

6.0 Top Domestic and International Trading Partners

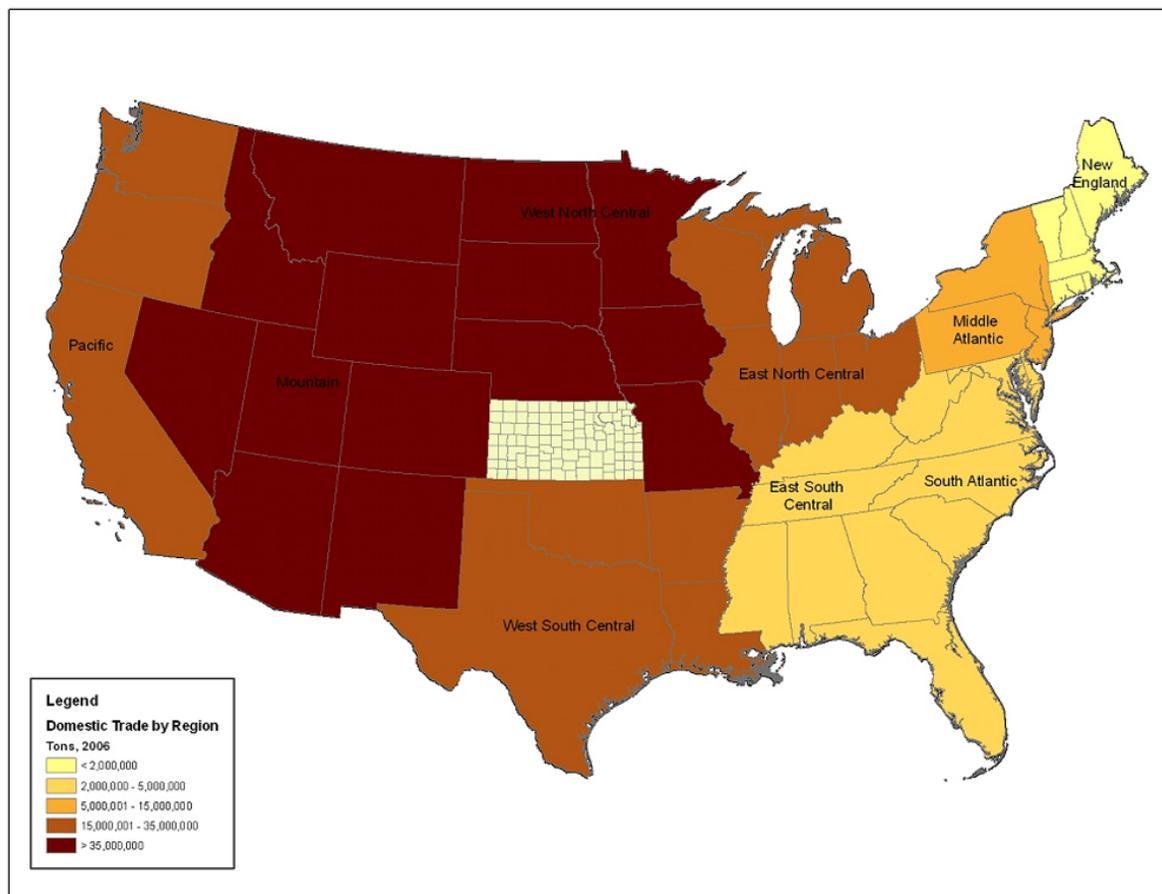
Although Kansas conducts most of its domestic trade with nearby regions, it also has important trading partners throughout the country and internationally, particularly when measured by value. Most of the freight value moving to and from Kansas is carried by truck, so continued population growth in other regions of the country, combined with economic growth in the state's foreign trading partners, will lead to additional truck trips in the state. The following sections describe Kansas' key domestic and international trading partners.

■ 6.1 Key Domestic Trading Partners

Since TRANSEARCH does not provide comprehensive state origin and destination detail for domestic freight flows, we instead calculated total domestic freight volumes to and from Kansas for each of the regions defined by the database. As shown in Figure 6.1, Kansas' biggest trading partners by weight are the West North Central (Nebraska, the Dakotas, Minnesota, Iowa, and Missouri) and Mountain (Montana, Wyoming, Idaho, Utah, Nevada, Colorado, Arizona, and New Mexico) regions, each of which generated over 35 million tons of trade with the state in 2006. Kansas exchanged between 15 and 35 million tons of goods that year with each of the Pacific, West South Central, and East North Central regions. Kansas trades a bit less with the remaining TRANSEARCH regions, although the Middle Atlantic region (New York, New Jersey, and Pennsylvania) is a significant partner, probably due to the extremely large population contained within it.

Table 6.1 compares 2006 trade volumes to forecast 2030 volumes, by region. The West North Central region will remain Kansas' dominant trading partner by weight, but the West South Central area is expected to move into second place, probably driven by large population increases in Texas. Similarly, trading tonnage with the South Atlantic region is expected to grow at a 3 percent annual rate as a result of continued population growth in the Sun Belt.

**Figure 6.1 Kansas Domestic Trade Tonnage by TRANSEARCH Region
2006**



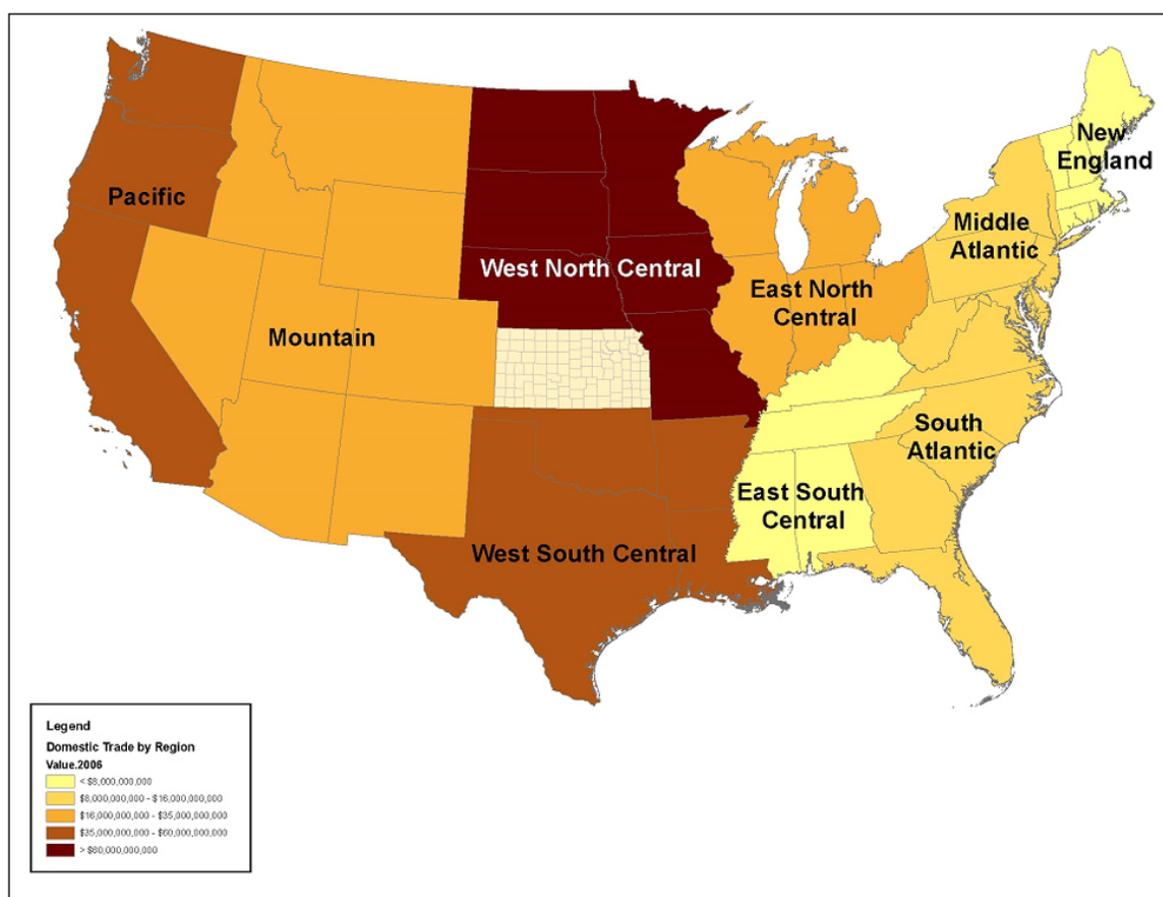
**Table 6.1 Kansas Domestic Trade Tonnage by TRANSEARCH Region
2006 and 2030**

Region	Weight (Tons)		CAGR
	2006	2030	
West North Central	65,713,274	97,911,362	1.7%
Mountain	53,302,536	59,344,800	0.4%
West South Central	33,499,774	62,920,939	2.7%
Pacific	18,981,969	28,163,774	1.7%
East North Central	15,174,615	23,006,472	1.7%
Middle Atlantic	5,917,186	10,638,473	2.5%
South Atlantic	4,995,870	10,156,624	3.0%
East South Central	4,025,832	6,951,482	2.3%
New England	1,852,120	2,805,499	1.7%
Total	203,463,176	301,899,425	1.7%

Figure 6.2 shows the value of Kansas' domestic trade by region. The West North Central area is the single largest trading partner by value for Kansas, representing over \$80 billion worth of goods in 2006. This is likely dominated by trade with Missouri centered around the Kansas City metropolitan area. The West South Central and Pacific regions are also important, with trade valued between \$35 and \$80 billion. The Mountain region accounts for less value than its volume (discussed above) would imply. This can be traced to the types of commodities moving between Kansas and the mountain West, which are dominated by Powder River coal and agricultural goods. These tend to have high shipment weights but low values per ton.

As shown in Table 6.2, the West North Central region will remain Kansas' largest trading partner by value, growing at almost 3 percent each year to \$178 billion by 2030. The Pacific region, which currently is the second largest trading region (by value) for Kansas, will be overtaken by the West South Central area, again probably as the result of population gains in Texas and region-wide.

Figure 6.2 Kansas Domestic Trade Value by TRANSEARCH Region
2006



**Table 6.2 Kansas Domestic Trade Value by TRANSEARCH Region
2006 and 2030**

Region	Value (Dollars)		CAGR
	2006	2030	
West North Central	\$90,030,449,126	\$178,111,127,255	2.9%
Pacific	\$59,277,312,023	\$102,808,467,056	2.3%
West South Central	\$45,162,401,841	\$104,691,213,907	3.6%
East North Central	\$33,030,750,766	\$54,390,724,699	2.1%
Mountain	\$20,810,524,544	\$38,403,495,046	2.6%
Middle Atlantic	\$15,876,195,158	\$28,240,141,463	2.4%
South Atlantic	\$15,808,884,763	\$35,722,438,256	3.5%
East South Central	\$7,997,445,877	\$16,490,106,883	3.1%
New England	\$4,432,707,173	\$9,950,301,624	3.4%
Total	\$292,426,671,271	\$568,808,016,189	2.8%

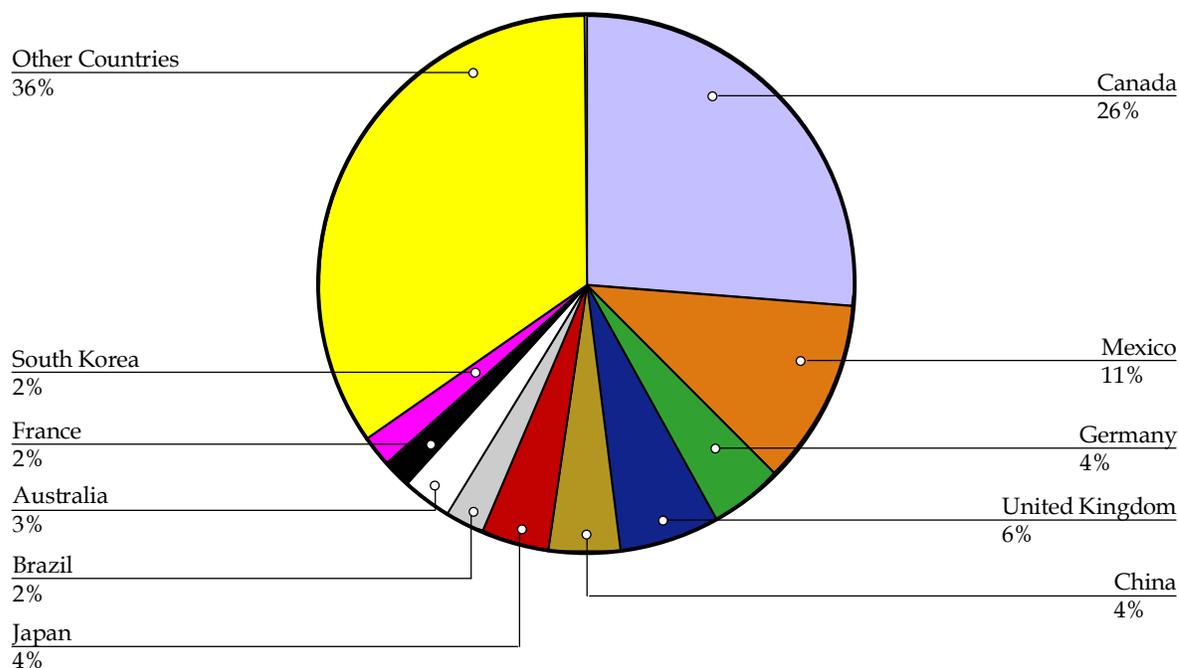
While the TRANSEARCH database does measure Kansas' exports to and imports from foreign countries, it does not provide information about which specific countries Kansas trades with, or the volume or value of that trade. However, this information is important for determining how growth in other countries will affect the freight transportation system in Kansas.

Because of this limitation, a different data source was needed to identify the specific countries with which Kansas conducts the largest amount of trade. The Census Bureau publishes state-level data on foreign trade. The data includes the value of exports to the top 25 foreign countries for each state. This information was used to determine Kansas' key foreign trading partners.

■ 6.2 Key Foreign Trading Partners

Figure 6.3 shows the top 10 international export markets for goods from Kansas. Not surprisingly, Canada and Mexico top the list. Kansas exported nearly \$2.3 billion worth of goods to Canada in 2006, and \$955 million to Mexico. It is also interesting to note the importance of European and East Asian markets to the Kansas economy. Germany, the United Kingdom, and France combined made up 12 percent of Kansas' export market by value in 2006, while China, Japan, and South Korea comprised another 10 percent.

**Figure 6.3 Top 10 Kansas International Export Markets by Value
2006**



As shown in Table 6.3, Kansas' exports to Canada and Mexico (which comprised 37 percent of Kansas' total exports by value in 2006) also have been growing quite rapidly. Between 2004 and 2006, exports to Canada grew by 73 percent; those to Mexico grew by 48 percent. Although it is likely that the recent economic slowdown has led to slowing or even contracting trade with these countries, trade will probably continue to grow in the long term. Trade growth between Kansas and these two countries will lead to more freight traffic in Kansas, particularly along I-35 and U.S. 81, which together form the major north-south corridor through the state.

