

**USE OF THE GRAIN TRANSIT  
PRIVILEGE IN THE  
UPPER GREAT PLAINS**

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**A. Clyde Vollmers  
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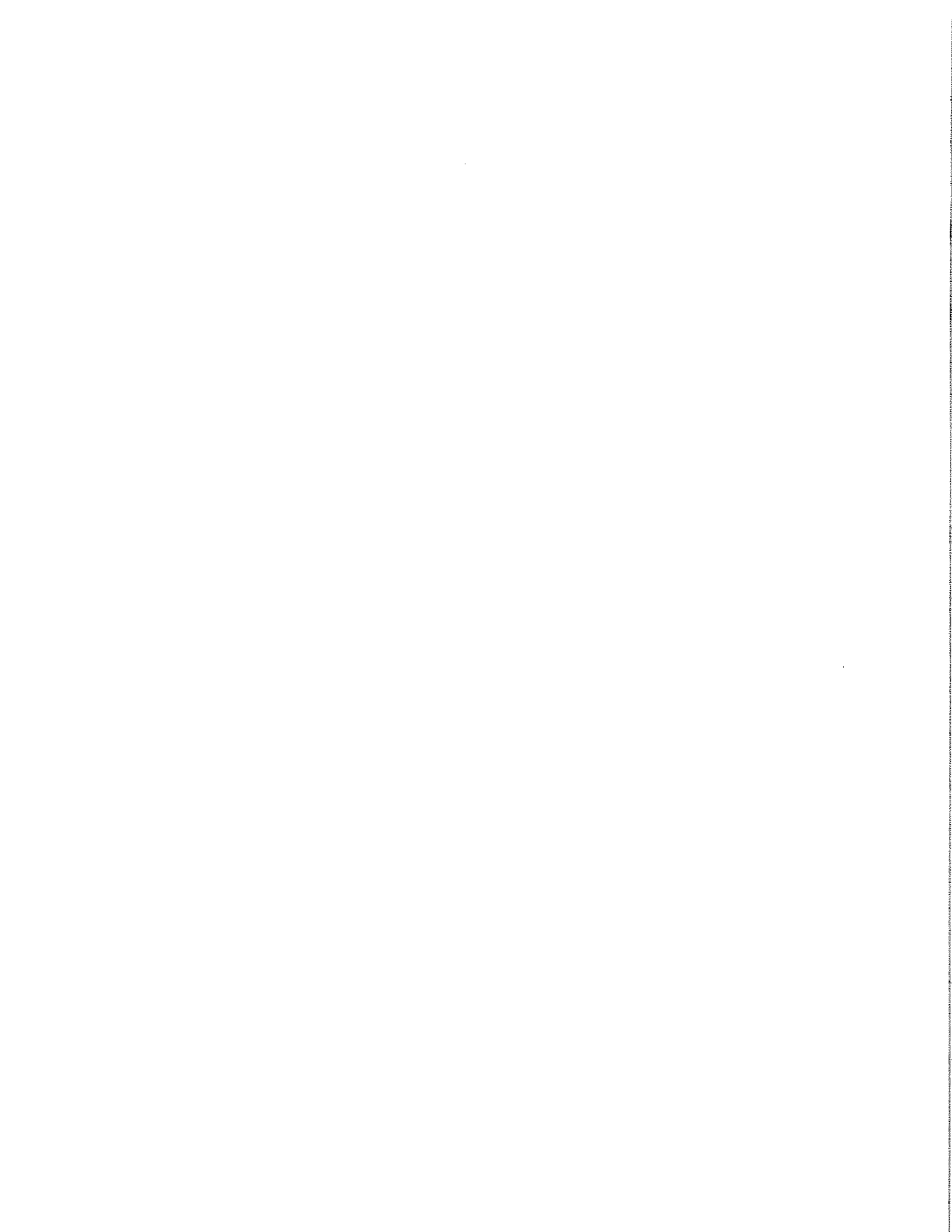
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## HIGHLIGHTS

The analysis of the use of the transit privilege indicated transit stations and in particular active transit stations have certain identifiable characteristics. Following is a selected list of characteristics which may be used to identify a transit station:

1. The location of a firm plays a large role in the transit operation. A firm must be located properly to secure the advantages of a transit operation.
2. An analysis of management will indicate if transit is feasible for a firm. The attitude of management seems to play a significant role in transit operations.
3. The type of ownership and the main business of a firm are significant in determining if a transit station will have an active account. Independent and line firms tend to utilize the privilege to a greater extent as do flour mills and firms classified as other.
4. The loading and unloading facilities and the internal plant facilities determine the ease with which transit operations can be conducted. Active transit stations tend to have better grain handling equipment.

The transit privilege is basically utilized by grain processors rather than grain merchandisers. The grain processing industry utilized 82 percent of the total transit volume during the period 1964-1968.

While the physical facilities available to the various transit operators differ significantly, an even greater difference may be observed between the attitudes of grain merchandisers and grain processors. Grain merchandisers seemed to utilize the transit privilege as a supplemental business and as such indicated a greater willingness to accept change in the basic concept of the transit privilege. Grain processors, in many cases, are completely dependent upon transit. Processing firms have fixed facility locations so any change in the transit privilege, such as a charge for the service, would place the firm in an economically uncompetitive position.

Slightly less than 10 percent of the Upper Great Plains region's average annual grain production received transit in the region. This amounted to 44,600 carloads of grain or about 95 million bushels in 1968. The total out-of-pocket cost for providing the transit service for this grain was \$2,582,382, while the fully distributed cost was \$3,573,735.

An analysis of the elasticity of demand for the transit privilege indicated that if a separate charge was assessed for transit, the bulk

of the demand for the service would be eliminated. None of the firms indicated a willingness to reimburse the carrier an amount equal to the fully distributed costs.

A charge for the transit privilege would have various effects on the various elements of the grain marketing industry. Grain processors would be forced to plan new plants in other areas of the country as the existing facilities were depreciated. The country elevator would not be affected extensively as only a small fraction of existing elevators transit grain. If locally procured grain forwarded in place of cleaned out grain can be profitable enough to offset the charge for transit, grain merchandising would continue in its present form.

If a separate charge was made for transit, present rates could be reduced or some future increase would be eliminated. A charge for transit would increase the price the farmer receives for his production.

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A. Clyde Vollmers and David C. Nelson\*

INTRODUCTION

The farmers in the Upper Great Plains region<sup>1</sup> produced 1,063 million bushels of grain and 105 million bushels of oil seeds in 1968.<sup>2</sup> The marketing of these grains is highly dependent upon the railroads which serve the area, and the railroads are highly dependent upon the grain for revenue.

Grain production and grain marketing have unique characteristics which have led to unique transportation services. Grain is a bulky, low-value product that is produced and is generally marketed seasonally. One service that is used most extensively in the grain marketing process is the transit privilege.

Transit or the transit privilege is the receiving and reshipping of a commodity in carload lots. The commodity may be processed or stored at an intermediate point. The reshipment is made under a rate that is equal to the difference between the inbound rate to the intermediate point and the through rate which exists between the origin and the destination.

The transit privilege is granted grain handlers; and in most cases, there is no direct reimbursement to the railroads for the service. The cost to the railroads for providing the transit privilege is built into the line-haul rates.

With the development of Great Lake shipments, river barge movements and truck movements, serious price competition has developed for the railroads. The cost of transit built into rail rates is one factor which has led to railroad grain rates which have been substantially higher than the rates of the competitive modes.

As railroads lose grain volume handled to the competing modes, the railroads need to examine various alternative pricing practices to maintain current business. One means of reducing rail rates may be to

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<sup>1</sup>For the purpose of this study, the Upper Great Plains region shall be defined as the four-state area of Minnesota, Montana, North Dakota, and South Dakota.

<sup>2</sup>U. S. Department of Agriculture, 1968 Crop Production Annual Summary, December 1968.

separate the total cost of providing line-haul service and accessorial service into component parts and charging freight rates upon this basis.

### Objectives

The general objective of this study is to determine the extent of the use of the transit privilege by grain handlers in the Upper Great Plains region. The specific objectives are:

1. To identify and analyze the determinants of the use of transit by a grain marketing firm.
2. To identify and describe the characteristics of firms that have transit accounts.
3. To identify and analyze the cost of providing the transit privilege.

### Method of Study

The data for this study was gathered by mailing questionnaires to the entire population of 242 firms with transit accounts in the Upper Great Plains region (Figure 1). The list of transit accounts was secured from the Western Weighing and Inspection Bureau. The questionnaire was designed to test several hypotheses and incorporated insight gained through personal visits with transit operators. The hypotheses tested are:

1. Transit stations have certain identifiable characteristics.
2. Active transit stations may be differentiated from inactive accounts by various characteristics of the firm.<sup>3</sup>

Thirty-two of the transit stations on the list supplied by the Western Weighing and Inspection Bureau have discontinued business. One hundred twelve firms or 54 percent of the remaining transit operators responded in part or in full to the questionnaire. Not all respondents answered all the questions; therefore, the totals which appear in the tables throughout the text may not always equal 112.

A special effort was exerted to obtain the volume of grain transited by each firm. A special questionnaire was designed to survey the 98 firms not responding to the original questionnaire. Each of the 98 firms was asked if the transit privilege had been utilized since 1964. If a firm indicated the privilege had been used, it was asked the number of carloads of grain transited each year. If any firm had utilized the

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<sup>3</sup>Active transit accounts are those firms which stated the transit privilege was currently being used while inactive transit accounts are those firms which are not currently using the transit privilege.

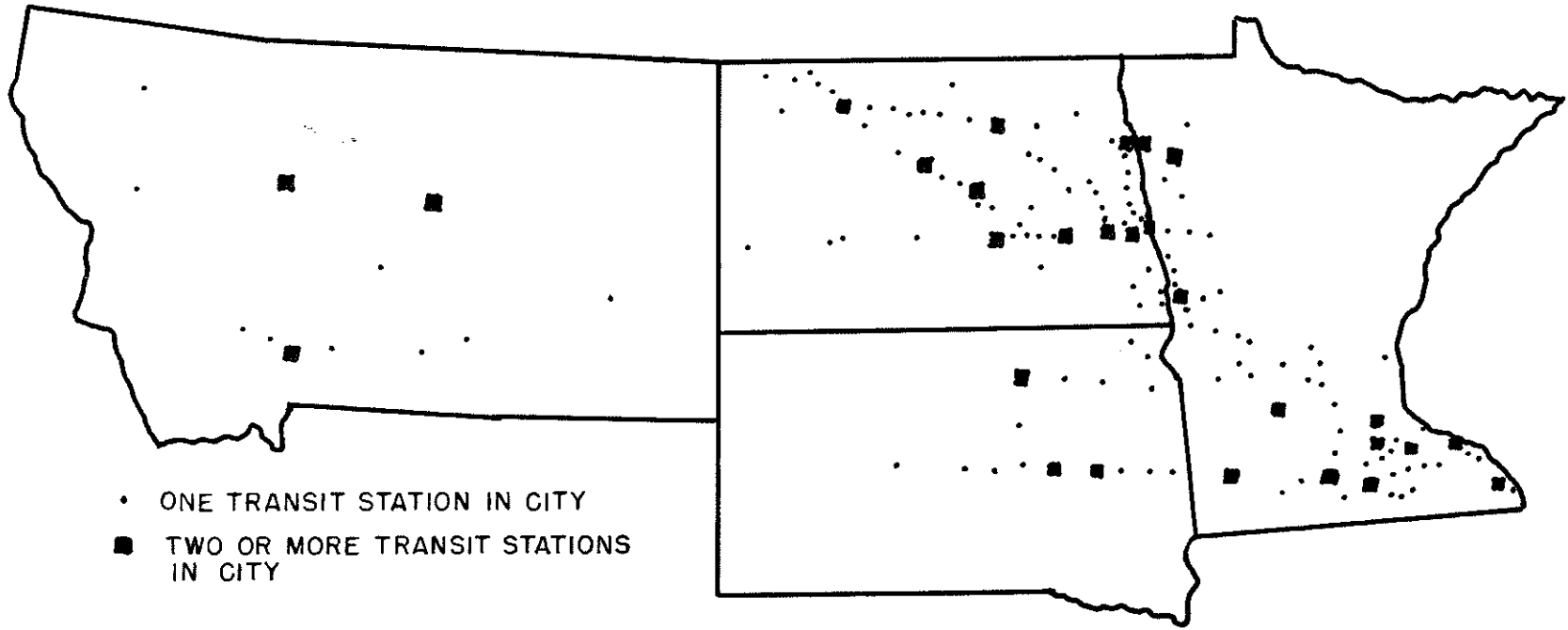


Figure 1. Location of Transit Stations, North Dakota, South Dakota, Minnesota, and Montana, 1969.

transit privilege but could not supply the transit volume, a release was obtained from the firm in order to obtain the transit volume from the railroad serving that station. Transit volume was obtained from 97 firms which used the transit privilege between 1964-1968.

