Regional Elevator Transportation: Market Decisions and Rail Service

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Abstract

Agriculture is a leading source of demand for transport resources. It accounted for nearly 1 in 5 ton-miles of highway freight and 1 in 10 ton-miles of rail and barge freight transported in the nation during 2010, and demand is expected to grow. Thus, understanding industry practices and trends related to transportation is essential in business, resource, and policy decisions. The goal here is to gain insight into transportation in the north-central plains region, defined here to include North Dakota, Minnesota, South Dakota, Nebraska, and Kansas. Responses from 208 elevators surveyed in the region were studied to understand industry composition, decision processes, marketing trends, and transport practices. Results show a strong need for sound local road infrastructure, which is essential in grain procurement and in serving growing local processor demand. Large elevators dominate the industry in terms of volume handled but smaller facilities remain active, especially in serving local demand. For this region, reliable and competitive rail service and sound rail service and investment decisions by elevators are important in long-term industry strength, especially in the light of current opportunities for export market growth.

Disclaimer

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1. Introduction

While service sector may be seen as an increasingly important factor in the U.S. economy, traditional natural resource based industries remain strong economic drivers in the upper Midwest. One of the longest-lived multimodal industries in this sector is agriculture. Agriculture is a national leader in demand of transportation services (FHWA 2012). Nationally, it accounted for 18 percent of all ton-miles transported in 2010. This demand is expected to grow 31 percent by 2020. Although over 80% of the agricultural ton-miles occur on the road system, the grain industry is an important user of rail and water services as well. Class I railroads reported that 1 in 10 tons originated is grain or food-related (Association of American Railroads 2010). Agriculture accounts for 12% of tons moved on the nations inland waterways (U.S. Army Corp of Engineers 2009). Importance of agricultural products to the nation's deep water ports is evident in U.S. exports, as food/feeds/beverage end-use commodities accounted for 9% of the total value (U.S. Census 2012).

The demand and supply points in agricultural marketing chains are wide-reaching, with some agility to make immediate changes and longer-term shifts in modal choice and marketing patterns. Promoting effective hinterlands connections to national and international marketing channels is essential in long-term industry competitiveness and productivity. Monitoring the continued evolution of the industry is critical in prudent transportation resource and policy decisions in local markets, national corridors, and international gateways. Hence, work here to gain insight into agriculture through the activities of the local elevator industry in the region.

Effective grain production and marketing was essential in establishing the U.S. economy and transportation system. As in early grain trade days, elevators remain heavily involved in an intermediary logistics role. Their ability to gather and market in large shipments, which meet customer quality specifications and food safety conditions, is essential in the competitiveness of U.S. grains in the world market. In a continuing effort to promote competitively effective transportation decisions related to this industry, this report summarizes findings from a survey of elevators in Kansas, Minnesota, Nebraska, North Dakota, and South Dakota. It builds on an existing knowledgebase created in past survey efforts in the region (Qasmi et. al 2010, Jessep and Casavant 2005, Vachal and Tolliver 2001).

Cereal grains are attributed with 45% of the transportation demand within the agricultural sector (FHWA 2012). The five participant states had substantially larger shares of state freight ton-miles attributed to cereal grains (Figure 1.1). For North Dakota and South Dakota the cereal grains account for 80% of agricultural traffic. Minnesota has the lowest share comprised of cereal grains, with 60%, but this is still well above the national share. It is important to note that these demand figures include estimates of farm deliveries to storage or distribution/processing center (Oakridge National Laboratory 2010). The Commodity Flow Survey, which is used as a primary data source for the Freight Analysis Framework (FAF^3) transportation flow, derives estimates based on other industry data sources since farms are not part of the freight shipping establishments considered in the survey population (FHWA 2012).

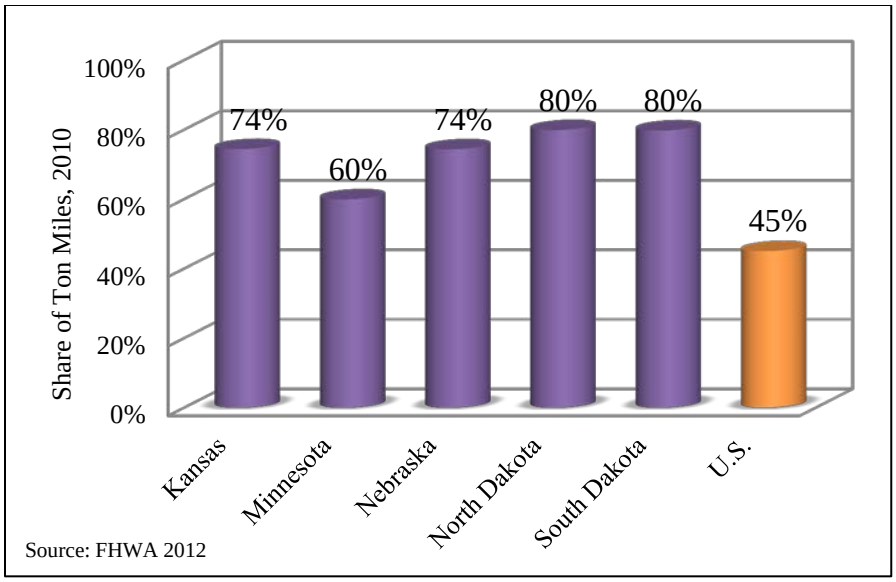

Figure 1.1 Cereal Grain Shipments as Share of All Agricultural Shipments, 2010

Grain is a transportation intensive agricultural sector, with profitability for this low-value, bulk product dependent on a reliable, cost-effective transportation network. As the value per ton increases, transportation costs generally become a lesser factor in the delivered product cost. Figure 1.2 shows a wide range in the value per ton for commodities. The relatively low value of grain is evident as its per ton value falls below that of waste and scrap products. The weighted value information was drawn from the most recent national survey of mining, manufacturing, wholesale, auxiliaries, and selected retail industries regarding transportation practices and commodity flows (Bureau of Transportation Statistics 2009).

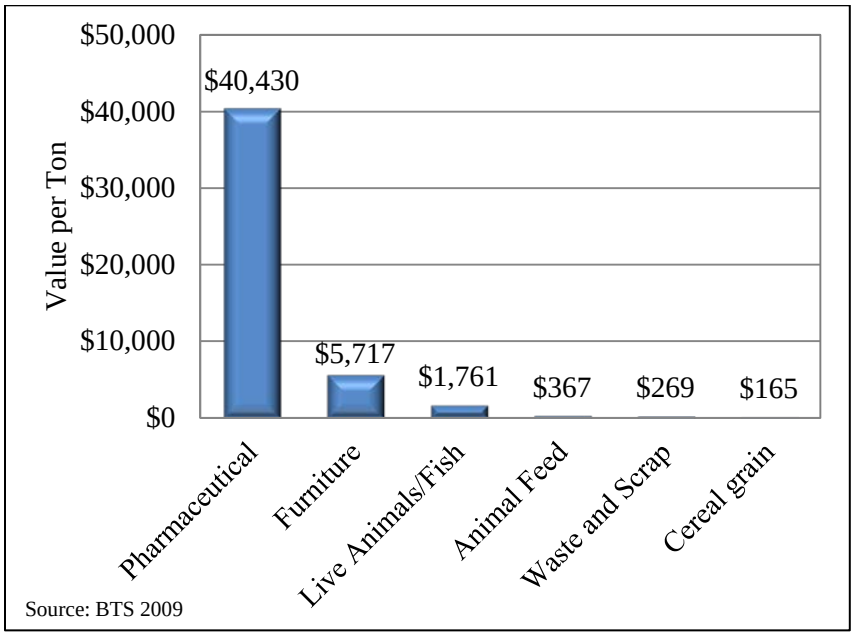

Figure 1.2 Value per Ton for Selected Commodities

The five-state region produced over 6 billion bushels, or 158 million tons, annually of major grains considering the corn, soybean, and wheat harvested over the past three years. The production is widely dispersed across the states with production densities differences related to the commodity and the agronomic environment (Figure 1.3). On average, states have 22% of their land in crop production. The rate is two to three times that level in this upper Midwest Region. Kansas and North Dakota have about 60% of land in crops. About 40% of the land in South Dakota and Minnesota is in crop production, with Nebraska at midrange among these states with about 1 in every 2 acres dedicated to crops.

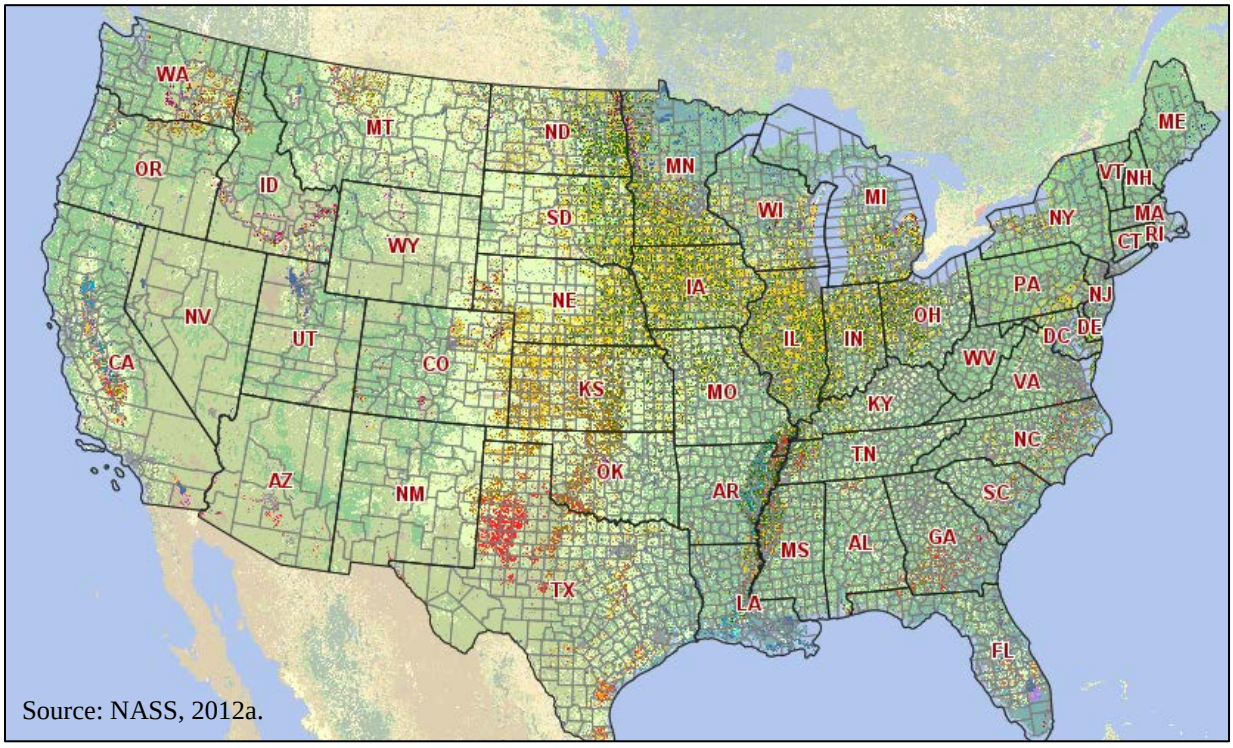

Figure 1.3 Cropland Cover, 2011

A portion of the corn may remain on-farm for livestock operations. Processing and feedlot consumption define local truck market delivery options for farmer or elevator deliveries. These are typically markets within 250 miles, or a one-day roundtrip for the truck. Due to long distances to most export gateways from this region, elevator gathering and rail transport are typically involved these supply chains. Understanding industry assets, business practices, and marketing patterns related to grain transportation is fundamental in decisions related to a competitive agricultural industry and successful rural economy. Results of the industry survey conducted in March 2012 offer insight regarding these issues.

