and exit-entrance to the adjoining states and provinces.

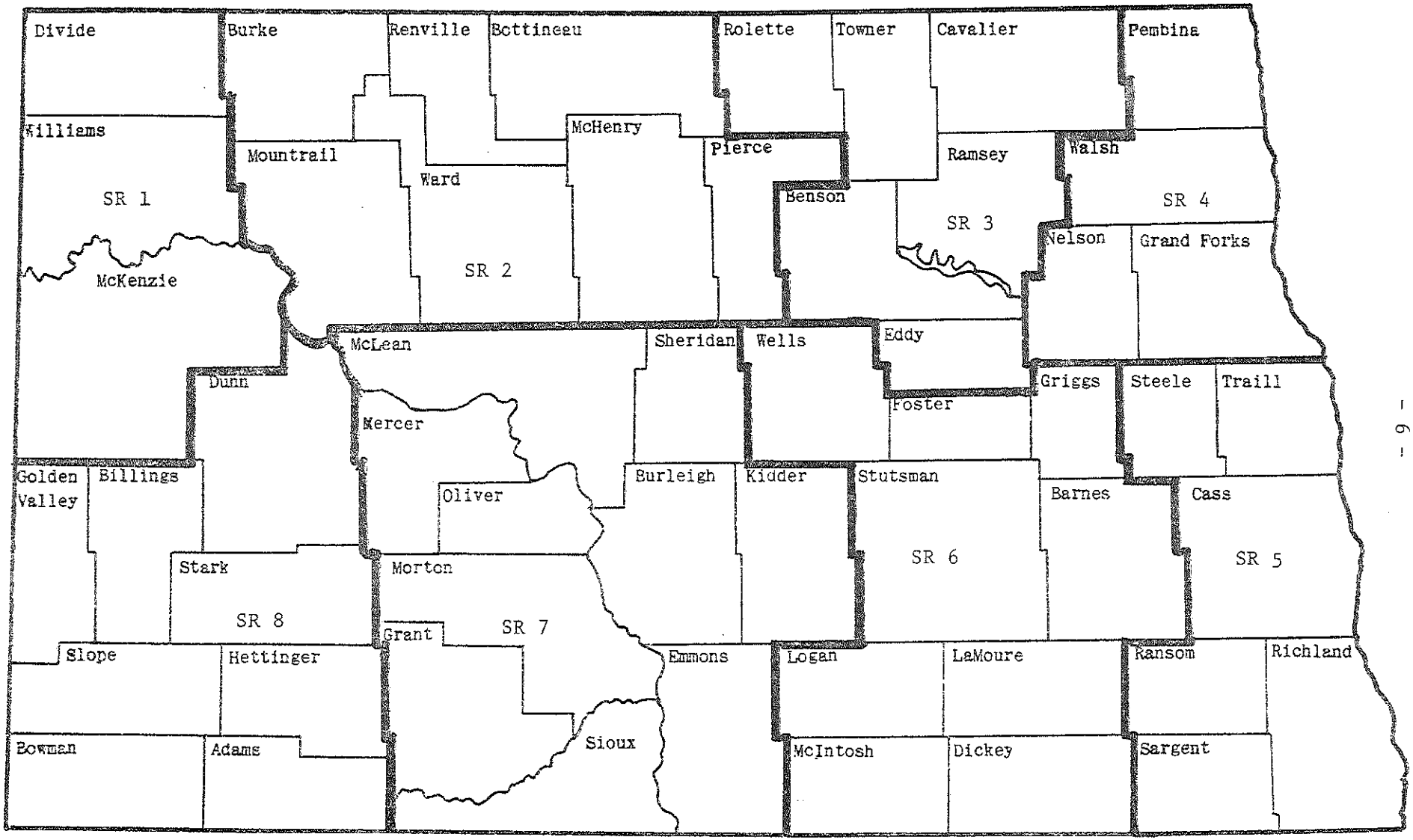

FIGURE 1. EIGHT NORTH DAKOTA ECONOMIC REGIONS WITH RESPECTIVE COUNTIES.

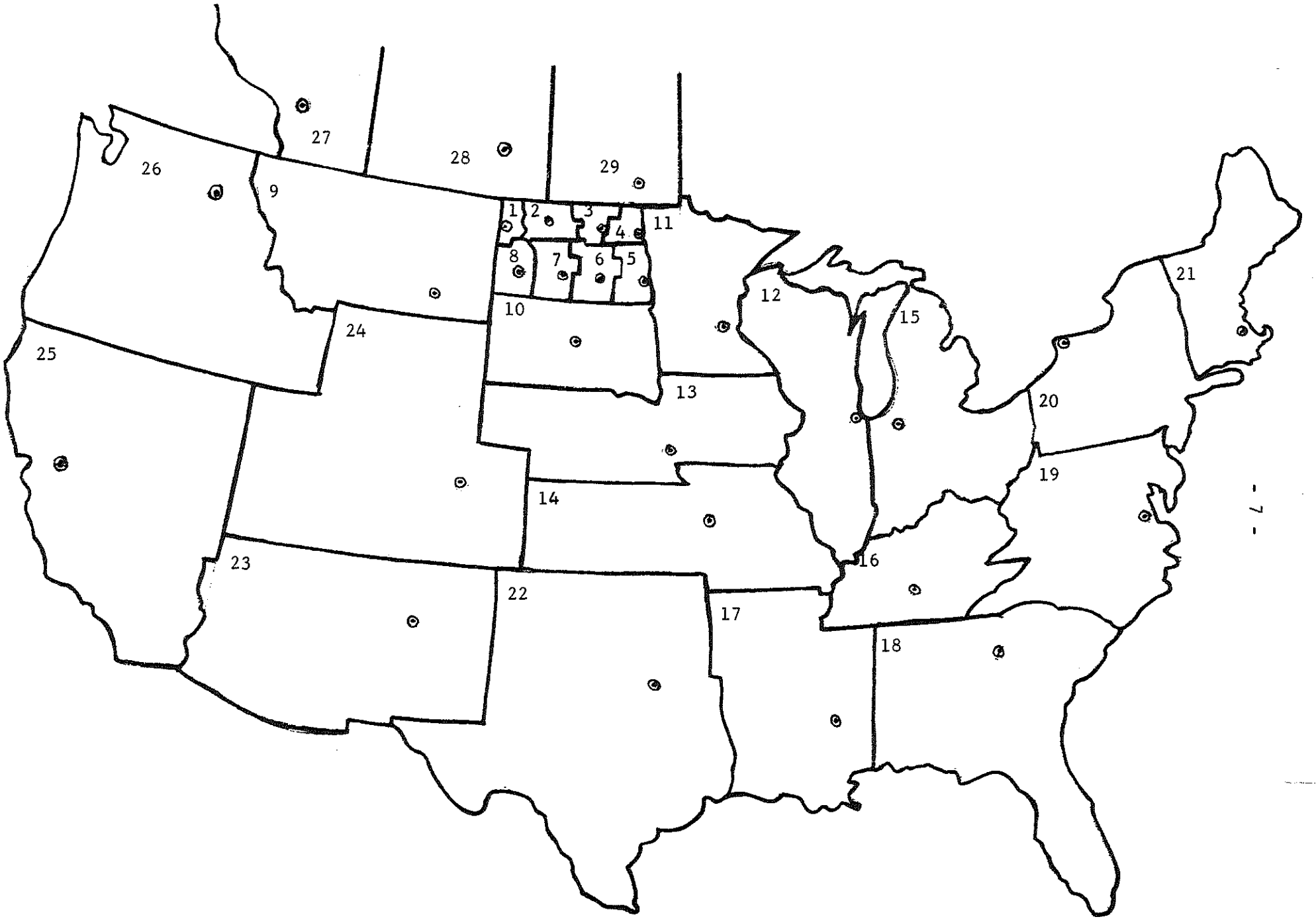

FIGURE 2. THE 29 REGIONS USED IN THE STUDY (1-8 = NORTH DAKOTA; 9-29 = ALL OTHER UNITED STATES AND CANADIAN ORIGINS OR DESTINATIONS)

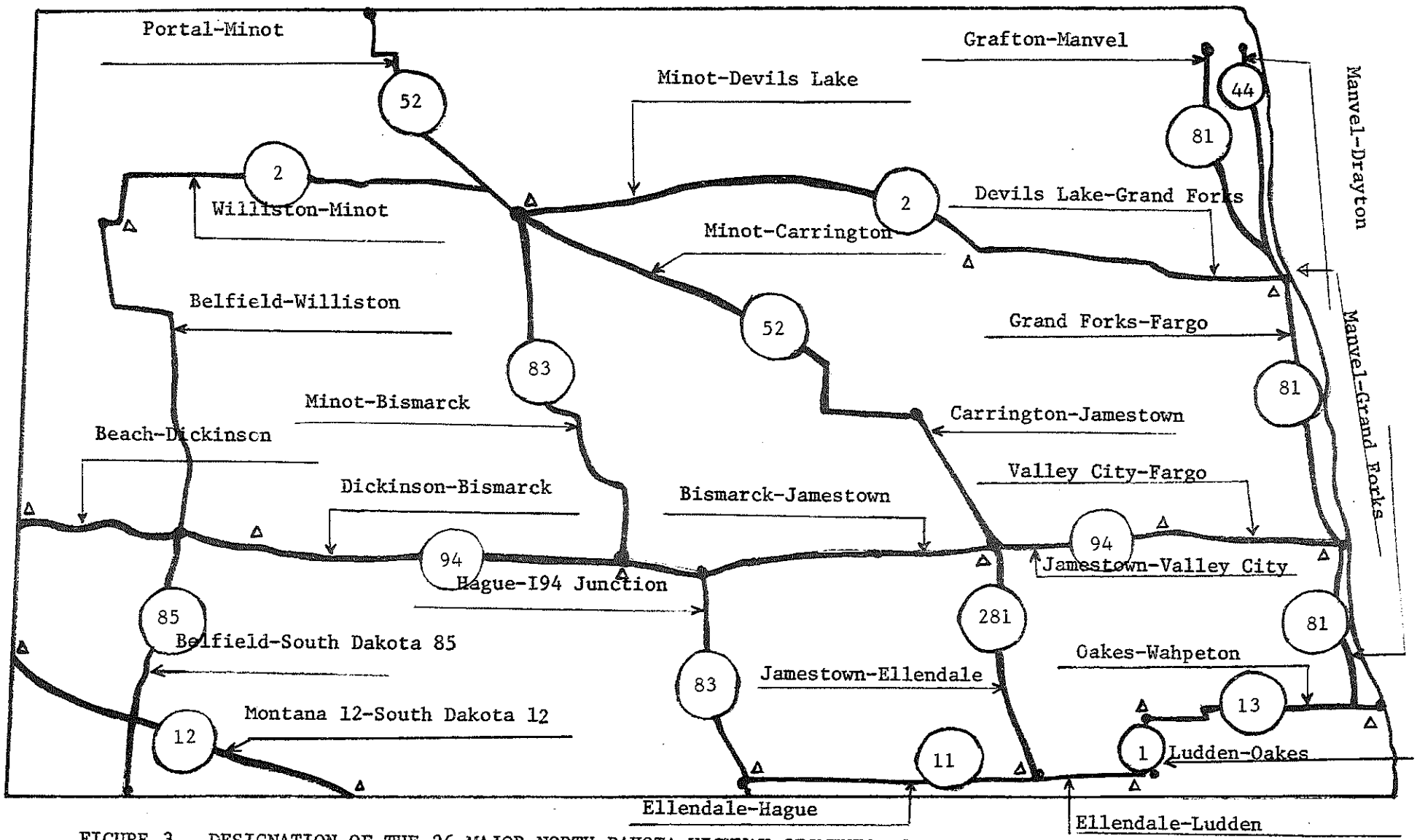

FIGURE 3. DESIGNATION OF THE 26 MAJOR NORTH DAKOTA HIGHWAY SEGMENTS USED TO IDENTIFY FLOW OVER HIGHWAYS

The sampled data were coded and transferred to computer cards. A computer program was written to aggregate and expand the sampled data to represent the population.

MOTOR CARRIER TRANSPORTATION OF NORTH DAKOTA CRUDE OIL AND PROCESSED OIL AND GASOLINE

North Dakota ranks seventeenth in the production of crude oil among the oil producing states.[10] Although the majority of North Dakota crude oil is transported by pipeline, a large volume is transported by motor carrier.

North Dakota ranks forty-second among the 50 states in the consumption of processed oil and gasoline. The 1970 per capita consumption of processed oil and gasoline, 620 gallons, is high in regard to the other states.[11] Although pipelines transport much processed oil and gasoline, motor carrier transportation is an integral part of the processed oil and gasoline industry.

Crude Oil Shipments

A total of 247,586 gross tons[12] of crude oil shipments traveled over North Dakota highways in 1969. The value of these shipments was $3,504,000 and the value added by transportation was $842,600.[13]

The major North Dakota crude oil-producing areas are located in State Economic Regions 1, 2, and 8. Direct crude oil pipelines exist in oil fields located in State Economic Regions 2, 5, and 8 (Figure 4).[14] The locations of

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[10] Conversation with Jack Swenson, Executive Director of the North Dakota Petroleum Council.

[11] Ibid.

[12] Gross tons always refer to the weight of the motor carrier and the load.

[13] See Table 68.

[14] Notice the Portal Pipeline which terminates at a St. Paul, Minnesota, refinery, the Amco Pipeline which terminates at the Mandan, North Dakota, refinery and the Mantador Pipeline which joins the Amco Pipeline at Dodge, North Dakota.

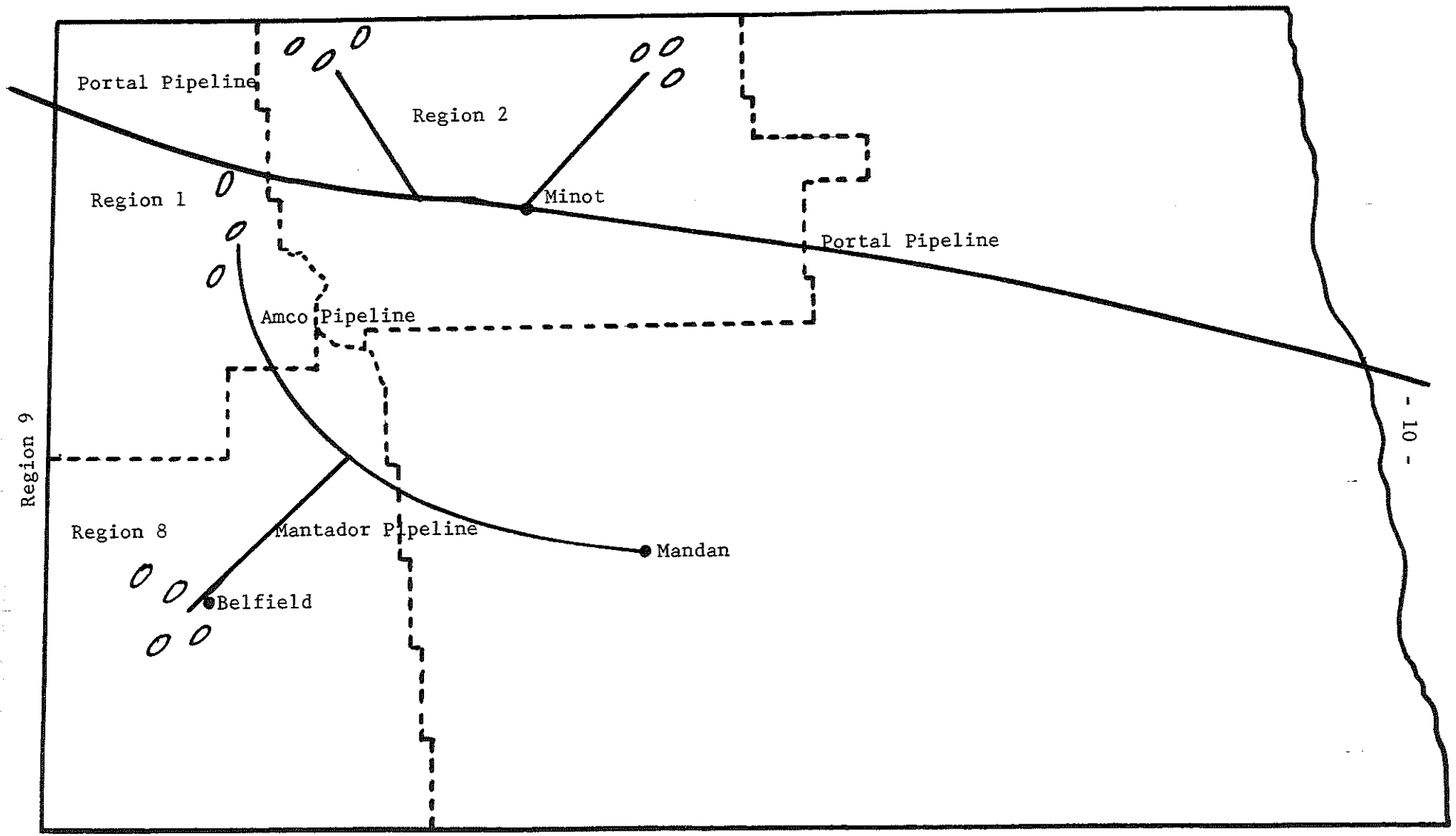

Figure 4. Direct Crude Oil Pipelines and Oil Fields Within Economic Regions 1, 2, 8, and 9.
Oil Fields
Direct Crude Oil Pipelines

state weigh stations in Regions 1 and 2 are distant from the oil fields and, therefore, will not have a record of these short hauls from the wellhead to a pipeline terminal. This causes the volume of crude oil transported by motor carrier in Regions 1 and 2 to be less than in Region 8.[15]

Interregion Flow of Crude Oil Shipments

The regional flow of North Dakota crude oil transported by motor carrier was concentrated among Regions 1, 8, and 9 (Table 1).

The largest movement of North Dakota crude oil, 208,059 gross tons, originated in State Economic Region 8 and was destined to National Region 9. The value of these shipments was $2,793,500 and the value added by transportation was $720,600.

TABLE 1. MOTOR CARRIER TRANSPORTATION OF NORTH DAKOTA CRUDE OIL BY REGIONAL MOVEMENT, GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Regional Movement	Gross Tons	Value	Value Added
Region 8 to Region 9	208,059	$2,793,500	$720,600
Region 8 to Region 8	10,070	126,000	14,000
Region 9 to Region 1	18,930	421,000	84,200
Region 1 to Region 1	6,150	109,500	13,000
Region 8 to Region 10	4,377	54,000	10,800
TOTAL	247,586	$3,504,000	$842,600

Crude Oil Flows by Highway Segments

Motor carrier shipments of North Dakota crude oil were aggregated by gross tons, value, and value added by transportation over 26 North Dakota highway routes (Table 2, Figures 5, 6, and 7).