The information obtained from the transit stations was analyzed by utilizing chi-square analysis. Chi-square analysis is a statistical process used to determine if several samples were derived from the same population or from different populations. Chi square is a statistical tool which may be applied when definite parameters exist for the samples being examined. When chi-square analysis is utilized, the questionnaire must contain multiple choice questions. The replies of all firms to one question will then be analyzed in relation to a second question. For example, do all firms that answered Question 1 with Choice A answer Question 2 in a different manner than do those firms which answered Question 1 with Choice B? If it is determined through chi-square analysis a significant difference exists, we may assume these firms in Group A differ significantly from those firms in Group B.

#### AN ANALYSIS OF TRANSIT

##### Definition of Transit

The Grain Transit Rules Tariff defines the terms transit, transit privilege, and transit stop as "the unloading and passing through an elevator, cleaning house, malt house, manufacturers, mill, and/or warehouses at transit stations, by consignee or transit operator, for storing and other purposes connected with the marketing and/or manufacturing of carload shipments of commodities originating at points outside the switching limits of transit station and the forwarding from the transit station, against such inbound tonnage, of outbound commodities provided for, to destinations, outside of the switching limits of the transit station."<sup>4</sup> The transit privilege may be granted with either flat or proportional rates.

A transit shipment arrives at the transit station on a flat rate. The rate outbound is the difference between the inbound flat rate and the flat rate between the original terminal and the destination. This difference is defined as the transit balance.

The following terms are frequently used in transit analysis and should be defined:

1. A transit station is the station where the transit privilege is authorized.
2. A transit operator is the party operating a transit house and using the transit account.

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<sup>4</sup>Western Truck Lines, Grain Transit Rules Tariff, Freight Tariff 331-S, W. J. Prueter, 516 West Jackson Boulevard, Chicago 6, Illinois, March 2, 1956.

3. A transit house is the plant, which may include one or more warehouses under one control or one ownership, used by the transit operator at the transit station.
4. A transit destination is the station to which transit is authorized.
5. The carriers' agent for the states of Minnesota, North Dakota, South Dakota, and Montana is the Western Weighing and Inspection Bureau. The carriers' agent serves as the railroads' accountant in transit operations.

Various marketing or manufacturing processes may take place during a transit stop including inspection, conditioning, storing, milling, feed mixing, or partial unloading.

The stoppage of a grain shipment at a rate break center is often confused with the utilization of the transit privilege to stop grain shipments. The primary difference between the two practices is the rate on the outbound grain movement. Rate break shipments move under established proportional rates and are dependent only upon prior shipment. Transit shipments are those which move on the balance of an established through rate. Not only are transit shipments dependent upon prior shipment, but the origin and the final destination determine the transit balance. Therefore, a firm located at a rate break center has only one rate on all outbound shipments to a single destination, while the transit operator may have a different rate for each trans-shipment to a single destination.

#### Origin and Development of Transit

Transiting was a widespread practice when the Interstate Commerce Act was passed in 1887. It is uncertain where the first transit privilege was used, but it was probably offered by the Nashville and Chattanooga Railroad at Nashville in 1870.<sup>5</sup> This privilege was granted shippers to help the railroad compete with boat lines on the Cumberland River in hauling grain. L. G. McPherson felt transit started in the Middle West in the early 1870's. "What was said to be one of the first transit tariffs was described to the author by a Chicago traffic executive. It was shown to him by J. F. Tucker, one-time vice-president of the Illinois Central Railroad. Written in long hand, it authorized the shipment of a bull from town-to-town on a 'service-in-transit' basis."<sup>6</sup>

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<sup>5</sup>Winter, J. C., General History and Theory of the Railroad Grain Rate Structure, talk presented at the Agricultural Industry Forum, University of Illinois, Urbana, February 2, 1960.

<sup>6</sup>Hobbah, Reginald V., "Railroad Transit Privileges," Journal of Business, Vol. 17, Part 2, University of Chicago Press, Chicago, July 1944, p. 4.



Transit privileges on grain were first adopted at Kansas City as the result of competition for grain shipments. Before expansion of the western lines into the east, all western railroads terminated at Kansas City where the grain was transferred to the eastern lines. The Santa Fe then extended lines into Chicago and disrupted the equilibrium by hauling grain on through rates from points west of Kansas City to Chicago. The eastern lines countered by establishing transit rates at Kansas City and Chicago.

Hobbah listed eight factors which led to the growth and expansion of the transit privilege:<sup>7</sup>

1. The freight rate break systems established certain centers with a rate advantage. These cities often had some natural location factor that led to their rate advantages. Transit privileges were given to other locations not as favorably located so as to allow them to compete on an equal freight rate basis.
2. The discriminatory nature of transit which gave existing operators an unnatural advantage over any competitor. The railroads, due to the great amount of pressure exerted by the shippers, deems it advisable for practical reasons to make the operation of the privilege general.
3. Transit privileges were often granted as a means of competition between railroads. If one road grants a transit privilege to some industry on its line, this firm has a freight cost advantage over other firms in this industry. Therefore, the roads serving other firms in the industry are forced to concede a transit privilege. The road that neither originates nor terminates traffic but merely serves as a connecting line finds it especially necessary to grant transit accounts.
4. As transit privileges are used, they give rise to vested interests. When an industry has grown up under transit rates, it is rather simple to show that withdrawal of the rate will lead to destruction of values and inconvenience to business and community. Since the burden of justifying cancellation is on the railroads, these results prove very effective in exonerating transit.
5. Truck transportation has had a limited effect upon transit. Transit stops to partly unload and to complete loading have been increasing, and there has also been a limited increase in the use of the stoppage-in-transit privilege.
6. The depression of the 1930's led to an increase in the usage of transit stops to partly unload and to complete loading due to smaller shipments at each station resulting from economic problems.

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<sup>7</sup>Ibid., p. 8.

7. World War II both retarded the growth of transit and led to expanded transit use. The transit privilege leads to a less effective utilization of railroad rolling stock; and during the war, there was a great effort to achieve efficiencies. The use of transit was expanded during the war when the Federal Government embarked on its defense program. Inland storage points were established to prevent congestion at ports.
8. The Interstate Commerce Commission policy (1) has contributed substantially to the growth of the transit system; (2) has prevented the extension of privileges to commodities and processes inconsistent with the theory and fiction of transit; and (3) has contributed little toward a contraction of transit--in fact, it has definitely prevented any substantial contraction.

#### The Legal History of Transit

Although transit was a widespread practice when the Interstate Commerce Act was passed in 1887, the word transit did not appear in the Act. The legal status of the transit privilege was uncertain until the first decision regarding the legality of transit was handed down by a state court 17 years later. In 1909, the U. S. Supreme Court ruled that a railroad was entitled to compensation beyond the cost of providing the service and by this ruling gave indirect judicial sanction to transit.<sup>8</sup>

The Interstate Commerce Commission at first took the position that whether transit was legal or illegal, the Interstate Commerce Act did not grant the Commission the power to extend the system. During this period, the Commission felt "if the 'transit system' is pernicious, it would obviously be unwarrantable for the Commission to order or sanction anything that would extend or perpetuate the mischief."<sup>9</sup> If transit was legal, the Commission felt "The privilege is one which...the companies might withhold on their own view of what was dictated by their interest on their policy."<sup>10</sup> While the Commission was uncertain as to the legality of the transit privilege, the view was entertained that if a railroad voluntarily established transit accounts, accounts had to be granted in a manner which did not conflict with the Interstate Commerce Act.

In 1904, the Commission took a positive position and reached the following conclusions:

Transit privileges were...in use to a considerable extent at the time of the passage of the Act, and since

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<sup>8</sup> Ibid., p. 13

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

then, they have become universal. To abrogate these privileges would be to confiscate thousands and probably millions of dollars on value by rendering worthless industrial plants which have been constructed upon the faith of their continuation...There can be no doubt that the application of this principle has cheapened the cost of transportation and probably of manufacture.<sup>11</sup>

Under the amendments to the Act in 1906 and 1910, the Commission assumed the view that broad authority over transit privileges had been granted. When this power was questioned, in 1921, the Supreme Court ruled that the Commission did have authority over transit by the power vested it in Section I of the Act.

The Commission's attitude and policy toward transit privileges explains part of the interpretation of the laws governing the system. The Commission, on occasion, has spoken with a favorable attitude toward transit. On other occasions, an awareness of some unfavorable aspects of transit have been exhibited. In 1910, the Commission expressed the opinion that the prevailing policy should be to curtail transit accounts to the degree that is consistent with the economic development of the country. Since that time the policy has been to require extension of transit only to remove violations of the Act.

The Interstate Commerce Commission views transit as a privilege, not as a right; and as such, the burden of proof falls upon the shipper to show that the failure to provide an account is unreasonable. A shipper must show commercial necessity to the Commission to achieve the right to receive a transit privilege. This can be done by showing: "(1) that, owing to peculiar conditions of production and marketing transit privileges will facilitate the marketing process and (2) similar transit arrangements are common, and the locality or shipper excluded from the use of transit is handicapped."<sup>12</sup>

Usually a carrier will not be required to provide a transit privilege if the movement involves a backhaul or an out-of-line haul. Transit privileges cannot be allowed on processes where the change in the commodity substantially changes the transportation characteristics of the product. Ordinarily transit can be established only on products that move on the same rate or nearly the same rate as the raw material from which the product was derived.

The Commission has acted aggressively in cases where the privilege would violate the general principles of transit but has rarely intervened in those cases where no violation was present.

When a transit account has been established, the removal of this account would serve as an increase in rates to the transit operator.

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<sup>11</sup>Ibid.

<sup>12</sup>Ibid., p. 15.

Therefore, to cancel a transit account, the carrier must prove that cancellation is justified. The most extensive attempt at cancellation occurred in 1915, when the carriers sought unsuccessfully to abolish the transit privilege of stopping to complete loading and to partly unload.

#### Current Transit Regulations

The Grain Transit Rules Tariff contains the regulations governing transit and transit operations. These regulations are designed to lead to efficient transit use and to preserve the present identification of transit. A selected list of regulations includes the following:<sup>13</sup>

1. When a transit operator transits a car at a transit station, the inbound paid freight bills covering tonnage must be presented to the Western Weighing and Inspection Bureau for recording within 30 days from the date of the inbound freight bill issued at the transit station.
2. When a shipment is held in transit, the custody and possession belongs to the consignee or owner.
3. The ownership of the transit billing may be transferred while the commodity is in a transit warehouse.
4. The transit balance expires if it is not applied within two years from the date of the inbound freight bill surrender. All transit privileges and balances, such as a second transit stop, expire after three years from the date of the billing from the point of origin.<sup>14</sup>
5. The outbound transit shipment must depart from the same warehouse as to whom the inbound shipment was delivered.
6. A maximum of five inbound freight bills may be surrendered for any carload shipment moving on a transit balance.