2. Method

A mail survey was selected as the method for the elevator survey. Descriptive statistics and means comparisons were the analytical method used to analyze survey responses. Based on the survey response profile, future research may be conducted related to transportation market decisions and patterns associated with the elevator industry.

A draft survey was designed based on previous industry surveys and the focus here on transportation issues. The survey was tested in a pre-mailing, and revised based on industry suggestions. The final survey included questions about company assets and activities, transportation practices, rail service, and industry structure. A cover letter included with the survey indicated cooperation among the elevator industry organizations in the survey, and their potential uses of survey results.

The survey was disseminated to 625 elevators in the upper Midwest by the industry organizations in Kansas, Minnesota, and South Dakota. The regional survey was conducted in cooperation with the elevator industry associations from four states, including Kansas, Minnesota, North Dakota and South Dakota.[1] The industry associations in these states provided input during survey development, developed cover letters with the organization letterhead, distributed surveys to elevators, and encouraged industry response with electronic and newsletter reminders. Nebraska elevators also participated in a more limited fashion.[2] A typical mail survey response is expected to be between 10% and 15%. The overall response rate was 33%, ranging from 43% in South Dakota to 24% in Minnesota (Table 1). The relatively high response rate is likely associated with historical processes in North Dakota and industry.

Table 1. Survey Response Rate

State	Mailed	Responses	Response Rate
Kansas	155	49	32%
Minnesota	225	55	24%
North Dakota	145	61	42%
South Dakota	100	43	43%
Overall	625	208	33%

[1] The North Dakota survey was mailed by the Upper Great Plains Transportation Institute, NDSU, in continuation of a decade-long commitment by the N.D. Wheat Commission to the elevator survey effort.

[2] Nebraska elevators were also included in the survey but changes in organization management prevented full cooperation in survey distribution and response prompts. The 17 responses from the 190 surveys mailed to these elevators by the UGPTI, with UGPTI letterhead rather than industry association letterhead, are incorporated into the regional survey results but individual state detail was not developed due to limited representation.

3. Industry Transportation Priorities

An important element of the survey is identifying transportation issues deemed most important in the future of the industry. Based on a scan of industry transportation activities and consultation with industry experts, elevators were asked to rank twelve transportation-related issues in terms of their importance for future industry growth. A Likert scale of 1 to 5 was offered for the ranking, with 1 indicating not important to 5 indicating very important. Ratings for the region and individual states are shown in **Table 2**. As expected, export market demand is viewed as a key issue by all states. Due to a mature economy and stable population base, international markets are viewed as the growth market for most in the U.S. agricultural sector. The current 'National Export Initiative' offers a great opportunity to highlight the role of agriculture as a contributor in expanded export sales. Recent years have shown the potential for increased export sales to existing customers, especially to developing nations where rising individual incomes have allowed for increased food expenditures. Second among issues in the region is the need for reliable local roads. This issue was rated first by South Dakota and North Dakota elevators. The competitiveness of U.S. agricultural has long been enhanced by its ability to efficiently amass low-value field crops locally for shipment to national and international customers in larger-volume shipments. The local roads system is the first connector in this supply chain, and is vital to rural economy success and in turn that of U.S. agriculture.

Table 2. Importance of Transportation Issues in the Future U.S. Grain Industry Growth, based on Respondent Rating Importance of

	KS	MN	ND	SD	Region
Export Market Demands	**4.3**	**4.3**	**4.1**	**4.1**	**4.2**
Local Road Investments	3.9	**4.2**	**4.1**	**4.2**	**4.1**
Local Processing/Feeding Demands	3.9	4.0	3.5	3.7	3.8
Rail Industry Capacity	3.8	3.9	4.0	3.2	3.7
Trade Agreements/International Policy	3.8	4.0	3.4	3.5	3.7
Truck Industry Capacity	**4.0**	3.8	3.5	3.5	3.7
Domestic Farm Policy	3.8	3.8	3.2	3.7	3.6
Bio-Energy Industry Demands	3.6	3.7	3.4	3.4	3.5
Food Security/Safety	3.6	3.6	3.4	3.4	3.5
Port Capacity	3.4	3.7	3.3	3.1	3.4
International Competitor Investments	3.1	3.5	3.1	3.0	3.2
Inland Waterway Capacity	3.1	3.6	2.8	3.0	3.1

Rating 1=Not Important to 5=Very Important

Other issues with above average rating include, local demand including both processing and animal consumption, rail and truck industry capacity, and future trade agreements. The growth of local processing related to ethanol and bio-fuels has had huge implications for the industry over the past decade, both in terms of the magnitude of local demand and the shift in transportation demanded created by these businesses. Continued expansion or future contraction in this industry would greatly affect the industry and its transportation needs. An ongoing concern for U.S. agriculture is its competitiveness in relocating product from inland production areas to domestic and international customers. Grain is a bulky, low-value product which is heavily dependent on an efficient bulk transportation system. As with the local roads, rail and truck capacity are key elements in system agility and reliability. Information gathered from industry in this survey will be useful as the industry in this region moves forward to address these issues with transportation investment and policy decisions.

4. Facility Profile

The respondent elevators were asked about their average grain handle, including volume, mode, and origination characteristics. In addition, rail capacity and storage information were collected as a basis for potential segmentation in discussing the market. Corn, soybean, and wheat crops were the focus as major crops grown in this region.

4.1 Grain Handle

The 208 respondent elevators handled over 6 billion bushels of grain annually (NASS 2012b). Representation of the market in terms of volume is estimated in comparing the reported handle to average annual production in the states between 2009 and 2011. All states, with the exception of Nebraska, are well-represented in terms of grain shipments captured in the survey responses with 30% to 49% of the bushels produced in the state. It is important to remember that producer deliveries to end-user and on-farm use reduce availability of the total production to the elevator industry.

Table 3. Major Grain Representation in Survey Response, by State

	Production	Handle	Respondent Share
KS	827,150	406,729	49%
MN	1,541,926	458,875	30%
ND	528,733	206,341	39%
SD	908,786	375,445	41%
NE	1,859,655	90,750	5%

The major commodity mix for the five states is dominated by corn, as it accounted for two-thirds of the major grains marketed. The balance of the handle was split closely between soybeans and wheat, at 17% and 16% respectively. The production mix is similar to a decade earlier, when corn accounted for 64% of the production and wheat and soybeans, 20% and 17%, respectively. Transportation demand from the industry, however, has increased substantially if one assumes it is derived from production volume. Major grains production in the five-state region increased 33% comparing this average annual production level to the average from 1999 to 2001. The largest percentage increases were in North Dakota and South Dakota where production levels grew by 53% and 45%, respectively. Expansion of local processing in the states would impact the translation in converting production volumes into transportation demand. Therefore, efforts such as this survey, which update market knowledge, are important in planning and investment decisions.

As expected, corn is the largest in volume among the three major grains considered in this survey. Regionally elevators reported that corn accounted for 56% of volume among the three grains, soybeans and wheat were similar in volume at 23% and 21%, respectively. The smaller share of corn in the elevator handle may be a function of survey response bias, but it is likely reflective of a relatively larger local market where farmers bypass elevators in making direct delivery to end users. Due to complexities in marketing minor grains, such as specialized end-uses and variability in when products move to market, focus on these major grains was chosen. Understanding current practices and expectations for the future transportation of these three commodities is valuable in efficient and effective resource decisions.

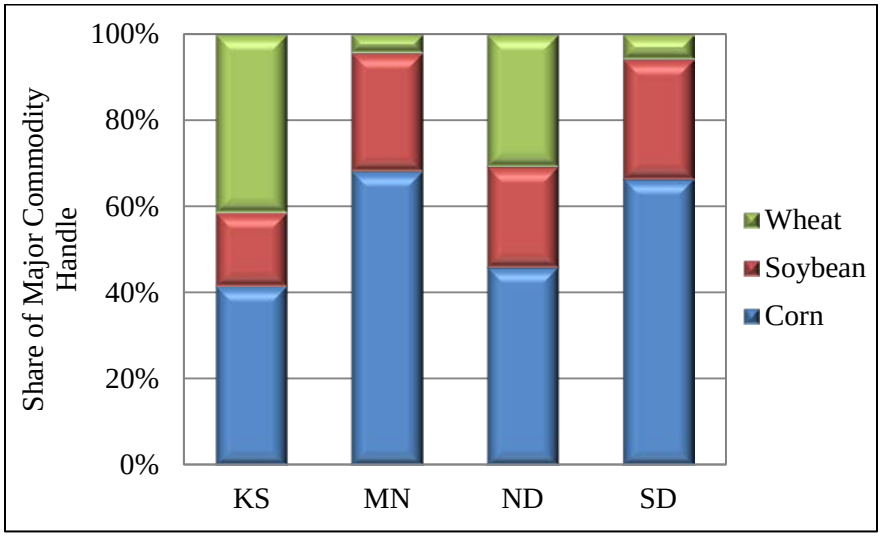

Figure 4.1 Major Commodity Mix for Respondents

Average annual handle for all elevators was 7,394 thousand bushels. The median was about half that at 3,000 thousand bushels. The gap between these figures is not surprising since it is a small number of elevators handle substantially more grain each year than other elevators. An important distinction in the elevator industry is the transportation alternatives as these directly impact the access to markets. Inland transportation for grain from the upper Midwest is derived from services available from truck, barge, rail, and container. Focus here is on elevator use of the most widely utilized modes in this region – truck and rail.

