

**AGRICULTURAL TRUCKING
GROWTH IN NORTH DAKOTA**

by

Gene C. Griffin

UGPTI Staff Paper No. 14

August 1981

**AGRICULTURAL TRUCKING
GROWTH IN NORTH DAKOTA**

BY

**GENE C. GRIFFIN
DIRECTOR**

**UPPER GREAT PLAINS TRANSPORTATION INSTITUTE
NORTH DAKOTA STATE UNIVERSITY
P. O. BOX 5074
FARGO, NORTH DAKOTA 58105**

AUGUST 1981

TABLE OF CONTENTS

	Page
GROWTH IN TRUCKING	1
RAILROAD PRICING REACTION TO GROWTH	8
MULTIPLE CAR RATES INTRODUCTION	11
BACKHAULS RESULTING IN GROWTH	13
ENERGY COSTS	13
RAILROAD FUTURE PRICING STRATEGY	14
CONCLUSION	15

LIST OF TABLES

	Page
TABLE 1. TRUCK SHARE OF NORTH DAKOTA GRAIN AND OILSEED MOVEMENTS BY CROP REPORTING DISTRICT FOR SELECTED YEARS	6
TABLE 2. AGRICULTURAL COMMODITY MOVEMENT BY TRUCK FROM NORTH DAKOTA FOR SELECTED YEARS	7
TABLE 3. TRUCK MOVEMENTS FROM NORTH DAKOTA TO VARIOUS DESTINATIONS FOR SELECTED YEARS	8

AGRICULTURAL TRUCKING GROWTH IN NORTH DAKOTA

By

Gene C. Griffin

GROWTH IN TRUCKING

Truck movement of exempt grains and oilseeds from North Dakota has increased substantially in the past six years both in terms of market share and absolute volume. The truck share of the grain and oilseed transportation market increased from nineteen percent in 1974-75 to a high of forty-one percent in 1978-79 followed by a slight decrease of three percent in 1979-80 (Figure 1). The balance of the traffic was hauled by rail.

Although the modal split for trucks has doubled in the past six years the increase in the absolute volume of grain and oilseed handled has been even more dramatic. The total number of bushels of grain and oilseed transported by truck from North Dakota increased from a low of 53.6 million bushels in 1974-75 to a high 185.1 million in 1978-79 followed by a slight decline in 1979-80 (Figure 2). This increase amounts to 242 percent in just five years.

There are at least two basic reasons for the tremendous growth in trucking of exempt commodities in the past six years, a protracted rail transportation capacity shortage and grain handling capacity shortage which lasted from October of 1977 through January of 1980 and rail pricing policy which made trucking of exempt commodities profitable. During the quote, "car shortage", there was a total shortage of total transportation capacity and/or export throughput capacity which allowed for expansion of existing truck firms and entry of new firms. The expansion of the trucking industry was aided by the inability of railroads to expand capacity very quickly and alternatively by the truck