#### Advantages and Disadvantages of Transit

The transit privilege offers advantages and disadvantages to both transit stations and nontransit stations as well as to the public.

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<sup>13</sup>Grain Transit Rules Tariff, op. cit., pp. 14, 16, 17, 19, and 38.

<sup>14</sup>While the regional regulations allow up to two years for re-shipment under the transit privilege, the railroads serving the Upper Great Plains region allow only one year. All transit privileges and balances expire after two years in the Upper Great Plains region.

Advantages

The transit privilege may be an asset to a transit operator in utilizing the plant and labor force more efficiently. During the harvest season, the plant and labor is usually operating near capacity while during the rest of the year the firm may be utilizing the labor force and plant facilities very inefficiently. The firm can achieve a higher degree of efficient utilization of assets by transiting grain during periods of low level local grain movement.

The transit privilege allows a transit operator to draw grain from a larger area, thereby obtaining grain of less uniform quality enabling the operator to merchandise grain.

Transit stations located throughout the grain production area prevent by-products from becoming concentrated in the market area. By-products are consumed over a wide area; and in most cases, there are local outlets available.<sup>15</sup> In the survey conducted for this study, it was determined that 74 percent of the firms responding had local outlets available for screenings, barley thins, and mill feeds (Table 1).

TABLE 1. RESPONDENT FIRMS HAVING OUTLETS AVAILABLE FOR BY-PRODUCTS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of By-Products	Outlet Available	No Outlet	Total	Percent Yes
Screenings	71	23	94	75
Barley Thins	54	17	71	76
Mill Feeds	33	15	48	68
Other	<u>6</u>	<u>11</u>	<u>17</u>	<u>35</u>
Total	164	66	230	74

The transit privilege permits various grain processing activities to occur in the grain production area. Thirty-six elevators responded to the survey question asking why the firm applied for a transit account. Nineteen of the firms replying were active transitors while 17 were inactive. Twelve elevators applied for transit to store grain while 34 firms applied for transit to blend, process, or merchandise grain. Nine of the 12 firms using the storage in the transit privilege are currently active transit accounts, while only 10 of the 24 firms processing grain are currently using the transit privilege (Table 2).

<sup>15</sup>Local outlets are defined as the sales of by-products of which reshipment is not made by the transit operator.

TABLE 2. REASONS RESPONDENT ELEVATORS ORIGINALLY APPLIED FOR TRANSIT PRIVILEGE, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Reasons for Applying for Transit Account	Firms Currently		Total
	Active Transitors	Inactive Transitors	
Storage	9	3	12
Blending and Processing	<u>10</u>	<u>14</u>	<u>24</u>
Total	19	17	36

Flour milling plants and feed manufacturing plants have a greater choice of location if the transit privilege is utilized. If grain movements could not be interrupted, all processing firms would need to be located at either the origin or the destination of the grain movement or a rate break center. When a shipment may be interrupted by utilizing transit, a firm may locate anywhere between the production center and the point of consumption.

The transit privilege may help organize the grain marketing process and the grain markets. Hobbah listed three market advantages which result from the use of transit:<sup>16</sup>

1. The price differential between markets can move the flow of grain into the area where a shortage exists. The transit privilege helps prevent the various markets from becoming glutted.
2. Grain from a wider area can compete in the various markets.
3. Prices will be based upon a wider production area; and therefore, there will be relatively uniform prices over a larger area.

Perhaps the advantages of transit can be summed up in the words of the elevator manager who, when asked why he applied for a transit account answered, "to make money."

#### Disadvantages

Under current regulations, the transit operator must present a paid freight bill within 30 days of the date of the inbound freight bill. A firm that is doing a large amount of transiting may have a substantial amount of money tied up in inbound freight charges. A grain merchandizing firm which turns over inventory rapidly may be able to limit the

<sup>16</sup>Hobbah, op. cit., p. 66

amount of capital involved in the transit operation. An operator using the storage in the transit privilege may have a substantial amount of capital involved for a lengthy period of time. A firm using the transit privilege should consider the allocation of capital in determining the activities in which the firm will participate.

Current regulations require a transit station to have sufficient grain in storage to cover all outstanding transit balances. Under various market conditions, a firm may wish to move grain without utilizing the transit privilege. These shipments may include shipments back to what is normally the origin territory or shipments by truck and water. However, the warehouseman must be certain enough grain remains in the warehouse to cover the transit balances; and under certain market conditions, this may be a serious limitation upon the firm. Due to the higher cost of transportation by rail, all grain utilized for local consumption or shipped outbound by truck or barge must be brought into the transit station by truck or barge. A transit balance is an asset which has a monetary value just as the physical plant and other equipment does. Therefore, a firm cannot allow a transit balance to expire or be canceled but must carefully analyze all procurement practices. The transit privilege may be regarded as discriminatory in nature, both between industries and between firms in one industry located upon different railroads. The transit privilege leads to higher freight rates for nonusers. Currently, transit is provided to users with no charge in most cases. The cost to the railroads of providing the service is built into the line-haul rates and, therefore, is borne by all shipments.

The use of transit may increase the cost of distribution at the expense of the farmer. A decrease in freight rates would not benefit the grain marketing industry but rather would return a higher price to the farmer for his grain.<sup>17</sup>

A serious problem facing the grain marketing industry today is the chronic shortage of railroad rolling stock capable of carrying grain. The privilege leads to an inefficient utilization of the existing equipment. The extent of the increased inefficiencies was not determined in this study, but the transit privilege would lead to more than a 10 percent increase in grain shipments. The firm may reship the transited car loaded with other grain, but the car unloading and reloading may take several days. A car sent empty from the transit station leads to the greatest inefficiencies. An estimated decreased utilization of rail cars would be somewhere between 6-10 percent.

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<sup>17</sup>Reply of the Public Service Commission, State of North Dakota and Chamber of Commerce of Fargo, North Dakota, to Petition for Reconsideration, Wheat, Rye, Flaxseed, to Duluth and Minneapolis, Before the Interstate Commerce Commission, No. 33408, June 1960, p. 6. See also Appendix A of the same publication. Several respondent elevator managers stated that a reduction in freight rates would not help the elevator but would return the amount of reduction to the farmer.

Locational Factors Affecting Transit Stations

The location of the transit station within various spheres determines the prevailing transit conditions confronting a firm. There are three locational factors affecting the firm:

1. The regional location of a firm and the railroad serving the region determines the regulations which apply to a transit station. The amount and degree of backhauls, circuitry, and out-of-line hauls has an impact upon the amount and extent of transit use. In the 1930 grain case, the Interstate Commerce Commission ruled that the railroads' transit regulations should provide for "reasonable limitation of out-of-line and competitive routes and backhauls."<sup>18</sup> In effect, the Commission gave each railroad the privilege of establishing transit regulations in regard to backhauls and out-of-lines. The various railroads have acted uniformly within the various regions, but a substantial degree of difference has developed between the various regions.

As current regulations are applied, the railroads serving North Dakota, South Dakota, Minnesota, and Montana have very stringent regulations. One manager interviewed stated the railroads are trying to discourage traffic and cited several examples where the railroads refused or discouraged out-of-line hauls. Some of these hauls would have involved payment for the service.

In the southwestern United States, out-of-line hauls and backhauls of several hundred miles are not only allowed but are common, and there is no charge to the shipper. The railroads serving the Upper Great Plains region do not allow this type of backhaul or out-of-line haul without charge and tend to discourage it even when there is reimbursement to the railroad for the service.

2. The location of the firm within the grain movement pattern has a significant effect upon the practices a transit operator will use. Firms located in North Dakota, South Dakota, Montana, and in northern Minnesota are at the head of the grain movement and usually handle one-way grain movements. Therefore, a transit operator can only transit grain in one direction and is dependent upon one market and upon one supply area. Firms located in southern Minnesota have a greater opportunity to deal in grains from different areas. A transit operator located in southern Minnesota and Iowa could use the transit privilege to mill wheat into flour. In this transit operation, North Dakota, South Dakota, and Montana wheat could be milled and the inbound transit billing canceled on shipments

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<sup>18</sup>Interstate Commerce Commission Reports, Vol. 164, U. S. Government Printing Office, Washington, D. C., May-July 1930, p. 654.



to the East Coast, southern United States, or the Kansas area. Wheat from Kansas could be brought in to cover the shipments into the Minneapolis and Duluth consumption areas. Barge grain from the Kansas area or truck grain from North Dakota and South Dakota could be brought into the mill to cover local consumption and flour shipped out by truck. A firm located in southern Minnesota could use the storage in the transit privilege very efficiently and profitably to transit grain moving in several directions and use the inbound billing to play the market. In conducting this study, a man was interviewed who was formerly employed as a transit operator. This man was employed on a percentage of the transit operation profits and returned the firm a substantial income; but his percentage of the profits was so large internal problems arose among the management personnel, and the transit operation was terminated.

3. The location of a firm in relationship to the network of lines of a particular railroad or railroads is one of the basic factors which determines if a firm is able to transit grain. Transit operators are dependent upon the railroads for a grain supply from which to draw transit grain.

If a firm is located upon a branch line or near the start of a mainline, only a limited volume of grain is transported past the transit station. While location upon a branch line would not prohibit transit activities, it would seriously limit the effectiveness of the practice--especially if the railroads involved do not allow backhauls.

To have significant volume of grain movement from which to draw transit grain, a firm should be located so it can draw grain from a large geographic area. The majority of the transit stations located in North Dakota and South Dakota are located in the eastern part of the states where they can purchase grain produced in a large area of the states. Only one transit station in North Dakota and South Dakota has less than a hundred miles of railroad lines from which to draw grain. The majority of transit stations in these states have several hundred miles of mainline and many branch lines from which to draw grain.

The majority of Minnesota transit stations are located along the lines from North Dakota and South Dakota to Minneapolis and Duluth. The majority of the remaining Minnesota transit stations are grain processors.

Montana transit stations are all located along the main railroad lines serving the state; the majority of which are in the major Montana cities.

#### How the Transit Privilege is Utilized

A firm must have a transit account before transit operations can take place. The transit privilege is accorded to firms that notify the

carrier's agent in writing of the intention to open a transit account. When a transit account is granted, the firm is notified by the Western Weighing and Inspection Bureau.

A transit operator's supply of grain is obtained from the normal flow of grain by the transit station. To determine what grain is available and what grain is moving, the transit operator may contact firms originating shipments of grain or may contact commission firms and find what grain is available at hold points located favorably to the transit station. When a firm becomes an established transitor, it may be contacted by other firms when shipments of certain specifications are available.

If a carload of grain is enroute and routed to a primary market, when a transit operator obtains title, the railroad will enroute the car to the transit station. If a transit operator purchases a car of grain that has not been routed, the car may be billed direct to the transit station.

Between the origin of the grain shipment and the unloading at the transit station, an official weight must be made and usually a sample will be taken. Official weights must be made for railroad records and for freight charges.

Flour millers, feed manufacturers, malsters, oil processors, and other processors may use the transit privilege to manufacture grain into flour, feed, or other products and to reship the primary products and/or the by-products to the consumption area at the balance of through rates.

Most country elevators use the transit privilege to merchandise grain. In the merchandising process, transit grain may be blended to upgrade or downgrade local grain; grain may be cleaned, dried, and sub-standard quality grain will be eliminated or other nonmanufacturing processes may take place.

