



Transportation of livestock in Montana
by Jack Richards

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:

The relevant factors of the economics of transportation of livestock, in Montana was considered in this research project.

The pattern of intrastate and interstate livestock movements and mode of transportation used was utilized to determine the need for livestock transportation in Montana. A survey of truckers was completed to determine available facilities from this source, and railroad companies were contacted relative to rail livestock transportation. Truck rate data were obtained during the survey of truckers and rail rate data were submitted by the Montana Railroad Commission.

Rail and truck rate structures were examined to determine if any significant differences exist. Cost and efficiency of rail vs. truck livestock transportation was also appraised, and the implications of this situation for Montana livestock producers.

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At some undefined trip length, competition will shift to involve long-distance trucking firms and railroad companies. Factors affecting the range of rail vs. truck competition include weight of animals, services desired, and the availability of a back-haul for trucks. Both truck and rail firms have sought to alter this competitive situation by innovating new types of equipment and new services, Montana producers benefit from competition in livestock transportation, and apparently are rewarded most when this competition centers on service. This occurs when long-distance trucking firms seek to match railroad rates and thus rail vs. truck competition will shift to service factors.

In order to do this, truckers must seek to maximize payloads, and thus are at a disadvantage since Montana exports mostly top-quality but light-weight feeder animals. For this reason, rail transportation is slightly more important to producers for long-distance shipments than truck transportation of livestock.

For the most part, Montana producers have adequate and efficient facilities available to serve their needs, and the future growth of the state's livestock and related industries is not likely to be retarded by lack of transportation facilities. Although there are elements of instability present in Montana's livestock-transportation industry, this is not likely to prevent the supply of ample facilities.

TRANSPORTATION OF LIVESTOCK IN MONTANA

by

Jack Richards

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A Thesis

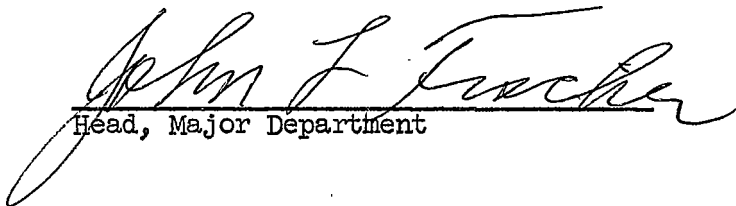
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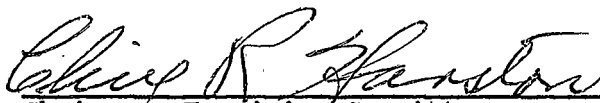
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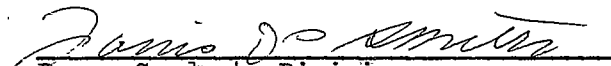
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ABSTRACT

The relevant factors of the economics of transportation of livestock in Montana was considered in this research project.

The pattern of intrastate and interstate livestock movements and mode of transportation used was utilized to determine the need for livestock transportation in Montana. A survey of truckers was completed to determine available facilities from this source, and railroad companies were contacted relative to rail livestock transportation. Truck rate data were obtained during the survey of truckers and rail rate data were submitted by the Montana Railroad Commission.

Rail and truck rate structures were examined to determine if any significant differences exist. Cost and efficiency of rail vs. truck livestock transportation was also appraised, and the implications of this situation for Montana livestock producers.

Virtually all local hauling is done by truck although intense competition often exists between farm trucks and commercial trucking firms. At some undefined trip length, competition will shift to involve long-distance trucking firms and railroad companies. Factors affecting the range of rail vs. truck competition include weight of animals, services desired, and the availability of a back-haul for trucks. Both truck and rail firms have sought to alter this competitive situation by innovating new types of equipment and new services.

Montana producers benefit from competition in livestock transportation, and apparently are rewarded most when this competition centers on service. This occurs when long-distance trucking firms seek to match railroad rates and thus rail vs. truck competition will shift to service factors. In order to do this, truckers must seek to maximize payloads, and thus are at a disadvantage since Montana exports mostly top-quality but light-weight feeder animals. For this reason, rail transportation is slightly more important to producers for long-distance shipments than truck transportation of livestock.

For the most part, Montana producers have adequate and efficient facilities available to serve their needs, and the future growth of the state's livestock and related industries is not likely to be retarded by lack of transportation facilities. Although there are elements of instability present in Montana's livestock transportation industry, this is not likely to prevent the supply of ample facilities.

CHAPTER I

INTRODUCTION

Livestock Transportation in Montana^{1/}

An adequate, stable, and efficient transportation system for livestock and meat is essential to Montana for the continued growth of the state's livestock and related industries. Not only is transportation indispensable in enhancing the potential for benefits from trade with other regions of the nation, but it is also a vital element in lowering cost of production within the state.

One of the basic requirements for market expansion is generally the physical movement of the goods. Thus, the full extent of market growth can be realized only when sufficient transportation is available, and when this transportation system is stable and efficient.

Transportation, therefore, can serve to advance such industries as livestock feeding, marketing and slaughtering within the state through providing the basic requirement for trade and market growth. At the same time, efficient transportation can lower the costs of production for these industries since transportation is often one of the basic production inputs. For example, transportation is needed to move the state's abundant feed supplies and feeder animals, and thus enhances livestock feeding within Montana. At the same time, livestock transportation is also vital to inter-regional trade that encourages feeding operations within the state.

Not only are existing industries cultivated by the expansion of marketing, but the potential for promoting the growth of new industries

^{1/} This research project is part of Montana's contributing project (MS 1068) to the Western Regional Project WM-37, "Economics of Transportation of Livestock and Meat in the Western Region". MS 1068 originated in 1957, with Dr. Hugh Winn as project leader. The project was revised in 1958, and in 1959 Dr. Elmer L. Menzie replaced Dr. Winn as project leader. Dr. Menzie was project leader until the Fall of 1961.

is strengthened. Trade tends to encourage specialization, and specialization lowers the cost of production which in turn invites trade. This results in an expanding market structure that facilitates inter-regional trade and encourages production specialization within Montana. While trade and specialization are likely to result in lower production costs, at the same time they are also likely to increase the costs of marketing. Improvements in the efficiency of transportation is one method of reducing marketing costs. As marketing costs fall, the benefits from trade that are possible for Montana livestock producers are likely to increase. 2/

Unless impediments exist, the flow of goods between two or more markets depends upon a price difference between the markets that is greater than the cost of transportation. Any improvements in transportation that reduces cost, or adds more to services than to costs, will add to the efficiency of transportation. As transportation becomes more efficient in the terms of reduced costs, and/or increased services, it increases the possible benefits from trade and production specialization. This should encourage the growth of existing industries as well as to stimulate the introduction of new industries in Montana. This process occurs as the result of the development of new markets as well as through greater penetration of existing markets because of lower costs of production.

As market expansion continues, the demand for Montana's livestock

2/ In this paper the term "livestock producer" is intended to represent the users of livestock transportation facilities by Montana's livestock industry. While this need may not be the same for all segments of the industry, there is no basis for differentiation of one segment from another. It is probably true that more long-hauls are required by those involved in marketing, feeding, or slaughtering, but this is by no means always the case and may be tending to become less true if direct marketing continues to grow in popularity. At the same time, most local hauling is probably done for ranchers, but here again this is far from universal. Thus the one term "livestock producer" is used to represent the users of livestock transportation facilities by the entire industry.

products can be expected to increase, both over space and time. An increase in demand tends to provide a higher general price level for livestock products and greater price stability. ^{3/} The importance of an increased price level and greater price stability to Montana livestock producers is apparent. The potential for such price improvements depends to a large extent upon the existing possibilities of production specialization and marketing. Transportation is important to both production and marketing of livestock.

Purpose of Study ^{4/}

The purpose of this study was to appraise and evaluate the structure of Montana's livestock transportation industry and its implications for Montana livestock producers with respect to adequacy, efficiency, and stability of existing facilities. This would include examining, describing, and comparing the structure of rail and truck transportation rates which prevail for the movement of feeder and slaughter livestock from representative Montana origins to the terminating local or terminal markets with respect to:

- (a) Intrastate movement of livestock
- (b) Interstate movement of livestock
- (c) Cost and efficiency of shipping by truck and/or rail

^{3/} It is recognized that benefits from efficiency in trading will be divided among consumers and producers according to relative elasticities involved and the terms of trade of producers and consumers. However, the author accepts the premise that the long-run demand for meat may be somewhat elastic and thus producers benefit in the long-run regardless of short-run results. The time involved for producer gain may likely be only a few years under current conditions.

^{4/} The objective of this study is only one portion of MS 1068 research project.

In addition to rates, the efficiency of transportation also includes service factors. Thus, both rate and service rail vs. truck competition is considered.

Research Procedures

Truck and rail livestock rates were obtained from representative points in Montana to both local and terminal markets serving as outlets for livestock produced in Montana. Rates were secured for feeder livestock and slaughter livestock of animals having economic significance in Montana. During 1960, eighty Montana livestock trucking firms were surveyed by Dr. E. L. Menzie. ^{5/} These trucking firms were located in almost all major areas of the state. Information was obtained on rates, types of service, and problems in trucking of livestock. Data on rail rates were submitted by the Montana Railroad Commission for 1960 and 1962 rates.

Secondary sources of information such as livestock trucking equipment, sales agencies, state and federal regulatory agencies and railroad agents, were contacted in 1962. In connection with this research on secondary data, a sample survey of livestock truckers was again undertaken where this was feasible without involving extensive additional travel. This sample survey in 1962 involved approximately 25 livestock truckers who were surveyed primarily to determine any changes that had occurred since the original and more comprehensive survey in 1960. During the 1962 sample survey, livestock truckers were also asked about their opinions concerning

^{5/} Dr. Menzie's survey in 1960 was the only complete survey of livestock truckers, but other relevant data were obtained during 1961 and 1962. The more current data was compared with 1960 data.

recent developments in the industry, current problems, and their outlook for the future of the trucking industry.

All rate information was analyzed with respect to variations throughout Montana. Comparative factors include:

- (a) Rate per ton-mile by truck and rail for varying distances. ^{6/}
- (b) Local haul rates vs. long-distance rates
- (c) Services rendered, time in transit, types of equipment, etc.

Rates per ton-mile for truck and rail were examined in order to determine which mode of transportation has the lowest rates at various distances. Secondary data concerning cost of additional services rendered by the trucking and railroad industries, time involved in transporting livestock, types of equipment used in handling the livestock and the adequacy of these services were considered. Also considered were short haul rate comparisons for various points within the state to indicate if there are significant differences. Long-haul rates were analyzed to determine if these differ significantly in cost to producer.

Special Data Involved in Project

The following clarification should be noted since it involved data used throughout this paper: In the 1960 survey, one trucker from Beach, North Dakota was included and this firm had two 38-foot semi-trailer units. Since it was indicated by this firm that most of its hauling was in Montana, this North Dakota firm is included in all data unless otherwise noted.

^{6/} A tabulation of rate data is presented as Appendices A and B of this paper. Appendix A lists truck and rail intrastate data. Appendix B is a tabulation of truck and rail interstate data.

Also involved in the 1960 survey was one large regulated trucking firm. This large firm purchased 18 livestock units and all of these were 40-foot semi-trailer units equipped with standard factory conversion panels that would allow these livestock units to be converted to dry-freights. However, this firm operates primarily outside of Montana and because of its size, might have all of its livestock units, or none of them, in Montana at any one time. It is impossible to evaluate how many, if any, of these units should be considered a part of Montana's livestock trucking facilities during the 1960 period on which the data is based.

During the 1962 sample survey of truckers, it was determined that this large firm had ceased hauling livestock as a part of its operations. Because of the difficulty in determining how many units to count as a part of Montana's available facilities, and because this operation has since been terminated, unless otherwise noted, this large firm was simply omitted from the tabulations.

CHAPTER II

MONTANA LIVESTOCK TRANSPORTATION--NEEDS AND FACILITIES

The Need For Facilities

Interstate Cattle Movements

Since 1958 over half of the total receipts from the sale of farm products in Montana has been derived from livestock and livestock products. Income from livestock accounted for 54.4 percent of Montana's farm income in 1960 and for 58.9 percent of the total farm income in 1961. 7/

Over a million head of cattle alone are shipped annually to the Midwest and other western states, and cash income from these cattle movements has been rising at a continuous rate in recent years (Table I). Montana ranchers, market agencies, and cattle feeders are all affected by the volume and form in which livestock and meat is exported from Montana (i.e., feeder cattle, slaughter cattle, or meat). Increases in cattle feeding and slaughter within Montana produce economic growth for the state, but regardless of the form in which the surplus meat production is exported, adequate transportation facilities must be available to do an efficient job.

At present, a major portion of the animals that are shipped to other states are feeder livestock, and marketing of this specialized product, as well as other livestock, makes an adequate transportation system imperative. Montana livestock producers must have sufficient transportation facilities to supplement the livestock industry of the state by moving surplus agricultural products to consumption areas.

7/ Montana Agriculture Statistics, Volume IX, December, 1962, and Volume VIII, December, 1960, USDA and Montana Department of Agriculture Cooperating, Helena, Montana.

TABLE I. MONTANA CATTLE AND CALVES--PRODUCTION, INCOME AND OUT-OF-STATE SHIPMENTS. *

Year	Cash Income	Calf Crop	Beef Cattle Population	Out-of-State Shipments
1953	\$ 90,444,000	1,044,000	1,984,000	779,524 ^{a/}
1954	108,070,000	1,089,000	2,131,000	855,386 ^{a/}
1955	109,622,000	1,141,000	2,229,000	896,990 ^{a/}
1956	136,293,000	1,151,000	2,329,000	1,307,534
1957	145,501,000	1,078,000	2,162,000	1,119,633
1958	190,044,000	1,106,000	2,100,000	1,086,491
1959	164,496,000	1,125,000	2,126,000	1,069,348
1960	174,708,000**	1,081,000**	2,113,000*	1,227,835
1961	166,048,000**	1,105,000**	2,028,000*	1,201,893**

* Source: Montana Cattle Movements, Clive R. Harston and Elmer L. Menzie, Unpublished Manuscript, Montana State College.

** Source: Montana Agriculture Statistics, Volume IX, December, 1962, USDA and Montana Department of Agriculture Cooperating, Helena, Montana.

^{a/} Estimated on basis of inventory births, farm and commercial slaughter, inshipments, and deaths.

An indication of the transportation required for interstate movement of livestock can be seen in Figure 1 which shows movements of cattle and calves in 1960 and 1961 by state of destination. In 1960, the total out-of-state cattle movement was 1,227,825 and in 1961 it was 1,201,893. Over 21 percent of the out-of-state cattle movement in both 1960 and 1961 went to Iowa. Illinois, Minnesota, South Dakota, and Nebraska combined, took another 40 percent of the out-of-state shipments during each of these two years (Table II). In recent years, there has been a significant shift in livestock shipments away from the West Coast to the Midwest, Plains and Mountain States. Combined shipments to California and Washington declined

from over 30 percent in 1946 to 6.5 percent in 1961 (Figure 12, page 58 and Table II). With over 60 percent of the cattle shipped to the big feeding states of Iowa, South Dakota, Nebraska, Illinois, and Minnesota, it is evident that many Montana cattle are going to destinations a considerable distance from Montana.

In most cases, the states located furthest away from Montana obtain cattle from general areas all over the state. All counties in Montana shipped some cattle to out-of-state destinations in 1960. Illinois, Iowa, Minnesota, and Nebraska received cattle from almost every county in Montana and the distribution between counties was relatively even. Iowa received cattle from 54 Montana counties while Illinois, Minnesota and Nebraska each had cattle shipments from 50 Montana counties. However, some distant states' cattle came from specific areas in Montana. Kansas, for example, received over 80 percent of its Montana cattle from the counties in the southern and eastern half of the state; Texas received 87 percent of its Montana cattle from the southern two-thirds of the state; and 91 percent of the cattle shipped to Colorado came from all sections of the state except the North Central. Oregon and Utah got 84 percent and 94 percent respectively from the western half of the state and California receives 80 percent from the western half with concentration in the southern part. ^{8/}

North Dakota received 89 percent of its Montana livestock from the eastern half of the state, mainly from bordering counties; South Dakota obtained 81 percent from the southeastern part; Idaho, 83 percent from the western half, and Wyoming received 88 percent from the southeastern parts of the state. ^{9/}

^{8/} "Montana Cattle Movements", Clive R. Harston and Elmer L. Menzie, Unpublished Manuscript, Montana State College.

^{9/} Ibid., pp. 10-11.

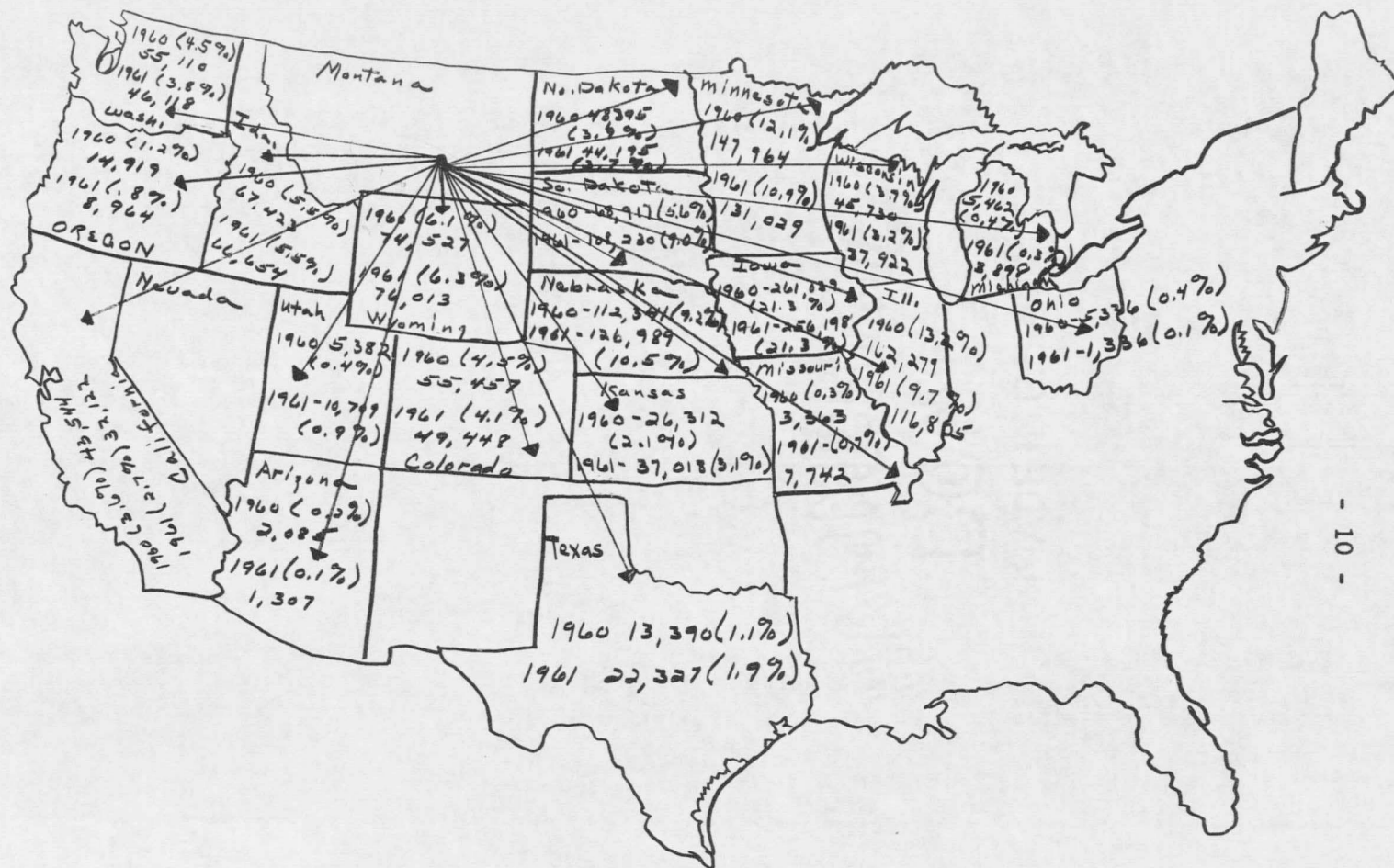


Figure 1. Number of Cattle Shipped and Percentage of Total by States of Destination in 1960 and 1961. *

* Source: Montana Department of Agriculture, Montana Agricultural Statistics, USDA and Montana Department of Agriculture Cooperating, Helena, Montana, Volume IX, December, 1962.

TABLE II. CATTLE SHIPMENTS OUT OF MONTANA BY STATE OF DESTINATION, 1960 AND 1961. *

State	Percent in 1960	Percent in 1961
Arizona	.2	.1
California	3.6	2.7
Colorado	4.5	4.1
Idaho	5.5	5.5
Illinois	13.7	9.7
Iowa	21.3	21.3
Kansas	2.1	3.1
Michigan	.4	.3
Minnesota	12.1	10.9
Missouri	.3	.7
Nebraska	9.2	10.5
North Dakota	3.9	3.7
Ohio	.4	.1
Oregon	1.2	.8
South Dakota	5.6	9.0
Texas	1.1	1.9
Utah	.4	.9
Washington	4.5	3.8
Wisconsin	3.7	3.2
Wyoming	6.1	6.3
All others	.7	1.4

* Source: Montana Department of Agriculture, Montana Agricultural Statistics, USDA, and Montana Department of Agriculture cooperating, Vol. VIII and Volume IX, Helena, Montana.

Intrastate Cattle Movements

In addition to the interstate movement of cattle, transportation must also be provided for the extensive movement of animals within the state. The extent of this movement in 1960 and 1961 is indicated in Table III where cattle movements into and out of counties are shown by crop reporting districts. These data, however, do not include movements within the counties themselves, but shows only movements into and out of the counties. Data are not available on cattle movements that do not cross county lines, but the extent of these in-county movements would also be important in determining the need for transportation facilities.

The combined cattle movements in 1960 and 1961, including both interstate and intrastate shipments, are demonstrated in Table IV by month of shipment. Although the data in Tables III and IV do not determine the exact need for transportation, they do serve to indicate the vast amount of livestock transportation facilities that are necessary to move Montana cattle, both in the state and to markets outside the state.

Transportation Needs for other Species

Although more information is available on cattle movements, (because of the necessity for brand inspection records which can be readily tabulated) adequate transportation facilities are also needed for the production and marketing of other species of livestock. However, because of this lack of data, it is more difficult to appraise the need for transportation in the production of other meat animals.

Montana ranked fifth in the United States in total sheep numbers with an inventory of 1,856,000 head on January 1, 1960. This figure decreased 6 percent during 1960 to an inventory of 1,768,000 head on January 1, 1961, and dropped another 11 percent from this figure during 1961.

TABLE III. CATTLE MOVEMENTS OUT-OF-COUNTIES AND INTO COUNTIES BY CROP-REPORTING DISTRICTS. *

District	Moved Out of Counties	Moved Into Counties	Net Movement Out-Of-District
<u>1960</u>			
Northwestern	178,952	57,996	120,956
Northcentral	252,867	83,731	169,136
Northeastern	189,997	71,491	118,506
Central	326,006	123,667	202,339
Southwestern	261,074	122,567	138,507
Southcentral	402,285	194,114	208,171
Southeastern	<u>259,637</u>	<u>77,339</u>	<u>182,298</u>
State Totals	1,870,818	730,905	1,139,913
<u>1961</u>			
Northwestern	173,204	68,465	104,739
Northcentral	299,480	111,459	188,021
Northeastern	225,061	72,893	152,168
Central	379,475	143,802	235,673
Southwestern	236,667	121,144	115,523
Southcentral	341,692	214,623	127,069
Southeastern	<u>257,476</u>	<u>79,163</u>	<u>178,313</u>
State Totals	1,913,055	811,549	1,101,506

* Source: Montana Agricultural Statistics, Volume IX, pp. 84-85, United States Department of Agriculture and Montana Department of Agriculture Cooperating, Helena, Montana, December, 1962.

On January 1, 1962, there were 1,576,000 sheep and lambs in Montana (including lambs on feed). Montana ranked seventh in the United States in total sheep numbers as of January 1, 1962. 10/

The number of hogs in Montana also decreased during this period. On January 1, 1960, Montana had 159,000 hogs, and this figure dropped to 151,000 by January 1, 1961, and to 148,000 head by January 1, 1962. 11/

Cattle and calf number in Montana also fell during the period January 1, 1960 to January 1, 1962, although drouthy conditions in the state were responsible for much of this decrease. On January 1, 1960, with a cattle and calf inventory of 2,428,000 head, Montana ranked as the 14th state in total cattle and calf numbers, but was seventh in the number of beef cows. During 1960, the cattle and calf population decreased 4 percent to 2,155,000 head on January 1, 1961; and during 1961 fell another 2 percent to 2,112,000 head on January 1, 1962. This was the smallest Montana cattle and calf inventory since January 1, 1952. Montana ranked 16th among the states in number of total cattle and calves on farms on January 1, 1962. 12/

Figure 2 indicates the number of each species of meat animals in the seven crop reporting districts of the state in 1960. 13/

10/ Montana Agricultural Statistics, op. cit., Vol. VIII, pages 11 and 94, and Vol. IX, pages 6, 7, and 8.