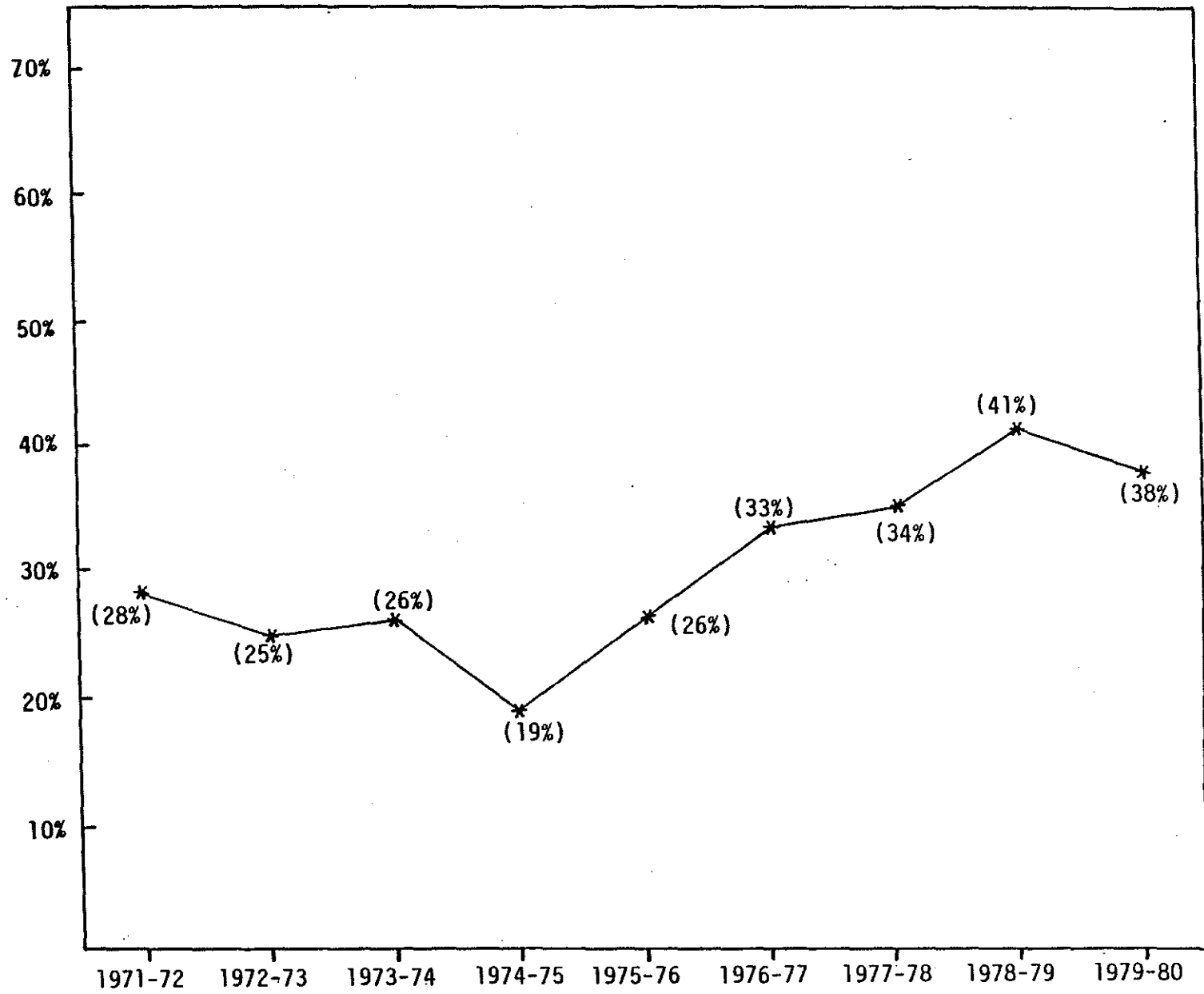


Figure 1. Shipments of North Dakota Agricultural Commodities by Truck.
(Percent of Total)