The storage-in-transit privilege may be used in association with other transit operations or may be used simply to store grain until consumer demand brings the grain out of storage. Grain processors may store grain for months before processing the grain into flour, feed, malt, oil, or other grain products and reshipping. Several elevators with large volume warehouses use the storage-in-transit privilege to fill the warehouse, while other firms interviewed have eliminated local grain procurement and operate exclusively as a grain storage station.

When the transit operator desires to forward a shipment, an inbound freight bill is selected, representative in kind of the outbound commodity. If milling, cleaning, or drying is authorized, the transit operator must deduct the proper percentage of loss from inbound weight. When the transit operator makes an outbound shipment, Western Weighing and Inspection Bureau forms must be completed and presented to the forwarding agent. At this time the inbound freight bill is stamped "Transit Privilege Canceled."

Transit operators were asked to analyze the firm's utilization of the transit privilege. They were first asked what type of grain was

transited; and secondly, what processes were applied to the grains at the transit station?

Slightly less than 52,330 actual carloads of grain processed at transit stations between 1964-1968 were analyzed. The majority of this grain, 30,300 carloads, was milled in transit while 8,400 carloads of grain were cleaned and 9,200 carloads were blended. About 4,200 carloads of grain were stored without undergoing other processes, and 227 carloads of grain underwent other treatments including drying (Table 3). Thirty-eight percent of the carloads was wheat and 31 percent was barley.

TABLE 3. PROCESSES UTILIZED BY RESPONDENT GRAIN MERCHANTISERS AT TRANSIT STATIONS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1964-1968

Processes	Total Carloads	Percentage
Grain Milled in Transit	30,300	58
Grain Cleaned in Transit	8,400	16
Grain Blended in Transit	9,200	18
Grain Stored in Transit	4,200	8
Other	<u>227</u>	<u>0</u>
Total	52,327	100

Railroad Handling of Transit Records

The railroad agent is notified by the Western Weighing Inspection Bureau when a firm is permitted to transit grain.

When a carload shipment arrives at a transit station, the railroad station agent prepares an inbound freight bill in duplicate if desired by the transit operator. The inbound freight bill is recorded for transit with the original being stamped "Not Good For Transit" and the duplicate "Good For Transit." The inbound freight rate is determined, the car is assigned a bureau number, and the date is recorded after which the railroad agent signs the freight bill. The agent checks on demurrage and switching settlements are made. When an outbound shipment is made, the agent determines the freight rate; and upon receipt of outbound billing instructions, the inbound freight bills are stamped "Transit Privilege Canceled."

The railroad agent maintains a record of transit operations of each transit account served by the railroad station. One such record studied by this writer was recorded in a spiral bound notebook. The record contained 14 columns which included: 1) bureau number, 2) date arrived, 3) car number and origin, 4) date and number of waybill, 5) inbound weight, 6) through rate from origin to destination, 7) inbound rate from origin to transit point, 8) balance of difference between inbound rate and through rate, 9) date of outbound shipment, 10) waybill number, 11) destination, 12) available weight useable on outbound shipments,

13) weight used on outbound shipments, and 14) credit or weight remaining. The bureau number is a number assigned to each carload stopped under the transit privilege. Each transit station has a separate record; and in this record, the first car of each calendar year is assigned the number one, and successive cars are numbered consecutively.

CHARACTERISTICS OF TRANSIT OPERATIONS

It is assumed that each transit station has a different combination of resources and utilizes these resources in different ways. It will be determined if there is a significant difference between active transit stations and inactive transit stations. It will also be determined if there is a difference between the various types of firms using transit. An effort will also be made to gain insight into the effect management has upon the transit operation and the effect management has upon active and inactive transit accounts.

Ownership and Main Business

The ownership of transit stations is evenly distributed between cooperatives with 35 transit accounts, line stations with 36 accounts, and independent firms with 39 accounts (Table 4). Currently, 65 firms are active transit operators and 42 are inactive transit operators. There is a significant degree of difference between type of ownership and active and inactive accounts as 50 percent of the cooperatives are active transit accounts, while 66 percent of the line and independent firms are active transit operators (Table 5). The line firms are engaged mainly in the elevator business, while the cooperatives and independents are involved in both the elevator business and the processing industry.

TABLE 4. TYPE OF OWNERSHIP AND MAJOR BUSINESS OF RESPONDENT TRANSIT ACCOUNTS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Major Business	Cooperative	Line	Independent	Total
Elevators	22	32	29	83
Flour Mills	2	1	2	5
Feed Mills	4	1	1	6
Other	<u>7</u>	<u>2</u>	<u>7</u>	<u>16</u>
Total	35	36	39	110

Chi .110 significant difference between firms.

There are 108 transit accounts classified as to main business of the firm; 83 of these are elevators and 58 percent of the elevators are active transit operators (Table 6). All five flour mills responding are currently using their accounts, while one of the five feed mills

responding was an active transit account. Eleven of the 15 firms classified as other are active transit accounts.<sup>19</sup> With a chi-square value of .073, the alternative hypothesis which states that there is a significant degree of difference between firms is accepted.

TABLE 5. TYPE OF OWNERSHIP VERSUS ACTIVE OR INACTIVE TRANSIT ACCOUNTS, RESPONDENT FIRMS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Ownership	Active	Inactive	Total
Cooperative	16	17	33
Line	23	12	35
Independent	<u>26</u>	<u>13</u>	<u>39</u>
Total	65	42	107

Chi .056 significant difference between firms.

TABLE 6. MAJOR BUSINESS OF FIRMS VERSUS ACTIVE OR INACTIVE TRANSIT ACCOUNTS, RESPONDENT FIRMS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Major Business	Active	Inactive	Total
Elevators	48	35	83
Flour Mills	5	0	5
Feed Mills	1	4	5
Other	<u>11</u>	<u>4</u>	<u>15</u>
Total	65	43	108

Chi .073 significant difference between firms.

#### Loading and Unloading Facilities

The loading and unloading facilities available to a transit account determine to some extent the volume of grain which will be transited. Transit cannot take place without at least a minimum of equipment. Active transit accounts and those firms which transit the greatest volume of grain tend to have the best grain handling facilities.

<sup>19</sup>The firms classified as others include those firms which checked the reply "Other" in Question 1 of the questionnaire. This group encompasses mainly malsters, soybean processors, and alfalfa processors.

There is a significant degree of difference between unloading facilities available at the various types of business. There is also a significant degree of difference between the unloading facilities available to active and to inactive transit operations. Forty-eight of the 51 active respondent transit operators have facilities to unload boxcars. Nineteen firms have some type of auger combination, either a portable auger or a pit and auger. Twenty-eight firms have some type of power shovel or other semi-manual unloading device. Three firms use bobcats to unload boxcars; and three firms have completely automatic systems, two using shakers and one using air flow. Three active transit accounts have no mechanical facilities to handle the unloading of boxcars. Eleven of the 27 inactive transit accounts have auger systems and 10 have power shovels. Six of the inactive accounts did not possess boxcar unloading facilities.

Sixty-four of the 107 respondent firms have hopper bottom unloading facilities for rail cars. About half of the elevators interviewed have the facilities, and three of the five flour mills contain the facilities. All six feed mills interviewed, and 11 of the 14 firms classified as other have hopper bottom rail car unloading facilities (Table 7). Forty-one of the 63 firms having rail car hopper bottom unloading facilities are active transitors, while only 13 of the 44 firms lacking rail car bottom unloading facilities are active transitors (Table 8).

TABLE 7. TYPE OF BUSINESS OF RESPONDENT FIRMS HAVING HOPPER BOTTOM RAIL CAR UNLOADING FACILITIES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Business	Have Hopper Facilities	No Hopper Facilities	Total
Elevators	43	39	82
Flour Mills	3	2	5
Feed Mills	6	0	6
Other	<u>11</u>	<u>3</u>	<u>14</u>
Total	63	44	107

Chi .071 significant difference between firms.

Eighty-six percent of the firms have facilities to unload hopper bottom commercial trucks (Table 9). The firms classified as other make up 12 of the 105 firms interviewed but include 4 of the 15 firms that do not have hopper bottom unloading facilities for trucks. The high degree of concentration in this category can be explained in part by the inclusion of malsters into the category of other firms.

The concentration of hopper bottom unloading facilities for trucks is greatest among inactive transit accounts. Elevators make up the largest share of inactive transit accounts and the majority of the

country elevators can handle hopper bottom trucks on the scale used to unload farm trucks (Table 10).

TABLE 8. ACTIVE AND INACTIVE RESPONDENT TRANSIT OPERATORS HAVING HOPPER BOTTOM RAIL CAR UNLOADING FACILITIES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Active	Inactive	Total
Have Hopper Facilities	41	22	63
No Hopper Facilities	<u>13</u>	<u>31</u>	<u>44</u>
Total	54	53	107

TABLE 9. TYPE OF BUSINESS OF RESPONDENT FIRMS HAVING HOPPER BOTTOM UNLOADING FACILITIES FOR TRUCKS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Business	Have Hopper Facilities	No Hopper Facilities	Total
Elevators	72	10	82
Flour Mills	4	1	5
Feed Mills	6	0	6
Other	<u>8</u>	<u>4</u>	<u>12</u>
Total	90	15	105

Chi .081 significant difference between firms.

TABLE 10. ACTIVE AND INACTIVE RESPONDENT TRANSIT OPERATORS HAVING HOPPER BOTTOM UNLOADING FACILITIES FOR TRUCKS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Active	Inactive	Total
Have Hopper Facilities	51	37	88
No Hopper Facilities	<u>10</u>	<u>5</u>	<u>15</u>
Total	61	42	103

Chi .038 significant difference between firms.

Thirty of the 47 firms with truck dumps are active transit accounts, and 34 of the 60 firms without truck dumps are active transit accounts (Table 11). There is a significant degree of difference between the main business of the firm and possession of truck dumps. The firms classified as other comprise 14 firms of which 7 have truck dumps. Forty-three percent of the elevators, 40 percent of the flour mills, and 33 percent of the feed mills have truck dumps (Table 12). An explanation for the concentration of truck dumps in the other classification would be the soybean processors were included in the category. The bulk of the soybean production is transported from the elevator to the processor by truck.

TABLE 11. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNTS POSSESSING TRUCK DUMPS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Active	Inactive	Total
Have Truck Dumps	30	17	47
No Truck Dumps	<u>34</u>	<u>26</u>	<u>60</u>
Total	64	43	107

Chi .037 significant difference between firms.

TABLE 12. MAIN BUSINESS OF RESPONDENT FIRMS POSSESSING TRUCK DUMPS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Business	Have Truck Dumps	No Truck Dumps	Total
Elevators	36	48	84
Flour Mills	2	3	5
Feed Mills	2	4	6
Other	<u>7</u>	<u>7</u>	<u>14</u>
Total	47	62	109

Chi .073 significant difference between firms.

Seventy-seven of the 83 elevators and 10 of the 14 firms classified as other have commercial truck loading equipment, but only 2 of the 5 flour mills and 3 of the 6 feed mills have truck loading facilities (Table 13). The inactive transit accounts have a higher percentage of truck loading facilities; and again, the inclusion of elevators in the category can, in part, explain the difference (Table 14).



TABLE 13. MAIN BUSINESS OF RESPONDENT FIRMS POSSESSING TRUCK LOADING FACILITIES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Business	Have Truck Loading Facilities	No Truck Loading Facilities	Total
Elevators	77	6	83
Flour Mills	2	3	5
Feed Mills	3	3	6
Other	<u>10</u>	<u>4</u>	<u>14</u>
Total	92	16	108

Chi .119 significant difference between firms.