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[15] The weigh stations in Region 8, Beach and Bowman, are close to the oil fields and will have a record of crude oil movements.

The most important east-west highway for motor carrier transportation of North Dakota crude oil is U.S. Interstate 94. The extreme Western segment of U.S. Interstate 94 between Beach and Dickinson had 210,290 gross tons of North Dakota crude oil traffic.[16] The respective value was $2,816,500 and the value added by transportation was $732,400.

TABLE 2. MOTOR CARRIER TRANSPORTATION OF NORTH DAKOTA CRUDE OIL SHIPMENTS OVER 26 NORTH DAKOTA HIGHWAY ROUTE SEGMENTS BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969[a]

Highway	Route Segment	Gross Tons	Value	Value Added
94	Dickinson-Beach	210,290	$2,816,500	732,400
94	Dickinson-Bismarck	7,270	90,000	15,400
12	Montana 12-South Dakota 12	36,862	445,000	88,200
85	South Dakota 85-Belfield	35,461	436,000	87,400
85	Belfield-Williston	8,299	125,000	23,800

[a]Twenty-six North Dakota route segments were used in this analysis; only five North Dakota route segments recorded North Dakota crude oil traffic.

A second important east-west highway is U.S. 12. The segment between the South Dakota and Montana borders had 36,862 gross tons of North Dakota crude oil traffic. These shipments were valued at $445,000 and the value added by transportation was $88,200.

The most important north-south highway is U.S. 85. The segment between the South Dakota border and Belfield had 35,461 gross tons of North Dakota crude oil traffic. The respective value was $435,000 and the value added by transportation was $87,400.

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[16]If a motor carrier has traveled over any part of a particular route, the gross tonnage, value, and value added by transportation are aggregated for that particular route. One motor carrier could have traveled over more than one particular route, therefore, double counting will occur.

Processed Oil and Gasoline Shipments

A total of 1,250,361 gross tons of processed oil and gasoline shipments was transported by motor carrier over North Dakota highways in 1969. The value of these shipments was $35,329,000 and the value added by transportation was $3,350,000.[17]

Motor carrier transportation of processed oil and gasoline is from the two North Dakota refineries[18] and regional storage terminals to retail outlets. The regional storage terminals are connected to processed oil and gasoline pipelines that originate at refineries located in North Dakota, Montana, and Oklahoma (Figure 8).[19]

Interregion Flow of Processed Oil and Gasoline

The regional flow of processed oil and gasoline shipments by motor carrier reflected the location of the two North Dakota refineries and the regional storage terminals. The motor carrier shipments radiated outward from these locations.

Processed oil and gasoline shipments transported by motor carrier originating in Region 1 (Williston refinery) totaled 84,340 gross tons. These shipments were valued at $2,373,000 and the value added by transportation was $196,200 (Table 3).

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[17] See Table 68.

[18] The Westland Refinery at Williston and the American Oil Company Refinery at Mandan.

[19] The storage terminals at Fargo and Grand Forks are connected to the Mandan refinery via the Standard Oil of Indiana pipeline and the William Brothers pipeline. One storage terminal at Jamestown is connected to the Mandan refinery via the Standard Oil of Indiana pipeline and a second storage terminal is connected to a refinery in Oklahoma via the Kaneb pipeline. The storage terminal at Minot is connected to the Glendive refinery in Montana via the Cennex pipeline. Storage terminals at Mandan and Dickinson are supplied with product by large capacity railroad tank cars originating from the storage terminal at Fargo.

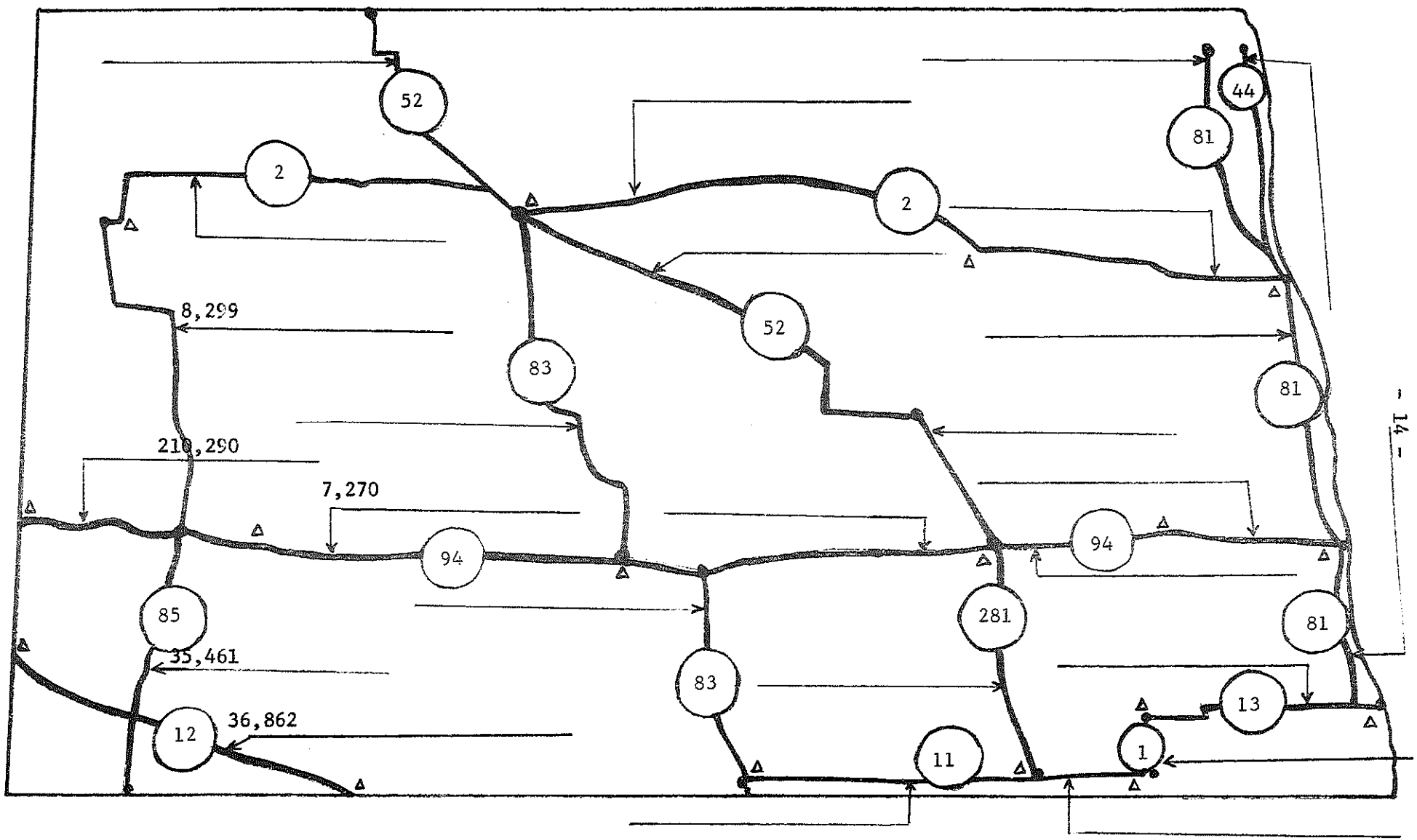

FIGURE 5. GROSS TONNAGE OF NORTH DAKOTA CRUDE OIL SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

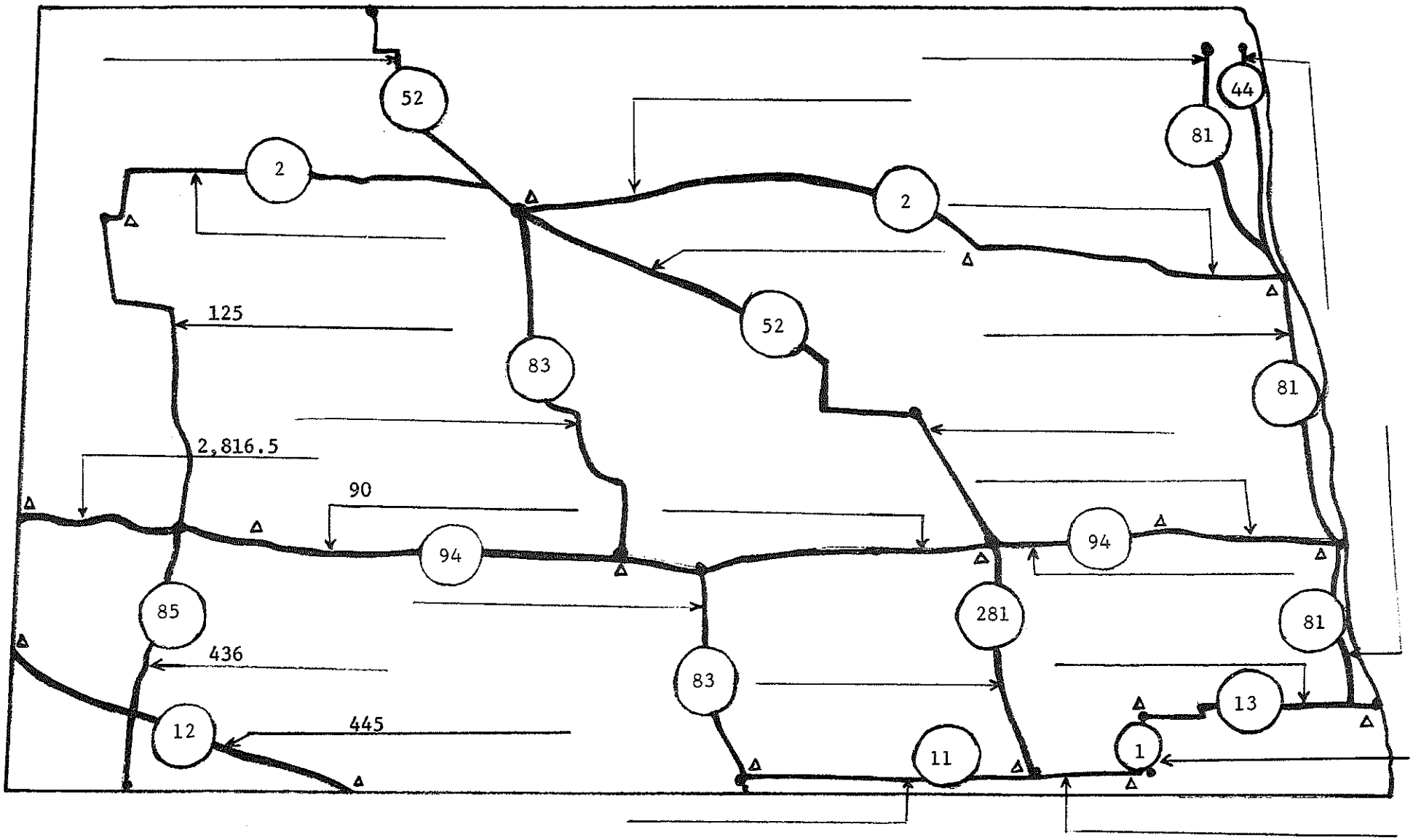

FIGURE 6. VALUE (THOUSAND DOLLARS) OF NORTH DAKOTA CRUDE OIL SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

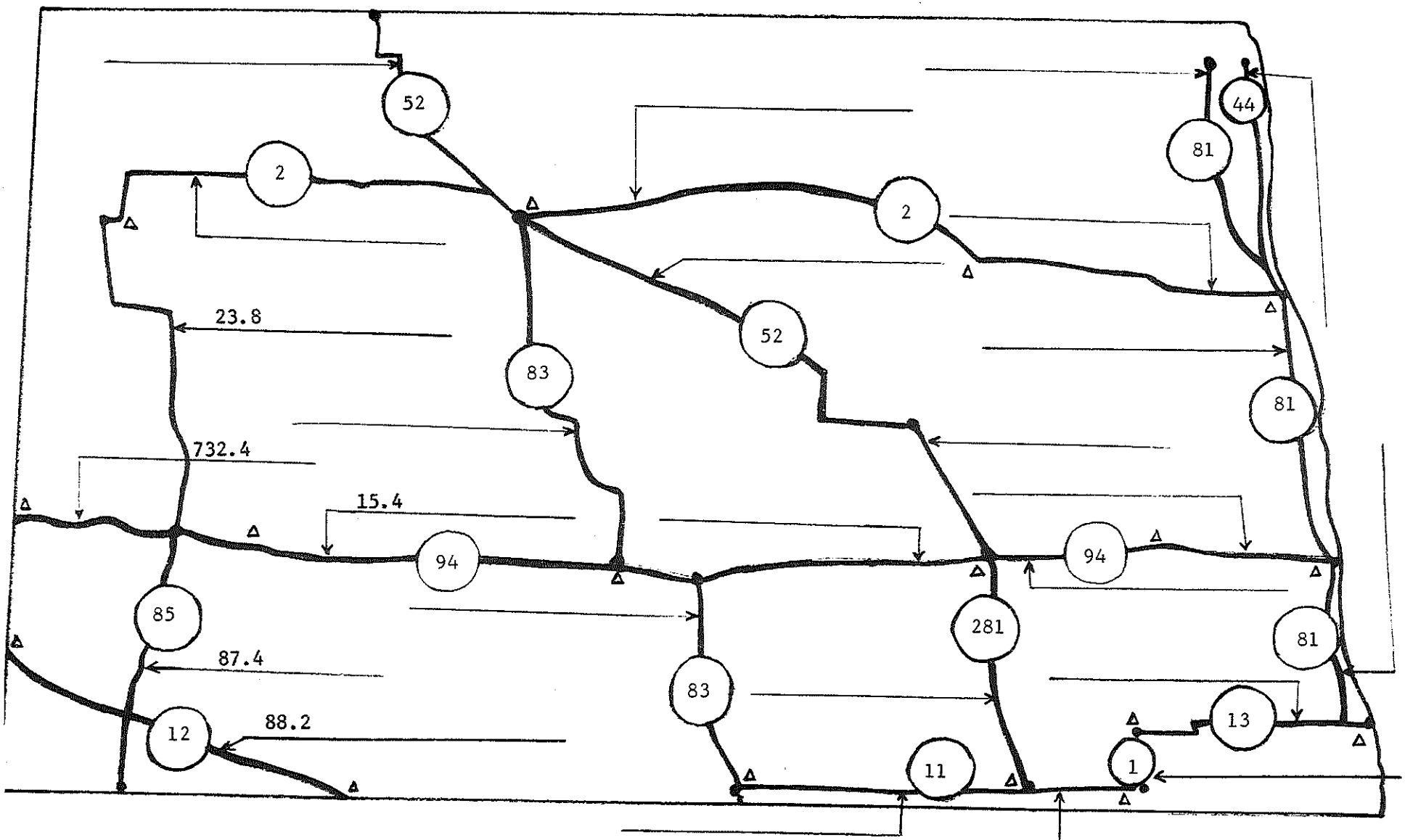

FIGURE 7. VALUE ADDED BY TRANSPORTATION (THOUSAND DOLLARS) OF NORTH DAKOTA CRUDE OIL SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

TABLE 3. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 1 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	40,235	$1,104,000	$ 55,700
2	7,045	205,000	19,400
3	720	20,000	4,000
7	4,820	140,000	29,000
8	12,595	400,000	38,700
9	18,225	484,000	44,400
11	700	20,000	5,000
TOTAL	84,340	$2,373,000	$196,200

Motor carrier shipments of processed oil and gasoline originating in Region 2 totaled 331,844 gross tons. The respective value was $9,278,000 and the value added by transportation was $846,600 (Table 4).

TABLE 4. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 2 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	3,966	$ 120,000	$ 10,800
2	90,945	2,554,000	134,500
3	64,070	1,780,000	174,200
4	43,303	1,200,000	112,200
5	17,674	500,000	100,000
6	35,862	1,000,000	100,400
7	62,814	1,760,000	161,100
8	8,143	224,000	21,400
9	730	20,000	4,000
10	3,606	100,000	20,000
28	731	20,000	4,000
TOTAL	331,844	$9,278,000	$846,600

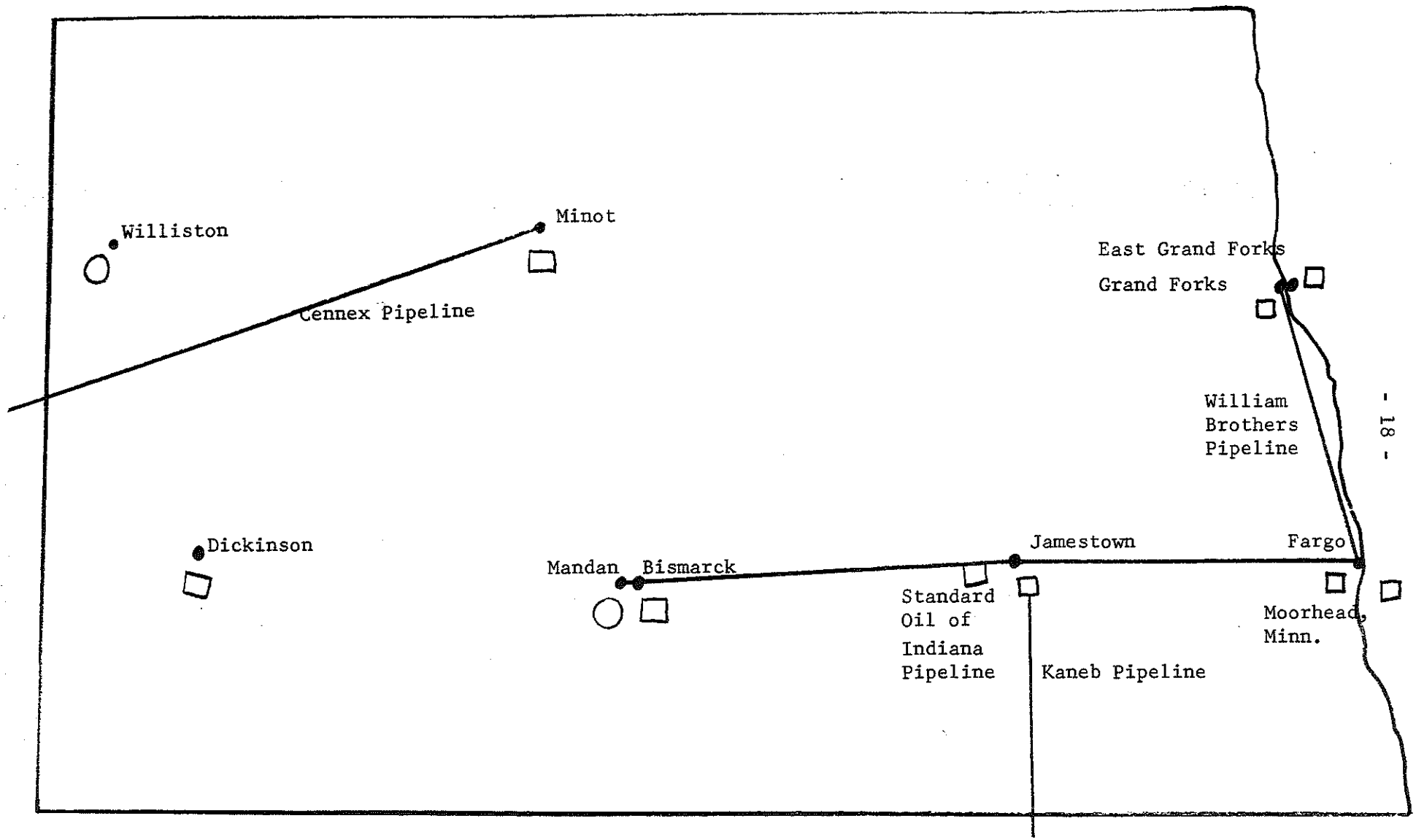

FIGURE 8. PROCESSED OIL AND GASOLINE PIPELINES, REFINERIES, AND STORAGE TERMINALS LOCATED IN NORTH DAKOTA

Products Pipeline ———

Storage Terminal

Refinery

The processed oil and gasoline originating in Region 2 are from the storage terminal at Minot. The storage terminal is the major distribution source for the Farmers Union Oil Company in North Dakota.