Exports to Europe and the Far East have also been growing. Kansas' exports to the UK and Germany expanded by 84 percent and 106 percent respectively from 2004 to 2006; those to Japan and China also grew significantly. All of this leads to additional traffic on Kansas' east-west transportation system.

**Table 6.3 Top 10 Kansas International Export Markets by Value
2004 and 2006**

	2004	2006	Percent Change
Canada	\$1,319,000,000	\$2,280,000,000	73%
Mexico	\$644,000,000	\$955,000,000	48%
United Kingdom	\$287,000,000	\$529,000,000	84%
Germany	\$188,000,000	\$387,000,000	106%
Japan	\$199,000,000	\$367,000,000	84%
China	\$210,000,000	\$360,000,000	71%
Australia	\$134,000,000	\$253,000,000	89%
Brazil	\$129,000,000	\$183,000,000	42%
South Korea	\$168,000,000	\$170,000,000	1%
France	\$144,000,000	\$162,000,000	13%
Other Countries	\$1,518,000,000	\$2,990,000,000	97%
Total	\$4,940,000,000	\$8,636,000,000	75%

7.0 Truck Travel Patterns

This section presents maps showing current and forecast total truck volumes moving along Kansas' freight highway corridors. It also highlights the traffic patterns of some key commodities (in terms of truck volumes) and their expected growth through 2030. The commodities chosen are those that are most critical to Kansas' economy, particularly its growing goods dependent industry sectors, such as agriculture, food manufacturing, aggregates, and transportation equipment manufacturing.

■ 7.1 Methodology and Data Limitations

As described earlier, the Global Insight TRANSEARCH data set includes information on current (2006) and future (2030) number of trucks by commodity type. These flows were assigned to the Kansas highway network (by Global Insight) using commonly accepted traffic modeling procedures. Truck flows were assigned to highway routes using a highway network file¹⁶ developed by Oak Ridge National Laboratory and adapted by Global Insight for the county-level geographic structure of the TRANSEARCH database. The resulting dataset, which includes number of trucks by commodity type and route utilized, allows analysts to create maps of freight flows by both mode and commodity.

To map commodity flows in Kansas, we first queried the TRANSEARCH database to identify all flows for key commodities in Kansas. Four commodity types were chosen (described below) because they represent the primary products or inputs to production of several key Kansas industries:

1. **Farm products**, including grain, seed, fresh fruits and vegetables, livestock, and all other products that comprise the output of the Kansas agricultural sector;
2. **Food products**, which include fresh and frozen meat, other animal products, milled grains, canned or frozen foods, and frozen specialties, among other things. These commodities include the primary outputs of Kansas' meat packing, milling, and food manufacturing industries;

¹⁶The network file is a database of major highways in the United States. It includes attribute and locational data about roads gathered from a wide variety of sources. It contains about 500,000 centerline miles of roadway, primarily consisting of roads classified as arterials or higher.

3. **Transportation equipment**, such as motor vehicles, motorcycles, and aircraft and aircraft parts. Automobiles and motorcycles are produced in the greater metropolitan Kansas City area, while Wichita is home to several aircraft parts manufacturers and maintenance, repair, and overhaul facilities; and
4. **Aggregates**, including crushed stone, riprap, and gravel, which are heavily mined throughout Kansas. These products are key raw materials for the construction industry.

We again describe several types of shipments— interstate, intrastate (including international), and through movements. For mapping purposes, all three movement types were summed (by commodity) to determine the total flows (truckloads). We used a geographic information system (GIS) to display how these truckloads are using the Kansas highway network.

As described earlier, TRANSEARCH generally provides useful data about statewide commodity flows and truck travel patterns. However, due to the way Global Insight collects and synthesizes the data that goes into TRANSEARCH, there are a few limitations to how the data can be used and interpreted to describe truck flows along the statewide highway network. These limitations are outlined below.

- **Use of Multiple Data Sources.** The Kansas dataset was developed by incorporating local and regional data into Global Insight’s national database. This requires making assumptions that can affect the accuracy of the data, particularly for finer levels of geographic and commodity detail. These problems often stem from the need to convert different industry and/or commodity classification systems into a common format for use in the database. For instance, the U.S. Bureau of the Census’ Vehicle Inventory and Use Survey, a key input to the development of truck flows in TRANSEARCH, uses its own commodity codes that must be converted to STCC codes to convert truck commodity flows to truck loads. Although it is possible to convert between the two, the process is not exact and can result in truck flow data being left unreported or miscategorized.
- **Data Reporting and Geographic Scale.** The Kansas TRANSEARCH dataset is one piece of a national dataset. Although total statewide flows are typically consistent with published statistics from state, Federal, and other sources, these data often do not provide the level of detail necessary for detailed analysis at the local or corridor level. This is primarily the result of limited geographic detail in the publicly available datasets that are used as inputs to TRANSEARCH. Oftentimes, public agencies are forbidden from reporting commodity flow and other data in a way that would disclose the business operations of participating firms, and must instead aggregate their data to protect participants’ confidentiality. The way in which specific companies report their freight activity can also affect the accuracy of the data (e.g., a company that reports a rail/truck intermodal move as simply a rail move, versus another that may categorize it as a truck move). The result is that as the geographic region under analysis becomes smaller, TRANSEARCH accuracy generally decreases.

- **Unrouted Truck Movements.** As discussed previously, the TRANSEARCH road network is based on a national-level database developed by Oak Ridge National Laboratory. Because this database covers flows along the entire national highway system, it is not ideal for detailed analysis at more local levels (i.e., flows within a single county or between adjacent counties). Trips within a single county cannot be routed on the road network because the method used to assign trips to specific road segments determines the most likely route from the centroid of the origin county to the centroid of the receiving county. Trips between adjacent counties and between counties located on the state border and destinations outside of the State, often cannot be routed for the same reason. In these cases, because routing is determined on a centroid to centroid basis, it is impossible to assign these trips to the road network accurately. For the purpose of this report, trips between adjacent counties and trips from border counties to destinations outside of Kansas have been given the same routing on the highway network as similar trips to or from an adjacent county. So, for example, trips from Republic County to Canada would be routed on the same highway segments in Kansas as trips from Cloud County to Canada.

■ 7.2 Data Comparisons

Recognizing these data challenges, particularly as they relate to truck movements, we ‘ground checked’ the TRANSEARCH data against selected 2006 KDOT truck counts. Figure 7.1 shows the traffic count locations we used for comparison (highlighted by red diamonds). As shown in Table 7.1, the total statewide truck flows estimated by TRANSEARCH are within 8 percent of KDOT truck counts. This is well within accepted bounds. However, on a corridor-by-corridor basis, the differences between TRANSEARCH and KDOT truck counts vary significantly. It is critical to note that the overall flows presented in the following sections are fairly accurate at a statewide level, but overall accuracy declines when looking at smaller levels of geography. Typically, truck information at finer levels of geographic detail is collected via truck counts, surveys, or other strategies.

Figure 7.1 KDOT Truck Count Locations for Comparison to TRANSEARCH

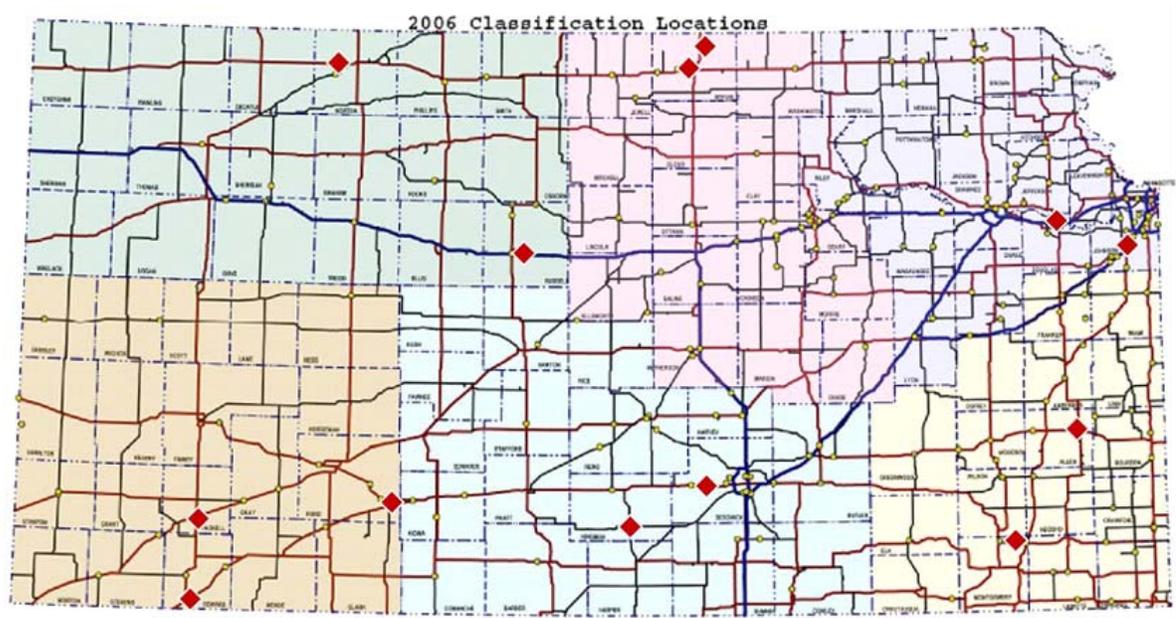


Table 7.1 Comparison of KDOT Truck Counts to TRANSEARCH Estimates

District	Location	KDOT 2006 Truck Counts	TRANSEARCH 2006 Data	Percent Difference
1	I-70 west of West Lawrence Exit 202, north of Lawrence	6,026	6,695	11%
	I-35 northeast of U.S. 56, Exit 210, east of Gardner	5,637	5,759	2%
2	U.S. 36 west of K-199, north of Cortland	228	144	-37%
	U.S. 81 south of RS-334, 5 miles south of Kansas/Nebraska Border	1,475	1,364	-8%
3	I-70 east of U.S. 281, Russell Exit	3,197	8,185	156%
	U.S. 36 west of MCS-6907, 8 miles west of Norton	299	169	-43%
4	U.S. 59 north of U.S. 4 at Moran	241	221	-8%
	U.S. 400 west of U.S. 169, north of Cherryvale	2,222	404	-82%
5	U.S. 54 east of K-163, north of Garden Plain	1,380	1,418	3%
	K-14 south of K-42, north of Rago	279	40	-86%
6	U.S. 400 east of K-34, northwest of Bucklin	426	460	8%
	U.S. 83 north of U.S. 54, east of Liberal	1,827	473	-74%
	U.S. 56 southwest of U.S. 83, 1 mile southwest of Sublette	451	272	-40%
Total		23,688	25,604	8%

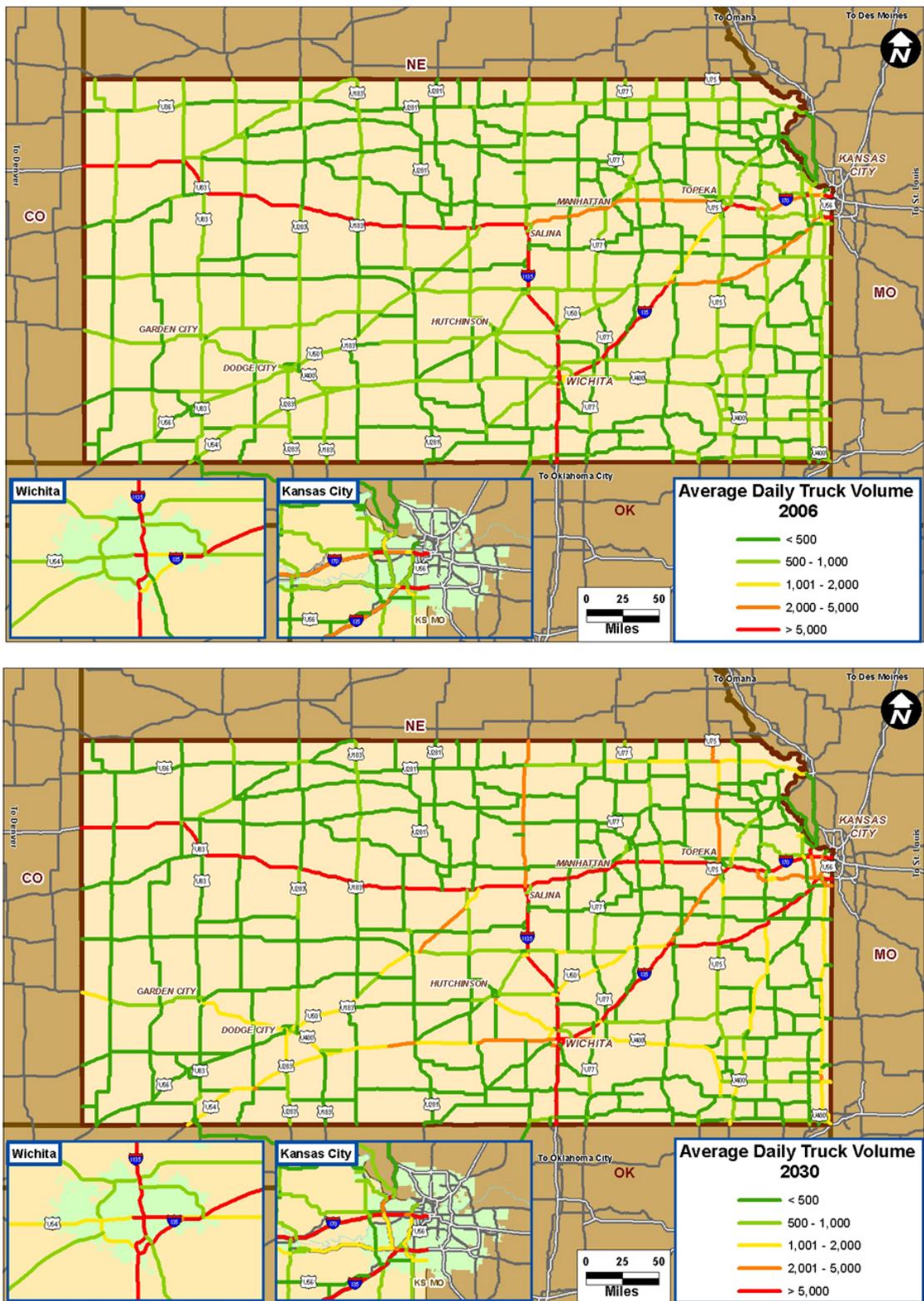
■ 7.3 Total Truck Volumes (All Commodities)

Figure 7.2 shows current (2006) and forecast (2030) total daily truck volumes on Kansas' existing highway network. Wider lines indicate greater truck traffic. Unsurprisingly, the largest volumes are found on the State's major highways, especially Interstates 35, 70, 335, and 135, but also on U.S. 81 north of the I-70 intersection. These corridors typically carry anywhere from about 2,000 to over 6,000 trucks per day. Several segments are expected to see substantially increased truck traffic in the coming years, particularly I-35 from Emporia to Kansas City and I-70 between Salina and Kansas City. U.S. 81 also will experience significant growth.