TABLE 14. RESPONDENT ACTIVE AND INACTIVE TRANSIT OPERATORS POSSESSING TRUCK LOADING FACILITIES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Active	Inactive	Total
Have Truck Loading Facilities	54	36	90
No Truck Loading Facilities	<u>10</u>	<u>6</u>	<u>16</u>
Total	64	42	106

The various firms were asked if more convenient unloading facilities would facilitate transit operations. Sixteen of the 42 firms replying to the question were active transit operations. Fourteen of the active transit accounts felt improved unloading facilities would improve transit conditions (Table 15). Twenty-six inactive transit accounts replied, and 10 felt they would transit grain if they had better unloading facilities. Twenty-three of the 24 firms, feeling that better unloading facilities would help transit operations, are elevators (Table 16).

#### Internal Plant Facilities

The plant facilities available at a transit station determine the ease with which transit operations can be conducted. The storage capacity of a firm may be used to merchandise grain, or the transit privilege may be used to fill a warehouse. Cleaning facilities are necessary in merchandising operations and assists in other types of transit operations.

Feed milling equipment may be utilized to process by-products from transit operations.

TABLE 15. THE NEED FOR BETTER UNLOADING FACILITIES BY ACTIVE AND INACTIVE RESPONDENT TRANSIT ACCOUNTS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Active	Inactive	Total
Need Better Unloading Facilities	14	10	24
Would Not be Affected	<u>2</u>	<u>16</u>	<u>18</u>
Total	16	26	42

Chi .094 significant difference between firms.

TABLE 16. THE NEED FOR BETTER UNLOADING FACILITIES CLASSIFIED AS TO THE TYPE OF BUSINESS OF RESPONDENT FIRMS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Business	Need Facilities	Do Not Need Facilities	Total
Elevators	23	12	35
Flour Mills	0	0	0
Feed Mills	0	4	4
Other	<u>1</u>	<u>2</u>	<u>3</u>
Total	24	18	42

Chi .153 significant difference between firms.

Elevators that have active transit accounts have an average storage capacity of 653,000 bushels, while elevators with inactive transit accounts have an average storage capacity of 292,000 bushels (Table 17). In North Dakota, the average bonded capacity of elevators was 178,500 bushels for 1968-1969. The average capacity for non-elevator firms<sup>20</sup> that are active transit accounts is 2,624,000 bushels, and the capacity of inactive non-elevator transit accounts is 248,000 bushels.

<sup>20</sup>Non-elevator firms are those firms replying to the questionnaire whose main business was classified as flour mill, feed mill, or other but not elevators.

TABLE 17. AVERAGE STORAGE CAPACITY AND AVERAGE ANNUAL VOLUME OF GRAIN HANDLED IN BUSHELS BY RESPONDENT FIRMS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Storage Capacity	Annual Volume
Elevators that are Active Transitors	653,000	1,320,000
Elevators that are Inactive Transitors	2,624,000	4,398,000
Non-elevator Firms that are Active Transitors	292,000	755,285
Non-elevator Firms that are Inactive Transitors	248,000	321,833

Elevators that are active transit accounts handled an average of 1,320,000 bushels annually, while elevators with inactive transit accounts handled 755,285 bushels. The non-elevator firms that are active transit operators handled large volumes of grain with an average of 4,400,000 bushels. Non-elevator firms that are inactive transit accounts handled 322,000 bushels of grain yearly.

Eighty-eight percent of the firms responding to the survey possessed grain cleaning equipment. Seventy-nine of the 84 elevators, 4 of the 5 flour mills and 9 of the 13 firms classified as other have cleaning equipment, while only 3 of the 6 feed mills possess the equipment (Table 18). Six of the 64 active transit operators do not have grain cleaning equipment, and 7 of the 42 inactive transit accounts do not possess cleaning facilities (Table 19).

TABLE 18. TYPES OF RESPONDENT BUSINESSES POSSESSING CLEANING EQUIPMENT, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Business	Have Cleaning Facilities	No Cleaning Facilities	Total
Elevators	79	5	84
Flour Mills	4	1	5
Feed Mills	3	3	6
Other	<u>9</u>	<u>4</u>	<u>13</u>
Total	95	13	108

Significant difference between firms.

TABLE 19. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNTS POSSESSING CLEANING EQUIPMENT, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Active	Inactive	Total
Have Cleaning Facilities	58	35	93
No Cleaning Facilities	<u>6</u>	<u>7</u>	<u>13</u>
Total	64	42	106

Chi .039 significant difference between firms.

Thirty of the 63 active transit accounts have commercial feed mills within the plant, and 17 of the 43 inactive transit stations have feed mills (Table 20). Thirty-eight of the 83 elevators have the facilities, while 2 of the firms classified as other have feed mills. Three of the five flour mills have feed mills within the operation (Table 21).

TABLE 20. ACTIVE AND INACTIVE RESPONDENT TRANSIT ACCOUNTS CONTAINING FEED MANUFACTURING PLANTS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Category	Active	Inactive	Total
Have Feed Manufacturing Plants	30	17	47
No Feed Manufacturing Plants	<u>33</u>	<u>26</u>	<u>59</u>
Total	63	43	106

Chi .038 significant difference between firms.

Transit operators were asked if local outlets<sup>21</sup> were available for four classes of by-products; including mill feed, barley thins, screenings, and others. The results within each group are fairly consistent; and therefore, the four groups have been combined into one group. There seems to be outlets available for by-products in about 70 percent of the firms studied (Table 22). Several firms were equipped to utilize

<sup>21</sup>Local outlets are defined as the utilization of by-products by the transit station or sales to local livestock feeders and other local firms.

by-products in other operations conducted by the firm. Flour mills have the greatest problem with outlets as they have outlets available in only half of the cases. Eighty-six percent of the firms classified as other have outlets, while about 70 percent of the elevators have outlets. Both active and inactive transit accounts have local outlets available for about 70 percent of the firms (Table 23).

TABLE 21. MAIN BUSINESS OF RESPONDENT FIRMS CONTAINING FEED MANUFACTURING PLANTS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1968-1969

Type of Business	Have Feed Manufacturing Plants	No Feed Manufacturing Plants	Total
Elevators	38	45	83
Flour Mills	3	2	5
Feed Mills	6	0	6
Other	<u>2</u>	<u>12</u>	<u>14</u>
Total	49	59	108

Chi .075 significant difference between firms.

TABLE 22. MAIN BUSINESS OF FIRMS IN RESPECT TO OPINION OF MANAGEMENT AS TO OUTLETS AVAILABLE FOR BY-PRODUCTS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969. EACH FIGURE REPRESENTS THE ACCUMULATED REPLIES TO FOUR QUESTIONS

Type of Business	Have Outlets	No Outlets	Total
Elevators	131	57	188
Flour Mills	5	5	10
Other	<u>24</u>	<u>4</u>	<u>28</u>
Total	157	66	223

Firms were asked if a change in plant facilities would assist transit operations. Twenty-two firms felt improved plant facilities would help transit operations, while 10 firms felt improved plant facilities were not necessary. Fourteen of the 15 active transitors felt improved facilities were needed, while 8 of the 17 inactive accounts felt improved plant facilities would affect transit activities (Table 24). Twenty-one of the 22 firms, feeling improved facilities would help transit operations, are elevators (Table 25). Six firms not classified as elevators responded, and five of these firms did not feel improved plant facilities were necessary for transit operations.

TABLE 23. ACTIVE AND INACTIVE RESPONDENT TRANSIT ACCOUNTS WITH OUTLETS AVAILABLE FOR BY-PRODUCTS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969. EACH FIGURE REPRESENTS THE ACCUMULATED REPLIES TO FOUR QUESTIONS

Category	Active	Inactive	Total
Have Outlets Available	99	60	159
No Outlets Available	<u>42</u>	<u>24</u>	<u>66</u>
Total	141	84	225

TABLE 24. THE OPINION OF MANAGEMENT OF RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNTS AS TO THE NEED FOR IMPROVED PLANT FACILITIES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Need Improved Facilities	14	8	22
Do Not Need Improved Facilities	<u>1</u>	<u>9</u>	<u>10</u>
Total	15	17	32

Chi .123 significant difference between firms.

TABLE 25. THE OPINION OF MANAGEMENT CLASSIFIED BY THE MAIN BUSINESS OF RESPONDENT FIRMS AS TO THE NEED FOR IMPROVED PLANT FACILITIES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Need Improved Facilities	Do Not Need Improved Facilities	Total
Elevators	21	5	26
Flour Mills	0	0	0
Feed Mills	0	3	3
Other	<u>1</u>	<u>2</u>	<u>3</u>
Total	22	10	32

Chi .238 significant difference between firms.

After pretesting the questionnaire, a hypothesis was formed that access to the scale used to weigh inbound shipments is one of the factors which determines if a transit operator is active or inactive. There is a significant degree of difference between scale locations and type of business as the non-elevator firms tend to have scales located more favorably to the transit station (Table 26).

TABLE 26. TYPE OF FIRM AND SCALE LOCATION OF RESPONDENT FIRMS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Miles the Firm is from Scale							Total
	5	6-25	26-50	51-100	101-150	151-200	200	
Elevators	22	12	9	13	3	3	3	65
Flour Mills	3	0	0	0	1	0	0	4
Feed Mills	2	1	1	1	0	0	0	5
Other	<u>10</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>12</u>
Total	37	13	11	15	4	3	3	86

A difference is indicated between the scale location of active transit accounts and inactive transit accounts (Table 27). However, the location of a scale in relation to the location station does not appear to play a major role in transit operations.

TABLE 27. SCALE LOCATION OF ACTIVE AND INACTIVE ACCOUNTS OF RESPONDENT FIRMS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Miles the Firm is from Scale							Total
	5	6-25	26-50	51-100	101-150	151-200	200	
Active								
Transitors	28	6	4	9	2	2	2	53
Inactive								
Transitors	<u>8</u>	<u>7</u>	<u>7</u>	<u>6</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>32</u>
Total	36	13	11	15	4	3	3	85

Transit operators were asked if a more favorable scale location would help transit operations. Eight of the 55 respondent firms thought a better scale location would help transit operations. Three of the eight firms are currently active transit operations. Therefore, it can be assumed that 5 of the 55 firms replying would consider utilizing the existing transit privilege if a more favorable scale location was available (Tables 28 and 29).

TABLE 28. ACTIVE AND INACTIVE RESPONDENT TRANSIT ACCOUNTS DESIRING BETTER SCALE LOCATION, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Better Scale Desired	3	5	8
Present Scale Adequate	<u>19</u>	<u>28</u>	<u>47</u>
Total	22	33	55

TABLE 29. MAIN BUSINESS OF RESPONDENT FIRMS DESIRING BETTER SCALE LOCATION, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Better Scale Desired	Present Scale Adequate	Total
Elevators	8	38	46
Flour Mills	0	0	0
Feed Mills	0	4	4
Other	<u>0</u>	<u>5</u>	<u>5</u>
Total	8	47	55

Effect of Management on Transit Practice

Decisions made by management determine if a transit operation will be profitable. Managers of some firms may not want to become involved with the extra work and decision-making that accompanies transit, while other managers may not have the time to devote to a transit operation. Management of some firms may not be familiar with transit or how to conduct transit operations and may lack the time, the authority, or the desire to become acquainted with the transit privilege.

The managerial ability available to a firm is difficult to stratify; and this study is not an extensive effort to analyze management; however, some insight was gained from the analysis. Inactive transit operators were asked if the current manager has used the transit account and if previous management had used the transit privilege. Eleven of the respondent firms have transit accounts that have been used by current management but not by previous management. Seven firms have transit accounts that have not been used by current management but were used by previous management. Five firms have transit accounts that have been used by both present and previous management, and four firms have transit accounts that have not been used at all. Therefore in 18 of the 27 firms, the management must be considered as a major factor in the decision to utilize the transit privilege.

