



Changing patterns of grain transportation in Montana
by Joseph Randolph Corley

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE in Agricultural Economics
Montana State University
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Abstract:

This study of changing patterns of grain transportation in Montana is a compilation of data accumulated as part of a broad program of research by the Economic Research Service, U. S. Department of Agriculture, to improve the marketing of agricultural products.

There is much interest among grain producers, carriers, country and terminal elevator operators, grain marketing firms and associations as to possible changes in the various aspects of grain marketing. This study provides data from Montana for one of these aspects--transportation. This report analyzes grain transportation for the marketing years 1958-59 through 1960-61 for Montana.

The analysis in this thesis was based on data collected from Montana for a survey of grain transportation in the Northwest states by the Economic Research Service, United States Department of Agriculture, which encompassed Washington, Oregon, Idaho, Montana, and Wyoming. The data and analysis of the United States Department of Agriculture survey will be available in published form in the summer of 1964. The analysis of the Montana data presented here is more detailed in its approach to the grain transportation characteristics and problems peculiar to this state without specific relevance to a national regional analysis, which will be presented in the report by the United States Department of Agriculture.

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JOSEPH R. CORLEY

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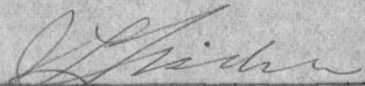
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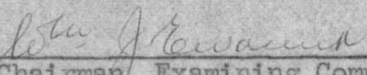
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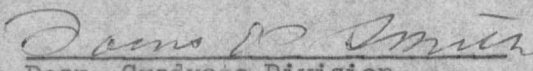
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ABSTRACT

This study of changing patterns of grain transportation in Montana is a compilation of data accumulated as part of a broad program of research by the Economic Research Service, U. S. Department of Agriculture, to improve the marketing of agricultural products.

There is much interest among grain producers, carriers, country and terminal elevator operators, grain marketing firms and associations as to possible changes in the various aspects of grain marketing. This study provides data from Montana for one of these aspects--transportation. This report analyzes grain transportation for the marketing years 1958-59 through 1960-61 for Montana.

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CHAPTER I

INTRODUCTION

The Problem Situation and its Evolution

The development of the vast agricultural areas of the Middle West and West was made possible partly because of the rapid and timely growth of the American railway system. In 1830, there were about 22 miles of railroad in the United States, all located in the East. By 1860, rail lines were stretching from Chicago into Wisconsin, across Illinois, and into Missouri and Iowa. The first transcontinental railroad was completed in 1869, and there were about 52,000 miles of railroads in the nation.

As the railroads extended across the plains and mountain states, it became necessary for them to encourage development of markets and resources to provide revenue. People were needed in the west, and the railroads began incentive plans to encourage mass movement from the growing Eastern States. These people, including many farmers, became a market for eastern manufactured goods, and developed the resources of the west for movement to the eastern industrial markets. With the completion of more transcontinental railroads, markets and industry on the west coast were connected with the east. Grain became a major product of the midwestern and northwestern states. Country elevators sprang up along the railroads to buy grain from farmers and ship it on to the larger terminal elevators in the midwest and on the west coast.

As the number of railroads increased, competition among them became more keen, and individual railroads devised rates to encourage shippers to use their services for as much of their traffic as possible. To encourage

shippers to continue movement of the grain on the originating railroad, proportional and transit rates were developed. They allowed the shipper to transport grain to an intermediate point for diversion or reconsignment, or for storage, mixing, cleaning, or processing, with continued movement at the balance of the through rate. Transit rates are proportional rates but allow the grain to be unloaded and reloaded with continued movement as one shipment. Individual railroads bringing grain from the outlying producing areas would often lose grain traffic to other railroads at intermediate stations.

The opinions of the public toward railroads prior to 1870 were generally favorable, but about this time, the public's attitude began to change. Conflicting interests brought about by the near completion of the railroad system helped to change attitudes of the people. A primary complaint dealt with the unfair rate practices. The farmers of the Grange believed that rail rates were too high, that there was discrimination against some shippers and communities, and the decline in agricultural prices had made the burden of the transportation cost even greater.

The Granger movement of the early 1870's resulted from efforts to iron out some of the disagreements, and brought about the first attempts to regulate the railroads. Pressured by the Granger movement, several Midwestern states passed legislation attempting to regulate the railroads, but this action was short-lived. However, these attempts laid the groundwork for the passing of the Interstate Commerce Act of 1887. This Act, along with subsequent acts and amendments, tended to stabilize and equalize rail rates for grain and grain products through economic regulation of

the railroads by the Interstate Commerce Commission.

Between 1900 and the mid-1930's, there evolved what is often termed the historical or traditional marketing channel through which grain moved from the country elevators to the exporters, terminals, and mills. The large eastern population, and the ocean ports in the East influenced the prevailing west to east direction of grain shipments. Rail competition was keen and the use of proportional, transit, and export rates for grain tended to equalize transportation through major terminal markets. Grain pricing was based on the quotations of the major exchanges, and country elevator operators, knowing the rail rates, could quote the farmer a market price less transportation and handling costs, and net a profit.

Prior to the 1930's, railroads were the only reliable means for transporting grain. Highways were undeveloped; there were few intercity trucks operating. Although there was some movement of grain by inland waterway, inconsistent water levels, ice, and other hazards limited barges as dependable carriers. Since the early 1930's, motor carriers have expanded and grown in importance, while water carriers have realized their greatest growth since the mid-1940's.

Rail transportation continues to be very important to grain marketing, but its relative importance has declined considerably since World War II. Between 1946 and 1958 several rail rate increases were authorized by the Interstate Commerce Commission, so that rail rates for grain almost doubled during the 12-year period. Table I shows the extent of these rate increases, both individually and cumulatively.

TABLE I: RAIL FREIGHT RATE INCREASES, INDIVIDUAL AND CUMMULATIVE, FROM 1946 THROUGH 1958. *

Interstate Commerce Commission Citation	Individual increase	Cummulative increase
	Percent	Percent
Ex Parte 162 <u>a/</u>	15	15
Ex Parte 166 <u>b/</u>	20	38
Ex Parte 168 <u>c/</u>	8	49
Ex Parte 175 <u>d/</u>	12	67
Ex Parte 196 <u>e/</u>	5	75
Ex Parte 206 <u>f/</u>	9	91
Ex Parte 212 <u>g/</u>	3	97

* Source: Bureau of Transport Economics and Statistics, Interstate Commerce Commission, Monthly Comment on Transportation Statistics, September, 1958.

- a/ Increased Rates, Fares, and Charges, 1946, 264 I.C.C. 695, 266 I.C.C. 537.
b/ Increased Freight Rates, 1947, 269 I.C.C. 33, 270 I.C.C. 81, 270 I.C.C. 93, 270 I.C.C. 403.
c/ Increased Freight Rates, 1948, 272 I.C.C. 695, 276 I.C.C. 9.
d/ Increased Freight Rates, 1951, 280 I.C.C. 179, 281 I.C.C. 557, 284 I.C.C. 589.
e/ Increased Freight Rates, 1956, 298 I.C.C. 279.
f/ Increased Freight Rates, Eastern and Western Territories, 1956, 299 I.C.C. 429.
g/ Increased Freight Rates, 1958.

At the same time the rates were increasing, the railroads continued to use equipment worn out with overuse and lack of maintenance during the war years. Costs of replacing this equipment were high, and modernization by the railroads had to take place gradually. Because of the increasing rail rates, poor equipment, and increasing discontent brought on by generally poor service furnished by the railroads, grain shippers began patronizing other forms of transport, namely trucks and barges.

The Research Problem

Out of the traditional marketing channel that developed and grew during the early twentieth century, came an orderly, convenient method for moving grain from the producer to the consumer. The milling industry, feed manufacturers, and other grain processors built plants at intermediate points to receive grain and ship their product. Carrier competition was not so much a question of freight rates, but service. There was an acceptable freight rate system, based on distance from the origin to the destination.

With the increased use of trucks and barges for shipping grain from the country to intermediate and ultimate destinations, changes in the methods of marketing grain have occurred. The increased use of trucks and barges by the grain trade has tended to disrupt the traditional marketing channel. Grain shipments by truck and barge often bypass the intermediate milling and storage points. Truck and barge rates are lower than rail rates, and this margin allows for bargaining among grain merchandisers because of the rail and truck or barge rate differential. The locational patterns for storage facilities are shifting from intermediate stations to points nearer the origin or the destination of the grain. The milling industry is seeking sites nearer the major areas of consumption. Competition between the various modes of transport is increasing. As a result of this increased competition among carriers, a long-run change is occurring in the traditional grain marketing structure.

Grain produced in Montana is shipped from country elevators to

terminals at Great Falls or Shelby, to terminal elevators at the major western ports, and to midwestern and southwestern markets. The choice of transportation is usually left to the country elevator operator, and the carrier selected will be the cheaper, or more convenient mode of transport. For shipments to flour millers or other grain processors, the receiver often specifies rail transportation because of the available transit privileges that accompany rail shipments.

Grain is shipped from western Montana predominantly to the Northwest coast ports, with limited quantities moving to California, or interior destinations in the southwest. Shipments from central Montana go either to the west coast, to Minneapolis or Duluth, Minnesota, or to destinations south of Montana. Shipments from eastern Montana move eastward to terminals at Duluth, Minneapolis or diversion points at Minot, Grand Forks, or Jamestown, North Dakota, or southward to Idaho, Utah, and other southwestern states. As a whole, most grain is shipped in rail cars. However, the portion moving by truck is increasing, and this fact is of concern to the grain trade. Nor is the degree of truck competition limited to the movement originating from country elevators. Farmers sometimes sell grain to truckers, and there is concern among those in the grain trade and the carrier industry, particularly the railroads, who have expressed interest in determining the amount of grain shipments from farms that are bypassing the local country warehousemen.

Because of unregulated trucking charges, the elevator operators who ship grain by truck can bid more at times for a farmer's grain. Distance from farms to country elevators is no longer a factor of great importance.

Farmers, who at one time were limited to the speed of a horse-drawn wagon, now deliver grain to elevators at greater distances, and do so for a few cents more per bushel of grain. Country elevator operators, before the rail rate reductions of 1958, were forced to use trucks in order to continue to compete with their business opponents. Because of increased use, trucks have become a part of the grain marketing system.

Hypothesis

Grain, shipped predominantly by rail carriers prior to the 1950's, is being shipped more and more by truck from country origins. This shift to truck for grain movement is causing a change in the grain marketing structure, which originally developed around rail routes and freight rates.

Objectives

Although grain transportation is a problem area in the midwest and west as a whole, this thesis will expound upon those problems associated with Montana. For purposes of providing a comparative presentation, the counties containing the sample elevators were divided into three geographic areas within the State (Figure 1).

This thesis shows in part the extent that truck transportation has affected the traditional grain marketing channel in Montana. Questions were asked country elevator operators in order to obtain information for the following areas of interest.

1. The buying radius of country elevators, their facilities for shipping grain by rail and motor carriers, and the volume shipped via each mode of transport for the crop years 1958-59

through 1960-61. For the crop year 1960-61, data were obtained showing the distribution of grain from Montana country elevators to major market areas of first destination.

2. The opinions of country elevator operators providing specific reasons for increased shipments of grain by motor carrier, such as the service and rate factors of rail and motor carriers.
3. The level of rates charged by motor carriers for a comparison of rail and truck freight charges on grain. (Rail rates for grain were obtained from published tariffs.)

An analysis of exogenous factors in rail rate determination are included, and an explanation of the causes for the increasing movement of grain by truck, and factors that determine the rate level for truck shipments.

MONTANA

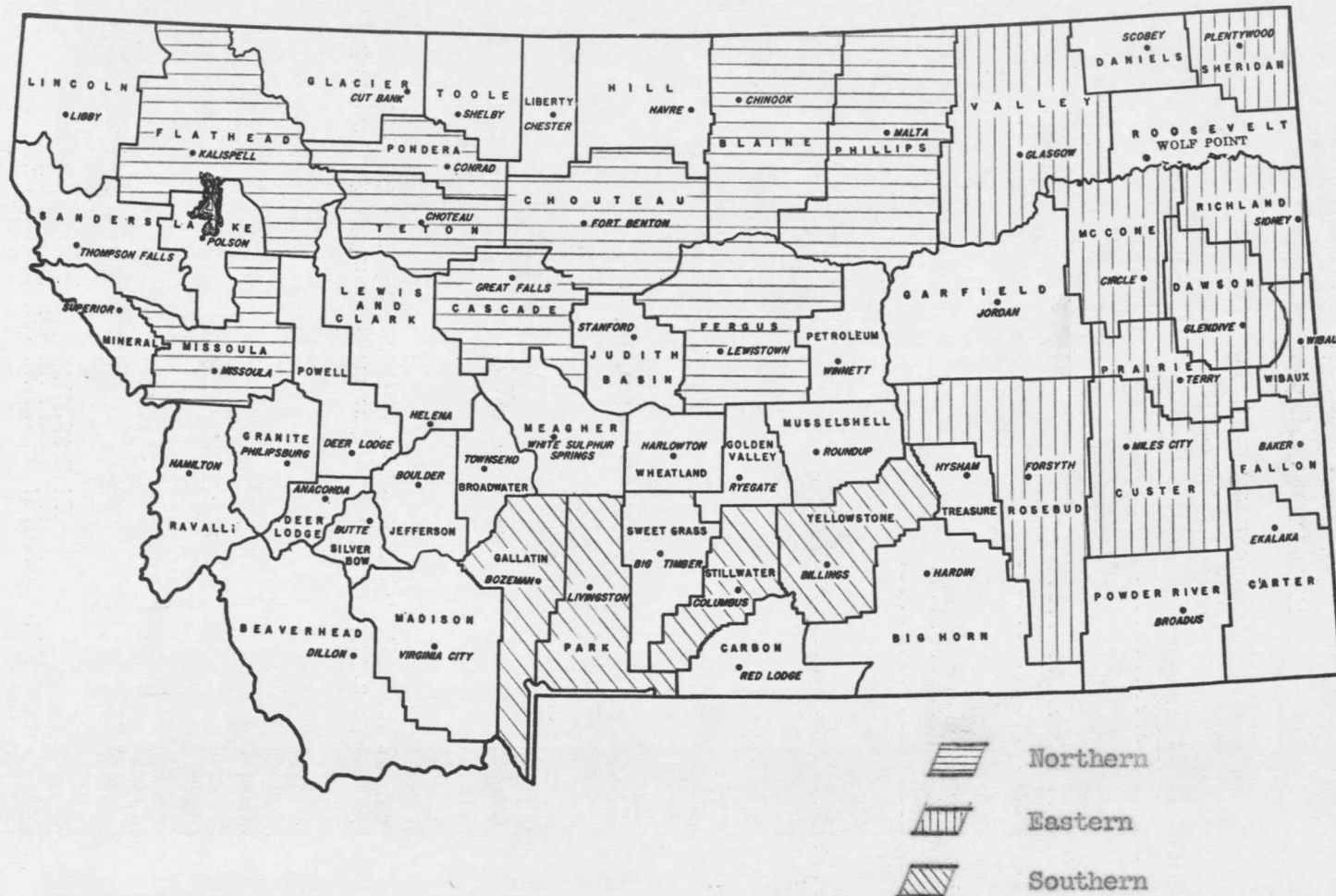


Figure 1. Origin areas for grain shipments from Montana country elevators.