11/ Ibid.

12/ Ibid.

13/ 1960 data is used to correspond to the information on truck rates. Since the only complete survey of truckers was in 1960, other information is given in greater detail for this same time period.

TABLE IV. CATTLE SHIPMENTS OUT-OF-STATE AND MOVEMENTS IN-STATE BY MONTH OF MOVEMENT. *

Month	Shipped Out- Of-State	Percent Of Total	Movements In State	Percent Of Total	Total Cattle Movements	Percent Of Total
<u>1960</u>						
January	63,216	5.2	40,866	6.0	104,082	5.5
February	34,679	2.8	27,355	4.0	62,034	3.2
March	45,618	3.7	40,100	5.8	85,718	4.5
April	39,032	3.2	51,125	7.5	90,157	4.7
May	28,333	2.3	64,240	9.4	92,573	4.8
June	39,616	3.2	40,817	6.0	80,433	4.2
July	50,899	4.1	23,093	3.4	73,992	3.9
August	87,238	7.1	28,983	4.2	116,221	6.1
September	163,183	13.3	65,249	9.5	228,432	11.9
October	396,563	32.3	152,417	22.3	548,980	28.7
November	219,486	17.9	106,835	15.6	326,321	17.1
December	59,972	4.9	43,080	6.3	103,052	5.4
State Totals	1,227,835		684,160		1,911,995	
<u>1961</u>						
January	65,114	5.4	44,968	5.9	110,082	5.6
February	34,816	2.9	33,594	4.4	68,410	3.5
March	49,163	4.1	40,409	5.3	89,572	4.6
April	44,095	3.7	45,941	6.1	90,036	4.6
May	28,440	2.4	69,560	9.2	98,000	5.0
June	40,129	3.3	54,410	7.2	94,539	4.8
July	81,169	6.7	36,437	4.8	117,606	6.0
August	131,258	10.9	44,463	5.9	175,721	8.9
September	156,440	13.0	75,624	10.0	232,064	11.9
October	345,701	28.8	175,678	23.2	521,379	26.6
November	179,135	14.9	96,999	12.8	276,134	14.1
December	46,433	3.9	39,093	5.2	85,526	4.4
State Totals	1,201,893		757,176		1,959,069	

* Source: Montana Agricultural Statistics, Volume IX, p. 86, United States Department of Agriculture and Department of Agriculture Cooperating, Helena, Montana, December, 1962.

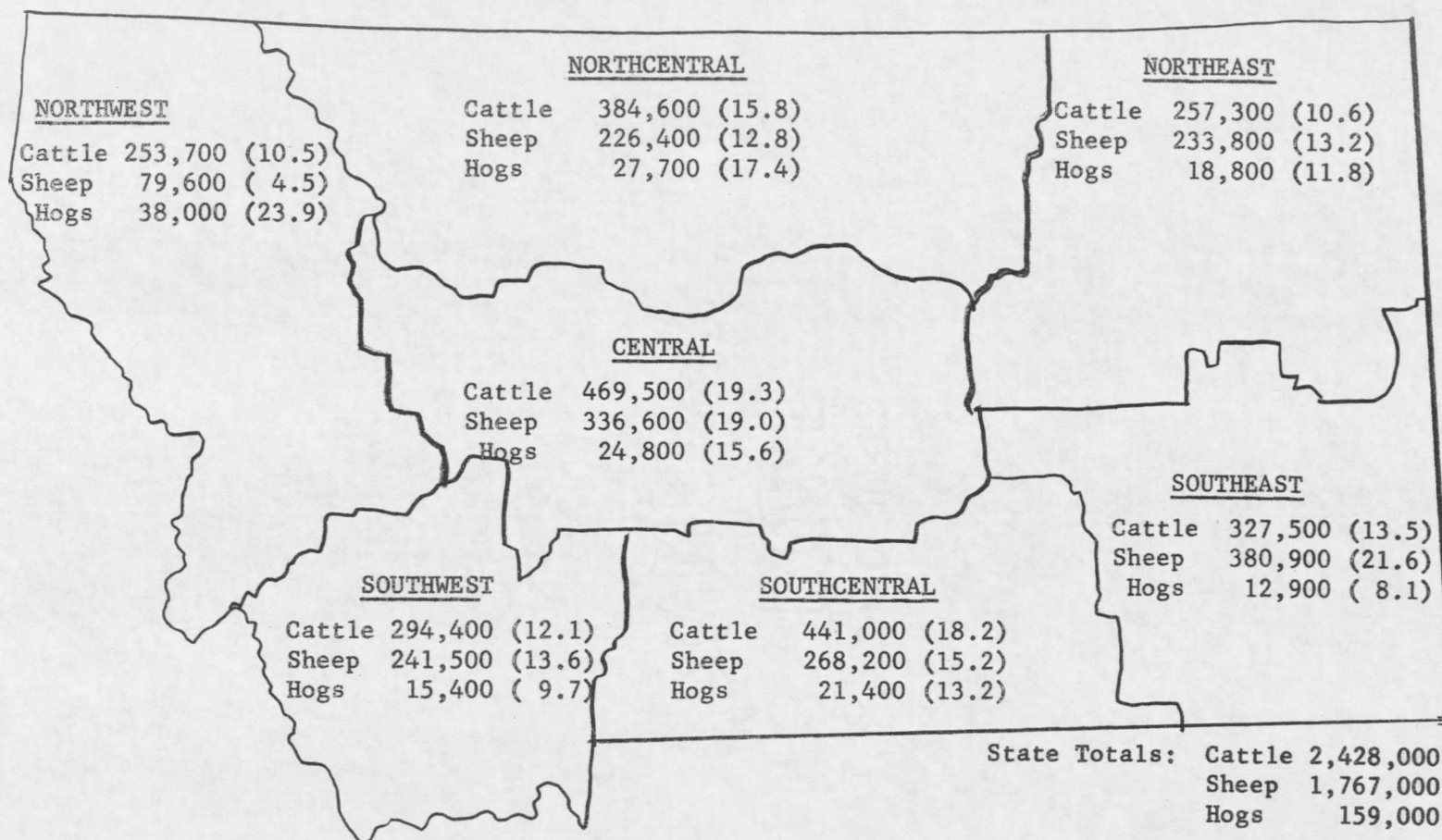


Figure 2. Location and Number of Montana Livestock, 1960, by Montana Crop Reporting Districts (number in parenthesis is percent of state total). *

* Source: Montana Agricultural Statistics, Volume VIII, December, 1960, op. cit.

Transportation Needs for Future Growth

Current trends toward market and meat packing decentralization indicate that these phases of the livestock and meat industry may be tending toward resource orientation for location rather than being market oriented. Changes in the feed supply and need for new enterprises may lead to more livestock feeding within the state and an increased interest in marketing and slaughtering activities within Montana.

At present, it appears that feedlot operations, slaughter, and consumption are nearly in balance within the state. The 89,000 cattle placed on feed in Montana in 1959 amounted to 80 percent of the total slaughter and the 122,000 placed on feed in 1960 was about 94 percent of the total slaughter (including farm slaughter). Based on an estimated consumption of beef of 95 pounds per capita and veal of five pounds, total feeding, slaughter and consumption are nearly in balance. 14/

However, a large share of Montana's fat cattle are shipped out-of-state and this leaves a deficit of locally produced slaughter stock. To cope with this problem, Montana meat packers fed an estimated 25,000 head of cattle in their own feedlots in 1960. This was approximately 20 percent of all the cattle fed in Montana that year. Over half of the packers in the state operated feedlots in 1960 to ensure a source of supply when needed and of the quality required. Most packers in Montana also appear anxious to have hog production increased within the state. Forty percent of the hogs slaughtered in Montana's commercial packing plants come from out-of-state markets. 15/

14/ The Market for Montana Cattle, Clive R. Harston and Elmer L. Menzie, page 3.

15/ Survival and Growth Potential of Small Meat Packing Business in Montana (Summary), Unpublished Ph.D Thesis by Charles Rust.

There is a considerable potential for expansion of markets for meat both from future growth within the state and from markets outside of the state. Montana should be in a relatively favorable position to absorb some of the projected market expansion, and the sale of two Montana federally-inspected meat packing plants suggests that packers in the area surrounding Montana feel that Montana is ready for expanded slaughter. ^{16/}

Although it can hardly be expected that Montana will suddenly become a major area of livestock feeding and meat processing, the potential for growth of these industries within the state is expanding. The ingredients are present in the form of surplus feed grains and feeder cattle for expanded livestock feeding within the state, and the present trends toward decentralized marketing and slaughter favor growth of Montana agriculture in these areas. Livestock transportation facilities are necessary to supplement the livestock industry of the state if the maximum benefit is to be derived from the growth potential that exists. Thus, Montana needs adequate transportation facilities to benefit from growth potential within the state as well as to obtain the maximum gain from marketing and trade with other areas of the nation.

Nearly half of the cattle movements in Montana are to transport cattle to feedlots, and 15 percent are to ship cattle to commercial slaughter (Table V). However, only 12 percent of cattle movements are cattle purchased by packers and 15 percent of the cattle were purchased by feeders. Order buyers purchased 20 percent of the cattle and dealer-traders 15 percent (Table VI). This indicates that while most of the movements were to send cattle to feed (47 percent), many of the purchasers were involved in direct marketing.

^{16/} Ibid.

Transportation Need Summarized

Montana's surplus production of livestock must be moved in some form to a deficit area for consumption. While more data is available on cattle movements, an enormous job of transportation must be accomplished for all species of meat animals. Current improvements in livestock transportation can both lower production costs and increase the gains possible from trade. In addition to these present benefits, ample and efficient transportation facilities enhance the potential for economic growth in livestock and related fields. Thus, Montana ranchers, feeders, market agencies, and meat packers all have an interest in an adequate, stable, and efficient livestock transportation industry.

Available Livestock Transportation Facilities

The Livestock Transportation Industry

There is a wide variation in the structure of firms and in the nature of competition between firms in the livestock transportation industry.

The commercial livestock trucking firm in Montana is primarily a small business concern. While these small firms are scattered throughout the state, there is often intense competition between firms. In addition to competition between commercial livestock trucking firms, these firms must also compete with huge railroad companies for long distance hauls, and with farm trucks for local hauls. The competitive situation, as will be pointed out later, is further complicated by the necessity of a back-haul in long-distance trucking. In this latter case, the commercial livestock trucker must compete with both railroads and other larger

TABLE V. MONTANA CATTLE MOVEMENTS, BY PURPOSE OF MOVEMENT, 1960. *

Moved To	Percent a/
Livestock Market	8.0
Change of Pasture	26.7
Feedlot	47.3
Slaughter, Home Use	0.2
Slaughter, Commercial	15.1
Railhead	2.4
Other	0.3

* Source: Harston and Menzie, Montana Cattle Movements, op. cit.

a/ Based on approximately 70 percent of the total animals moved.

TABLE VI. MONTANA CATTLE MOVEMENTS, BY TYPE OF PURCHASER, 1960. *

Purchaser	Percent a/
Rancher	9.0
Order-Buyer	20.4
Dealer-Trader	15.0
Packer	12.0
Feeder	15.4
Market Agency	0.1
Not Sold	28.1

* Source: Harston and Menzie, Montana Cattle Movements, op.cit.

a/ Based on approximately 76 percent of the total animals moved.

trucking firms holding a public utility franchise for available back-hauls. ^{17/}

There were 80 commercial livestock trucking firms contacted during the 1960 survey of Montana livestock truckers. Twenty seven of these eighty firms owned only one truck per firm, and nearly 60 percent of the firms owned two trucks or less (Figure 3). Only five Montana trucking firms owned six trucks or more in 1960 with one firm having seven units and one firm had eight. Although there is considerable difference in the value of the trucks involved, it is evident that Montana's commercial livestock truckers are small business concerns.

The livestock transportation industry, because of its wide variation in firm type, structure, and differences in competition is difficult to define. On the local scene, competition exists between commercial livestock truckers, farm trucks, and occasionally railroads. Farm livestock hauling is essentially a supplementary activity, intended to lower production costs. Commercial livestock trucking operations, on the other hand, probably are closer to monopolistic competition. Differences in location, types of equipment, insurance provided, services offered, operator skill, are just some of the factors around which a core advantage might be built in a commercial trucking operation.

In long distance operations, the constituents competing for business are commercial livestock truckers, railroads, and occasionally large regulated trucking firms who use livestock hauling as a supplementary source of income. However, the intensity of competition in livestock operations has eliminated large regulated firms from hauling livestock

^{17/} These "permits" as they are commonly called regulates the degree of competition that exists by commodities and by routes for most manufactured products. The affect of this regulation on livestock trucking will be discussed in Chapter III in the section entitled, "The Grey Area", page 44.

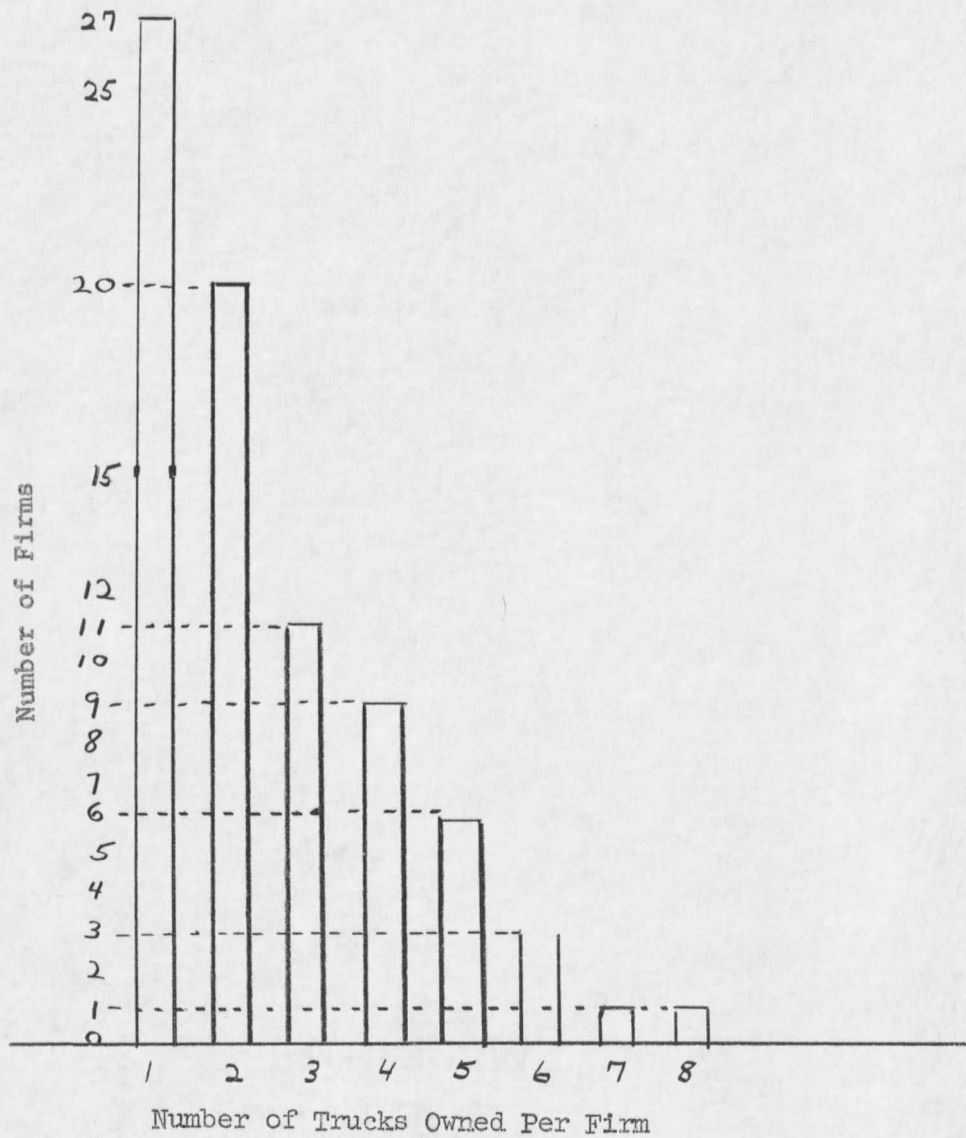


Figure 3. Number of Trucks Owned Per Livestock Trucking Firm, 1960.

in Montana and probably elsewhere to a great extent. 18/

While there was insufficient data to determine the competitive conditions exactly, it appears that local operations tend to revolve around competition between farmers and local livestock truckers. Hauls of an intermediate range, (e.g. 100 to 800 miles) go primarily to livestock truckers with railroad becoming more competitive as the trip length increases. Railroads are probably the most competitive form of livestock transportation on very long hauls, (e. g. those over 800 to 1,000 miles) especially if lighter animals are involved. The reasons for this competitive situation will be brought out in greater detail in later sections of this report.

The industry concept becomes even more complicated when considered in relation to external economies due to the development of the industry. For example, the livestock trucking industry has received external economies from the general trucking industry such as more powerful truck tractors, plush truck stops, better road conditions, etc. External economies can also be attributed to the livestock industry such as dehorned cattle, better loading facilities, and vaccinations to reduce shipping losses. Even in the case of rail shipments, such economies as fast livestock trains, etc., are due to a widespread growth of the entire railroad industry of which livestock shipments constitutes only a minor part.

Montana's Livestock Trucking Facilities

Eighty livestock truckers that were interviewed in 1960 survey owned a total of 199 specialized livestock hauling units that were engaged in

18/ During the 1962 survey, there were no large regulated firms hauling livestock in Montana. The one large firm that had been hauling livestock during the time of the 1960 survey, had ceased operations. When asked about this during the 1962 survey, this firm states that their livestock operations were terminated because they could not meet the intense competition in livestock hauling.

moving Montana livestock. In Figure 4, the number of livestock trucks available to supply the transportation needs of producers in each crop reporting district is shown. While it is recognized that trucks from outside these districts (and from out-of-state) can also be utilized for transportation, still Figure 4 indicates the amount of truck facilities that were permanently located and available within each of the state's crop reporting districts in 1960.

In order to correlate the need for livestock trucks with existing facilities, livestock number (Figure 2) in each crop reporting district are used to indicate the need for facilities. Although livestock numbers do not indicate the exact need for transportation facilities, they demonstrate the existing distribution of livestock in Montana. Data on livestock numbers and available truck facilities may be a very good indication of need if the present demand/supply situation for commercial livestock trucks is in balance, or nearly in balance. Comments on competition by truckers during the 1960 and 1962 surveys indicates that the supply of facilities varies from ample to over-supplied. However, truck owners would have to meet at least all variable costs in the short-run and all costs in the long-run. Therefore, it seems likely that the supply of facilities would tend to remain approximately equal to the demand since new innovations (such as equipment changes) and the depreciation rate on existing equipment would require that truck owners meet some fixed costs in a period no longer than a few years duration in most cases. Thus, livestock numbers and available truck facilities may be a fairly good indication of the need for, and the supply of, truck facilities in the different areas of the state. This information of livestock and truck numbers is recapped in Table VII.

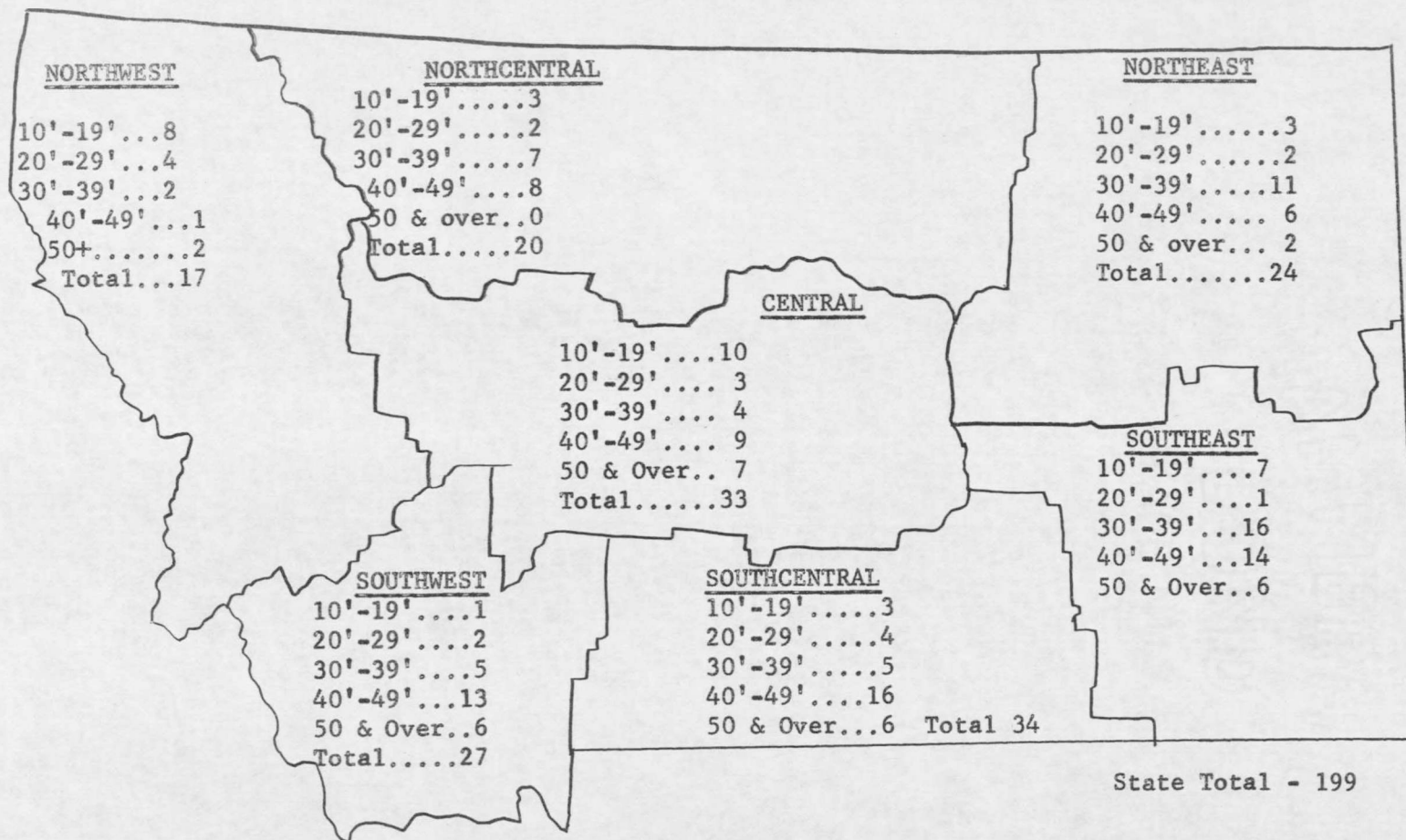


Figure 4. Trucks Available By Crop Reporting Districts (1960 Survey). a/

a/ Includes 2-38' trailers from Beach North Dakota which haul primarily in Montana.

Types of Livestock Trucking Equipment in Montana

There is considerable variation in the types of equipment being used by Montana livestock trucking firms. Much of this variation in equipment results from attempts on the part of trucking firms to solve the problem of being competitive in livestock hauling. This competition has centered for the most part on service except in local hauling which probably centers on both price and service competition. In some cases, increased payloads have been sought through the use of specialized equipment to increase total revenue without increasing the rate charged per unit. Thus, equipment is varied by livestock truckers according to the competitive conditions involved, type of hauling, (i.e., local, long-haul, etc.), type of roads traveled, length of haul, legal restrictions, demand for specific services, governmental regulations, and similar factors.

The forty-foot semi-trailer was found to be the most common size and type of livestock hauling unit in Montana in 1960 (Figure 5). The sixteen-foot short-bed (straight-truck) and the sixty-foot drop center semi-trailer were almost evenly divided as the second and third most common sizes (Figure 5). Each of the major types of livestock hauling equipment will be considered in detail with a discussion of the major advantages and disadvantages of each type.