Equally important, however, are some of the more rural and non-Interstate routes, especially in southwest Kansas. These include U.S. 50/U.S. 400 between Garden City and Dodge City, U.S. 283 between Dodge City and the Oklahoma state line, and U.S. 54/400 from the Oklahoma line, through Wichita, and eastward to Independence. These roads, along with U.S. 83 between Liberal and Garden City, comprise the major arteries of the "meat-packing triangle" in southwest Kansas. These routes are expected to remain important but, as the map shows, other facilities in the area are also expected to see significantly more truck traffic by 2030. Increased truck traffic will likely be tied to growth in the local meat processing industry and expanding agricultural output in the region, which is a key supplier to local cattle feed lots and processing plants.

Other key rural facilities include U.S. 36 between Elwood/St. Joseph and Fairview as well as State Road 96 from Hutchinson to Wichita. U.S. 36 is an important road for the food manufacturing industry in northeast Kansas, which includes Triumph Foods, the largest pork processing plant in the world. Stakeholder interviews indicated that this road is beginning to experience accelerated deterioration from increasing freight and passenger traffic, but there are no viable alternative routes for local businesses. State Road 96 is most heavily used by trucks carrying petroleum products, nonmetallic minerals, and farm products.

Figure 7.2 Current and Future Daily Truck Volumes in Kansas
2006 and 2030



7.4 Farm Products

Figure 7.3 shows current (2006) daily truck volumes for agricultural products in Kansas. As the map shows, the heaviest truck volumes are found on Kansas' Interstates and other major highways, such as I-70, I-35, and I-135. Each of these facilities carries over 50,000 agricultural shipments each year; some parts of them have upwards of 325,000. Since agricultural commodities are often heavy, this can exacerbate concerns about pavement consumption and road maintenance.

It also should be noted that rural highways tend to carry substantial truck traffic as well, particularly in the western half of Kansas. Higher truck volumes in southwest Kansas are related to the cattle industry. This part of Kansas contains more than 300 cattle feed lots, which supply the four major meat packing plants in the region. Cattle come to the feed lots from within Kansas, nearby states like Texas and Oklahoma, and from as far away as Florida. Corn, which is heavily cultivated in southwest Kansas, is a key feed grain for the cattle; it is also sometimes imported from Nebraska if Kansas is experiencing a corn deficit. Wheat, which is primarily grown in central Kansas, may explain some of the higher truck volumes in that region. In some cases, these rural roads were not designed to accommodate high truck volumes, and are therefore more susceptible to deterioration caused by heavy shipments.

Figure 7.3 Annual Agriculture and Livestock Truck Volumes in Kansas 2006

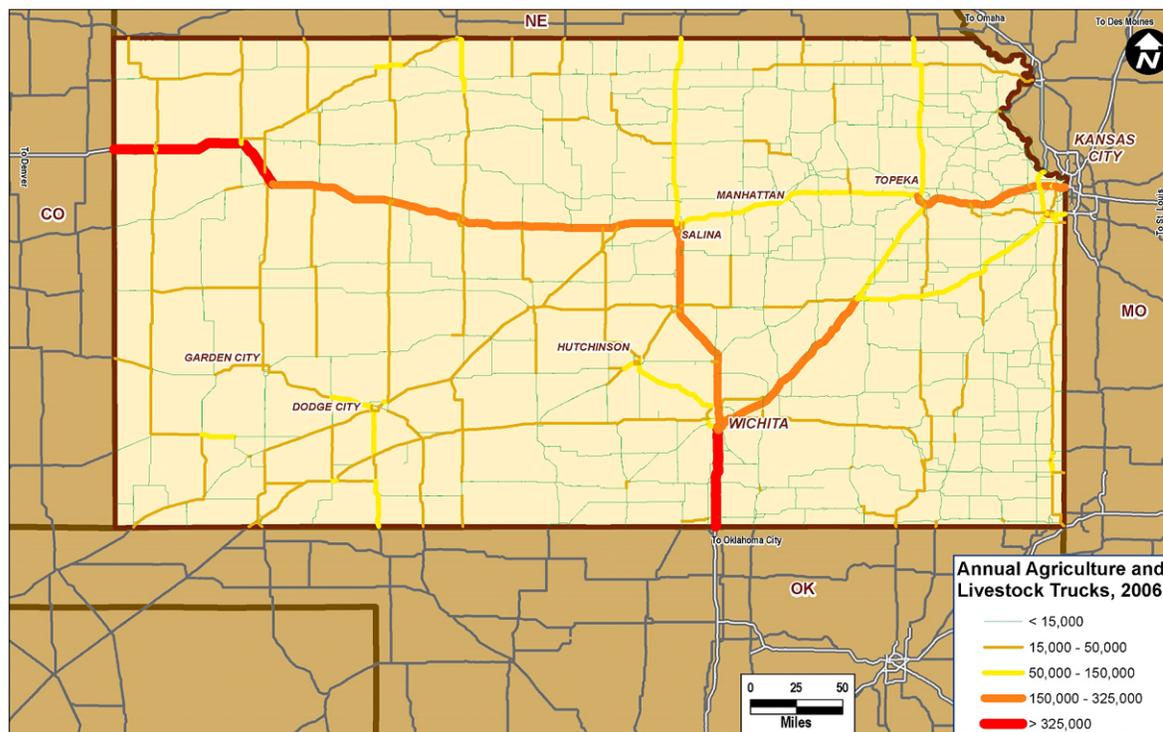
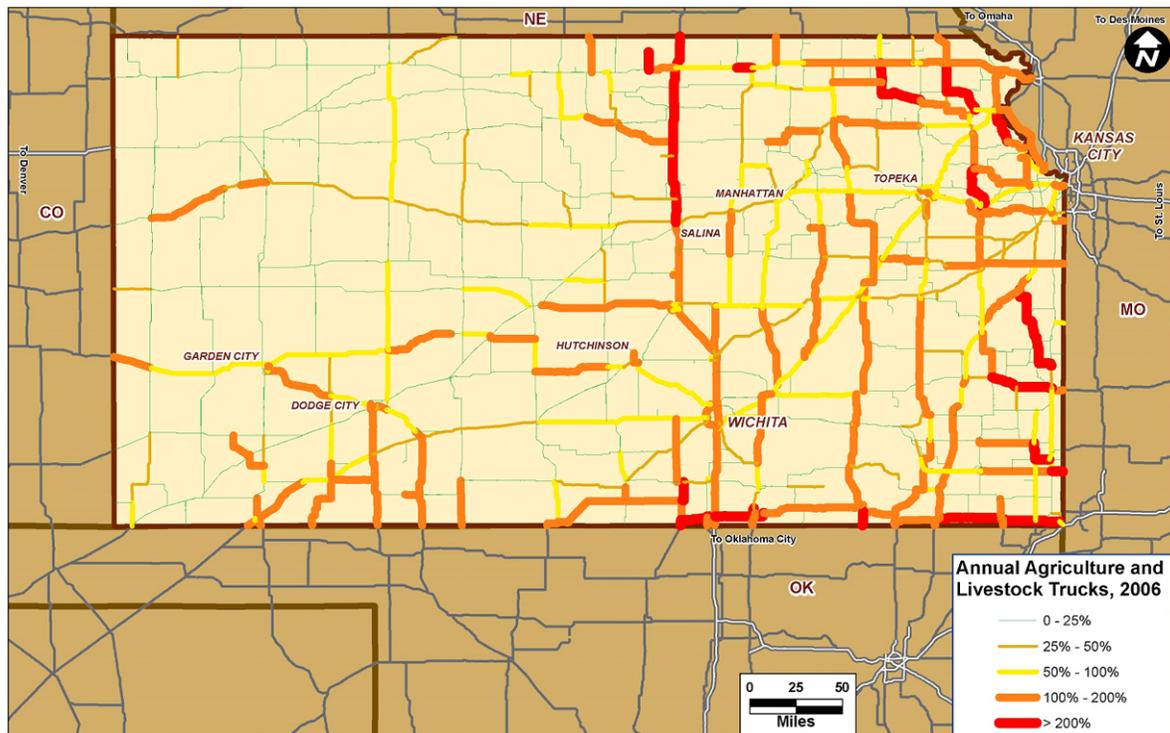


Figure 7.4 presents the percentage increase in trucks carrying farm products through 2030. The largest increases in percentage terms will occur in the eastern half of the State. Depletion of the Ogallala Aquifer may contribute to the smaller volume growth observed in northwestern Kansas. Note that most of the agricultural traffic growth will occur on non-Interstate roads, such as U.S. 81 north of Wichita, which is expected to see between 100 and 200 percent growth in agricultural truck traffic. Other rural facilities, such as U.S. 166 parallel to the Oklahoma border and U.S. 81 from Salina to the Nebraska border, will have more than twice as many trucks by 2030. These roads are often the primary link allowing Kansas farms to get their products to market. There also will be substantial growth in southwest Kansas, probably driven by growth in cattle shipments, as well as corn and other feed grains, much of which are produced in the region to supply the growing beef industry.

Figure 7.4 Percent Increase in Annual Agriculture and Livestock Truck Volumes in Kansas 2006 to 2030



7.5 Food Products

Figure 7.5 is a map showing average daily truck volumes for food products. As the map demonstrates, this traffic is primarily concentrated on the Interstates, with slightly smaller

volumes radiating out of the “meat packing triangle” in southwest Kansas. As mentioned above, there are four large meat packing plants in the region, located in Liberal, Garden City, and Dodge City. Combined, they have a daily kill capacity of almost 24,000 cattle.¹⁷ The truck traffic moving out of the region thus represents fresh and frozen beef making its way from the processing plants to the Interstate system for further distribution regionally and nationally. Key facilities include U.S. Highways 50, 54, 56, 83, and 283. The heavier volumes along Kansas’ Interstates represent the output of food manufacturing industry clusters located in Salina, Wichita, Topeka, and the Kansas City metro area, along with beef from southwest Kansas.

**Figure 7.5 Annual Food Product Truck Volumes in Kansas
2006**

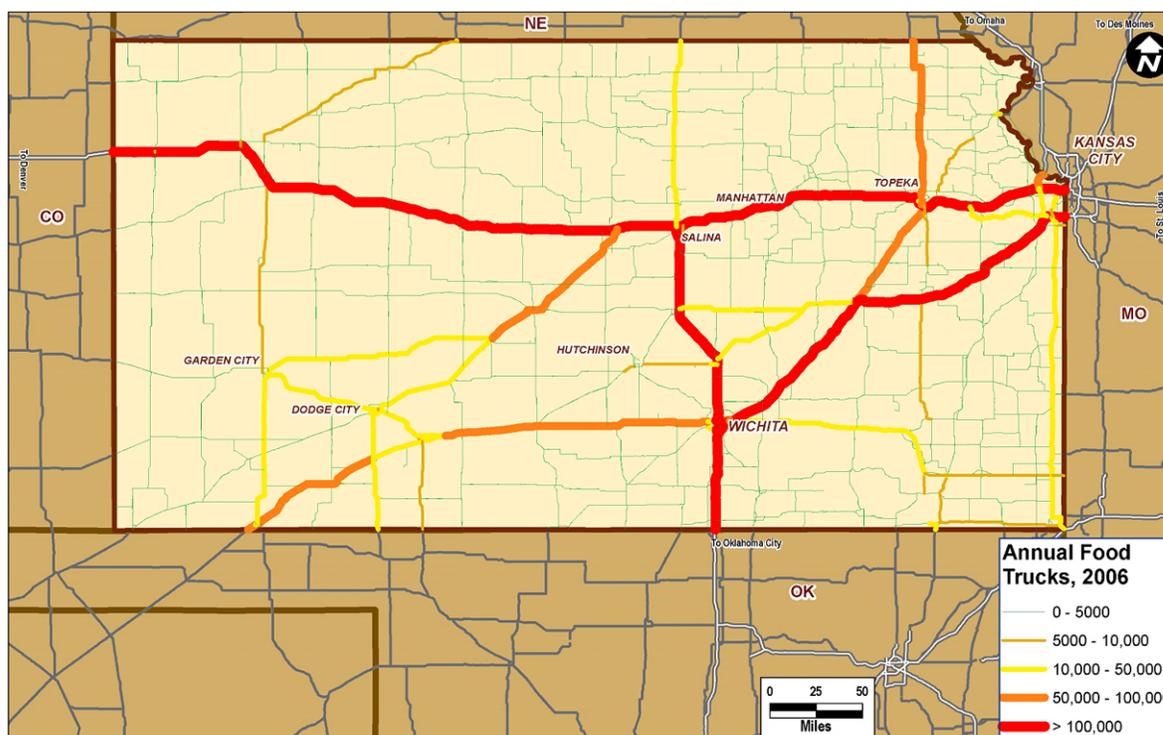
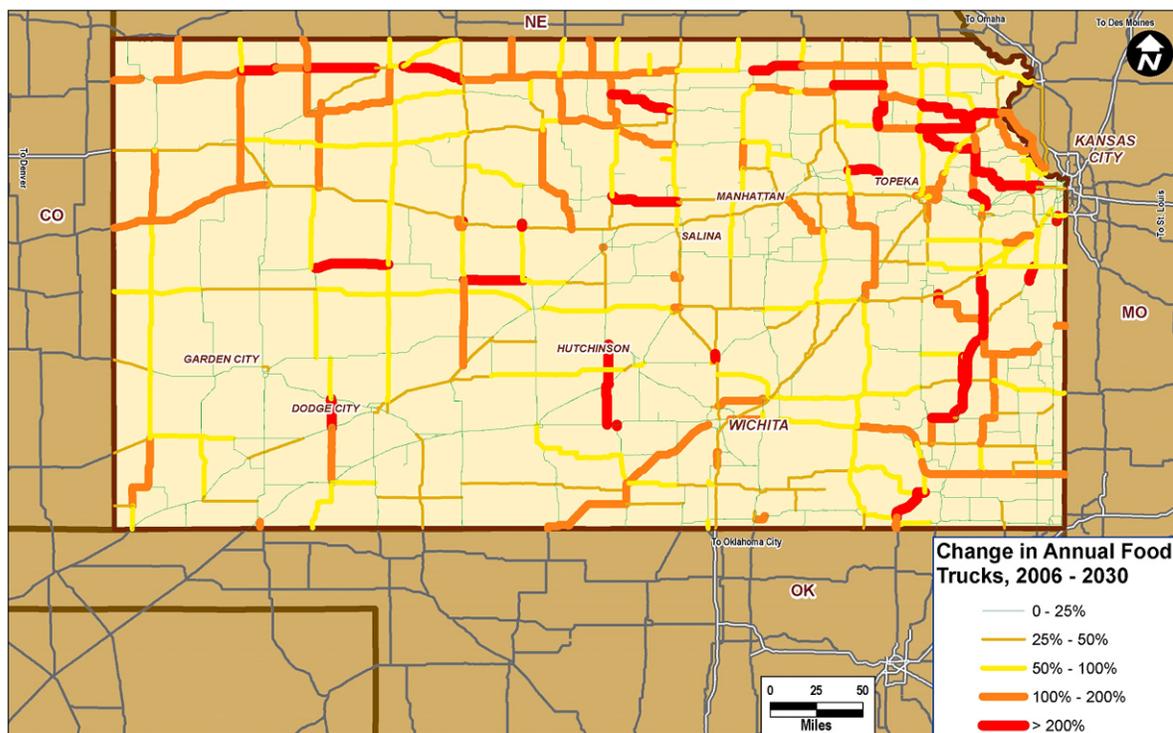


Figure 7.6 shows the expected percentage increase in trucks hauling food products on Kansas roads from 2006 to 2030. The largest increases in volumes will occur in District 1, particularly around Kansas City and Atchison. Highways expected to see significant truck volume growth include I-70 and U.S. Highway 40/24 just outside Kansas City, as well as U.S. Highways 73 and 59 near Atchison. However, there also will be notable growth in District 6 and in the northern half of the State, as well as around Wichita. There

¹⁷Kansas University Transportation Center, *Transportation Logistics and Economics of the Processed Meat and Related Industries in Southwest Kansas*, Lawrence, Kansas, July 2007.

are food manufacturing facilities in Hutchinson and Great Bend, which helps explain the large volume growth forecast in those areas. KDOT Districts 1, 2, 5, and 6 all have notable clusters of food manufacturers, including meat processing plants, dairy product manufacturers, frozen food manufacturers, and grain millers.