CHAPTER II

GRAIN PRODUCTION IN MONTANA

Montana is one of the surplus grain producing states in the United States. From 1956 through 1962, Montana's grain production averaged 134 million bushels, and was the leading grain producer among the five Northwest States, and prominent among the North Central States (Table II). Wheat is the predominant grain produced in the State, and in 1962, amounted to over 71 million bushels. Barley is second in production, and amounted to 55 million bushels in 1962, the highest year of production during the 7-year period beginning 1956. Production of all other grains, including oats, rye, flaxseed, corn, and durum amounted to almost 19 million bushels in 1962 (Table III).

Montana produces a surplus of grain, and is dependent upon efficient and dependable transportation for moving this surplus grain to market. Grain producers are at a definite disadvantage, in comparison to grain producers in the Midwest and Pacific Northwest because they must meet the higher transportation costs incurred in getting their product to market. It is important that grain producers in Montana be provided with freight rates sufficiently low to enable them to compete effectively with grain producers in other states.

TABLE II: GRAIN PRODUCTION IN MONTANA, BY TYPE OF GRAIN, 1956 THROUGH 1962.

Year	Winter Wheat	Spring Wheat	Oats	Barley	Other Grains a/	Total
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
1956	24,928	43,962	7,070	29,726	21,634	127,320
1957	45,276	28,055	9,486	45,606	12,998	141,421
1958	64,542	36,500	9,348	52,239	4,608	167,237
1959	45,175	32,320	7,392	51,810	5,744	142,441
1960	45,954	29,699	7,530	40,044	4,893	128,120
1961	39,102	13,518	5,032	26,370	2,193	86,215
1962 b/	37,136	34,201	10,783	54,961	8,036	145,117

Agricultural Statistics, U. S. Department of Agriculture, 1958-62. Crop Production, 1962 Annual Report, SRS, U. S. Department of Agriculture, Washington, D. C.

a/ Includes rye, flaxseed, corn, and durum.

b/ Preliminary data.

TABLE III: PRODUCTION OF OTHER GRAINS IN MONTANA, BY GRAIN, 1956 THROUGH 1962.

Year	Corn	Rye	Flaxseed	Durum	Total
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
1956	2,992	99	450	18,093	21,634
1957	3,843	225	275	8,655	12,998
1958	3,168	280	320	840	4,608
1959	3,404	380	140	1,820	5,744
1960	144	777	228	3,744	4,893
1961	174	555	36	1,428	2,193
1962 <u>a/</u>	200	666	210	6,960	8,036

Agricultural Statistics, U. S. Department of Agriculture, 1958-62. Crop Production, 1962
Annual Report, SRS, U. S. Department of Agriculture, Washington, D. C.

a/ Preliminary data.

CHAPTER III

GRAIN RECEIPTS AND HANDLING FACILITIES AT COUNTRY ELEVATORS

Buying Radius of Country Elevators

The first merchandiser for grain in its journey from the producer to the consumer is usually the country elevator operator. Grain is almost always received at the country elevator in trucks. The exception might be the rail-delivered feed grain purchased by the elevator operator for the convenience of his local clientele.

Inquiry was made of country elevator operators to determine the approximate radii of their local buying areas for grain. The local buying area or normal buying radius of a country elevator is defined to include the area surrounding and usually serviced by the country elevator, for both purchases and sales, although the area may be serviced by several local elevators. The average for the state is about 22 miles, with over three-fourths reporting that they occasionally received grain from distances outside their normal buying radius. It is noticeable that for elevators located in the eastern section of the state, the normal buying radius is over 30 miles, and ranges from 16 to 18 miles for the northern and southern sections. However, when comparing the number of elevators, this wide range becomes understandable. Counties in the northern section average almost 15 elevators each, counties in the southern section average over 11 elevators each, while in the eastern section, the average is about seven elevators per county. The fewer elevators, types of farming techniques, and sparsity of the population within the three sections along with lower average number of elevators would help account for the wider

area serviced by country elevators in the eastern counties.

Grain Storage in Montana

In 1962, country elevators in Montana had storage facilities for about 39.6 million bushels of grain. In comparison to the 1962 production of all grains, this space would be inadequate for storing new grain for any length of time, and maintain the movement of grain from the producers. During harvest, country elevator operators must keep the volume moving in order to handle all grain produced during any given crop year. Farm storage facilities, along with subterminal storage facilities could be used for part of the overflow, but a sizable portion must be shipped from the state during harvesttime.

TABLE IV: STORAGE POSITION OF GRAINS IN MONTANA, BY POSITION, AND BY GRAIN, ON JULY 1ST, 1958 THROUGH 1961. *

Grain and position	Year			
	1958	1959	1960	1961
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
Wheat:				
On-farm	10,058	21,395	17,154	23,025
Off-farm	22,300	30,581	29,522	27,063
Total	<u>32,358</u>	<u>51,976</u>	<u>46,676</u>	<u>50,088</u>
Oats:				
On-farm	3,415	3,282	2,510	2,334
Off-farm	242	181	144	247
Total	<u>3,657</u>	<u>3,464</u>	<u>2,654</u>	<u>2,581</u>
Barley:				
On-farm	16,874	12,379	10,695	9,210
Off-farm	9,314	9,340	9,250	6,743
Total	<u>26,188</u>	<u>21,719</u>	<u>19,945</u>	<u>15,953</u>

TABLE IV: (continued) STORAGE POSITION OF GRAINS IN MONTANA, BY POSITION, AND BY GRAIN, ON JULY 1ST, 1958 THROUGH 1961. *

Grain and position	Year			
	1958 1,000 bu.	1959 1,000 bu.	1960 1,000 bu.	1961 1,000 bu.
Other grains:				
On-farm	124	136	73	179
Off-farm	56	172	67	44
Total	180	308	140	223
All grains:				
On-farm	30,471	37,192	30,432	34,748
Off-farm	31,912	40,275	38,983	34,097
Total	62,383	77,467	69,415	68,845

* Source: United States Department of Agriculture, Montana: Stocks of Grain on July 1, by Position, 1958-61, Statistical Reporting Service, Helena, Montana, 1963.

For the period 1958 through 1961, grain in commercial storage (off-farm) was greater than on-farm storage, except for 1961, when on-farm storage was slightly higher. On-farm storage of all grains except wheat and "other grains" decreased for the 4-year period. This indicates that farmers may be using more of their available storage for wheat at the expense of storage for other grains, possibly to take advantage of higher wheat prices as the marketing year moves on. However, the fact that grain storage facilities in Montana are not sufficient to contain a year's grain production indicates the reliance of Montana farmers and grain merchandisers upon an effective means of transportation for hauling grain to distant markets.

Truck-Loading Facilities

Of the 57 country elevator operators replying, 10 stated that trucks could not be loaded at their elevator. The remaining 47 could load open-top semitrailer trucks, and 33 could load closed-van semitrailers. No inquiry was made as to whether the elevators that could load out trucks had special truck-loading spouts. It may be assumed that in some cases the same loading spout was used for both rail cars and trucks, while in other cases, the elevators had loading spouts for both rail cars and trucks. However, the use of one spout for both rail cars and trucks would not be the usual case, since the loading operation would be limited to one vehicle at a time. For this reason, it is likely that most elevators have separate loading facilities for rail cars and trucks.

The types of truck loading facilities available at the country elevators is indicated by the number that could load open-top semitrailers versus the number that could load closed-van semitrailers. Many of the elevators were originally equipped to load farm wagons and trucks with feed and seed grains, and these same facilities were suitable for loading open-top semitrailers. The closed-van semitrailers require more elaborate loading spouts for end-loading the trucks and extensions to distribute the load over the entire van. This would account for the higher percentage of elevators that load out open-top semitrailers compared to those that can load closed-van semitrailers.

Facilities for Handling Rail Cars

All of the elevator operators reported that their elevators had rail

siding, and were equipped to load rail cars. The elevator operators were asked to state the maximum number of rail cars that could be loaded in a 10-hour workday with regularly scheduled switching service. On the average, 4.6 rail cars could be loaded from 55 Montana elevators, and ranged from 1 to 8, with one reporting 18 rail cars.

For the year beginning July 1, 1960, the 55 country elevator operators reported the average number of cars loaded per week by quarters. For the first quarter, July through September, they averaged loading 2.5 rail cars per week. More carloadings of grain during this period resulted from grain harvest in August and September. During the second and third quarters, the elevators averaged about the same number of weekly carloadings, 1.8 and 1.9 respectively. This declined during the fourth quarter. Looking at the areas separately, the Northern area was most consistent in the average number of cars loaded per week although a decrease occurred in the last quarter. The decrease in carloadings also occurred during the last quarter in the Eastern and Southern areas.

TABLE V: AVERAGE NUMBER OF RAIL CARS THAT CAN BE LOADED PER 10-HOUR WORKDAY, AND THE AVERAGE NUMBER OF RAIL CARS LOADED PER WEEK, BY QUARTERS, AS REPORTED BY COUNTRY ELEVATOR OPERATORS IN MONTANA, JULY 1, 1960 THROUGH JUNE 30, 1961.

Area	Average number of cars that can be loaded in 10-hour workday.	Average number of cars loaded per week by quarter, beginning July 1, 1960			
		1st qtr.	2nd qtr.	3rd qtr.	4th qtr.
	Number	Number	Number	Number	Number
Northern	4.9	2.3	2.3	2.1	0.8
Eastern	4.5	3.1	1.6	1.8	.9
Southern	4.4	1.7	.8	1.5	.4
Total	4.6	2.5	1.8	1.9	.7

Prospective Changes in Loading Facilities

Fifty-four country elevator operators replied to the question as to whether they had plans to install new or additional equipment during the coming year, 1962-63. None of the elevators planned to install any new facilities for loading rail cars. Three of the 54 indicated plans to improve present facilities for handling trucks. These included:

1. Installation of truck-loading spouts,
2. An increase in the height of the driveway through the elevator,
and
3. Expansion of the existing facilities for loading trucks.

CHAPTER IV

GRAIN SHIPMENTS FROM COUNTRY ELEVATORS

Local Grain Sales

Local grain sales from country elevators take care of the needs of the local clientele. The operators handle grain for seed and feed purposes, and occasionally operate as a feed dealer. Purchases made by other processors located in or near the immediate community of the country elevator are also included in local sales.

Of the 57 replying, only two reported any sales to local processors. These sales amounted to about 10 thousand bushels of oats and 16 thousand bushels of barley. All local sales to processors were reported by elevator operators located in the Southern area of the State.

The bulk of the local sales reported by elevator operators was made to farmers and amounted to 546,000 bushels of grain in 1960-61. Sixty-eight percent was barley, 15 percent was wheat, 12 percent was oats, and the remaining 4 percent was other grains. In all three areas, barley accounted for the largest share of total local sales.

Grain sales to farmers from country elevators are made primarily for two purposes--seed for planting and as livestock feed. The small percentage of local sales of wheat and other grains (which include durum wheat) are probably for seeding purposes. However, the high share of barley sales to farmers would result not only from purchases for seed, but to a greater extent for cattle feeding. The 22 counties having country elevators in the survey sample are for the most part, important cattle producing counties, and averaged 44.8 thousand head of cattle and calves per county, while the

state average was 37.7 thousand head per county on January 1, 1962. ^{1/}

TABLE VI: LOCAL SALES OF GRAIN FROM COUNTRY ELEVATORS IN MONTANA TO FARMERS, BY TYPE OF GRAIN, AND BY AREA, 1960-61.

Area	Wheat	Oats	Barley	Other Grains	Total
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
Northern	26	-	37	-	63
Eastern	25	25	149	12	211
Southern	<u>32</u>	<u>41</u>	<u>188</u>	<u>11</u>	<u>272</u>
Total	83	66	374	23	546

Shipments to Markets of First Destination

During the crop year 1958-59, grain shipments from the sampled Montana country elevators amounted to 10.3 million bushels. This was the largest volume shipped for any year during the period, 1958-59 through 1960-61. Shipments dropped to 8.9 million bushels in 1959-60, and increased to 9.4 million bushels in 1960-61. The shipments reflect somewhat the volume of grain produced in 1958 and 1959, but do not correspond with the later year, 1960-61 (see Table I). Although grain production continued to decrease through 1961, shipments increased from 1959-60 to 1960-61. To compensate this increase, grain storage decreased from 77.5 million bushels in 1959 to 69.4 million in 1960 and 68.8 million in 1961.

While the number of elevators sampled in the Northern area was greater

^{1/} United States Department of Agriculture, Montana Agricultural Statistics, Volume IX, December, 1962, United States Department of Agriculture and Montana Department of Agriculture Cooperating, Helena, Montana, p. 75.

than the Eastern or Southern areas, the relative share of shipments from the Northern counties declined from 54 percent to 42 percent while the share from the Eastern counties increased from 32 percent to 41 percent. Shipments from the Southern area increased about 2 percent.

Shipments of grain owned by the Commodity Credit Corporation decreased over the 3-year period; no truck shipments of Commodity Credit grain were reported in either 1958-59 or 1959-60, but 37 thousand bushels were reported as shipped by truck in 1960-61. However, the policy of the Commodity Credit Corporation is to use rail carriers in the movement of grain, relying on trucks only when rail facilities are not readily available. Commodity Credit grain shipments from the sampled country elevators were 21 percent of total shipments in 1958-59, 14 percent in 1959-60, and 8 percent in 1960-61.

TABLE VII: RAIL SHIPMENTS OF COMMODITY CREDIT GRAIN FROM SAMPLE COUNTRY ELEVATORS IN MONTANA, BY GRAIN, AND BY ORIGIN AREA, 1958-59 THROUGH 1960-61.