4.2 Elevator Transportation Capabilities

Truck service is generally discussed as a hopper bottom semi-tractor and trailer unit, with weight setting capacity around 80,000 pounds. Rail service is discussed here in terms of the tariff rates offered for major grains. The tariff rates are defined in terms of cars per train. Rail car capacity for grains is about 200,000 pounds per car, with high-capacity cars built to hold about 6% more. Rail service offerings in terms of cars per trains range from a single car to trains of over 100 cars, and vary by railroad, origin loading capabilities, track engineering capacities and destination

market preferences/infrastructure. Surveys results show that in the region, elevators market about 53% of the grain they handle each year via truck with the balance transported to market by rail.

Modal splits vary across states and commodities. With corn, about 61% was reportedly marketed by truck. Rail is the majority in mode selection accounting for 53% and 63% of soybean and wheat volumes, respectively, handled by elevators. Among the states, Minnesota and South Dakota had more balanced modal splits with 58% and 46% truck, respectively (Figure 4.2). Kansas elevators market about two in three bushes by truck, as it accounts for 65% of volume. North Dakota is dominated by rail, as three of every four bushels is marketed via rail.

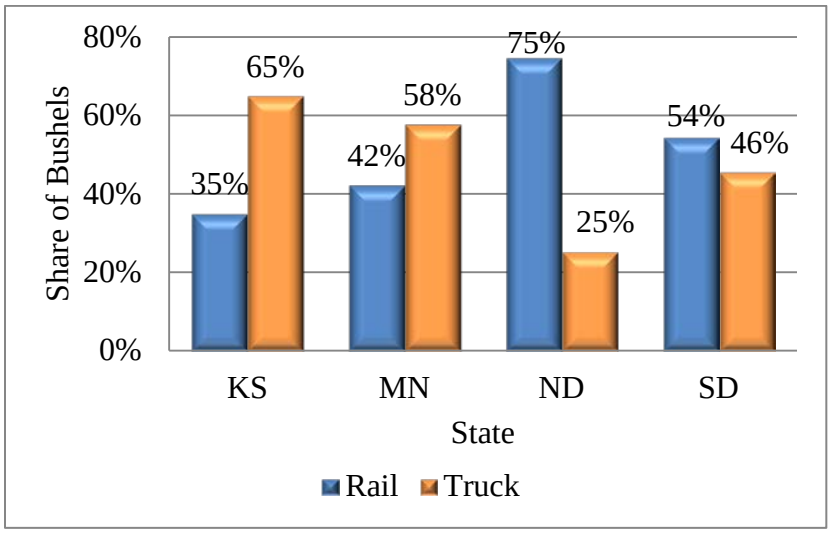

Figure 4.2 Elevator Shipments for Major Crops, by Mode

Queries of the survey responses were used to categorize elevators, based on rail assets, as single car, multicar, or shuttle. The single car includes elevators with track space to load trains up to 24 railcars in size without a switch. The multicar group includes facilities capable of loading trains 25 to 69 cars with the current track space. Facilities with track capacity for at least 70 railcars were categorized as shuttle. Facilities no rail track space were categorized as 'Truck Only.' A good cross-representation of elevators among the rail groups was found in the survey responses (Figure 4.3).

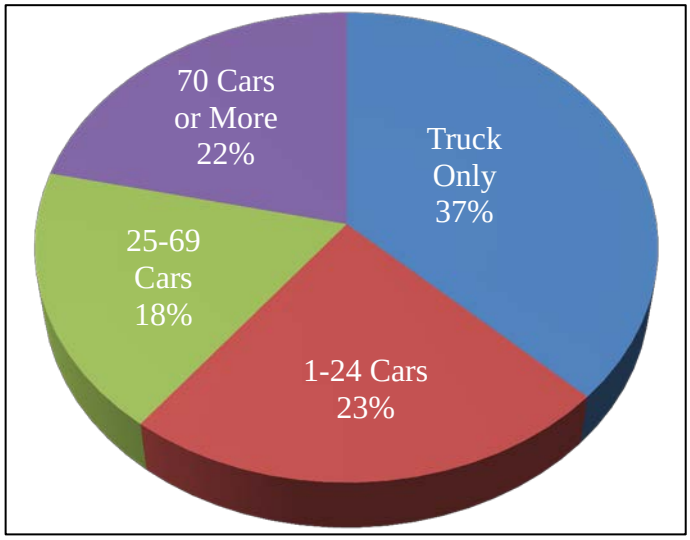

Figure 4.3 Elevator Groups, by Truck and Rail Capability

Survey responses by state show responses from elevators with a range of transportation capacities, from the truck only to shuttle. The composition of the elevator industry, considering transportation capabilities, does vary significantly by state ($\chi^2[210] = 51.9718$, $p<0.0001$). It is interesting to note that North Dakota response share attributed to the truck only group are substantially lower than in the other states (Table 4). The representation of shuttles in the mix of responses is also noticeably higher in North Dakota than in other states. The nature of markets, in terms of producer on-farm storage, crop mix, and local market size and proximity, may be factors in the function and structure of the elevators industries in each state.

Table 4. Survey Responses, by Elevator Group and State

Elevator Group	KS	MN	ND	SD
Truck Only	22	23	4	20
1-24 Cars	16	10	15	5
25-69 Cars	4	9	23	3
70 Cars or More	7	8	18	9

The transportation capability, or investment, does have some relationship to facility activity in terms of volume handled. Pearson correlation coefficients were estimated to quantify these relationships. A weak correlation is found in the association available track space and annual grain shipments in survey responses ($r =0.50$, $p <0.0001$). The correlation between storage and handle is stronger, suggesting that storage capacity may offer indication of elevator handle ($r =0.80$, $p <0.0001$). Figure 4.4 shows the trend for increased handle as transportation capability is

expanded from truck only to the shuttle alternative. The relationship between transportation capabilities and storage is not clearly distinguishable ($r = 0.38$, $p < 0.0001$).

4.3 Turnover Ratios

Average annual handle for respondent elevators was 7,395 thousand bushels. Average storage was less than half that at 3,043 thousand bushels. It appears the efficiency of elevators in asset utilization, measured by turnover of storage capacity, increases with expanded transportation options (Figure 4.4). The average turnover among respondents was 2.30 – as elevators reporting that they turned over their storage capacity an average of 2.3 times per year considering the average volume of grain handled annually. A significant difference is found in turnover rates based on elevator group ($F[192] = 6.41$, $p = 0.001$). Shuttle elevators were most efficient with an average, unweighted, turnover rate of 3.2. The 1-24 car elevators were least efficient in storage utilization, with an average, unweighted, turnover rate of 1.9. The turnover rates for the truck only and 25-69 car shippers were similar at 2.1. Location was not significant, considering average turnover rate by elevators in each state. The two-way effect of location and elevator group is not found to be significant in elevator asset utilization, as measured by the turnover ratio.

The average handle and storage for elevator groups in each state is illustrated in (Figure 4.4). As expected, the average handle does increase across the transportation capability axis. Although differences are shown in the average handle and storage across states, the difference is not significant. In addition, limited observations may skew the results in considering the average for the group. Additional analysis will introduce summation and weighted data as additional assessment of elevator activity and efficiency, overall and within groups. While individual elevator activity and turnover ratios may be important for individual elevators in gauging performance, overall industry activity and performance offers another metric of understanding.

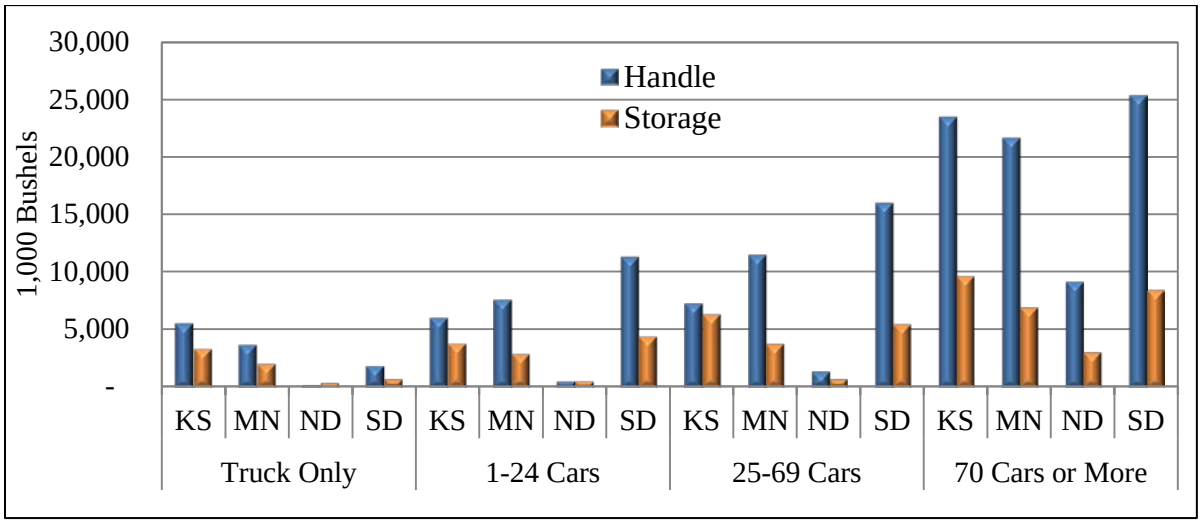

Figure 4.4 Average Grain Handle and Storage Capacity, by Elevator Group and State

The share of handle and storage attributed to elevator groups in each state, based on survey responses, is shown in Figure 4.5. In each case, the elevators with at the far end of the transportation spectrum that have track space for at least 70 railcars are attributed with the largest share of the grain market – considering both the handle and storage metrics. These shares may or may not be reflective of the larger elevator population in the states but given response levels and the share of grain represented by these respondent elevators it seems reasonable to assume some reflection of the industry as a whole.

