



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.

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.

TRANSPORTATION OF LIVESTOCK IN MONTANA

by

Jack Richards

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A Thesis

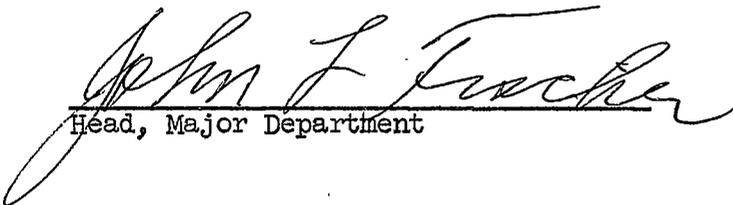
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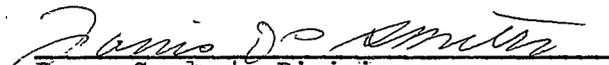
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ABSTRACT

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.

