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## Study of the Regulatory Issues Affecting Truck Freight Movement in the Midwest

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# Study of the Regulatory Issues Affecting Truck Freight Movement in the Midwest



Center for Transportation  
Research and Education

**Final Report**  
**December 2014**

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# **STUDY OF THE REGULATORY ISSUES AFFECTING TRUCK FREIGHT MOVEMENT IN THE MIDWEST**

**Final Report  
December 2014**

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## EXECUTIVE SUMMARY

This project investigated regulatory issues that may affect or limit freight movement in Iowa and other Midwest states: Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin. Current state regulations for the following are reviewed and summarized:

- Vehicle dimensions
- Vehicle weights
- Speed limits
- Weight compliance enforcement
- Fees and taxes
- Driver qualifications
- Medical certification
- Hours of service
- Oversize-overweight permits

The interviews of trucking companies revealed that there were no serious concerns noted for Iowa regarding driver qualifications or medical certification, driver shortage, fees and taxes, enforcement, or hours of service.

Overall, discussions with private sector interests and state regulatory agencies noted that vehicle size and weight (including oversize-overweight permits) were of primary concern. Follow-up interviews with stakeholders in states throughout the central third of the US showed interest and strong opinions (which vary greatly) concerning changing limits.

One of the most important conclusions from the stakeholder interviews and survey was the need and interest in a peer-to-peer event focused on identifying regulatory trends and issues, as well as the potential for Iowa and other states to find and prioritize possible regulatory changes to improve freight movement in Iowa and other Midwest states.

From this study, we identified the following potential efficiencies that may improve freight movements in the Midwest:

- Provide more streamlined regulatory services along the I-80 and I-35 freight corridors (e.g., oversize-overweight permit portal at [www.gotpermits.com](http://www.gotpermits.com))
- Conduct cost-benefit analysis on allowing longer combination vehicles (LCVs) in Iowa, considering the impact of large trucks on the infrastructure
- Promote advanced vehicle technologies that may mitigate truck driver fatigue and improve safety

In future research, it is important to study the relationship between freight corridor performance and the existing regulations and to quantify the impacts of freight regulations on the safe and efficient movement of freight via trucks.



## 1. INTRODUCTION

Freight movement by truck across Iowa and throughout the Midwest is a critical issue that will impact commerce in the short-term future (5 to 10 years) as well as the long-term future (20 to 50 years). Truck movements across the Midwest states are projected to increase, and this increase points to a need to remove potentially unnecessary barriers and obstacles and establish a more efficient and productive system for the movement of freight.

The Moving Ahead for Progress in the 21st Century Act, or MAP-21 (P.L. 112-141), was signed into law July 6, 2012. Funding surface transportation programs, it was the first long-term highway authorization enacted since 2005 (FHWA 2013a).

A number of sections were included in MAP-21 related to improving the national freight network performance and supporting freight-related surface transportation project investments, including the following:

- §1115. National freight policy
- §1116. Prioritization of projects to improve freight movement
- §1117. State freight advisory committees
- §1118. State freight plans
- §1201. Metropolitan transportation planning that continues the ability to involve freight shippers and providers of freight transportation services
- §1202. Statewide and nonmetropolitan transportation planning that continues the ability to involve freight shippers and providers of freight transportation services
- §1203. National goals and performance management measures that include assessment of freight movement on the Interstate System
- §1401. Jason's law that makes construction of commercial motor vehicle parking facilities eligible for Federal funding
- §1510. Idle reduction technology that raises the truck weight exemption for idle reduction equipment from 400 to 550 pounds
- §1511. Special permits during periods of national emergency
- §32801. Comprehensive truck size and weight limits study
- §32802. Compilation of existing State truck size and weight limit laws

In particular, the U.S. Department of Transportation (USDOT) is required to conduct a comprehensive study on truck size and weight limits (§32801) and to compile state limitations on the size and weight of trucks that may travel on the National Highway System (§32802).

This particular project investigated various regulatory issues that may affect or limit freight movement in Iowa and other Midwest states: Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin. Current state regulations for the following were reviewed and are summarized in this report:

- Vehicle dimensions
- Vehicle weights
- Speed limits
- Weight compliance enforcement
- Fees and taxes
- Driver qualifications
- Medical certification
- Hours of service
- Oversize and overweight permits

Based on the literature review, the following inconsistencies in the regulations of the states were identified:

- Longer combination vehicles (LCVs) are only allowed on state roads in Nebraska and South Dakota and by the turnpike authority in Kansas.
- Although all states in the study area are member jurisdictions of the International Fuel Tax Agreement (IFTA), each state has defined its own fees for this program and specified different fuel tax requirements.
- Tolls (which are of concern to several shippers that were interviewed) are charged on the Illinois Tollway and the Kansas Turnpike.
- Weight enforcement practices, levels, and severity of penalties (for exceeding weight limits) are different between states.