There is no storage terminal for processed oil and gasoline in Region 3. Only a small amount of product, 1,170 gross tons, originated in Region 3. These shipments destined for Region 3 were valued at $40,000 and the value added by transportation was $3,600.

Motor carrier shipments of processed oil and gasoline originating in Region 4 totaled 225,490 gross tons. The value of these shipments was $6,482,000 and the value added by transportation was $501,000 (Table 5).

TABLE 5. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 4 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	9,260	$ 260,000	$ 23,400
3	70,385	2,008,000	182,600
4	113,825	3,304,000	178,800
5	19,220	550,000	52,800
6	5,650	160,000	14,400
7	730	20,000	4,000
8	730	20,000	5,000
9	730	20,000	5,000
10	4,960	140,000	35,000
TOTAL	225,490	$6,482,000	$501,000

The majority of processed oil and gasoline shipments originating in Region 4 was destined to Region 4 and Region 3, 113,825 gross tons and 70,385 gross tons, respectively. The processed oil and gasoline originated from the storage terminal at Grand Forks in Region 4.

A total of 150,717 gross tons of processed oil and gasoline originated in Region 5 (Table 6). These shipments were valued at $4,246,000 and the value added by transportation was $413,650.

The major shipments of products originating in Region 5 were destined to Region 5, 69,348 gross tons, and to Region 6, 47,091 gross tons. The values were $1,954,000 and $1,324,000, respectively, and the corresponding values added by transportation were $100,200 and $122,550.

TABLE 6. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 5 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	2,023	$ 60,000	$ 15,000
2	6,248	180,000	38,800
3	6,553	184,000	17,700
4	730	20,000	1,800
5	69,348	1,954,000	100,200
6	47,091	1,324,000	122,550
7	8,494	240,000	48,000
8	8,680	240,000	60,000
9	830	24,000	7,800
10	720	20,000	1,800
TOTAL	150,717	$4,246,000	$413,650

A total of 32,555 gross tons of processed oil and gasoline was transported by motor carrier originating in Region 6. These shipments were valued at $940,000 and the value added was $99,000 (Table 7).

Two processed oil and gasoline storage terminals are located at Jamestown in Region 6. Since the nearest state weigh station is located at Ellendale,[20] some intraregion processed oil and gasoline shipments were not recorded.

[20] Jamestown is 64 miles from Ellendale.

A total of 187,462 gross tons of processed oil and gasoline was transported by motor carrier originating in Region 7 (Table 8). The value of these shipments was $5,248,000 and the value added by transportation was $455,550. The shipments originated from the Mandan refinery and a railhead storage terminal at Mandan.

TABLE 7. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 6 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	1,450	$ 40,000	$ 8,000
2	8,481	280,000	25,200
5	730	20,000	1,800
6	2,920	80,000	4,000
7	9,494	260,000	23,400
8	4,370	120,000	24,000
10	5,110	140,000	12,600
TOTAL	32,555	$940,000	$99,000

TABLE 8. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 7 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	6,837	$ 204,000	$ 41,650
2	89,905	2,488,000	225,000
5	701	20,000	4,000
6	730	20,000	1,800
7	45,966	1,292,000	66,800
8	876	24,000	3,100
9	730	20,000	1,800
10	40,987	1,160,000	104,400
28	730	20,000	7,000
TOTAL	187,462	$5,248,000	$455,550

A total of 15,990 gross tons of processed oil and gasoline originating in Region 8 was transported by motor carrier (Table 9). The value of these shipments was $440,000 and the value added by transportation was $39,000. These shipments originated at a railhead storage terminal at Dickinson.

TABLE 9. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 8 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	690	$ 20,000	$ 1,800
2	1,450	40,000	3,600
3	730	20,000	4,000
6	1,460	40,000	8,000
7	4,370	120,000	10,800
8	6,570	180,000	9,000
9	720	20,000	1,800
TOTAL	15,990	$440,000	$39,000

Motor carrier shipments of processed oil and gasoline originating in Region 9 totaled 156,900 gross tons (Table 10). The value of the shipments was $4,410,000 and the value added by transportation was $518,100.

The shipments originating in Region 9 were from the Farmers Union Oil Refinery at Glendive, Montana. The refinery distributes Farmers Union products by motor carrier to Western North Dakota retail outlets.

TABLE 10. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NATIONAL REGION 9 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	20,100	$ 540,000	$ 48,600
2	8,020	220,000	44,000
3	730	20,000	4,000
4	1,460	40,000	10,000
5	1,020	40,000	10,000
6	8,690	240,000	48,000
7	16,610	460,000	41,400
8	80,637	2,240,000	201,600
9	7,283	270,000	42,500
10	12,350	340,000	68,000
TOTAL	156,900	$4,410,000	$518,100

A total of 19,485 gross tons of processed oil and gasoline shipments originated in Region 10. These shipments were valued at $540,000 and the value added by transportation was $69,800 (Table 11).

A total of 3,631 gross tons of processed oil and gasoline was transported to Region 2.[21] The respective value was $100,000 and the value added by transportation was $20,000.

A total of 10,210 gross tons of processed oil and gasoline was transported to Region 6.[22] The value of the shipments was $280,000 and the value added by transportation was $25,200.

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[21] Conversations with state scale personnel indicated that the shipments were aviation fuel destined to the Minot Air Force Base from the Rapid City Air Force Base in South Dakota.

[22] Conversations with state scale personnel indicated the shipments originated from a storage terminal at Aberdeen, South Dakota.

TABLE 11. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE ORIGINATING IN NATIONAL REGION 10 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	125	$ 4,000	$ 2,200
2	3,631	100,000	20,000
3	365	4,000	2,200
4	160	4,000	2,200
5	720	20,000	1,800
6	10,210	280,000	25,200
7	951	28,000	5,000
8	2,912	80,000	7,200
11	411	20,000	4,000
TOTAL	19,485	$540,000	$69,800

A total of 44,408 gross tons of processed oil and gasoline shipments originated in National Region 11 (Table 12). These shipments were valued at $1,332,000 and the value added by transportation was $207,500. The product originates from storage terminals at East Grand Forks, Minnesota, and Moorhead, Minnesota.

TABLE 12. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE SHIPMENTS ORIGINATING IN NATIONAL REGION 11 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	1,990	$ 60,000	$ 15,000
2	4,960	140,000	28,000
3	170	4,000	2,700
4	1,904	64,000	6,600
5	20,052	560,000	50,400
6	7,802	290,000	49,200
7	4,660	134,000	32,600
9	1,440	40,000	12,000
11	720	20,000	4,000
28	710	20,000	7,000
TOTAL	44,408	$1,332,000	$207,500

Processed Oil and Gasoline Flows by Highway Segments

Motor carrier shipments of processed oil and gasoline were aggregated by gross tons, value, and value added by transportation over 26 highway route-segments (Table 13, Figures 9, 10, 11).[23]

The most important east-west North Dakota highway for motor carrier transportation of processed oil and gasoline is U.S. Interstate 94. The extreme eastern and western segments had the most traffic, 172,589 gross tons and 170,160 gross tons, respectively. The value of the shipments over the two segments was $4,912,000 and $4,883,000, respectively. The respective values added by transportation were $600,200 and $666,600.

An important Northern east-west highway is U.S. 2. The segments of U.S. 2 between Minot and Devils Lake and Devils Lake and Grand Forks had the most tonnage, 152,288 gross tons and 139,695 gross tons, respectively. The respective values were $4,248,000 and $3,990,000. The values added by transportation were $400,100 and $363,400, respectively.

The most important north-south North Dakota highway for the transportation of processed oil and gasoline is U.S. 83. The segment between Minot and Bismarck had the most traffic (213,466 gross tons) with a value of $5,944,000 and the value added by transportation was $576,600.

An important north-south highway in Western North Dakota is U.S. 85. The segment between Belfield and Williston had 50,769 gross tons of processed oil and gasoline traffic with the value of $1,596,000 and the value added by transportation was $177,000.

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[23] If the motor carrier has traveled on any part of a particular route, the gross tonnage, value, and value added by transportation are aggregated for that particular route. One motor carrier could have traveled over more than one route, therefore, double counting will occur.

An important north-south highway in Central North Dakota is U.S. 52. The segment between Minot and Carrington had 94,164 gross tons of processed oil and gasoline traffic, with the value of $2,680,000 and the value added by transportation was $274,600.

An important north-south highway in Eastern North Dakota is U.S. 81. The segment between Grand Forks and Manvel had 91,860 gross tons of processed oil and gasoline traffic, with the value of $2,655,000. The value added by transportation was $203,600.

The segment of U.S. 81 between Grand Forks and Fargo had 63,709 gross tons of processed oil and gasoline traffic. The value of these shipments was $1,843,000 and the value added by transportation was $175,300.

TABLE 13. MOTOR CARRIER TRANSPORTATION OF PROCESSED OIL AND GASOLINE SHIPMENTS OVER 26 NORTH DAKOTA HIGHWAY ROUTES, 1969

Highway	Route-Segment	Gross Tons	Value	Value Added
1	Ludden-Oakes	3,237	$ 90,000	$ 9,350
2	Williston-Minot	18,744	525,000	51,700
2	Minot-Devils Lake	152,288	4,248,000	400,100
2	Devils Lake-Grand Forks	139,695	3,990,000	363,400
11	Ellendale-Hague	1,778	50,000	7,100
11	Ellendale-Ludden	2,190	60,000	5,400
12	Montana 12-South Dakota 12	89,729	2,524,000	302,400
13	Oakes-Wahpeton	5,495	154,000	9,600
44	Manvel-Drayton	16,830	471,000	42,800
52	Minot-Portal	30,479	850,000	125,500
52	Minot-Carrington	94,164	2,680,000	274,600
81	Manvel-Grafton	59,790	1,695,000	119,000
81	Manvel-Grand Forks	91,860	2,655,000	203,600
81	Grand Forks-Fargo	63,709	1,843,000	175,300
81	Fargo-Wahpeton	22,785	654,000	44,000
83	Hague-I 94 Junction	66,382	1,934,000	170,100
83	Bismarck-Minot	213,466	5,944,000	576,600
85	SD 85-Belfield	31,175	908,000	108,400
85	Belfield-Williston	50,769	1,596,000	177,000
94	Beach-Dickinson	170,160	4,883,000	666,600
94	Dickinson-Bismarck	108,513	3,047,000	461,850
94	Bismarck-Jamestown	141,337	4,102,000	568,400
94	Jamestown-Valley City	66,773	2,008,000	377,200
94	Valley City-Fargo	172,589	4,912,000	600,200
281	Carrington-Jamestown	19,266	539,000	65,400
281	Jamestown-Ellendale	19,825	555,000	56,400