Year and Area	Red Winter Wheat	Red Spring Wheat	Barley	Other Grains	Total
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
1958-59:					
Northern	777	30	322	16	1,145
Eastern	301	89	158	55	603
Southern	303	2	119	-	424
Total	<u>1,381</u>	<u>121</u>	<u>599</u>	<u>71</u>	<u>2,172</u>
1959-60:					
Northern	337	92	39	-	468
Eastern	261	184	32	47	524
Southern	251	9	-	1	261
Total	<u>849</u>	<u>285</u>	<u>71</u>	<u>48</u>	<u>1,253</u>
1960-61:					
Northern	119	-	17	-	136
Eastern	186 <u>a/</u>	229	122 <u>a/</u>	10	547
Southern	93	-	6	-	99
Total	<u>398</u>	<u>229</u>	<u>145</u>	<u>10</u>	<u>782</u>

a/ Includes truck shipments of 3,000 bushels of red winter wheat, and 34,000 bushels of barley.

TABLE VIII: SHIPMENTS OF NONGOVERNMENT GRAIN FROM SAMPLED COUNTRY ELEVATORS IN MONTANA, BY RAIL AND TRUCK, BY GRAIN, AND BY ORIGIN AREA, 1958-59 THROUGH 1960-61.

Year and Area	Red Winter Wheat		Red Spring Wheat		Barley		Other Grains		Total	
	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
1958-59:										
Northern	1,487	347	831	79	1,474	213	7	-	3,799	639
Eastern	457	604	1,271	166	76	13	94	10	1,898	793
Southern	520	173	160	8	175	8	3	-	858	189
Total	<u>2,464</u>	<u>1,124</u>	<u>2,262</u>	<u>253</u>	<u>1,725</u>	<u>234</u>	<u>104</u>	<u>10</u>	<u>6,555</u>	<u>1,621</u>
1959-60:										
Northern	2,079	390	689	103	607	192	-	2	3,375	687
Eastern	314	578	1,029	296	73	87	52	19	1,468	980
Southern	602	206	177	115	13	28	2	-	794	349
Total	<u>2,995</u>	<u>1,174</u>	<u>1,895</u>	<u>514</u>	<u>693</u>	<u>307</u>	<u>54</u>	<u>21</u>	<u>5,637</u>	<u>2,016</u>
1960-61:										
Northern	2,058	499	298	135	463	337	-	45	2,819	1,016
Eastern	648	544	1,608	163	230	28	91	16	2,577	751
Southern	746	542	89	43	57	21	-	4	892	610
Total	<u>3,452</u>	<u>1,585</u>	<u>1,995</u>	<u>341</u>	<u>750</u>	<u>386</u>	<u>91</u>	<u>65</u>	<u>6,288</u>	<u>2,377</u>

Most of the grain shipped from Montana elevators is nongovernment grain. Total shipments of nongovernment grain increased from 8.2 million bushels in 1958-59 to 8.7 million bushels in 1960-61, after declining to 7.7 million in 1959-60. Most grain is shipped in rail cars, but truck volume has increased during the 3-year period. In 1958-59, trucks hauled about 20 percent of the shipments of nongovernment grain; in 1959-60, their share increased to 26 percent, and 27 percent in 1960-61. The northern and southern areas demonstrated the most consistent shift from rail cars to trucks for shipping grain, as shown in Tables VIII and IX. Truck shipments have increased significantly in these areas during the 3-year period. On the other hand, after a substantial increase in truck volume from 1958-59 to 1959-60, shipments by truck decreased to a low for the 3-year period in the eastern counties.

TABLE IX: TRUCK SHIPMENTS OF NONGOVERNMENT GRAIN AS A PERCENTAGE OF TOTAL SHIPMENTS FROM COUNTRY ELEVATORS IN MONTANA, BY AREA, 1958-59 THROUGH 1960-61.

Crop year	Northern	Eastern	Southern	Total
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
1958-59	14.4	29.5	18.1	19.8
1959-60	16.9	40.0	30.5	26.3
1960-61	26.5	22.6	40.6	27.4

Wheat was the predominant grain shipped from the country elevators by truck. In the northern and southern counties, red winter wheat accounted for the largest portion, while in the eastern counties, red spring wheat was

the major grain. Barley is the other grain produced in large volume in Montana, and accounted for about 16 percent of total truck shipments in 1960-61.

Grain Shipments to Selected Markets

For the marketing year 1960-61, the country elevators sampled in Montana were asked the markets of first destination to which they shipped nongovernment grain, and the volume shipped to each of the markets (Table X).

The country elevator operators in the northern area shipped the largest single share to terminals at Northwest Coast ports. This accounted for about 51 percent of their total nongovernment grain shipments. About 84 percent was shipped in rail cars. A considerable portion--39 percent--was shipped, or consigned, to destinations in Montana. The remaining 10 percent was shipped to various other markets. Shipments from the eastern area moved predominantly to Minnesota and destinations in the North Central States. These states accounted for 70 percent of the grain shipments from eastern Montana. Grain shipments from southern Montana were more widely disbursed. Thirty-eight percent moved to the Northwest Coast ports, 18 percent moved to Montana terminals, 17 percent was shipped to Spokane, and 16 percent was shipped to Minnesota.

About 1.9 million bushels of grain was shipped from all sampled elevators to Shelby, Great Falls, Billings, and other Montana points, with about two thirds moving by rail. However, much of the rail movement to the terminals at Shelby and Great Falls was diverted or reconsigned to other destinations. The country elevator operators did not know the ultimate destination since grain was purchased on-track by terminals, grain brokers, or

TABLE X: SHIPMENTS OF NONGOVERNMENT GRAIN FROM SAMPLE COUNTRY ELEVATORS IN MONTANA TO MARKETS OF FIRST DESTINATION, BY MODE OF TRANSPORT, BY GRAIN, AND BY ORIGIN AREA, 1960-61.

Origin and destination	Red Winter Wheat		Red Spring Wheat		Barley		Other Grains		Total	
	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
Northern area to:										
Northwest										
Coast	1,232	244	159	5	237	50	-	20	1,628	319
Montana	669	221	79	50	224	238	-	-	972	509
Spokane	28	-	60	60	-	-	-	-	88	60
Utah	16	5	-	5	-	7	-	-	16	17
Idaho	-	-	-	-	-	30	-	-	-	30
Pasco	-	25	-	-	-	-	-	15	-	40
Minnesota	45	1	-	-	-	-	-	-	45	1
California	-	2	-	15	-	12	-	-	-	29
Unknown	68	1	-	-	2	-	-	10	70	11
Total	<u>2,058</u>	<u>499</u>	<u>298</u>	<u>135</u>	<u>463</u>	<u>337</u>	<u>-</u>	<u>45</u>	<u>2,819</u>	<u>1,016</u>
Eastern area to:										
Northwest										
Coast	-	3	107	-	2	13	-	-	109	16
Montana	-	-	164	4	-	-	-	-	164	4
Spokane	44	14	260	4	7	12	17	8	328	38
Utah	-	-	-	-	-	1	-	-	-	1
Idaho	-	-	-	-	-	1	-	-	-	1
Minnesota	367	490	457	128	131	1	55	8	1,010	627
North Central States	178	37	455	6	14	-	19	-	666	43
California	51	-	-	21	-	-	-	-	51	21
Unknown	8	-	165	-	76	-	-	-	249	-
Total	<u>648</u>	<u>544</u>	<u>1,608</u>	<u>163</u>	<u>230</u>	<u>28</u>	<u>91</u>	<u>16</u>	<u>2,577</u>	<u>751</u>

TABLE X: (continued) SHIPMENTS OF NONGOVERNMENT GRAIN FROM SAMPLE ELEVATORS IN MONTANA TO MARKETS OF FIRST DESTINATION, BY MODE OF TRANSPORT, BY GRAIN, AND BY ORIGIN AREA, 1960-61.

Origin and destination	Red Winter Wheat		Red Spring Wheat		Barley		Other Grains		Total	
	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
Southern area to:										
Northwest										
Coast	340	158	36	6	17	13	-	-	393	177
Montana	112	107	19	20	-	8	-	-	131	135
Spokane	186	44	26	2	-	-	-	-	212	46
Utah	-	53	-	12	-	-	-	-	-	65
Idaho	-	14	-	-	-	-	-	-	-	14
Pasco	-	36	-	-	-	-	-	-	-	36
Minnesota	92	107	1	3	40	-	-	-	133	110
North Central										
States	-	5	3	-	-	-	-	-	3	5
California	4	12	-	-	-	-	-	-	4	12
Unknown	12	6	4	-	-	-	-	4	16	10
Total	<u>746</u>	<u>542</u>	<u>89</u>	<u>43</u>	<u>57</u>	<u>21</u>	<u>-</u>	<u>4</u>	<u>892</u>	<u>610</u>
All areas to:										
Northwest										
Coast	1,572	405	302	11	256	76	-	20	2,130	512
Montana	781	328	262	74	224	246	-	-	1,267	648
Spokane	258	58	346	66	7	12	17	8	628	144
Utah	16	58	-	17	-	8	-	-	16	83
Idaho	-	14	-	-	-	31	-	-	-	45
Pasco	-	61	-	-	-	-	-	15	-	76
Minnesota	504	598	458	131	171	1	55	8	1,188	738
North Central										
States	178	42	458	6	14	-	19	-	669	48
California	55	14	-	36	-	12	-	-	55	62
Unknown	88	7	169	-	78	-	-	14	335	21
Total	<u>3,452</u>	<u>1,585</u>	<u>1,995</u>	<u>341</u>	<u>750</u>	<u>386</u>	<u>91</u>	<u>65</u>	<u>6,288</u>	<u>2,377</u>

commission merchants, and was shipped from the country elevators to a diversion point. For westbound grain shipments from Montana, diversion points are located at Shelby, Great Falls, and Spokane, and Pasco, Washington. Eastbound grain shipments may be diverted or reconsigned at Minot, Jamestown, or Grand Forks, North Dakota.

Wheat is shipped predominantly by rail car in all three areas, but rail shipments have decreased slightly during the 3-year period, 1958-59 through 1960-61 for the state as a whole (Table XI). In the northern counties, wheat shipments by rail remained about the same for 1958-59, and 1959-60 at 85 percent, but dropped to 79 percent in 1960-61. In the eastern counties, rail shipments of wheat dropped from 69 percent of total nongovernment wheat shipments to 61 percent in 1959-60 and increased to 76 percent in 1960-61. Only in the southern area has the volume of wheat shipped by rail continued to decrease during the 3-year period. In 1958-59, the railroads transported 79 percent, in 1959-60, they transported 71 percent, and 59 percent in 1960-61.

The sampled elevator operators reported a smaller volume of barley shipments (Table XII). In 1958-59, 88 percent of the shipments of non-government barley was shipped by rail car, but declined in 1959-60 to 69 percent, and 66 percent in 1960-61. In 1958-59, operators in the northern area reported 87 percent of the barley shipments moved by rail, eastern area operators reported 85 percent by rail, while in the southern area, operators reported 96 percent of the barley was shipped by rail. Rail shipments of barley from elevators in the eastern counties decreased to 45 percent in 1959-60, but increased to 89 percent in 1960-61. Elevator operators

TABLE XI: SHIPMENTS OF NONGOVERNMENT WHEAT FROM SAMPLE COUNTRY ELEVATORS IN MONTANA, BY RAIL AND TRUCK, AND BY ORIGIN AREA, 1958-59 THROUGH 1960-61.

Year and origin area	Rail Volume	Percentage by rail	Truck Volume	Percentage by truck	Total Volume
	<u>1,000 bu.</u>	<u>Percent</u>	<u>1,000 bu.</u>	<u>Percent</u>	<u>1,000 bu.</u>
1958-59:					
Northern	2,318	84.5	426	15.5	2,744
Eastern	1,728	69.2	770	30.8	2,498
Southern	680	79.4	176	20.6	856
Total	<u>4,726</u>	<u>77.5</u>	<u>1,372</u>	<u>22.5</u>	<u>6,098</u>
1959-60:					
Northern	2,768	84.9	493	15.1	3,261
Eastern	1,343	60.6	874	39.4	2,217
Southern	779	70.8	321	29.2	1,100
Total	<u>4,890</u>	<u>74.3</u>	<u>1,688</u>	<u>25.7</u>	<u>6,578</u>
1960-61:					
Northern	2,356	78.8	634	21.2	2,990
Eastern	2,256	76.1	707	23.9	2,963
Southern	835	58.8	585	41.2	1,420
Total	<u>5,447</u>	<u>73.9</u>	<u>1,926</u>	<u>26.2</u>	<u>7,373</u>

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TABLE XII: SHIPMENTS OF NONGOVERNMENT BARLEY FROM SAMPLE COUNTRY ELEVATORS IN MONTANA, BY RAIL AND TRUCK, AND BY ORIGIN AREA, 1958-59 THROUGH 1960-61.

Year and origin area	Rail Volume	Percentage by rail	Truck Volume	Percentage by truck	Total Volume
	<u>1,000 bu.</u>	<u>Percent</u>	<u>1,000 bu.</u>	<u>Percent</u>	<u>1,000 bu.</u>
1958-59:					
Northern	1,474	87.4	213	12.6	1,687
Eastern	76	85.4	13	14.6	89
Southern	175	95.6	8	4.4	183
Total	<u>1,725</u>	<u>88.0</u>	<u>234</u>	<u>12.0</u>	<u>1,959</u>
1959-60:					
Northern	607	76.0	192	24.0	799
Eastern	73	45.6	87	54.4	160
Southern	13	31.7	28	68.3	41
Total	<u>693</u>	<u>69.3</u>	<u>307</u>	<u>30.7</u>	<u>1,000</u>
1960-61:					
Northern	463	57.9	337	42.1	800
Eastern	230	89.1	28	10.9	258
Southern	57	73.1	21	26.9	78
Total	<u>750</u>	<u>66.0</u>	<u>386</u>	<u>34.0</u>	<u>1,136</u>

in the southern counties reported a similar change; rail shipments dropped to 32 percent in 1959-60, but increased to 73 percent in 1960-61.

Truck Shipments Not Elevated at the Country Elevator

Not all grain shipped by the country elevator operators is elevated, or handled at the warehouse. In some instances, elevator operators purchase grain held in farm storage. They arrange for the grain to be loaded into trucks at the farm for delivery to a market. The elevator operator does nothing more than negotiate for the transportation, weigh the truck, and possibly determine the grade of the grain.

This method of grain handling was not used to any great extent in Montana. Only three elevator operators reported truck shipments made in this manner in 1960-61. The volume amounted about 79 thousand bushels, or 3.3 percent of total truck shipments from the sampled elevators.

Truck shipments made in this manner are more prevalent in areas near navigable rivers where the distance for the grain haul is comparatively short. The country elevator operators realize a saving in handling by making direct shipments from farms to markets, and they eliminate the farmer's task of delivering the grain to the country elevators.