The researchers also conducted interviews of trucking company and trucking brokerage representatives to gather opinions on trucking regulations. Based on the results from the private sector interviews, a survey for state DOTs was designed and sent to neighboring states, as well as many other states in the central portion of the US. The focus of the survey was whether the various regulations in Iowa have a negative impact on trucking freight flows.

Previous studies (e.g., TRB 1990, TRB 2002) concluded that allowing vehicles with greater cargo volume capacity and/or greater cargo weight capacity could reduce fuel consumption in freight transportation and also reduce total shipper costs. On the other hand, the arguments against increasing the limits include the potential of degrading highway safety, diversion of freight from rail to truck, and the cost of upgrading infrastructure to accommodate larger trucks (TRB 2014).

This study looked to find common ground among all of the issues and the multiple stakeholders from the states surrounding Iowa.

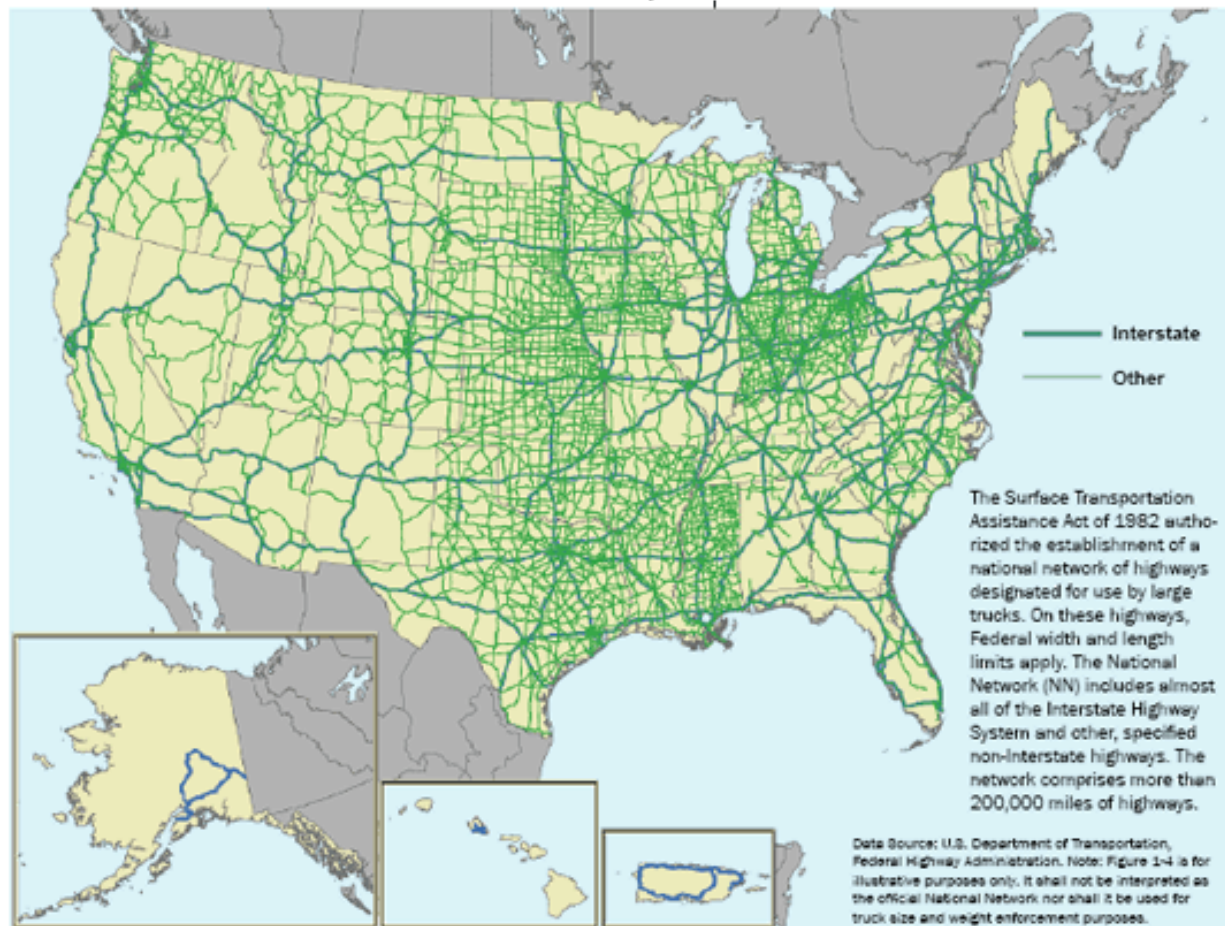


## 2. REVIEW OF RELEVANT REGULATIONS AND POLICIES

This chapter summarizes and provides a brief compilation of the regulations and policies relevant to freight movement in Iowa and its neighboring Midwest states. By necessity, much of the information contained in this section was excerpted directly from the source publications (with minor edits and minimal paraphrasing). The sources of the information for each state reviewed are listed in the References.