Half of the cooperatives that have transit accounts are active transitors, while two-thirds of the line and independent firms are active.



There are several explanations for fewer cooperative firms utilizing their privileges. A cooperative elevator views the profits (or losses) of transit operations relative to the individual plant, while line firms may analyze transit as it relates to a group of plants. The board of directors of a cooperative may not be acquainted with transit; and if a firm experiences several unprofitable transit transactions, the board may encourage the manager to re-evaluate the transit operation and eliminate the practice.

Five of the 29 firms with inactive transit accounts have never used the accounts. Nineteen of the 29 firms have used the transit privilege since 1965, while the remaining 5 firms eliminated transit operations prior to 1965. Nine of the 24 firms that are currently inactive, but have used the transit privilege, used the privilege for only one year. Therefore, a management decision was made after one year of utilization of the privilege to discontinue the practice.

Transit Operators' View of Transit

Twenty-seven of the respondent active transit operators consider transit operations as a major part of the firm's activities (Table 30).<sup>22</sup> Three firms which are currently inactive transitors plan to make transit a major part of the business. Thirty-one businesses felt transit was a major part of the firm's activities. Seventeen of these firms were elevators, five were flour mills, and nine were classified as other. None of the respondent feed mills considered transit a major part of their business (Table 31).

TABLE 30. RESPONDENT MANAGERS' OPINION OF THE CONTRIBUTION TRANSIT MAKES TO THE FIRM, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Firms Feeling Transit a Major Part of Business	27	3	30
Firms Feeling Transit Not Major Part of Business	<u>35</u>	<u>21</u>	<u>56</u>
Total	62	24	86

Chi .099 significant difference between firms.

<sup>22</sup>In certain cases numbers may not agree. This is because a firm may have replied to two questions under consideration but not the third. In the above example, three firms are not currently active transit accounts but plan to become so in the near future. One firm replied stating the business of the firm and that it considered transit as a major part of the firms' business but did not state if the firm was an active transit account.

TABLE 31. MAIN BUSINESS OF RESPONDENT FIRMS CONSIDERING TRANSIT AS A MAJOR PART OF THE FIRM'S OPERATION, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Consider as a Major Part of Operation	Do Not Consider as a Major Part of Operation	Total
Elevators	17	50	67
Flour Mills	5	0	5
Feed Mills	0	2	2
Other	<u>9</u>	<u>4</u>	<u>13</u>
Total	31	56	87

Chi .099 significant difference between firms.

The various firms were asked if present business operations would continue if transit were eliminated. Fifteen active transit operators felt present operations would be discontinued if transit were eliminated (Table 32). Eight elevators, three flour mills, and four firms classified as other would not continue present operations if the transit privileges were eliminated (Table 33). Eighty percent of the firms interviewed felt the transit privilege made the firm more competitive (Table 34). Eight-two percent of the firms felt transit made the firm more competitive in securing grain (Table 35). Eighty-five percent of the firms felt transit created a competitive advantage in selling in the Minneapolis market (Table 36). Most transit operators, 73 percent, did not feel transit was an advantage in selling grain within 50 miles of the warehouse (Table 37). Seventy-five percent of the active transit operators feel the transit privilege makes the firm more competitive in selling products in a regional market 50 to 250 miles from the plant (Table 38). Ninety-two percent of the active transit operators feel that the transit privilege can be used to secure a competitive position in the national market or markets over 250 miles from the plant (Table 39). Most operators felt transit a benefit in securing grain and a benefit in selling grain in nonlocal markets. Transit was not felt to be a benefit in local markets where truck shipments would predominate.

#### Impact of Exogenous Facilities Change

Various regulations and other external facilities not under the control of the transit operator condition and limit transit operations. While these factors have a very substantial influence upon the transit operation, the individual transit operator has very little control over these aspects. Included in these categories would be types of rates and grain marketing procedures.

TABLE 32. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNTS THAT WOULD CONTINUE OR DISCONTINUE PRESENT BUSINESS IF TRANSIT ACCOUNTS WERE ELIMINATED, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Continue Present Business	50	22	72
Discontinue Present Business	<u>14</u>	<u>0</u>	<u>14</u>
Total	64	22	86

Chi .043 significant difference between firms.

TABLE 33. MAIN BUSINESS OF RESPONDENT TRANSIT ACCOUNTS THAT WOULD CONTINUE OR DISCONTINUE BUSINESS IF TRANSIT ACCOUNTS WERE ELIMINATED, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Continue Present Business	Discontinue Present Business	Total
Elevators	59	8	67
Flour Mills	2	3	5
Feed Mills	2	0	2
Other	<u>9</u>	<u>4</u>	<u>13</u>
Total	72	15	87

Chi .109 significant difference between firms.

TABLE 34. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNT'S OPINION AS TO THE COMPETITIVE NATURE OF TRANSIT, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Improves Competitive Position	45	13	58
Does Not Improve Competitive Position	<u>6</u>	<u>9</u>	<u>15</u>
Total	51	22	73

Chi .061 significant difference between firms.

TABLE 35. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNT'S OPINION AS TO THE COMPETITIVE NATURE OF TRANSIT IN SECURING GRAIN, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
More Competitive in Securing Grain	24	3	27
No Advantage	<u>5</u>	<u>5</u>	<u>10</u>
Total	29	8	37

Chi .124 significant difference between firms.

TABLE 36. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNT'S OPINION AS TO THE COMPETITIVE NATURE OF TRANSIT IN SELLING IN THE MINNEAPOLIS MARKET, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Transit Helpful	36	11	47
Transit Not Helpful	<u>2</u>	<u>6</u>	<u>8</u>
Total	38	17	55

Chi .203 significant difference between firms.

TABLE 37. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNT'S OPINION AS TO THE COMPETITIVE NATURE OF TRANSIT IN SELLING LOCALLY (WITHIN 50 MILES OF THE FIRM), NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
More Competitive Locally	8	1	9
No Advantage	<u>21</u>	<u>4</u>	<u>25</u>
Total	29	5	34

Chi .114 significant difference between firms.

TABLE 38. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNT'S OPINION AS TO THE COMPETITIVE NATURE OF TRANSIT IN SELLING REGIONALLY (50 TO 250 MILES FROM FIRM), NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
More Competitive			
Regionally	21	0	21
No Advantage	<u>7</u>	<u>5</u>	<u>12</u>
Total	28	5	33

Chi .140 significant difference between firms.

TABLE 39. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNT'S OPINION AS TO THE COMPETITIVE NATURE OF TRANSIT IN SELLING NATIONALLY (OVER 250 MILES FROM FIRM), NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
More Competitive			
Nationally	23	1	24
No Advantage	<u>2</u>	<u>4</u>	<u>6</u>
Total	25	5	30

Chi .193 significant difference between firms.

Grain is bought and sold on United States government grades and standards. Historically, grain was loaded at country elevators and transported to locations called hold points. Boxcars were opened at hold points, samples were taken, and the cars were reshipped. The title to the grain was transferred upon the grades determined from the sample taken at the various hold points. However, hold points have several features which limit their usefulness. The carload of grain has left the elevator, and it is economically impossible to bring a carload of grain back if the grade is not what was desired to be loaded. Stopping cars at hold points also adds to the time needed to deliver the grain to the market.

The limitations of hold points have led to the development of the concept of spout sampling. When the spout sampling process is utilized, the sample is taken as the car is loaded; and the grade can be determined before the car is shipped. Therefore, transit managers were asked several questions dealing with grain sampling.

Forty percent of the respondent active transit accounts felt spout sampling would be a benefit, while 25 percent of the respondent inactive transit accounts considered spout sampling a benefit (Table 40).

TABLE 40. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNT'S OPINION IF SPOUT SAMPLING WOULD HELP TRANSIT OPERATION, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Helpful	25	5	30
Not Helpful	<u>37</u>	<u>15</u>	<u>52</u>
Total	62	20	82

Chi .524 significant difference between firms.

Thirty of the respondent 82 firms felt spout sampling would be helpful to transit operations. Twenty-six of the 30 firms that felt transit would be helpful were elevators. Fifteen firms that were not elevators replied to the question, and only four looked upon spout sampling as a benefit to transit (Table 41).

TABLE 41. MAIN BUSINESS OF RESPONDENT TRANSIT ACCOUNTS CLASSIFIED AS TO WHETHER SPOUT SAMPLING WOULD HELP TRANSIT OPERATION, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Helpful	Not Helpful	Total
Elevators	26	41	67
Flour Mills	1	2	3
Feed Mills	0	2	2
Other	<u>3</u>	<u>7</u>	<u>10</u>
Total	30	52	82

Chi .091 significant difference between firms.

Although the majority of respondent transit stations do not consider spout sampling a benefit to transit operations, most firms would buy grain on spout sampling (Table 42). About 75 percent of the respondent active transitors would be willing to buy grain on spout samples.

The elimination of hold points or inspection points would affect the grain purchasing procedures of transit operation of 27 of the 57

active transit operations (Table 43). Of the 32 firms which felt elimination of hold points would affect transit operations, 28 were elevators, 1 was a flour mill, and 3 were firms classified as other (Table 44).

TABLE 42. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNTS THAT WOULD OR WOULD NOT BUY GRAIN ON SPOUT SAMPLING, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Would Buy	34	12	46
Would Not Buy	<u>12</u>	<u>3</u>	<u>15</u>
Total	46	15	61

Chi .064 significant difference between firms.

TABLE 43. RESPONDENT ACTIVE AND INACTIVE ACCOUNTS MANAGER'S OPINION AS TO THE ELIMINATION OF HOLD POINTS AFFECTING TRANSIT OPERATIONS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Would Affect	27	5	32
Would Not Affect	<u>30</u>	<u>11</u>	<u>41</u>
Total	57	16	73

Chi .054 significant difference between firms.

TABLE 44. MAIN BUSINESS OF RESPONDENT MANAGER'S OPINION AS TO THE ELIMINATION OF HOLD POINTS AFFECTING TRANSIT OPERATIONS, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Would Affect	Would Not Affect	Total
Elevators	28	29	57
Flour Mills	1	4	5
Feed Mills	0	2	2
Other	<u>3</u>	<u>6</u>	<u>9</u>
Total	32	41	73

Chi .105 significant difference between firms.

In the past special multicar rates have existed for limited situations such as in the movement of commodity credit grain. Currently, there are multicar or unit train rates in effect for grain movements in other parts of the country. Transit operators were asked if the firm had facilities to utilize a multicar rate and if a multicar rate could replace the transit privilege.

Forty-seven of the 81 respondent firms felt facilities were available to enable the firm to employ a multicar rate (Table 45). Examining replies to other questions and replies to personal interviews seems to indicate the limitation in utilizing a multicar rate was not in the physical plant capacity but rather in the facilities provided by the railroads serving the firm. Some firms lacked sufficient rail siding, while most firms lacked an adequate supply of rail cars. Several transit operators lacked sufficient outbound transit volume or total volume to effectively employ a multicar rate. One transit operator summed up the situation very well when he stated, "I can use a multicar rate if the railroad could provide the service."

TABLE 45. RESPONDENT ACTIVE AND INACTIVE TRANSIT FIRMS THAT HAVE FACILITIES ENABLING THE ESTABLISHMENT TO UTILIZE A MULTICAR RATE, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Can Use Multicar Rate	32	15	47
Cannot Use Multicar Rate	<u>26</u>	<u>8</u>	<u>34</u>
Total	58	23	81

Chi .049 significant difference between firms.

Forty-one of the respondent 65 elevators felt a multicar rate could be utilized, and 7 of the 12 feed mills and firms classified as other could use a multicar rate. All five flour mills due to the type of outbound shipment felt a multicar rate could not be effectively employed (Table 46).