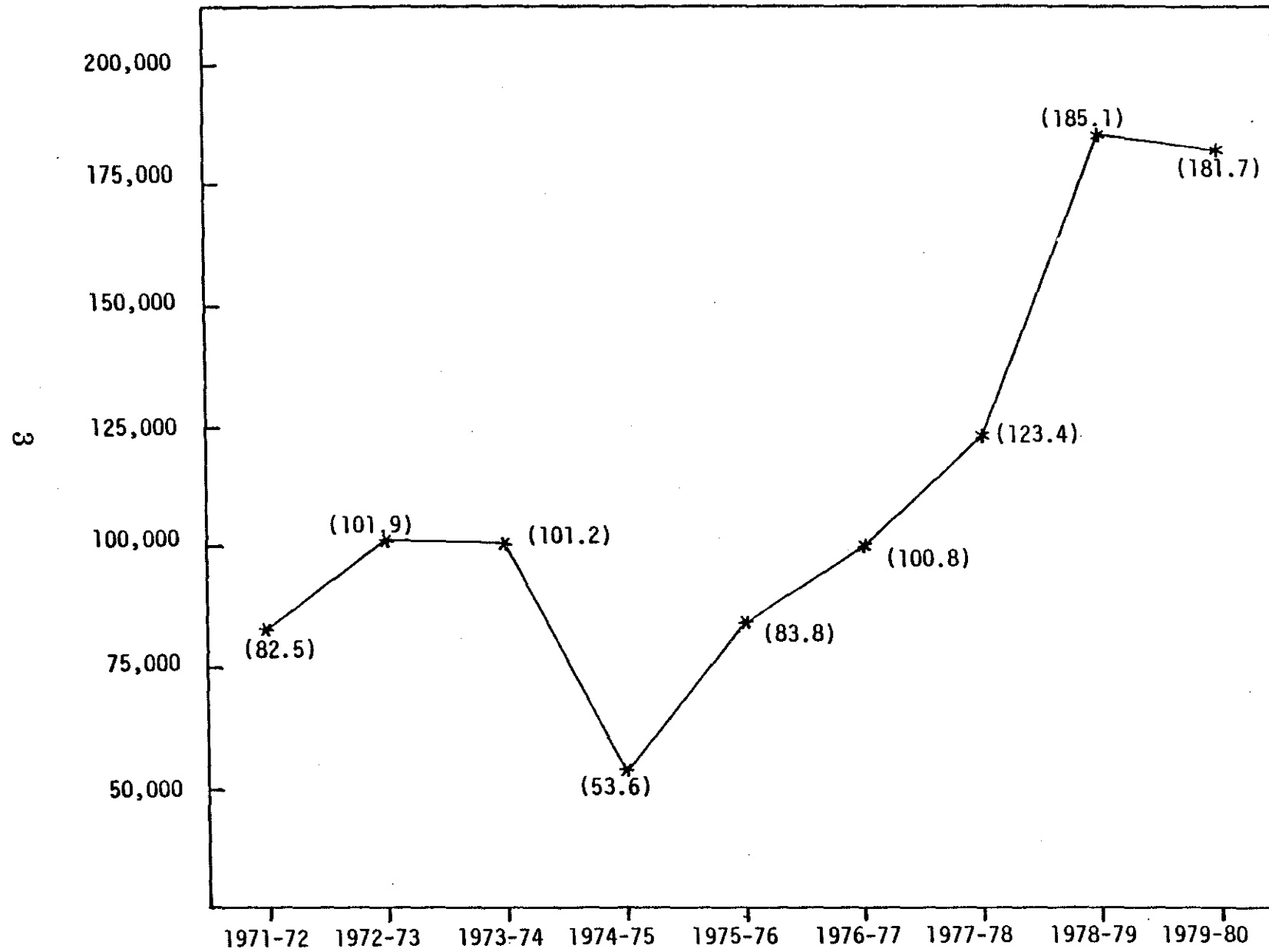


Figure 2. Shipments of North Dakota Agricultural Commodities by Truck.
(000,000 bushels)

industries' ability to expand capacity rather easily by increasing utilization of trucks and putting more trucks on the road. Rail rates were sufficiently high on wheat and sunflower during this time period to allow for profitable trucking. This also encouraged expansion of the trucking of exempt commodities from North Dakota. Other reasons for growth include the tremendous increase in production of sunflower and the nature of the movement of sunflower which is very seasonal.

The growth in exempt carriage has taken place primarily in the eastern one-third to one-half of the state. Exempt carriage increased from 18 percent to 41 percent in crop reporting district 3 between 1974-75 and 1978-79 (Table 1). In crop reporting district 6 exempt carriage increased from 28 percent to 59 percent during the same time period. Although truck share of the modal split increased considerably in crop reporting districts 7 and 8 the absolute volume increase was comparatively small because of the low production density of these regions. The eastern one-half of the state accounted for 85 percent of the truck movement during the 1978-79 crop year (Figure 3). The CRD's of the state in which significant growth in exempt carriage occurred have two common characteristics which differentiate it from the rest of the state. One, this region is closer to the Minneapolis and Duluth terminal markets than any other part of the state and secondly, it is the region which has experienced a tremendous increase in sunflower production. Both of these factors have influenced the growth of agricultural trucking in North Dakota.