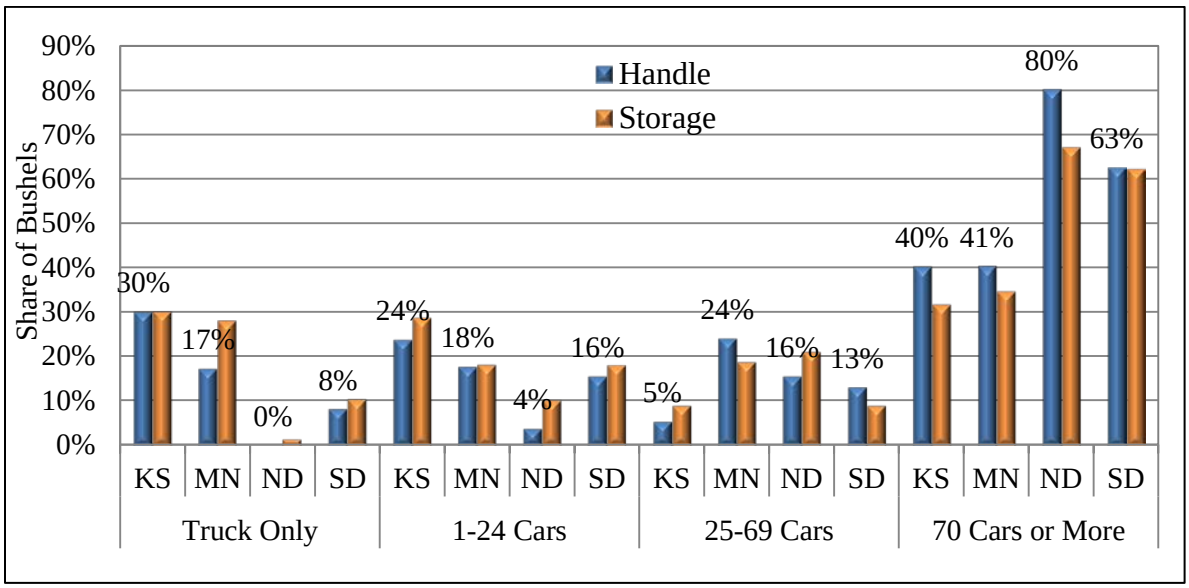

Figure 4.5 Share of Grain Handle and Storage Capacity, by Elevator Group in State

The turnover ratio offers insight regarding elevator activities in terms of asset utilization. Elevators make investments in storage and transportation assets based on the market signals and risk analysis. Generally, expanded transportation options such as shuttle trains require large investments specific to the rail assets. Storage investments do tend to be greater with higher levels of transportation investment. Average storage capacity for truck only, 1-24 car, and 25-69 car elevators all ranged from 2 to 3 million bushels. The largest relative range among groups, in terms of the coefficient of variation, was for the truck only facilities with 80 to 40,000 thousand bushels. The shuttle group had the largest average storage capacity of 6 million bushes, and the smallest coefficient of variation. The greater range in the coefficient of variation may be related to the diversity in elevator business models for the smaller facilities. While shuttle elevator capabilities are tied closely to export market investments and expectations, other elevator capabilities range greatly. For instance, these elevators may be tied to a single user, individual product, multiple domestic markets, or a specialized supply channel.

Region-wide the turnover ratios increase as transportation capabilities are expanded. Truck only elevators turnover their storage an average 1.6 times per year and shuttles 2.9 times per year. The 1-24 car and 25-69 car groups average 2.0 and 2.5, respectively, considering unweighted ratios.

When individual elevators are weighted by annual handle, the average turnover ratios increase to 2.1 for truck only and 1-24 car groups, and 3.2 for the shuttle group. The 25-69 car group turnover ratio falls to 1.9 reflecting the wide range in asset utilization within the elevator groups.

The truck only facilities have similar productivity in Minnesota and South Dakota; this may be related to truck-served local market opportunities such as feedlots and local processing. In Minnesota, these facilities have the highest turnover ratio among the elevator groups. The shuttle facilities have higher productivity within states in Kansas, North Dakota, and South Dakota.

Average turnover for the state, with individual elevator turnover ratios weighed by bushels handled, is highest in North Dakota at 3.5 and lowest in Kansas at 2.6. In North Dakota, the volume handled by the shuttle facilities is a key factor in the higher overall turnover ratio (Figure 4.6). Although shuttle elevators lead in terms of volume Kansas as well, the mix of other elevator groups and relatively high proportions handled by the truck only and 1 to 24 car groups has a strong influence in the overall turnover ratio. In South Dakota the shuttle facilities also have the highest turnover ratio among the groups, the 1 to 24 and 25 to 69 car group are, however, quite active in terms of volume handled which contributes to an overall lower turnover ratio. Minnesota has an interesting dynamic in its responses as turnover ratios are similar for all elevator groups, and highest for the truck only group (Figure 4.7).

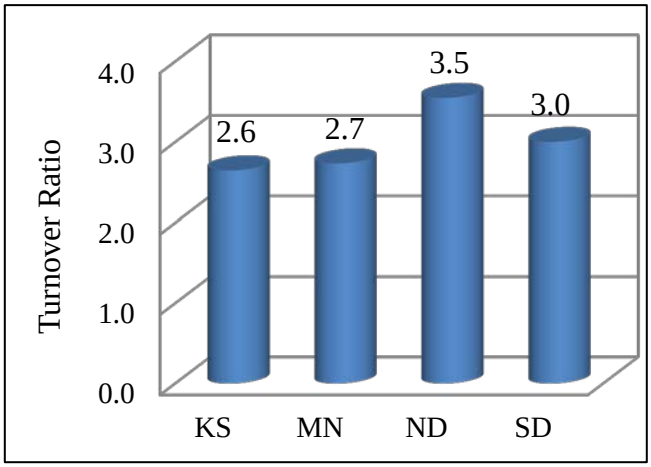

Figure 4.6 Average Elevator Turnover Ratio, by State

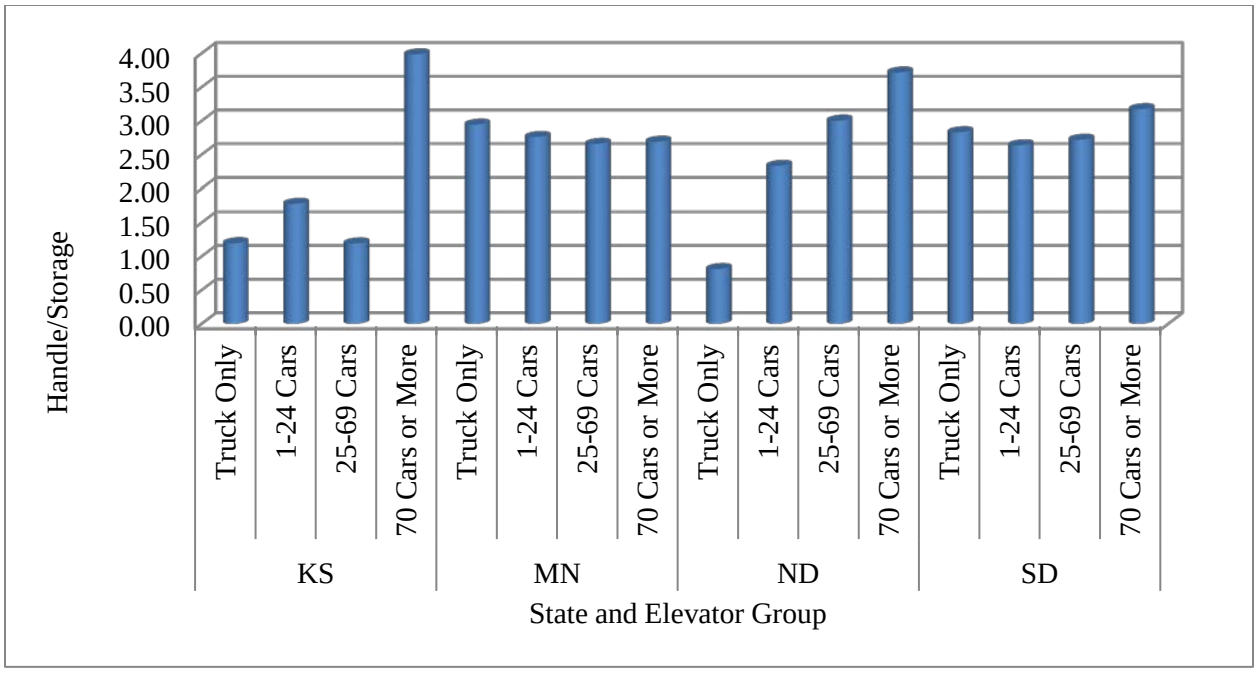

Figure 4.7 Annual Turnover Ratio by State and Elevator Group, Weighted by Elevator Handle

5. Grain Procurement

Trucks are the mode of choice in delivery to elevators, and they remain important to agility of the market in serving local processors and nearby terminals. Elevators were asked to describe their local truck market in terms of inbound draw area, outbound rates, and services. The inbound draw area and outbound truck marketing patterns have large implications for local roads. The rates and services offer context for understanding the nature of truck services in the region.

Inbound draw area for the major grains is affected by factors such as costs related to farm truck fleet characteristics and pricing differentials among elevators. For example, a farmer delivering 50,000 bushels to a market 20 miles away would expend about $4,300 in variable truck costs including fuel, labor, tires and maintenance, and would take some 133 trips compared to $3,150 in variable truck costs and 53 trips for making deliveries in a 5-axle truck. The more efficient truck configuration results in fewer trips – important in farmer decisions on defining a viable market access radius (Berwick 2007). Some costs may be more for owning the larger truck such as insurance, tires, and some maintenance items, but the efficiency of the larger truck has changed the farm truck fleet.

Regionally average length of haul was estimated to be 13 miles. Approximately 51% of grain handled by elevators was originated within 10 miles of the facility. Although not available at regional level in 1995, 72% of the grain was drawn from within 10 miles of the elevator in North Dakota (Vachal et. al 1996). The increased size of the draw area is reasonable given industry trends in equipment, consolidation, and marketing. When the draw area is expanded to 20 miles in the current survey, approximately 75% of the major grains are captured. Responses show that 17% is originated from distances of 21 to 30, with the remaining 7% of bushels drawn from origins of greater than 30 miles from the elevator. The origination characteristics do vary among states and elevator groups. Table 5 shows that Minnesota elevators draw a relatively large share

Table 5. Grain Origination, by State

	10 or less*	11 to 20	21 to 30	30 or more
		Miles		
Kansas	63%	19%	12%	6%
Minnesota	49%	24%	12%	15%
North Dakota	42%	31%	22%	5%
South Dakota	44%	30%	24%	2%

*Significant difference ($\chi^2[210] = 27.565$, $p<0.01$); other distances not tested.

of their grain from distances of 30 miles or more. Kansas, in contrast, collected a relatively large share of grain from within 10 miles of their facilities at 63%. North Dakota and South Dakota respondents report similar patterns for their grain originations, with North Dakota having a

slightly larger share in the longest distance category. Average length of haul ranged from a low of 12 miles in Kansas to a high of 16 miles in Minnesota.