Forty-two of the 50 respondent active transit firms felt multicar rates should not be used to replace the transit privilege (Table 47). Fourteen of the 56 elevators, 1 of the 5 feed mills, 1 of the 2 flour mills, and 2 of the 7 other firms felt the transit privilege could be replaced with multicar rates (Table 48).

#### Summary

A great deal of difference exists between the characteristics of active and inactive transit accounts. Following is a summary of some of the major differences.



TABLE 46. MAIN BUSINESS OF RESPONDENT FIRMS THAT HAVE FACILITIES TO UTILIZE A MULTICAR RATE, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Could Use Multicar Rate	Could Not Use Multicar Rate	Total
Elevators	41	24	65
Flour Mills	0	5	5
Feed Mills	1	1	2
Other	<u>6</u>	<u>4</u>	<u>10</u>
Total	48	34	82

Chi .103 significant difference between firms.

TABLE 47. RESPONDENT ACTIVE AND INACTIVE TRANSIT ACCOUNTS WHICH WOULD OR WOULD NOT BE WILLING TO REPLACE TRANSIT WITH MULTICAR RATES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Active	Inactive	Total
Would Replace	8	9	17
Would Not Replace	<u>42</u>	<u>10</u>	<u>52</u>
Total	50	19	69

Chi .064 significant difference between firms.

TABLE 48. MAIN BUSINESS OF RESPONDENT FIRMS WHICH WOULD OR WOULD NOT BE WILLING TO REPLACE TRANSIT WITH MULTICAR RATES, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Type of Business	Would Replace	Would Not Replace	Total
Elevators	14	42	56
Flour Mills	1	1	2
Feed Mills	1	4	5
Other	<u>2</u>	<u>5</u>	<u>7</u>
Total	18	52	70

The ownership of transit stations is evenly divided between co-operative, line, and independent firms; however, ownership is one factor which determines if a transit account is utilized. The main business of

the firm also is a factor which determines if a transit account will be utilized.

Active transit accounts tend to contain better unloading facilities to handle inbound grain shipments by either rail car or motor trucks. Ten firms currently inactive transit accounts indicated transit would become feasible if better unloading facilities were available.

Transit firms tend to be larger in physical plant capacity than nontransit firms, and active transit accounts have larger plants than do inactive firms. Active transitors also handle a larger volume of grain annually than do inactive accounts.

Nearly 90 percent of the respondent firms have grain cleaning equipment, but only half of the respondent feed mills had the facilities. Just less than half of the respondent firms had commercial feed manufacturing plants, but the concentration tended to be greater among active transitors.

The majority of respondent transit accounts tended to have outlets available for by-products of the various transit operations.

Eighty percent of the responding 26 elevators felt improved plant facilities were needed to assist transit operations. Both active and inactive elevators felt the need for improved facilities. The other categories tended to feel existing facilities were adequate for present transit operations.

The effect management has upon the utilization of the transit privilege was found to be quite extensive. It was found in 18 of the 27 respondent firms either present management or previous management, but not both, had used the transit privilege. Four of the 27 firms had never used the transit privilege, while the remaining 5 had a continuing practice of utilizing the transit privilege.

Seventy-five percent of the management in responding elevators do not consider transit as a major part of the firm's business. None of the responding feed mills consider transit as a major part of the business, while all flour mills consider transit as a major part of the firm's activities. Seventy percent of the respondent firms classified as other also consider transit as a major part of their business.

Fourteen of the respondent firms felt business would not be continued if the transit privilege were eliminated. Eight of these firms were elevators, three were flour mills, and four were classified as other.

Most respondent firms felt the transit privilege offered a competitive advantage in securing grain or in selling grain in the Minneapolis market and other regional (between 50-250 miles from the firm) or national (over 250 miles from the firm) markets. Transit was not considered an advantage in selling in the local market (less than 50 miles from the firm).

Most respondent transit operators did not feel spout sampling was a benefit to transit operations, but 75 percent of the firms would buy on spout samples.

Currently, multicar rates do not appear as a practical substitute for the transit privilege. While most firms could use multicar rates, the majority would not be satisfied if transit were replaced with this type of rate.

#### THE DEMAND FOR TRANSIT

The Upper Great Plains region produced just under 1.2 billion bushels of barley, oats, rye, soybeans, wheat, and flax in 1968. While some of the grain is consumed locally, the bulk of the production is moved into commercial channels using either motor truck or railroads.

In conducting this study, the volume of grain transited was analyzed in relation to total grain production. Total grain production was used in order to determine transit as it relates to the Upper Great Plains grain industry.<sup>23</sup>

#### Supply of Grain

Transit is utilized on long distance hauls or on grain shipped to other parts of the country. Therefore the Upper Great Plains region's grain production as a percent of the total United States production is one determinant of the demand for the transit privilege.

From 1964 to 1968, North Dakota, South Dakota, Minnesota, and Montana produced 96 percent of the total United States flax production, 93 percent of the hard red spring wheat, and 99.5 percent of the durum wheat. This area also accounted for 40 percent of the total oats production, 45 percent of the total barley production, and 50 percent of the rye production. Twenty-six percent of all classes of wheat is grown in this region (Table 49).

During the five-year period, 1964-1968, the Upper Great Plains produced just over five billion bushels of the six grains included in the study. Oats accounted for the largest volume as 348 million bushels were produced. Hard red spring wheat production was 187 million bushels, and barley accounted for 179 million bushels. Other wheats including soft wheat accounted for 96 million bushels, while durum production was 72 million bushels. Rye production was 14 million bushels, while oil crop production was 77 million bushels of soybeans and 25 million bushels of flax.

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<sup>23</sup>Unpublished research, Upper Great Plains Transportation Institute, North Dakota State University, Fargo.

TABLE 49. UPPER GREAT PLAINS REGION'S PRODUCTION, UNITED STATES' PRODUCTION, AND UPPER GREAT PLAINS REGION'S PRODUCTION AS A PERCENT OF THE UNITED STATES' PRODUCTION OF BARLEY, OATS, RYE, SOYBEANS, SPRING WHEAT, DURUM WHEAT, ALL CLASSES OF WHEAT, AND FLAX FOR THE YEARS 1964-1968, IN THOUSANDS OF BUSHELS

Year	Category	Barley	Oats	Rye	Soybeans	Spring Wheat	Durum Wheat	All Wheat	Flax	Total
1964	4-State Production	166,918	311,246	15,732	63,856	166,665	66,290	300,752	22,808	881,312
	U. S. Production	402,895	880,095	33,318	701,917	198,979	66,675	1,290,650	24,406	3,333,281
	% by 4 States	41.42	35.36	47.21	9.09	83.76	99.42	23.30	93.45	26.44
1965	4-State Production	181,864	394,981	19,038	68,241	197,204	69,581	343,219	33,992	1,041,335
	U. S. Production	392,279	926,851	33,223	845,608	228,662	69,866	1,315,613	35,402	3,548,976
	% by 4 States	46.36	42.61	57.30	8.07	86.24	99.59	26.08	96.01	29.95
1966	4-State Production	165,358	301,460	12,320	92,774	169,093	62,340	311,234	22,561	905,707
	U. S. Production	393,186	801,327	27,775	928,481	186,571	62,638	1,311,707	23,390	3,485,861
	% by 4 States	42.05	37.62	44.35	9.99	90.63	99.52	23.72	96.45	25.98
1967	4-State Production	170,563	333,284	12,477	79,817	274,058	62,647	402,820	19,694	1,018,655
	U. S. Production	370,246	781,867	24,075	972,701	249,225	63,013	1,524,349	19,931	3,693,169
	% by 4 States	46.06	42.62	51.82	8.20	89.90	99.41	26.42	98.81	27.58
1968	4-State Production	211,957	400,215	11,565	78,972	225,858	97,242	438,997	26,414	1,168,120
	U. S. Production	418,168	929,524	23,220	1,079,662	244,098	97,697	1,570,433	27,264	4,048,271
	% by 4 States	50.68	43.05	49.80	7.31	92.52	99.53	27.95	96.88	28.85
Totals	4-State Production	896,670	1,741,186	71,132	383,660	1,032,878	358,100	1,797,022	125,479	5,015,129
	U. S. Production	1,976,774	4,319,664	141,611	4,528,369	1,107,535	359,889	7,012,747	130,393	18,109,558
	% by 4 States	45.36	40.31	50.23	8.47	93.27	99.50	25.63	96.22	27.70
Average	4-State Production	179,334	348,237	14,226	76,732	206,576	71,620	359,404	25,096	1,003,026
	U. S. Production	395,355	863,933	28,322	905,673	221,507	71,978	1,402,549	26,079	3,621,911
	% by 4 States	45.36	40.31	50.23	8.47	93.27	99.50	25.63	96.22	27.70

Volume of Grain Transited

Data was obtained from the 242 firms listed with the Western Weighing and Inspection Bureau as having transit accounts established to utilize the grain transit privilege (Table 50). Thirty-two firms with transit accounts are no longer in operation, and 56 firms did not supply transit volume. Ninety-seven of the remaining firms utilized the transit privilege, and 57 firms were inactive transitors during the five-year period 1964-1968.

TABLE 50. NUMBER OF FIRMS CLASSIFIED BY TYPE OF RESPONSE TO QUESTION REQUESTING TRANSIT VOLUME, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	State				Total
	North Dakota	South Dakota	Minnesota	Montana	
Out of Business	11	2	19	0	32
Did Not Reply	17	5	29	5	56
Did Not Utilize					
Transit	24	10	19	4	57
Firm Using Transit	<u>43</u>	<u>9</u>	<u>36</u>	<u>9</u>	<u>97</u>
Total	95	26	103	18	242

The 154 firms which supplied transit volume stated that an annual average of 27,875 carloads of grain were transited in the four-state area during the five-year period 1964-1968 (Table 51).

TABLE 51. ANNUAL VOLUME OF GRAIN TRANSITED BY RESPONDENT FIRMS AND WEIGHTED AND UNWEIGHTED ESTIMATE OF TOTAL TRANSIT UTILIZED AND THE WEIGHTED ESTIMATED AS A PERCENT OF TOTAL GRAIN AVAILABLE FOR YEARS 1964-1968, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA. FIGURES ARE 120,000 POUND CARLOADS

Category	Year					Total	Average
	1964	1965	1966	1967	1968		
Cars Transited by Respond- ent Firms	28,007	26,555	30,267	27,925	26,618	139,372	27,874
Total Transit Estimate Unweighted	38,190	336,280	41,270	38,080	36,300	190,050	38,010

-continued-

TABLE 51. ANNUAL VOLUME OF GRAIN TRANSITED BY RESPONDENT FIRMS AND WEIGHTED AND UNWEIGHTED ESTIMATE OF TOTAL TRANSIT UTILIZED AND THE WEIGHTED ESTIMATE AS A PERCENT OF TOTAL GRAIN AVAILABLE FOR YEARS 1964-1968, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA. FIGURES ARE 120,000 POUND CARLOADS - continued

Category	Year					Total	Average
	1964	1965	1966	1967	1968		
Total Transit Estimate Weighted Average	49,950	44,500	50,700	46,800	44,600	233,550	46,710
Carloads of Grain Available	356,743	417,219	371,316	420,444	476,726	2,042,448	408,489
Percent Transited Using Weighted Estimate	13.16	10.66	13.65	10.87	9.36	11.38	--

Total transit volume was desired, but 56 firms did not reply to the questionnaire; therefore, the replies of the respondent firms were expanded to include all transit stations. Two methods were used to estimate the total volume of grain transited. The first method assumed all firms transited the same average volume. It was assumed that the nonrespondent firms had the same percentage of elevators, flour mills, and feed mills as did those firms which responded.

$$\frac{154}{139,372} = \frac{210}{x}$$

$$x = 190,050$$

154 = Total respondent transit accounts

139,372 = Total transit volume of all respondent accounts

210 = Total respondent active and inactive accounts and nonrespondent accounts

Using this method, an estimate of 190,050 carloads of grain utilized the transit privilege during the period of 1964-1968, in North Dakota, South Dakota, Minnesota, and Montana.