Semi-trailer Units (Figure 6-c).---The 1960 survey of 80 livestock truckers indicated that 153 of the 199 livestock hauling units involved were semi-trailers (Table VIII). Thus, semi-trailers constituted over three fourths of the livestock trucking units in Montana in 1960 with the forty-foot unit the most popular size. The popularity of the forty-foot unit can be attributed mostly to the flexibility of this unit over a wide

TABLE VII. PERCENT AND NUMBER OF CATTLE, SHEEP, AND HOGS BY CROP REPORTING DISTRICT; AND PERCENT AND NUMBER OF TRUCKS AND HAULING CAPACITY IN MONTANA BY CROP REPORTING DISTRICT IN 1960. *

Crop Reporting District	Percent Cattle a/	Cattle Numbers	Percent Sheep	Sheep Numbers	Percent Hogs	Hog Numbers	Percent Trucks b/	Truck Numbers	Percent of Total Linear Footage	Total Linear Footage
Northwest	10.5	253,700	4.5	79,600	23.9	38,000	8.5	17	6.0	428
Northcentral	15.8	384,600	12.8	226,400	17.4	27,700	10.0	20	9.4	663
Northeast	10.6	257,300	13.2	233,800	12.5	18,800	12.1	24	11.9	844
Central	19.3	469,500	19.0	336,600	15.6	24,800	16.6	33	16.2	145
Southwest	12.1	294,400	13.7	241,500	9.7	15,400	13.6	27	15.2	1,080
Southcentral	18.2	441,000	15.2	268,200	13.5	21,400	17.1	34	18.2	1,294
Southeast	13.5	327,500	21.6	380,900	8.1	12,900	22.1	44	23.1	1,634
State Totals	100	2,428,000	100	1,767,000	100	159,000	100	199	100	6,088

a/ Does not include milk cows.

b/ Includes two 38-foot trailers from Beach, North Dakota

* Source: Montana Agricultural Statistics, Volume VIII, op. cit. and the 1960 Survey of Montana Truckers.

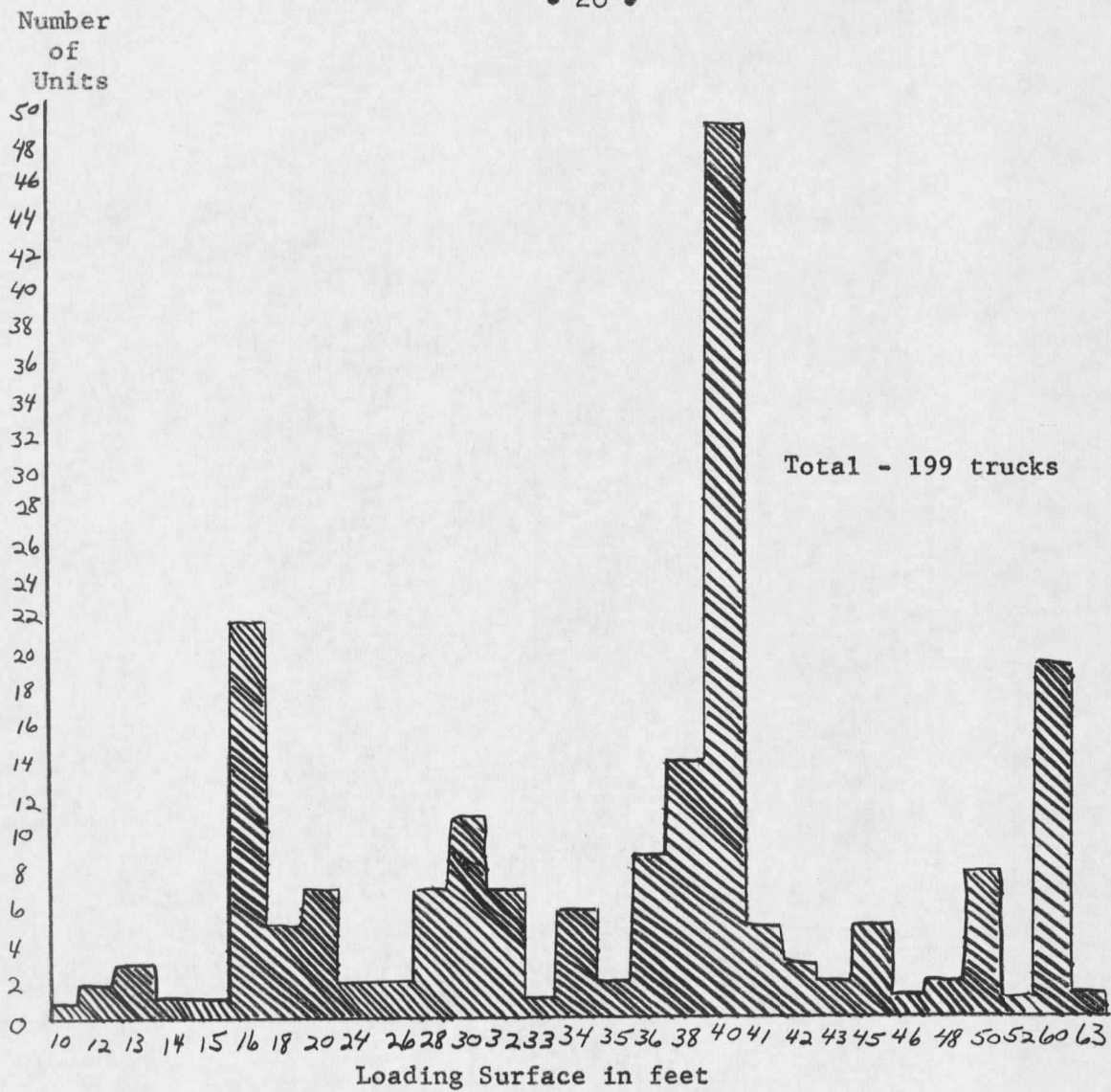


Figure 5. Loading Surface of Montana Trucks (1960). a/

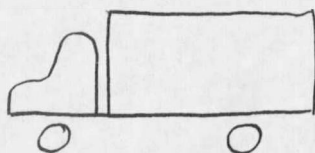
a/ Does not include Consolidated Freightways.

range of uses although this situation may be changing somewhat. 19/ The forty-foot unit can be utilized for long-haul operations, especially with heavier animals, and at the same time is also popular for many local haul operations because it can be easily handled and doesn't present the loading problems of the combination units or drop-center units. Because of this versatility, the forty-foot semi-trailer is suitable for many types of local and long-haul operations and is popular where both types of hauling constitute an important portion of the trucker's hauling or where only one or two units must be capable of serving the demands of a wide range of different types of hauling. 20/ However, the position of the forty-foot semi-trailer may be changing somewhat.

In general, semi-trailers that are less than forty-feet in length are used primarily for local hauling and units over forty-feet are most often used for specialized long-distance hauling. Changing competitive conditions, legal restrictions, more powerful truck-tractors, and better

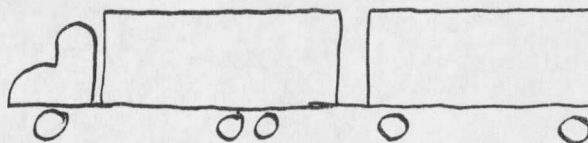
19/ Data was not obtained in the 1960 survey to determine the types of equipment used for different types of hauling such as long-distance, local, etc. However, during the 1962 survey, an attempt was made to determine the types of hauling most commonly done by each operator and the equipment used. Since the 1962 survey only involved a sample of the livestock truckers, it was not possible to do more than estimate the existing situation for the entire population of truck owners. While there was some overlapping in the use of equipment types for different types of hauling, it was possible to gain some insight into this problem. For example, in only one case was the drop-center unit used for local hauling and in all other instances this type of equipment was used for specialized long-distance hauling except for very occasional trips locally.

20/ For the purpose of this paper, a local trucker will be considered as one who operates primarily with a 150 mile radius of his base of operations although he may occasionally make a trip beyond the 150 mile limit. A long haul trucker will make most of his trips beyond the 150-mile limit, and only occasionally haul entirely within this distance. Some truckers may also solicit both long hauls and local hauling although this is likely to require a wide range of equipment if complete services are to be offered at competitive prices.



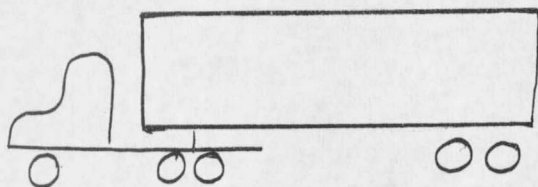
a

Short-bed or
Straight Truck



b

Combination Unit
Truck and Full-Trailer



c

Semi-Trailer



d

Drop-Center
Semi-Trailer

Figure 6. Types of Livestock Trucking Equipment in Common Use in Montana.

TABLE VIII. LOADING SURFACES OF MONTANA TRUCKS (1960 Survey). a/

Type of Truck	Linear Length	No. of Units
Straight Trucks	10	1
	12	2
	13	3
	14	1
	15	1
	16	22
	18	5
	20	6
	Total	41
Semi-Trailers	20	1
	24	2
	26	2
	28	7
	30	11
	32	7
	33	1
	34	6
	35	2
	36	9
	38	14
	40	49
	41	5
	42	3
	43	2
	45	5
	46	1
	48	2
	50	4
	Total	133
Combinations		
Truck-Trailer	50 (22 truck, 28 trailer)	3
	52 (24 truck, 28 trailer)	1
	Total	4
Truck-Drop Center	63 (22 truck, 41 trailer)	1
Drop-Center Semi-Trailer	60	19
Drome Semi-Trailer Comb.	50 (10' drome, 40' semi)	1

a/ Does not include Consolidated Freightways units; includes two 38-foot semi-trailers located at Beach, North Dakota (these haul primarily in Montana).

hauling conditions have all tended to reduce the capacity of the forty-foot semi-trailer unit to compete in long-distance hauling. As a result, this unit may become less popular in the future for long-distance hauling. As a result, this unit may become less popular in the future for long-distance operations and more widely used for local and intermediate distance hauling (e.g., 100-800 miles).

There were 62 semi-trailers under forty feet in length involved in the 1960 survey (Table VIII). While the longer trailers such as 36 feet to 38 feet may be used occasionally for long trips, this is of minor, and diminishing importance. In addition to being shorter, most of the semi-trailers less than 40 feet in length are older units. ^{21/} Apparently, the demand for shorter trailers in the commercial livestock hauling field ended about five or six years ago, and had been tapering off previous to that time. Short semi-trailers are not competitive for long-hauls because longer legal length limits in the different states, improvements in equipment, etc., have resulted in the innovation of specialized long-distance hauling units. This same factor is likely to render the forty-foot semi-trailer less competitive for long distance hauling and more competitive for local hauling. In some areas, however, there may continue to be a demand for the relatively short semi-trailers to fill the range of equipment desired for the various types of hauling to be done. At present

^{21/} The age of equipment was not determined in the 1960 survey, but there was no exception to this premise found in the 1962 sample survey during which it was found that all trailers involved in the 1962 survey that were less than 38 feet in length were older trailers. Equipment sales agencies contacted in 1962 said there was almost no demand at present for semi-trailers less than 38 feet in length except for occasional orders from large ranches desiring these shorter trailers to supply private needs.

however, there is little demand for new short semi-trailers probably because Montana truckers that desire to purchase shorter semi-trailers have found these to be relatively inexpensive and readily available on the used equipment market. Future demand for this type of unit is likely to remain of minor importance except for specialized cases of local hauling.

Specialized Long-Distance Units.--Most long-distance hauling is done by units with forty feet or more of linear loading surface. There were 96 of the 199 units in the 1960 survey that were forty feet or more in length (Table VIII). However, there were only 47 units that were longer than forty feet in length in Montana in 1960.

While the forty foot semi-trailer has been popular for a number of years for long distance hauling, the drop-center (Figure 6-d) has been gaining in popularity and is the second most popular type and size semi-trailer in Montana. The drop-center unit is a special type of semi-trailer and of recent development. The loading surface in the drop-center is limited by the legal length limits of the various states in which it would be operated but this is usually unimportant. This type of unit has ample capacity to increase loading surface even within present legal limits to the extent that the most important limiting factor to the size of load hauled with this unit is likely to be the legal weight limits.

The most common size drop-center unit is forty-feet in length with a twenty-foot double deck center section that is capable of hauling mature cattle on two levels in this center area. Thus, with forty feet of overall length, the drop-center has sixty feet of linear loading surface. Although this unit with sixty feet of loading surface is the most common size, equipment sales agencies report that they would take orders for units up to fifty feet in length with a thirty-foot center section and the resulting eighty feet of linear loading surface. This latter case is rare,

and there were no instances found of units this large having been sold in Montana. However, it might be practical to have a 42-foot trailer with 64 feet of loading surface or a 44-foot trailer (with a 24-foot drop-center) that would provide 68 feet of loading surface. The overall length of the drop-center unit, consequently, depends on maximum weight limits of the states in which it will be operated rather than on the maximum legal length limits.

The outstanding advantage of the drop-center unit, then, is the ability to increase loading surface with this unit without proportionately increasing the overall length of the unit. This was probably more important several years ago and may be coming of less importance as the legal lengths in many states have been increased in recent years. As legal lengths have increased and become more uniform throughout different sections of the country, the drop-center unit may be losing in popularity. Encouraging this is the fact that drop-center units have a relatively high initial cost and are difficult to load in some cases, increasing the danger of bruising animals. Although this latter factor has been corrected to some extent by new innovations that allow for a movable center section that reduces handling the animals up and down ramps, this innovation has further added to the initial cost of this type of unit. At present, mixed trends were encountered as to the future of the drop-center. Some factors point to reduced use of this type of unit (e.g., more long semi-trailers) and others point to continued popularity of the drop-center (e.g., the innovation of the movable center section).

Combination Units (Figure 6-b)---These are another specialized type of long-distance hauling unit. Overall length, lack of maneuverability, and difficulty in loading all tend to reduce the use

of this type of unit for hauling other than long-distance operations. There were only five of these units in operation in Montana in 1960 (Table VIII) and at least one of these units pulled a full trailer of the drop-center type resulting in 63 feet of loading surface. This was the most loading surface in any single unit in Montana in 1960.

The advantages of this type of unit includes longer loading surface without the need for double decking some of the animals, increased maximum weight since these units are longer and have special axle arrangements that increase the weight limit in many states, and also, the combination unit has a favorable cost relative to loading capacity. The principal disadvantages of this unit includes those mentioned above for local hauling although these are of much less importance for long distance hauling. Another disadvantage of this unit is that it is only practical in states with long legal length limits and this requires that all states in which the unit is operated will have uniform long length limits. This unit is generally loaded from the side although it can be loaded from the rear by disconnecting the units. In this case, most ranches may not be set up for this type of loading and it may be more difficult requiring that the animals be moved to another loading point such as a stockyards. This latter disadvantage, however, would be of only minor importance.

Short-bed (straight trucks) (Figure 6-a).---Forty one of the 199 trucks involved in the 1960 survey were of the short-bed type (Table VIII). This type of unit is definitely intended for local hauling and the principal source of competition would be from farm trucks in many cases.

The need for short-bed trucks may be due to several factors. Many local truckers, for example, prefer to have a small truck available to increase the range of their services to livestock producers. A majority of the truck owners that had trucks less than twenty feet in length, also

owned longer units. 22/ Another reason for the popularity of the short-bed unit may hinge on the definition of "livestock trucker". There was no attempt made in this study to determine the extent that each operator depended on livestock hauling and this may be a factor in the type of equipment used. Since Montana does not regulate livestock truckers, as many states do, this complicates the problem of determining who should qualify as a "livestock trucker ". The definition may range from those who are totally dependent upon livestock hauling to individuals that haul other commodities as much or more than livestock and to individuals engaged in other occupations such as order-buying or ranch operations and occasionally doing commercial livestock hauling. In some cases, the owner of small livestock trucks (and perhaps larger units also) may have used these as only part-time supplements to their normal sources of income. This may have been a factor in adding to the popularity of certain size units, particularly those in the short-bed class.

The sixteen-foot unit was the most popular short-bed truck for commercial livestock truckers (Figure 5) and apparently, this size is also the most popular unit among Montana ranchers as well. 23/ Estimates of

22/ In many instances in the original survey, only the truck lengths were given and in this case it is not always possible to determine the class in which the unit would be long. It is possible to have a short bed truck that is twenty feet or more in length or a semi-trailer as short as twenty feet, but both of these examples would be rare. At least one of the units in the 1960 survey was listed specifically as a 20-foot semi-trailer.

23/ The source of these data were primarily from livestock equipment sales agencies. These agencies estimate that the lengths of farm units are increasing on the average with 15 to 16 feet being the most popular size for farm purchases of new equipment.

the sales of short-bed livestock units indicates that about 90 percent of the units 16-feet in length or less are being sold to farmers. As roads become better and equipment improves, farm trucks will likely increase their competitive range of livestock hauling although these farm operations will be likely to be limited by the lack of availability of trucks to haul large number of livestock and by their load capacity relative to the distances the animals are to be moved.

Affect of Axle Arrangements.--Another distinguishing factor that affects all types of livestock trucking equipment, and that probably should be mentioned at least briefly, is the affect of using different axle arrangements. Many of the older style, relatively short semi-trailers now being used for local hauling are single-axle units. In addition to being too short to compete for present long-distance hauling, these units also lack capacity to legally carry heavy loads. This results from the weight requirements in many states which are based either on the number of axles or the tire surface of the trucking unit. Operators hauling long distances must maximize payloads and this requires either tandem-axle or the single-axle arrangement found in combination units.

Railroad Livestock Transportation Facilities

There are 4,962 miles of railroads in Montana and this is 2.29 percent of the railroads in the United States. The Great Northern line has 1,826 miles in Montana, the Northern Pacific has 1,583 miles, and the Chicago, Milwaukee, St. Paul, and Pacific has 1,251 miles of Montana railroads. 24/

24/ The Montana Almanac, 1960, and the Statistical Supplement, 1962-63, Montana State University.

The Northern Pacific follows a central and southern route via Glendive, Miles City, Billings, Livingston, Bozeman, Butte or Helena and Missoula. The Great Northern traverses the northern portion of the state via Glasgow, Havre, Shelby, and Libby with principal branches to Great Falls, Billings, and Butte. The Chicago, Milwaukee, St. Paul, and Pacific parallels the Northern Pacific over a large portion of its length in eastern and western Montana, but takes a more northerly route in the central portion through Roundup and Harlowton; a principal branch connects with Great Falls. 25/

The Chicago, Burlington, and Quincy enters from Wyoming and connects with Billings, and the Minneapolis, St. Paul and Sault Ste. Marie, enter from North Dakota in the extreme northeast and extends to Whitetail. There are several short rail lines that serve primarily the coal mining industry, etc., in addition to the five major lines mentioned above. 26/

While rail service at present is seldom used for intrastate livestock movements, rail is used for a large proportion of the livestock shipments to distant destinations. A comparison of rail/truck services and prices will be discussed in Chapter III along with the problems, advantages and disadvantages of each mode of transportation.

25/ Ibid.

26/ Ibid.

CHAPTER III

Competition and Livestock Transportation

Montana's commercial livestock truckers compete in transportating animals with farm trucks, rail companies, and other truckers. However, this competition stems from different sources as trip length varies. The commercial truckers must compete with farm trucks at the local level and with rail in long-distance operations. Hauling involving intermediate distances often results in intense competition between the different commercial livestock trucking firms. 27/ In addition, trucks transporting livestock for long-distances must have a complementing back haul. Competition for back hauls comes from railroads and other trucks. This chapter will examine each of the major sources of competition in the industry. The results of this competitive situation will then be considered along with the unsolved problems it has evolved for the livestock transportation industry and the implications of this competitive situation both in rates and services for Montana livestock producers.

Sources of Competition

Local Hauling.--As agricultural mechanization continues, more and more Montana ranchers are operating their own trucks. Increases in the number of farm trucks adds to the capacity of existing transportation facilities especially in local trucking operations.

27/ The definition of local and long-distance hauling was given on p.35.

In December of 1959, Montana had 52,800 trucks on farms and led all of the Mountain States in the numbers of trucks on farms. Forty seven point three percent of all trucks in Montana were farm trucks, and Montana also topped all other Mountain States in farm truck numbers as a proportion of total truck population. 28/ However, many of these farm trucks would not be equipped to haul livestock, but the above figures are an indication of farm truck hauling capacity in Montana and the competition that exists between farm trucks and commercial livestock truckers for local hauling.

Usually farm trucks have a small capacity for hauling because they are most often of the short-bed type (Figure 6-a), and are therefore unable to haul more than a small number of livestock per load. Because of this, farm trucking units present their most effective competition to the commercial livestock trucking firms when a small number of animals are to be moved only a short distance. It is difficult to assemble sufficient farm trucks in most cases to move large numbers of animals even if the large group of animals had to be moved only a short distance. In addition, the small payload renders the farm truck inefficient for hauling more than short distances. However, farm trucks may be very efficient with these limitations and thus reduce the overall demand for commercial trucking services. This study excluded farm trucks, and thus the competition potential from this source can only be estimated in general terms.

Wyckoff determined that the cost of operating farm trucks in Washington was 36.6 cents per mile. Twenty seven point three percent of the

28/ Motor Truck Facts, The Automobile Manufacturers Association, Detroit 2, Michigan, 1962 edition, page 32.

cost of farm truck operation in this case was for labor, 25.7 percent for depreciation, 18.0 percent for gasoline, 13.7 percent for maintenance, 6.8 percent for insurance, 5.5 percent for tires, and 3.0 percent for licences and taxes. 29/

However, with the need for trucks in many farm enterprises (e.g., small grains, sugar beets, etc.), any additional use for livestock hauling may add to the efficiency of farm truck ownership. This may be an important factor in determining the cost to the livestock enterprise of farm trucking operations on a diversified farm. If the truck must be owned for other uses, it may be that the only cost chargeable to the livestock operation would be the actual variable costs of operation while hauling livestock, plus depreciation on necessary additional equipment such as stockracks, but not including most fixed costs such as licenses, insurance, repairs, depreciation, etc. Usually, however, most diversified farms would probably elect to charge a portion of all fixed costs to the livestock operation. Regardless of the method selected, it may not be possible to determine the actual cost basis of farm truck operations for hauling livestock without knowing the overall farm cost structure and planning involved.

In any case, the limiting factors for farm truck in competing for local livestock hauling (seeking greater efficiency for the farm operation) are inefficiency in hauling long distances, lack of capacity to move large numbers, and lack of availability of a farm truck on many farms.

29/ Cattle Transportation in Washington by J. B. Wyckoff, Bulletin 636, Washington Agricultural Experiment Station, April, 1962, p. 10.

Intrastate Hauling

Intrastate Rail Operations.--Rail hauling intrastate at present is only of minor importance. It appears, for the present, that current growth of farm truck numbers and intense competitive conditions have virtually eliminated rail competition on other than long intrastate hauls, and there is no indications that this situation is likely to change in the foreseeable future. Unless livestock are to be moved a distance that is significantly longer than the distance from farm to railhead, it will be much more practical to use trucks (farm or commercial) for the entire haul rather than using trucks part way and rail part way. Rail short-haul rates as contrasted to local truck rates and farm truck costs, are not competitive, and for this reason, rail transportation is seldom used even for trips of moderately long distances (e.g., 100 miles). Rate competition will be discussed in a later section of this chapter.

Intrastate Truck Operations.--Probably the most significant factors affecting commercial truck operations on a local basis (as contrasted to long-haul operations) are: (a) differences in types of equipment used and corresponding cost differences, and (b) need for a back-haul and lack of opportunity for back-haul. However, an additional factor is important for purely intrastate (as contrasted to interstate operations), namely truckers need be concerned about only the legal restrictions of one state if engaged in intrastate hauling only."

The most important consideration regarding trip length is the determination of the need for maximizing payload. Most local truckers quote rates on a per mile basis. In this case, the livestock producer has the responsibility of seeking maximum load in order to reduce cost per unit

(although there is also pressure on local livestock truckers to provide an equipment range capable of hauling the desired load without excess unloaded space.) One result, then, of quoting rates on a per mile basis may be to change the problem of the local trucker from maximizing payload to the need to provide a wide range of equipment. In some cases this may be achieved by using a large unit (e.g., such as a forty-foot semi-trailer) and charging only for the proportion that might be loaded (e.g., if the shipper only had a load for a 36-foot unit). Such cases, however, would probably be most common for firms with only one or two trucking units. The degree that this occurs probably depends upon the intensity of the competition existing in each area.

Another problem that is important to the intrastate truckers is the difficulty that arises from seasonality in livestock shipments. Growth of livestock feeding in Montana and more diversified types of farming tend to reduce the seasonality problem, but in many cases this is more noticeable in long-haul operations rather than local operations or intrastate operations of intermediate distances.

As pointed out previously, (Chapter II), the trucker that hauls primarily intrastate can afford to use shorter units and single axle units (at least on the truck). This type of equipment probably has a significantly lower purchasing cost and thus may be relatively efficient compared to farm trucks of short lengths and limited hauling capacity. Thus, intrastate commercial operations are an intermediate step in the equipment range with a capacity to haul larger numbers and to do so more efficiently over a longer range of distance than farm trucks, but at the same time unable to compete with specialized long-distance hauling equipment.

Interstate Livestock Transportation

Both rail and truck companies compete for available traffic in interstate livestock movements, although the range of this competition may vary depending upon distance hauled and the size and class of livestock. Trucks, for example, are competitive over a much longer range with mature animals than with light feeder animals. This type of equipment used in truck operations, of course, has an important bearing on this latter factor. The larger loading surface of longer semi-trailers drop-centers, and combination units will allow these to be competitive with rail transportation for much greater distances than the normal forty-foot semi-trailer. In this case, the limiting factor determining the range of competition may be the legal length and weight limits in the states in which the units are operated. Competitive factors other than rates such as time-in-transit, shrinkage, and market testing privileges will also influence the mode of transportation used. In some cases, the availability of a back-haul may be fundamental to the rates charged by truck companies, and thus an important factor in determining the range of competition between rail and truck.