Origination patterns vary significantly across the elevator groups, and show a larger range in grain origination than that of the states. Average length of haul was estimated to be 10 miles for truck only facilities compared to 16 miles for the elevators with track for 70 cars or more. Truck only elevators drew 75% of the grain they handled from within a radius of 10 miles. The mid-range elevator groups drew more than half of their grain from within a 10-mile radius; while elevators with track space for 70 cars or more drew only about 40% of their average annual grain handle from within the 10-mile boundary. Elevators offering the widest range of transportation options drew one in every three bushels from origins beyond 20 miles of their facility. Future investment in facilities with enhanced marketing capabilities has important implications for roads managers considering marketing patterns and truck equipment used for these local deliveries.

Table 6. Grain Origination, by Elevator Group

	10 or less*	11 to 20	21 to 30	30 or more
		Miles		
Truck Only	75%	13%	7%	5%
1-24 Cars	57%	26%	13%	4%
25-69 Cars	52%	29%	13%	7%
70 Cars or More	40%	27%	21%	12%

*Significant difference ($\chi^2[210] = 40.6501$, $p<0.0001$); other distances not tested.

6. Grain Shipment Patterns

While understanding grain procurement is important in local transportation asset planning and management, knowledge about the supply chains used in grain sales by elevators is needed for input into regional transportation corridor and national infrastructure system decisions. The modal distributions discussed in the previous section offer an overarching indicator for dependencies and shifts in grain marketing patters. In addition, elevators were asked to indicate typical marketing patterns in terms of geography for the three major grains.

Regionally, in-state markets account for the largest share of major grain shipments made by elevators in the region. Over half of the volume is delivered to local end-users such as processors and livestock operations. The modal breakdown shows that about 88% of this volume moves in trucks. An additional 14% moves to interstate domestic market, about one-third of this volume is attributed to trucks with the larger share moving in rail. The Pacific export region is second largest among the marketing channels in volume reported by the elevators. About one in four of the major grains bushels originated by elevators in the region is destined for Pacific grain export facilities. Virtually all this volume is repositioned for export via rail.

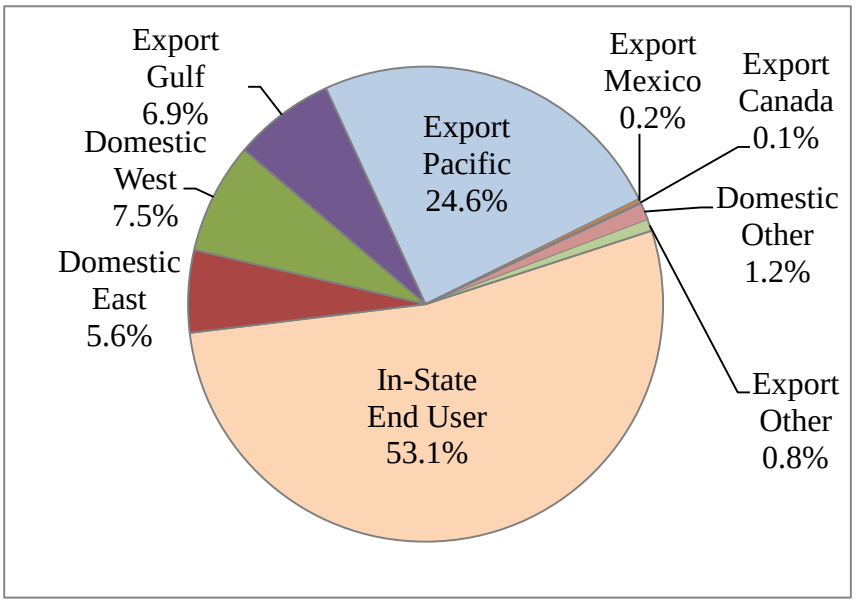

Figure 6.1 Marketing Channels for Major Grain Shipments from Elevators in the Region

Differences are evident in the marketing patterns among the major grains reported by elevators (**Table 7**). Intrastate movements accounted for the largest market in corn and wheat movements. Soybeans, however, were slightly more likely to be moved to the Pacific region to export, at 42.9% of volume, than they are to be used in a local market. The Pacific export region also provided the second largest market gateway for corn from the region at 24.4% of volume, while

wheat is more likely to move to the Gulf region for export at 20.6% of the volume. Domestic markets to the east of the region are most common in wheat marketing while the western domestic markets are more likely to be accessed for marketing corn. Exports reported to Canada were all corn, with truck and rail used in those shipments. The grain exported to Mexico, from the respondent elevators, includes corn and soybeans moved via rail.

Table 7. Shipments from Elevators in the Region, by Mode and Market

Crop	Mode	In-State End User	Domestic East	Domestic West	Export Gulf	Export Pacific	Export Mexico	Export Canada	Domestic Other	Export Other
Corn	Rail	2.5%	1.5%	7.3%	2.3%	24.2%	0.3%	0.0%	0.3%	0.1%
	Truck	54.6%	1.5%	2.6%	0.3%	0.3%	0.0%	0.1%	1.2%	1.0%
Soybean	Rail	1.4%	3.6%	0.8%	3.7%	42.6%	0.2%	0.0%	0.8%	0.0%
	Truck	40.8%	1.5%	1.5%	1.5%	0.3%	0.0%	0.0%	0.8%	0.5%
Wheat	Rail	21.9%	12.1%	5.7%	19.1%	4.7%	0.0%	0.0%	0.0%	0.0%
	Truck	32.5%	1.2%	1.2%	1.5%	0.0%	0.0%	0.0%	0.1%	0.0%

Shipment patterns for elevators in each of the states are presented in Table 8. To the degree that major grains production patterns and market demand are expected to remain stable over time, the aggregate major grains flow information provided here offers a good basis for understanding potential transportation impacts related to transportation investments, service adjustments, market disruptions, or other influential factors. Additional detail regarding the states, modes, and commodities is presented in the next four tables.

Table 8. Grain Shipments, by State and Destination

		Destination Reported by Elevators								
State	Mode	In-State End User	Domestic East	Domestic West	Export Gulf	Export Pacific	Export Mexico	Export Canada	Domestic Other	Export Other
Kansas	Rail	12.7%	0.6%	8.2%	11.1%	13.4%	1.0%	0.0%	0.0%	0.0%
	Truck	46.6%	1.0%	2.3%	1.2%	0.0%	0.0%	0.0%	1.9%	0.0%
	All	59.3%	1.6%	10.6%	12.3%	13.4%	1.0%	0.0%	1.9%	0.0%
Minnesota	Rail	6.3%	8.3%	3.7%	0.7%	27.9%	0.1%	0.1%	0.0%	0.0%
	Truck	47.7%	0.9%	1.1%	0.6%	0.2%	0.0%	0.2%	0.3%	1.9%
	All	54.1%	9.2%	4.8%	1.3%	28.0%	0.1%	0.3%	0.3%	1.9%
North Dakota	Rail	4.3%	5.5%	3.4%	7.2%	26.1%	0.0%	0.0%	0.0%	0.6%
	Truck	33.9%	7.4%	11.0%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%
	All	38.2%	12.9%	14.4%	7.6%	26.4%	0.0%	0.0%	0.0%	0.6%
South Dakota	Rail	0.9%	14.4%	1.5%	1.5%	27.7%	0.0%	0.0%	1.0%	0.0%
	Truck	47.8%	2.0%	1.1%	0.0%	0.3%	0.0%	0.0%	1.2%	0.5%
	All	48.7%	16.4%	2.6%	1.5%	28.0%	0.0%	0.0%	2.3%	0.5%

Table 9. Kansas Elevator Shipments, by Crop, Mode, and Market										
Crop	Mode	In-State User	Domestic East	Domestic West	Export Gulf	Export Pacific	Export Mexico	Export Canada	Domestic Other	Export Other
Corn	Rail	3.0%	0.0%	11.2%	9.2%	14.0%	1.0%	0.0%	0.0%	0.0%
	Truck	54.0%	1.1%	3.4%	0.0%	0.0%	0.0%	0.0%	3.0%	0.0%
Soybean	Rail	5.3%	0.0%	0.0%	22.2%	23.8%	1.8%	0.0%	0.0%	0.0%
	Truck	41.3%	1.2%	0.3%	3.2%	0.0%	0.0%	0.0%	0.9%	0.0%
Wheat	Rail	47.2%	3.1%	9.3%	3.9%	0.0%	0.0%	0.0%	0.0%	0.0%
	Truck	32.6%	0.3%	1.6%	1.9%	0.0%	0.0%	0.0%	0.1%	0.0%

Table 10. Minnesota Elevator Shipments, by Crop, Mode, and Market										
Crop	Mode	In-State User	Domestic East	Domestic West	Export Gulf	Export Pacific	Export Mexico	Export Canada	Domestic Other	Export Other
Corn	Rail	2.3%	2.4%	3.6%	0.9%	29.0%	0.2%	0.1%	0.0%	0.0%
	Truck	55.3%	0.0%	1.2%	0.7%	0.3%	0.0%	0.4%	0.6%	3.1%
Soybean	Rail	0.2%	1.9%	0.0%	0.8%	50.1%	0.0%	0.0%	0.0%	0.0%
	Truck	43.5%	0.1%	1.9%	0.7%	0.0%	0.0%	0.0%	0.0%	0.7%
Wheat	Rail	24.1%	31.1%	8.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Truck	31.9%	4.4%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 11. North Dakota Elevator Shipments, by Crop, Mode, and Market										
Crop	Mode	In-State User	Domestic East	Domestic West	Export Gulf	Export Pacific	Export Mexico	Export Canada	Domestic Other	Export Other
Corn	Rail	6.9%	4.0%	2.8%	0.2%	23.6%	0.0%	0.0%	0.0%	1.0%
	Truck	43.9%	0.5%	16.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Soybean	Rail	0.5%	6.5%	4.7%	0.4%	40.9%	0.0%	0.0%	0.0%	0.0%
	Truck	8.4%	30.3%	7.1%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
Wheat	Rail	1.7%	8.3%	3.6%	33.4%	16.5%	0.0%	0.0%	0.0%	0.0%
	Truck	35.0%	0.5%	0.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 12. South Dakota Elevator Shipments, by Crop, Mode, and Market										
Crop	Mode	In-State User	Domestic East	Domestic West	Export Gulf	Export Pacific	Export Mexico	Export Canada	Domestic Other	Export Other
Corn	Rail	1.0%	0.2%	2.7%	2.7%	30.9%	0.0%	0.0%	1.0%	0.0%
	Truck	60.3%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.8%	0.1%
Soybean	Rail	1.3%	4.9%	0.0%	0.0%	45.0%	0.0%	0.0%	1.8%	0.0%
	Truck	31.6%	4.4%	4.5%	0.0%	1.3%	0.0%	0.0%	3.2%	1.9%
Wheat	Rail	0.0%	63.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Truck	31.9%	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%

7. Truck Service

Truck services were addressed both in terms of elevator capacity to originate and market grain. For origination, local truck rates are important in understanding costs for hiring a third party to haul grain to the elevator. Truck rates are also a competitive factor for shorter-haul end-use markets. In addition, elevators were asked about practices related to on-farm purchases and truck assets.