The second approach was an effort to obtain a more realistic transit volume. Utilizing this approach, all firms were segregated as to the main business of the firm. An estimate of the total transit volume was then made with each type of business.

The volume of grain transited by active and inactive transit accounts which were elevators was expanded to include elevators not replying to the questionnaire. The elevators were classified as to

location by state as it was determined that the respondent active transitors differed in volume transited according to state. A similar procedure was followed for flour mills, malsters, and oil processors.

The firms not responding were classified into types of business by analyzing the name and location of the firm. This approach resulted in a larger estimate of total transit privilege utilization. The estimate for the five-year period is 233,650 carloads of grain stopped under the transit privilege or an annual average of 46,732 cars (Table 52).

TABLE 52. WEIGHTED ESTIMATE OF TOTAL TRANSIT VOLUME ACCUMULATED FOR THE YEARS 1964-1968, CLASSIFIED BY TYPE OF BUSINESS. NON-ELEVATOR USE WAS NOT STATED BY STATE TO PREVENT IDENTIFICATION OF INDIVIDUAL FIRMS

Category	State				Total
	North Dakota	South Dakota	Minnesota	Montana	
Elevator Use	17,225	1,325	18,625	4,050	41,225
Non-Elevator Use	--	--	--	--	192,325
Total					233,550

The discrepancy between these values may be explained by the greater response from elevators. Only 50 percent of the flour mills, feed mills, and oil processors supplied transit volume while over 75 percent of the elevators supplied transit volume. Since elevators transited less grain per firm, the greater response of elevators; and the larger number of elevators tended to bias the unweighted estimate downward. The weighted estimate of transit volume, therefore, can be assumed to reflect a value closer to the actual transit volume.

During the five-year period 1964-1968, 2,052,448 carloads of grain were produced and were available for transit. Of this amount, 233,550 cars were granted transit or 11.38 percent of the total grain available was transited. In 1966, the largest volume of grain, both relative and absolute, was transited. In 1968, the lowest relative amount of transit was utilized; and in 1965, the lowest absolute volume was used.

It is interesting to note the utilization of the transit privilege, both as a relative value and as an absolute value, is inversely related to total crop production or total grain available for transit.

Wheat accounted for about 40 percent of the total volume of transit grain (Table 53). The volume of wheat transited, both relative and absolute, was inversely related to the total wheat available for transit.

Barley accounted for about 30 percent of the total volume of grain transited. While barley transit was relatively an inverse function of

total production, as was the pattern in wheat and total transit, barley absolutely showed a pattern of gradual increased utilization.

TABLE 53. ANNUAL VOLUME OF WHEAT AND BARLEY TRANSITED, ABSOLUTE VOLUME, AND AS A PERCENT OF WHEAT AND BARLEY AVAILABLE FOR THE YEARS 1964-1968, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA. FIGURES ARE IN 120,000 POUND CARLOADS

Category	Year					Total
	1964	1965	1966	1967	1968	
Wheat Volume Transited	19,292	15,432	21,056	19,487	14,785	90,052
Barley Volume Transited	12,803	13,585	14,459	14,999	15,641	71,489
Wheat Available	150,376	171,609	155,617	201,410	219,499	898,511
Barley Available	66,767	72,746	66,143	68,225	84,783	368,664
Percent of Wheat Available Transited	12.82	8.99	13.53	9.68	6.74	10.02
Percent of Barley Available Transited	19.17	18.67	21.86	19.17	18.45	19.39
Wheat as Percent of Total Transit	41.09	34.68	41.53	41.64	33.15	38.56
Barley as Percent of Total Transit	27.27	30.53	28.52	32.05	35.07	30.60

Wheat and barley combined accounted for 70 percent of the total carloads of grain transited.

The grain processing industry utilizes the transit privilege most extensively. The processors in the Upper Great Plains region have 17 percent of the transit accounts, and elevators have 83 percent of the accounts; but the millers, malsters, and other processors transit 82 percent of the total grain transited.

#### Cost of Providing Transit

Providing the transit service is a cost to the railroads; and since railroads attempt to regain all costs, the cost of providing transit is built into the general grain rate structure. Therefore all grain shipments bear the cost of providing the service, while only 11 percent of the grain produced actually utilizes the transit privilege.

The actual cost of providing transit can be determined by examining Rail Carload Cost Scale by Territories for the Year 1966, published



by the Bureau of Accounts of the Interstate Commerce Commission.<sup>24</sup> The Bureau of Accounts determined out-of-pocket costs and fully distributed costs for the terminal costs of a carload of grain. The terminal costs per hundredweight for a 120,000 pound car are 5.928 cents for out-of-pocket costs or 8.204 cents for fully distributed costs (Table 54).

TABLE 54. THE OUT-OF-POCKET COSTS AND THE FULLY DISTRIBUTED COSTS OF PROVIDING TRANSIT PER HUNDREDWEIGHT, PER CARLOAD, AND PER BUSHEL FOR WHEAT AND BARLEY. RAILROAD COST SCALE FOR 120,000 POUND CAR FOR 1966

Item	Out-of-Pocket Costs	Fully Distributed Costs
	dollars	
100 Pounds	.05928	.08204
Wheat/Bushels	.03571	.04924
Barley/Bushels	.02845	.03937
120,000 Pound Carload	71.14000	98.45000

The out-of-pocket cost for barley per bushel is \$.02845, while the cost of wheat is \$.03571.<sup>25</sup> This amounts to a total cost per car (loaded to 120,000 pounds) of \$71.14. The fully distributed cost per bushel of barley is \$.03937, and the fully distributed cost per bushel of wheat is \$.04924. The fully distributed cost of a 120,000 pound carload of grain is \$98.45.

Using the weighted transit estimate for North Dakota, South Dakota, Minnesota, and Montana, the total cost of providing transit can be determined for the years 1964-1968. The average annual out-of-pocket costs for grain transit was \$2,704,031 and the fully distributed costs averaged \$3,742,084 (Table 55). The 1968 out-of-pocket cost for barley transit was \$1,112,700, while the cost for wheat was \$1,051,800. The 1968 fully distributed cost for barley was \$1,539,856 and wheat was \$1,455,583.

<sup>24</sup>Bureau of Accounts, Interstate Commerce Commission, Rail Carload Cost Scale by Territories for the Year 1966, U. S. Government Printing Office, Washington, D. C., 1968.

<sup>25</sup>The fully distributed costs and the out-of-pocket costs for wheat and barley were determined by adjusting the hundredweight rates to the official test weight for each grain. The carload costs were determined by multiplying the fully distributed cost and the out-of-pocket cost per hundredweight times the 1,200 hundredweights in a car.

TABLE 55. THE FULLY DISTRIBUTED AND OUT-OF-POCKET COSTS OF PROVIDING TRANSIT FOR WHEAT, BARLEY, AND TOTAL TRANSIT USE BASED UPON WEIGHTED ESTIMATES OF TRANSIT USE IN NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1964-1968

Category	Year					Total	Average
	1964	1965	1966	1967	1968		
Total Out-of-Pocket Costs	2,716,836	2,575,979	2,935,947	2,709,011	2,582,382	12,520,157	2,704,031
Total Fully Distributed Costs	3,759,806	3,564,874	4,063,031	3,748,976	3,573,735	18,710,422	3,742,084
Wheat Out-of-Pocket Costs	1,372,432	1,097,832	1,497,923	1,386,305	1,051,805	6,406,299	1,281,259
Wheat Fully Distributed Costs	1,899,297	1,519,286	2,072,963	1,918,495	1,455,583	8,865,619	1,773,123
Barley Out-of-Pocket Costs	910,805	966,437	1,028,613	1,067,029	1,112,701	5,085,727	1,017,149
Barley Fully Distributed Costs	1,260,455	1,337,443	1,423,489	1,476,651	1,539,856	7,038,092	1,407,618

Elasticity of Demand

Managers of transit stations were asked if the firm would be willing to pay for the use of the transit privilege. Seventy-four firms responded to the question. Thirty-five firms indicated a willingness to pay for transit, while 39 firms would not pay for utilizing the privilege (Table 56). If a firm indicated a willingness to make reimbursement for transit usage, the manager was asked to state the amount the firm would be willing to pay. The majority of the firms willing to pay for transit were willing to pay 1 cent per bushel. Eight firms indicated a willingness to pay more than 1 cent per bushel. None of the firms were willing to pay 5 or more cents per bushel. Forty-eight firms that replied to the question inquiring as to the willingness of a firm to pay for transit stops also provided transit tonnage (Table 57).

TABLE 56. RESPONDENT FIRMS WILLING TO PAY FOR TRANSIT AND AMOUNT FIRMS ARE WILLING TO PAY, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Willing to Pay	Not Willing to Pay	Amount Firms Are Willing to Pay Per Bushel for Transiting Grain			
		1 Cent	2 Cents	3 Cents	4 Cents
35	39	18	4	1	3

TABLE 57. TONNAGE OF RESPONDENT TRANSIT STATIONS WILLING TO PAY FOR THE TRANSIT PRIVILEGE, NORTH DAKOTA, SOUTH DAKOTA, MINNESOTA, AND MONTANA, 1969

Category	Amount Firms Are Willing to Pay Per Bushel for Transiting Grain					
	0 Cent	1 Cent	2 Cents	3 Cents	4 Cents	5 Cents
Number of Firms Which Supplied Transit Volume and Amount Each of the Firms is Willing to Pay for Transit	30	13	4	0	1	0
Tonnage of Firms Willing to Pay Each Amount	62,336	2,007	326	0	3,420	0

Friedlaender explained the elasticity of demand for a transportation service may be determined by the formula  $E_t = \frac{Q}{R}$ .<sup>26</sup> This theoretical formula may be converted to a working mathematical  $\bar{R}$  formula as follows:

$$E = \frac{\frac{Q_1 - Q_2}{Q}}{\frac{R_1 - R_2}{R}}$$

Where:  $Q_1$  = Quantity in first period

$Q_2$  = Quantity in second period

$Q$  = Lowest value of  $Q_1$  or  $Q_2$

$R_1$  = Rate in first period

$R_2$  = Rate in second period

$R$  = Lowest value of  $R_1$  or  $R_2$

An infinite elasticity of demand exists between no charge and a charge of 1 cent as theory would indicate. Determining the elasticity through the middle portion of the arc is rather difficult. Using the data provided by all transit stations, the demand for transit is inelastic between 1-4 cents. However, one transit station indicated a willingness to pay 4 cents per bushel for the transit service; and the transit volume of this firm is greater than the accumulated transit volume of the other 17 firms willing to pay for transit. All other larger transit users indicated an unwillingness to pay for the transit privilege. A second elasticity value was determined by removing the firm willing to pay 4 cents from the data. An elasticity of 6.21 was derived between 1-2 cents. The significance of the elasticity value of 6.21 is rather relative, but it appears any charge for transit would eliminate the bulk of the demand for the transit service. Examining Table 57, one notes 53 percent of all firms indicates an unwillingness to pay for the transit privilege; but among those firms which supplied transit volume, 63 percent indicated an unwillingness to pay for transit. This difference may be explained by the response of inactive transit accounts which tended to indicate a willingness to pay for transit should transit operations be re-instated among the firms activities.

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<sup>26</sup>Friedlaender, Ann. F., The Dilemma of Freight Transport Regulation, The Brookings Institution, Washington, D. C., 1969, p. 53.