Figure 7.6 Percent Increase in Annual Food Product Truck Volumes in Kansas 2006 to 2030



7.6 Transportation Equipment

Figure 7.7 shows the daily truck volumes for transportation equipment. Not surprisingly, this traffic is mainly concentrated around Wichita, where I-35 and I-135 each bear 25,000 to more than 50,000 truckloads of transportation equipment annually. Similarly, I-70 west of Salina handles over 50,000 trucks per year loaded with this commodity; between Salina and the Kansas City metro area, it averages between 25,000 and 50,000. Aircraft maintenance, repair, and overhaul businesses routinely ship airplane parts by truck all over the country for refurbishment, after which they are returned to Wichita to be reinstalled on aircraft. Similarly, aircraft manufacturers located in Wichita rely on truck shipments for raw materials and finished products. There are also a lot of transportation equipment

shipments moving to and from the Kansas City metro area, which has a cluster of automobile and motorcycle manufacturers.

Figure 7.7 Annual Transportation Equipment Truck Volumes in Kansas 2006

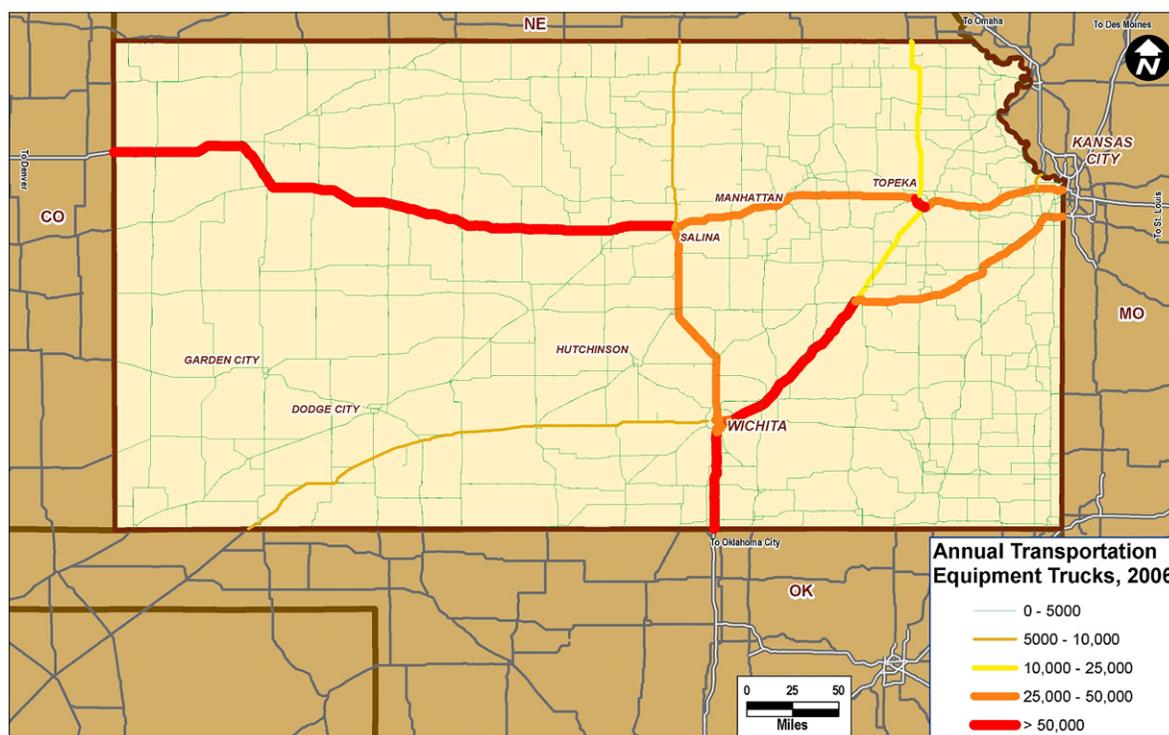
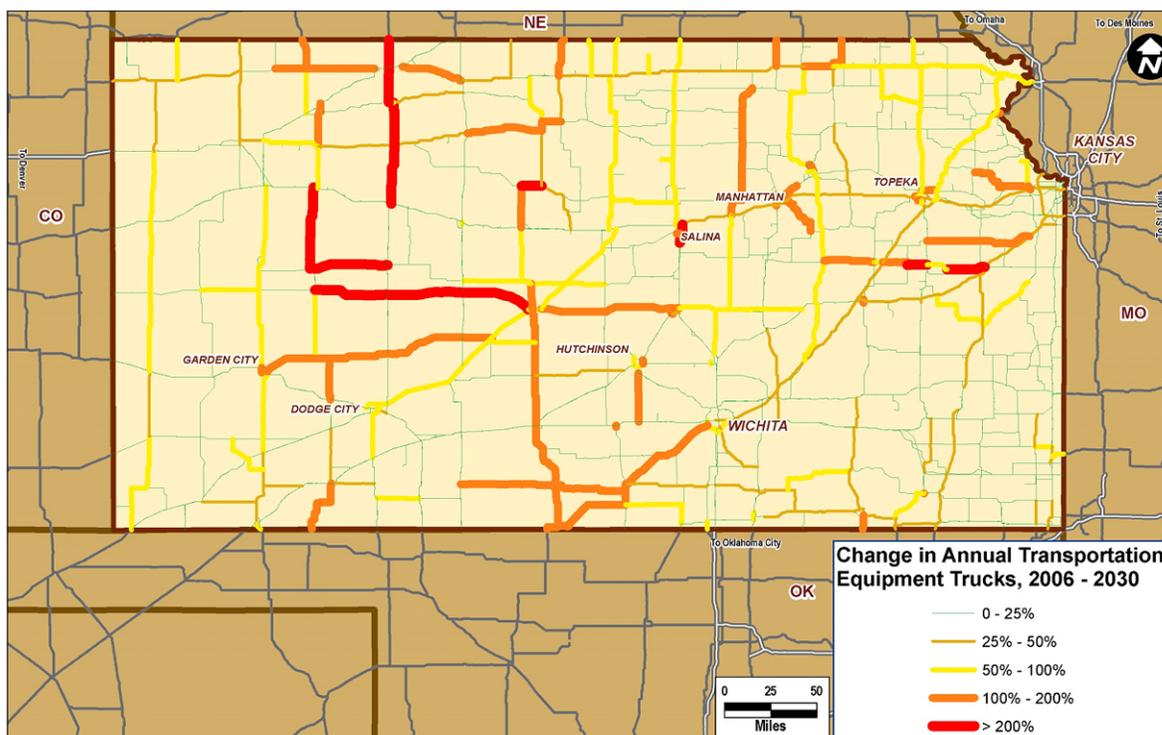


Figure 7.8 displays the forecast percentage increase in trucks carrying transportation equipment through 2030. Key links between Wichita and the Kansas City metro area (including I-35 and I-335) are expected to see 25 to 50 percent growth in truck traffic for this commodity. Although this is relatively modest compared to traffic growth in other parts of the State, these roads already were carrying over 40,000 trucks annually in some cases. As a result of this growth, they will soon be carrying anywhere from 30,000 to more than 75,000 trucks per year. Also noteworthy is the substantial growth that is expected to occur on some of the State’s rural roads, especially in northwest Kansas. This traffic is most likely linked to a relatively small but still significant cluster of manufacturers in the region, including an aircraft parts manufacturer (Rans Company), a farm equipment maker (Wilkins Manufacturing), and a maker of recreational vehicles and campers (Peterson Industries).

Figure 7.8 Percent Increase in Annual Transportation Equipment Truck Volumes in Kansas 2006 to 2030



7.7 Aggregates

Figure 7.9 presents current daily truck volumes for aggregates in Kansas. As the map shows, this traffic is mostly confined to the Interstates and a few other key roads, such as State Highway 59/U.S. 169 south of I-35. Most of this traffic is in and between Kansas' major urban areas, since aggregate products are often used in the construction industry, which is typically concentrated in larger population centers. There are well over 100 producers of aggregate, sand, and concrete in Kansas located throughout the State, which is why truck traffic is so dispersed.¹⁸

It should be noted that a lot of aggregate products are moving by rail rather than truck. For example, rail carried 76 percent of the total tonnage of Portland cement and processed nonmetallic minerals in Kansas in 2006, amounting to more than four million tons.

¹⁸Kansas Aggregate Producer's Association.

**Figure 7.9 Annual Aggregate Truck Volumes in Kansas
2006**

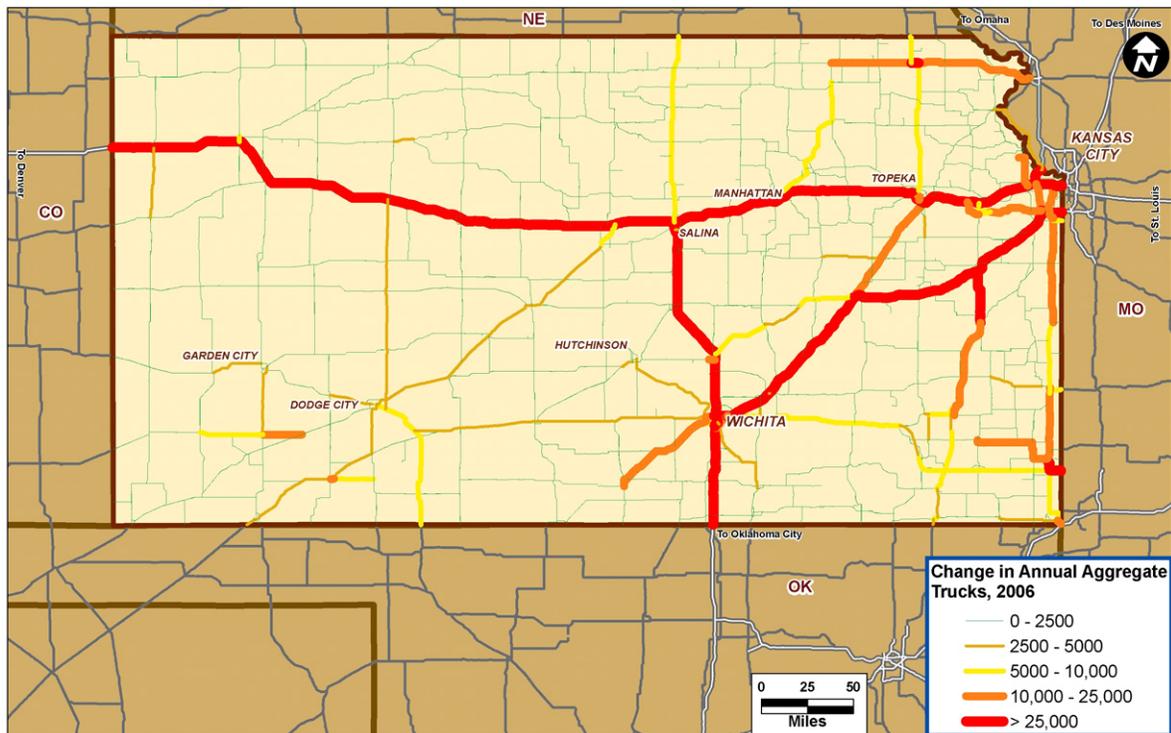
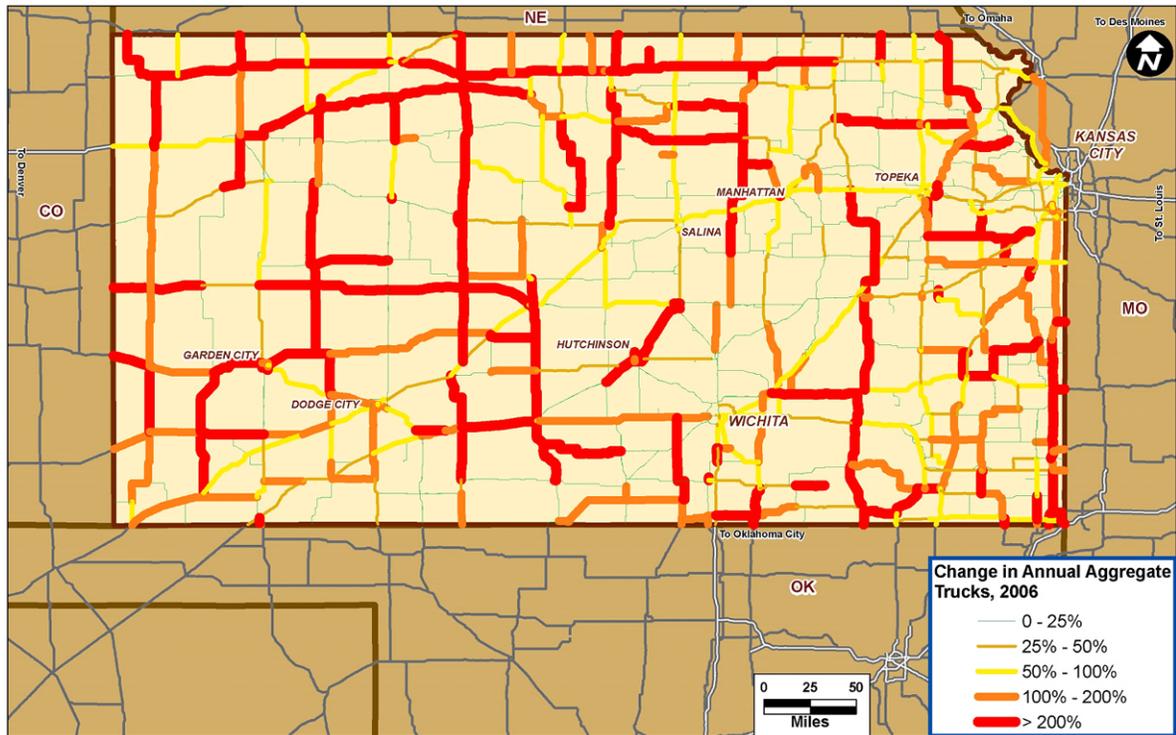


Figure 7.10 shows the expected percent increase in aggregate flows by truck through 2030. Substantial growth (in percentage terms) is forecast to occur all over the State, but as shown in Figure 7.9, most of those roads had less than 2,500 trucks per year in 2006. Nonetheless, substantial increases in truck traffic will cause accelerated deterioration along these corridors. This is especially important since aggregate shipments tend to be quite heavy. There also will be substantial growth in District 6 and around Kansas' major cities, likely driven by population growth in these areas.