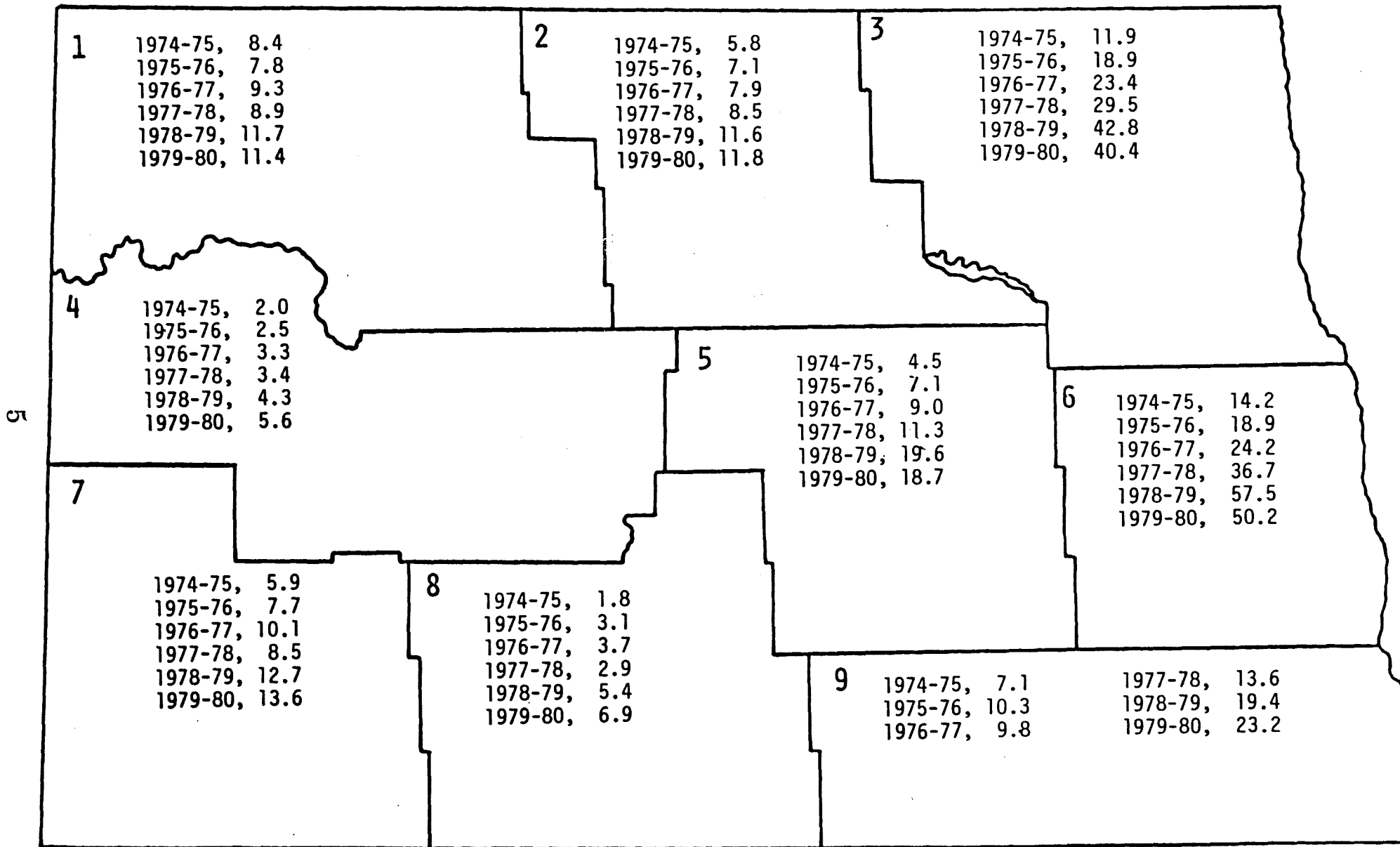


Figure 3. Truck Movement of Grain and Oilseed in Millions of Bushels by Crop Reporting District for Selected Years.

TABLE 1. TRUCK SHARE OF NORTH DAKOTA GRAIN AND OILSEED MOVEMENTS BY CROP REPORTING DISTRICT FOR SELECTED YEARS.

CROP REPORTING DISTRICT	YEAR					
	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
	(PERCENT)					
1	19	18	24	19	21	21
2	21	26	27	26	30	30
3	18	24	29	32	41	35
4	19	18	25	24	25	30
5	17	22	30	35	40	42
6	28	34	41	49	59	51
7	31	39	60	60	54	54
8	24	24	40	45	45	54
9	19	26	33	31	33	35

SOURCE: Unpublished grain movement data, Upper Great Plains Transportation Institute, North Dakota State University, Fargo, North Dakota.

The commodity which contributed most of the growth in trucking of exempt commodities was sunflower which increased from 4.7 million bushels in 1974-75 to 69.1 million bushels in 1980-81 (Table 2). Hard wheat contributed to a significant portion of the growth as well as accounting for an increase of 37.9 million bushels between the year of lowest movement, 1974-75 and the year of peak movement of 1979-80. Durum wheat and barley also contributed to the growth but to a much lesser extent than sunflower or hard wheat.

TABLE 2. AGRICULTURAL COMMODITY MOVEMENT BY TRUCK FROM NORTH DAKOTA FOR SELECTED YEARS.							
COMMODITY	CROP YEAR						
	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
(000,000 BUSHELS)							
Hard Wheat	25.4	37.5	41.7	41.4	76.1	63.3	43.3
Durum Wheat	6.4	11.9	10.4	12.9	17.6	15.3	7.5
Barley	7.4	8.9	25.1	21.9	17.3	16.9	14.9
Sunflower	4.7	7.7	7.1	32.7	57.8	68.6	69.1

SOURCE: Griffin, Gene C., North Dakota Grain and Oilseed Transportation Statistics 1980-81, Upper Great Plains Transportation Institute, North Dakota State University, Fargo, North Dakota, UGPTI Report No. 42, March 1982.

Duluth-Superior accounted for the lowest increase in volume of North Dakota truck movement of the three major terminal markets which serve North Dakota. Truck movements to Duluth increased from 23.2 million bushels in 1974-75 to 92.2 million bushels in 1979-80 (Table 3). The absolute volume of truck moved grain and oilseed also increased dramatically to Minneapolis-St. Paul increasing from 18.6 million bushels to 40.7 million bushels.