Results of Competition

One important result of the intense competition in livestock hauling is the development of specialized types of livestock hauling equipment that makes the commercial trucker more competitive. Also, units that are no longer competitive for long-distance hauling may serve to make the local trucker more competitive because these units are available to the local trucker at a reduced cost. This situation has been augmented by the production of more powerful truck-tractors, better highways, more desirable traveling conditions and similar factors that can be attributed in

part at least to the general trucking industry.

The benefits of using more competitive equipment, and of other cost-reducing innovations in the livestock trucking industry have, for the most part, been returned to the livestock producer (although these savings may have been passed on by the producer to the consumer). This has occurred because the livestock truckers usually operate under conditions of intense competition and are, therefore, usually in an unfavorable bargaining position.

Bargaining Position of Livestock Transportation Firms

The 1960 survey of 80 Montana livestock truckers served to indicate some of the weaknesses of the bargaining position of livestock trucking firms. A schedule of 17 questions on shipper relations and truckers problems was included in the survey to determine the various conditions existing in the industry.

From this survey, it was found, for example, that most livestock truckers are not able to charge for extra services. Only 12 truckers said they charged extra for services on unimproved roads and this may have been the result of a small need for this service. For example, a trucker engaged primarily in long-distance hauling and using specialized types of equipment might be more likely to include such a charge. Also, an extra charge for off-highway service would not be likely to weaken the bargaining position of a long-distance trucker to any important degree. Most Montana truckers do not charge for multi-stops when hauling livestock. Only eight truckers said they charged extra for this service. Only six truckers charged extra for special sanitation and most truckers indicated that they cleaned their truck and used clean bedding--in many cases after every load--and this was done at the truckers expense.

On the other hand, insurance on livestock is provided in most cases at the shipper's expense. Sixty eight truckers answered this question and 51 of these 68 said insurance was provided. In 31 of the 51 insurance-provided examples, the cost was borne by the shipper. In only 12 cases, did the trucker absorb the cost of insurance in his normal rate. In the eight remaining examples where insurance was provided, the trucker sometimes paid the cost and the shipper sometimes paid. There is, of course, a difference in the bargaining power of individual firms and in the bargaining power of the individuals served by the transportation industry. Possibly, the terms may differ between large ranchers and packers and small ranch or farm owners. Also, some truckers are in a more favorable position than others due to financial condition of the truck firm or because of isolation by distance from other truck competition.

In general, it appears that the terms of trade are such that most cost reducing improvements in the industry as well as increased services will be returned to the livestock producer although these savings may later be passed on to consumers in the form of reduced livestock prices. The overall bargaining position of livestock truckers may be tempered somewhat by rail competition for long-distance hauling. For example, rail companies are in a more favorable bargaining position, and in many instances, offer the only competition to trucking of livestock other than the competition between trucking firms. When this occurs, trucks must only match rail competition in order to be competitive, and are influenced to some extent by the greater bargaining power of railroad companies which tend to provide a floor to price reduction. This is not the case where competition stems from farm trucks or between commercial trucking firms. But in these latter cases, as previously pointed out, farm trucks lack the capacity to compete in most cases for more than short distances or when large numbers of livestock are being moved, and commercial firms will have to cover fixed costs in most cases in a fairly short period of time which will affect the

minimum price at which services will be provided. Because it is not necessary to do more than meet transportation prices set by rail, commercial trucking firms will seek to compete with rail companies on service factors rather than on prices.

In most cases, the organization of the livestock trucking industry resembles that of monopolistic competition. Firm size is small, resources are under-utilized (partially due to seasonality of shipments) and service offered are widely variable (particularly in the types of equipment available, sizes of equipment and additional services). This condition has been met in several states through regulation and franchises at the state level that controls the resources pressed into livestock trucking. Montana, however, has no such regulations although in the 1960 survey at least ten of the 80 truckers contacted mentioned the need for such regulation of livestock trucking. Other Montana livestock truckers also mentioned that rate cutting was a problem and needed some method of correction.

While data is incomplete to appraise this situation fully, it appears that rate competition is most intense for local hauling, or where hauling is not directly competitive with railroad competition.

Long-distance trucking operations are also faced with the problem of obtaining a complimenting back-haul. Most Montana livestock truckers must obtain a back-haul to a surplus cattle and sheep area in order to be competitive in their operations. In general, the only unregulated back-haul available is hogs. Unfortunately, Montana's sparse population requires that only a minor number of hogs be imported into the state, and Montana truckers must compete with out-of-state truckers based at the market where the trip originates. This puts Montana trucking firms at somewhat of a disadvantage. This situation encourages hauling of regulated commodities that are needed in Montana. However, very few if any, livestock truckers have the necessary Interstate Commerce (ICC)

permits required to haul manufactured or processed commodities. ^{30/}
This and similar situations have developed into what is known as the
"grey area" of transportation.

The "Grey Area"

Regulations that control competition in transportation do not prevent shippers from hauling products that they own. This has resulted in two developments that aim at obtaining back-hauls. Truckers can obtain dealerships for certain commodities and charge a markup that includes the transportation charge. This involves selling, credit, and storage, and often creates problems for the firm. It is also possible for bona fide dealers to lease a truck either on a per trip or per-unit-of-time basis but this involves insurance problems and driver problems, particularly in labor unions. The legality of these operations hinges probably in part at least on the degree of importance that transportation constitutes in the total profit structure of the firm. The result is a "grey area" with some firms legal and other firms questionable. This problem is not limited to livestock trucking alone. In fact, livestock trucking may not even constitute a very important portion of the "grey area" problem. Many large manufacturers have desired their own distribution system. When transporting products over wide areas, available back-hauls are attractive supplements to existing enterprises. Entrepreneurs probably look longingly at the potential for rearranging the enterprise combination for more profit by utilizing the existing demand for cheap transportation.

^{30/} The permits held, if any, by Montana livestock truckers was not determined by the 1960 survey.

It must be remembered that once a truck has made an initial trip of up to 1,500 miles or more, this truck must return home. Drivers will have to be paid, fuel consumed, and maintenance provided whether a back-haul is obtained or not. Thus, the only cost that is variable in the back-haul operation is the difference between the cost of the truck returning empty or loaded, and this is a minor cost.

The most important result of this situation as far as livestock trucking is concerned is that the availability of a back-haul serves to make livestock trucks competitive with rail transportation over a longer distance. This provides producers with competitive rail-truck service over a longer distance range. At exactly what distance a trucking firm would not provide services without a back-haul depends on how profitable the initial trip may be.

While regulations of transportation of various commodities can be justified on the basis of the stability they create for the transportation industry, at the same time regulated truckers do not usually haul livestock and livestock truckers are limited by the lack of back-hauls. However, if meat packing and livestock marketing continue to decentralize, the average length of trips may become shorter and this may diminish the importance of this problem as far as livestock shipments are concerned.

Rate Competition in Livestock Transportation

A basic consideration necessary for valid rail/truck rate comparisons in Montana is that rail rates are offered to the public on a "price-taker" basis with no negotiation of rates while truck rates, on the other hand, range from fully negotiated to partially negotiated. In addition, rail companies more than likely follow long range price policies whereas smaller trucking firms are usually unable to do this. The differences in the terms

of trade involved between livestock shippers when dealing with trucking firms as compared to railroad companies results in highly variable truck rates when rail firms do not influence the price as contrasted to rail determined rates with definite price patterns indicating that rate is an inverse function of distance.

Intrastate Rail and Truck Rate Comparisons

Intrastate truck rates (Appendix A) when plotted on a scattergram, show no significant structural pattern that would indicate a price/distance function. This may be due in part to the different degree of competition that local truckers face from various sources and in different areas as well as to differences in the degree that rates are negotiated from one area to another. The only trends that can be established in the rates of local truckers is a horizontal movement of prices per ton/mile as the distance increases. When a 25,000 pound minimum weight is used (Figure 7), this horizontal price is found at .064 cents per ton/mile. When a 40,000 pound minimum is used, the horizontal cluster is at the price of .04 cents per ton/mile (Figure 8). Since most local truck rates are quoted on a per mile basis, two minimum weight categories are used to demonstrate the effect of changing payload weight when prices are quoted on a per mile basis. When per hundredweight or per ton/mile data is calculated from per mile rates, the results vary directly with the load hauled. Since a forty-foot unit is being considered for both rail and truck, it is likely that an average load for a forty-foot truck unit would tend to be greater than the average for a forty-foot rail unit even though the latter would have slightly more loading space. Truckers usually will load heavier per square-foot of loading surface since trucks have fewer delays and a driver to care for each load. Since rail rates are quoted on a per hundredweight basis, there is little incentive to load rail units much

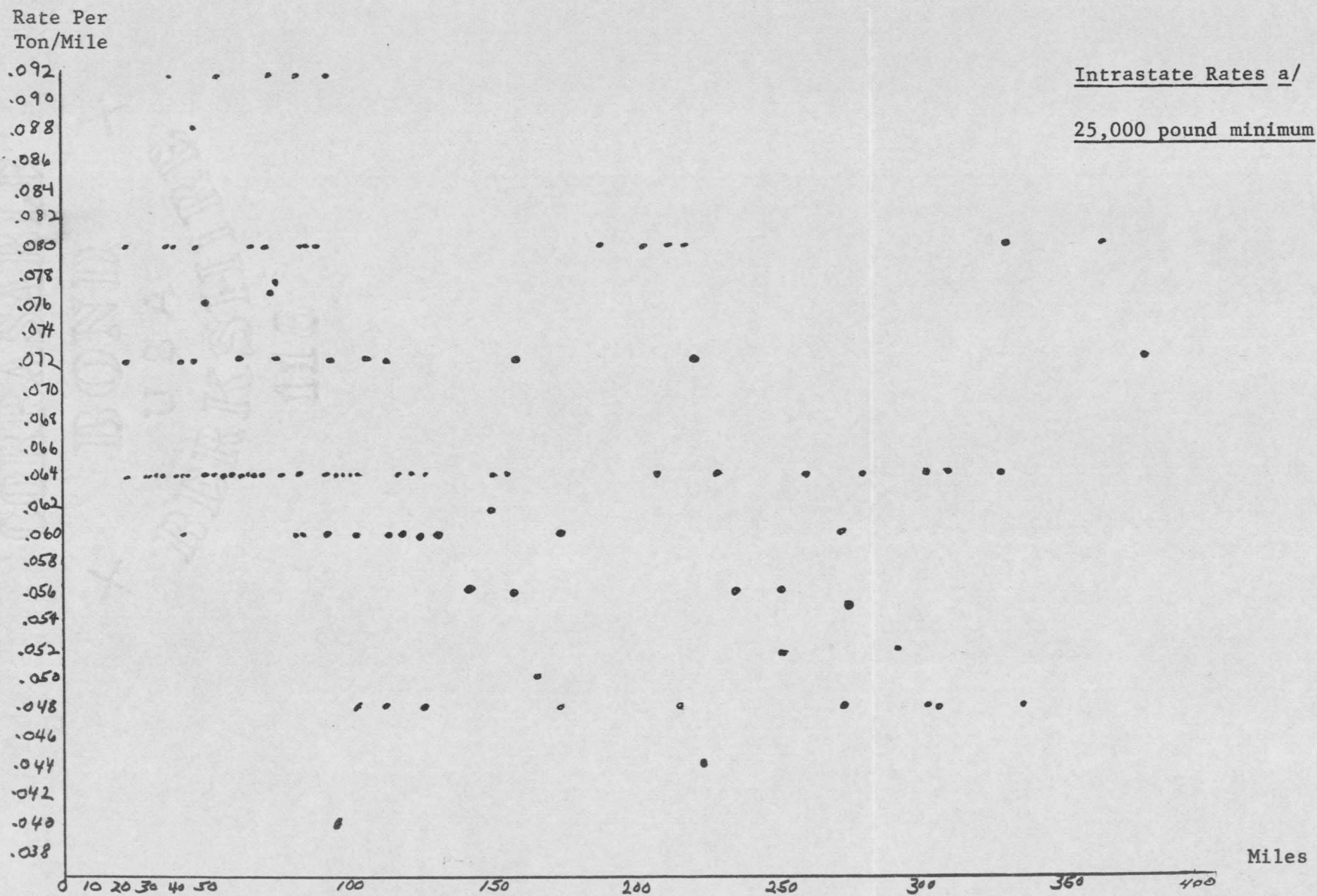


Figure 7. Truck Rates Per Ton/Mile For Various Distances.

a/ Based on Appendix A.

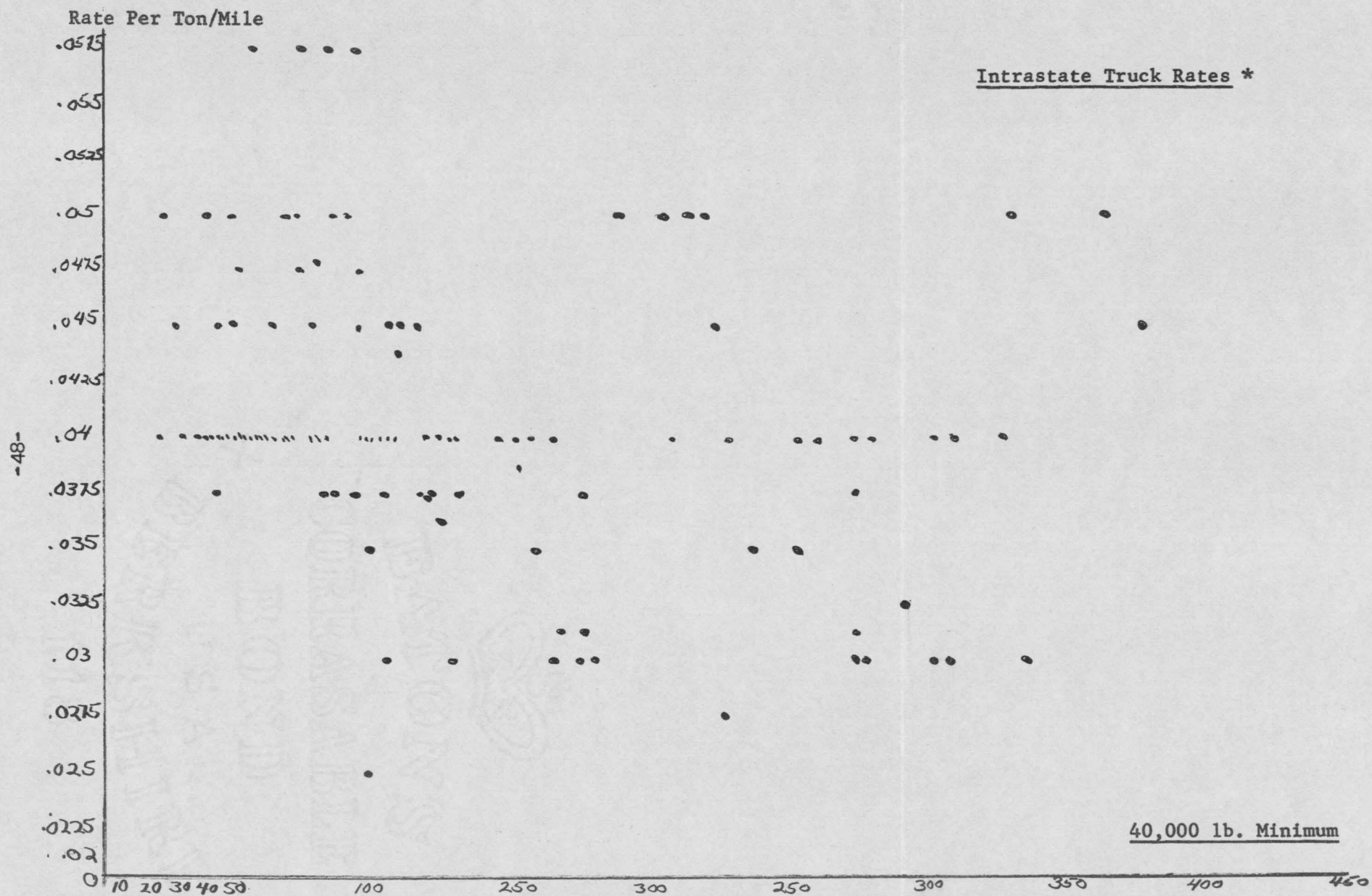


Figure 8. Truck Rates Per Ton/Mile for Various Distances.

* Source: Based on Appendix A.

above the minimum weights even in intrastate shipments. Montana truckers, however, quote most intrastate rates on the basis of cost per mile which is likely to encourage shippers to load trucks heavier. ^{31/} However, the forty-foot unit is the most logical size to use for comparisons since this size is popular for both rail and truck shipments.

Montana truck rates for forty-foot trailers demonstrates a horizontal emphasis at a price of 80 cents per mile (Figure 9.). This would be expected since a 25,000 pound load resulted in a horizontal cluster at .064 cents per ton/mile and a 40,000 pound load resulted in the same thing at .04 cents per ton/mile (Figures 7 and 8). But if truck rates are negotiated to any important degree, the data in Figure 7, 8, and 9 may be representative of only the asking price. More likely, negotiation varies between truckers, between areas of the state, between seasons, and between different shippers. ^{32/}

^{31/} This should not be confused, however, with the desire to maximize payloads in long-distance hauling. As has been pointed out, truckers hauling long-distances seek to maximize payloads in order to increase the income from the trip without increasing the price per unit. Livestock producers would seek to maximize the load hauled in local truck operations since the rate is quoted on a per-mile basis, and it will cost less per unit as the size of the load is increased.

^{32/} There was no attempt made in this study to evaluate the extent of negotiation existing in truck rates. This might have been accomplished by a survey of shippers such as ranchers, market agencies, etc., and used as a cross-reference on quoted truck rates. Such a survey should encompass all types of shippers since negotiations may differ between large and small producers. Since Montana does not regulate livestock rates, and since rate cutting was often mentioned as a problem in the 1960 and 1962 surveys, the truck rates presented in Appendix A may have to be evaluated on the basis of negotiated rates.

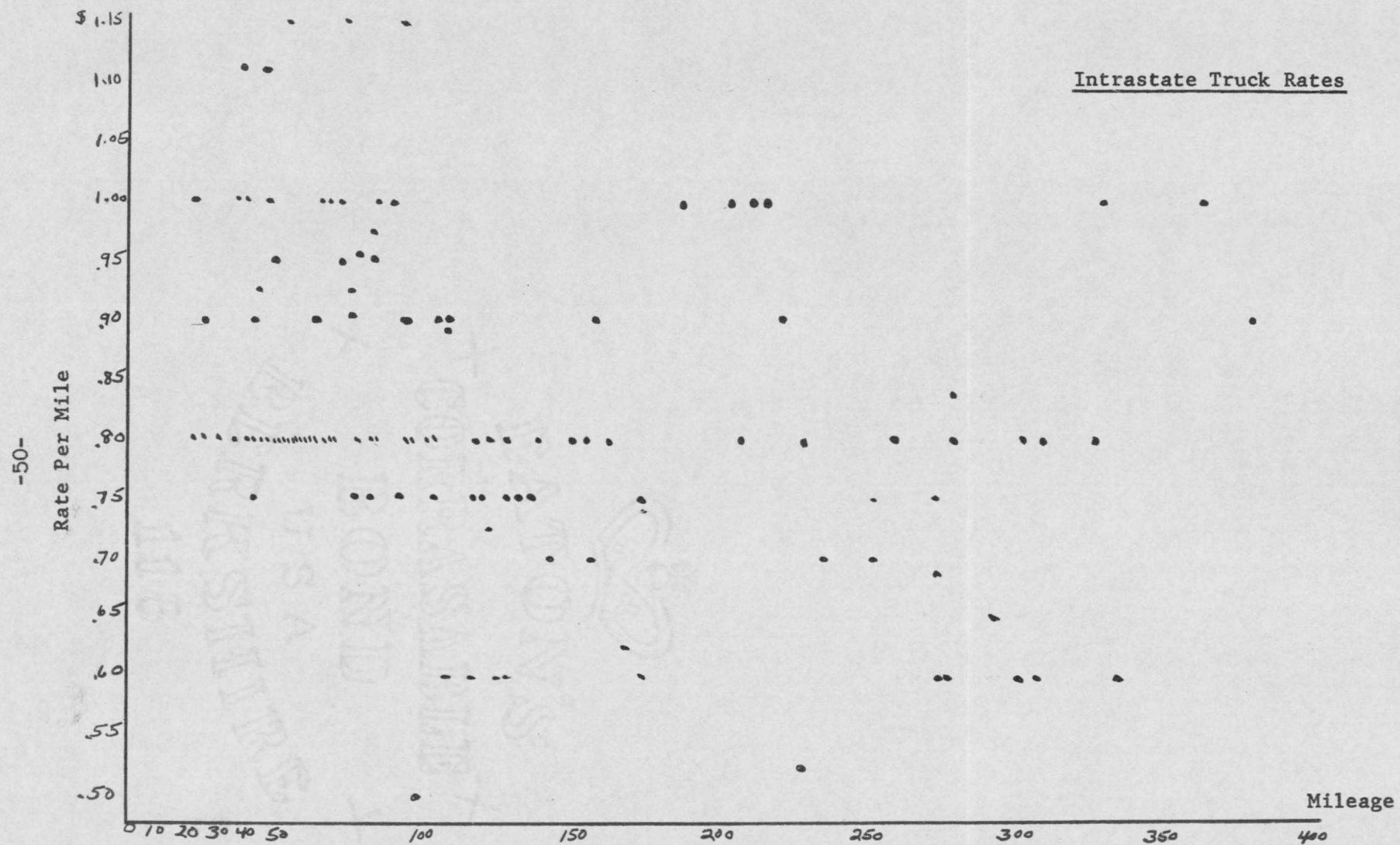


Figure 9. Truck Rates Per Mile For Various Distances. *

* Source: Appendix A.

Rail Rates Per Ton/Mile (Not Feeders)

Intrastate Rail Rates

- 50a -

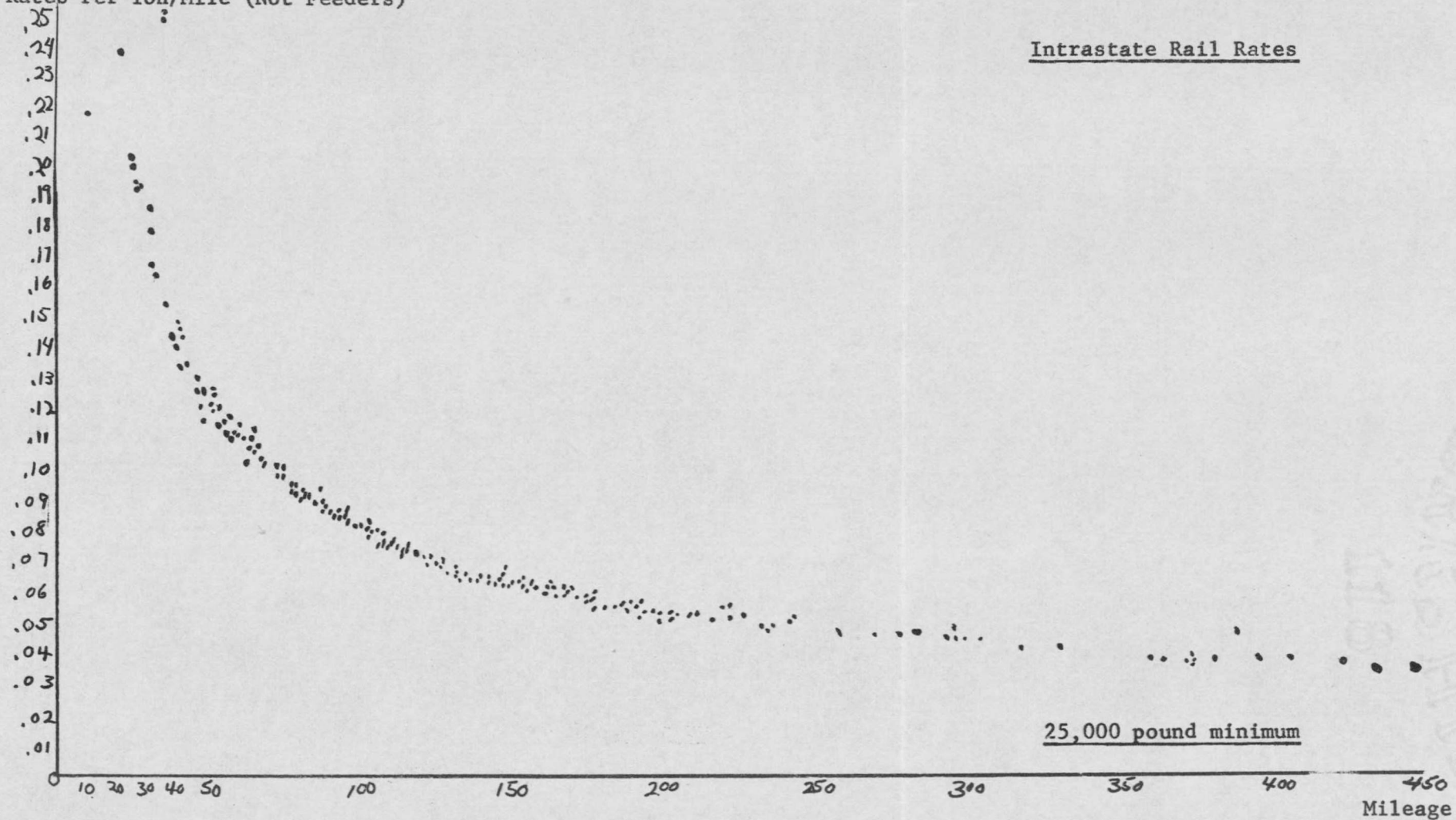


Figure 10. 1961 Rail Rates Per Ton Mile For Various Distances. *

* Source: Appendix A.