**Figure 7.10 Percent Increase in Annual Aggregate Truck Volumes in Kansas
2006 to 2030**



8.0 Rail Travel Patterns

This section presents maps of total rail volumes moving along Kansas' major rail freight corridors. Like truck flows, TRANSEARCH data allows rail traffic to be analyzed and mapped by commodity. Global Insight assigns TRANSEARCH rail flows to the network using a proprietary routing model that includes national, regional, and shortline railroads. Rail volume data comes from the Surface Transportation Board's Carload Waybill Sample¹⁹ combined with proprietary data from the railroads. Similar to the truck travel patterns presented in Section 7.0, rail flows are presented here with the forecast year (2030) superimposed over the base year (2006). This shows which links of the rail network are likely to experience the most growth. Also included in this section are maps showing flows of key rail commodities, such as grain, coal, intermodal traffic, and carload traffic.

■ 8.1 Railroads Operating in Kansas

The Surface Transportation Board classifies railroads into three categories, depending on their annual revenue and miles of track owned:

- **Class I railroads** include those that had at least \$346.8 million in revenues in 2006.²⁰ These are the major national railroads that handle the preponderance of U.S. rail freight. They largely concentrate on long-haul service between major cities. There currently are seven Class I railroads operating in the United States and three in Kansas (UP, BNSF, and KCS).
- **Regional railroads**, sometimes known as Class II railroads, are defined as railroads with at least 350 miles of track and/or annual revenue between \$40 million and the Class I threshold. These railroads typically operate in two to four states, rather than nationally as the Class Is typically do. In 2007, there were 33 regional roads operating in the U.S. and one in Kansas (the Kansas and Oklahoma).
- **Shortlines**, sometimes known as Class III railroads, operate less than 350 miles of track and have annual revenue of less than \$40 million. Shortlines typically provide

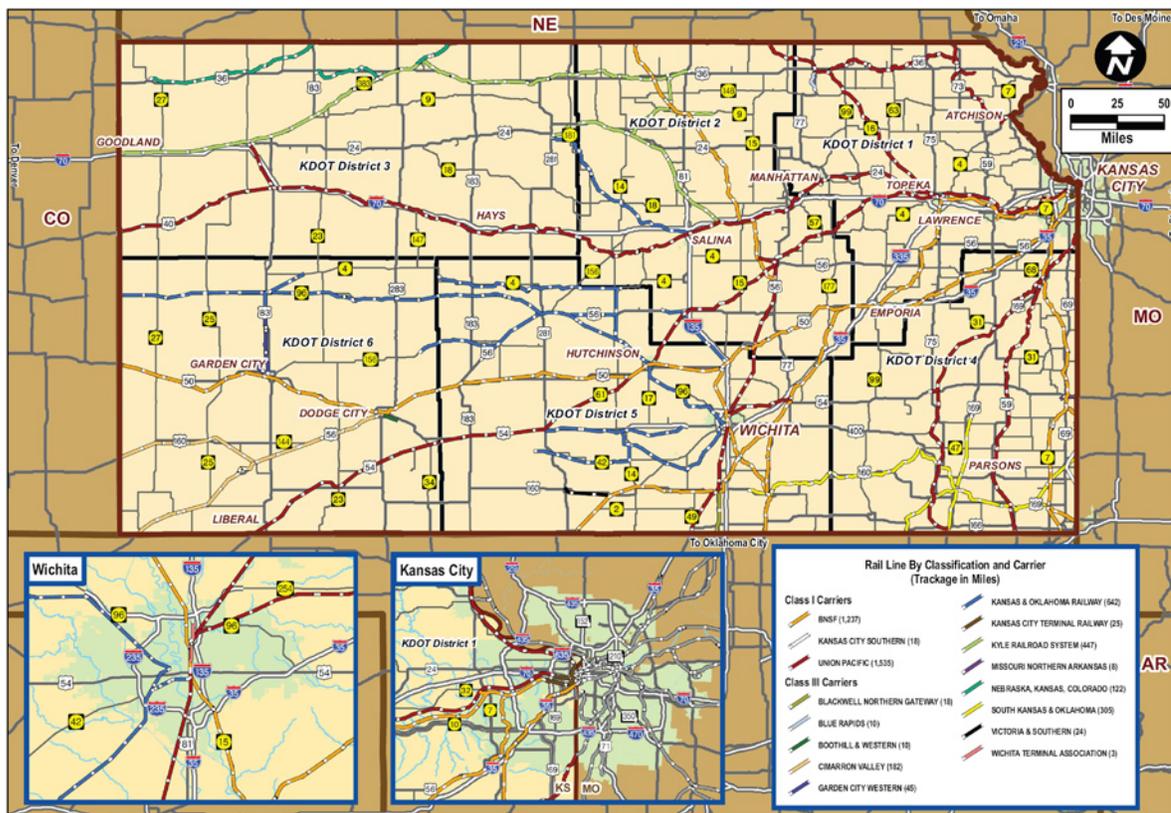
¹⁹The Carload Waybill Sample is a confidential rail freight origin-destination database maintained by the Surface Transportation Board. All rail carriers terminating at least 4,000 carloads per year are required to report data, which includes all national and regional railroads and the larger shortlines.

²⁰This revenue threshold is updated annually by the Surface Transportation Board.

point-to-point service over relatively short distances. There were 324 such lines operating in the U.S. in 2007. In Kansas, there are 12 shortline railroads and two switching railroads.

Figure 8.1 shows the rail network in Kansas by classification and carrier. The following sections describe the Kansas Class I and regional/shortline networks in greater detail.

Figure 8.1 Kansas Rail Network by Classification and Carrier



Class I Railroads

There are three Class I railroads operating in Kansas: Union Pacific (UP), Burlington Northern Santa Fe (BNSF), and Kansas City Southern (KCS).²¹ Of these, the BNSF and UP are by far the dominant railroads in the State, owning 1,237 and 1,830 miles of track respectively (out of a total of 3,085 Class I miles statewide). KCS owns the remaining 18 miles of Class I track. These Class I railroads serve as wholesalers of long-distance, line-haul freight service in Kansas and elsewhere (approximately 65 percent of rail movements in Kansas, by weight, are through movements). That is, they link Kansas markets and

²¹Norfolk Southern does not own track in Kansas, but has trackage rights to three miles of track in the State.

industries with the national rail system (and vice versa), allowing shippers and manufacturers in the State to more effectively access markets outside of Kansas. All Class I railroads, along with their infrastructure and rolling stock (i.e., locomotives and railcars) are part of for-profit corporations with publicly traded stock.

The Class I railroads in Kansas are focused primarily on a handful of major markets. Coal, which made up 48 percent (383 million tons) of the total freight tonnage in Kansas in 2006, primarily moves through the State from coal fields in the Mountain West to power plants in the Eastern and Southern United States. Most of this traffic moves through the Kansas City region en route to its final destination. Agricultural products (particularly grain) are another key commodity in Kansas. Corn and wheat produced in Kansas is typically consolidated in Wichita for further distribution or export via Gulf Coast ports. Intermodal shipments, which made up 44 percent of the freight value in Kansas in 2006, are another critical market for the Class I railroads. The Kansas City metropolitan area is a major transshipment point for intermodal traffic, much of which is generated at the San Pedro Bay Ports²² in California.

Given this business model, the primary concern for Class I railroads is maintaining (or improving) efficient movements into, out of, and through Kansas. Consequently, they typically focus their investment on high-density, longer-distance line-haul business along key corridors connecting major markets. Operationally, these railroads tend to target large blocks of traffic, in order to take advantage of the economies of scale offered by long-distance rail transportation. Investment decisions by the Class Is, particularly infrastructure investments, are made very carefully for two reasons. First, as publicly traded companies, the Class I railroads are held accountable by their shareholders. Second, rail infrastructure investments are not fungible, i.e., it is difficult to redeploy or reuse rail infrastructure (e.g., tracks) once it is in place. Therefore, according to some interviewees, the Class I railroads are much more likely to invest in motive power or rolling stock (which can be redeployed easily) than they are in infrastructure improvements.

The Class I railroads work closely with regional and shortline railroads via interline or haulage agreements, through which two different railroads agree to haul each others' freight or equipment over certain segments of track. These agreements, which allow the regional and shortline railroads (and their customers) to access the national rail network, are particularly important in rural Kansas, since many rural parts of the State lack direct access to the national rail network.

²²The San Pedro Bay ports refers to the Port of Los Angeles and the Port of Long Beach in Southern California.

Regional and Shortline Railroads

Regional and shortline railroads also are a critical component of the rail system in Kansas. There are 14 shortline and regional railroads in Kansas.²³ Two of these are switching railroads operating in Kansas City and Wichita.²⁴ Shortline railroads account for 41 percent of the total rail miles owned and operated in Kansas.

Some rural parts of Kansas do not have direct access to Class I services, making the shortline and regional system a vital backbone for shippers and manufacturers in those areas. Like the Class I railroads, these railroads primarily are private sector entities, but are often able to operate in conditions where the Class I railroads cannot, taking advantage of different labor-cost structures, profitability targets, and business models. In many cases, regional and shortline railroads were formed through competitive bids for track spun off by the larger railroads.

Unlike the Class I railroads, regional and shortline railroads regularly serve locally generated traffic, oftentimes gathering or consolidating smaller blocks of traffic from individual shippers for transfer to the larger national rail system. This is a critical service in Kansas, as many agricultural producers and other shippers do not generate the volumes of traffic that would be attractive to the Class I railroads. Without the ability of the regional and shortline railroads to provide this service, many of these shipments would likely occur by truck. Commodities handled by the shortline and regional railroads in Kansas include steel, grains, some consumer products, and scrap metal. Without regional and shortline rail service, some shippers might close or relocate, taking jobs and tax revenue with them.²⁵

These shortline and regional railroads tend to rely more on carload shipments for the bulk of their revenue, in contrast to the Class I railroads, which tend to focus on more profitable intermodal shipments. Capacity limitations and infrastructure deterioration could limit the ability of the shortline and regional carriers to absorb expected increases in freight volumes, increasing costs (both in time and money) for shippers and potentially forcing them to ship goods by truck. This could have environmental impacts (increased emissions) while exacerbating concerns about highway maintenance and preservation.

In all, the shortline and regional railroads often provide rail access to rural areas, smaller industries and agricultural areas, helping to ensure these regions can access more distant markets and remain economically viable. In addition, existing land around or in close proximity to shortline and regional railroads are increasingly being targeted for industrial redevelopment activities. Because of this, there is growing belief that investment into

²³ Although the Kansas and Oklahoma meets the criteria for a regional railroad, KDOT uses only the Class I and Class III categories; accordingly, the term “shortlines,” as used in this Technical Memorandum, refers to all non-Class I railroads in Kansas.

²⁴ Another two are tourist trains that do not handle freight.

²⁵ AASHTO Freight Rail Bottom Line Report.

shortline systems can have tangible economic development benefits. In fact, many state DOTs manage rail access or infrastructure funding programs targeted at maintaining or improving the infrastructure or operations of these smaller railroads and in some cases are coupling these programs with economic development incentives to attract employers. KDOT already is involved in this process, through tools such as the State Rail Service Improvement Fund (SRSIF).²⁶

■ 8.2 Total Rail Volumes (All Commodities)

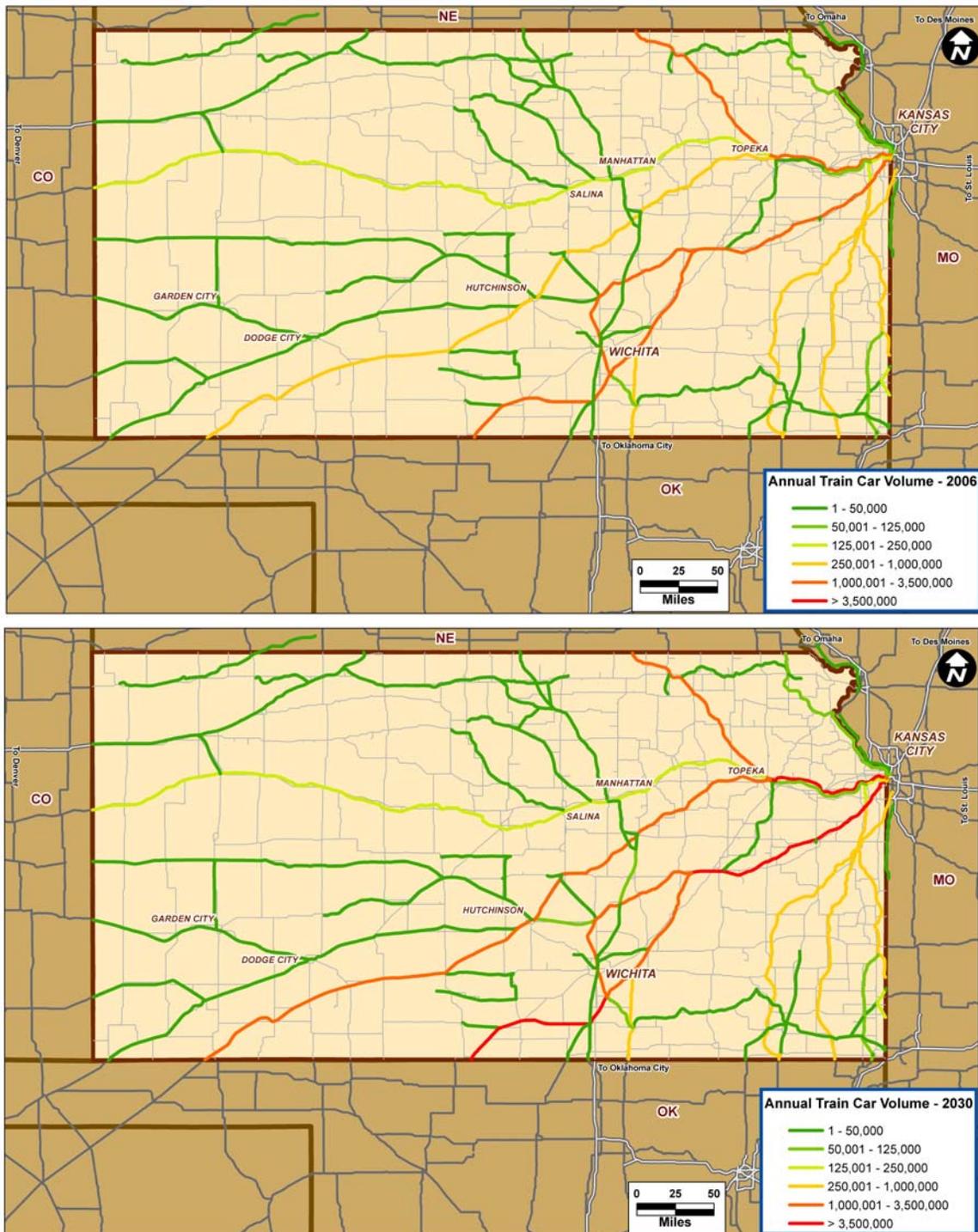
Figure 8.2 shows current (2006) and forecast (2030) total rail car volumes for all commodities. The vast majority of rail traffic is moving along the Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) Class I mainlines, particularly the UP Tucumcari, BNSF Transcon, and a few other north-south routes in Eastern Kansas. This traffic is expected to grow rapidly. Though most links on the BNSF Transcon line currently are carrying between 2.5 million and 5 million rail cars annually, by 2030 the entire line will be operating above 5 million cars per year, with some links reaching over nine million cars annually. Other segments experiencing significant growth in traffic include the BNSF corridors between the Transcon line and the Oklahoma State line via Wichita, the BNSF north-south line in Eastern Kansas, and the UP corridor in the Northeast corner of the State. The other UP line (between the Nebraska State line and Kansas City via Topeka) handles large volumes of coal trains.