TABLE 3. TRUCK MOVEMENTS FROM NORTH DAKOTA TO VARIOUS DESTINATIONS FOR SELECTED YEARS.						
DESTINATION	CROP YEAR					
	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
	(000,000 BUSHEL)					
Minneapolis-St. Paul	18.6	21.6	26.9	24.4	32.2	40.7
Duluth-Superior	23.2	42.5	47.8	71.0	110.5	92.2
West	7.1	6.7	9.1	9.6	13.0	15.1

SOURCE: Griffin, Gene C., North Dakota Grain and Oilseed Transportation Statistics 1980-81, Upper Great Plains Transportation Institute, North Dakota State University, Fargo, North Dakota, UGPTI Report No. 42, March 1982.

RAILROAD PRICING REACTION TO GROWTH

Railroad managements' reaction to price competition from the truck mode has been quite consistent over the past twenty years since trucks became viable competitors in the transportation of grain and oilseed. The railroads have typically met truck competition by reducing the single car rates which have been in effect. Railroads reduced rates on wheat from North Dakota as a result of diversion of traffic to the truck mode in 1960, 1963, and 1971. The reductions were to the Minneapolis-St. Paul and Duluth-Superior markets.

The result of rail rate reductions has been a diversion of traffic back to the rail mode. An example of such a movement is the drop in truck share of the hard wheat movement to Duluth-Superior (Figure 4). Just prior to the December 1971 rate adjustment the trucks accounted for 56 percent of the Duluth movement. Following the rail rate reduction the truck share dropped to 35 percent and 16 percent in the next two succeeding crop years. A similar drop in truck share of the market also took place in the Minneapolis-St. Paul market dropping from 37 percent to 33 and 24 percent in the succeeding two years (Figure 5).