Intrastate Rail Rates

Intrastate rail hauling at present is of only minor importance in Montana. In 1960, nearly 98 percent of intrastate cattle movements were by truck. 33/ It is likely that approximately this same proportion would exist for other species of livestock as well. Consequently, only minor emphasis is placed on intrastate rail rate comparisons. However, Appendix A shows a complete schedule of intrastate rail rates from Montana origins to Montana destinations during 1960 on a per hundredweight basis and on a per ton/mile basis for both slaughter and feeder cattle. Where intrastate truck rates are available for comparisons, these are also presented in Appendix A for the same rail origins and destinations. The 1960 intrastate rail data is also demonstrated on a per ton/mile basis in the form of a scattergram in Figure 10. As might be expected with regulated rates or with a planned price policy, the rates in Figure 10 demonstrate a definite pattern as distance increased. In this case, the cost per ton/mile is an inverse function of distance. There is a slight indication of this inverse pattern with intrastate truck rates also, but this was not nearly so pronounced. This latter fact might be another indication that rate competition for most intrastate rates (local hauls) stems from sources other than rail such as farm trucks and between commercial livestock truckers.

A possible point of deception in comparisons of truck and rail rates is the differences that exist in rail mileage and truck mileage. For example, the rail mileage from Billings to Roundup, Montana is 206 miles compared to a truck mileage of only 53 miles (Appendix A). Although a

33/ op. cit. Transportation of Cattle and Calves in Montana, p. 16.

per ton/mile comparison would indicate that the rail rate was lower (in this case the truck rate is .064 cents per ton/mile and the rail rate is only .053 cents per ton/mile), but if the differences in mileage are taken into account, it can readily be seen that the truck rate for the trip is lower than the rail rate. Per ton/mile comparisons, therefore, will not always indicate the true cost situation unless the mileages for rail and truck are very nearly equal.

Interstate Rail vs. Truck Rates

Supply of facilities, either truck or rail is determined primarily by weight hauled, rates, and in the case of long distance truck operations, the availability of a back-haul. Trucks, for the most part, must meet the rates set by rail competition in long-distance hauling although some variation in rates can exist without actually changing the competitive situation. A small rate differential does not indicate that truck rates are necessarily higher since truck operations may be from ranch headquarters, whereas an additional cost is necessary to move animals from the ranch to railhead for rail movement. However, this would not be the case if both trucks and rail load, for example, at a local auction or other similar point.

The relation of weight hauled per load is vitally important in determining the profitability of truck long-haul operations in livestock transportation. Profitability of the trip for trucks will depend upon total revenue as contrasted to rail that more than likely must stress rate per unit and minimum weight requirements. Thus, trucks will attempt to maximize payloads. The additional cost of hauling a 40,000 pound payload as compared to a 30,000 pound payload, for example, would be much less than proportional. Some costs, such as driver's wages, insurance, licenses, taxes, etc., would not vary at all, and other costs such as

fuel, tires, etc., would vary much less than proportional for several reasons. The total revenue from the trip, however, would vary proportionately with the weight hauled, and the profit position would be entirely determined by some minimum weight necessary to cover all costs (unless a back-haul is expected which would only change the amount of the minimum since the revenue from hauling both payloads would be combined. From this discussion, and the previous section on back-hauls (see "The Grey Area, page 44) it can be seen that two of the most influential factors determining the supply of truck facilities in long-distance operations are the ability to maximize payloads and the availability of a back-haul. Live-stock truckers apparently have increased their competitive range by innovating special types of equipment (Chapter II) which allows greater total revenue while competing with rail rates set on a per unit (per cwt.) basis. While this situation allows truckers to be competitive from a revenue standpoint, additional hauling can be obtained by truck companies by seeking to compete with rail on service factors such as speed, convenience, and flexibility.

Because trucks have greater speed and a driver to care for each load, trucks can be loaded tighter per square foot of loading surface than is the case with rail-cars. There is also little incentive to load rail cars very much above the minimum weights required since rail services will be provided without maximizing payload per rail-car. Railroad companies also prefer that loads are not crowded, and the car-trailer system of rail rates tends to discourage "tight" loading of animals. Railroad personnel contact in 1962 felt that the average weight per rail-car would tend to be somewhere just above the minimum required weights.

The need to maximize payloads will reduce the length of hauls in which trucks can be competitive with light-weight feeder cattle. Figure 11 demonstrates loading capacity of various truck sizes with different weights

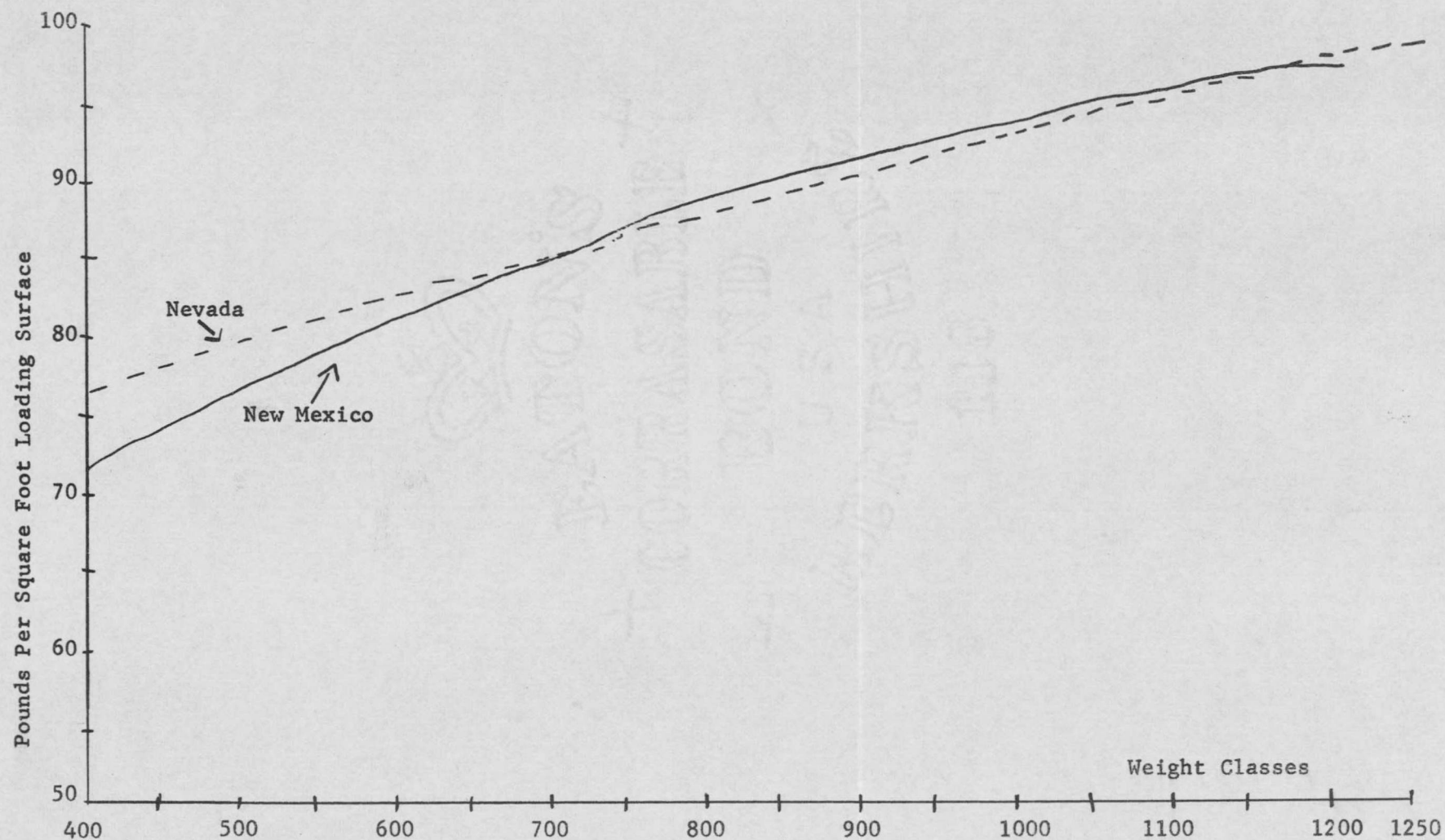


Figure 11. Weight Per Unit of Loading Surface for Selected Weight Classes of Cattle. *

* Source: Barmetler, Edmond R., Interstate Transportation for Nevada Livestock, p. 22.

of livestock as determined by studies in Nevada and New Mexico. Weight data collected in the 1960 Montana survey showed a similar relationship between size of animals and pounds per square foot.

The number of animals that can be loaded in any given loading surface will depend upon the weight and condition of the animals involved. If animals of equal quality and weight are hauled, there would be little difference from one area to another in the maximum number possible to load in a given space. However, some variation will occur because of personal preferences of truck operators as to how compact the animals should be loaded and differences in types of equipment. A hypothetical example will illustrate the effect of equipment on weight hauled in a given loading surface. If 30 head of 1,000 pound animals can be loaded into a forty-foot semi-trailer with only one partition, 15 head would be loaded in front and 15 head in back of the partition. ^{34/} However, if the forty-feet of loading surface were increased to sixty feet by the use of the drop-center unit, proportionately fewer animals could be hauled. The reason for this is that the 10-foot front and rear sections of the drop-center should haul 7.5 animals each. Since this is impossible, one less animal would be hauled. The 60-feet of loading surface in the drop-center is ample to alter the limiting factor from loading surface to legal weight requirements but the foregoing example will, nonetheless, serve to demonstrate the effect of type of equipment on weight hauled per square foot.

^{34/} Partitions are normally standard equipment in longer units to prevent animals from crowding during sudden stops or when the unit is traversing a steep grade. In the drop-center unit, partitions are present to provide the double-decking arrangement. Partitions are also used to separate different classes of livestock and similar reasons.

In general, it is possible to haul more weight per square foot with heavier animals than with lighter animals (Figure 11), and of course, easier to haul more weight with strong animals than with weak livestock. Other factors affecting weight hauled per unit of loading surface include temperature, bedding used, horned livestock, and time-in-transit. Most important to Montana producers, however, is the affect of animal size. A large proportion of Montana livestock shipments are feeder animals and many of these go to states in the Midwest for feeding. Although data is not available for states of destinations for all species of Montana meat animals, this data has been tabulated for cattle shipments (Figure 12) by states of destination and this indicates that the states receiving the greatest proportion of Montana livestock are the Midwest feeding states of Iowa, Illinois, Nebraska, and Minnesota (1960). This situation may have an adverse affect on the competitive position of Montana livestock truckers and thus on the range of competitive rail/truck services and available truck facilities. The seasonality problem in the shipment of cattle further complicates this problem since the big shipping months occur during September, October, and November of each year (Figure 13). Seasonality of shipments is probably most important for light feeder animals. For example, in 1960, 49.5 percent of Montana calf shipments occurred in October. ^{35/} Although seasonality may adversely affect local truckers more than long-distance truckers, all segments of the livestock

^{35/} Montana Agricultural Statistics, Volume IX, December, 1962, Montana Department of Agriculture Cooperating with United States Department of Agriculture, Helena, Montana, page 80.

trucking industry will be susceptible to some instability due to the seasonality of shipments. Long-distance truckers have the advantage of moving animals from feedlots and markets to distant destinations and thus each trip will constitute a larger portion of the firms total revenue. 36/

Effect of Animal Weight and Trip Length on Rate Competition

Estimates of out-of-state movements of Montana cattle in 1958 indicate that about 53 percent were shipped by rail and about 44 percent by truck. But by 1960, nearly 60 percent of all cattle moved out of Montana were shipped by rail while 39 percent were hauled by truck (a few were driven). Railroads gained in 1960 over 1958 in both total numbers of cattle moved out-of-state, and in their share. 37/

The reasons for this popularity of rail facilities in Montana may stem from the classes of cattle most commonly marketed by Montana producers and the destinations to which they are shipped. Comparisons with the results of other studies will show why this is true.

For example, a comparison to Nevada cattle shipments shows that from 1959 to 1962, 90 percent of all Nevada cattle moved by truck. Although rail service in Nevada is provided by two major railroads with one in the northern part of the state and the other in the southern part, livestock shippers (in Nevada) continue to select trucks for the transportation of cattle in increasing numbers. The reasons given for truck preference in Nevada are: Rail transportation requires the animals to be handled several times, thereby increasing the chances of injury, death, and shrinkage. In addition to this, delivery time to destination may be

36/ This is not intended to imply that rail facilities alone would be inadequate but rather that it seems to be more in the interest of producers to have alternative modes of transportation available.

37/ Montana Cattle Movements, op. cit., p. 16.

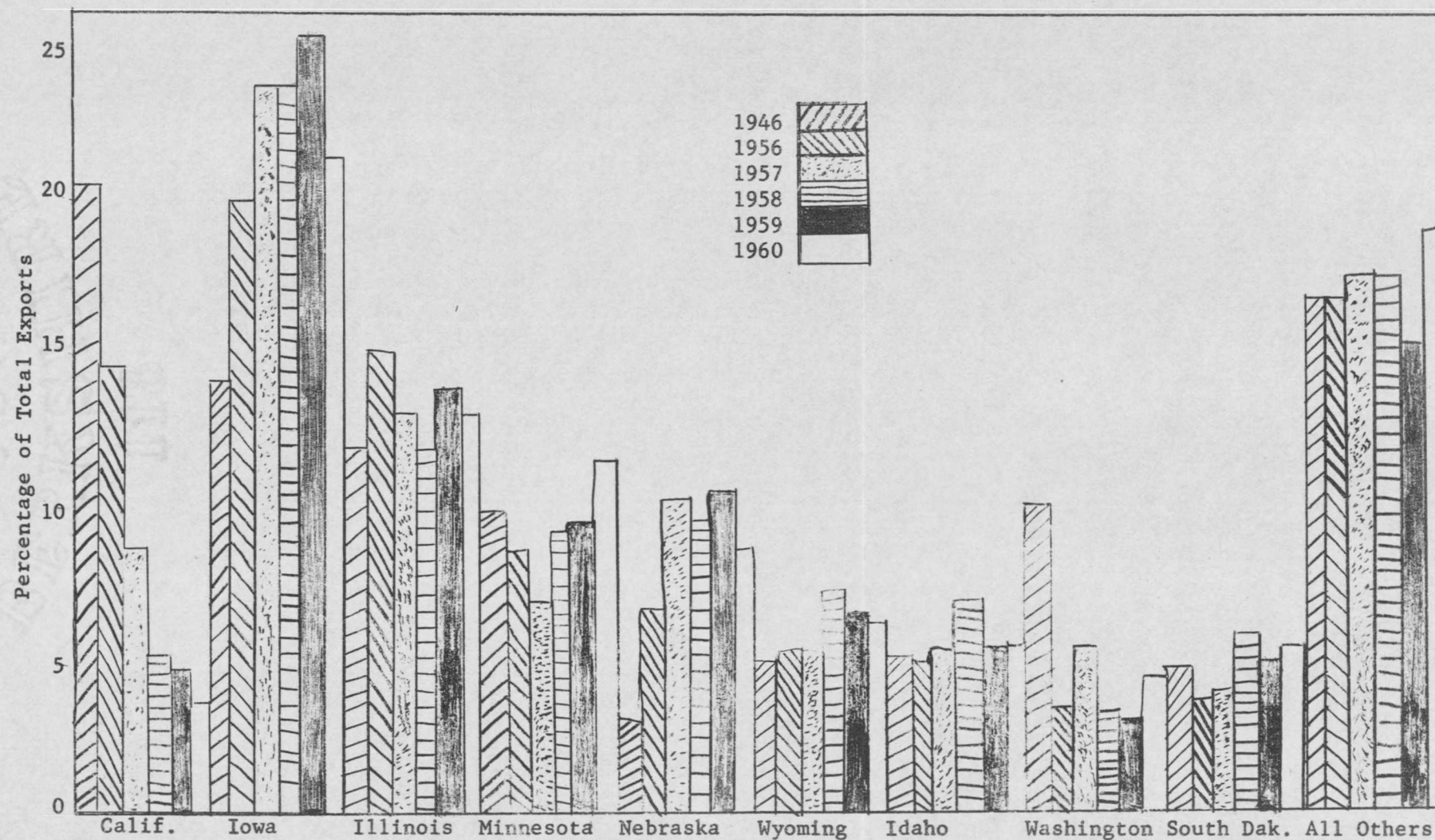


Figure 12. Montana Cattle and Calves, Shipped Out-of-State, by States of Destination and by Year, 1946, and 1956-60. *

* Source: Montana Cattle Movements, Clive R. Harston and Elmer L. Menzie.

Percent of
Total Shipments

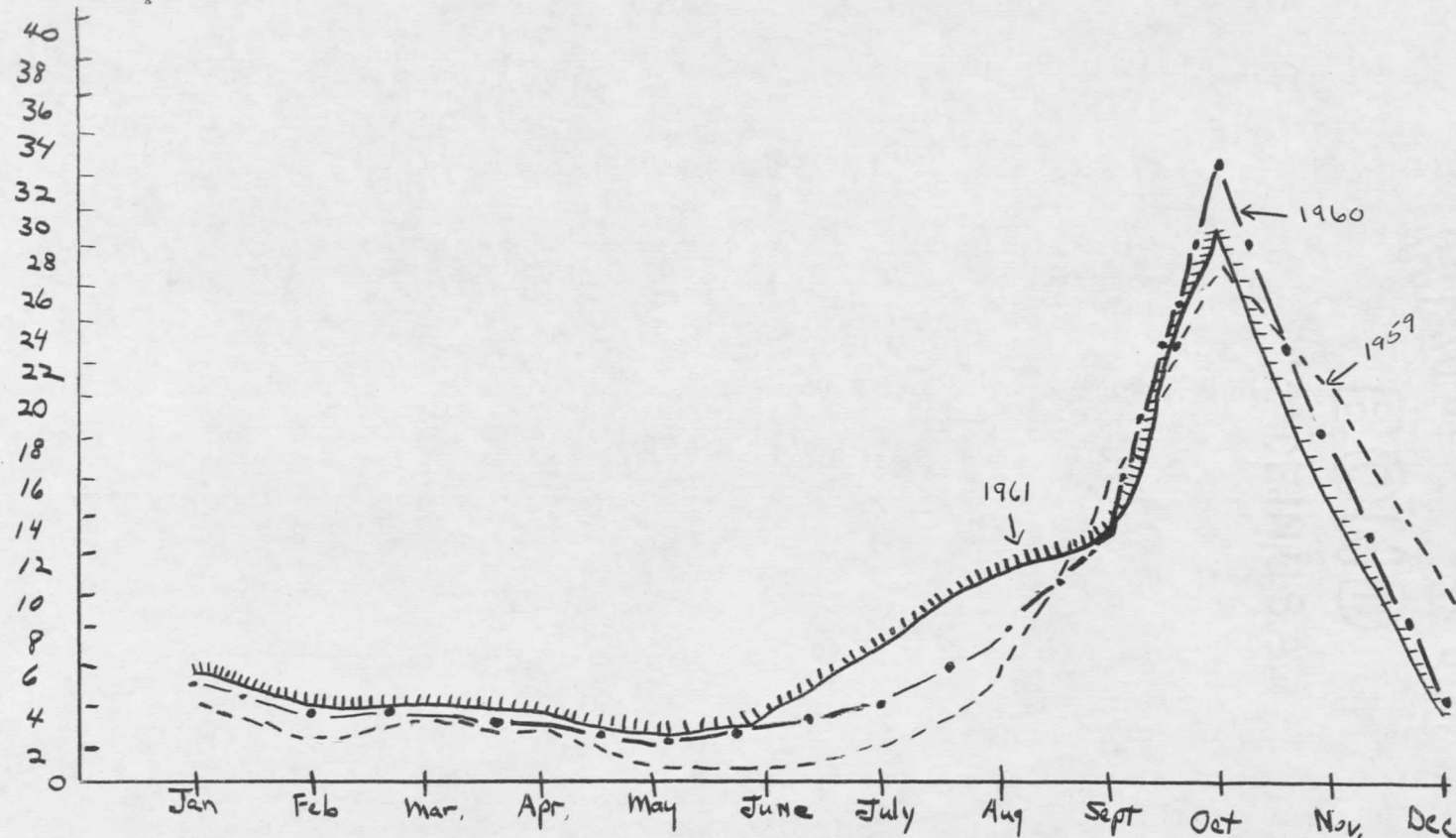


Figure 13. Cattle Shipments Out-of-State Percent of Total Numbers Each Month. *

* Source: Montana Agricultural Statistics; Volume VIII, Dec. 1960, p. 99, and Volume IX, Dec. 1962, pp. 80-81, Montana Department of Agriculture, Cooperating with United States Department of Agriculture, Helena, Montana.

longer for rail than for highway equipment and thereby increased shrinkage and perhaps reduced rate of regain may be experienced. 38/

Although Nevada is similar to Montana in producing mostly feeder livestock, Nevada feeder animals go mostly to California, Idaho, Utah, or other bordering states. 39/ This means that Nevada cattle, on the average, travel a much shorter distance than Montana cattle and trucks can be competitive with light animals for the shorter distance. Also, there may be more available back-hauls and the seasonality problem may be somewhat different. Although there would not be much difference in the weight of Montana or Nevada feeder cattle, in the majority of the cases the distance involved in moving the animals rules out the use of trucks for Montana feeders and the use of rail for Nevada feeder cattle.

Montana producers, while preferring rail to truck for calves, at the same time, prefer truck to rail for mature cattle (Table IX). Therefore, states close to Montana receive cattle mostly by truck, but a greater portion of the total number of mature cattle also go by truck to most states. Idaho, North Dakota, South Dakota, and Wyoming took delivery by truck on 85 percent of their Montana cattle. Shipments to Washington, Oregon, and Colorado tend to favor trucks also. On the other hand, from 75 to 97 percent of the shipments to states such as Iowa, Illinois, Minnesota, Nebraska, Wisconsin, and California are hauled by rail (Figure 14).

TABLE IX. PERCENT OF EACH CLASS OF LIVESTOCK MOVED BY TRUCK AND BY RAIL, 1960. *

Class of Livestock	Truck	Rail
Heifers	48	52
Calves	28	72
Cows	75	23
Bulls	75	24

* Source: Montana Cattle Movements, Harston and Menzie, p. 16.

38/ Interstate Transportation for Nevada Livestock, op. cit., p. 7.

39/ Ibid.