7.1 Truck Rates

Elevators were asked to report truck rates in their market, if known, for per loaded mile trip increments of 25, 100, and 200 miles. On average, elevators in the region reported a truck rate of $0.21 per hundred-weight for the 25-mile haul, and $0.52 and $0.99 per hundred-weight, respectively, for the longer hauls of 100 and 200 miles. Efficiencies in terms of loading time and potential for back haul are reflected in the per-mile rate differences as the 25-mile trip costs about $0.0084 per mile and the 200-mile trip $0.0050 per mile. Some variation was found among states, with a range of 19 to 24 cents per ton for a 25-mile trip and 51 to 57 cents for a 100-mile trip. North Dakota did report the highest rate for both these distances. The 15 cent range for the 200-mile trip was the largest in absolute terms, but the 25-mile was largest in percent variation.

Table 13. Regional Truck Rates

	Trip Distance, Loaded Miles		
	25	100	200
	$ per cwt		
KS	$0.19	$0.52	$0.95
MN	$0.23	$0.56	$1.10
ND	$0.24	$0.57	$0.99
NE	$0.20	$0.51	na
SD	$0.19	$0.52	$0.99
Region	$0.21	$0.54	$1.06

7.2 Truck Ownership

In addition to these for-hire rates, elevators reported that it was common practice for their businesses to lease and own trucks (Figure 7.1). Among the 225 responses, 54% of the elevators owned at least one truck with 61% of those maintaining fleets of at least three trucks (Figure 7.1). The ownership characteristics were different among the states ($\chi^2[210] = 16.2511$, $p<0.04$). Elevators were not asked about the number of trucks they lease, but in a yes or no question 54% indicated that they have leased truck equipment in their asset pool. The lease characteristics did

not vary significantly by elevator group, but did vary by state ($\chi^2[210] = 11.6906$, p=0.02). Truck ownership was most common among South Dakota elevators with every 2 in 3 elevators

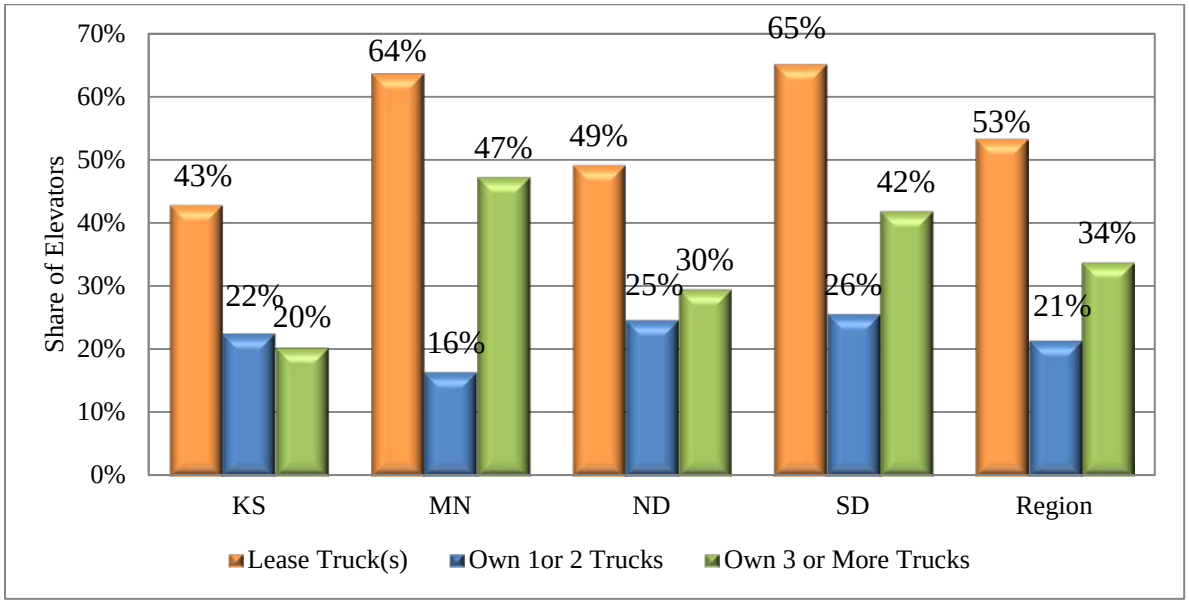

Figure 7.1 Elevator Truck Equipment, by State

reporting they had purchase truck assets for their business. Minnesota has similar ownership rates with 64% of elevators maintaining at least one truck in their asset pool. With the exception of Kansas, it was more common across states to maintain a fleet of at least three trucks than a smaller number of units. Truck leases were most common in the South Dakota responses with 65% of elevators reportedly leasing trucks. North Dakota was least likely to lease trucks, with

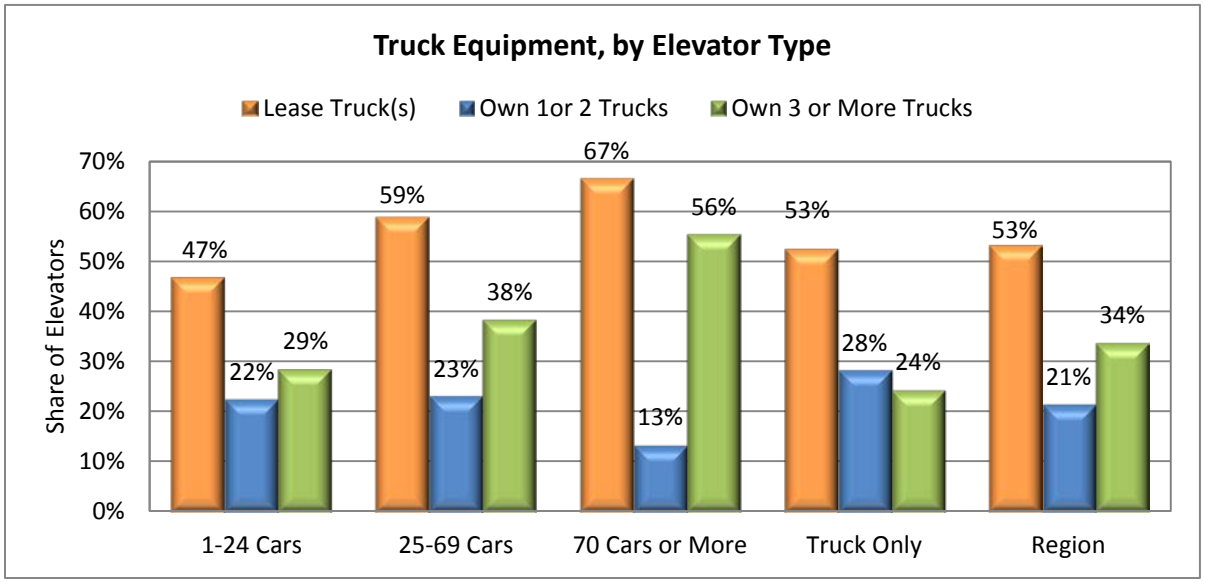

Figure 7.2 Truck Equipment, by Elevator Type

With regard to the association of truck ownership and transportation capabilities, a significant difference was found among the elevator groups for ownership ($\chi^2[210] = 14.1824$, $p=0.02$). Facilities with the most extensive transportation options had the highest incidence for truck leasing and truck ownership of at least three units. Among elevators with track space for 70 cars or more, 67% reported they leased trucks and 56% owned at least three trucks. The share of facilities with the larger elevator-owned truck fleets is substantially above the share in other elevator groups. Small truck fleets were most commonly owned by the truck only facilities.

7.3 FOB Farm Activity

A final question related to truck use and grain origination gathered information about on-farm grain purchases (FOB purchases). This type of purchase allows the elevator to create an extension of its storage capacity by utilizing on-farm storage. In a 2001 survey, 11% of respondent elevators from these states reported they made FOB purchases (Vachal and Tolliver). A substantial increase is seen in 2012 as 62% of respondents reported that they purchased grain through FOB contracts. A weighted average equates this to about 9% of the volume based on percent reportedly purchased via FOB program considering volume handled by individual elevators. FOB activity did have some variation considering state ($\chi^2[210] = 9.3721$, $p=0.05$) that could be related to make-up of the respondent pool. Minnesota had the largest share of elevators who made FOB purchases at 74%, compared to a low of 48% of elevators in North Dakota. For Kansas and South Dakota, 69% and 65% of elevators reported FOB purchase activity.

The FOB purchase activity also varied significantly by elevator group ($\chi^2[210] = 11.6693$, $p=0.01$). It was most common among the truck only facilities, with 36% reportedly using the option in their marketing program. It was least common among the facilities with track for 70 cars or more with 21% reporting they had FOB activity. Survey results show that among the 1-24 car and 25-69 car groups, 23% and 18% made FOB purchases, respectively.

8. Rail Service

Rail service is especially important in growth for elevators in this region given the projected increases in export demand (OECD-FAO 2010). Management of rail grain transportation has matured over recent decades as elevators and railroads have made investments and devised programs aimed to increase reliability and competitiveness. To attain knowledge about current rail activities, elevators were asked about their ability to their management practices, market activities, and service satisfaction.