6

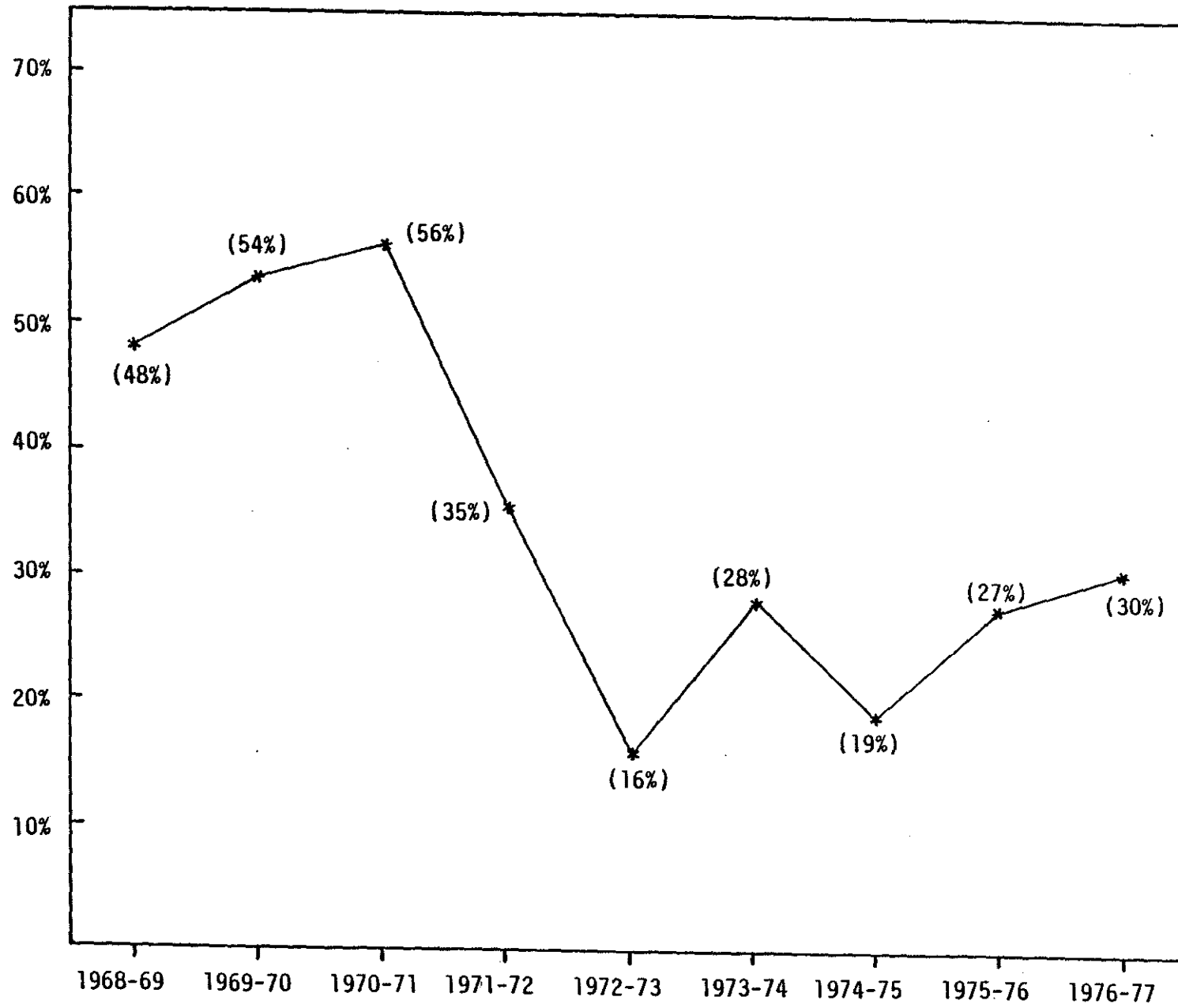


Figure 4. Hard Red Spring Truck Movements to Duluth-Superior.

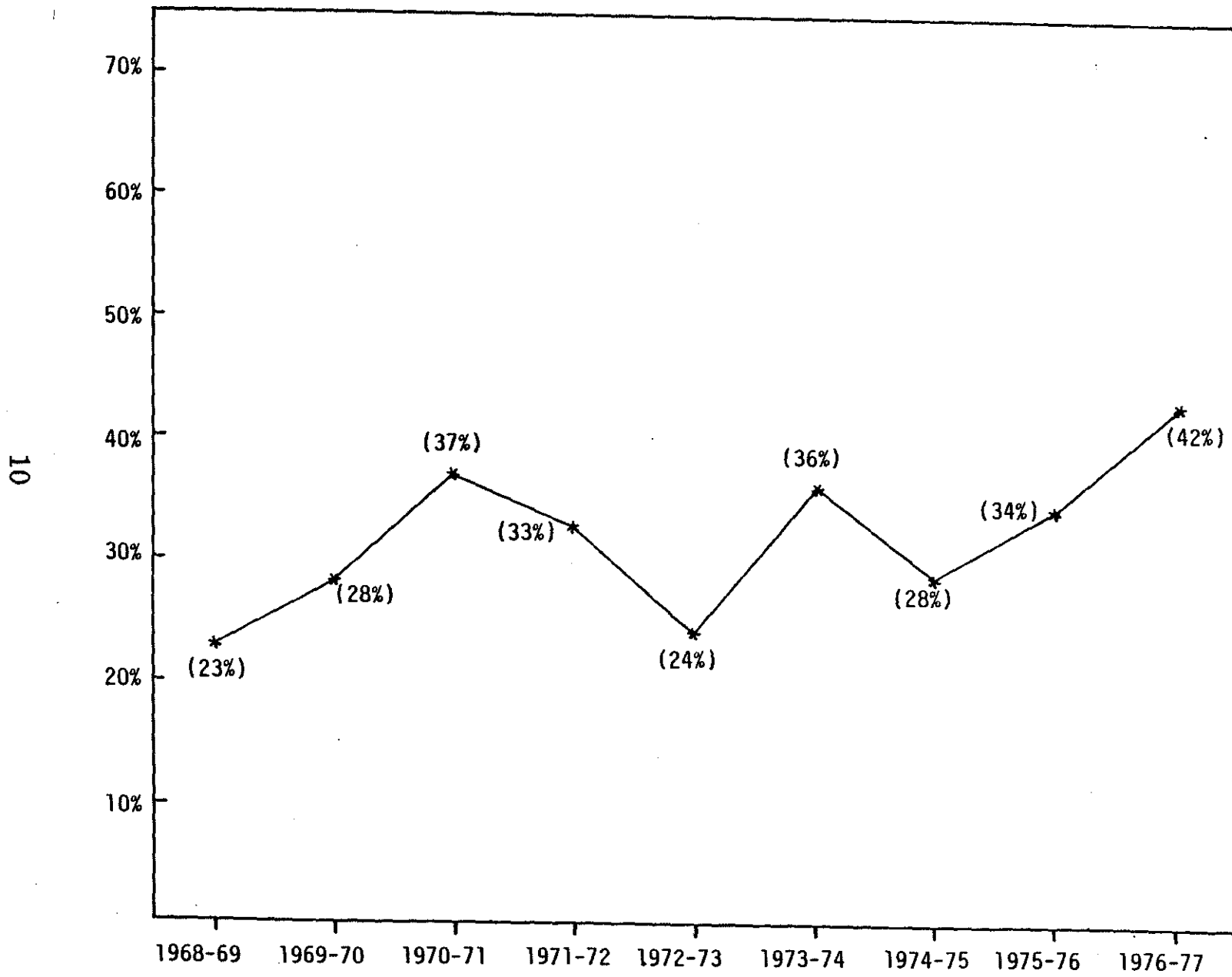


Figure 5. Hard Red Spring Wheat Truck Movements to Minneapolis - St. Paul.