Coal shipments are by far the largest component of rail movements in Kansas by tonnage, comprising some 383 million tons yearly in 2006. However, the forecast growth in train traffic is expected to be driven by intermodal shipments (which are forecast to grow at about 3 percent per year) and agricultural goods (which are forecast to grow at about 2.1 percent per year). Though coal shipments are expected to grow at a steady 1 percent per year, much of this growth will be along the BNSF line south of Kansas City.

The State's shortlines do not handle as much traffic as the Class I mainlines, but will nonetheless see significant growth in traffic in the coming years. Much of this growth will be driven by the expansion of traditional carload traffic such as aggregates and grains, especially on the State's shortline and regional railroads.

²⁶An expanded discussion of the SRSIF is included in the Public Policy Profile, another technical document produced as part of the Kansas Statewide Freight Study.

Figure 8.2 Total Annual Rail Car Volume - All Commodities
2006 and 2030

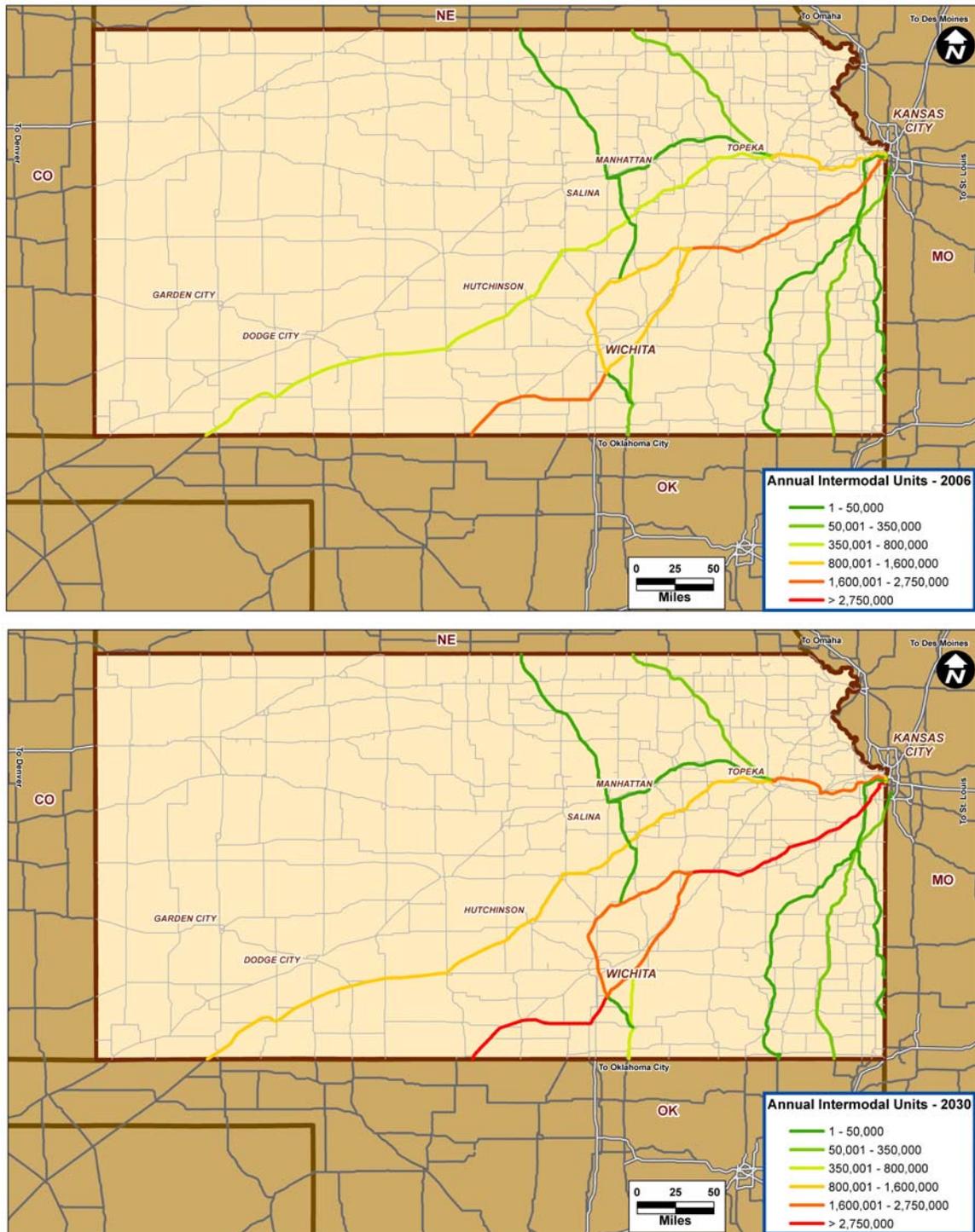


■ 8.3 Intermodal Traffic

Figure 8.3 shows current and forecast intermodal rail traffic on the Kansas rail network. Intermodal traffic refers to movements that consist of both truck and rail segments, i.e., container-on-flatcar (COFC) and trailer-on-flatcar (TOFC) moves. The long-haul part of the trip is made by rail, with a shorter truck drayage movement at one or both ends. This traffic is almost exclusively focused on the Class I national railroads, as it is their primary revenue generator. Traffic on the BNSF Transcon, which carries most of the intermodal traffic to and through the State, is expected to grow the most – from about 2.5 million cars annually on some segments in 2006 to 5 million in 2030. Intermodal movements on the UP corridor that runs south from Kansas City to the Oklahoma line will increase over 50 percent to an annual total of nearly 200,000 cars. The BNSF corridor running south from the Transcon past Wichita to the Oklahoma State line will experience the greatest growth in percentage terms, with intermodal traffic expanding by 180 percent to about 472,000 cars annually.

The BNSF Gardner Intermodal Terminal being built southwest of Kansas City will be able to absorb some of this growth. This facility, when opened, will initially handle about 400,000 20-foot equivalent units (TEU) annually. The terminal can be expanded to handle up to 1 million TEU annually. However, any growth above that level might strain the capacity of the regional rail network and could create significant and recurring delays. Since intermodal shipments also involve a truck movement at one or both ends of the trip, so growth in intermodal rail traffic will likely lead to increasing truck volumes in the Kansas City region.

Figure 8.3 Annual Intermodal Rail Car Volume
2006 and 2030

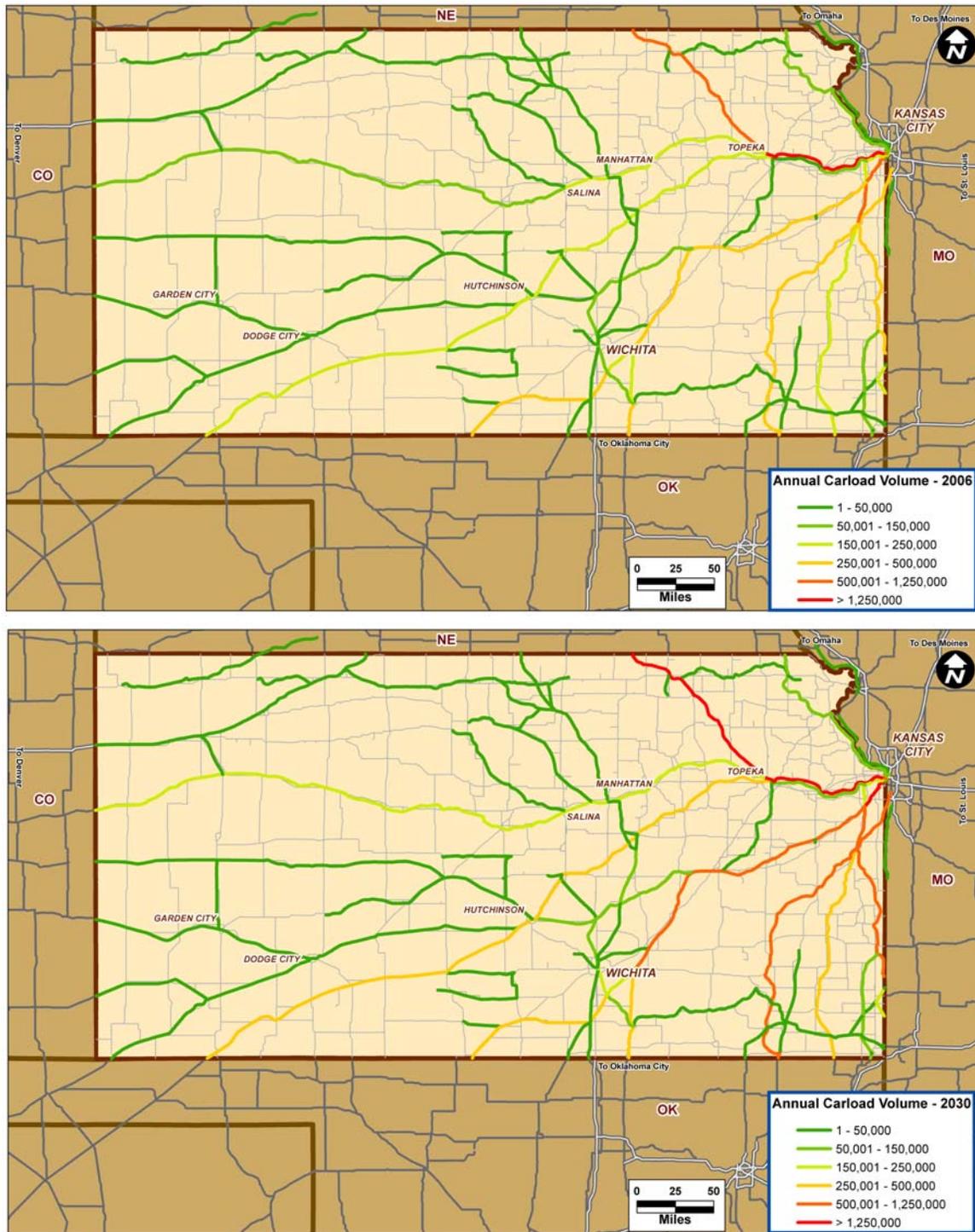


■ 8.4 Carload Traffic

Figure 8.4 shows current (2006) and forecast (2030) total annual carload volumes on the Kansas rail network. Carload traffic includes all rail movements other than intermodal shipments. Included in this category are rail shipments of agricultural products, coal, scrap metal, petroleum products, and anything else not transported via the TOFC or COFC modes. This map shows some of the traffic growth that will occur on major rail facilities like the BNSF Transcon, but it also reveals growth on Kansas' shortline and regional rail networks. Although many of the smaller corridors on the map are owned by the Class I railroads, shortline railroads like the Kyle Railroad System and the Kansas and Oklahoma Railway frequently interline with the national railroads on these tracks. These shortlines therefore connect their customers (particularly agricultural shippers in rural areas) with the transcontinental rail freight network.

Shortline and regional railroads are much more dependent upon carload traffic for most of their revenues than the Class I railroads, which have largely concentrated on intermodal movements during the last few decades. One consequence of the Class I railroad's continued focus on intermodal freight is that traditional carload shipments frequently get outbid for limited rail capacity by intermodal shippers. This makes it hard for shippers (including agricultural producers, smaller industries, and those located in rural areas) that rely on a shortline to obtain good rates and service quality, increasing the likelihood that they will shift their freight to trucks.

Figure 8.4 Annual Carload Volume
2006 and 2030



The next two sections focus on two specific carload commodities: grain and coal. Grains are a critical agricultural product in many parts of Kansas, with inbound movements carrying cattle feed to the cattle producing parts of the state, and outbound movements carrying grain or grain products (like flour) to markets in neighboring states and abroad. Coal is by far the largest commodity moving in Kansas (by weight), but most of it is simply moving through the State.