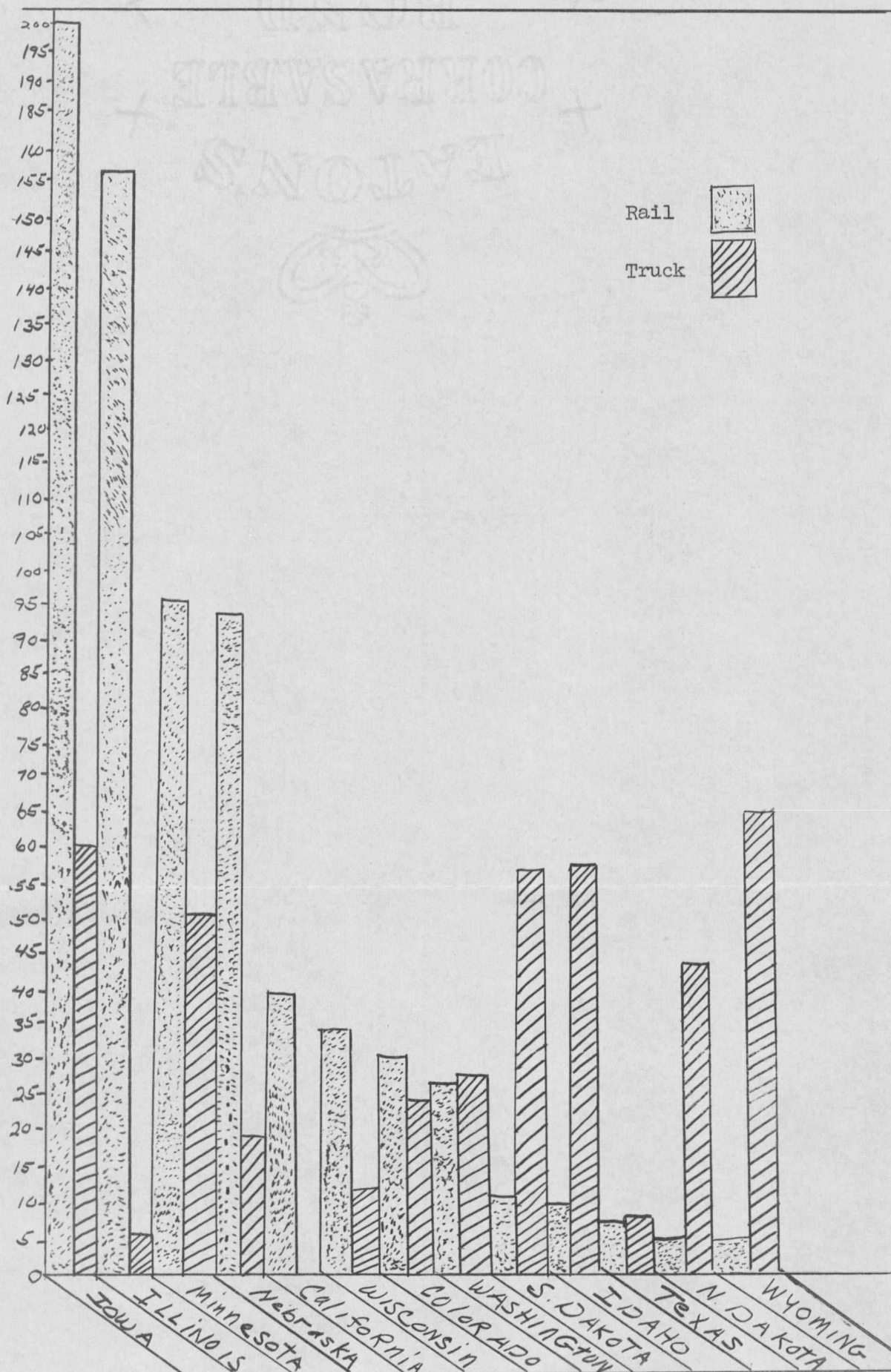


Figure 14. Movements of Cattle and Calves from Montana in 1960 to Major States of Destination by Mode of Transport. *

* Source: Montana Cattle Movements, Harston and Menzie, Fig. 6.

Rate Comparisons

Both rail and truck interstate rates, when compared on a per ton/mile basis, result in a pattern that indicates an inverse function of rate increases relative to distance. However, there is much more variation in interstate truck rates (Figure 15). On the other hand, interstate rail rates show a definite price pattern resulting from rates offered on a "price-taker" basis and a planned price policy of the larger rail firms (Figure 16). A comparison of interstate rail vs. interstate truck rates graphically will demonstrate that truck rates are uniformly slightly higher than interstate rail rates (Figure 17). However, in some cases, this is to be expected since the truck rates represent cost from ranch headquarters while rail rates may be from the closest railhead.

These graphic comparisons will clarify the competitive rate situation existing between interstate rail and truck rates. A more exact tabulation of rate comparisons on per ton/mile and per hundredweight basis is presented in Appendix B.

As can be seen from Figure 17, there is only minor differences in rail and truck rates and in many cases these are equal. This results from truckers seeking to match rail rates in most cases, and competing with rail companies on service factors.

Rail vs. Truck Service Competition

A comprehensive comparison of rail vs. truck livestock transportation must include the total services offered by each method as well as a comparison of the rates charged. Railroad companies offer such services as diversion privilege, feeding or grazing in-transit, market-testing privileges, and the use of the car plus trailer system of determining weight and rates. Many of these services cannot be duplicated by livestock

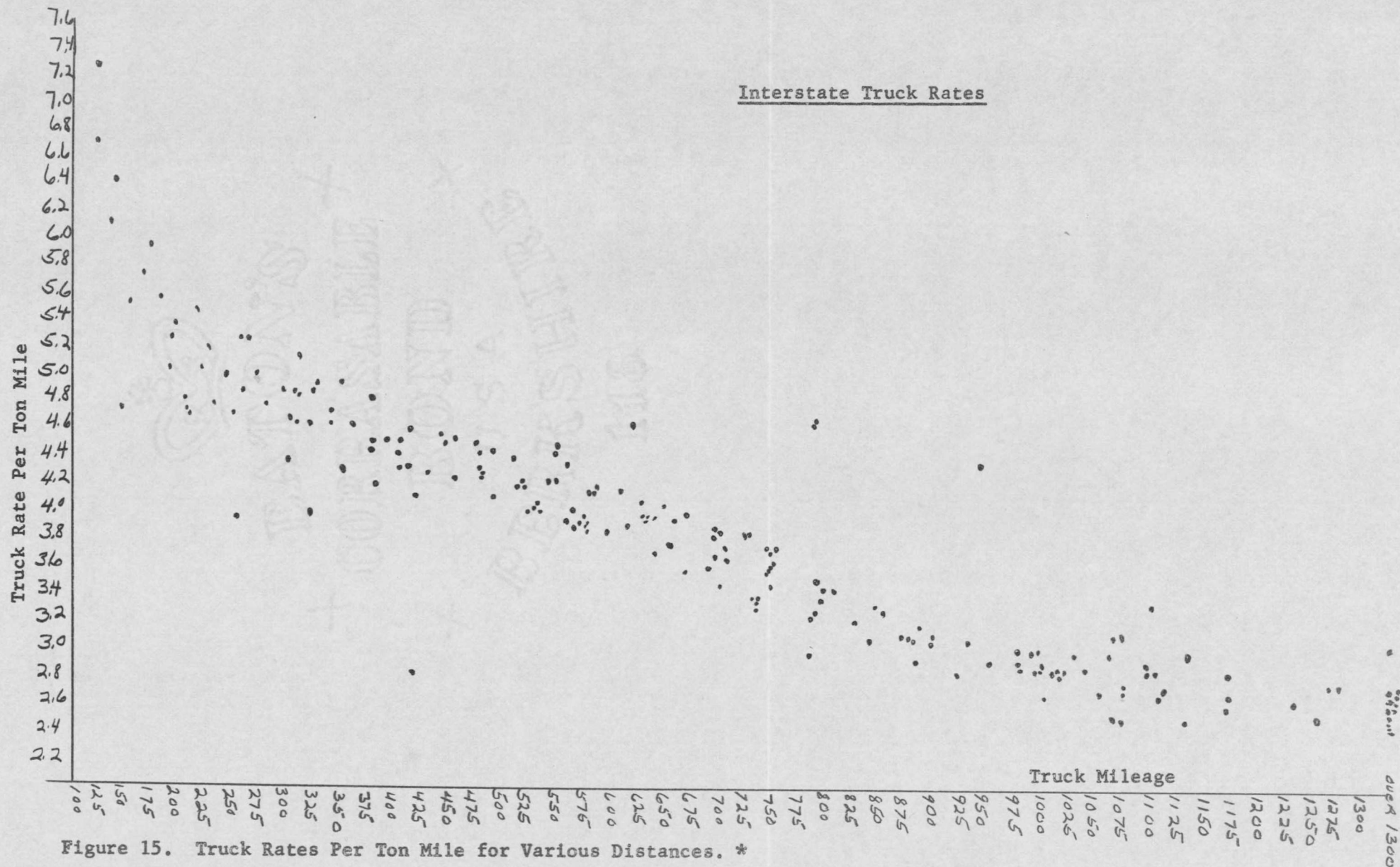


Figure 15. Truck Rates Per Ton Mile for Various Distances. *

* Source: Appendix B.

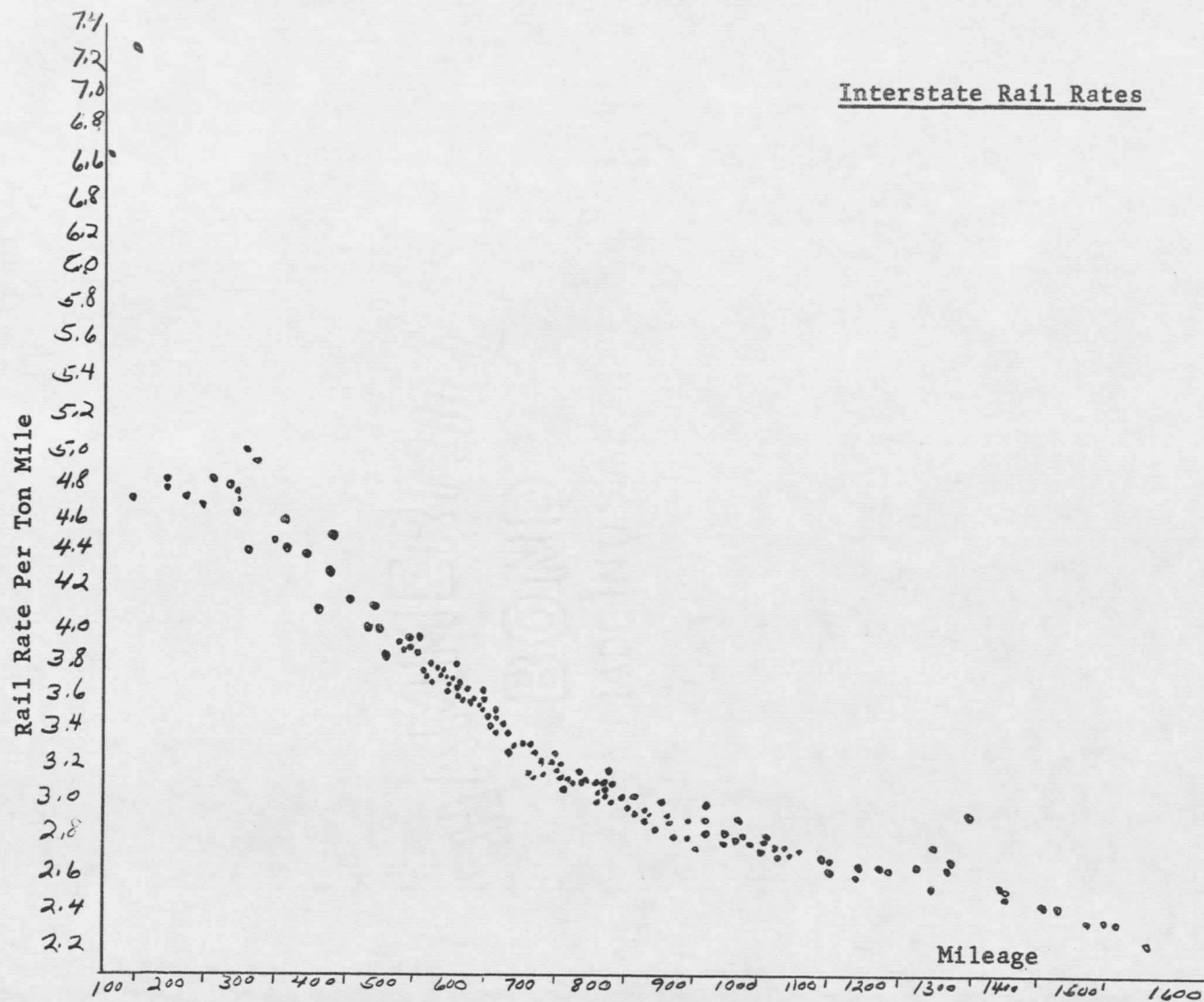


Figure 16. Rail Rates for Various Distances.

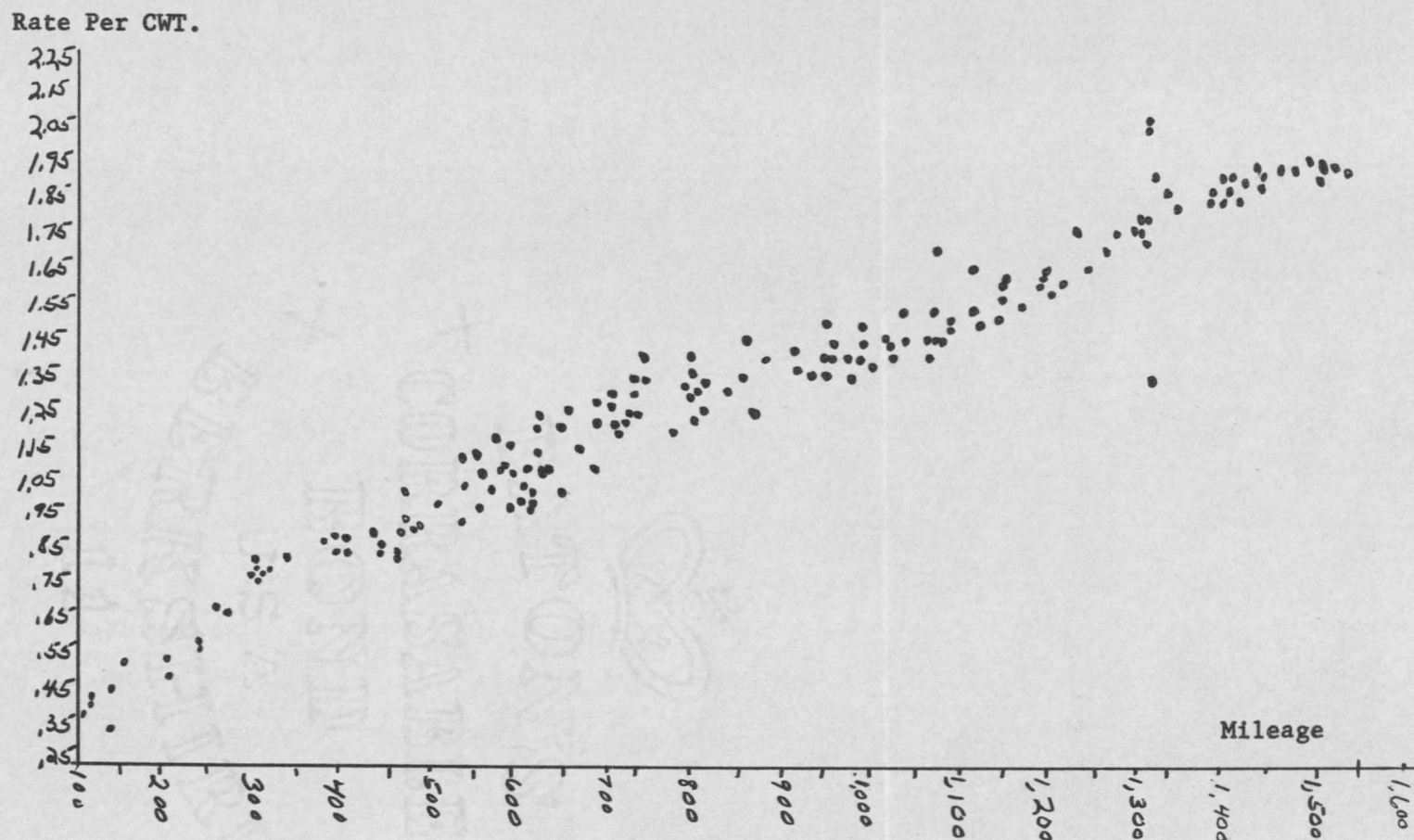


Figure 17. Comparison of Rail and Truck Rates for Various Distances Interstate, 1960. *

* Source: Appendix B.

trucking operations. The "feed-in-transit" privilege allows a shipper to stop his livestock enroute for feeding and grazing up to 18 months while retaining the advantage of shipping on a lower through rate. The value of market-testing privileges are probably enhanced by market conditions that encourage speculation although market-testing may be useful for other purposes as well. The use of the car-plus-trailer privilege allows carload rates on partial carloads when these are shipped with at least one full carload of livestock.

Much of the advantage of rail transportation may stem from the basic structure of the rail firm. Railroad companies are usually older and larger organizations that are capable of utilizing planned price policies that enable price agreements such as feeding-in-transit to exist over time. Rail companies furnish excellent facilities for loading, handling and feeding livestock and these are established at numerous points on each rail route. Insurance is not a problem, and the financial structure provides shipper confidence in rail "Claims Departments" to handle losses. All of these advantages gives rail companies a more prominent stature in the eyes of the livestock producer and establishes rail firms as reliable sources of livestock transportation.

Truck hauling of livestock has the distinct advantage of loading at the ranch headquarters, and because trucks are not scheduled, shipments can be made at any time. This provides convenience, flexibility and personal service to the shipper. In this latter instance, the trucker represents a local business firm and often a well-known acquaintance to the livestock shipper which is valued by some livestock producers. However, for the most part, the advantages of shipping by truck will revolve around the speed, convenience, and flexibility of truck livestock transportation.

A comparison of the required in-transit times from selected Montana

origins to selected destinations can be seen by comparing Table X (truck in-transit time) with Table XI (rail in-transit time). For example, from Table X, it can be seen that the average truck time from Billings to Denver, Colorado is approximately 16 hours and from Table XI the rail time from Billings to Denver is shown to be 28 hours. Other origins and destinations will demonstrate similar results. It should be remembered also that rail in-transit times do not take into account movement of livestock from the ranch to railhead, and in some cases the delay for switching livestock cars into through trains would not be included in the data of Table XI. Although special livestock trains help greatly to improve the competitive rail-truck situation on the basis of in-transit time, nonetheless, it is generally conceded that when all factors are taken into account, truck shipments will usually be significantly faster. Time in-transit is important because livestock shrinkage increases with the length of time required for transportation.

Shrinkage Related to In-Transit Time

Shrinkage is an important economic cost of marketing and one that is likely to be absorbed by the producer. Even where livestock are sold direct, shrinkage is generally considered by the buyer when negotiating a livestock purchase.

The greatest shrinkage occurs during loading, unloading, and during the first hour of hauling. It increases at a slower rate with additional miles. Shrinkage is due to two types of weight loss: Excretory shrinkage or loss of weight from belly fill; and tissue shrinkage, which is a decrease in the carcass weight of the animal. These two types of shrinkage do not occur in distinct phases. In the early part of the shipment, excretory shrinkage occurs. At an undefined state in the movement, both excretory and tissue shrinkage occur simultaneously. During the latter

TABLE X. TRUCK IN-TRANSIT TIME FOR VARIOUS DISTANCES.

Truck Origin a/	Destination	Distance	Time	M.P.H.
Jordon	Sioux City, Io.	761	20 hrs.	38
Hardin	Delhart, Texas	960	32 hrs.	30
Hardin	Chicago, Ill.	1250	34-35 hrs.	35.7
Glendive	Sioux City, Io.	684	20 hrs.	34.2
Glasgow	Alta, Io.	880	34 hrs.	25.9
Billings	Spokane, Wn.	565	16 hrs.	35.3
Billings	Omaha, Neb.	891	24 hrs.	37.1
Billings	St. Paul, Minn.	847	24 hrs.	35.3
Billings	Denver, Colo.	586	16 hrs.	36.6
Billings	Boise, Ida.	623	18 hrs.	34.6
Great Falls	So. St. Paul	1020	24 hrs.	42.5
Great Falls	Eau Claire, Wis.	1097	30 hrs.	36.5
Great Falls	Milwaukee, Wis.	1349	35 hrs.	38.5
Great Falls	Chicago, Ill	1426	36 hrs.	39.6
Miles City	Austin, Minn.	830	21 hrs.	39.5
Lewistown	Green Bay, Wis.	1185	30 hrs.	39.5
Lewistown	Sioux City, Io.	950	22 hrs.	43.2
Havre	Eau Claire, Wis.	1070	26 hrs.	41.2
Sidney	St. Cloud, Mo.	635	16 hrs.	39.7
Bozeman	St. Joseph, Mo.	1030	25 hrs.	41.2
Missoula	Milwaukee, Wis.	1580	39 hrs.	40.5

a/ Most truckers did not give exact information on time taken but indicated that the rate varied from 30 to 40 miles per hour depending upon such things as terrain, winds, etc. This estimate seems to fit fairly well with the above sample of actual times given. Most truckers try to stay within the regulated time so as to avoid the necessity of a stop-over.

TABLE XI. RAIL IN-TRANSIT TIME FOR VARIOUS DISTANCES. *

<u>To Denver</u>	Stock loaded in the immediate Laurel area (including Billings) would move to Denver in approximately 28 hours. Stock loaded at other Montana points would require one stop for feed, water and rest enroute, and transit time would of course be increased in accord with the operational factors involved.
<u>To Omaha</u>	Normal routing from Montana points would be through the Laurel, Montana, gateway via the Burlington lines. Stock fed at Laurel would move through to Omaha within the 36 hour confinement period. In some cases it might be necessary to allow one stop for feed, water and rest enroute.
<u>To Kansas City</u>	Cattle from Laurel and points east of Laurel in Montana would require approximately 60 hours in transit time, with one stop for feed, water and rest. This routing would apply through Laurel via the Burlington lines or through the Twin Cities gateway via the Rock Island to Kansas City.
<u>To Twin Cities</u>	Stock moving from Laurel and points east of Laurel would move to the Twin Cities within the 36 hour confinement period under normal circumstances. Shipments from points west of Laurel usually require one stop for feed, water, and rest enroute.
<u>To Chicago</u>	Stock moving from Laurel and points east of Laurel to Chicago would require one stop for feed, water and rest with a normal transit time of approximately 60 hours.
<u>To Sioux City</u>	Stock loaded at Laurel and points east would normally require one stop for feed, water, and rest enroute with a total transit time of approximately 48 hours.

* Source: The above information on time in transit by rail was submitted by the Northern Pacific Railway Company.

part of the shipment, tissue shrinkage is relatively more important. ^{40/}

A controlled experiment at the University of Wyoming showed that feeder steers in a moving truck lost 5.5 percent of their weight in eight hours, 7.9 percent in 16 hours, and 8.9 percent in 24 hours. Feeder cattle shrink about one-quarter more than fat cattle on long hauls, but net shrink after fill back shows little difference. During the first nine hours in transit, fat cattle shrink more than feeder cattle, beyond nine hours the shrinkage for feeder cattle is greater. Fat cattle shrink about 5 percent during the first five hours, then about 0.17 percent per hour for the next 25 to 30 hours. This is demonstrated graphically in Figure 18. ^{41/}

Although other factors such as temperature, breed of animals, sex, feeder or fat, etc., may have an affect on shrinkage, by far the most important factor is time in-transit. Shrinkage occurs at about the same rate on either truck or rail shipments (Figure 19), but it must be remembered that truck shipments in most cases will progress much farther per hour than will rail movements. Thus, even though the method of transportation used has little effect on shrinkage, the time in-transit required by rail or truck will have a definite affect. This gives trucks, with their greater speed, a core advantage in service competition. However, the importance of various service factors offered to producers by either rail or truck firms will depend on the specific circumstances involved and the needs of each individual livestock shipper.

^{40/} "Shrinkage is Important", Clive R. Harston, Montana Agricultural Experiment Station, Circular 220, April 1, 1959.

^{41/} "Shrinkage Depends on Where, When and What You Market", Clive R. Harston, Montana Agricultural Experiment Station, Circular No. 221, April, 1959.