The barley rates to Duluth-Superior have also been reduced to meet truck competition. Rail rates were reduced in 1978 in response to a 78 percent truck share of the market in 1976-77 and a 73 percent share in 1977-78 (Figure 6). The truck share of the market dropped to 41 percent and 31 percent in the succeeding two years of 1978-79 and 1979-80.

MULTIPLE CAR RATES INTRODUCTION

Truck competition on wheat moving to the Pacific Northwest has fostered the most recent rail rate reductions and an introduction of the multiple car rate concept to North Dakota agricultural commodity rail transportation. The rail rate reductions were due primarily to truck-barge competition. Wheat has been diverted from rail to truck in western North Dakota and Montana. The wheat is being transshipped by barge from Lewiston, Idaho and other river terminal points on the Columbia-Snake to Portland and other ocean ports on the lower Columbia. Wheat is also being trucked from North Dakota and Montana direct to Pacific Northwest Ports.

Wheat movements by truck to the Pacific Northwest from western North Dakota and Montana have increased over time to the point where trucks accounted for 38 percent of the North Dakota movement in 1979-80 and 46 percent of the movement in 1980-81. Railroads countered with several individual single car rate reductions up until the introduction of multiple car rates in December of 1980.

The reduction of rates and introduction of multiple car rates in December of 1980 was very significant in that it was the first time the railroads have countered truck competition with something other than price competition. With multiple car rates the railroads introduced service differentiation into the transportation market in North