With regard to rail service options and elevator board price differentials, many factor affect local basis. The focus here is on transportation, so the rail rate component in that mix is highlighted. Truck rates may also be influential but since that is a relatively homogeneous and agile transportation service, market competition allows fewer opportunities for differential pricing based on intramodal, intermodal, product, and geographic competition. The rail tariffs provide a foundation for understanding trainload efficiencies, to the degree cost savings are reflected in the published rates. Differences related to market competition are also reflected in the rates. A sample of rates from Minnesota and South Dakota were used to illustrate the role of rail rates in elevator board prices. For example, corn loaded in a shuttle rail train pay $2.14 per hundred-weight to reposition at the Gulf compared to $2.45 per hundred-weight for elevators marketing corn in smaller rail units. It is expected at least a part of the 31 cent rail rate difference may reflected in the board price, with the shuttle-equipped elevator offering a price to farmers that is higher than the board price for an elevator limited to the smaller train rail options. Differences in market competition are reflected in the commodity differences, as an elevator shipping corn to the Gulf for $2.14 per hundred-weight pays $2.07 and $2.63 per hundred-weight to reposition soybeans and wheat to the Gulf, respectively (Table 14).

Table 14. Sample Rail Tariff Rate Average from MN and SD to the Gulf Region, 2012

	1-23 cars	24-48 cars	Shuttle
		$/cwt	
Corn	2.46	2.46	2.15
Soybean	2.95	2.93	2.64
Wheat	2.28	2.28	2.07

Note: Corn=39 bushels per ton, Soybeans and Wheat=37 bushels per ton

Historically, rail service for grain haulage was provided through on-demand tariff cars. As elevator orders were received, the railroads would fill these orders resources were available. More common today in the grain industry are contract orders for rail services which guarantee service during a specified service window for a single trip or periodic trips over a year or two. These contracts may be purchased directly from the railroad or through a third party involved in brokering the service. Today, the tariff orders accounted for about one in ten rail cars shipped by the elevators in the region with this service. They were most common among South Dakota

elevators, and may be associated with the short line rail carrier providing services to many elevators in the state. Shuttle service, which was first widely pursued by rail carriers in the grain industry about 15 years ago, is dominant among the order types. The shuttle service encompasses both single destination trains and a newer service in which multi-destination trains which are consolidated as shuttle at the origin and moved beyond market gateways to final destination in smaller units such as 25 and 50 cars.

Table 15. Service Type for Rail Shipments, 2011

State	Shuttle	Other Guaranteed*	Tariff	Other
		Share of All Rail Shipment		
Kansas	77%	5%	6%	9%
Minnesota	75%	8%	12%	0%
North Dakota	68%	11%	8%	4%
South Dakota	65%	17%	17%	0%
Region	73%	10%	11%	3%

The trend toward the shuttle is evident in North Dakota where historical information is available (Figure 8.1). Shuttle-type shipments were used in 45% of the rail grain shipments in 2007. In the most recent survey, shuttles were used in 68% of the rail shipments. Anecdotes from industry suggest that expansion of shuttle service in the domestic markets resulting from pricing incentives and service reliability, along with increased export activity, have been influences. The service reliability factor may be reflected in a delay for delivery of cars. On average, elevators reported shuttle freight currently 2 days overdue compared to 6 days for other guaranteed freight. Over the past 5 years in North Dakota, the maximum delay reported for the shuttle freight has been 16 days compared to 32 days for other guaranteed rail service.

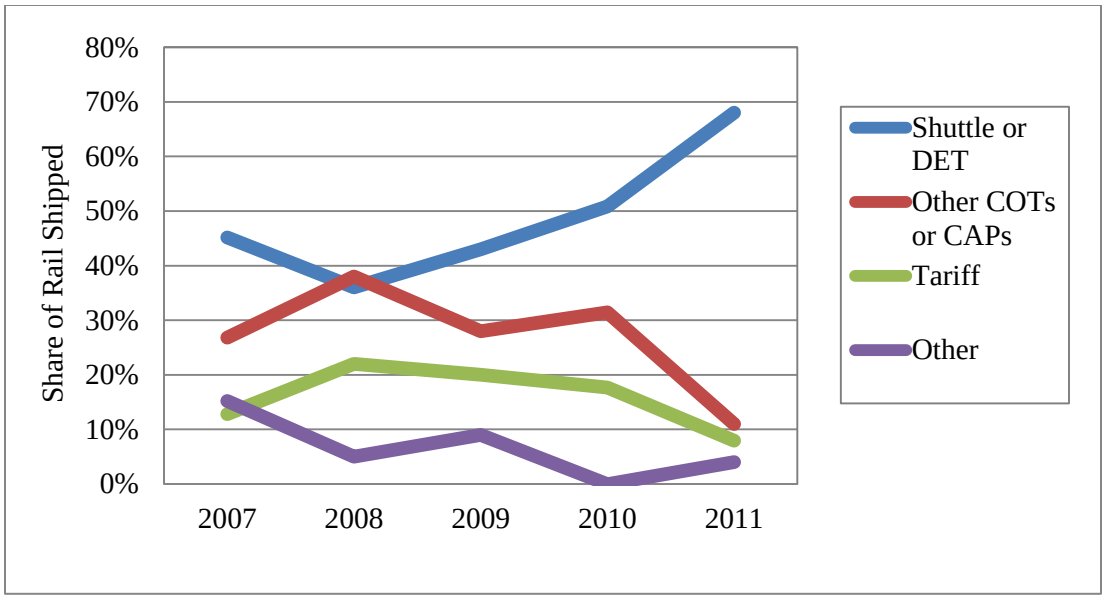

Figure 8.1 North Dakota Elevator Rail Shipment Type, 2007 to 2011

Respondents in the region purchase a majority, 65%, of their rail freight from a third party (Figure 8.2). South Dakota elevators are most likely to contract directly with railroads for their freight, while North Dakota elevators have the greatest tendency to purchase their service through a broker. The source selected for purchases is influenced by factors such as price and predictability.

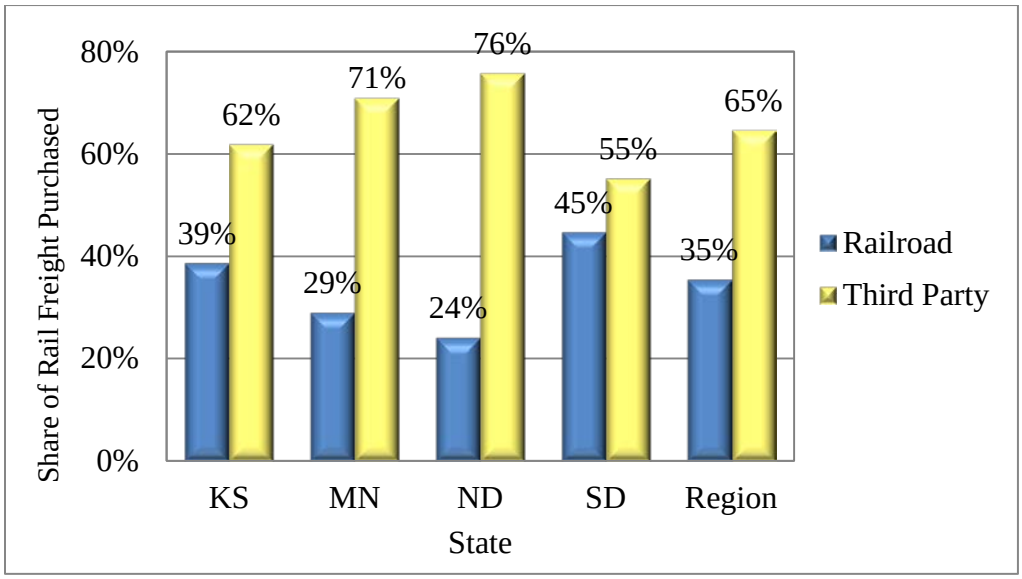

Figure 8.2 Source for Rail Freight, 2011

Elevators make ongoing assessment of rail freight demand for their business and demand and supply in the larger market. Figure 8.3 illustrates the relationship in this market, as reflected in

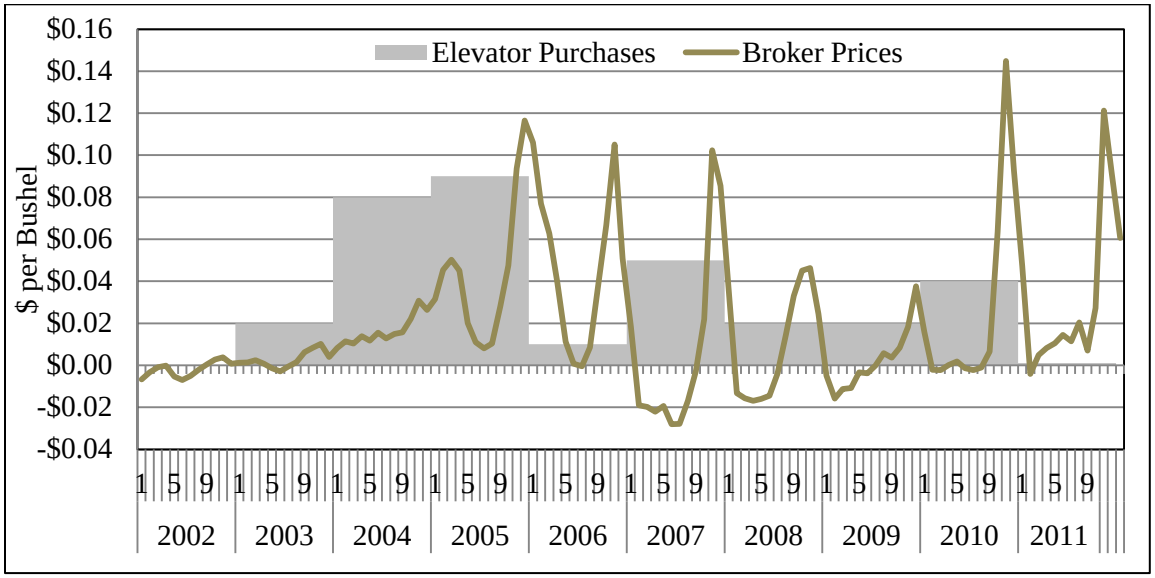

Figure 8.3 Guaranteed Rail Services, Average Annual ND Elevator Payments and Average Monthly Broker Market Offerings

premiums or discounts in secondary, or rail broker, rail service offerings along with the average annual premiums or discounts report by North Dakota elevators. These values are the premium or discount that is added, or subtracted, from the tariff rate to access guaranteed freight in the rail market. Secondary rail market volatility is evident, but premium North Dakota elevators have paid in the market to guarantee rail freight does was lower in recent years. The historical information is not available for other states in the region. This may be related to a number of factors such as predictability of grain market activity, increased usage of longer-term rail contracts, or improved elevator management techniques for rail freight.