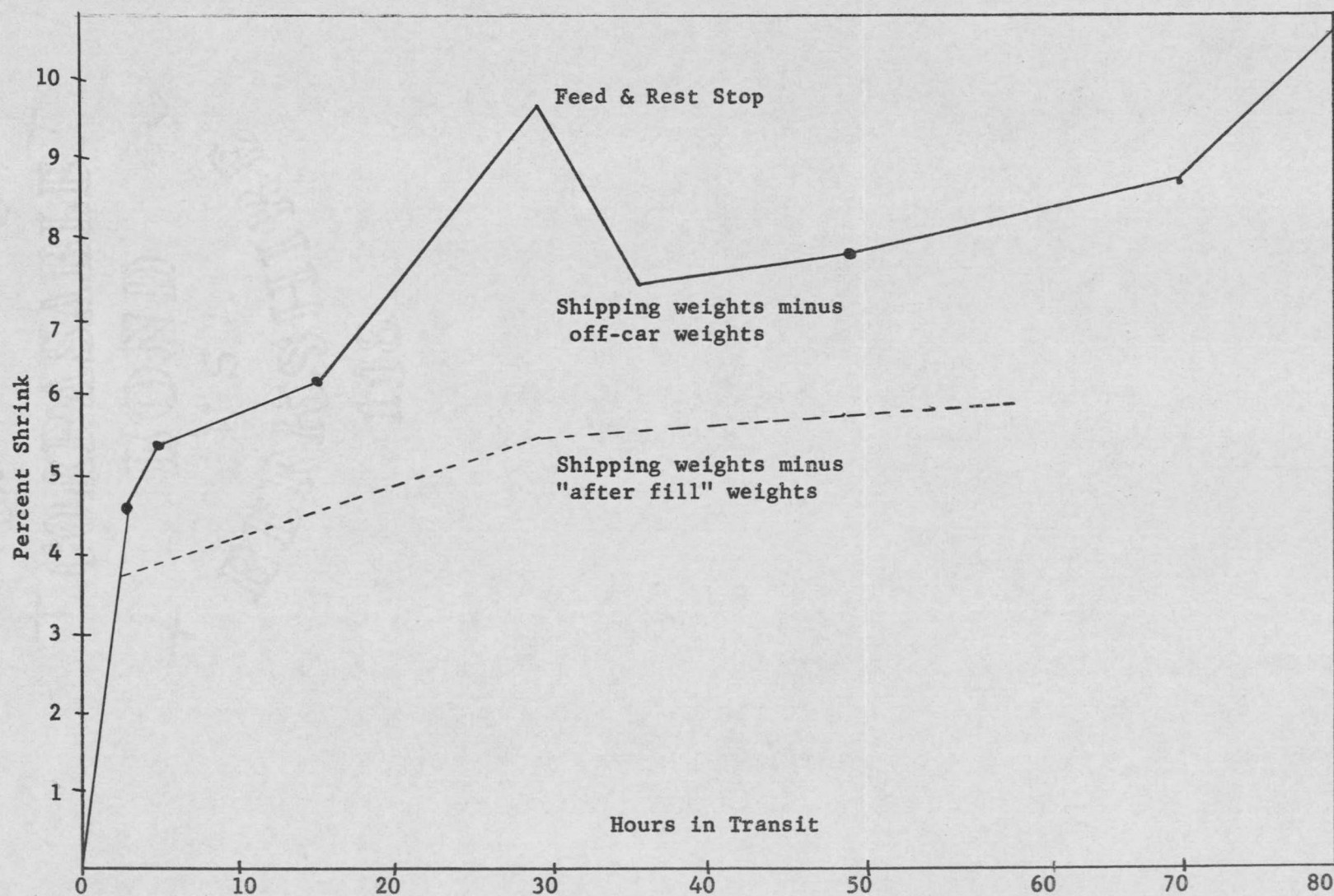


Figure 18. Shrinkage Increases as Hours in Transit Increase (fat cattle). *

* Source: Harston, Clive R., "Shrinkage Depends on Where, When, and What You Market", Montana Agricultural Experiment Station Circular No. 221, April, 1959, p.4.

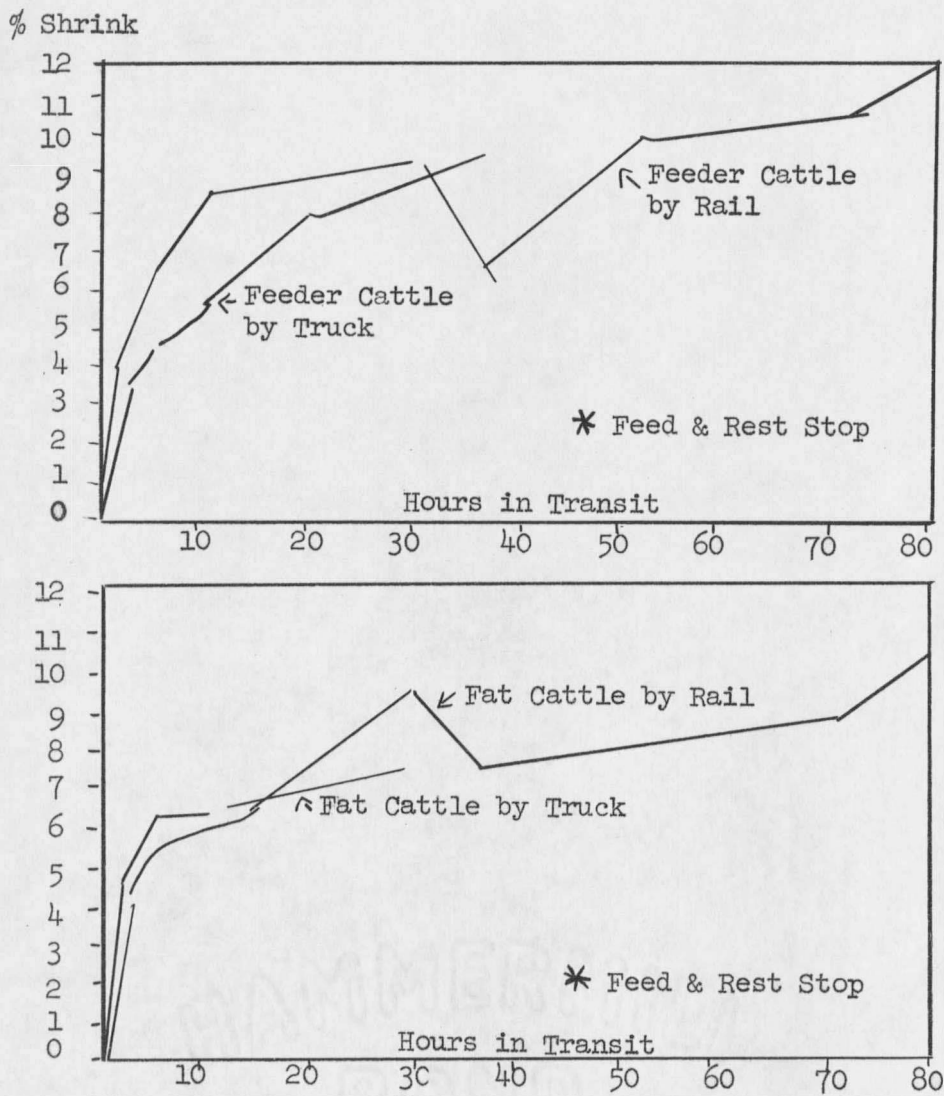


Figure 19. How Shrinkage Differs When Cattle are Shipped by Truck and Rail (Feeder and Fat Cattle).

Summary of Rail and Truck Efficiency

Livestock transportation rates indicate clearly that rail movements are not competitively priced for local shipments. The ability of rail companies to meet competition for local hauling is further reduced by the extra cost and handling necessary to move animals from the ranch to rail-head for loading. As a result of this rate situation, approximately 98 percent of intrastate livestock shipments are made by truck. Rail shipments would be competitively priced only on longer intrastate hauls, and thus, would be insignificant in affecting rates of local livestock movements.

Competing for local livestock hauling are farm trucks and commercial livestock trucking firms. Farm trucks are primarily limited by a small payload that can be efficiently hauled only a short distance and by lack of capacity to move large numbers of animals. Also, many farms do not have their own truck. However, within these limited capacities, it is likely that farm truck costs are favorable relative to hauling prices asked by local trucking firms. When livestock are sold in large lots, or moved to a market more than a short distance from the ranch, however, it will usually be necessary to depend on local commercial trucking firms.

The organization of local livestock trucking firms suggests that, at least, this portion of the livestock transportation industry is involved in monopolistic competition. Local trucking firms are generally small, apparently underutilizing their resources in many cases, and offer a widely varying range of services to producers. These local firms may have a core advantage in location, equipment available, operator's experience, or similar features. Competition would be most intense between firms when competing for "fringe" customers that were not within the "core" segment of each firm, and price cutting would likely become more

prevalent as the degree of competition between firms increases.

As trip length increases, some undefined point will be reached where rail companies would become competitive with rates set by trucking firms. With the introduction of rail competition, a more definite price pattern is discernable. In the range of rail vs. truck competition, rates are nearly equal although truck rates may be slightly higher in some cases. Where rate competition is reduced, truckers apparently are seeking to match rates set by rail firms and compete with rail on service factors. When this occurs, rail companies have the advantage of planned price policies, financial stature, and continuous availability. Truck firms will stress speed, convenience, and flexibility of their services.

The distance range of rail vs. truck competition will be influenced by weight, class, and condition of the livestock. Availability or lack of availability of a back-haul for trucks will also affect the distances at which trucks can compete with rail. At some undefined upper limit, truck services probably will not be competitively priced, and rail companies will furnish most of the required transportation facilities. Trucking firms have sought to alter this situation by innovation with special types of equipment and rail firms by innovating with special services such as fast "livestock" trains.

Thus, where local hauling is influenced by competition from farm trucks, emphasis may be on rates and reduced costs to consumers. Beyond the competitive range of farm trucks, competition will probably shift to service factors although where intense competition exists, rate cutting will probably continue to be a problem. In long-distance hauling, truckers will be likely to continue maximizing payloads and avoiding rate competition where these firms actively seek long-hauls as an important portion of their total income. This will more than likely result only in the range where rail rates are competitive with truck rates however. When rates are not influenced by rail competition, rate cutting is likely to

be a problem.

In any case the livestock producer will benefit through either reduced rates or increased services, although these gains may later be passed on to consumers in the form of reduced livestock prices.

CHAPTER IV

CONCLUSIONS

An adequate, stable, and efficient livestock transportation system is essential to Montana to supplement the livestock industry of the state. Production of high-quality feeder animals in Montana requires an adequate transportation system in order to market this specialized product. Transportation is also necessary for the growth of livestock feeding, marketing and slaughtering within the state. Efficient transportation promotes interregional trade and reduces production costs of livestock and related industries. Therefore, gains in livestock transportation efficiency that either reduce cost or increase services to Montana producers are in the economic interest of the state. These gains in efficiency are most likely to occur when rate and service competition is present due to the availability of alternative sources of transportation.

Local livestock transportation is provided by farm trucks and local commercial trucking firms. Rail facilities are rarely used for local hauling. Farm truck costs of operation are apparently favorable relative to prices asked by local livestock truckers, but farm trucks are limited by size and availability. Local trucking firms are faced by an intense competitive rate situation that probably reduces profits to a low point and promotes instability in this section of the livestock transportation industry. The organization of these local trucking firms suggests that this portion of the industry is involved in a form of monopolistic competition. Firm size is small, resources are often underutilized, and competition is intense for "fringe" customers. This situation is likely to result in truck rates that are usually competitively priced, but with a wide range of available services included in these rates. Much of the variation in local trucking services will revolve around the availability of different types and sizes of equipment, although speed, flexibility, and convenience of trucking services will also be emphasized by trucking

firms to gain additional customers. Local trucking rate patterns indicate a wide range of variation reflecting the different degrees of competition and bargaining power that exists from one area to another.

At some undefined distance, as trip length increases, competition will shift to involve rail firms and long-distance trucking firms. When this occurs, rate patterns will tend to indicate a fairly definite pattern with rates an inverse function of distance. This results from trucking firms seeking to match long-distance rates set by rail companies and causes competition to shift from rates to service. Thus, the source of competition in livestock hauling, and consequently the rates and services offered to producers, will be determined by distance in most cases regardless of whether the haul is intrastate or interstate.

Much of the equipment now being utilized by trucking firms specializing in short hauls may be out-dated long-haul equipment. As new equipment innovations are introduced that will allow long-distance truckers to increase total revenue, replaced units may become available to local haulers at reduced prices. Thus, equipment is likely to be improved for all commercial trucking firms through the innovation of long-distance units. Of course, the extent of this cannot be determined. Accompanying this improved equipment situation in the commercial field is an apparent increase in the size and ability to compete by farm trucking units. Thus, in the immediate future, it appears that livestock trucking equipment may continue to improve at all levels of the industry.

This equipment situation is probably encouraged most by the need of long-distance truckers to maximize payload. In order to increase the range of truck competition, long-distance truckers must seek to maximize payloads since this increases total revenue without a proportionate increase in rates per unit and provides a method of matching rail rates (per unit) while increasing total revenue. This is possible since the total revenue would be a proportional function for payload increases

(same rate per unit as payload increases) while total cost would be increasing less than proportionally (in the range of physical maximum loading potential).

A similar situation exists for back-hauls since total revenue increases at a much faster rate than total cost. Although the back-haul operation would likely increase profits more effectively than maximizing payload, it is difficult to obtain back-hauls to Montana from most areas. Manufactured or processed commodities are generally not available due to interstate commerce regulations and it is difficult to obtain livestock or unprocessed feed shipments since Montana produces abundant supplies of livestock feed as well as surplus feeder cattle and sheep. However, long-distance trucking firms will seek to increase profit and competitive range whenever possible by maximizing payload or obtaining a back-haul. This has resulted in innovation of special types of equipment such as the drop-center and long semi-trailer units that promote payload maximization. In some cases, special types of equipment have also been innovated that increase the number and types of commodities that can be utilized for back-hauls although existing regulations are likely to discourage this to some extent.

Increases in efficiency are likely to be returned to producers due to the competition for livestock traffic existing between alternative sources of transportation. Thus, Montana producers benefit as the range of competition is extended, and more than likely benefit most when competition centers on service.

If improvements in transportation efficiency are passed on to the producer in the form of rate reductions, the terms of trade between livestock producers and the eventual consumer are probably such that these gains will be passed on to the consumer in the form of reduced livestock prices. However, in the long run, lower prices may increase the demand for meat and indirectly be of benefit to producers. On the other hand,

increased efficiency that results in more services to producers rather than rate reductions, may offer greater prospects of being retained by the producer. Increased speed of shipments, greater shipper convenience, an adequate supply of satisfactory equipment, and similar factors will directly benefit the producer. Since these benefits will increase producer efficiency, in the long-run consumers will also benefit indirectly if production costs fall.

Both rail and truck transportation is important to Montana producers. However, rail is not competitive for short hauls, but is somewhat more important than truck facilities for long-distance shipments. Since Montana exports primarily feeder cattle and ships these mostly to distant states, rail companies have an advantage since they do not have to maximize payloads. Rail pricing policy that offers a special feeder rate (Appendix A and B) to producers also benefits the competitive standing of rail firms. This situation is influenced also by the seasonality of livestock movements. The peak shipping period is in September, October and November and this is even more pronounced for feeder animals. The net result of the type and class of livestock most commonly exported from Montana, and the destinations of this livestock, is to increase the importance of rail facilities to Montana producers.

Future growth of the state's livestock and related industries is not likely to be retarded by the lack of adequate or efficient livestock transportation facilities. Although there are elements of instability present in Montana's livestock transportation industry, it appears that this will not prevent the supply of ample facilities to serve producers. This instability is most evident for local hauling where intense competition often exists. State regulation of intrastate trucking would provide greater stability to this segment of the industry, but whether this step would be justified is not clear.

Rate and service competition in most phases of the industry has resulted in increased efficiency and innovations that make transportation more convenient and flexible for livestock producers. Although efficiency is only relative, and improvements must always be sought, it appears that Montana producers are served by efficient transportation both in terms of rates and services. However, any increases in the range of effective rail vs. truck competition are likely to benefit Montana producers.

For the most part, Montana producers have adequate and efficient transportation facilities available to serve their needs and this situation seems certain to continue and to be improved by new innovations and improved competitive conditions.

APPENDICES

A P P E N D I X A

Data is tabulated in Appendix A concerning intrastate rates for truck and rail shipments in Montana.

Comparisons are made on per hundredweight basis and on a per ton/mile basis. Because intrastate truck rates were so often given on a per mile basis, the truck per mile rate is also listed, and truck and rail mileage for various intrastate points are tabulated.

On a per mile basis for trucks, the load hauled determines directly the charge per hundredweight and also the charge per ton/mile. It is important to determine the most likely load for trucks to haul. In Appendix A, a 25,000 pound minimum is assumed for both truck and rail when using 40-foot units for each mode of transportation. This was done for the purposes of comparisons, but in actual practice, it is likely that trucks would tend to haul more weight than rail cars (using 40-foot unit in each case). This is important where the truck rate is quoted on a per mile basis, and it must be emphasized that if trucks hauled more (e.g., 30,000 pounds) than a comparable rail unit, then truck rates would be more favorable than those indicated in Appendix A.

Rail rates were submitted by the Montana Railroad Commission for 1960 and truck rates are from the 1960 survey of Montana livestock truckers.

Intrastate Rail and Truck Rates for Montana Using Forty-foot Truck-Trailer and Forty-foot Rail Car with Rate Based on 25,000 pound Minimum Weights. (1960 data). Rail Rates Submitted by Montana Railroad Commission and Truck Rates from 1960 Survey.

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Rate Per Feeder	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Butte	Billings	237	235	.70	.6636	.056	.58	.495	.0493	.0421
	Dillon	64	69	.80	.2048	.064	.36	.305	.1043	.0884
	Norris	70	73	.80	.224	.064	.37	.315	.1013	.0863
	Townsend	93	105	.80	.2976	.064	.42	.355	.0800	.0676
	Lewistown	251	242	.70	.7028	.056	.62	.525	.0512	.0434
	Great Falls	159	171	.70	.4452	.056	.52	.44	.0608	.0515
	Helena	66	70	.80	.2112	.064	.37	.315	.1013	.0863
	Deer Lodge	38	40	.80	.1520	.080	.28	.24	.14	.12
	Bozeman	95	95	.80	.3040	.064	.41	.35	.0863	.0736
	Phillipsburg	53	95	.80	.1696	.064	.41	.35	.0863	.0736
(truck general under 100 miles)				.80		.064				
(truck general over 100 miles)				.70		.056				
Billings	Red Lodge	59	59	.80	.1888	.064	.33	.28	.1118	.0949
	Hardin	50	58	.80	.16	.064	.33	.28	.1137	.0965
	Roundup	53	206	.80	.1696	.064	.55	.47	.0533	.0456
	Columbus	42	40	.80	.1344	.064	.28	.24	.14	.1206
	Butte	237	235	.70	.6636	.056	.58	.495	.0493	.0421
	Lewistown	129	154	.75	.3870	.06	.50	.425	.0649	.0552
	Forsyth	103	102	.75	.3090	.06	.42	.355	.0823	.0696
	Hysham	77	75	.80	.2464	.064	.37	.315	.0986	.084
	Livingston	117	115	.75	.3510	.06	.42	.355	.073	.0617
(truck general under 100 miles)				.80		.064				
(truck general over 100 miles)				.75		.06				
(truck general over 200 miles)				.70		.056				

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Rate/CWT. Ton/Mile	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Missoula	Butte	120	119	.75	.36	.06	.44	.375	.0739	.063
	Lewistown	273	331	.75	.993	.06	.70	.595	.0422	.0359
	Hamilton	47	48	1.00	.118	.08	.29	.245	.1208	.1021
	Polson	68	78	1.00	.272	.08	.37	.315	.0948	.0808
	Dillon	175	175	.75	.525	.06	.52	.44	.0594	.0503
	Deer Lodge	82	80	.75	.246	.06	.37	.315	.0925	.0787
	(truck general under 75 miles)			1.00		.08				
	(truck general over 75 miles)			.75		.06				
Helena	Great Falls	98					.41	.35	.0836	.0714
	Bozeman	98					.41	.35	.0836	.0714
	Deer Lodge	62					.36	.305	.1161	.0984
	Townsend	33					.28	.24	.1696	.1454
	Butte	73					.37	.315	.1013	.0863
	Missoula	120					.44	.375	.0733	.0625
	Lewistown	211					.55	.47	.0521	.0445
Bozeman	Butte	95					.41	.35	.0863	.0737
	Billings	142	140	.7042	.40	.0563	.45	.385	.0642	.0550
	Helena		98				.41	.35	.0836	.0714
	Townsend		65				.36	.305	.1107	.093
	Wh. Sulphur Sp.		105				.42	.355	.0800	.0676
	Livingston		25				.26	.22	.2080	.1760
	Boulder		133				.45	.385	.0676	.0579
	Forsyth		242				.62	.525	.0512	.0433
	Dillon		164				.52	.44	.0634	.0536
	Malta		406				.77	.655	.0379	.0323
Kalispell	Cutbank		134				.45	.385	.0671	.6574
	Shelby		158				.50	.425	.0632	.0537
	Great Falls		258				.62	.525	.0480	.0406

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Rate Per Feeder CWT.	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Lewistown	Billings	129	154	.80			.50	.425	.0649	.0551
	Stanford	45	49	.80			.29	.245	.1183	.1000
	Bozeman	163	202	.80			.54	.46	.0534	.0455
	Butte	251	242	.80			.62	.525	.0512	.0433
	Havre	223	241	.80			.62	.525	.0514	.0435
	Roundup	76	133	.80			.45	.385	.0676	.0578
	Winnett	53	59	.80			.33	.28	.1118	.0949
	Harlowtown	58	63	.80			.36	.305	.1142	.0968
	Livingston	138	227	.80			.58	.495	.0511	.0436
Red Lodge	Billings		59				.33	.28	.1118	.0949
	Hardin		117				.44	.375	.0752	.0641
	Columbus		70				.36	.305	.1028	.0871
Malta	Butte	363	381	1.00	1.452	.08	.75	.64	.0393	.0335
	Great Falls	204	211	1.00	.8440	.08	.55	.47	.0521	.0445
	Havre	90	87	1.00	.36	.08	.38	.325	.0873	.0747
	Glasgow	71	66	1.00	.284	.08	.36	.305	.0190	.0924
	Chinook	68	109	1.00	.272	.08	.42	.355	.077	.0651
	Sidney	212	221	1.00	.848	.08	.625	.53	.0565	.0479
	Cutbank	217	217	1.00	.868	.08	.55	.47	.0506	.0433
	General			1.10		.088				
General on Highway				1.00		.08				
Havre	Bozeman	307	319	.60	.7656	.048	.68	.58	.0426	.0363
	Chinook	21	22	1.00	.80	.08	.26	.22	.2363	.2000
	Cut Bank	127	129	.60	.3048	.048	.44	.375	.0682	.1581
	Great Falls	114	123	.60	.2736	.048	.44	.375	.0715	.0609
	Butte	274	294	.60	.7076	.048	.65	.555	.0442	.0377
	Shelby	103	105	.60	.2472	.048	.42	.355	.0800	.0676
General under 100 miles				1.00		.08				
General over 100 miles				60-65		.078				

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Rate/CWT.	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Hamilton	Butte		167				.52	.44	.0622	.0526
	Missoula		48				.29	.245	.1208	.1020
	Polson		126				.44	.375	.0698	.0595
	Miles City		533				.90	.765	.0337	.0287
	Phillipsburg		123				.44	.375	.0715	.0609
Miles City	Billings	150	148	.7742	.4645	.0619	.50	.425	.0675	.0574
	Bozeman	292	288	.6489	.7579	.0519	.65	.555	.0451	.0385
	Forsyth	46	46	1.104	.2032	.0883	.29	.245	.1260	.1065
	Terry	39	39	1.141	.1781	.0912	.28	.24	.1435	.1230
	Hysham	72	73	.9579	.2785	.0766	.37	.315	.1013	.0863
Polson	Butte		196				.54	.41	.0551	.0469
	Missoula		78				.37	.315	.0948	.0807
Glendive	Sidney		55				.33	.28	.1202	.1018
	Circle		52				.33	.28	.1269	.1076
	Billings	226	226	.55	.4972	.044	.58	.495	.0513	.0438
	Miles City		78				.37	.315	.0948	.0807
	Terry		39				.28	.24	.1435	.1230
	Wibaux		31				.28	.24	.1806	.1548
	Forsyth		124				.44	.375	.0709	.0604
(General under 150)				.90						
(General over 200 miles)				.55						
Wolf Point	Billings		386				.79	.67	.0409	.0347
	Sidney		106				.445	.38	.0839	.0716
	Glasgow		50				.29	.245	.1160	.0980
	Hamilton		592				.93	.79	.0314	.266
	Circle		213				.585	.495	.0549	.0464
Dillon	Butte	64	69	.80	.2048	.064	.36	.305	.1043	.0884
	Billings	260	304	.80	.8320	.064	.68	.58	.0447	.0381

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Rate Per Feeder Rate/CWT.	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Dillon	Hardin	310	362	.80	.9920	.064	.72	.61	.0397	.0337
	Boulder	100	107	.80	.32	.064	.42	.355	.0785	.0663
	Bozeman	118	164	.80	.3776	.064	.52	.44	.0634	.0536
(General 24/foot)				.80		.064				
Fort Benton	Great Falls		45				.29	.245	.1288	.1088
	Lewistown		162				.52	.44	.0641	.0543
	Dillon		284				.65	.555	.0457	.0390
	Havre		79				.37	.315	.0936	.0797
	Billings		279				.63	.535	.0451	.0383
	Scobey		448				.79	.67	.0352	.0299
	Chester		141				.45	.385	.0638	.0546
Glasgow	Lewistown		394				.75	.64	.0380	.0324
	Wolf Point		50				.29	.245	.1160	.0980
	Circle		263				.69	.585	.0524	.0444
	Billings		436				.81	.69	.0371	.0316
	Glendive		210				.585	.495	.0557	.0471
	Sidney		155				.525	.445	.0677	.0574
	Havre		153				.50	.425	.0653	.0555
	Roundup		434				.70	.665	.0359	.0306
Shelby	Butte		270				.63	.555	.0466	.0396
	Great Falls		99				.41	.35	.0828	.0707
	Helena		197				.54	.46	.0548	.0467
	Conrad		31				.28	.24	.1806	.1548
	Cut Bank		25				.26	.22	.2080	.1760
	Havre		105				.42	.355	.0800	.0676
	Bozeman		295				.65	.355	.0440	.0376
	Choteau		102				.42	.355	.0823	.0696