Grain Shipments From Farms that Bypass Country Elevators

Bypassing refers to grain that is sold directly to truckers or other grain dealers by farmers, and is not merchandised through local elevators. There has been increasing interest among farmers, members of the grain trade, and railroads as to the extent that truck shipments of grain from farms are bypassing the country elevators. Farmers are interested because of the

increase in the number of itinerant merchant truckers, the extra profit that might result from grain sales direct to truckers, and the risk involved in selling to unknown individuals. To the country elevator operators, bypassing is a direct form of competition, reducing the volume of grain that is merchandised through his plant. Railroad personnel have expressed interest because it indicates further increases in the use of trucks for transporting grain which is also direct competition to their business. A reduction in the volume of grain handled by the elevators is reflected in the number of rail car shipments from the elevator. The sample elevator operators were asked their opinions regarding bypassing in their areas, and whether they believed that a significant volume of grain was moving from their local buying areas. 2/ The operators were aware of such activity but could give no estimate as to the amount of grain that was bypassing the local community.

The business practices of itinerant merchant truckers differ from the for-hire truckers in that they are grain merchandisers as well as transporters. They perform the merchandising function of a country elevator, but with no fixed facilities. Thus, they have an operating margin that includes the country elevator operator's handling costs plus the trucker's cost of transportation. The merchant trucker may pass a portion of this margin to the farmer by paying a higher price, deliver it to a terminal or processor, and absorb a profit greater than would otherwise be realized from

2/ "Significant" is a broad term, but in the context of this question generally specifies that a noticable quantity of grain is bypassing country elevators.

the truck rate. In this way, the country elevator's margin may be divided between the farmer and the merchant trucker. The merchant trucker's method of operation also adds to the farmer's convenience, since the grain need not be delivered to a country elevator.

It was beyond the scope of this thesis to determine the effects of sales to merchant truckers upon the grain pricing at the farm or country elevator level, but some speculation might be warranted. Since these truckers perform a country elevator function, their most profitable area of operation is between the farmer and the terminal elevator or processor, and directly competitive with country elevators. Because of the truckers mobility, it is possible that they are able to draw off a large share of the premium quality grains for delivery to markets supporting temporarily higher prices. By observing the individual market quotations for cash grain sales, they can buy and sell with greater rapidity, as well as aid toward intermarket price stability.

Although the competition of merchant truckers is not considered as a real threat at the present time, increasing numbers of them could, in the future, deemphasize the importance of the central grain exchanges in determining the representative cash grain price. The primary effect would result from a bypassing of the major terminal markets. An increase in the number of merchant truckers trading in premium quality grains between the farm level and the processors or millers could decrease the volume of premium grain moving through the major terminals. Since the effectiveness to determine a representative price depends upon large volumes of grain being merchandised through the exchanges, the reduction in volume would lessen

their effectiveness.

Of the 55 elevator operators replying to the question, 28 replied that a significant volume of grain was bypassing the local elevators, while the remaining 27 stated that no significant volume was moving direct from farms in their local area (Table XIII). Eight of ten elevator operators in the southern counties reported that bypassing was significant. By percentage, this was the highest proportion for the three areas. In the northern counties, 16 out of 23 operators reported that bypassing was significant. By contrast, most of the elevator operators in the eastern counties did not believe a significant volume of grain was bypassing their area. Only four believed that a noticable volume of grain was being purchased from local farms by distant buyers. The predominant comment regarding bypassing movement was that itinerant merchant truckers were buying grain directly from farmers for movement to distant markets. There were also some comments that commission merchants were arranging for truckers to pick up grain in farm storage.

TABLE XIII: RESPONSES OF COUNTRY ELEVATOR OPERATORS IN MONTANA INDICATING THEIR KNOWLEDGE OF GRAIN BYPASSING THEIR OWN OR OTHER ELEVATORS WITHIN THEIR LOCAL BUYING AREA, BY ORIGIN AREAS, 1961-62.

Origin Area	Operators that be- lieve grain is by- passing their area		Comments (If yes) a/
	Yes	No	
	<u>Number</u>	<u>Number</u>	
Northern	16	7	Truckers are hauling more grain direct from farms (1). A great deal of barley is purchased by itinerant merchant truckers and sold to feeders; some increase in wheat sold to merchant truckers (7). Local and nonlocal truckers are buying more grain direct from farmers (5). Some commission firms are buying and trucking direct from farms (2). No comment (1).
Eastern	4	18	Truckers are picking up more grain in the country for delivery at terminal elevators (1). Shipments from farms direct to feed lots (1). Truckers pick up wheat on farms. Since they have both the trucker rate and handling commission, they are becoming very stiff competition (1). Trucker-merchants buy wheat directly from farms for delivery to Southern points and reshipment to California (1).
Southern	8	2	More purely grain haulers, larger proportion of this type of hauling direct from farms to out-of-state mills (1). Truckers with no permanent facilities in the community buying direct from farmers for out-shipments (1). Truckers move grain direct from farm to market (2).

TABLE XIII: (continued) RESPONSES OF COUNTRY ELEVATOR OPERATORS IN MONTANA INDICATING THEIR KNOWLEDGE OF GRAIN BYPASSING THEIR OWN OR OTHER ELEVATORS WITHIN THEIR LOCAL BUYING AREA, BY ORIGIN AREAS, 1961-62.

Origin Area	Operators that be-		Comments (If yes) <u>a/</u>
	lieve grain is by-		
	<u>passing their area</u>		
	Yes	No	
	<u>Number</u>	<u>Number</u>	
			More straight-grain haulers. Movement direct from farms by trucker-buyers has greatly increased. Lower rail rates in neighboring states has caused increased trucking from this area to those points to take advantage of lower rail rates (1).
			Loss of volume due to increased trucking direct from farms to out-of-state buyers (1).
			A great deal of barley is purchased by itinerant truckers and sold to feeders; some wheat purchased by itinerant truckers (1).
			No comment (1).
Total	28	27	

a/ Numbers in parentheses indicate the number of times the comment was reported.

Data compiled in the survey of grain transportation in the North Central states showed a predominance of feed grains moving into Western states, with 57 percent transported in trucks. ^{3/} This survey also showed that the predominant type of motor carrier transporting feed grain was the itinerant merchant trucker. This indicates that there was probably considerable activity of merchant truckers in the Northwest since it is a surplus livestock producing area. On the other hand, itinerant merchant truckers are used for less than 1 percent of the truck shipments from country elevators in Montana. Since these truckers moving from the Midwest are not getting hauls from the country elevators, the belief among country elevator operators is substantiated in that itinerant merchant truckers may be buying grain direct from farmers to use as a backhaul into the Midwestern states.

Further evidence of bypassing reported in the preliminary data of the grain transportation survey for the Northwest was provided by the replies of terminal elevator operators. All terminal elevator operators combined reported receiving 30 percent of their grain receipts by truck direct from farmers. The operators of terminals located in eastern Washington, Montana, and Utah reported that about 34 percent of their trucked grain receipts came from farmers. These data tend to support the opinions of the country elevator operators in Montana.

^{3/} Haldeman, R.C., Bennett, R.M., Corley, J.R., et.al., Grain Transportation in the North Central States -- An Economic Analysis, United States Department of Agriculture, Marketing Research Report 490, Washington D. C., United States Government Printing Office, July, 1961, p. 56.

Types of Truckers Used For Grain Shipments From Country Elevators

The increased use of trucks for transporting grain from country elevators has developed interest concerning the types of truckers that are participating in the transportation of grain. The results of the replies from the sample country elevator operators in Montana reveal that all types of truckers are used for transporting grain. The various motor carriers are exempted from economic regulation by the Interstate Commerce Commission when transporting grain in interstate commerce, and are not required to adhere to prescribed rates or routes. The common or contract carriers and private carriers usually transport grain as a backhaul to a specific destination. For this reason they are less flexible than the itinerant merchant or the exempt for-hire motor carrier. For the purpose of classifying truckers into types, the following distinctions were made.

- (1) Common or contract motor carriers: For-hire trucking firms having operating authority issued by the Interstate Commerce Commission were classed as common or contract motor carriers. Motor common carriers receive a certificate of public convenience and necessity to operate over regular or irregular routes, and to transport specified commodities in interstate commerce. Contract carriers are issued permits to operate between specified points hauling specified commodities. Both types transport general commodity freight at prescribed rates subject to the Interstate Commerce Act.
- (2) Itinerant merchant truckers: Truckers who purchase an exempt commodity and transport it to market for resale were included in this group. The difference between the buying and selling price, if any, is their profit and, in effect, their charge for the haul.

- (3) Exempt for-hire truckers: For-hire motor carriers operating in interstate commerce and not having authority issued by the Interstate Commerce Commission were classified as exempt for-hire truckers. Their operations are similar to the common or contract motor carriers, although they are not limited to specified routes and their rates are not subject to approval by the Interstate Commerce Commission. They are limited to transporting exempted agricultural commodities, except under trip-leasing agreements.
- (4) Private carriers: Trucks operated by firms not primarily in the trucking business were classified as private carriers. This category includes trucks operated by grocery firms, merchandising firms, lumber and steel firms, and others who operate trucks for their own convenience. These trucks may transport exempted agricultural products on return hauls to help defray expenses.
- (5) Elevator-owned or leased trucks: Trucks operated either by the shipping or receiving elevator were included in this group. Although these trucks are private in nature, they are used for the convenience of the elevator operator. There is no actual freight charge for transporting the grain.

Grain Shipments By Type of Motor Carrier

The sample country elevator operators in Montana estimated the percentage of the 1960-61 volume of truck shipments transported by the various types of truckers (Tables XIV through XVII). In a few instances, the elevator operator did not have sufficient knowledge to estimate his total truck volume by type of motor carrier, and partial estimates were furnished. Elevator operators not knowing the types of truckers used made no estimates. The percentage estimates were applied to the reported truck volume, in order to provide the estimated volume of grain transported by the various trucker types. Their estimates accounted for about 90 percent of total truck shipments.

TABLE XIV: SHIPMENTS OF NONGOVERNMENT GRAIN BY TYPE OF MOTOR CARRIER AND TYPE OF GRAIN FROM SAMPLE MONTANA COUNTRY ELEVATORS IN THE NORTHERN AREA TO TERMINALS, PROCESSORS, AND FEEDERS, 1960-61.

Grain and destination	Type of Trucker					Total 1,000 bu.
	Common or Contract	Itinerant merchant	Exempt For-hire	Private	Elevator-owned	
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	
Red Winter Wheat:						
Terminals	207	-	73	115	1	396
Processors	18	-	23	18	-	59
Total	225	-	96	133	1	455
Red Spring Wheat:						
Terminals	85	-	15	10	-	110
Processors	5	-	9	5	-	19
Total	90	-	24	15	-	129
Barley:						
Terminals	87	-	72	38	-	197
Processors	-	-	-	30	-	30
Feeders	20	-	66	-	-	86
Total	107	-	138	68	-	313
All grains:						
Terminals	379	-	160	163	1	703
Processors	23	-	33	53	-	108
Feeders	20	-	66	-	-	86
Total	422	-	258	216	1	897

TABLE XV: SHIPMENTS OF NONGOVERNMENT GRAIN BY TYPE OF MOTOR CARRIERS AND TYPE OF GRAIN FROM SAMPLE MONTANA COUNTRY ELEVATORS IN THE EASTERN AREA TO TERMINALS AND PROCESSORS, 1960-61.

Grain and destination	Type of Trucker					Total 1,000 bu.
	Common or Contract	Itinerant merchant	Exempt For-hire	Private	Elevator-Owned	
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	
Red Winter Wheat:						
Terminals	294	-	95	50	-	439
Processors	14	-	-	14	-	28
Total	308	-	95	64	-	467
Red Spring Wheat:						
Terminals	82	-	16	-	-	98
Processors	-	-	-	-	-	-
Total	82	-	16	-	-	98
Barley:						
Terminals	47	-	29	12	-	88
Processors	-	-	-	-	-	-
Total	47	-	29	12	-	88
Other grains:						
Terminals	1	-	1	-	-	2
All grains:						
Terminals	424	-	141	62	-	627
Processors	14	-	-	14	-	28
Total	438	-	141	76	-	655

TABLE XVI: SHIPMENTS OF NONGOVERNMENT GRAIN BY TYPE OF MOTOR CARRIERS AND BY TYPE OF GRAIN FROM SAMPLE MONTANA COUNTRY ELEVATORS IN THE SOUTHERN AREA TO TERMINALS AND PROCESSORS, 1960-61.

Grain and destination	Type of Trucker					Total
	Common or Contract	Itinerant merchant	Exempt For-hire	Private	Elevator-Owned	
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
Red Winter Wheat:						
Terminals	82	6	159	251	-	498
Processors	4	-	-	51	-	55
Total	<u>86</u>	<u>6</u>	<u>159</u>	<u>302</u>	<u>-</u>	<u>553</u>
Red Spring Wheat:						
Terminals	12	-	2	11	-	25
Processors	8	-	-	-	-	8
Total	<u>20</u>	<u>-</u>	<u>2</u>	<u>11</u>	<u>-</u>	<u>33</u>
Other grains:						
Terminals	-	-	-	4	-	4
All grains:						
Terminals	94	6	161	266	-	527
Processors	12	-	-	51	-	63
Total	<u>106</u>	<u>6</u>	<u>161</u>	<u>317</u>	<u>-</u>	<u>590</u>

TABLE XVII: SHIPMENTS OF NONGOVERNMENT GRAIN BY TYPE OF MOTOR CARRIER AND TYPE OF GRAIN FROM SAMPLE MONTANA COUNTRY ELEVATORS TO TERMINALS, PROCESSORS, AND FEEDERS, 1960-61.

Grain and destination	Type of Trucker					Total 1,000 bu.
	Common or Contract	Itinerant merchant	Exempt For-hire	Private	Elevator-Owned	
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	
Red Winter Wheat:						
Terminals	583	6	327	416	1	1,333
Processors	36	-	23	83	-	142
Total	<u>619</u>	<u>6</u>	<u>350</u>	<u>499</u>	<u>1</u>	<u>1,475</u>
Red Spring Wheat:						
Terminals	179	-	33	21	-	233
Processors	13	-	9	5	-	27
Total	<u>192</u>	<u>-</u>	<u>42</u>	<u>26</u>	<u>-</u>	<u>260</u>
Barley:						
Terminals	134	-	101	50	-	285
Processors	-	-	-	30	-	30
Feeders	20	-	66	-	-	86
Total	<u>154</u>	<u>-</u>	<u>167</u>	<u>80</u>	<u>-</u>	<u>401</u>
Other grains:						
Terminals	1	-	1	4	-	6
All grains:						
Terminals	897	6	462	491	1	1,857
Processors	49	-	32	118	-	199
Feeders	20	-	66	-	-	86
Total	<u>966</u>	<u>6</u>	<u>560</u>	<u>609</u>	<u>1</u>	<u>2,142</u>

Common or contract motor carriers were used most often for transporting grain from the sampled country elevators in Montana, but by area, this was true only in the Northern and Eastern areas. For the state as a whole, 45 percent of the truck shipments were made in common or contract motor carriers. The bulk of this movement was destined for terminal markets, and accounted for 93 percent of the truck shipments in this type of carrier.