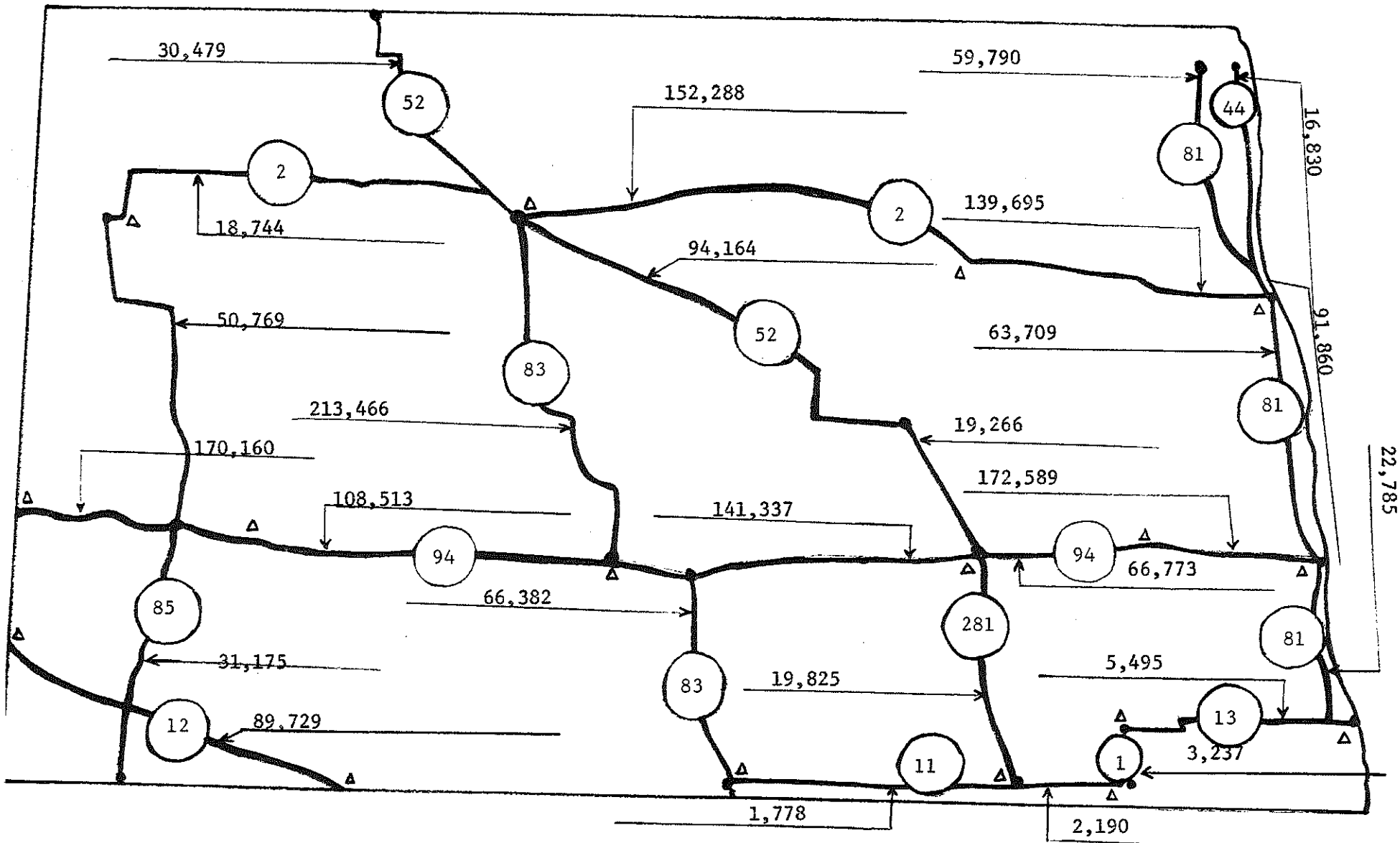

FIGURE 9. GROSS TONNAGE OF PROCESSED OIL AND GASOLINE SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

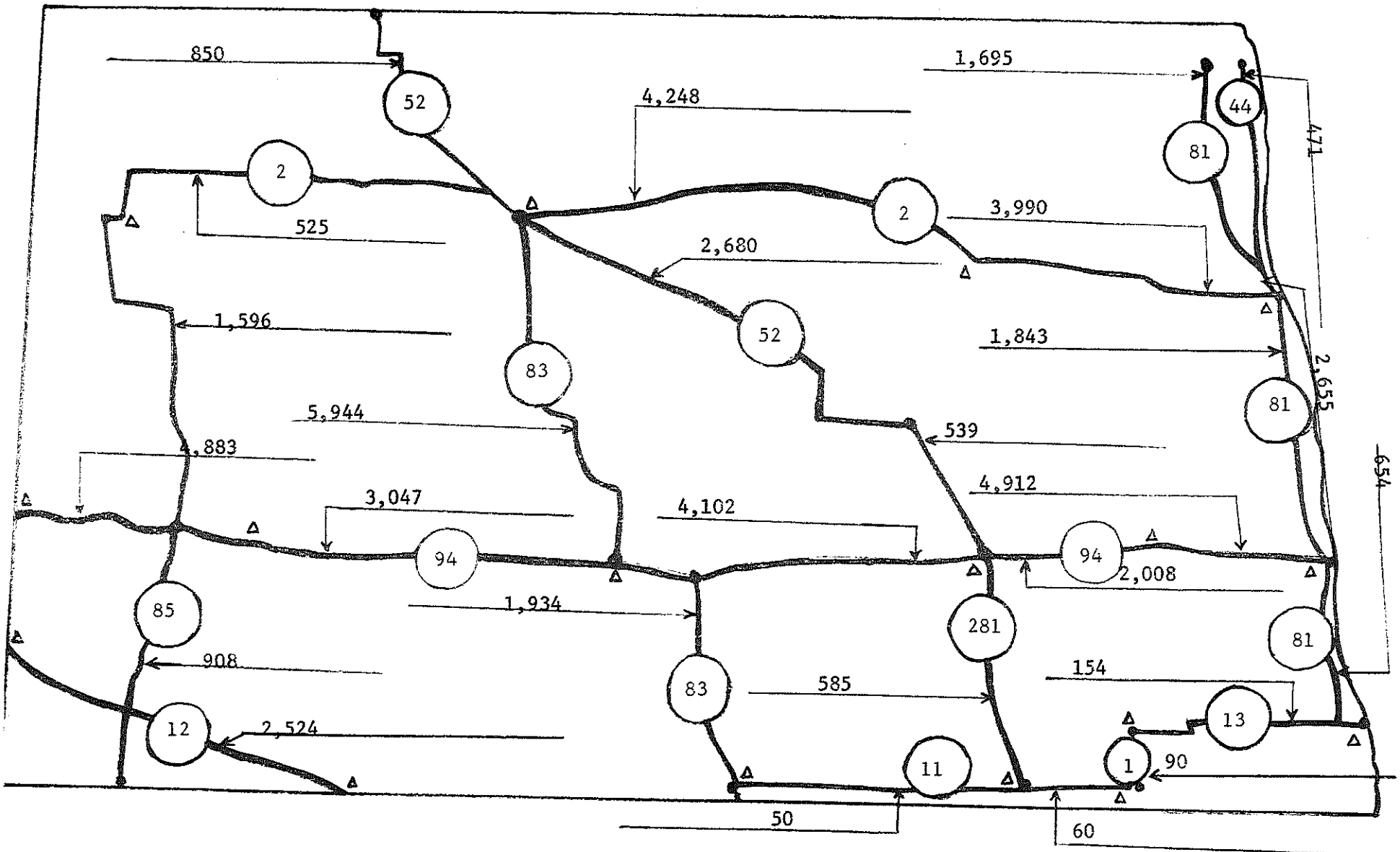

FIGURE 10. VALUE (THOUSAND DOLLARS) OF PROCESSED OIL AND GASOLINE SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

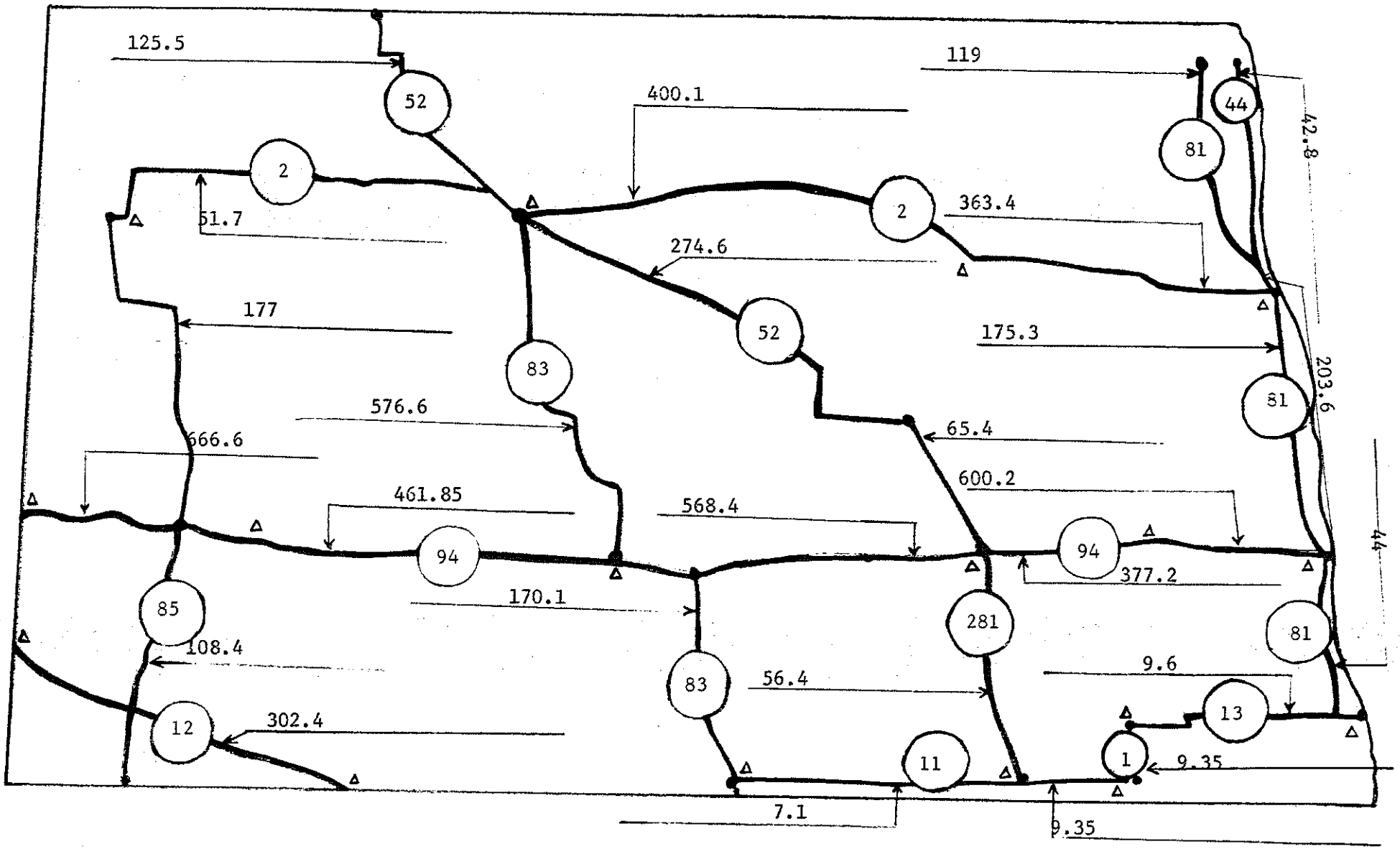

FIGURE 11. VALUE ADDED BY TRANSPORTATION (THOUSAND DOLLARS) OF PROCESSED OIL AND GASOLINE SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

MOTOR CARRIER TRANSPORTATION OF GROCERIES

Motor carrier transportation of groceries is from regional warehouses to retail outlets and from produce-growing areas to regional and retail outlets. The regional warehouses receive grocery shipments by rail from national factories and distribute them by motor carrier.

A total of 732,217 gross tons[24] of grocery shipments was transported over North Dakota highways in 1969. These shipments were valued at $203,156,000. The value added by transportation was $10,042,920.[25]

Interregion Flow of Grocery Shipments

The regional flow of grocery shipments by motor carrier reflected the location of regional warehouses and the national produce-growing areas. The motor carrier shipments of groceries radiated outward from these locations.

Motor carrier shipments of groceries originating in Region 1 totaled 13,209 gross tons. These shipments were valued at $3,690,000 and the value added by transportation was $151,650 (Table 14). These shipments were largely from the Gamble Robinson Company warehouse in Williston, North Dakota.

A total of 62,578 gross tons of grocery shipments originated in Region 2. These shipments were valued at $18,390,000 and the value added by transportation was $534,350 (Table 15). A large amount of these shipments originated from the Gamble Robinson Company and Nash Finch Company warehouses at Minot.

Motor carrier shipments of groceries originating in Region 3 totaled 9,159 gross tons. The value of these shipments was $3,590,000 and the value added

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[24]Gross tons always refer to the weight of the motor carrier and the load.

[25]See Table 68.

TABLE 14. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 1 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	4,632	$1,150,000	$ 43,850
2	1,140	360,000	7,800
3	370	80,000	2,700
4	1,702	440,000	19,600
7	2,520	890,000	28,500
8	330	90,000	2,600
9	2,190	590,000	36,800
11	325	90,000	9,800
TOTAL	13,209	$3,690,000	$151,650

TABLE 15. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 2 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	3,728	$1,170,000	$ 36,000
2	25,590	7,660,000	128,800
3	3,333	1,030,000	33,500
4	2,970	780,000	29,000
5	8,319	2,230,000	89,400
6	2,124	650,000	27,500
7	5,405	1,730,000	50,450
8	2,051	660,000	24,000
9	954	300,000	18,400
10	7,504	2,010,000	82,800
11	494	130,000	11,000
28	106	40,000	3,500
TOTAL	62,578	$18,390,000	$534,350

by transportation was $87,400 (Table 16). These shipments originated from the Gamble Robinson Company warehouse at Devils Lake.

TABLE 16. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 3 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	1,905	$ 740,000	$23,000
3	4,290	1,860,000	27,300
4	95	40,000	1,300
5	695	270,000	7,500
6	740	290,000	7,900
7	360	120,000	3,000
11	1,074	270,000	17,400
TOTAL	9,159	$3,590,000	$87,400

A total of 38,834 gross tons of grocery shipments originated in Region 4. The value of these shipments was $11,845,000 and the value added by transportation was $469,550 (Table 17). A large portion of these shipments originated in the warehouses of Gamble Robinson, Nash Finch, and Superior Distributors in Grand Forks.

TABLE 17. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 4 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	905	$ 270,000	$ 11,100
2	5,450	1,750,000	68,000
3	22,550	6,800,000	162,900
4	2,285	615,000	11,400
5	1,354	410,000	9,400
6	1,590	640,000	124,800
7	900	250,000	13,250
8	195	80,000	5,400
9	1,550	480,000	30,000
10	785	240,000	21,000
11	1,270	310,000	12,300
TOTAL	38,834	$11,845,000	$469,550

Motor carrier shipments of groceries originating in Region 5 totaled 196,659 gross tons. The value of these shipments was $56,115,000 and the value added by transportation was $2,127,200 (Table 18). These shipments were primarily from the warehouses of Fairway Foods, Gamble Robinson, Kraft Foods, Nash Finch, Super Valu, and Red Owl at Fargo. The Red Owl warehouse distributes groceries to all Red Owl stores in Eastern Montana, Northern South Dakota, Western Minnesota, and North Dakota.[26]

TABLE 18. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 5 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	10,271	$ 2,980,000	$ 171,250
2	32,189	9,350,000	400,700
3	16,773	5,085,000	153,500
4	4,040	1,230,000	26,000
5	2,955	950,000	12,600
6	47,808	13,560,000	284,750
7	31,266	8,840,000	267,400
8	13,986	3,760,000	163,500
9	20,916	5,680,000	524,400
10	14,284	4,080,000	86,600
11	610	180,000	3,000
28	1,561	420,000	33,500
TOTAL	196,659	$56,115,000	$2,127,200

A total of 3,192 gross tons of grocery shipments originated in Region 6. The respective value was $890,000 and the value added by transportation was $29,750 (Table 19).

[26]Motor carrier shipments of groceries from Region 5 (Fargo) to Region 11 (Western Minnesota) will not be recorded because the motor carrier will travel directly to Region 11 and, therefore, not pass through a North Dakota weigh station.

TABLE 19. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 6 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	570	$180,000	$ 5,000
5	1,030	270,000	5,150
6	1,592	440,000	19,600
TOTAL	3,192	$890,000	$29,750

Motor carrier transportation of grocery shipments originating in Region 7 totaled 111,164 gross tons. The respective value was $30,785,000 and the value added by transportation was $713,450 (Table 20). These shipments largely originated in the warehouses of Super Valu, Cloverdale, and Gamble Robinson.

TABLE 20. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 7 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	8,719	$ 2,590,000	$ 80,450
2	18,429	5,410,000	128,400
3	3,440	1,060,000	40,450
4	676	240,000	14,400
5	2,560	730,000	22,400
6	11,382	3,630,000	88,600
7	13,188	4,315,000	63,000
8	16,746	4,830,000	96,400
9	8,699	2,580,000	74,800
10	26,715	7,810,000	173,200
11	320	90,000	5,800
28	290	90,000	6,000
TOTAL	111,164	$30,785,000	$713,450

A total of 2,025 gross tons of grocery shipments originated in Region 8 to Region 8. The value of these shipments was $540,000 and the value added by

transportation was $15,700.[27]

Motor carrier transportation of grocery shipments originating in Region 9 totaled 4,771 gross tons. The value of these shipments was $1,340,000 and the value added by transportation was $86,400 (Table 21).

TABLE 21. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 9 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	1,550	$ 530,000	$34,400
7	665	180,000	18,000
8	2,496	630,000	34,000
TOTAL	4,771	$1,340,000	$86,400

A total of 41,094 gross tons of grocery shipments originated in National Region 10. These shipments were valued at $11,470,000 and the value added by

TABLE 22. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 10 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	570	$ 180,000	$ 5,000
2	4,250	1,220,000	70,000
4	1,525	390,000	28,200
5	13,326	3,450,000	179,100
6	2,083	690,000	27,600
7	7,656	2,470,000	88,800
8	3,164	790,000	33,400
9	5,033	1,290,000	40,100
11	1,732	450,000	13,100
28	1,755	540,000	21,000
TOTAL	41,094	$11,470,000	$506,300

[27] Due to the location of the state weigh stations in North Dakota Region 8, Beach and Bowman, some grocery shipments originating from Dickinson were not recorded because the shipments traveled within the boundaries formed by the two weigh stations, i.e., the weigh stations were not between the origin and destination of the shipments.

transportation was $506,300 (Table 22). Most of these shipments were bakery and meat products along with regular shipments of groceries.

Motor carrier transportation of grocery shipments totaled 115,654 gross tons originating in National Region 11. The value of these shipments was $28,121,000 and the value added by transportation was $1,568,150 (Table 23).

TABLE 23. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 11 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	5,435	$ 1,440,000	$ 145,200
2	12,787	3,715,000	286,900
3	10,217	3,020,000	133,100
4	1,310	350,000	19,200
5	6,351	1,724,000	73,000
6	10,511	3,084,000	121,100
7	19,493	5,450,000	339,900
8	14,283	1,100,000	85,800
9	21,222	5,478,000	233,000
10	10,201	1,760,000	91,550
28	3,514	910,000	37,400
20	330	90,000	2,000
TOTAL	115,654	$28,121,000	$1,568,150

A total of 17,057 gross tons of grocery shipments originated in National Region 12. The value of these shipments was $4,720,000 and the value added was $509,820 (Table 24).

TABLE 24. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 12 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969[a]

Destined Region	Gross Tons	Value	Value Added
1	545	$ 180,000	$ 26,000
5	2,020	540,000	42,000
6	215	90,000	7,200
7	873	240,000	27,120
8	560	180,000	21,400
9	12,154	3,310,000	379,100
11	365	90,000	3,500
28	325	90,000	3,500
TOTAL	17,057	$4,720,000	$509,820

[a]Motor carrier shipments of groceries from Region 12 to Region 9 denote grocery traffic that passed through North Dakota. It does not necessarily denote that the traffic was destined specifically for Region 9; it could be destined for points west or south of Region 9. The data on the weigh scale ticket only stated, "Beach and Out" or "Williston and Out" therefore, Region 9 was the destination code.

Motor carrier transportation of grocery shipments originating in National Region 13 totaled 9,399 gross tons. The value of these shipments was $2,700,000 and the value added by transportation was $159,900 (Table 25).

TABLE 25. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 13 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	659	$ 180,000	$ 7,000
2	672	210,000	27,000
5	1,585	450,000	29,000
6	685	270,000	17,400
7	1,437	420,000	34,000
9	1,295	360,000	14,000
11	350	90,000	3,500
28	2,382	630,000	24,500
29	334	90,000	3,500
TOTAL	9,399	$2,700,000	$159,900

Motor carrier transportation of grocery shipments originating in National Region 14 totaled 2,130 gross tons. The value of these shipments was $690,000 and the value added by transportation was $58,300 (Table 26).

TABLE 26. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 14 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	665	$270,000	$28,800
5	360	90,000	6,900
7	405	150,000	15,600
11	355	90,000	3,500
28	345	90,000	3,500
TOTAL	2,130	$690,000	$58,300

A total of 2,295 gross tons of grocery shipments originated in National Region 15 by motor carrier. These shipments were valued at $600,000 and the value added by transportation was $35,300 (Table 27).

TABLE 27. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 15 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	360	$ 90,000	$ 3,500
5	705	180,000	17,800
9	1,045	240,000	10,500
28	185	90,000	3,500
TOTAL	2,295	$600,000	$35,300

Motor carrier transportation of grocery shipments originating in Region 16 totaled 525 gross tons. The value of these shipments was $150,000 and the value added by transportation was $6,100 (Table 28).

TABLE 28. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 16 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
7	185	$ 60,000	$2,600
28	340	90,000	3,500
TOTAL	525	$150,000	$6,100

Motor carrier transportation of grocery shipments originating in National Region 17 totaled 2,672 gross tons. These shipments were valued at $810,000 and the value added by transportation was $75,900 (Table 29).

TABLE 29. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 17 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	463	$180,000	$14,000
5	365	90,000	15,500
7	704	180,000	32,400
9	1,140	360,000	14,000
TOTAL	2,672	$810,000	$75,900

Motor carrier transportation of grocery shipments originating in National Region 18 totaled 3,347 gross tons. The shipment's value was $900,000 and the value added by transportation was $75,200 (Table 30).

TABLE 30. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 18 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
5	724	$180,000	$14,000
6	330	90,000	7,000
7	265	90,000	7,000
9	690	180,000	13,400
10	348	90,000	7,000
28	990	270,000	26,800
TOTAL	3,347	$900,000	$75,200

Motor carrier transportation of grocery shipments originating in National Region 19 totaled 705 gross tons. These shipments were valued at $180,000 and the value added by transportation was $24,500 (Table 31).

TABLE 31. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 19 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
5	355	$ 90,000	$12,000
28	350	90,000	12,500
TOTAL	705	$180,000	$24,500

Motor carrier transportation of grocery shipments originating in National Region 20 totaled 880 gross tons. The value of these shipments was $260,000 and the value added by transportation was $34,800 (Table 32).

TABLE 32. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 20 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
4	530	$170,000	$23,200
7	350	90,000	11,600
TOTAL	880	$260,000	$34,800

Motor carrier transportation of grocery shipments originating in National Region 22 totaled 16,454 gross tons. The value of these shipments was $4,740,000 and the value added by transportation was $491,000 (Table 33).

TABLE 33. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 22 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	575	$ 150,000	$ 40,000
2	813	270,000	49,800
4	1,213	330,000	62,400
5	353	90,000	13,600
7	1,715	450,000	73,000
8	1,409	360,000	73,600
9	325	90,000	73,600
11	1,285	360,000	14,000
28	8,766	2,340,000	91,000
TOTAL	16,454	$4,740,000	$491,000

Motor carrier transportation of grocery shipments originating in National Region 24 totaled 2,773 gross tons. The value of these shipments was $810,000 and the value added by transportation was $45,500 (Table 34).