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Feeder Rate/CWT.	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Hardin	Billings	50	58	.95	.19	.076	.33	.28	.1137	.965
	Miles City	122	180	.7368	.3596	.0589	.53	.45	.0568	.0500
	Forsyth	76	134	.968	.2942	.0774	.45	.385	.0774	.0574
	Helena	275	296	.683	.7513	.0546	.65	.555	.0439	.0375
	Red Lodge	109	117	.8791	.3833	.0703	.44	.375	.0752	.0641
	(General Short Haul)			1.00		.08				
	(General over 200 miles)			.80		.064				
Roundup	Billings	No Route								
	Bozeman		210			.0523	.55	.47	.0447	
	Hardin	No Route								
	Rygate		41			.1414	.29	.245	.1195	
	Winnett		192			.0562	.54	.46	.0479	
	Miles City		146			.0684	.50	.425	.0582	
	Forsyth		102			.0823	.42	.355	.0696	
Chinook	Missoula	301	363	.80	.9632	.064	.72	.61	.0396	.0336
	Havre	21	22	.80	.0672	.064	.26	.22	.2363	.2000
	Malta	68	66	.80	.2176	.064	.36	.305	.1090	.0924
	Sydney	280	287	.80	.896	.064	.71	.605	.0494	.0421
	Bozeman	328	340	.80	1.049	.064	.70	.595	.0411	.0350
	(General on Hiway)			.80		.064				
	(General)			.90		.072				
Conrad	Great Falls		68				.36	.305	.1058	.0897
	Shelby		31				.28	.24	.1794	.1538
	Choteau		71				.37	.315	.1042	.0887
	Cut Bank		56				.33	.28	.1178	.1000
	Chester		74				.37	.315	.1000	.0851
Sidney	Glendive	54	55	1.15	.2484	.092	.33	.28	.1200	.1018
	Wolf Point	92	106	1.15	.4232	.092	.445	.38	.0839	.0716
	Billings	277	281	.60	.6648	.048	.65	.555	.0462	.0395

From	To	Truck		Truck		Truck		Rail		Rail		Rail Feeder	
		Truck Mileage	Rail Mileage	Rate Per Mile	Rate Per CWT	Rate Per Ton/Mile	Rate Per CWT	Rate Per Feeder	Rate/ Ton/Mile	Rate/ Ton/Mile	Rate/ Ton/Mile	Rate/ Ton/Mile	Rate/ Ton/Mile
Sidney	Forsyth	174	179	.60	.4176	.048	.53	.45	.0592	.0502			
	Miles City	127	133	.60	.3048	.048	.45	.385	.0676	.0578			
	Havre	301	308	.60	.7224	.048	.72	.61	.0467	.0396			
	(General over 125 miles)			.60		.048							
Deer Lodge	Butte		40				.29	.245	.1442	.1218			
	Missoula		80				.37	.315	.0925	.0787			
	Helena		62				.36	.305	.1161	.0983			
	Miles City		423				.78	.665	.0368	.0314			
	Phillipsburg		57				.33	.28	.1457	.0982			
	Townsend		91				.41	.35	.0901	.0769			
	Bozeman		136				.45	.385	.0661	.0566			
Forsyth	Billings	103	102	.80	.3296	.064	.42	.355	.0823	.0696			
	Miles City	46	46	.90	.1656	.072	.29	.245	.1260	.1065			
	Hardin	76	134	.90	.2736	.072	.45	.385	.0671	.0574			
	Hysham	26	27	.90	.0936	.072	.26	.22	.1925	.1629			
	Baker	127	148	.80	.4064	.064	.50	.425	.0675	.0574			
	Glendive	122	124	.80	.1408	.064	.44	.475	.0709	.0604			
	(General under 100 miles)			.90		.073							
	(General 100-200 miles)			.80		.064							
Choteau	Great Falls		53				.33	.28	.1245	.1056			
	Shelby		102				.42	.35	.0823	.0696			
	Cut Bank		126				.44	.375	.0698	.0563			
	Conrad		71				.37	.315	.1042	.0887			
	Helena		150				.50	.425	.0666	.0566			
	Butte		223				.58	.495	.0513	.0443			
Columbus	Billings		400				.36	.305	.1028	.0871			
	Red Lodge		70				.29	.245	.1414	.1195			
	Big Timber		41				.53	.45	.0557	.0473			
	Butte		190										

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Rate Per Feeder Rate/CWT.	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Hysham	Billings		74				.37	.315	.1000	.0851
	Hardin		107				.42	.355	.0785	.0663
	Forsyth		27				.26	.22	.1925	.1629
	Bozeman		215				.55	.47	.0511	.0437
Plentywood	Sidney	84	90	.75	.2520	.06	.415	.355	.0922	.0788
	Wolf Point	97	122	.50	.1940	.04	.44	.375	.0721	.0614
	Scobey	42	45	.75	.1260	.06	.29	.245	.1288	.1088
	(General under 100 miles)			.75		.06				
(General over 100 miles)				.50		.04				
Thompson Falls	Missoula		102				.42	.355	.0823	.0696
	Polson		91				.41	.35	.0901	.0769
	Butte		222				.58	.495	.0522	.0445
Stanford	Great Falls		69				.36	.305	.1043	.0884
	Lewistown		49				.29	.245	.1183	.1000
	Fort Benton		114				.42	.355	.0736	.0622
	Billings		166				.52	.44	.0626	.0530
	Dillon		309				.68	.58	.0440	.0375
Scoby	Wolf Point		167				.52	.44	.0622	.0526
	Sidney		135				.525	.445	.0777	.0659
	Glasgow		216				.55	.47	.0509	.0435
	Plentywood		151				.50	.425	.0662	.0562
Cut Bank	Great Falls		124				.44	.375	.0709	.0604
	Shelby		25				.26	.22	.2080	.1760
	Conrad		56				.33	.28	.1178	.1000
	Choteau		126				.44	.375	.0698	.0595
	Chester		68				.36	.305	.1058	.0897
	Malta		217				.55	.47	.0506	.0433
	Havre		129				.44	.375	.0682	.0581

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Feeder Rate/CWT.	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Baker	Miles City	81	104	1.15	.3726	.092	.42	.355	.0807	.0682
	Glendive	73		1.15	.3358	.092				
	General			1.15		.092				
Big Timber	Billings	82	81	.80	.2624	.064	.38	.325	.0938	.0802
	Bozeman	60	59	.80	.1920	.064	.33	.28	.1118	.0949
	Columbus	40	41	.80	.1280	.064	.29	.345	.1414	.1195
	Harlowton	44		.80	.1408	.064	No Route			
	Livingston	35	34	.80	.1120	.064	.28	.24	.1647	.1411
	Polson	336	352	.60	.8064	.048	.71	.605	.0403	.0343
	Butte	155	155	.80	.4960	.064	.50	.425	.0645	.0548
	(General under 200 miles)			.80		.064				
	(General over 200 miles)			.60		.048				
Circle	Glendive	49	52	.80	.1568	.064	.33	.28	.1269	.1076
	Wolf Point	53	213				.585	.495	.0549	.0464
	Glasgow	102	262				.69	.585	.0526	.0446
	Billings	241	277				.63	.535	.0454	.0386
	Miles City	121	130				.44	.375	.0676	.0576
	Sidney	75	107				.42	.355	.0785	.0663
	Forsyth	167	176	.63	.4208	.0504	.53	.45	.0602	.0511
	(General 40-50 miles)			.80		.064				
	(General 151-200 miles)			.63		.0504				
Townsend	Butte		106				.42	.355	.0792	.0669
	Helena		33				.28	.24	.1696	.1454
	Bozeman		65				.36	.305	.1107	.0938
	White Su. Sp.		81				.38	.325	.0938	.0802
	Boulder		68				.36	.305	.1058	.0897
	Ryegate		145				.45	.385	.0620	.0531
	Dillon		175				.52	.44	.0594	.0502

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT	Truck Rate Per Ton/Mile	Rail Rate Per CWT.	Rail Rate/CWT. Feeder.	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Harlowton	Billings	92	136	.75	.2760	.06	.45	.385	.0661	.0566
	Lewistown	58	63	.80	.1856	.064	.36	.305	.1142	.0968
	Big Timber	44		.80	.1408	.064	No Route			
	Ryegate	30	30	.80	.096	.064	.26	.22	.1733	.1466
	Wh. Su. Spgs.	58	80	.80	.1856	.06	.37	.315	.0925	.0787
	Great Falls	131	143	.75	.3930	.064	.45	.385	.0629	.0538
	(General Over 100 miles)			.75		.06				
	(General under 100 miles)			.80		.064				
Terry	Miles City	39	39	1.00	.1560	.08	.28	.24	.1435	.1230
	Glendive	38	39	1.00	.1520	.08	.28	.24	.1435	.1230
	Billings	188	187	1.00	.7520	.08	.50	.45	.0566	.0481
	Bozeman	230	327	1.00	1.32	.08	.70	.595	.0428	.0363
	Forsyth	85	85	1.00	.34	.08	.38	.325	.0894	.0764
	General			1.00						
Phillipsburg	Butte		97				.41	.35	.0845	.0721
	Missoula		75				.37	.315	.0986	.0840
	Bozeman		192				.54	.46	.0562	.0479
	Deer Lodge		57				.33	.28	.1157	.0982
	Dillon		166				.52	.44	.0626	.0530
	Helena		97				.41	.35	.0845	.0721
White Sul. Spg.	Billings	150	245	.80	.48	.064	.62	.525	.0508	.0428
	Bozeman	97	105	.80	.3104	.064	.42	.355	.0806	.0676
	Townsend	42	81	.80	.1216	.064	.38	.325	.0932	.0802
	Cut Bank	208	335	.80	.6656	.064	.70	.595	.0415	.0355
	Harlowton	58	80	.80	.1856	.064	.37	.315	.0927	.0787
	Forsyth	229	252	.80	.7328	.064	.62	.525	.0496	.0416
	General									

From	To	Truck		Truck Rate Per CWT	Truck Rate Per Ton/Mile	Rail Rate Per CWT	Rail Rate Per Feeder Rate/CWT	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
		Truck Mileage	Rail Mileage						
Chester	Conrad		74			.37	.315	.1000	.0851
	Cut Bank		68			.36	.305	.1058	.0897
	Great Falls		142			.45	.385	.0633	.0542
	Havre		62			.36	.305	.1161	.0983
	Shelby		43			.29	.245	.1348	.1139
Boulder	Butte		38			.28	.24	.1473	.1263
	Helena		36			.28	.24	.1555	.1333
	Bozeman		59			.33	.28	.1118	.0949
	Big Timber		192			.54	.46	.0562	.0479
	Townsend		68			.36	.305	.1058	.0897
	Dillon		107			.42	.355	.0785	.0663
Ryegate	Roundup		41			.29	.245	.1414	.1195
	Great Falls		172			.52	.44	.0604	.0511
Great Falls	Butte	159	170	.90	.5724	.072	.52	.44	.0611
	Billings	221	234	.90	.7956	.072	.58	.495	.0495
	Helena	94	97	.90	.3384	.072	.41	.35	.0845
	Havre	184	123	.90	.4104	.072	.44	.375	.0715
	Fort Benton	41	44	.90	.1476	.072	.29	.245	.1414
	Sidney	379	431	.90	1.364	.072	.28	.665	.0361
	Stanford	62	69	.90	.2232	.072	.36	.305	.1043
	Cut Bank	108	123	.90	.4428	.072	.44	.375	.0715
	General			.90					
Livingston	Billings		115			.0730	.42	.355	.0617
	Bozeman		25			.2080	.26	.22	.1760
	Big Timber		34			.1647	.28	.24	.1411
	Wh.Su. Spgs.		130			.0676	.44	.375	.0576

From	To	Truck Mileage	Rail Mileage	Truck Rate Per Mile	Truck Rate Per CWT	Truck Rate Per Ton/Mile	Rail Rate Per CWT	Rail Rate Per Feeder	Rail Rate/ Ton/Mile	Rail Feeder Rate/ Ton/Mile
Winnett	Billings		214			.0514	.55	.47	.0439	
	Lewistown		59			.1118	.33	.28	.0949	
Libby	Havre		373			.0386	.72	.61	.0327	
	Kalispell		138			.0652	.45	.385	.0557	
	Missoula		272			.0536	.73	.62	.0455	
Pleva	General			.90		.072				
Bainville	General over 100 mi.			.50		.04				
	General under 100 mi.			65-70		.04				
Hinsdale	General under 80 mi.			.90		.072				
Three Forks	General			.80		.064				
Belgrade	General			.70		.056				

A P P E N D I X B

Data on 1960 interstate rail and truck rates is tabulated for selected Montana origins in Appendix B.

Since nearly all truck rates for interstate hauls are quoted on a per hundredweight basis, the weight hauled is not an important factor to consider in comparisons. However, this would be vitally important in the determination of truckers profits since trucks would attempt to maximize payloads in long-distance hauling in order to increase total revenue without increasing the rate charged per unit.

It appears that trucks must, for the most part, accept rail rates or a small percentage above rail rates. It should be kept in mind that rail rates do not include costs of moving livestock from ranch to railhead for loading.

Rail rates were submitted by the Montana Railroad Commission for 1960 and truck rates are from the 1960 survey of Montana livestock truckers.

From	To	Truck		Rail		Rail Rate		Truck Rate	Rail Rate
		Mileage	Rate	Mileage	Rate	Per CWT.	Per CWT.	Per Ton/Mile	Per Ton/Mile
Bozeman	Idaho Falls, Idaho	211	.50	307	.78	.665	.0474		.0508
	Spokane, Wash.	432	.90	432	1.25	1.065	.0426		.0578
	Ogden, Utah	392	.90	493	.98	.835	.0459		.0397
	Portland, Oregon	798	1.40	798	1.25	1.065	.0351		.0336
	Denver, Colorado	728	1.40	728	1.24	1.055	.0385		.0316
	Garner, Iowa	1,052	1.40	1,052	1.45	1.235	.0266		.0272
	Sioux Falls, S.D.	888	1.30	891	1.26	1.07	.0293		.0282
	Boise, Idaho	481	1.04		1.09	.925	.0432		
	Eau Claire, Wis.	1,077	1.45	1,089	1.47	1.25	.0269		.0270
	Twin Cities, Minn.	979	1.39				.0284		
	Milwaukee, Wis.	1,329	1.79	1,323	1.75	1.49	.0269		.0264
	St. Joseph, Missouri	1,030	1.52				.0295		
	Chicago, Illinois	1,406	1.79				.0269		
	Mason City, Iowa	1,075							
	Bay Area	1,069	1.69				.0316		
	Los Angeles, Calif.	1,168		1,302	1.78	1.515			.0273
Butte	Idaho Falls, Idaho	211	.50	212	.555	.47	.0474		.0523
	Spokane, Washington	327	.79				.0484		
	Twin Cities	1,075	1.48				.0275		
	Eau Claire, Wis.	1,173	1.65		1.85	1.575	.0281		
	Milwaukee, Wis.	1,425	1.90	1,399			.0266		
	Chicago, Illinois	1,502	1.90				.0253		
	Boise, Idaho	481		499	.98	.835			.0392
	Denver, Colorado	824		861	1.34				.0312
	Portland, Oregon	702	1.30	700	1.16		.0370		.0331
	Los Angeles, Calif.	1,166		1,205	1.66				.0275
	Sioux City, Iowa	1,064		1,043	1.43				.0274
	Saint Paul, Minn.	1,085		1,074	1.45				.0270
	Salt Lake City, Utah	428		434	.92				.0423
	Seattle, Washington	616		652	1.16				.0355

From	To	Truck Mileage	Rail Mileage	Truck Rate Per CWT.	Rail Rate Per CWT.	Rail Rate Per CWT. For S/F	Truck Rate Per Ton/Mile	Rail Rate Per Ton/Mile
Kalispell	Spokane, Washington	254	290	.60	.76		.0472	.0524
	Portland, Oregon	629	659	1.25	1.10		.0397	.0333
	Omaha, Nebraska	1,309		1.70			.0260	
	Seattle, Washington	543	598	1.15	1.10		.0424	.0367
Havre	Eau Claire, Wis.	1,070		1.36			.0254	
	Spokane, Washington	522		1.10	1.03	.875	.0421	
	Portland, Oregon	897		1.42	1.35	1.15	.0316	
	Boise, Idaho	453	793	1.42	1.26	1.07	.0377	.0317
	Seattle, Washington	811		1.40			.0345	
	Salt Lake City, Utah	700	728	1.35	1.24	1.055	.0386	.0340
	Idaho Falls, Idaho	483	506		1.03	.875		.0407
	Milwaukee, Wis.	1,382			1.67	1.42		
Gt. Falls	Spokane, Washington	415		.90	.94	.80	.0434	
	Portland, Oregon	790	798	1.35	1.25	1.065	.0468	.0313
	Ogden, Utah	551		1.25			.0454	
	Twin Cities	999		1.46			.0292	
	Eau Claire, Wis.	1,097		1.56	1.52	1.29	.0284	
	Milwaukee	1,349		1.88			.0279	
	Chicago, Ill.	1,425		1.88			.0264	
	Sioux City, Iowa	1,001		1.431	1.40	1.19	.0286	
	Albert Lee, Minn.	1,067		1.55			.0290	
	Mason City, Iowa	1,105		1.55			.0280	
	Omaha, Nebraska	1,080		1.50			.0276	
	St. Paul, Minn.	1,020		1.43	1.43	1.215	.0280	
	Scottsbluff, Neb.	717		1.32	1.28	1.09	.0365	
	Humbolt, Iowa	1,100		1.56			.0284	
	Seattle, Wash.	704	750	1.45	1.25	1.065	.0355	.0333
	Salt Lake City, Utah	587		1.25			.0420	
	Denver, Colorado	827		1.35	1.345	1.145	.0326	.0310
	Idaho Falls, Idaho	370	866		.89	.755		.0364
	Kansas City, Kan.	1,288	383		1.62	1.375		
	Los Angeles, Calif.	1,325		2.05			.0306	

From	To	Truck Mileage	Rail Mileage	Truck Rate Per CWT	Rail Rate Per CWT	Rail Rate Per CWT. For S/F	Truck Rate Per Ton/Mile	Rail Rate Per Ton/Mile
Billings	Eau Claire, Wis.	925	930	1.30	1.29	1.095	.0278	.0277
	Scottsbluff, Iowa	476		.99			.0416	
	Omaha, Nebraska	891	888	1.20	1.22	1.035	.0269	.0275
	Sioux City, Iowa	826	808	1.18	1.17	.999	.0285	.0289
	Mason City	833		1.27			.0305	
	Albert Lee, Minn.	895		1.50			.0330	
	Huron, S.D.	636		1.15			.0361	
	Green Bay, Wis.	1,025		1.48			.0288	
	Milwaukee, Wis.	1,187		1.66			.0280	
	Minneapolis, Minn.	837		1.25			.0299	
	Chicago, Illinois	1,264		1.63			.0257	
	St. Cloud, Minn.	806		1.16			.0288	
	Austin, Minn.	915		1.28			.0280	
	Humbolt, Iowa	920		1.25			.0272	
	St. Paul, Minn.	847					.0286	
	Nampa, Idaho	637					.0392	
	Seattle, Washington	854	887	1.39	1.18	3.39	.0313	
	Sioux Falls, S.D.	746				2.95		
	Amarillo, Tex.	991						
	Idaho Falls, Idaho	353	447	.94	.80		.0420	
Glendive	Kansas City, Kansas	1,091	1,019	1.39	1.18		.0273	
	Cheyenne, Wyoming	484	549	1.02	.865		.0371	
	Sioux City, Iowa	684	641	1.15	.98	.835	.0336	.0306
	Denver, Colorado	655	884	1.35	1.33	1.13	.0412	.0300
	Fargo, No. Dak.	415		1.10			.0530	
	Twin Cities	641		1.01			.0315	
	Eau Claire, Wis.	748	732	1.15	1.13	.96	.0307	.0308
	Milwaukee, Wis.	990	966	1.42	1.39	1.18	.0285	.0288
	Chicago, Ill.	1,067	1,038	1.42	1.37	1.18	.0264	.0268
	Los Angeles, Calif.	1,500	1,066		2.06	1.75		.0386
	Dickinson, No. Dak.	100	98		.455	.38		.0908
	Sioux Falls, S.D.	610	564		.91	.775		.0323
	Cheyenne, Wyo.	540	775		1.21	1.03		.0312

From	To	Truck Mileage	Rail Mileage	Truck Rate Per CWT.	Rail Rate Per CWT.	Rail Rate Per CWT. For S/F	Truck Rate Per Ton/Mile	Rail Rate Per Ton/Mile
Miles City	Austin, Minn.	830		1.15			.0277	
	Woodbine, Iowa	770	752	1.30	1.13	.96	.0338	.0300
	St. Cloud, Minn.	653		1.04			.0318	
	Twin Cities	684	691	1.11			.0324	
	Eau Claire, Wis.	782		1.18			.0302	
	Milwaukee, Wis.	1,034	1,016	1.49	1.46	1.24	.0288	.0287
	Chicago, Ill.	1,111		1.49			.0268	
	Denver, Colorado	586	806	1.25	1.25	1.065	.0427	.0310
	Portland, Oregon	1,093	1,064	1.70	1.48	1.26	.0311	.0278
	Seattle, Washington	1,007						
	Kansas City, Kansas	963	937		1.26	1.07		.0268
	Sioux Falls, S.D.	593	584		.98	.835		.0336
	Cheyenne, Wyo.	484	697		1.17	.995		.0335
	Dickinson, N.D.	184	176		.545	.465		.0619
	St. Paul, Minn.	694	691		1.09	.925		
Sidney	Alta, Iowa	764		1.10			.0388	
	Woodbine	830		1.25			.0301	
	Sioux City	730	696	1.15	1.10	.935	.0315	.0316
	Twin Cities	690		1.05			.0304	
	Eau Claire, Wis.	795	732	1.17	1.15	.98	.0294	.0314
	Milwaukee, Wis.	1,040	966	1.46	1.43	1.215	.0285	.0296
	Chicago, Ill.	1,115		1.46			.0262	
	St. Cloud, Minn.	635		.97			.0305	
	Denver, Colo.	700	939		1.35	1.15		.0287
	Kansas City		972		1.31	1.115		.0270
	W. Fargo, N.D.	450	405		.80	.68		.0395
	Idaho Falls, Idaho	590	728		1.21	1.03		.0332
	St. Paul, Minn.	690	642		1.03	.875		.0321

From	To	Truck Mileage	Rail Mileage	Truck Rate Per CWT.	Rail Rate Per CWT.	Rail Rate Per CWT.	Truck Rate Per Ton/Mile	Rail Rate Per Ton/Mile
Lewistown	Sioux City, Iowa	950		1.40			.0295	
	Green Bay, Wis.	1,184		1.64			.0277	
	Boise, Idaho	645		1.24			.0384	
	Scottsbluff, Neb.	607	1,260	1.15			.0379	
	Sacramento, Calif.	1,143	1,061	1.85	1.73	1.47	.0324	.0274
	Eau Claire, Wis.	897		1.46	1.43	1.215	.0296	.0270
	Des Moines, Iowa	1,084		1.49			.0275	
	Twin Cities	889		1.38			.0310	
	Milwaukee, Wis.	1,239		1.79			.0289	
	Chicago, Ill.	1,316		1.79			.0272	
	Portland, Oregon	900	911	1.44	1.36	1.155	.0320	.0298
	St. Paul, Minn.	899		1.34			.0298	
	Bismarck, N. D.	454		.90			.0396	
	Salt Lake City	592	674	1.20	1.16	.985	.0405	.0344
	Spokane, Washington	525	564	1.10	1.08	.92	.0419	.0382
	Seattle, Washington	814	864	1.45	1.36	1.155	.0356	.0314
	Kansas City, Kan.	1,178	1,173		1.52	1.29		.0259
	Cheyenne, Wyo.	615	680		1.195	1.015		.0336
	Idaho Falls, Idaho	375	454		.94	.80		.0414
	Sioux Falls, S. D.	808			1.26	1.07		
Shelby	Boise	722		1.35			.0374	
	St. Paul	1,068	1,005	1.45	1.40	1.19	.0272	.0279
	Spokane, Washington	419	419	.90	.91	.775	.0430	.0434
	Seattle, Washington	708	728	1.35	1.24	1.055	.0381	.0340
	Salt Lake City, Utah	669		1.35			.0403	
	Boise, Idaho	722	769	1.35	1.25	1.065	.0374	.0325
	Portland, Oregon	794	789	1.45	1.24	1.055	.0365	.0314
	Chicago, Ill.	1,485	1,399		1.83	1.555		.0262
	Idaho Falls, Idaho	452	492		.98	.835		.0406
	Omaha, Neb.	1,169	1,165		1.51	1.285		.0259
	Milwaukee, Wis.	1,408	1,329		1.83	1.555		.0275

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