Private truckers were used for 28 percent of the shipments from country elevators. They were the predominant motor carrier used by country elevator operators in Southern Montana, where they hauled 54 percent of truck shipments. In the Eastern area, they transported 12 percent of truck shipments, and 24 percent of truck shipments from elevators located in the Northern counties.

Exempt for-hire truckers transported 26 percent of truck shipments reported by trucker types. Country elevator operators in all areas reported using exempt for-hire truckers, and by area, were used for 29 percent of truck shipments from elevators in the northern counties, 27 percent of truck shipments in the southern counties, and 22 percent in the eastern counties. Itinerant merchant truckers and elevator-owned trucks were used for less than 0.05 percent of the truck shipments from country elevators.

Of total shipments by truck, 87 percent was transported to terminal elevators, 9 percent was shipped to processors, and the remaining 4 percent moved to feeders. Only country elevators in the northern counties reported any shipments to cattle feeders.

The Use of Truck Brokers by Country Elevator Operators to Obtain Trucks

Truck brokers perform a service for both the trucker and the shipper. Their emergence has risen primarily because of the increase in the number of truck operators that cater only to shippers of exempt agricultural commodities. Many of the truckers operating as exempt for-hire carriers service several states and have offices in only a few, if any of them. Truck brokers serve as the link between shippers and truckers hauling exempt commodities.

Country elevator operators in Montana were asked whether they used truck brokers to obtain trucks, and if so, the estimated volume of grain that was shipped in trucks obtained through truck brokers. Of the 57 sample elevator operators replying, only two had obtained trucks in this manner, and the amount of grain shipped in these trucks amounted to about 3 percent of total truck shipments from all sample elevators in 1960-61.

Although truck brokerage is expanding in many regions of the nation, and in many areas of agricultural transportation, comments of country elevator operators in Montana indicate that there are only a few if any located in this state. Grain brokers have tended to take over the position of being a brokerage firm for grain and trucks, and as such, secure trucks for their own use. Then too, the supply of trucks and the regions to which truckers are willing to provide service depends upon the area from which they originate. Most of the trucks that transport grain bring other products into the state, and use grain as a backhaul to their originating area.

Changes in Distribution Patterns for Grain Shipments

Sixteen out of 57 country elevator operators indicated that their distribution pattern for grain had changed since 1958. The largest number of elevator operators indicating a change were located in the southern counties, where 54 percent replied affirmatively. In the eastern counties, about one third replied yes, while in the northern counties, only 8 percent replied that their distribution pattern had changed significantly. Three operators located in the southern area indicated that their distribution pattern had changed because of increased trucking direct from farms, and was reducing the volume handled by them. This reason was not indicated by elevators in the other two areas.

In all areas, elevator operators stated that an increasing volume of grain was being marketed in the northwest states. There are probably larger quantities of grain going to the ports in Washington and Oregon, and increasing quantities moving to the northern Utah area. Because of reduced grain rates since 1960 to Northwest Coast terminals from many Montana origins, this suggests that increased shipments of grain are moving West to these terminals as a result of the rate reductions.

CHAPTER V

REASONS FOR USING THE VARIOUS MODES OF TRANSPORT

Historically, the movement of grain from country elevators to terminals, processors, and ports of export has been by rail carriers. This method of transport prevailed predominantly during the late nineteenth century and early twentieth century. By 1935, motor carriers had reached a level of being sufficiently competitive to warrant regulation by the Interstate Commerce Commission similar to that of the railroads. However, agricultural products were exempted from economic regulation when transported by truck. Motor carriers transporting the exempted agricultural commodities did not offer any significant competition until the period beginning after World War II. Since then, trucks have hauled increasingly larger shares of grain and have become more competitive with the railroads.

Competition brought on by the truckers has increased the importance of improved rail service, rail carrier equipment, and favorable rail rates. Truck and truck-barge carriers are competing with the railroads for the grain traffic between country elevators and terminal elevators, processors, and feeders.

Rates are the major factor of successful competition among the various carriers. They usually reflect not only the cost of moving grain from one point to another, but the various services available to grain merchandisers. Railroads have generally been known to charge rates higher than either truck or truck-barge, but they have included certain privileges for the grain merchandisers. Flour millers have depended upon milling-in-transit

rates whereby they receive raw grain, mill it into flour, and ship the flour on to the destination at the balance of the original rate on the grain. Other transit privileges provide for storage, cleaning, and mixing or blending of grain while in transit.

Rail rates became regulated with the enactment of the Interstate Commerce Act of 1887. Various supplementary acts and amendments have strengthened the original act. Provisions are included that require railroads to publish schedules showing charges for transportation between different points, both on their own routes, and on the routes of other rail and water carriers when joint rates have been established. A railroad generally cannot change the established rates except by giving 30 days notice to the Interstate Commerce Commission and to the public. ^{4/} The railroads must show the proposed changes and the time the changes will go into effect.

Such regulations tended to stabilize rail rates. The price spread for grain between country and terminal markets became relatively stable, reflecting the rail freight rates between country origins and terminal destinations. Most of the freight charges paid truckers are negotiated, often at the time of loading. Truckers usually offer no service other than the movement of grain from one origin to one destination, and their cheaper rates reflect the minimum service. Barge carriers also transport grain at negotiated rates as well as published rates.

^{4/} The Interstate Commerce Commission may alter this provision when good cause is shown. (The Interstate Commerce Act, Revised to October 1, 1958, United States Government Printing Office, Washington, D.C., 1958, p. 38).

The increasing importance of truck carriers is causing changes in the grain marketing methods that were historically based on rail carrier rates. Increased carrier competition has caused increased competition among country elevator operators. They now must compete for the producer's grain, and for markets. Since country elevator operators base their buying and selling prices on terminal market quotations including railroad transportation costs, truck rates when lower than rail rates, tend to increase the margin within which country elevator operators negotiate. As a result, they are able to offer either a higher price for the producer's grain, or accept a lower price from the buyer.

Efforts by the railroads to compete with the lower cost truck and barge carriers have resulted in rail rate reductions. These rate reductions were first reduced in areas where trucks offered the strongest competition. In Montana, rail rate reductions became effective in late 1960 to the West Coast, with further reductions in 1961. Rail grain rates were also reduced from Montana points to Minneapolis and Duluth-Superior in 1961.

The rates reduced and made effective in October, 1960 from Western Montana origins to Northwest Coast terminals differed from the normal rail rates that had been in effect. The new rates were limited transit rates initiated to be competitive with truck and truck-barge rates. Whereas the normal rates allowed up to three transit stops, multiple diversion, and inspection privileges, the limited transit rates provided for only one transit stop and diversion, and inspection was limited to specific stations.

Advantages and Disadvantages of Shipping Grain by Rail

The advantages and disadvantages furnished by the country elevator operators reflect their own opinions. The questionnaire contained no suggestive or choice answers. No assumptions have been made that an advantage for one carrier was automatically a disadvantage for its competitor. In only a limited number of questionnaires did the operator indicate that an advantage of one carrier became a disadvantage of the other carrier. That is, an advantage of a carrier such as low rates did not necessarily indicate that the rates of the other carrier were higher and disadvantageous, unless the elevator operator stated this.

Advantages--A total of 45 country elevator operators in Montana reported advantages for shipping grain by railroad (Table XVIII). The advantage reported most often was that rail cars are faster and more convenient to load, and was reported by 27 of the elevator operators, or 60 percent of those reporting. Twelve out of the 27 operators indicating this advantage were located in the eastern counties. In the southern area, 8 out of 11 elevator operators reported this advantage. A second advantage, rail cars hold a larger volume of grain, was reported by 14 of the reporting operators. These two advantages are interrelated in that the larger volume capacity of rail cars facilitates the faster loading of grain. While cooping, and sometimes patching is required for rail cars, one rail car will hold about three times as much grain as a truck. Once the loading operation has been started by the elevator operator, a comparatively large volume of grain can be moved at one time.

Other advantages that were reported by 27 percent or more of the operators were: Rail cars are usually available; and rail rates are stable.

Disadvantages--Forty-two elevator operators reported disadvantages for shipping grain by rail car (Table XIX). There were two disadvantages-- rail freight rates are higher; and shortage of box cars at times--reported by 22 operators. The disadvantage that there is a shortage of box cars at times, generally refers to the shortages that occur during harvest-time. In the discussion of storage facilities, it was brought out that due to the limited commercial storage facilities, during the heaviest time of harvesting, the railroads are not able to furnish box cars rapidly enough to handle the overflow. This results in periodical shortages of box cars. The disadvantage that rail rates are higher reflects the comparison that operators make in relation to truck rates.

Other disadvantages were: Slower delivery to market, poor condition of box cars, and more loss of grain in transit, all reported by at least 31 percent of the operators. The disadvantage that railroads are slower in transporting grain to market, results from the extra time involved in switching and getting the cars to the rail centers, and the making of line-haul trains, all of which cause delay in the movement of a rail car. The poor condition of rail cars reported by the elevator operators, indicates the quality of the rail cars furnished for grain movement. Some operators referred to dirty cars, splintered cars needing repairs, and other faulty equipment as basis for this disadvantage. Box cars needing repairs also reflect the primary cause for greater loss in transit, due to leakage loss

TABLE XVIII: ADVANTAGES OF SHIPPING GRAIN BY RAIL CAR, AS REPORTED BY SAMPLE COUNTRY ELEVATOR OPERATORS IN MONTANA, 1961-62.

Advantages	Elevators Reporting			
	Northern	Eastern	Southern	Total
	Number	Number	Number	Number
Faster and more convenient to load rail cars	7	12	8	27
Rail cars hold a larger volume of grain	7	3	4	14
Rail cars are usually available	9	1	2	12
Rail rates are stable	1	9	2	12
Railroads are more dependable and reliable	1	2	6	9
Can get official grades for rail shipments	5	-	2	7
Railroads provide diversion privileges	5	-	1	6
Less bookwork per bushel of grain	2	1	3	6
Others <u>a/</u>	1	3	2	6

a/ Other advantages include: Obtain full market value because of transit, Southern (2); Less loss in transit, Northern (1); Eastern (1); Greater variety of markets, Eastern (2).

TABLE XIX: DISADVANTAGES OF SHIPPING GRAIN BY RAIL CAR, AS REPORTED BY SAMPLE COUNTRY ELEVATOR OPERATORS IN MONTANA, 1961-62.

Disadvantages	Elevators Reporting			
	Northern	Eastern	Southern	Total
	Number	Number	Number	Number
Rail freight rates are higher	4	11	7	22
Shortage of box cars at times	7	11	4	22
Slower delivery to market	2	9	4	15
Poor condition of box cars	6	3	4	13
More loss of grain in transit	1	7	5	13
Rail cars have to be coopered	1	4	4	9
Rail service is poor	2	1	1	4
Slower settlement of claims	1	2	-	3
Less flexibility	1	-	2	3

in transit.

Advantages and Disadvantages of Shipping Grain by Truck

Advantages--Thirty-eight country elevator operators reported advantages for shipping grain by truck (Table XX). "Trucks charge lower rates" was reported most often, and was indicated by 82 percent of the operators. Truck rates are usually cheaper, but truckers provide only a minimum service to grain shippers. Where rail carriers usually provide for inspection, diversion, and transit stops, the truckers usually provide transportation from the shipper to the buyer.

A second advantage "Trucks provide faster delivery to markets" was indicated by 16 of the operators reporting. Truckers do not provide any more than the basic transportation service, and they move rapidly from the origin to destination and return to keep moving as much as possible. The third advantage "Less loss in transit" was reported 14 times.

Disadvantages--Out of a total of 36 country elevator operators reporting, 17 indicated that trucks have to be loaded at all hours, and are inconvenient to load (Table XXI). This disadvantage arises because truckers cannot afford undue delay and prefer to have the truck loaded as soon as possible upon arrival at the elevator. Elevator operators stated that trucks arrived at all hours of the day or night and could not be depended upon to arrive at a scheduled time. Other disadvantages reported were that trucks were not always readily available at harvesttime, stated by 33 percent of the reporting elevator operators, and that it was difficult to collect shortage claims from truckers, indicated by 30 percent of the 36 elevator operators.

TABLE XX: ADVANTAGES OF SHIPPING GRAIN BY TRUCK, AS REPORTED BY SAMPLE COUNTRY ELEVATORS IN MONTANA, 1961-62.

Advantages	Elevators Reporting			
	Northern Number	Eastern Number	Southern Number	Total Number
Trucks charge lower rates	6	14	11	31
Provide faster delivery to markets	1	11	4	16
Less loss in transit	-	10	4	14
Easier to load	1	4	1	6
Better, faster service	1	2	3	6
Trucks transport small quantities easily	1	2	1	4
Other <u>a/</u>	4	3	-	7

a/ Other advantages include: Trucks are usually available and off-set rail car shortages, Northern (1), Eastern (1); Trucks are usually available, Eastern (2); Obtain a higher net price for grain, Northern (2); Better claims recovery on losses in transit, Northern (1).

TABLE XXI: DISADVANTAGES OF SHIPPING GRAIN BY TRUCK, AS REPORTED BY SAMPLE COUNTRY ELEVATOR OPERATORS IN MONTANA, 1961-62.

Disadvantages	Elevators Reporting			
	Northern	Eastern	Southern	Total
	Number	Number	Number	Number
Trucks have to be loaded at all hours; inconvenient to load	7	6	4	17
Trucks are not always readily available at harvesttime	2	7	3	12
Hard to collect on shortage claims	2	7	2	11
Greater risk of loss on grain shipments	5	1	4	10
High accounting and administrative cost per bushel (including inspection fee)	4	1	4	9
Unstable rates	-	7	2	9
Trucks do not hold large quantities	1	1	4	6
Erratic service, not always willing to haul to desired location of destination	-	1	2	3
Not always dependable	-	-	3	3
Other <u>a/</u>	2	7	1	10

a/ Other disadvantages include: Truckers bypass country elevators, Northern (1); No right of appeal on weights and grades, Eastern (2); Not all buyers will receive by truck, Northern (1), Eastern (1); Trucked grain is discounted, Eastern (1); No trucks available, Eastern (2); Poor highways, Eastern (1); No inspection required (Federal or state) on truck shipments, Southern (1).