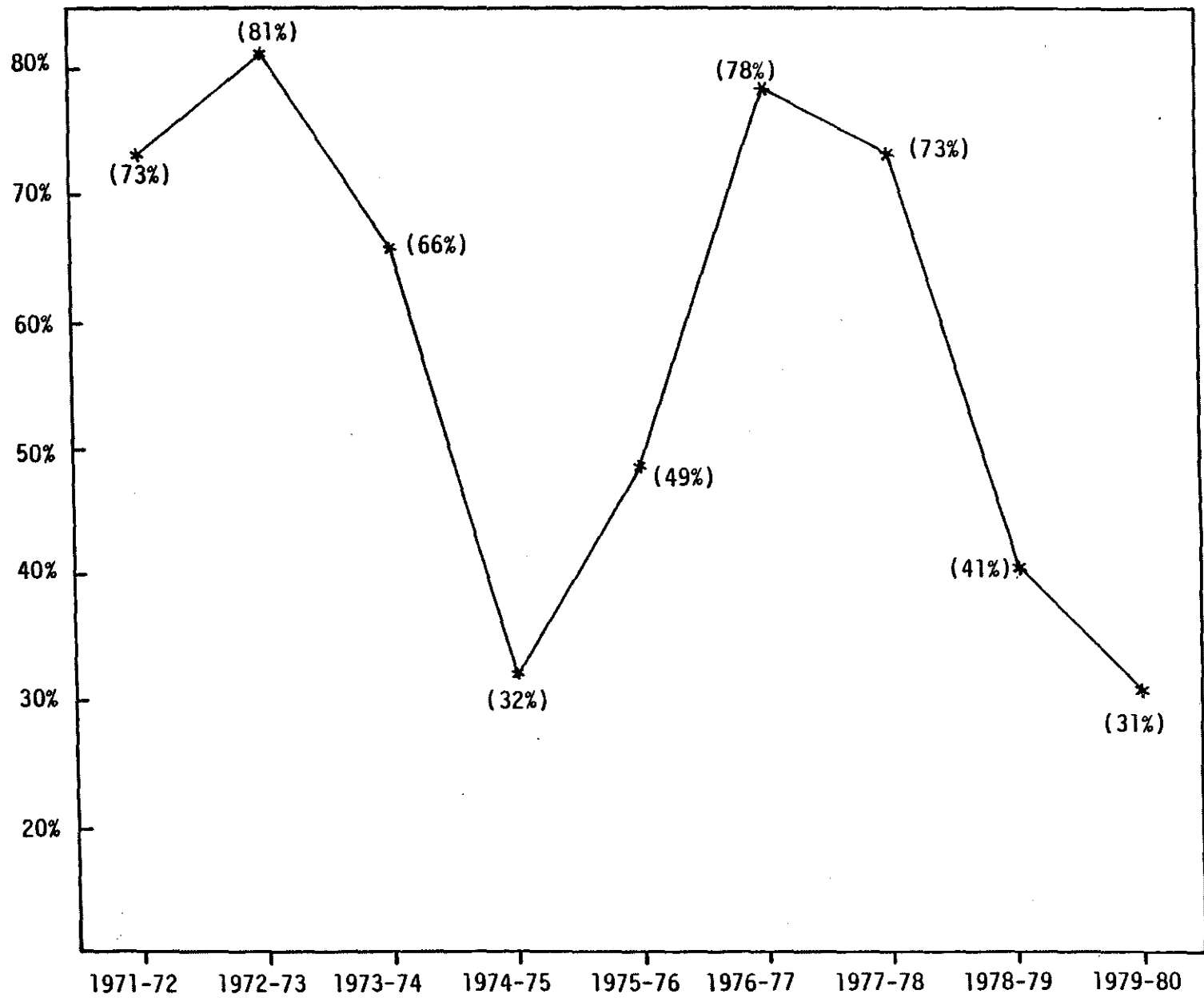


Figure 6. Barley Movements by Truck to Duluth - Superior.

Dakota. Prior to multiple car rates the only rates available to North Dakota shippers were the single car rate and the truckload rate. Both types of service were good substitutes with one another with some slight differences in slight characteristics. However, the 26 and 52 multiple car rates are not a substitute with the single car or truckload service. Thus the railroads are using a combination of price competition and service differentiation to meet the truck competition to the Pacific Northwest.

BACKHAULS RESULTING IN GROWTH

Truck movement of building material, oil drilling pipe and casing and fresh fruit and vegetables from the West Coast to the Upper Great Plains and Midwest results in trucks seeking backhaul opportunities to the West Coast. Hard wheat from North Dakota and Montana have provided that opportunity and has made this particular truck movement much more economically viable. Wheat as a backhaul has been a very positive factor in the growth of the truck movement of wheat to the Pacific Northwest. A high percentage of loaded miles will probably be necessary in the future for truckers to maintain economic viability in this move. The reason is that trucks cannot compete cost wise to head with railroads. Alternatively it is very difficult, almost impossible for railroads to compete with trucks if they are loaded both ways. Thus truckers will have to seek backhauls or fronthauls if they wish to remain competitive with lower multi-car rates.

ENERGY COSTS

Increasing costs of energy particularly diesel fuel has a special significance for trucking firms who are competing with railroads for the same agricultural commodities. Trucks are a more fuel intensive mode than railroads in the point to point transaction of

bulk agricultural commodities. Thus as diesel fuel prices increase truck costs will increase faster than rail costs. If diesel costs do spiral it will create an anti-competitive barrier for trucks making it very important for them to minimize deadheading.

RAILROAD FUTURE PRICING STRATEGY

The growth of trucking of exempt commodities in both the relative sense and the absolute sense has been significant in the late seventies. This growth translates into a revenue loss for the railroads as long as they have excess capacity which they currently have. Thus it is safe to assume that the railroads will make an effort to attract that traffic now moving by truck back to the rail mode. The railroads have at least two methods by which they can try to achieve this.

Traditionally the railroads have implemented some form of price competition to regain traffic lost to the truck mode. That is they have lowered their rates down to the level of truck costs, making it unprofitable for trucks to operate. The railroads will continue to base their rates on long run truck costs in truck competitive areas in the future.

The railroads will also try and differentiate rail service from truck service in the future. An example of such differentiation is the multi-car wheat rates introduced westbound. Every bushel of wheat that moves under a multiple car rate is a bushel that more than likely will not be available for a truck or single car move. To the extent that they can differentiate service they can create some captivity, especially if multi-car method of merchandising becomes the preferred method.

Thus, the railroads long run pricing strategy will be to price according to long run truck costs and they will attempt to differentiate truck service from multi-car rail service.

Railroads may temporarily abandon this strategy in the short run when transportation shortages occur and then return its long run strategy when shortages disappear. This will occur as a result of the Staggers Act.

The Staggers Rail Act will also allow the railroads to adjust their rates to meet both truck and barge competition quicker than before without fear of the rates becoming permanent. Thus, railroads will be more aggressive than in the past in meeting intermodal competition from truck and barge.

CONCLUSION

The growth in trucking in North Dakota of exempt agricultural commodities have been significant during the late seventies. This growth represents a profitable revenue loss to the competing railroads. The railroads will reduce rail rates to truck cost levels and introduces new types of services in the form of multi-car rates to recapture this lost traffic. Trucks will have to maintain backhauls and minimize deadheading to maintain traffic levels achieved and to remain economically viable.