TABLE 34. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 24 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	335	$ 90,000	$ 4,500
4	345	90,000	5,500
5	718	180,000	10,500
11	1,020	270,000	19,000
28	355	90,000	6,000
TOTAL	2,773	$810,000	$45,500

Motor carrier transportation of grocery shipments originating in National Region 25 totaled 54,999 gross tons. The value of these shipments was $14,400,000 and the value added by transportation was $1,545,500 (Table 35).

TABLE 35. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 25 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969[a]

Destined Region	Gross Tons	Value	Value Added
2	2,261	$ 670,000	$ 90,000
3	4,250	1,120,000	121,200
4	13,341	3,500,000	574,800
5	17,684	4,550,000	573,200
6	175	90,000	4,000
7	871	240,000	14,600
9	2,056	540,000	21,000
10	364	90,000	3,500
11	12,612	3,240,000	127,500
28	675	180,000	7,000
29	710	180,000	8,700
TOTAL	54,999	$14,400,000	$1,545,500

[a]Motor carrier shipments of groceries from Region 25 to Region 11 denote grocery traffic that passed through North Dakota. It does not necessarily denote that the traffic was destined specifically for Region 11; it could be destined for points east or south of Region 11. The data on the weigh scale ticket only stated, "Fargo and Out" and "Grand Forks and Out," therefore, Region 11 was the destination code.

Motor carrier transportation of grocery shipments originating in National Region 26 totaled 15,514 gross tons. The value was $4,080,000 and the value added by transportation was $604,800 (Table 36).

TABLE 36. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 26 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	675	$ 180,000	$ 32,800
4	1,230	360,000	50,000
5	6,550	1,710,000	337,000
10	3,310	870,000	75,000
11	3,424	870,000	75,000
28	325	90,000	35,000
TOTAL	15,514	$4,080,000	$604,800

A total of 695 gross tons of groceries was transported from National Region 27 to National Region 10 by motor carrier. The value of these shipments was $180,000 and the value added by transportation was $18,000.

A total of 4,433 gross tons of groceries was transported from National Region 28 by motor carrier. These shipments were valued at $1,160,000 and the value added by transportation was $68,400 (Table 37).

TABLE 37. MOTOR CARRIER TRANSPORTATION OF GROCERY SHIPMENTS ORIGINATING IN NATIONAL REGION 28 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	55	$ 40,000	$ 3,500
2	294	90,000	3,500
5	1,811	450,000	20,400
7	96	40,000	3,500
11	2,177	540,000	37,500
TOTAL	4,433	$1,160,000	$68,400

Grocery Flows by Highway Segment

Motor carrier shipments of groceries were aggregated by gross tonnage, value, and value added by transportation over 26 North Dakota highway routes (Table 38 and Figures 12, 13, and 14).

The most important east-west North Dakota highway for motor carrier transportation of groceries is U.S. Interstate 94. The segments between Bismarck and Jamestown and Valley City and Fargo had the most tonnage, 375,899 gross tons and 366,587 gross tons, respectively. The value of the shipments over the two segments was $99,278,000 and $100,702,000, respectively. The value added by transportation was $5,462,200 and $5,396,880, respectively.

A second important east-west highway for motor carrier transportation of groceries is U.S. 2. The segment between Minot and Devils Lake had 95,262 gross tons of grocery shipments that were valued at $28,284,500. The value added by transportation was $1,427,800. A second important segment of Highway U.S. 2 is between Devils Lake and Grand Forks with 86,378 gross tons of grocery traffic. The value of these shipments was $25,429,000 and the value added by transportation was $1,450,500.

An important north-south highway located in Western North Dakota for the transportation of groceries is U.S. 85. The segment between Belfield and Williston had 43,323 gross tons of grocery traffic. These shipments were valued at $12,459,000 and the value added by transportation was $707,050.

In Central North Dakota, highway U.S. 83 is an important north-south highway for the transportation of groceries. The segment between Bismarck and Minot had 97,671 gross tons of grocery traffic. The value of these shipments was $28,720,000 and the value added by transportation was $1,178,120.

Highway U.S. 81 is an important north-south highway located in Eastern North Dakota for the transportation of groceries. The segment between Fargo and Grand Forks had 61,286 gross tons of grocery traffic. The value of these shipments was $17,379,000 and the value added by transportation was $858,400.

TABLE 38. MOTOR CARRIER TRANSPORTATION OF GROCERIES OVER 26 NORTH DAKOTA HIGHWAY ROUTE SEGMENTS, 1969

Highway	Route-Segment	Gross Tons	Value	Value Added
1	Ludden-Oakes	3,524	$ 1,070,000	$ 48,250
2	Williston-Minot	40,530	11,310,500	1,065,350
2	Minot-Devils Lake	95,262	28,284,500	1,427,800
2	Devils Lake-Grand Forks	86,378	25,429,000	1,450,000
11	Ellendale-Hague	6,955	2,270,000	77,550
11	Ellendale-Ludden	2,314	740,000	33,850
12	Montana 12-South Dakota 12	25,268	6,560,000	228,700
13	Oakes-Wahpeton	914	270,000	12,800
44	Manvel-Drayton	10,810	2,910,000	450,550
52	Minot-Portal	44,128	12,134,000	612,100
52	Minot-Carrington	32,988	9,455,000	452,790
81	Manvel-Grafton	19,261	5,295,000	270,650
81	Manvel-Grand Forks	29,036	7,945,000	608,400
81	Grand Forks-Fargo	61,286	17,379,000	858,400
81	Fargo-Wahpeton	8,116	2,434,000	104,400
83	Hague-I 94 Junction	58,912	17,650,000	728,960
83	Bismarck-Minot	97,671	28,720,000	1,178,120
85	South Dakota 85-Belfield	26,264	6,985,000	294,320
85	Belfield-Williston	43,323	12,459,000	707,050
94	Beach-Dickinson	193,363	51,853,000	3,235,020
94	Dickinson-Bismarck	224,308	60,623,000	3,530,560
94	Bismarck-Jamestown	357,899	99,278,000	5,462,200
94	Jamestown-Valley City	341,954	93,542,000	5,199,580
94	Valley City-Fargo	366,587	100,702,000	5,396,880
281	Carrington-Jamestown	34,772	99,970,000	460,690
281	Jamestown-Ellendale	35,505	10,190,000	564,810

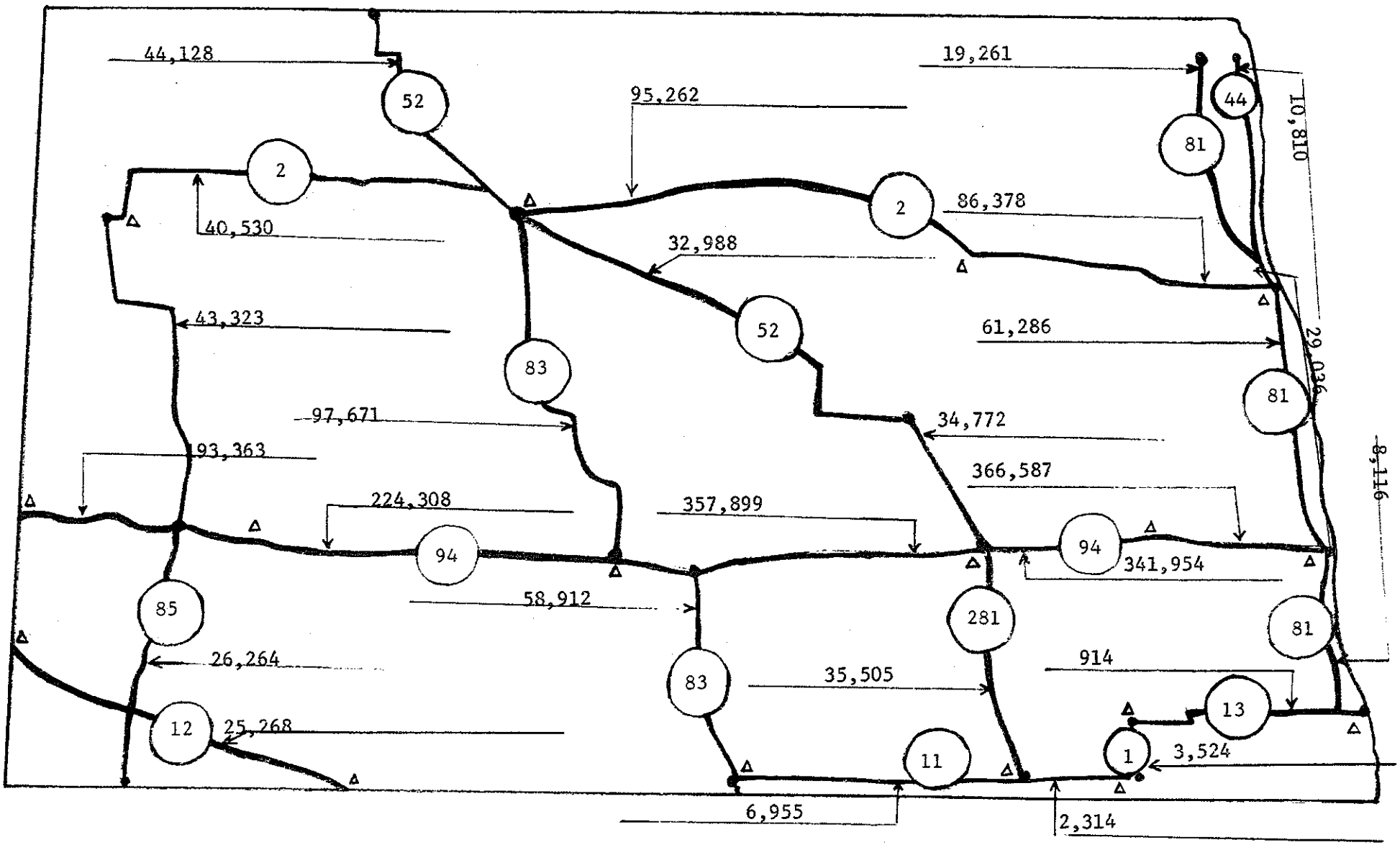

FIGURE 12. GROSS TONNAGE OF GROCERY SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

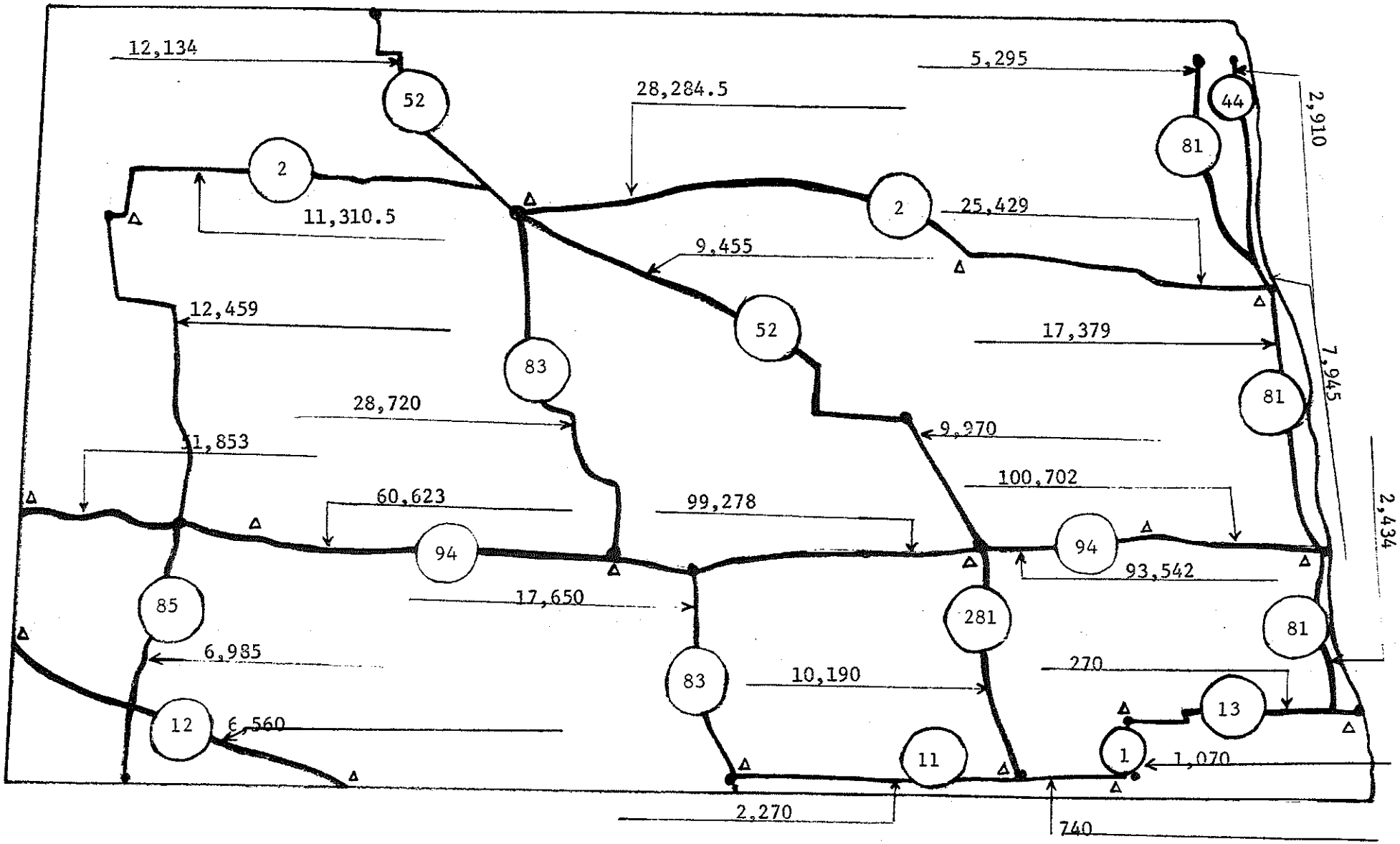

FIGURE 13. VALUE (THOUSAND DOLLARS) OF GROCERY SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

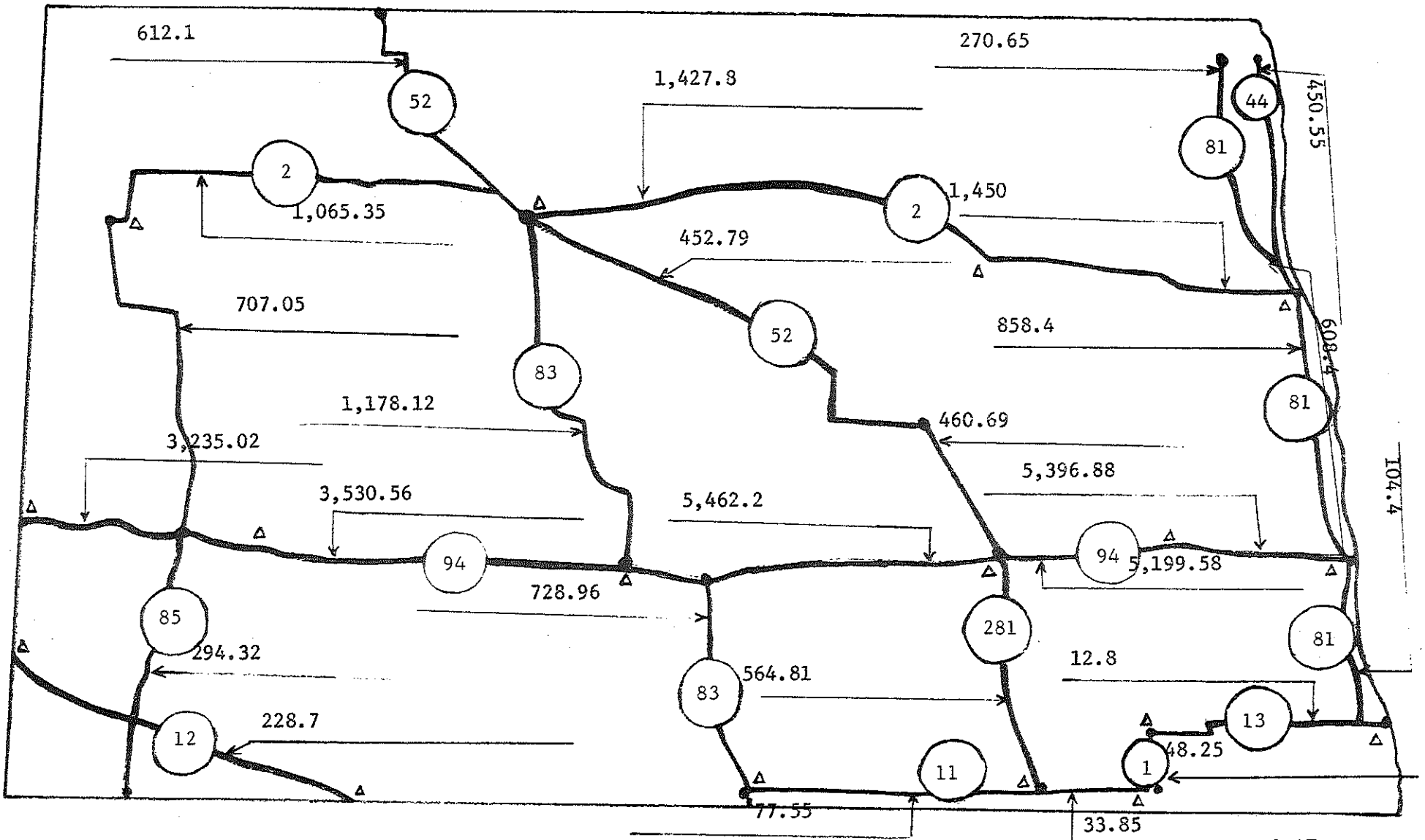

FIGURE 14. VALUE ADDED BY TRANSPORTATION (THOUSAND DOLLARS) OF GROCERY SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS PRODUCTS

Miscellaneous products refer to eight general product classes: durable goods, steel products, building materials, farm equipment, processed agriculture products, vehicles, mining products, and general freight.[28] A total of 2,027,854 gross tons of miscellaneous product shipments was transported over North Dakota highways in 1969. These shipments were valued at $432,197,500 and the value added by transportation was $31,665,557.[29]

The durable goods product class included furniture and appliance shipments. These shipments totaled 101,808 gross tons and were valued at $30,221,000. The value added by transportation was $2,657,180.

The steel product class included steel products used in heavy and light industry and finished products composed largely of steel.[30] These shipments totaled 208,016 gross tons and were valued at $55,203,000. The value added by transportation was $3,327,070.