FOUR STAR

ONION SKIN

SOUTHWESTERN CO. S. 18 A.

20 2 COTTON NUMBER

Relationship of Advantages and Disadvantages of Shipping Grain by Rail and Truck

Country elevator operator replies as to the advantages of one carrier and the disadvantages of the other are comparable. The most frequently reported advantages for shipping grain by rail may be generally related to the most frequently reported disadvantages for shipping grain by truck. Convenience in loading the vehicles presented the most comparability. Elevator operators usually felt that the railroads were more considerate in this area. Rail cars were spotted at the elevator and the operator was free to load the car during his spare time. The railroads provide free time of 48 hours before demurrage charges begin. In contrast, truckers insist upon being loaded immediately upon arrival. They say that idle time costs them about \$5 to \$10 per hour in revenue, and with their low rates they must keep moving as much of the time as possible.

The most frequently reported advantage for shipping by truck was lower rates, while the most frequently reported disadvantage for shipping by rail was high rates. Although the railroads have made reductions in Montana for movement to Pacific ports, rate reductions for movement eastward have been less, and trucks are more competitive for eastbound traffic. Elevator operators also stated that there is less loss in transit by truck compared to shipments by rail.

As to the amount of grain that can be handled in single shipments, elevator operators stated that rail cars can handle large volume shipments, and the disadvantage of trucks is that they cannot handle large volume shipments. On the other hand, an advantage of trucks is that they can handle

small quantities. Both carriers are a convenience to elevators that load out rail cars and trucks. However, elevator operators who ship predominantly by rail can be at a disadvantage since rail rates generally have a minimum weight specification. Rail shipments of low minimum weights move at higher car-load rates, while shipments of less than the lowest minimum weight move at considerably higher less-than-carload rates. One exception in the railroad tariffs permits application of the rail carload rates to less-than-carload shipments at the close of the season when clean-out of the elevator occurs.

Service Factors Influencing the Use of a Particular Mode of Transport

The type of service provided by the transportation firms is often of importance to the shipper. The type of equipment, the condition of the equipment, dependability of the carrier, his promptness and attitude all add or detract from the shipper's opinion of the service provided by a motor truck or railroad carrier.

TABLE XXII: RESPONSES OF SAMPLE COUNTRY ELEVATOR OPERATORS IN MONTANA AS TO WHETHER THE QUALITY OF SERVICE PROVIDED BY A PARTICULAR MODE OF TRANSPORT HAS CAUSED INCREASED USE OF THAT MODE OF TRANSPORT, BY AREA, 1961-62.

Area	Service has caused increased use of a particular carrier		Comments (If yes) <u>a/</u>
	Yes	No	
	<u>Number</u>	<u>Number</u>	
Northern	5	16	Disinterest shown by railroad employees (1). Increased use of trucks due to shortages of box cars at harvest (4).
Eastern	3	15	Faster delivery to market; trucks in better condition (1). Poor train service; poor cars furnished; periodic shortages of rail cars (1). Trucks provide better service at lower rates (1).
Southern	4	9	Dependability and servicing of claims by trucks (1). Car shortages. Fewer claims by truck. Reliability of railroads is factor over trucks (2). Increased use of trucks due to shortages of box cars at harvest (1).
Total	12	40	

a/ The numbers in parentheses indicate the number of times the comment was stated.

Out of 52 country elevator operators, 12 stated that the service factors of a particular mode of transport had influenced them to increase the use of that mode. In all three areas, elevator operators stated that the shortage of rail cars was a reason for shifting to truck. However, this reason does not indicate that the elevator operators necessarily shifted

entirely to truck, but used trucks as a substitute when rail cars were not available to handle the heavy inflow of grain during harvest. The problem faced by the rail industry of providing rail cars increases at harvesttime. Not only are more rail cars demanded, but the terminal elevators that receive grain are limited to the number of cars that can be handled at a given time. During the peak shipping season, rail car turn-around time increases because of the increased flow. At such times, truckers perform a valuable service for the elevator operator by helping to relieve the congestion.

Effects of Rail Rate Increases Since 1946

In 1946, the railroads increased their rail rates for the first time since 1938. ^{5/} This was the beginning of a series of rate increases that continued through 1958, and almost doubled the 1946 grain rate level (Table I, page 4). Country elevator operators in Montana were asked to state whether the increases in grain rates by rail had any effect on the choice of carrier used or their marketing practices. Fifty-seven operators replied to this question.

In the northern area, seven replied that they had increased their truck shipments as a result of increasing rates. As to the timing of the

^{5/} Ex Parte 148, Increased Rates, Fares, and Charges, 1942, effective in 1942, with various suspensions from 1942 to 1945, and reinstatement in 1946, was superceded by Ex Parte 162 (264 ICC 695, 266 ICC 537), effective in 1947, which increased rail rates on grain by 15 percent. For practical purposes, Ex Parte 162 followed Ex Parte 123 (Fifteen percent case, 226 ICC 41), effective in 1938.

shift, four operators indicated that the shift occurred in the late 1950's or early 1960's. In the eastern section, 50 percent of the operators indicated an increase in truck shipments, while in the southern area, 92 percent indicated increased shipments by truck. Most of the elevator operators replied that they did not begin shipping more grain by truck immediately after the first rail rate increase in 1946, but started later, gaining momentum by the late 1950's. In no instance did an elevator operator report a complete shift to truck.

The reluctance to decrease grain shipments by rail, even in the face of increasing costs, reflects the dependency of grain merchandisers upon rail transportation for receiving and shipping grain, and upon the additional services provided by the railroads for handling grain. However, as the rail rates increased, a gradual shift was made by operators from rail to truck, particularly for shipments to receivers that would readily accept grain by truck. Trucks provided a means of moving small lots at lower rates, and faster service where the additional transit services usually provided by the railroads were not needed. Lower truck rates increased the competition among elevators; those shipping by truck were able to take advantage of the lower rates, and in bidding for grain, offer a higher price to the farmer. This practice, in turn, forced more country elevator operators to use trucks for shipping grain to compete.

Effects of Recent Rail Rate Reductions

Of the 57 elevator operators replying to this question, 11 replied that as a result of recent rail rate reductions, they had increased their

TABLE XXIII: RESPONSES OF SAMPLE COUNTRY ELEVATOR OPERATORS IN MONTANA AS TO THE EFFECTS OF RAIL RATE INCREASES SINCE 1946, BY AREA, 1961-62.

Area	Rail rate increases have caused a shift to other carriers		Comments regarding shift a/
	Yes	No	
	<u>Number</u>	<u>Number</u>	
Northern	7	17	We used trucks when available (1). In late 50's, trucks became available at cheaper rates (3). As rail rates increased, truck shipments increased, was gradual (1). In 1961, added facilities for loading trucks (1). No comments (1).
Eastern	10	10	Was a gradual transition (9). More grain is being trucked every year as facilities for receiving are opened up (1).
Southern	12	1	In 1962, lower truck rates caused us to shift more to truck (2). About 1959, more grain was shipped by truck because of rail rate reductions in surrounding states (1). As rail rates increased, truck shipments increased, was gradual (1). Competition forced trucked grain shipments, since more was bought on cheap trucking charges (1). Rail rates continued to increase; trucks remained as they were (2). The increase in rates have made it very hard to compete with truckers and as a result the elevators have had to change to truck (1).

TABLE XXIII: (continued) RESPONSES OF SAMPLE COUNTRY ELEVATOR OPERATORS IN MONTANA AS TO THE EFFECTS OF RAIL RATE INCREASES SINCE 1946, BY AREA, 1961-62.

Area	Rail rate increases have caused a shift to other carriers		Comments regarding shift <u>a/</u>
	Yes	No	
	<u>Number</u>	<u>Number</u>	
			Has been a gradual transition since 1946 (2). In late 50's, trucks became available at cheaper rates (1). Has shifted from 21 percent in 1958 to 27 percent in 1959, 42 percent in 1960, 83 percent in 1961, and expect 100 percent in 1962 (1).
Total	29	28	

a/ Numbers in parentheses indicate the number of times the comment was reported.

shipments by rail relative to truck. About 12 percent of those in the northern area and 10 percent in the eastern area reported a shift. In the southern area, however, 46 percent of the operators indicated that they had increased their shipments by rail as a result of recent rail rate reductions.

The trend of numerous increases in rail grain rates was reversed in Montana, when in October, 1960, a reduction was made for grain shipments from west of the continental divide to North Coast points and Spokane. 6/ It did include a few points east of the divide as far as Bozeman. Further reductions were made in October, 1961 from Montana origins to North Coast points and California, and extended the territory of the reductions made in 1960. Rail grain rates were also reduced from Montana origins to Minneapolis and Duluth at the same time. This rate applied to origins as far west as central Montana and the Triangle area. It resulted in a drop from $87\frac{1}{2}$ cents per 100 pounds to 80 cents on grain shipments from the Triangle area in central Montana.

In September, 1962, further reductions were made from Montana to North Coast markets and to California. The reductions to North Coast destinations applied to origins in the Gallatin Valley, eastward to Billings and north to Lewistown. 7/ The railroads also published reduced grain rates from the

6/ NPCFB Docket 11913, "Grain From Montana to North Coast Points and Spokane" Activities Report of the Pacific Northwest Grain and Grain Products Association, Portland, Oregon, 1960, p. 5.

7/ NPCFB Docket NC-1228, "Grain and Grain Products, Carload From Montana to North Coast Markets," Activities Report of the Northwest Grain and Grain Products Association, Portland, Oregon, 1962, p. 5.

central Montana territory to California (Table XXIV). 8/

Changes in Facilities or Marketing Practices Because of Increased Use of Trucks

Of the 57 elevator operators in Montana replying, 25 percent stated that they had made changes in their loading facilities or marketing practices because of increased use of trucks. The change reported most often was the addition of truck-loading facilities. Only two operators reported that any changes were made in their marketing methods because of increased use of trucks. One operator in the northern area reported that he was having to hold grain for truckers. In the southern area, one operator reported that he was arranging to have more grain picked up from farm storage.

In both the northern area and the eastern area, the percentage of elevator operators reporting changes was relatively low (21 percent for the northern area, and 15 percent for the eastern area), while in the southern counties, 46 percent reported a change. In all cases, the changes included the addition of truck loading facilities. The fact that more of the operators in the southern area reported changes suggests that the influence of increased trucking may have had a greater impact upon this area, or the southern situated elevators may have been slower to adjust to the increased use of trucks for shipping grain until comparatively recently. However, it is more likely the intense truck competition is being felt in the southern area more than in some other areas of the state. This would occur

8/ Ibid.

TABLE XXIV: RAIL RATES FROM SELECTED ORIGINS IN MONTANA TO THE NORTH COAST AND CALIFORNIA BEFORE AND AFTER SEPTEMBER 12, 1962. *

Destinations and origins	Rates in effect	
	Prior to Sept. 12, 1962	After Sept. 12, 1962
	<u>Cents/CWT</u>	<u>Cents/CWT</u>
To North Coast From:		
Drummond	53	51
Garrison	55	51
Three Forks	67	51
Bozeman	68½	51
Big Timber	73	59½
Billings	79	65
Forsyth	95½	85½
To California From:		
Drummond	97½	95½
Garrison	99½	95½
Bozeman	113	95½
Big Timber	117½	104
Billings	123½	109½
Forsyth	144½	134½

* Source: NPCFB Docket NC-1228 "Grain and Grain Products, Carload from Montana to North Coast Markets;" Docket JT-1292 "Grain and Grain Products, Montana to San Francisco and Los Angeles, California," Activities Report of the Northwest Grain and Grain Products Association, Portland, Oregon, 1962, p. 5.

TABLE XXV: RESPONSES OF COUNTRY ELEVATOR OPERATORS IN MONTANA INDICATING WHETHER RAIL RATE REDUCTIONS SINCE MAY 1958 HAVE CAUSED THEM TO INCREASE THEIR SHIPMENTS BY RAIL CAR, BY AREA, 1961-62.

Area	Rail rate decreases have caused increased use of rail carriers		Comments regarding extent of shift <u>a/</u>
	Yes <u>Number</u>	No <u>Number</u>	
Northern	3	21	Slightly--rail rate reductions have not been sufficient to cause a great deal of change (1). No comment (2).
Eastern	2	18	No comment (2).
Southern	6	7	Not much, reductions so far have not been sufficient to cause such a shift (5). At points where new rail rates equal truck rates, grain moved by rail (1).
Total	11	46	

a/ Numbers in parentheses indicate the number of times the comment was reported.

because of the nearness to markets and buyers in the states immediately south of Montana, and the imbalance in rail rates because of more pronounced rate reductions in south Idaho.

TABLE XXVI: RESPONSES OF COUNTRY ELEVATOR OPERATORS IN MONTANA INDICATING WHETHER THEY HAVE MADE ANY SIGNIFICANT CHANGES IN THEIR FACILITIES OR MARKETING PRACTICES BECAUSE OF INCREASED USE OF TRUCKS, BY AREA, 1961-62.

Area	Operators made major changes		Comments (If yes) <u>a/</u>
	Yes	No	
	Number	Number	
Northern	5	19	Installed a spout to load trucks (3). Addition of truck loading facilities (1). Now holding grain until truckers arrive (1).
Eastern	3	17	Installed large scale for semitrailers, and truck loading spout (1). Truck loading spout was installed (1). Remodeling was required to load trucks (1).
Southern	6	7	Installation of truck loading spout in 1962 (1). Addition of truck loading facilities (2). In 1961-62, had to pick up grain on farm by truck, as well as install truckloading spout (1). Installed outside truck loading spouts (1). Have installed truck loading spout (1).
Total	14	43	

a/ Numbers in parentheses indicate the number of times the comment was reported.

Proposed Changes in Transportation Legislation

In his initial transportation message to Congress in April 1962 and again in 1963, the late President Kennedy recommended changes in the present transportation regulatory policy. Specific attention was directed toward present policies concerning the transportation of bulk and agricultural commodities. He emphasized the need for an equally competitive opportunity for all carriers, with less regulation in some respects and Federal assistance in others. He pointed out two specific inequities. The bulk exemption as defined in Part III of the Interstate Commerce Act provides water carriers with an advantage over the other modes of transport which should be removed. He suggested, as a first choice, the extension of this bulk exemption to the other carriers or, as a second choice, the placing of all carriers under equal regulation through repeal of the bulk exemption. In addition, he advocated the extension of the exemption of agricultural and fishery products, now available only to motor carriers and freight forwarders, to all carriers.

In both messages, the President suggested that should the exemptions be extended to all carriers, control of maximum railroad rates should be retained by the Interstate Commerce Commission along with other controls necessary to protect the public interest in areas where effective truck competition may not be present. Legislation aimed at accomplishing these recommendations were introduced in both legislative branches in 1962 and 1963. However, the legislation never came to a vote.