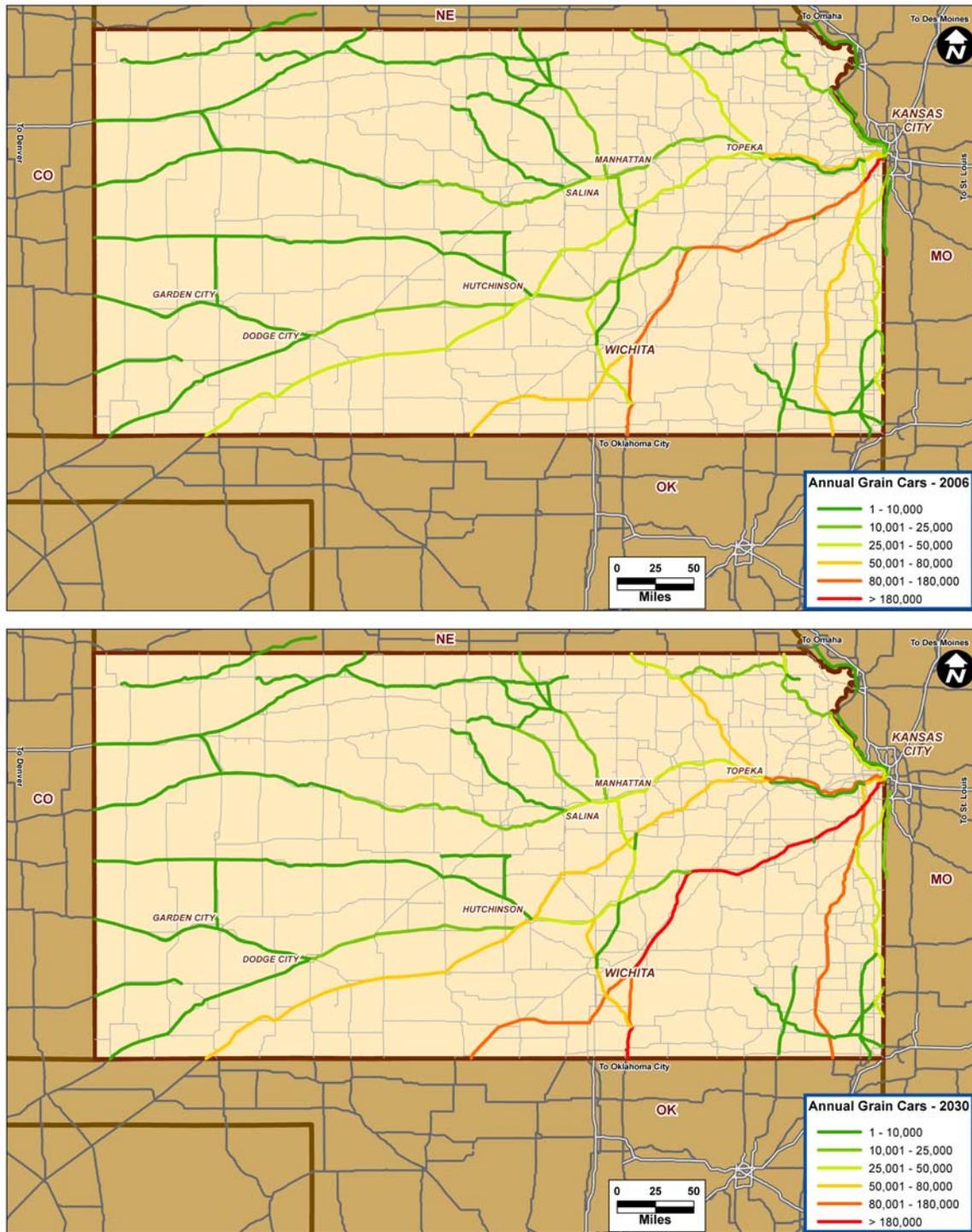
■ 8.5 Grain

Figure 8.5 presents the current (2006) and forecast (2030) annual grain car movements on the Kansas rail network. Not surprisingly, there will be rapid growth in this commodity in and around Wichita, which is a major transshipment point for grain destined for export through Gulf Coast ports. Wichita also is an origination point for flour milled from Kansas wheat, most of which is produced in central Kansas (KDOT Districts 2 and 5).

The growth along the UP Tucumcari and BNSF Transcon lines will likely be driven by increasing shipments of corn. Southwestern Kansas is the leading producer of corn in the State. Corn from that region is used for several purposes, including animal feed, food manufacturing, and ethanol production. Parts of the BNSF and UP rail networks in Kansas are expected to carry more than 150,000 grain carloads annually by 2030. Growth in grain shipments also will affect other rail corridors in Kansas, including UP's line connecting northwest Kansas (another large corn-producing area) to Kansas City and other UP lines that run north to the Nebraska border and south to the Oklahoma line.

Grain producers in rural areas of Kansas are especially sensitive to conditions on the State's shortline and regional rail network. Many of these shippers rely on shortline railroads to gain access to the national rail network. A number of factors could make it more difficult for Kansas farms to ship by rail in the future. These include deteriorating tracks (shortlines often lack the necessary capital to make needed upgrades to their facilities) and insufficient weight capacity (many parts of Kansas' shortline rail network are not capable of handling 286,000 pound railcars, which are the Class I industry standard). These problems can be exacerbated by the closure and/or consolidation of grain elevators, and the associated closure of spurs and sidings. This forces farmers to drive farther to get crops to market, and in some cases causes a mode shift from rail to truck, which may accelerate pavement and bridge deterioration on rural highways.

Figure 8.5 Annual Grain Car Volume
2006 and 2030



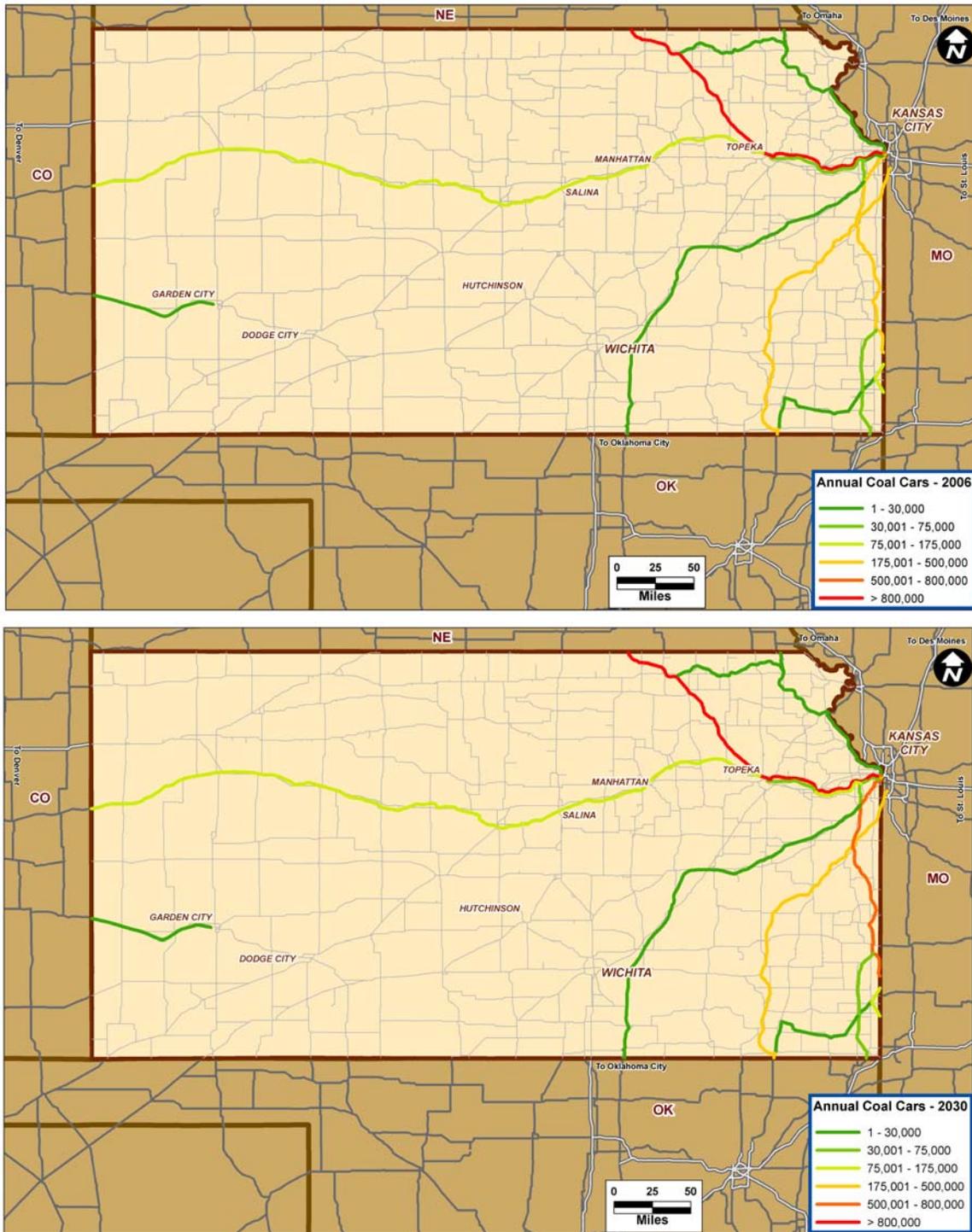
■ 8.6 Coal

As mentioned previously, coal is the top commodity in Kansas by weight, making up 48 percent of total freight tonnage in 2006, or 383 million tons. Most of this coal moves by rail. Figure 8.6 shows current (2006) and projected (2030) coal movements by carload. The Union Pacific corridor that enters Kansas from Nebraska and runs through Topeka and Kansas City connects Wyoming's Powder River Basin (a major coal mining region) to markets in the Eastern United States. It therefore carries the most coal of any rail corridor in Kansas (up to 1.2 million carloads per year in 2006). However, coal traffic is not expected to grow much in this corridor, due to slow growth in demand and higher mining and transportation costs. The BNSF corridor south of Kansas City is expected to see an increase of over 130,000 coal cars annually as more coal is shipped to markets in Texas and the southeastern U.S., where it will be used mostly to generate electricity for rapidly growing populations in those regions.

Coal trains already experience delays moving through the Kansas City metropolitan area, largely due to physical chokepoints like the Missouri River Bridge. These delays can easily ripple throughout the entire rail network, leading to losses of efficiency and speed well outside of the region. Expected growth in coal shipments (to about 485 million tons in 2030) will exacerbate these existing issues.

Nearly 90 percent of the coal moving on Kansas rail corridors is through traffic. This freight is therefore not directly related to economic activities within the State, but it still takes up space on the statewide rail network. Furthermore, the Class I railroads have been steadily increasing the length of their trains in recent years, which enables them to haul more freight without necessarily running more trains. Coal trains from the Mountain West, where low population density and long distances between crossings allows trains up to 10,000-feet long, can have numerous impacts on Kansas. These include longer delays at grade crossings (and associated increases in emissions) and access issues for emergency vehicles.

Figure 8.6 Annual Coal Car Volume
2006 and 2030



Appendix A

Appendix A

Table A.1 STCC Codes and Commodities

1	Agriculture Production and Livestock <i>Cotton, grain, oil kernels/nuts/seeds, field seeds, miscellaneous field crops, fresh fruits and vegetables, livestock, dairy farm products, animal fibers, live poultry, poultry eggs, horticultural specialties, animal specialties, farm products not elsewhere classified</i>
8	Forest Products <i>Crude barks or gums, miscellaneous forest products</i>
9	Fresh Fish or Marine Products <i>Fresh fish or whale products, marine products, fish hatcheries</i>
10	Metallic Ores <i>Iron ores, copper ores, lead ores, zinc ores, lead and zinc ores combined, gold ore, silver ore, bauxite or other aluminum ores, manganese ores, tungsten ores, chromium ores, miscellaneous metal ores</i>
11	Coal <i>Anthracite, bituminous coal, lignite</i>
13	Crude Petroleum or Natural Gas <i>Crude petroleum, natural gas, natural gasoline</i>
14	Nonmetallic Minerals <i>Dimension stone (quarry), broken stone or riprap, gravel or sand, clay ceramic or refracted minerals, chemical or fertilizer mineral crude, miscellaneous nonmetallic minerals not elsewhere classified, water</i>
19	Ordnance or Accessories <i>Guns/howitzers/mortars, guided missiles or space vehicles, ammunition or related parts not elsewhere classified, tracked combat vehicles or parts, military fire control equipment, small arms, small arms ammunition, miscellaneous ordnance or accessories</i>
20	Food or Kindred Products <i>Fresh or chilled meat, fresh frozen meat, meat products, inedible animal by-products, fresh or frozen dressed poultry, processed poultry or eggs, creamery butter, condensed/evaporated/dry milk, ice cream/frozen desserts, cheese or special dairy products, processed milk, canned or cured sea foods, canned specialties, canned fruits/vegetables, dehydrated or dried fruits/vegetables, pickled fruits/vegetables, processed fish products, frozen fruit/vegetables/juice, frozen specialties, canned food, flour, prepared or canned feed, milled rice/flour/meal, cereal preparations, wet corn milling or milo, dog/cat/pet food, bread or other bakery products, biscuits/crackers/pretzels, sugar/sugar mill products or by-products, candy/confectionery, malt liquors, malt, wine/brandy/brandy spirit, distilled/blended liquors, soft drinks/mineral water, miscellaneous flavoring extracts, cottonseed/soybean/nut/vegetable oils or by-products, marine fats or oils, coffee, margarine/shortening, ice, macaroni/spaghetti, miscellaneous food preparations not elsewhere classified</i>
21	Tobacco Products <i>Cigarettes, cigars, chewing or smoking tobacco, stemmed or re-dried tobacco</i>

Table A.1 STCC Codes and Commodities (continued)

22 Textile Mill Products	<i>Cotton broad-woven fabrics, man-made or glass woven fiber, silk-woven fabrics, wool broad-woven fabrics, narrow fabrics, knit fabrics, carpets/mats/rugs, yarn, thread, felt goods, lace goods, padding/upholstery fill, processed textile waste, coated or imprinted fabric, industrial cord or fabrics, wool/mohair, cordage/twine, textile goods not elsewhere classified</i>
23 Apparel or Related Products	<i>Men's/boys/women's/children's clothing, millinery, caps or hats or hat bodies, fur goods, gloves/mittens/linings, robes or dressing gowns, raincoats or other rain wear, leather clothing, belts, apparel not elsewhere classified, curtains or draperies, textile house furnishings, textile bags, canvas products, pleated textile products, apparel findings, miscellaneous fabricated textile products</i>
24 Lumber or Wood Products	<i>Primary forest materials, lumber or dimension stock, miscellaneous sawmill or planing mill, millwork or cabinet-work, plywood or veneer, prefabricated wood buildings, wood kitchen cabinets, structural wood products, wood containers or box shooks, treated wood products, rattan or bamboo ware, lasts or related products, cork products, hand tool handles, scaffolding equipment or ladders, wooden ware or flatware, wood products not elsewhere classified, miscellaneous wood products</i>
25 Furniture or Fixtures	<i>Benches/chairs/stools, tables or desks, sofas/couches, buffets/china closets, bedsprings/mattresses, beds/dressers/chests, cabinets or cases, children's furniture, household or office furniture, public building or related furniture, wood or metal lockers/partitions, venetian blinds or shades, furniture or fixtures not elsewhere classified</i>
26 Pulp, Paper, or Allied Products	<i>Pulp or pulp mill products, paper, fiber/paper/pulp board, envelopes, paper bags, wallpaper, die-cut paper or pulp board products, pressed or molded pulp goods, sanitary paper products, miscellaneous converted paper products, paper containers or boxes, sanitary food containers, fiber cans/drums/tubes, paper or building board</i>
27 Printed Matter	<i>Newspapers, periodicals, books, miscellaneous printed matter, manifold business forms, greeting cards/seals, loose leaf binder/blank book, service industries for print trades</i>
28 Chemicals or Allied Products	<i>Industrial/inorganic/organic chemicals, potassium or sodium compound, industrial gases, crude products of coal/gas/petroleum, cyclic intermediates or dyes, inorganic pigments, plastic matter/synthetic fibers, drugs, soap, cleaning preparations, surface active agents, cosmetics, paints/lacquers, gum or wood chemicals, fertilizers, miscellaneous agricultural chemicals, adhesives, explosives, printing ink, chemical preparations not elsewhere classified</i>
29 Petroleum or Coal Products	<i>Petroleum refining products, coal or petroleum liquefied gases, asphalt paving blocks or mix, asphalt coatings or felt, miscellaneous coal or petroleum products</i>
30 Rubber or Miscellaneous Plastics	<i>Tires/inner tubes, rubber/plastic footwear, reclaimed rubber, rubber or plastic hose or belting, miscellaneous fabricated products, miscellaneous plastic products</i>
31 Leather or Leather Products	<i>Leather, industrial leather belting, boot or shoe cut stock, leather footwear/slippers/gloves/mittens/luggage/handbags, leather goods not elsewhere classified</i>
32 Clay, Concrete, Glass, or Stone	<i>Flat glass, laminated safety glass, glass containers, miscellaneous blown or pressed glassware, Portland cement, clay brick or tile, ceramic floor or wall tile, refractories, miscellaneous structural clay products, vitreous china, porcelain, pottery, concrete, lime, gypsum, cut stone, abrasive products, asbestos products, gaskets/packing, processed nonmetal minerals, mineral wool, miscellaneous nonmetallic minerals</i>