The building materials product class included lumber, cement products, and nonsteel building products. These shipments totaled 381,938 gross tons and were valued at $15,857,000. The value added by transportation was $5,476,890.

The farm equipment product class included all farm machinery. These shipments totaled 193,184 gross tons and were valued at $150,747,700. The value added by transportation was $3,570,000.

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[28]The eight product classes along with North Dakota crude oil, processed oil and gasolines, and groceries compose the 11 product classes used in the analysis.

[29]See Table 68.

[30]Finished steel products are products, such as wire and steel pipes.

The processed agriculture product class included livestock feed, fertilizer, and grain seed. These shipments totaled 193,610 gross tons and were valued at $15,381,350. The value added by transportation was $2,728,270.

The vehicle product class included automobiles, trucks, and boats. These shipments totaled 149,872 gross tons and were valued at $108,013,650. The value added by transportation was $3,189,130.

The mining product class included shipments of sand and gravel, coal, and salt water.[31] These shipments totaled 101,528 gross tons and were valued at $153,800. The value added by transportation was $1,214,760.

The general freight product class included all shipments whose respective scale ticket listed general freight as the type of product transported.[32] These shipments totaled 697,898 gross tons and were valued at $191,620,000. The value added by transportation was $12,496,620.

Interregion Flow of Miscellaneous Shipments

Motor carrier shipments of miscellaneous products originating in Region 1 totaled 86,306 gross tons. These shipments were valued at $18,992,000 and the value added by transportation was $1,066,950 (Table 39).

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[31] Salt water is used in the drilling of oil wells.

[32] It was difficult to determine what product or products were transported under the general freight heading, therefore, general freight was used as a product class.

TABLE 39. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 1 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	20,588	$ 6,070,500	$ 104,900
2	6,755	1,642,500	51,200
3	2,525	217,000	23,500
4	3,375	1,636,000	43,100
5	7,545	1,673,500	120,250
6	1,340	20,300	19,400
7	4,858	1,328,500	42,500
8	9,081	1,705,300	68,900
9	25,575	5,413,400	487,200
10	4,380	925,500	92,400
11	284	33,000	13,600
TOTAL	86,306	$18,992,000	$1,066,950

A total of 145,982 gross tons of miscellaneous shipments originated in Region 2. The value of these shipments was $39,339,150 and the value added by transportation was $1,894,700 (Table 40).

The largest miscellaneous product shipment originating in Region 2 was destined to Region 2 (40,418 gross tons). These intraregion shipments were valued at $9,282,550 and the value added by transportation was $248,500. A second large movement of miscellaneous products originating in Region 2 was destined to Region 5 (27,621). These shipments were valued at $8,341,300 and the value added by transportation was $383,450.

TABLE 40. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 2 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	13,498	$ 3,062,300	$ 132,200
2	40,418	9,282,550	248,500
3	9,500	2,542,500	104,700
4	8,630	2,174,000	105,000
5	27,621	8,341,300	383,450
6	8,145	2,567,650	123,000
7	13,298	3,055,350	127,050
8	5,047	1,028,200	53,000
9	4,817	1,590,500	118,400
10	6,591	2,215,300	141,600
11	4,269	1,264,000	127,000
14	210	70,000	9,600
21	1,471	740,000	91,500
22	1,420	805,500	99,600
28	466	380,000	14,500
29	581	220,000	15,600
TOTAL	145,982	$39,339,150	$1,894,700

A total of 5,538 gross tons of miscellaneous shipments originated in Region 3. The value of these shipments was $1,401,200 and the value added by transportation was $68,850 (Table 41).

TABLE 41. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 3 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	520	$ 132,000	$ 5,600
3	2,953	384,000	16,200
4	470	150,200	5,200
6	365	45,000	3,750
7	80	5,000	1,650
8	60	5,000	2,100
9	790	600,000	30,000
10	300	80,000	4,350
TOTAL	5,538	$1,401,200	$68,850

A total of 100,989 gross tons of miscellaneous shipments originated in Region 4. These shipments were valued at $24,377,400 and the value added by transportation was $1,095,950 (Table 42).

The largest regional flow originating in Region 4 of miscellaneous products was to Region 3 (31,085 gross tons). These shipments were valued at $8,044,300 and the value added by transportation was $247,500. The intraregion flow of miscellaneous products originating in Region 4 to Region 4 was 20,995 gross tons. The respective value was $4,257,100 and the value added by transportation was $91,200.

TABLE 42. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 4 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	2,473	$ 580,000	$ 36,800
2	23,653	6,185,000	272,000
3	31,085	8,044,300	247,500
4	20,995	4,257,100	91,200
5	5,280	1,196,000	39,600
6	4,465	614,000	53,600
7	3,455	693,000	52,050
8	831	45,000	11,400
9	7,387	2,468,000	253,200
10	915	140,000	26,000
28	450	155,000	12,600
TOTAL	100,989	$24,377,400	$1,095,950

A total of 535,727 gross tons of miscellaneous shipments originated in Region 5. These shipments were valued at $175,953,100 and the value added by transportation was $8,642,700 (Table 43).

The largest regional flow of miscellaneous shipments originating in Region 5 was destined to Region 9 (128,442 gross tons). The value of these shipments was $48,975,500 and the value added by transportation was $4,238,200. A second

large regional flow of miscellaneous shipments originating in Region 5 was destined to Region 2 (107,966 gross tons). These shipments were valued at $36,292,500 and the value added by transportation was $1,353,500.

TABLE 43. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 5 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	14,228	$ 6,244,500	$ 239,250
2	107,966	36,292,500	1,353,500
3	12,558	5,004,000	125,000
4	4,720	1,883,200	38,000
5	19,338	3,735,450	87,000
6	82,831	15,759,650	621,150
7	98,798	32,570,300	971,300
8	43,392	15,459,500	564,000
9	128,442	48,975,500	4,238,200
10	13,223	6,290,000	188,200
11	4,147	1,845,000	61,900
28	5,609	1,493,500	146,000
29	475	400,000	9,200
TOTAL	535,727	$175,953,100	$8,642,700

A total of 3,852 gross tons of miscellaneous shipments originated in Region 6. These shipments were valued at $1,302,000 and the value added by transportation was $46,350 (Table 44).

TABLE 44. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 6 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	167	$ 6,000	$ 2,000
2	807	175,000	8,700
3	203	55,000	4,750
5	320	420,000	3,400
6	695	180,000	3,000
7	360	15,000	2,200
8	240	60,000	2,700
9	360	135,000	11,600
10	700	256,000	8,000
TOTAL	3,852	$1,302,000	$46,350

A total of 84,243 gross tons of miscellaneous shipments originated in Region 7. These shipments were valued at $17,849,800 and the value added by transportation was $863,250 (Table 45).

The largest miscellaneous product shipments originating in Region 7 were destined to Region 2 (20,589 gross tons). These shipments were valued at $4,093,200 and the value added by transportation was $180,850. The intraregion shipments, those miscellaneous shipments originating in Region 7 and destined to Region 7, totaled 17,014 gross tons. The respective value was $3,728,250 and the value added by transportation was $55,300.

TABLE 45. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 7 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	4,229	$ 935,000	$ 53,000
2	20,589	4,093,200	180,850
3	1,647	251,000	24,050
4	1,880	269,000	28,400
5	14,669	1,904,500	135,400
6	6,667	1,335,200	64,400
7	17,014	3,728,250	55,300
8	1,862	310,000	16,500
9	2,635	574,500	82,600
10	9,595	2,770,150	140,700
11	2,892	1,404,000	58,000
28	614	275,000	24,050
TOTAL	84,243	$17,849,800	$863,250

A total of 34,825 gross tons of miscellaneous shipments originated in Region 8. These shipments were valued at $2,808,000 and the value added by transportation was $280,300 (Table 46).

TABLE 46. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NORTH DAKOTA ECONOMIC REGION 8 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	1,636	$ 46,000	$ 13,000
2	195	70,000	3,000
3	330	500	3,450
4	345	15,000	4,350
5	1,321	260,500	16,000
6	317	220,000	5,300
7	690	206,000	3,400
8	23,773	1,026,900	99,400
9	2,770	411,100	58,200
10	2,117	232,000	29,800
11	1,331	320,000	44,400
TOTAL	34,825	$2,808,000	$280,300

A total of 275,425 gross tons of miscellaneous shipments originated in National Region 9. These shipments were valued at $60,752,600 and the value added by transportation was $5,794,605 (Table 47).

The largest miscellaneous shipment originating in National Region 9 was destined to State Economic Region 5 (96,250 gross tons). These shipments were valued at $20,475,300 and the value added by transportation was $2,989,000.

The second largest miscellaneous product movement originating in National Region 9 was to National Region 11. A total of 47,486 gross tons of miscellaneous products was transported with a respective value of $7,335,800. The value added by transportation was $525,000.

TABLE 47. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 9 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	18,821	$ 5,707,400	$ 385,200
2	8,911	2,360,500	188,000
3	3,250	324,000	88,000
4	6,528	2,120,000	222,000
5	96,250	20,475,300	2,989,000
6	5,916	1,432,500	168,600
7	8,242	2,081,000	249,400
8	18,620	4,152,200	350,400
9	46,189	11,741,900	476,705
10	14,657	2,862,000	143,600
11	47,486	7,335,800	525,000
29	555	160,000	8,700
TOTAL	275,425	$60,752,600	$5,794,605

A total of 175,740 gross tons of miscellaneous shipments originated in National Region 10. These shipments were valued at $37,989,600 and the value added by transportation was $2,687,140 (Table 48).

The largest miscellaneous product movement originating in National Region 10 was destined to State Economic Region 7 (31,294 gross tons). These shipments were valued at $4,841,600 and the value added by transportation was $343,090. A second large movement of miscellaneous products originating in National Region 10 was destined to National Region 9 (29,407 gross tons). The respective value was $7,516,500 and the value added by transportation was $267,300. These shipments traveled over North Dakota highways en route to National Region 9.

TABLE 48. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 10 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	22,802	$ 3,106,500	$ 497,500
2	26,807	5,806,500	482,500
3	3,543	1,026,500	76,200
4	3,770	1,300,000	94,000
5	6,562	1,777,000	107,200
6	9,865	2,437,500	156,400
7	31,294	4,841,600	343,090
8	18,750	2,877,000	300,300
9	29,407	7,516,500	267,300
10	17,193	5,105,500	213,500
11	1,750	425,000	54,000
28	3,577	1,555,000	84,500
29	420	215,000	10,650
TOTAL	175,740	$37,989,600	$2,687,140

A total of 382,577 gross tons of miscellaneous shipments originated in National Region 11. These shipments were valued at $123,873,700 and the value added by transportation was $8,994,950 (Table 49).

A large movement of miscellaneous products originating in National Region 11 was destined to National Region 9 (123,230 gross tons). These shipments traveling through North Dakota were valued at $40,299,200 and the value added by transportation was $3,657,500.

TABLE 49. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 11 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	9,896	$ 2,845,000	$ 332,000
2	65,386	20,497,000	1,743,800
3	9,785	3,851,850	222,500
4	11,155	2,569,100	206,800
5	20,475	7,529,000	280,200
6	36,246	10,551,000	609,500
7	58,439	21,276,150	1,236,000
8	14,576	4,481,000	355,000
9	123,230	40,299,200	3,657,500
10	12,316	4,428,000	121,900
11	8,368	1,918,300	90,950
28	11,805	3,413,000	132,800
29	900	215,000	6,000
TOTAL	382,577	$123,873,700	$8,994,950

A total of 24,168 gross tons of miscellaneous shipments originated in National Region 12. These shipments were valued at $6,694,000 and the value added by transportation was $553,680 (Table 50).

TABLE 50. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 12 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	495	$ 160,000	$ 26,000
2	1,085	320,000	53,000
3	985	240,000	27,600
4	1,570	465,000	45,000
5	1,575	610,000	35,000
7	1,558	670,000	63,280
8	1,125	265,000	42,800
9	6,209	2,869,000	198,000
10	275	200,000	11,000
11	2,220	235,000	48,000
28	992	580,000	30,000
29	345	80,000	10,000
TOTAL	24,168	$6,694,000	$553,680

A total of 49,150 gross tons of miscellaneous shipments originated in National Region 13. These shipments were valued at $15,924,000 and the value added by transportation was $1,365,400 (Table 51).

TABLE 51. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 13 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	1,331	$ 195,500	$ 47,600
2	9,733	3,108,000	315,000
3	1,970	495,000	55,300
4	2,144	985,000	71,100
5	2,880	909,000	63,800
6	8,966	2,209,500	174,000
7	7,613	2,620,000	176,800
8	1,785	1,069,000	57,000
9	6,489	2,051,000	215,000
10	1,152	562,000	30,000
11	1,764	525,000	63,000
27	235	15,000	9,000
28	2,410	1,020,000	72,000
29	678	160,000	15,800
TOTAL	49,150	$15,924,000	$1,365,400

A total of 11,591 gross tons of miscellaneous shipments originated in National Region 14. These shipments were valued at $3,756,000 and the value added by transportation was $348,200 (Table 52).

TABLE 52. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 14 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	2,154	$1,290,000	$ 86,400
4	385	280,000	18,000
5	1,725	285,000	41,400
6	1,001	240,000	20,700
7	2,281	646,000	62,400
8	628	160,000	21,200
9	2,437	545,000	62,400
11	335	80,000	6,900
28	645	230,000	28,800
TOTAL	11,591	$3,756,000	$348,200

A total of 28,078 gross tons of miscellaneous shipments originated in National Region 15. These shipments were valued at $10,839,000 and the value added by transportation was $1,311,800 (Table 53).

TABLE 53. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 15 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	440	$ 240,000	$ 29,600
2	5,262	1,515,000	238,400
4	1,973	760,000	110,000
5	5,705	2,160,000	178,000
6	1,086	184,000	36,800
7	1,571	850,000	64,200
8	385	270,000	24,800
9	6,961	3,625,000	364,000
10	940	290,000	56,000
11	3,180	860,000	182,000
28	575	85,000	28,000
TOTAL	28,078	$10,839,000	$1,311,800

A total of 2,308 gross tons of miscellaneous shipments originated in National Region 16. The value of these shipments was $660,000 and the value added by transportation was $101,500 (Table 54).

TABLE 54. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 16 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	564	$180,000	$ 18,100
4	290	80,000	11,600
6	334	80,000	13,400
7	266	80,000	13,400
8	270	80,000	15,000
9	584	160,000	30,000
TOTAL	2,308	$660,000	$101,500

A total of 2,466 gross tons of miscellaneous shipments originated in National Region 17. The respective value was $560,300 and the value added by transportation was $140,500 (Table 55).

TABLE 55. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 17 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	762	$ 85,300	$ 54,000
5	1,000	480,000	46,500
9	704	95,000	40,000
TOTAL	2,466	$560,300	$140,500

A total of 3,240 gross tons of miscellaneous shipments originated in National Region 18. The respective value was $978,000 and the value added by transportation was $201,600 (Table 56).

TABLE 56. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 18 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	405	$208,000	$ 40,000
4	320	15,000	15,400
5	200	70,000	13,400
7	155	80,000	15,400
8	230	80,000	15,400
9	1,210	430,000	62,000
10	360	15,000	20,000
11	360	80,000	20,000
TOTAL	3,240	$978,000	$201,600

A total of 3,706 gross tons of miscellaneous shipments originated in National Region 19. These shipments were valued at $1,225,000 and the value added by transportation was $227,800 (Table 57).

TABLE 57. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 19 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
4	1,915	$ 560,000	$110,600
5	555	180,000	27,600
6	207	35,000	13,800
9	454	270,000	28,000
11	575	180,000	47,800
TOTAL	3,706	$1,225,000	$227,800

A total of 1,812 gross tons of miscellaneous shipments originated in National Region 20. These shipments were valued at $660,000 and the value added by transportation was $85,600 (Table 58).

TABLE 58. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 20 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	200	$ 70,000	$12,000
4	315	80,000	11,600
9	1,112	440,000	52,000
11	185	70,000	10,000
TOTAL	1,812	$660,000	$85,600

A total of 715 gross tons of miscellaneous shipments originated in National Region 21. The respective value was $260,000 and the value added ty transportation was $45,500 (Table 59).

TABLE 59. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 21 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
3	210	$ 70,000	$16,000
4	210	70,000	15,500
6	295	120,000	14,000
TOTAL	715	$260,000	$45,500

A total of 20,541 gross tons of miscellaneous shipments originated in National Region 22. The value of these shipments was $9,125,000 and the value added by transportation was $1,156,600 (Table 60).

TABLE 60. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 22 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	1,332	$ 455,000	$ 100,000
2	1,551	830,000	99,600
3	265	80,000	15,800
4	805	420,000	62,400
5	1,461	930,000	81,600
6	832	175,000	40,800
7	3,165	1,480,000	146,000
8	4,438	1,135,000	276,000
9	1,835	1,160,000	100,000
10	1,391	860,000	54,400
28	3,466	1,600,000	180,000
TOTAL	20,541	$9,125,000	$1,156,600

A total of 109 gross tons of miscellaneous shipments originated in National Region 23 and was destined to State Economic Region 5. The value of the shipments was $80,000 and the value added by transportation was $21,000.

A total of 8,222 gross tons of miscellaneous shipments originated in National Region 24. The value of these shipments was $1,110,500 and the value added by transportation was $227,700 (Table 61).

TABLE 61. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 24 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	1,660	$ 96,500	$ 33,600
2	1,005	89,500	27,000
3	335	80,000	11,200
4	1,255	115,000	46,400
5	350	4,000	9,500
7	345	80,000	8,000
9	2,415	480,500	56,000
11	857	165,000	36,000
TOTAL	8,222	$1,110,500	$227,700

A total of 9,625 gross tons of miscellaneous shipments originated in National Region 25. The value of these shipments was $2,733,000 and the value added by transportation was $639,200 (Table 62).

TABLE 62. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 25 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	405	$ 160,000	$ 32,800
2	1,693	720,000	153,600
5	1,445	314,000	93,000
6	200	80,000	18,400
7	540	85,000	36,400
8	930	295,000	45,000
9	1,768	540,000	84,000
11	1,156	285,000	76,000
28	1,133	245,000	80,000
29	355	9,000	20,000
TOTAL	9,625	$2,733,000	$639,200

A total of 13,433 gross tons of miscellaneous shipments originated in National Region 26. The respective value was $3,990,000 and the value added by transportation was $708,850 (Table 63).