In February 1964, a bill was introduced into the House of

Representatives that would deregulate agricultural commodities. 9/ This bill

"...would extend to railroads, domestic water carriers and freight forwarders the exemption now applicable to the transportation of agricultural commodities (including grain) and fishery products by motor carriers." 10/

In effect, railroads would be placed on equal footing with motor carriers when transporting unmanufactured agricultural commodities with no regulations as to rates charged. One stipulation pertinent to the carriage of agricultural products would require that both rail carriers and motor carriers submit to the Interstate Commerce Commission a statement of the commodity hauled, the rate charged, and the origin and destination of the shipment within 30 days after the service was performed. However, this bill was killed in May, 1964, when the Rules Committee failed to clear it for consideration by the House of Representatives.

9/ Representative Harris, Transportation Amendments of 1964, House Bill Number 9903, reported out February 6, 1964.

10/ "Rep. Harris Introduces as 'Clean' Bill 'Transportation Amendments of 1964'", Traffic World, Vol. 117, No. 6, Feb. 8, 1964, p. 23.

CHAPTER VI

AN ANALYSIS OF DATA FURNISHED BY COUNTRY ELEVATORS

Motor carriers are being used to transport more grain from country elevators. The data collected from the sampled country elevator operators show that truck shipments of nongovernment grain increased from 20 percent to 27 percent of the total during the 3-year period 1958-59 through 1960-61. While this is a relatively small increase--just over 2 percent a year--country elevator operators are using motor carriers more for transporting grain. Although the time period is too short to determine a trend, truck shipments from all areas of the state are increasing both relatively and in volume. While the relative volume increased by 17 percentage points during the 3-year period, actual volume increased about 47 percent.

There are several factors that might be considered in determining the increased usage of trucks relative to rail usage. These factors can be included in two broad categories, service and rates.

Service factors include the functions of the carriers, the equipment that is provided to shippers, and the method and efficiency with which the carrier performs its functions. When comparing the service factors of motor carriers and rail carriers, it becomes fairly obvious that service is not significantly important in causing more grain shipments by truck.

The truckers who haul grain include private, exempt for-hire and regulated carriers. Private carriers were operated by a number of firms. Chain grocery firms based both in Montana and other states transport grain as a backhaul. Their trucks bring in fresh produce and other grocer items

from Washington, south Idaho, Utah, Minnesota, and other states, and for their return haul, transport grain back to the area from which the trucks originated. In the case of one Montana grocer firm, its trucks transport grain to the area where produce is picked up, usually south into Idaho and Utah. Chain hardware firms operating in the state also transport grain as a backhaul, and their trucks usually originate from outside Montana. Exempt for-hire carriers who transport grain out of Montana are most often based in other states, particularly Washington, California, Idaho, and Utah. They transport fresh produce into Montana and Canada in season, and take grain as a backhaul. Contract haulers from Washington and Oregon bring lumber and other commodities into Montana and make return hauls with grain. Common carriers operating in Montana will accept loads of grain for return hauls rather than dead-head an empty truck, but grain is usually a second choice.

As a rule, the elevator operators do not obtain trucks through any organized channels. Truckers delivering commodities to a particular area will contact elevator managers for a load of grain going to the particular area to which they wish to return. At times, it becomes necessary for elevator operators to post notices on bulletin boards of local truck-stops when in need of a truck and none are available.

Elevator managers stated that no destination area is served by truck with any regularity. During the season when truck movement into Montana is heavy from Washington and Oregon, return hauls of grain will be heavy to the North Coastal area, but is not constant throughout the year. This is also true for other destination areas of Montana grain.

Rail service in the grain producing areas is provided by four major railroads. Three provide rail connections for grain shipments moving East or West from Montana origins, and one connects Montana origins with southern points. Rail service is available to all destinations and at all times. Since the railroads are required to provide a minimum of service they are more dependable. They operate on schedules, have freight agents in most communities; they are dependable and financially reliable. Grain shipments by rail can be shipped directly to a destination, or they may be shipped on transit rates which allow the grain to be handled before reaching its final destination.

From an observation of service factors, rail carriers appear to be the ideal method of shipping grain, and for this reason most grain shippers prefer to move grain in rail cars. One disadvantage to rail shipments is the time involved in moving grain to a terminal market. A rail car may not be delivered for several days, whereas trucks may make a similar trip in a matter of hours.

The second factor important to grain shippers is the rate charged by the carrier or the cost of moving the grain to the destination. Truck rates are the lower for grain movement. Figures 2 and 3 show nonlinear curves of rail rates and truck rates to eastern and western destinations. (See Appendix B for explanation of nonlinear derivation.) These curves, based on actual rail and truck rates indicate that for intermediate distance, truck rates are appreciably lower than rail rates. However, as distances increase, the differential tends to decrease, indicating that truck rates tend to begin to lose their competitiveness for distances

greater than about 800 miles. Table XXVII shows the data on a per-bushel cost basis per mile.

Rates of both railroads and trucks are higher for westbound grain shipments from Montana than origins in neighboring states. Even though the distance from Montana origins is greater, the rates are higher also on a bushel-mile basis. For instance, the rate per bushel-mile (the cost of moving one bushel of grain one mile) is .046 cents for a distance of 350 miles from an origin in Washington, while the rate is .081 cents per bushel-mile from a Montana origin 400 miles from the West Coast.

Freight charges for grain shipments eastward from Montana are similar to those for westbound shipments (Table XXVII). Grain moves predominantly from Montana into Duluth-Superior and Minneapolis-St. Paul, with lesser amounts going to other North Central destinations. The eastbound rail rates are higher than westbound rates, and the difference varies from about 1 to 2 cents, depending upon the distance. Truck rates for eastbound shipments are higher than those for westbound shipments, ranging from 2 to 3 cents per bushel more. Compared to the rail and truck rates in Idaho, Wyoming, Washington, and Oregon, Montana rail and truck rates are highest for the distance involved.

Theoretically, freight rates increase as the distance increases, but at a decreasing rate. Short hauls should therefore command a higher rate per unit-mile than long hauls. However, in the case of grain rates, several variable factors alter this theory, so that actual rates do not follow the theoretical plan. In Montana, competition between rail and truck carriers is not totally effective and freight rates are more nearly adjusted

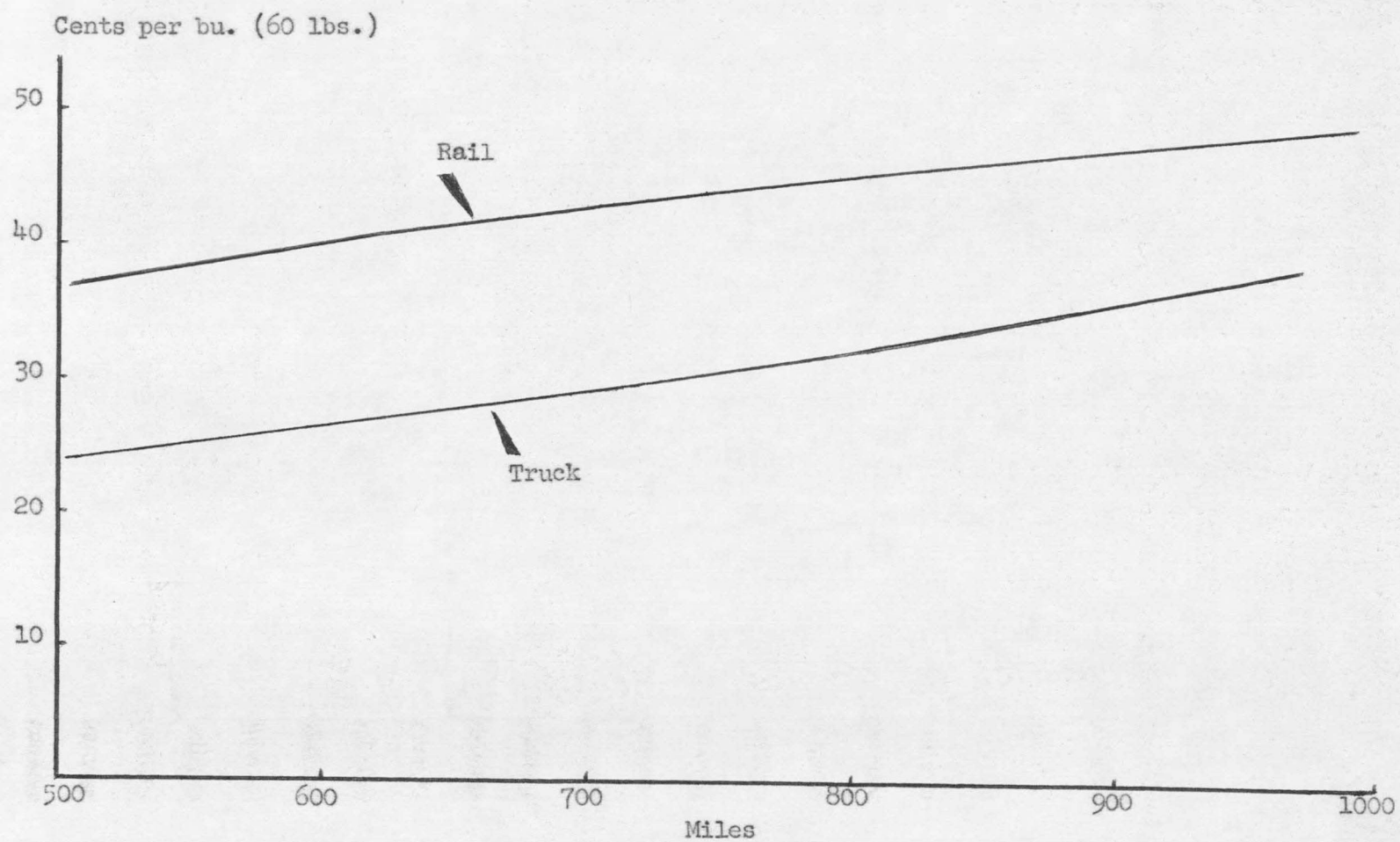


Figure 2. Grain rates by rail and truck from origins in Montana to Northwest Coast ports.

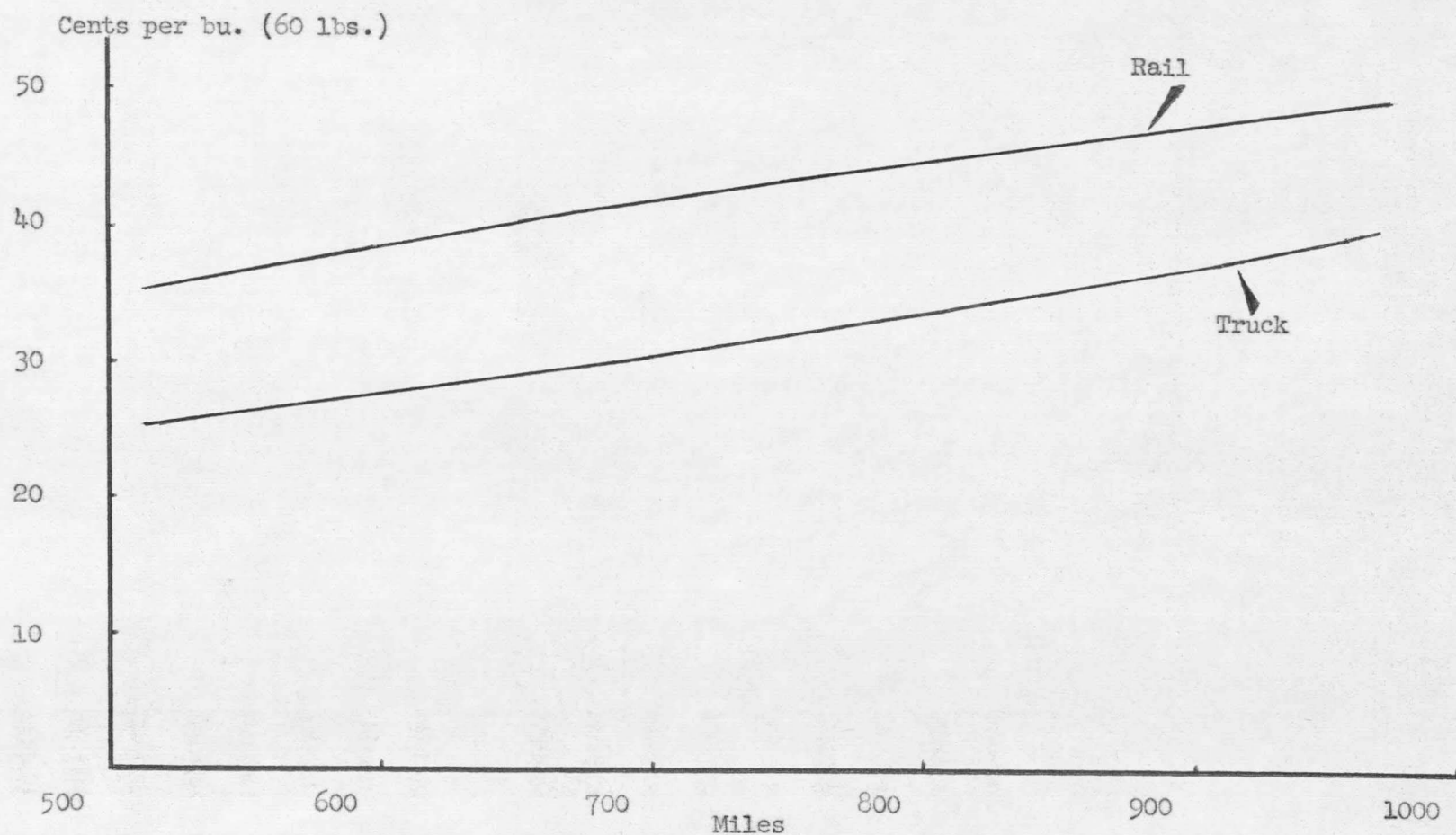


Figure 3. Grain rates by rail and truck from origins in Montana to Minneapolis and Duluth, Minn.

TABLE XXVII: COMPARATIVE FREIGHT RATES FOR SHIPPING GRAIN TO WEST COAST PORTS AND MIDWESTERN TERMINALS IN CENTS PER BUSHEL-MILE, BY MILEAGE BLOCKS, AND MODE OF TRANSPORT, 1961-62.