Table A.1 STCC Codes and Commodities (continued)

33	Primary Metal Products <i>Blast furnace/coke, primary iron or steel products, electrometallurgical products, steel wire/nails/spikes, cold finishing of steel shapes, iron or steel castings, copper/lead/zinc/other nonferrous smelter products, copper/aluminum/other nonferrous basic shapes, nonferrous wire, aluminum/copper/other nonferrous castings, iron/steel/nonferrous metal forgings, primary metal products not elsewhere classified</i>
34	Fabricated Metal Products <i>Metal cans, cutlery, edge or hand tools, hand saws or saw blades, builders or cabinet hardware, miscellaneous hardware, metal sanitary ware, plumbing fixtures, non-electrical heating equipment, structural metal products, metal doors/sash, fabricated plate products, sheet metal products, architectural metal work, miscellaneous metal work, bolts/nuts/screws, metal stampings, miscellaneous fabricated wire products, shipping containers, metal safes or vaults, steel springs, valves or pipe fittings, fabricated metal products not elsewhere classified</i>
35	Machinery <i>Steam engines/turbines, internal combustion engines, farm machinery, lawn or garden equipment, construction machinery, mining machinery, oil field machinery, elevators or escalators, conveyors or parts, hoists/cranes, industrial trucks, machine tools, dies/tools/jigs, machine tool accessories, metalworking machinery, food products machinery, textile machinery, woodworking machinery, paper industries machinery, printing trades machinery, special industry machinery, pumps, bearings, ventilating equipment, mechanical power transmission equipment, industrial furnaces, miscellaneous general industrial, typewriters, electronic data processing equipment, accounting or calculating equipment, scales or balances, office machines, merchandising machines, commercial laundry equipment, refrigeration machinery, service industry machinery, carburetors/pistons, miscellaneous machinery or parts</i>
36	Electrical Equipment <i>Measuring instruments, transformers, switchboards, motors or generators, industrial controls or parts, welding apparatus, carbon products for electrical uses, miscellaneous electrical industrial equipment, household cooking equipment/refrigerators/laundry equipment, electric house wares or fans, vacuum cleaners, sewing machines, household appliances, lamps, lighting fixtures, wiring equipment, non-current wiring devices, radio or TV receiving sets, phonograph records, telephone or telegraph equipment, radio or TV transmitting equipment, electronic tubes, solid state semiconductors, miscellaneous electronic components, storage batteries or plates, primary batteries, X-ray equipment, electric equipment for internal combustion engines, electrical equipment not elsewhere classified</i>
37	Transportation Equipment <i>Motor vehicles, motor car/truck/bus bodies, motor vehicle parts or accessories, truck trailers, aircraft, aircraft or missile engines, aircraft propellers or parts, miscellaneous aircraft parts, ships or boats, locomotives, railroad cars, motorcycles or bicycles, missile or space vehicle parts, trailer coaches, transportation equipment not elsewhere classified</i>
38	Instruments, Photo Equipment, and Optical Equipment <i>Scientific equipment, mechanical measuring or control equipment, automatic temperature controls, optical instruments, medical instruments, orthopedic or prosthetic supplies, dental equipment or supplies, ophthalmic or opticians goods, photographic equipment or supplies, watches/clocks</i>
39	Miscellaneous Manufacturing Products <i>Jewelry/precious metals, silverware or plated ware, musical instruments, games or toys, sporting goods, pens, pencils/crayons/artists materials, marking devices, carbon paper or inked ribbons, costume jewelry, feathers/plumes, buttons, apparel fasteners, brooms/brushes, linoleum or other coverings, signs or advertising displays, morticians goods, matches, dressed or dyed furs, manufactured products not elsewhere classified</i>
40	Waste or Scrap Materials <i>Ashes, metal scrap, textile scrap, wood scrap, paper waste, chemical or petroleum waste, rubber or plastic scrap, stone/clay/glass scrap, leather scrap, miscellaneous waste or scrap</i>
41	Miscellaneous Freight Shipments <i>Special commodities, miscellaneous freight shipments</i>

Table A.1 STCC Codes and Commodities (continued)

42	Shipping Containers <i>Shipping containers, semi-trailers returned empty, empty equipment (reverse route)</i>
43	Mail or Contract Traffic <i>Mail and express traffic, other contract traffic</i>
44	Freight Forwarder Traffic <i>Freight Forwarder Traffic</i>
45	Shipper Association Traffic <i>Shipper Association Traffic</i>
46	Miscellaneous Mixed Shipments <i>Fak shipments, multi-STCC mixed shipments</i>
47	Small Packaged Freight Shipments <i>Small packaged freight shipments</i>
48	Waste Hazardous Materials <i>Waste compressed gases, waste flammable/combustible liquids, waste flammable/combustible solids, waste oxidizing materials, waste organic poison, waste poisonous materials, waste etiologic agents, waste radioactive materials, waste corrosive materials, waste other regulated materials, waste miscellaneous hazardous materials, other regulated waste stream</i>
49	Hazardous Materials <i>Ammunition, explosives, non-flammable compressed gases, flammable/combustible liquids, flammable/combustible solids, oxidizing materials, organic peroxides, organic/inorganic poisons, etiologic agents, radioactive materials, corrosive materials, other regulated materials, environmentally hazardous materials</i>
50	Secondary Traffic <i>Rail intermodal drayage to/from ramp, air freight drayage to/from airport</i>

Table A.2 TRANSEARCH 2006 Economic Areas in the Kansas Data Set

Mississippi part of Baton Rouge, Louisiana

Wilkinson County

Biloxi, Mississippi

George, Harrison, Stone, Hancock, and Jackson Counties

Cedar Rapids, Iowa

Benton, Lynn, Jones, Iowa, Johnson, and Washington Counties

Arkansas and Oklahoma parts of Dallas, Texas

Arkansas: Polk, Sevier, Little River, and Miller Counties

Oklahoma: Pushmataha, McCurtain, Bryan, and Choctaw Counties

Davenport, Iowa

Clinton, Cedar, Scott, Muscatine, and Louisa Counties

Denver, Colorado

Colorado: Routt, Moffat, Jackson, Logan, Weld, Larimer, Phillips, Morgan, Grand, Yuma, Washington, Boulder, Rio Blanco, Garfield, Gilpin, Eagle, Summit, Clear Creek, Adams, Denver, Jefferson, Arapahoe, Kit Carson, Park, Elbert, Lincoln, Douglas, Lake, Mesa, Pitkin, Gunnison, Delta, El Paso, Teller, Chaffee, Fremont, Montrose, Ouray, Custer, San Miguel, and Hinsdale Counties

Nebraska: Dundy County

Des Moines, Iowa

Dickinson, Emmet, Kossuth, Mitchell, Worth, Winnebago, Cerro Gordo, Hancock, Clay, Palo Alto, Chickasaw, Floyd, Fayette, Buena Vista, Pocahontas, Wright, Franklin, Humboldt, Butler, Bremer, Webster, Buchanan, Black Hawk, Sac, Calhoun, Hamilton, Hardin, Grundy, Tama, Crawford, Carroll, Marshall, Boone, Greene, Story, Dallas, Polk, Guthrie, Jasper, Poweshiek, Warren, Madison, Keokuk, Mahaska, Marion, Adair, Jefferson, Henry, Wapello, Clarke, Monroe, Lucas, Union, Des Moines, Van Buren, Davis, Ringgold, Decatur, Appanoose, Wayne, and Lee Counties

Colorado part of Farmington, New Mexico

San Juan, Dolores, La Plata, Montezuma, and Archuleta Counties

Fayetteville, Arkansas

Arkansas: Benton, Madison, and Washington Counties

Oklahoma: Delaware and Adair Counties

Arkansas and Mississippi parts of Memphis, Tennessee

Arkansas: Cross, Crittenden, St. Francis, Lee, and Phillips Counties

Mississippi: DeSoto, Marshall, Benton, Tunica, Tate, Lafayette, Panola, Quitman, and Yalobusha Counties

Iowa part of Minneapolis, Minnesota

Osceola County

Mississippi part of New Orleans, Louisiana

Pearl River County

North Platte, Nebraska

Colorado: Sedgwick County

Nebraska: Hooker, Thomas, Blaine, Garden, McPherson, Arthur, Logan, Keith, Lincoln, Deuel, Perkins, and Chase Counties

Oklahoma part of Wichita, Kansas

Beaver, Cimarron, and Texas Counties

Oklahoma City, Oklahoma

Woods, Grant, Alfalfa, Garfield, Major, Blaine, Kingfisher, Logan, Lincoln, Canadian, Oklahoma, Okfuskee, Caddo, Seminole, Pottawatomie, Grady, Cleveland, McClain, Hughes, Pontotoc, Comanche, Garvin, Coal, Stephens, Atoka, Murray, Cotton, Carter, Johnston, Jefferson, Marshall, and Love Counties

Omaha, Nebraska

Iowa: Harrison, Shelby, Audubon, Pottawatomie, Cass, Mills, Montgomery, Adams, Fremont, Page, and Taylor Counties

Nebraska: Pierce, Antelope, Wayne, Madison, Stanton, Cuming, Burt, Boone, Colfax, Platte, Dodge, Washington, Nance, Butler, Saunders, Polk, Douglas, Sarpy, and Cass Counties

Pueblo, Colorado

Cheyenne, Kiowa, Crowley, Pueblo, Saguache, Prowers, Bent, Otero, Huerfano, Mineral, Rio Grande, Las Animas, Alamosa, Costilla, Baca, and Conejos

Nebraska part of Rapid City, South Dakota

Sheridan, Cherry, and Grant Counties

Iowa part of Rochester, Minnesota

Howard and Winneshiek Counties

Scottsbluff, Nebraska

Sioux, Dawes, Box Butte, Morrill, Scotts Bluff, Banner, Cheyenne, and Kimball Counties

Table A.2 TRANSEARCH 2006 Economic Areas in the Kansas Data Set
(continued)

Fort Smith, Arkansas

Arkansas: Franklin, Crawford, Sebastian, Logan, and Scott Counties

Oklahoma: Sequoyah, Haskell, Le Flore, and Latimer Counties

Grand Island, Nebraska

Keya Paha, Boyd, Holt, Brown, Rock, Wheeler, Garfield, Loup, Custer, Greeley, Valley, Merrick, Sherman, Howard, Hamilton, Dawson, Buffalo, Hall, Frontier, Hayes, Gosper, Adams, Clay, Kearney, Phelps, Red Willow, Furnas, Harlan, Hitchcock, Nuckolls, Franklin, and Webster Counties

Greenville, Mississippi

Coahoma, Tallahatchie, Bolivar, Sunflower, Leflore, Carroll, Washington, Humphreys, Sharkey, and Issaquena Counties

Jackson, Mississippi

Holmes, Attala, Yazoo, Neshoba, Leake, Kemper, Madison, Scott, Warren, Rankin, Lauderdale, Newton, Hinds, Clarke, Claiborne, Jasper, Smith, Copiah, Simpson, Wayne, Jefferson, Jones, Covington, Jefferson Davis, Lawrence, Adams, Lincoln, Franklin, Greene, Forrest, Lamar, Marion, Perry, Walthall, Pike, and Amite Counties

Jonesboro, Arkansas

Randolph, Clay, Greene, Lawrence, Mississippi, Craighead, and Poinsett Counties

Oklahoma part of Joplin, Missouri

Ottawa County

Lincoln, Nebraska

York, Seward, Lancaster, Otoe, Fillmore, Saline, Nemaha, Gage, Johnson, Thayer, Jefferson, Pawnee, and Richardson Counties

Iowa part of Madison, Wisconsin

Allamakee, Clayton, Dubuque, Delaware, and Jackson Counties

Arkansas part of Shreveport, Louisiana

Lafayette and Columbia Counties

Sioux City, Iowa

Iowa: Sioux, O'Brien, Cherokee, Plymouth, Woodbury, Ida, and Monona Counties

Nebraska: Dixon, Dakota, and Thurston Counties

Iowa and Nebraska parts of Sioux Falls, South Dakota

Iowa: Lyon County

Nebraska: Knox and Cedar Counties

Tulsa, Oklahoma

Craig, Nowata, Osage, Washington, Kay, Noble, Rogers, Pawnee, Mayes, Tulsa, Payne, Creek, Wagoner, Cherokee, Okmulgee, Muskogee, McIntosh, and Pittsburg Counties

Tupelo, Mississippi

Alcorn, Tippah, Tishomingo, Prentiss, Union, Lee, Itawamba, Pontotoc, Calhoun, Monroe, Chickasaw, Grenada, Clay, Lowndes, Webster, Montgomery, Oktibbeha, Choctaw, Noxubee, and Winston Counties

Western Oklahoma

Harper, Woodward, Ellis, Dewey, Roger Mills, Custer, Beckham, Washita, Kiowa, Greer, Harmon, and Jackson Counties

Little Rock, Arkansas

Fulton, Carroll, Baxter, Marion, Boone, Sharp, Izard, Stone, Newton, Searcy, Independence, Jackson, Van Buren, Johnson, Pope, Cleburne, White, Conway, Woodruff, Faulkner, Yell, Perry, Prairie, Lonoke, Pulaski, Monroe, Saline, Garland, Montgomery, Arkansas, Hot Spring, Grant, Jefferson, Howard, Pike, Clark, Lincoln, Dallas, Desha, Cleveland, Hempstead, Nevada, Ouachita, Calhoun, Drew, Bradley, Chicot, Ashley, and Union Counties