TABLE 63. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 26 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	485	$ 215,000	$ 28,000
2	1,810	405,000	98,400
3	365	15,000	19,600
4	310	15,000	19,800
5	4,150	1,235,000	266,250
6	230	300,000	17,600
7	530	150,000	33,200
8	440	300,000	28,000
9	2,532	645,000	126,000
11	2,581	710,000	72,000
TOTAL	13,433	$3,990,000	$708,850

A total of 2,980 gross tons of miscellaneous shipments originated in National Region 27. The value of these shipments was $1,275,000 and the value added by transportation was $72,500 (Table 64).

TABLE 64. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 27 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
1	345	$ 80,000	$ 5,000
2	320	80,000	6,000
9	1,413	1,015,000	42,000
28	902	100,000	19,500
TOTAL	2,980	$1,275,000	$72,500

A total of 6,077 gross tons of miscellaneous shipments originated in National Region 28. The respective value was $2,164,000 and the value added by transportation was $172,700 (Table 65).

TABLE 65. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 28 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
2	812	$ 300,000	$ 13,500
4	561	95,000	10,000
5	466	200,000	11,000
6	895	360,000	22,200
7	226	140,000	12,000
9	670	380,000	18,000
10	777	214,000	36,000
11	615	210,000	18,000
28	1,055	265,000	32,000
TOTAL	6,077	$2,164,000	$172,700

A total of 4,348 gross tons of miscellaneous shipments originated in National Region 29. These shipments were valued at $1,073,000 and the value added by transportation was $119,500 (Table 66).

TABLE 66. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS SHIPMENTS ORIGINATING IN NATIONAL REGION 29 BY GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Destined Region	Gross Tons	Value	Value Added
5	795	$ 405,000	$ 18,000
8	350	80,000	8,500
9	1,063	180,000	36,000
10	1,216	48,000	36,000
28	924	360,000	21,000
TOTAL	4,348	$1,073,000	$119,500

Miscellaneous Product Flows by Highway Segment

Motor carrier shipments of miscellaneous products were aggregated by gross tonnage, value, and value added by transportation over 26 North Dakota highway routes (Table 67 and Figures 15, 16, and 17).

The most important east-west North Dakota highway for motor carrier transportation of miscellaneous products is U.S. Interstate 94. The segments between Valley City and Fargo and Bismarck and Jamestown had the most tonnage, 1,175,817 gross tons and 1,108,396 gross tons, respectively. The value of the shipments over the two segments was $354,494,700 and $347,828,200, respectively. The respective values added by transportation were $21,452,990 and $21,520,330.

A second important east-west North Dakota highway for transportation of miscellaneous shipments is U.S. 2. The segment between Devils Lake and Grand Forks had 168,236 gross tons of miscellaneous shipments that were valued at $47,750,700. The value added by transportation was $2,840,750. A second important segment of U.S. 2 is between Minot and Devils Lake. A total of 134,915 gross tons of miscellaneous shipments traveled over this segment at a value of $38,868,300. The respective value added by transportation was $2,393,650.

An important north-south highway located in Western North Dakota for the transportation of miscellaneous products is U.S. 85. The segment between Belfield and Williston had 169,386 gross tons of miscellaneous product traffic. These shipments were valued at $40,136,900 and the value added by transportation was $2,987,190.

An important north-south highway located in Central North Dakota for the transportation of miscellaneous products is U.S. 52. The segment between Minot and Carrington had 75,529 gross tons of miscellaneous product traffic. The

respective value was $21,849,250 and the value added by transportation was $1,290,500.

A second important Central North Dakota north-south highway is U.S. 83. The segment between Bismarck and Minot had 285,511 gross tons of miscellaneous product traffic with the respective value of $84,281,450. The value added by transportation was $4,880,770.

The important north-south North Dakota highway in Eastern North Dakota is U.S. 81. The segment between Grand Forks and Fargo had 105,748 gross tons of miscellaneous product traffic. The value of these shipments was $33,854,000 and the value added by transportation was $1,762,780. The segment between Manvel and Grafton had 52,380 gross tons of miscellaneous product traffic with the respective value of $8,895,800. The value added by transportation was $343,950.

TABLE 67. MOTOR CARRIER TRANSPORTATION OF MISCELLANEOUS PRODUCTS OVER 26 NORTH DAKOTA HIGHWAY ROUTE SEGMENTS, 1969

Highway	Route Segment	Gross Tons	Value	Value Added
1	Ludden-Oakes	13,823	$ 4,720,000	$ 254,440
2	Williston-Minot	102,180	27,609,850	1,907,400
2	Minot-Devils Lake	134,915	38,868,300	2,393,650
2	Devils Lake-Grand Forks	168,236	47,750,700	2,840,750
11	Ellendale-Hague	9,884	1,941,850	149,940
11	Ellendale-Ludden	10,339	3,630,650	206,140
12	Montana 12-South Dakota 12	99,047	17,272,950	1,162,600
13	Wahpeton-Oakes	11,824	3,949,500	218,190
44	Manvel-Drayton	9,620	1,875,000	245,350
52	Minot-Portal	70,330	23,116,500	1,208,800
52	Minot-Carrington	75,529	21,849,250	1,290,500
81	Manvel-Grafton	52,380	8,895,800	343,950
81	Manvel-Grand Forks	45,824	14,212,800	829,400
81	Grand Forks-Fargo	105,748	33,854,000	1,762,780
81	Fargo-Wahpeton	29,233	8,539,400	454,990
83	Bismarck-Minot	285,511	84,281,450	4,880,770
83	Hague-Interstate 94	82,085	15,541,950	1,361,590
85	South Dakota 85-Belfield	112,242	19,677,700	1,663,330
85	Belfield-Williston	169,386	40,136,900	2,987,190
94	Beach-Dickinson	693,724	200,177,400	14,283,940
94	Dickinson-Bismarck	714,108	212,958,500	14,812,171
94	Bismarck-Jamestown	1,108,396	347,828,200	21,520,330
94	Jamestown-Valley City	1,099,145	341,878,900	20,706,692
94	Valley City-Fargo	1,175,817	354,494,700	21,452,990
281	Carrington-Jamestown	74,893	22,624,800	1,359,000
281	Jamestown-Ellendale	116,023	35,494,250	2,431,570

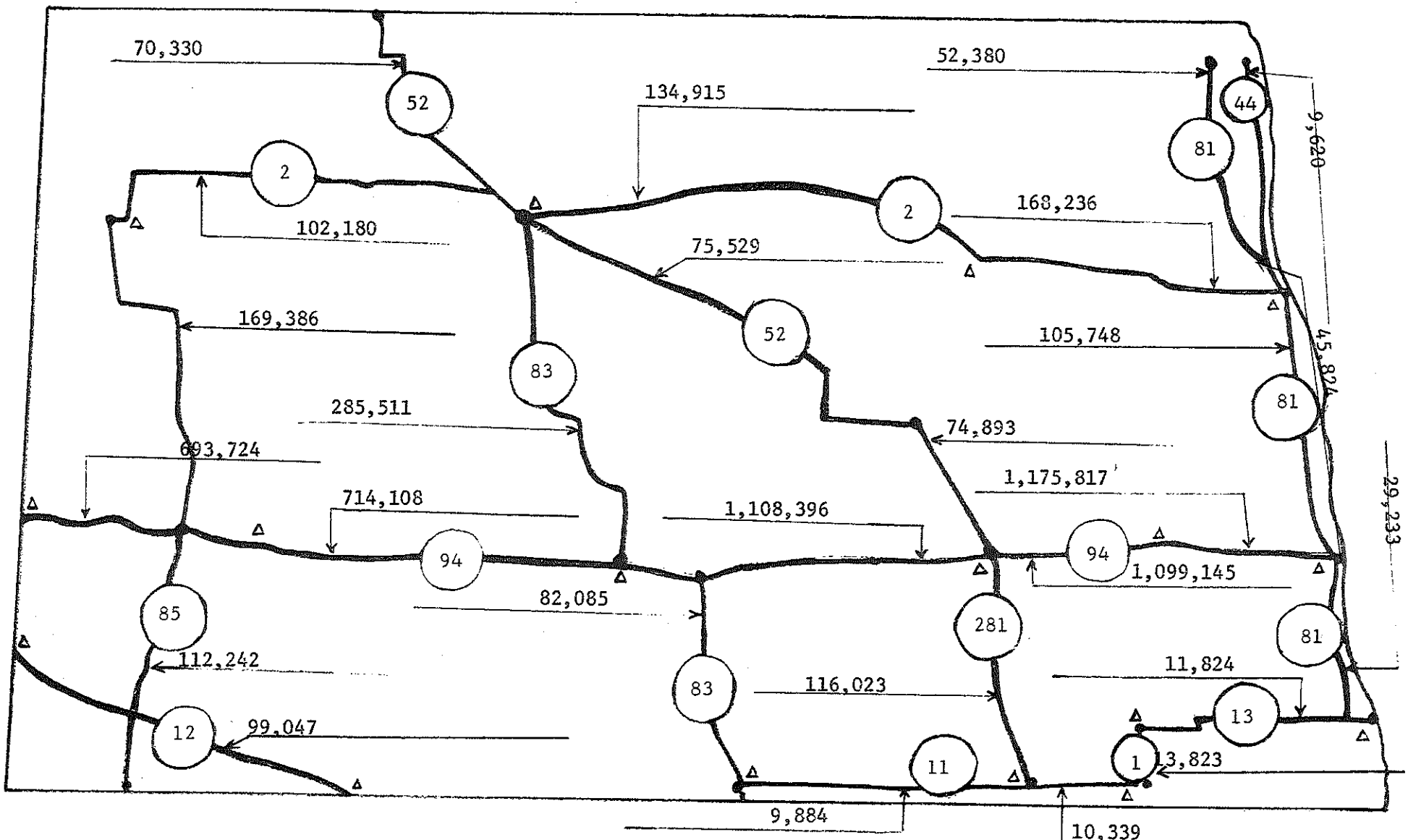

FIGURE 15. GROSS TONNAGE OF MISCELLANEOUS SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

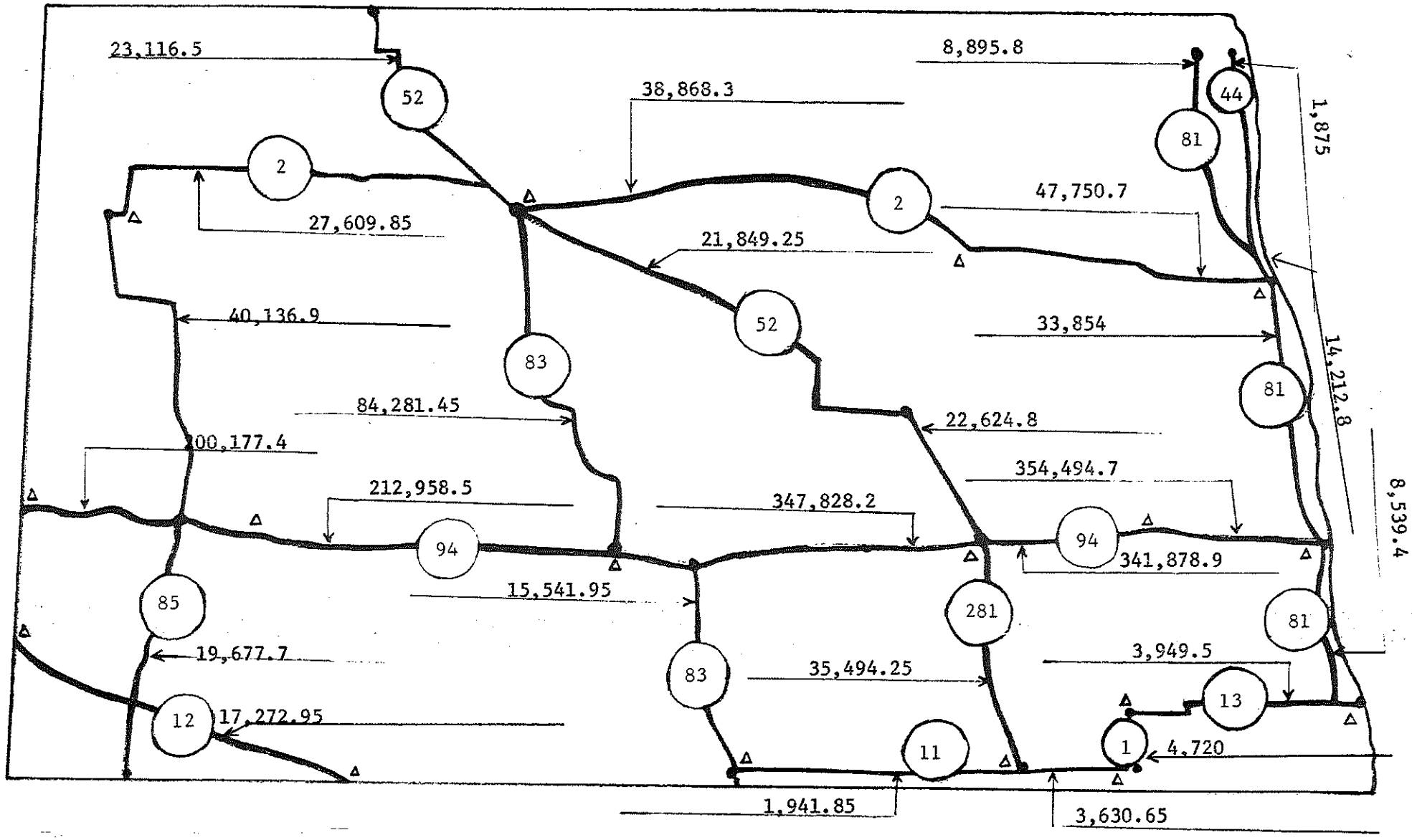

FIGURE 16. VALUE (THOUSAND DOLLARS) OF MISCELLANEOUS SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

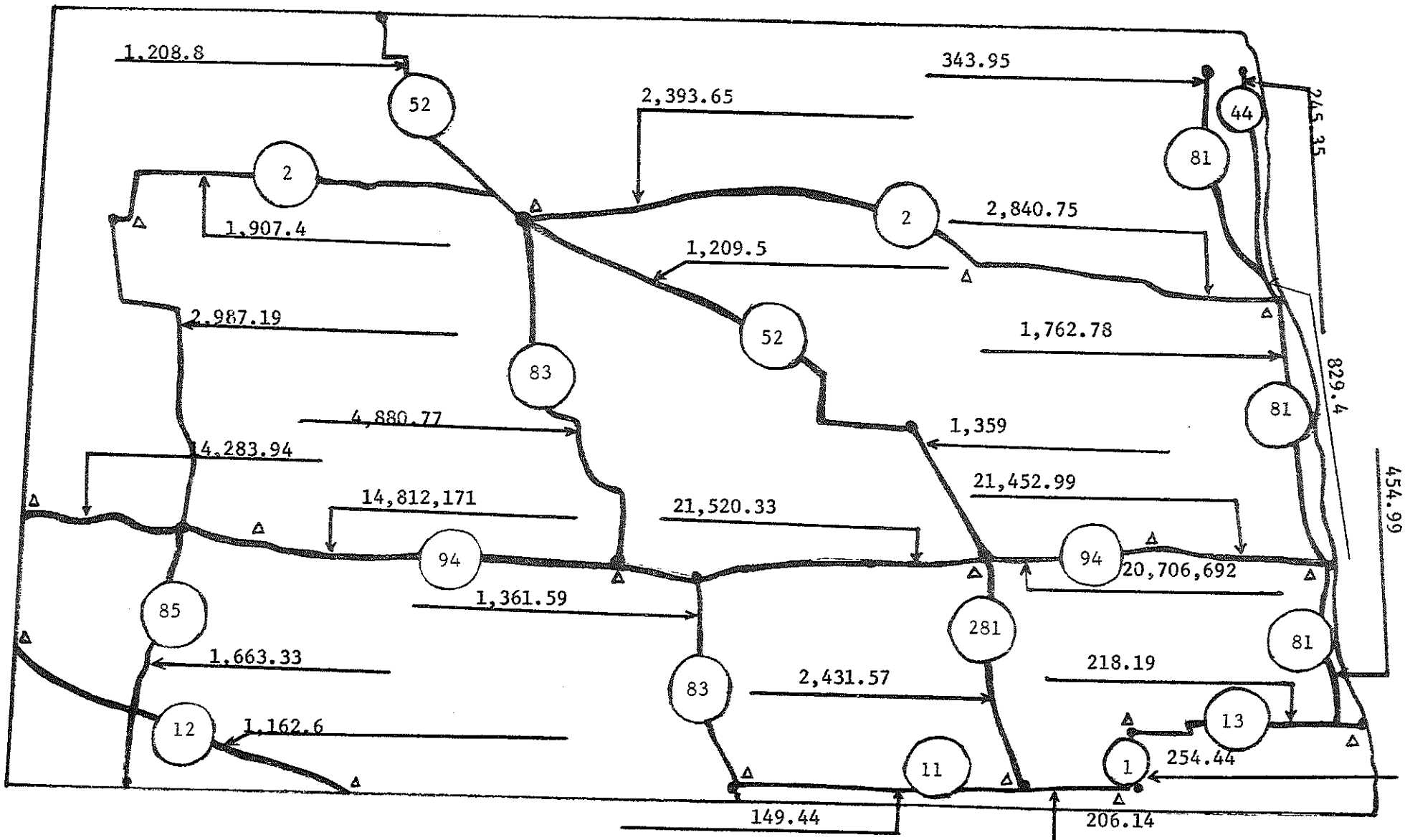

FIGURE 17. VALUE ADDED BY TRANSPORTATION (THOUSAND DOLLARS) OF MISCELLANEOUS SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

MOTOR CARRIER TRANSPORTATION OF NONAGRICULTURAL PRODUCTS, TOTALS, AND PRIMARY ROUTES

A total of 4,258,018 gross tons of nonagricultural products was transported by motor carrier over North Dakota highways in 1969. The value of these shipments was $809,186,500 and the value added by transportation was $48,895,440 (Table 68).

Processed oil and gasoline shipments accounted for 29.3 percent of the total nonagricultural product shipments by motor carrier over North Dakota highways in 1969.[33] The value of these shipments was 4.3 percent of the total value of nonagricultural shipments. The value added by transportation of processed oil and gasoline shipments was 6.8 percent of the total value added by transportation of nonagricultural product shipments.

Grocery shipments accounted for 17.1 percent of the total nonagricultural product shipments by motor carrier over North Dakota highways in 1969. The value of these shipments was 25.1 percent of the total value of nonagricultural shipments and the value added by transportation was 20.5 percent of the total value added by transportation.