Miles	Shipments eastbound from:				Shipments westbound from:					
	Montana		Wyoming		South Idaho		Montana		Washington-North Idaho	
	Rail Cents	Truck Cents	Rail Cents	Truck Cents	Rail Cents	Truck Cents	Rail Cents	Truck Cents	Rail Cents	Truck Cents
150	-	-	.116	.044	-	-	-	-	.083	.087
200	-	-	.101	.043	-	-	-	-	.069	.068
250	-	-	.089	.041	-	-	-	-	.058	.056
300	-	-	.079	.040	-	-	-	-	.051	.049
350	-	-	.071	.039	-	-	-	-	.046	.044
400	-	-	.065	.037	-	-	.081	.053	-	-
450	-	-	.060	.036	-	-	-	-	-	-
500	-	-	-	-	-	-	.074	.048	-	-
550	.066	.047	-	-	.050	.053	-	-	-	-
600	.063	.046	-	-	.048	.050	.067	.045	-	-
650	.061	.044	-	-	.046	.047	-	-	-	-
700	.059	.043	-	-	.045	.044	.061	.042	-	-
750	.057	.042	-	-	.043	.042	-	-	-	-
800	.055	.041	-	-	.042	.039	.056	.040	-	-
850	.053	.040	-	-	.042	.037	-	-	-	-
900	.051	.040	-	-	.041	.036	.051	.039	-	-

to what the traffic will bear. 11/

In practically all cases, motor rates for grain shipments do not reflect full costs. Most of the truck shipments of grain from country elevators are return hauls, and the lower truck rates indicate that backhaul rates are charged by the truckers. Common or contract carriers, exempt for-hire truckers, and private carriers transported practically all trucked grain (88 percent), and generally this was backhaul movement. Because of the predominant backhaul movement of grain, truck rates do not maintain a true relationship to full costs, but tend to be regulated by the level of rail rates.

The truck rates from origins in Montana, when expressed in graphic terms, increase at a per-bushel rate relative to the prevailing rail rates. The truck rates, ranging from about 10 to 12 cents below rail rates are probably lower than need be to remain competitive. There are several factors that might be significant in determining the lower truck rates for transporting grain.

- (1) Grain transported by truck is a backhaul movement, and the trucker is not entirely dependent upon getting full cost return for the grain haul.
- (2) Not only do truckers have competition from railroads, but must also compete with each other. Since grain is an exempt agricultural commodity, and is used by all types of truckers as a

11/ "What the traffic will bear" refers to the volume of traffic that can be transported by the carrier and yield the highest gross revenue.

backhaul, the presence of such trucker types as those owned by private firms seeking a backhaul could, although they would not, set rates so low that they would cover nothing more than the out-of-pocket costs for that particular haul. In other words, rate could reflect only the added extra cost of transporting the load of grain.

- (3) These lower truck rates indicate that truckers are generally serving only those areas where two-way hauls are available. For shipments to areas where return hauls are not available, the truck rates will reflect the full cost of the two-way trip.

In discussing the factors that determine the motor carrier rate level for grain, it was indicated that the rail grain rate level was the upper limit of truck rates. Truck rates will tend to find a level below that of rail rates, but the minimum motor carrier grain rate level is determined also by the competition among the motor carriers themselves. Since the rail rate structure and theories of rate making are very complex, a discussion of factors affecting the rail rate structure will be confined to grain rates, and some of the factors most obvious to the rate level for Montana.

Grain is shipped at commodity rates and these rates are usually special point-to-point rates. They are not built upon any systematic basis but are adjusted to meet the needs of a particular shipper's locality, or competitive condition. Although these rates may have at one time been based on class rates, the influx of competition among railroads and between railroads and motor trucks have altered them. Other factors are also used in

determining the rate level, such as consideration of the characteristics of the commodity and the characteristics of the haul. Important commodity characteristics include handling of the commodity, its susceptibility to loss and damage, its value, and whether it is a finished or raw commodity. The characteristics of grain are such that rates for moving it have been adjusted downward, becoming more favorable for grain shippers.

In Montana, the characteristics of the haul are less favorable. Common characteristics of the haul that are used in determining rates are distance, operating conditions, whether the haul is over the route of more than one carrier, the traffic density, and empty-car movement.

Country elevator operators shipping grain from Montana are at a disadvantage because of the distance involved. Montana is on the fringe of the population centers, whether east, west, or south. Grain is also produced in areas nearer these population centers and Montana producers must compete with these other areas, while handicapped by greater distance and the resulting higher rates. Table XXVI shows mileages from Billings and Great Falls to selected major markets of first destination for grain shipments. To the West, Montana producers must compete with Idaho, Washington, and Oregon producers, Idaho and Wyoming in the South, and the Dakotas, Minnesota, Nebraska, and other North Central States in the East.

TABLE XXVIII: DISTANCES IN MILES FROM BILLINGS AND GREAT FALLS TO SELECTED MARKETS OF FIRST DESTINATION FOR GRAIN SHIPMENTS.

Destination	Origin <u>a/</u>	
	Billings miles	Great Falls miles
Seattle, Washington	868	727
Portland, Oregon	934	794
San Francisco, California	1,197	1,234
Ogden, Utah	526	644
Denver, Colorado	580	816
Omaha, Nebraska	934	1,170
Minneapolis, Minnesota	834	1,018

a/ Mileages determined from road map prepared by the H. M. Gousha Company, Chicago, Ill.

Differences in carrier operations are reflected in the rates charged for transportation. Operating conditions which affect carrier expenses include heavy grades, sharp curves, heavy snow, extremely low temperatures and other adverse weather conditions. In Montana, such conditions are prevalent and are probably considered by the rail carriers in establishing grain rates. Traffic density and empty-car movement into Montana are further unfavorable characteristics. Since Montana is a surplus state in terms of raw materials, while having a relatively small population demanding finished goods, much more equipment is needed to transport commodities out of the state, compared to the number of loaded cars entering the state.

Conclusions

Under the present conditions existing in Montana, grain shipments from country elevators are more suitable for movement by rail car. The railroads are the established carriers, and the grain marketing structure has developed around rail transportation. Railroads provide the most reliable, and dependable service and they have developed much of their service to meet the needs for grain transportation.

Trucks, on the other hand, are late-comers in the area of grain transportation. They have provided the greatest amount of competition through lower rates, which could be expected to draw a share of the grain transported by rail carriers. From the standpoint of service, truck competition has probably been less effective. No doubt, a great deal of the grain transported by truck is overflow grain resulting from seasonal shortages of box cars. Trucks serve to relieve the periodical box car shortages. To some degree, the fact that truckers offer faster service may have encouraged shipments by truck, but speed of delivery is not an extremely important factor in the marketing of grain.

The present trend in grain movement is not sufficiently positive to say that trucks are becoming of such importance in the transportation of grain to expect any major changes in the grain marketing structure because of increased truck shipments. The reliance of truckers upon grain as a backhaul indicates that truckers are not operating in the state because of a large volume of grain in the area for movement by truck, but grain is being transported incidentally to other transportation performed by truckers. Rail rate reductions made in Montana since 1960 have forced truckers

to reduce their rates further in order to continue to haul grain. In some areas of the state, rail rates have become so low that truckers are finding it more difficult to continue to compete with railroads for grain on the basis of rates.

Country elevator operators in Montana are faced with the problem of competing with grain shippers in areas nearer the markets. Because of greater distance and resulting higher rail freight rates, elevator operators and the Montana grain producers receive a smaller share of the market price for grain. Lower grain rates from Montana would tend to narrow the price differential between the Montana producers and those located nearer the markets. However, rail freight rates for grain, based on the optimum rate level at which the largest volume of grain moves, would not be expected to be lowered appreciably unless the railroads could be convinced that the lower rates would produce an equal or higher net revenue than is being received at present. In the western half of the state, truck competition has undoubtedly effected lower rail rates. The reduced westbound rail rates have influenced rail carriers to reduce eastbound rates because of the increased differential between western and eastern market prices at the origin points. To this extent, truck competition has been effectual in causing rail rate reductions, both for westbound and eastbound shipments. Should truck shipments from country elevator origins continue to increase, the railroads may be encouraged to initiate further reductions.

Efforts on the part of various members of Congress during the past few years indicate that the sentiment is building to change the present laws governing the regulation of transportation. The attitudes appear to lean

toward less, rather than increased regulation. Should the railroads be freed of regulation, at least in the movement of agricultural commodities, they will be able to adjust their operations more effectively to fit the shippers' needs.

APPENDIX

APPENDIX A

GLOSSARY

Car turn-around time. The total time required for a rail car to be loaded, shipped to a destination, unloaded and delivered to a shipper.

Cooper. To prepare a rail car for loading. For grain shipments, cooping entails the patching and sealing of the box car, and installation of grain doors.

Demurrage. A charge for the undue detention of cars held by a shipper or receiver, held beyond the specified free time.

Diversion or reconsignment. Any change of consignee, consignor, route or destination made while the shipment is enroute to its original consignee or destination, or any other change that requires a change in billing or additional movement of the car, or both.

Rail siding. A spur track. Track of indefinite length extending out from a main line, and next to which one or more firms may be located.

Rates:

Export. Rates published to a port only on traffic destined to a foreign country, or an insular possession of the United States.

Proportional. A rate specifically published to be used only as a factor in making a combination through rate. A rate published from Billings, Montana to Jamestown, N. D. to apply only on traffic transported previously by rail to Billings, and destined to points beyond Jamestown by rail would be a proportional rate.

Through. A total rate from the point of origin to destination.

Transit. A proportional rate. It permits the commodity to be stopped at a point located between the origin and destination for storage, processing, or mixing, and forwarding at a later date at the balance of the through rate.

Trip-leasing agreements. Agreements between nonregulated motor carriers and regulated motor carriers where the nonregulated carrier agrees to transport regulated commodities from an origin to a destination in the name of the regulated carrier.

APPENDIX B

Population and Sampling Procedure

The design of this thesis follows a survey of grain transportation in the Northwest Region by the United States Department of Agriculture, in accordance with the Budget and Finance Division of the Agricultural Marketing Service. ^{12/} For this reason, the following description of the thesis design is a description of the Northwest grain transportation survey, which included Montana along with Washington, Oregon, Idaho, and Wyoming. However, the Northwest survey was conducted in two phases. Phase I covered country elevators located in the five states of the survey, and Phase II covered terminal elevators and processors. This thesis will be concerned only with the country elevator phase of the survey.

Country elevators were defined as grain merchandisers who received more than 50 percent of their grain from farmers and shipped more than 50 percent of the grain in its original form. Any elevators that received less than half their grain from farmers, or shipped less than half their receipts as raw grain were excluded from the sample.

The population of country elevators from which the sample was drawn consisted of a listing estimated to include 90 to 95 percent of the entire universe of country elevators. The listings were obtained from the United States Department of Agriculture's Agricultural Stabilization and Conservation Service lists of government licensed warehouses eligible for handling and storing Commodity Credit grain. In order to get a widely disbursed

^{12/} Acceptance of the procedure was agreed upon prior to the enrollment of the author in the graduate program at Montana State College.

sample of the country elevator population, the counties in the five states were stratified according to the number of elevators per county. Utah was originally included as one of the Northwest States; however, all elevators sampled in that state were excluded because they did not come under the definition of country elevators.

There were a total of 135 counties in the six Northwest States (Idaho, Montana, Oregon, Utah, Washington, and Wyoming) that had one or more country elevators. These counties were stratified into the following groupings: 76 counties with 1 to 5 elevators, 49 counties with 6 to 20 elevators, and 10 counties with over 20 country elevators. It was decided to select a 25 percent sample of the elevators in the population. This decision was based on past experience gained from a previous grain transportation survey, 13/ the amount of manpower estimated to be available, the costs that would be incurred, and an estimated allowance for about 5 percent of the elevators that would be eliminated. The entire 6-state area was sampled at one time, rather than sampling each state individually. The counties with from 1 to 5 country elevators were arranged alphabetically, and every other county was chosen. Five more counties were eliminated through selection of country elevators because these counties had only one elevator. The country elevators within each town were arranged alphabetically, and the towns. Starting with a random number, the country elevators were counted continuously, and every second elevator was chosen to be a sample elevator.

13/ Haldeman, op. cit., page 28.

The 49 counties with 6 to 20 country elevators, the towns and elevators, were listed alphabetically, and every fourth county was eliminated. In the remaining 37 counties, every third country elevator was selected to be in the sample. The remaining 10 counties with over 20 country elevators were arranged alphabetically, as were the towns within the counties, and the elevators, and every fourth elevator was selected to be included in the sample. As a result of this sampling procedure, 92 country elevators in Montana were selected from a total of 365. Out of the 92 sample elevators, 57 operators furnished usable questionnaires. This was 16 percent of the population of government approved country elevators in Montana. For purposes of providing a more comparative picture, the counties containing sample elevators were divided into three geographic areas within the state. The Northern section includes counties in and around the Triangle area, the Eastern section includes those counties east of Phillips and Yellowstone Counties, and the Southern section includes Yellowstone, Stillwater, Park and Gallatin Counties. This division, based on a sight-judgement, separates the counties into groups having certain transportation characteristics in common, and is used for various comparisons throughout the thesis.

Interview Procedure

Before making the personal interviews with the elevator operators, the questionnaires were mailed with a letter explaining the purpose of the survey, and stating that an interviewer would call in a few days. The interviewer's task was to call upon the elevator operator, check the answers, and pick up the questionnaire. If necessary, the interviewer would assist the country elevator operator in completing the questionnaire.

APPENDIX C

DERIVATION OF RATE CURVES FOR GRAIN SHIPMENTS FROM MONTANA

Regression curves showing the rail and truck rates were derived from actual rates between selected origins and destinations (Figures 2 and 3). The truck rates were taken from the questionnaires as reported by the country elevator operators. The rail rates were obtained for comparable origins and destinations from published railroad tariffs.

The formula $y = ax + bx^2 + cx^3$, where y equals distance in miles, and x equals cents per bushel, was used to determine the curves. The rates from an originating area to a group of related destinations was arranged according to distance, rates, and clustering of points. The clusters were divided into three groups. Averages were taken of the groups and the values (means) given to y and x for three equations, so that values for the a , b , and c determinants could be found. The groups were selected by inspection using those mileage distances which were comparatively similar, considering the rates charged. From the values obtained for determinant a , b , and c , the regression points were obtained. The rate x was assumed and y was the unknown. The points obtained from the solution of the formula $y = ax + bx^2 + cx^3$ using the derived values of a , b , and c , with x assumed, were plotted on the graphs shown in Figures 2 and 3.

The following tabulation shows the values obtained for the determinants a , b , and c , for plotting the rail and truck rate curves.

Destination and carrier	Derived values for determinants		
	a	b	c
To Minneapolis-Duluth:			
Rail	-30.35474	1.75596	-.01504
Truck	-210.33687	14.71704	-.22974
To Pacific Coast:			
Rail	239.42066	-10.37510	.12118
Truck	204.58097	-10.99268	.16613

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