Elevators report a range of $-230 to $250 per car paid to guarantee shuttle rail service in 2011, the weighted average based on elevator handle, was $16 per car. A similar range, as expected, was found for other guaranteed freight as elevators reported a range of $-200 to $200. Other guaranteed freight includes service such as the BNSF Certificates of Transportation and the UP Guaranteed Freight Car Allocation System. The average paid to guarantee other types of rail service was lower at $12 per car. The average prices paid by elevators in each state ranges from a low of $-57 per car in Kansas for shuttle freight to a high of $72 per car in South Dakota (Figure 8.4).

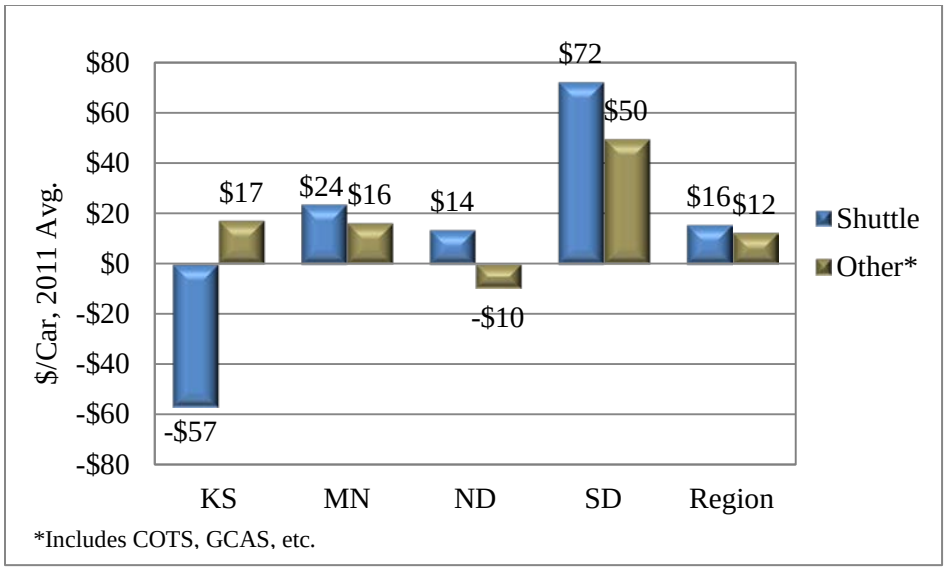

Figure 8.4 Guaranteed Rail Service Premiums/Discounts, 2011

Regarding expectations for near-term freight management, elevators were asked about their rail service position, or purchases, for the upcoming year. Early 2012 guaranteed rail service purchases offer some insight regarding expectations for the upcoming year in terms of service demand and price changes. On average, 25% of the guaranteed rail freight elevators expected to use in 2012 had been ordered based on reported annual handle by individual elevators (Table 16). It ranged from a low of 17% in Minnesota to a high of 36% in North Dakota. Average premiums were $-3 for shuttle freight and $16 for other guaranteed rail freight. Differences are evident in premium/discounts paid among the states, as was the case in 2011. Elevators in Kansas report the largest discount in their early purchases of rail service for 2012, averaging $-142 per car. The highest average payments have been made by elevators in South Dakota. The range in payments for other guaranteed freight is much narrower, with a minimum of $0 per car for Minnesota to a maximum of $28 per car in South Dakota.

Table 16. Current Year Guaranteed Rail Freight Purchases

State	Share Ordered by March 15	Average premium paid for any guaranteed rail freight service purchased for next year	
		Shuttle	Other Guaranteed
		$ per car	
Kansas	26%	-142	16
Minnesota	17%	-68	0
North Dakota	36%	-16	25
South Dakota	19%	143	28
Region	25%	-3	16

The final item in the survey of elevators in the region was a service rating of the primary rail carrier. Elevators were asked to rate the service they received in 2011, including customer service, carrier reliability, and equipment condition on a scale of 1 to 5, indicating poor to excellent with regard to the service item. Two short line railroads received top ratings in the survey, the Twin Cities and Western Railroad and the Northern Plains Railroad (Table 17). Among the Class I carriers, the UP was rated 3.6, the BNSF 3.5, and the CP 3.0. Overall customers gave the highest ratings to timeliness of equipment delivery and ordering processes used in the market. The lowest ratings are associated with equipment condition and access to marketing personnel. Additional detail is offered by state to provide additional regarding the rating by elevators in each state.

Table 17. Rail Service Rating by Elevators, 2011

Railroad	N=	Marketing and Sales Service	Timely Delivery of Equipment	Ordering Alternatives /Process	Condition of Equipment	Availability of Order Information	Access to Marketing Personnel	2011 Average
				Average Rating, 1=Poor to 5=Excellent				
BNSF	55	3.1	3.6	3.7	3.8	3.7	3.2	3.5
CP	5	3.0	3.8	2.8	2.1	3.1	3.0	3.0
DMVW	3	4.0	4.0	4.0	3.0	3.0	3.0	3.5
K & O	6	2.8	4.2	3.6	3.4	3.5	3.3	3.5
NP	7	4.6	4.6	3.9	3.7	3.0	3.0	3.8
RRVW	11	4.0	4.1	4.0	2.7	3.7	3.8	3.7
TCWR	3	4.6	4.6	3.8	3.8	3.8	3.8	4.0
UP	10	2.5	3.4	4.0	3.4	4.0	4.0	3.6
Other	10	2.7	3.2	3.3	2.5	2.6	3.1	2.9
Railroad Avg	8	3.5	3.9	3.7	3.2	3.4	3.3	3.5

If fewer than 3 responses for railroad, individual rating not included.

Table 18. Kansas Elevator Rail Service Rating

Railroad	Marketing and Sales Service	Timely Delivery of Equipment	Car Ordering Alternatives/ Process	Condition of Equipment	Availability of Order Information	Access to Marketing Personnel	2011 Average
			Average Rating, 1=Poor to 5=Excellent				
BNSF	4.0	3.4	4.0	3.6	4.0	3.6	3.8
K & O	2.8	4.2	3.6	3.4	3.5	3.3	3.5
UP	2.2	3.1	4.0	3.1	4.0	4.0	3.4
State, Weighted	3.5	3.6	3.9	3.4	3.8	3.6	3.6

Responses Weighted by Rail Shipments; For fewer than 3 response for railroad rating not included.

Table 19. Minnesota Elevator Rail Service Rating

Railroad	Marketing and Sales Service	Timely Delivery of Equipment	Car Ordering Alternatives/ Process	Condition of Equipment	Availability of Order Information	Access to Marketing Personnel	2011 Average
			Average Rating, 1=Poor to 5=Excellent				
BNSF	4.0	3.4	4.0	3.6	4.0	3.6	3.8
TCWR	2.8	4.2	3.6	3.4	3.5	3.3	3.5
State, Weighted	3.0	4.1	4.1	3.8	3.5	3.1	3.6

Responses Weighted by Rail Shipments; For fewer than 3 response for railroad rating not included.

Table 20. North Dakota Elevator Rail Service Rating

Railroad	Marketing and Sales Service	Timely Delivery of Equipment	Car Ordering Alternatives/ Process	Condition of Equipment	Availability of Order Information	Access to Marketing Personnel	2011 Average
			Average Rating, 1=Poor to 5=Excellent				
BNSF	3.8	4.3	3.6	4.4	4.0	3.9	4.0
CP	3.0	3.8	2.8	2.1	3.1	3.0	3.0
DMVW	4.0	4.0	4.0	3.0	3.0	3.0	3.5
NP	4.6	4.6	3.9	3.7	3.0	3.0	3.8
RRVW	2.9	3.7	3.4	2.9	3.3	2.8	3.2
State, Weighted	3.4	4.0	3.4	3.4	3.5	3.4	3.5

Responses Weighted by Rail Shipments; For fewer than 3 response for railroad rating not included.

Table 21. South Dakota Elevator Rail Service Rating

Railroad	Marketing and Sales Service	Timely Delivery of Equipment	Car Ordering Alternatives/ Process	Condition of Equipment	Availability of Order Information	Access to Marketing Personnel	2011 Average
			Average Rating, 1=Poor to 5=Excellent				
BNSF	2.9	3.3	3.7	3.7	3.6	3.1	3.4
State, Weighted	0.9	3.3	3.7	3.7	3.6	3.1	3.0

Responses Weighted by Rail Shipments; For fewer than 3 response for railroad rating not included.

9. Conclusion

Agriculture has had a long-standing and influential role as a customer in the nation's transportation system. A regional elevator survey was conducted in cooperation with industry partners to ascertain information needed to better understand current transportation marketing patterns and practices. In addition, these industry experts were asked to identify issues seen as most critical to future industry success. Overall, export market demand is viewed as a key issue by all states. Due to a mature economy and stable population base, international markets are viewed as the growth market for most in the U.S. agricultural sector. Second among issues in the region is the need for reliable local roads. A reliable local road system is essential in procurement and in serving local markets. Elevators responding from Kansas, Minnesota, Nebraska, North Dakota, and South Dakota reported that major grains were originated from an average 13 miles. About 7% of the volume was drawn from beyond 30 miles. Elevators supplemented their facility storage with FOB farm purchases at a greater rate than in the past and were more likely than not to own or lease trucks. Fleets of three of or more trucks were common among the elevators.

With regard to distribution, over half the volume handled by elevators in the 5-state region was delivered to local end-users such as processors and livestock operations. Although trucks dominated this market, rail was also used to move grain from elevator to local end-users. The Pacific Region is the largest export destination – accounting for 24.6% of the major grain shipments. Virtually all this volume is repositioned from elevator to port by rail. Rail service and practices do vary among states and by elevator rail ability. The trend toward larger shipments in the rail market is evident in the results. Shuttle type shipments were used in about 45% of the rail grain movements in 2007 for the region – this has increased to 68%. With regard to service provided by rail carriers, two short line railroads – the Twin Cities and Western Railroad and the Northern Plains Railroad – received the highest customer service ratings at 4.0 and 3.8, respectively. Among Class I railroads, the UP and BNSF were rated 3.6 and 3.5. The CP received a much lower 3.0 rating from its customers.

Survey results contribute to a continued effort by industry to monitor trends and to make wise resource and marketing decisions. It is possible this effort will establish the baseline for future annual surveys that can be used to gather information needed in local planning, regional investment decisions, and individual business management. As evidenced in the survey results, future success of U.S. agriculture remains rooted in competitive and reliable transport investments and marketing practices that is essential in repositioning products from inland production areas to domestic and international markets.

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