General freight shipments accounted for 16.3 percent of the total nonagricultural product shipments by motor carrier over North Dakota highways in 1969. The value of these shipments was 24.6 percent of the total value of nonagricultural shipments and the value added by transportation was 25.5 percent of the total value added by transportation.

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[33]Processed oil and gasoline shipments (1,250,361 gross tons) divided by the total nonagricultural product shipments (4,258,018 gross tons) multiplied by 100.

TABLE 68. MOTOR CARRIER TRANSPORTATION OF NONAGRICULTURAL PRODUCTS BY PRODUCT CLASS, GROSS TONS, VALUE, AND VALUE ADDED BY TRANSPORTATION, 1969

Product Class	Gross Tons	Value	Value Added
North Dakota Crude Oil	247,586	$ 3,504,000	$ 842,600
Processed Oil and Gasoline	1,250,360	35,329,000	3,350,000
Groceries	732,217	203,156,000	10,042,920
Durable Goods	101,808	30,221,000	2,657,180
Steel Products	208,016	55,203,000	3,327,070
Building Materials	381,938	15,857,000	5,476,890
Farm Equipment	193,184	150,747,700	3,570,000
Processed Agricultural Products	193,610	15,381,350	2,728,270
Mining Products	101,528	153,800	1,214,760
Vehicles	149,872	108,013,650	3,189,130
General Freight	697,898	191,620,000	12,496,620
TOTAL	4,258,018	$809,186,500	$48,895,440

Primary Routes

Motor carrier transportation of nonagricultural products in North Dakota was primarily over U.S. highways 2, 52, 81, 83, 85, 94, and 281 (Table 69, Figures 18, 19, 20).

The most important east-west highway in North Dakota is U.S. Interstate 94. All segments of U.S. Interstate 94 had over one million gross tons of nonagricultural product traffic. The segment with the most nonagricultural product traffic was between Valley City and Fargo (1,714,993 gross tons). The value of these shipments between Valley City and Fargo was $460,108,700 and the value added by transportation was $27,450,070. The segment of U.S. Interstate 94 with the least nonagricultural product traffic was between Bismarck and Dickinson (1,054,199 gross tons). The value of these shipments between Bismarck and Dickinson was $276,718,500 and the value added by transportation was $18,819,980.

A second important east-west highway in North Dakota is U.S. 2. The segment between Devils Lake and Grand Forks had 394,309 gross tons of nonagricultural

product traffic. The value of these shipments was $77,169,700 and value added by transportation was $4,654,650.

An important north-south highway in Western North Dakota is U.S. 85. The segment between Belfield and Williston had 271,777 gross tons of nonagricultural product traffic. The value of these shipments was $54,316,900 and the value added by transportation was $3,895,040.

In Central North Dakota an important north-south highway for the transportation of nonagricultural products is U.S. 83. The segment between Minot and Bismarck had 596,648 gross tons of nonagricultural product traffic. The value of these shipments was $118,945,450 and the value added by transportation was $6,635,490.

The most important north-south highway in Eastern North Dakota is U.S. 81. The segment between Grand Forks and Fargo had 230,743 gross tons of nonagricultural product traffic. The shipments were valued at $53,076,000 and value added by transportation was $2,796,480.

TABLE 69. MOTOR CARRIER TRANSPORTATION OF NONAGRICULTURAL PRODUCT SHIPMENTS OVER 26 NORTH DAKOTA HIGHWAY ROUTES, 1969

Highway	Route-Segment	Gross Tons	Value	Value Added
1	Ludden-Oakes	20,584	$ 5,880,000	$ 312,040
2	Williston-Minot	161,454	39,445,350	3,024,450
2	Minot-Devils Lake	382,465	71,400,800	4,221,550
2	Devils Lake-Grand Forks	394,309	77,169,700	4,654,650
11	Ellendale-Hague	18,617	5,080,850	234,590
11	Ellendale-Ludden	14,843	4,430,650	245,390
12	Montana 12-South Dakota 12	250,906	26,801,950	1,781,900
13	Oakes-Wahpeton	18,233	4,373,500	240,590
44	Manvel-Drayton	37,260	5,256,000	738,700
52	Minot-Portal	144,937	36,100,500	1,946,400
52	Minot-Carrington	202,681	33,984,250	2,017,890
81	Manvel-Grafton	101,431	15,885,800	733,600
81	Manvel-Grand Forks	166,720	24,812,800	1,641,400
81	Grand Forks-Fargo	230,743	53,076,000	2,796,480
81	Fargo-Wahpeton	60,134	11,627,400	603,390
83	Minot-Bismarck	596,648	118,945,450	6,635,490
83	Hague-Interstate 94	207,379	45,125,950	2,260,650
85	South Dakota 85-Belfield	205,142	28,006,700	2,153,450
85	Belfield-Williston	271,777	54,316,900	3,895,040
94	Beach-Dickinson	1,267,537	259,729,900	18,917,960
94	Dickinson-Bismarck	1,054,199	276,718,500	18,819,980
94	Bismarck-Jamestown	1,607,632	451,208,200	27,550,930
94	Jamestown-Valley City	1,507,872	437,428,900	26,283,470
94	Valley City-Fargo	1,714,993	460,108,700	27,450,070
281	Carrington-Jamestown	128,931	33,103,800	1,885,090
281	Jamestown-Ellendale	171,353	46,239,250	3,052,780

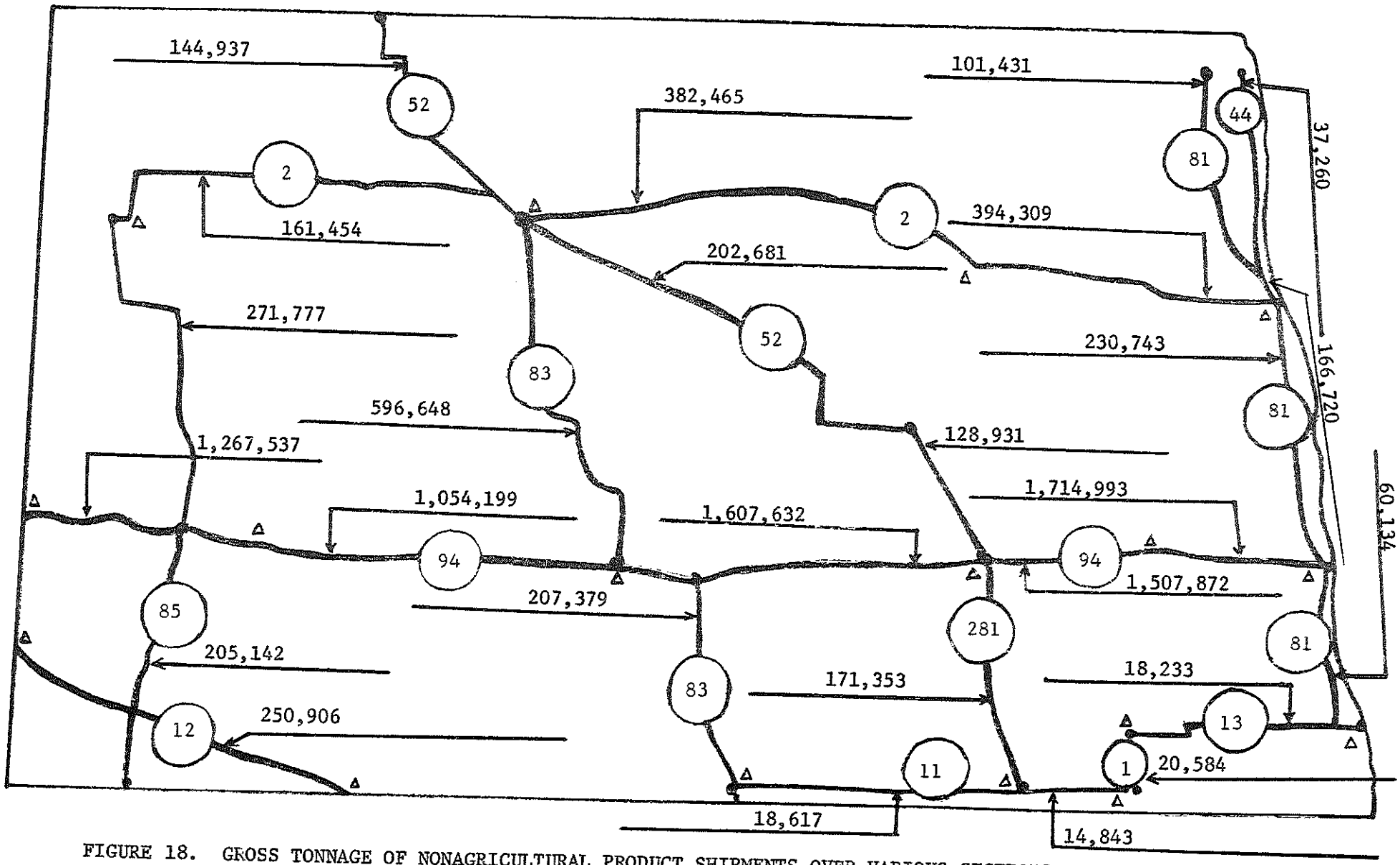

FIGURE 18. GROSS TONNAGE OF NONAGRICULTURAL PRODUCT SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

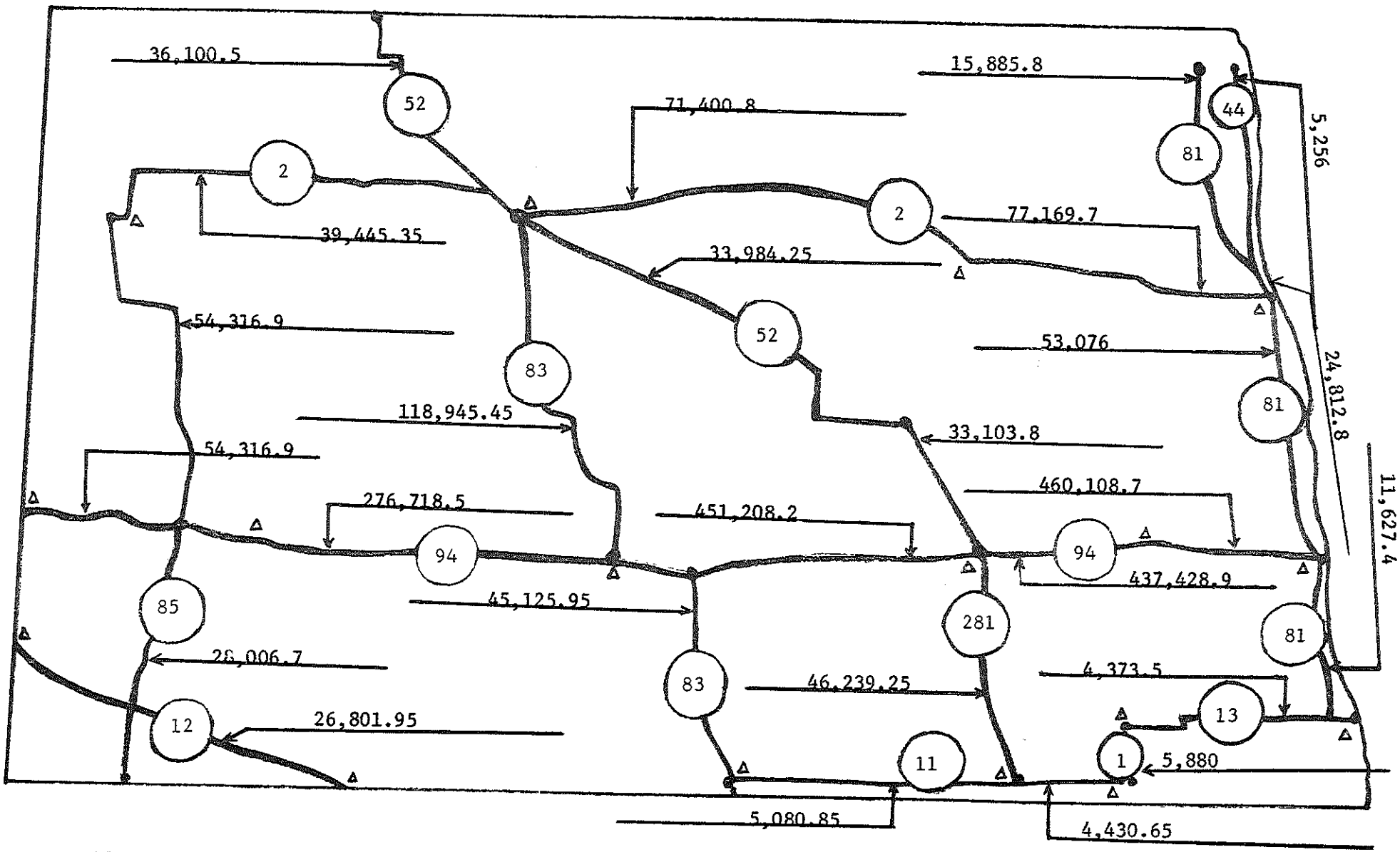

FIGURE 19. VALUE (THOUSAND DOLLARS) OF NONAGRICULTURAL PRODUCT SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

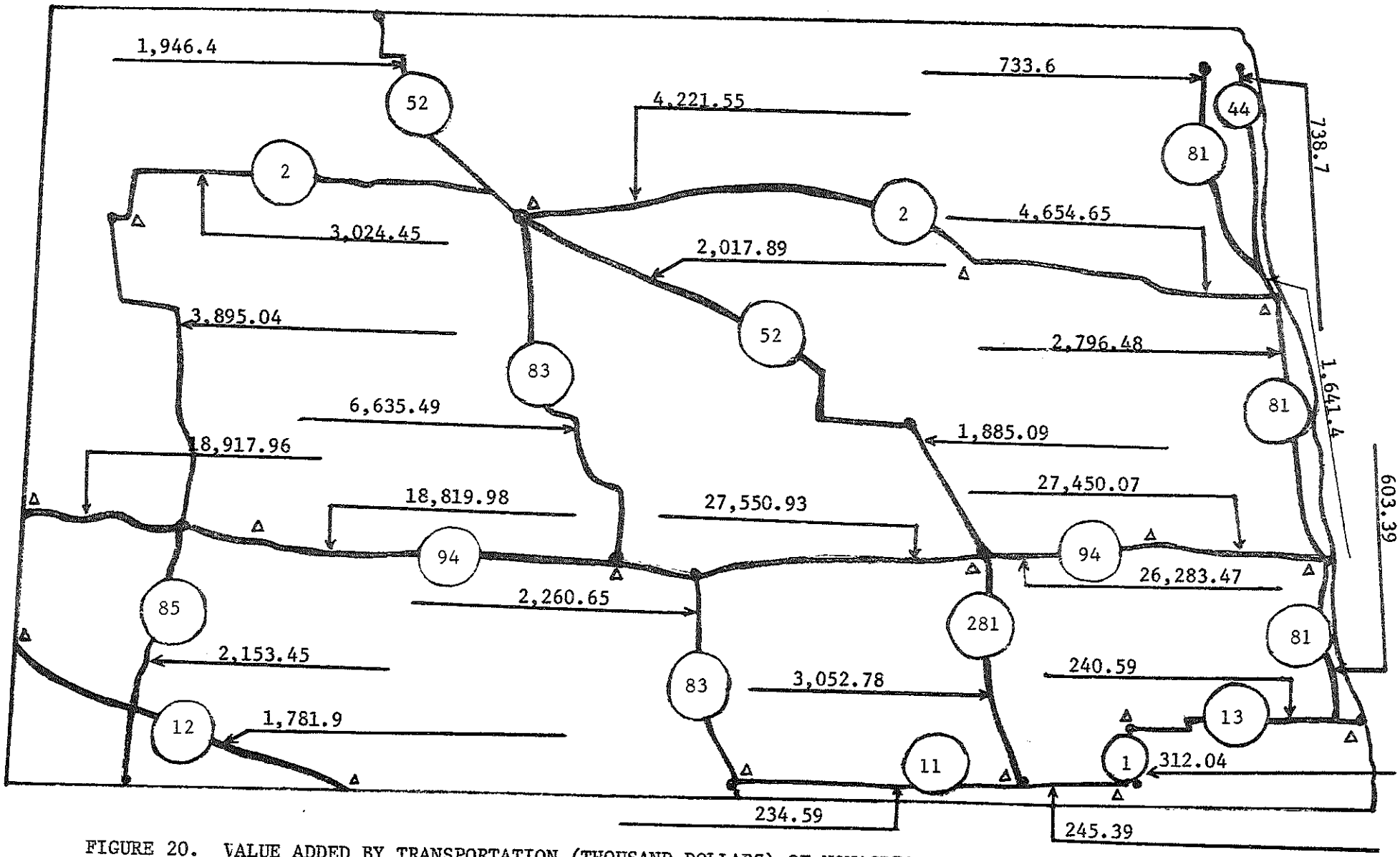

FIGURE 20. VALUE ADDED BY TRANSPORTATION (THOUSAND DOLLARS) OF NONAGRICULTURAL PRODUCT SHIPMENTS OVER VARIOUS SECTIONS OF NORTH DAKOTA HIGHWAYS DURING 1969

APPENDIX TABLE 1. CENTRAL POINTS AND CORRESPONDING REGIONS

Region	Central Point
North Dakota Economic Region 1	Williston
North Dakota Economic Region 2	Minot
North Dakota Economic Region 3	Devils Lake
North Dakota Economic Region 4	Grand Forks
North Dakota Economic Region 5	Fargo
North Dakota Economic Region 6	Jamestown
North Dakota Economic Region 7	Bismarck
North Dakota Economic Region 8	Dickinson
National Region 9	Billings, Montana
National Region 10	Pierre, South Dakota
National Region 11	Minneapolis, Minnesota
National Region 12	Chicago, Illinois
National Region 13	Omaha, Nebraska
National Region 14	Kansas City, Missouri
National Region 15	Fort Wayne, Indiana
National Region 16	Nashville, Tennessee
National Region 17	Jackson, Mississippi
National Region 18	Atlanta, Georgia
National Region 19	Richmond, Virginia
National Region 20	Buffalo, New York
National Region 21	Boston, Massachusetts
National Region 22	Dallas, Texas
National Region 23	Albuquerque, New Mexico
National Region 24	Denver, Colorado
National Region 25	Sacramento, California
National Region 26	Spokane, Washington
National Region 27	Calgary, Alberta, Canada
National Region 28	Regina, Saskatchewan, Canada
National Region 29	Winnipeg, Manitoba, Canada