### 2.1 Vehicle Dimensions

The Surface Transportation Assistance Act (STAA) of 1982 authorized the establishment of a national network of highways designated for use by large trucks. On these highways, Federal width and length limits apply. The National Network (see Figure 1) includes almost all of the Interstate Highway System as well as other, specified non-Interstate highways. The network comprises more than 200,000 miles of highways.



Data source: U.S. Department of Transportation, Federal Highway Administration

**Figure 1. STAA National Network designated for use by large trucks**

Vehicle dimensions on the STAA National Network are governed by federal regulations. Uniform regulations for size prevent states from enacting more restrictive limits on these highways. The federal minimums for states to allow on these highways are as follows: 102 inches wide, 48-foot trailer, and 28-foot trailer for double trailer combinations. Table 1 lists the dimensional restrictions on the Interstate highways and designated routes as set by each of the eight states.

**Table 1. Dimensional restrictions on Interstate highways and other designated routes on the STAA National Network**

<b>State</b>	<b>Single Vehicle</b>	<b>Tractor semi trailer</b>	<b>Tractor double trailer</b>	<b>Semi Trailer</b>	<b>Trailer in double combo</b>	<b>Width</b>	<b>Height</b>
Iowa	41 ft	None	None	53 ft	28.5 ft	8.5 ft	13.5 ft
Illinois	42 ft	None	None	53 ft <sup>1</sup>	28.5 ft	8.5 ft	13.5 ft
Kansas	45 ft	None	None	59.5 ft	28.5 ft	8.5 ft	14 ft
Minnesota	45 ft	None	None	53 ft <sup>2</sup>	28.5 ft	8.5 ft	13.5 ft
Missouri	45 ft	None	Two 28 ft trailers <sup>3</sup>	55 ft	28 ft <sup>3</sup>	8.5 ft	14 ft <sup>4</sup>
Nebraska	40 ft	None	65 ft <sup>5</sup>	53 ft	None	8.5 ft	14.5 ft
South Dakota	45 ft	None	81.5 ft <sup>5</sup>	53 ft	45 ft	8.5 ft	14 ft
Wisconsin	45 ft	None	None	53 ft <sup>6</sup>	28.5 ft	8.5 ft	13.5 ft

Sources: Illinois General Assembly n.d., Nebraska Legislature 2014, The American Driver n.d.

<sup>1</sup> Kingpin to center of rear axle cannot exceed 45.5 ft if trailer is longer than 48 ft.

<sup>2</sup> If >48 ft, no more than 43 ft from kingpin to center of rear axle group.

<sup>3</sup> No overall restriction on length. May use two 28.5 ft trailers if the trailers were in actual use on December 1, 1982. These combinations are restricted to 65 ft overall.

<sup>4</sup> Exclusively within commercial zone, 15 ft.

<sup>5</sup> Total length of trailers is limited; no restriction on overall length.

<sup>6</sup> 53 ft trailers only allowed on Interstate and maximum distance from kingpin to center of rearmost axle not to exceed 43 ft.

On state and local highways not in the network, states are entitled to enact more restrictive limits for vehicle dimensions. Table 2 lists the dimensional restrictions on non-designated routes as set by each of the eight states in this region.

**Table 2. Dimensional restrictions on non-designated routes**

State	Single Vehicle	Tractor semi trailer	Tractor double trailer	Semi Trailer	Trailer in double combo	Width	Height
Iowa	41 ft	None	None	53 ft	28.5 ft	8.5 ft	13.5 ft
Illinois	42 ft	65 ft	60 ft	53 ft <sup>1</sup>	28.5 ft	8 ft	13.5 ft
Kansas	45 ft	None	None	59.5 ft	28.5 ft	8.5 ft	14 ft
Minnesota	45 ft	75 ft	Permit only	53 ft <sup>2</sup>	28.5 ft	8.5 ft	13.5 ft
Missouri	45 ft	65 ft	Two 28 ft trailers <sup>3</sup>	53 ft	28 ft <sup>3</sup>	8.5 ft	13.5 ft <sup>4</sup>
Nebraska	40 ft	65 ft	65 ft <sup>5</sup>	53 ft	None	8.5 ft	14.5 ft
South Dakota	45 ft	None	81.5 ft <sup>5</sup>	53 ft	45 ft	8.5 ft	14 ft
Wisconsin	45 ft	75 ft	Permit only	48 ft	28.5 ft	8.5 ft	13.5 ft

Sources: Illinois General Assembly n.d., Nebraska Legislature 2014, The American Driver n.d.

<sup>1</sup> Maximum tractor/semitrailer wheelbase is 55 ft or 65 ft overall length. Kingpin to rearmost axle cannot exceed 42.5 ft if trailer is longer than 48 ft.

<sup>2</sup> 53 ft trailers only allowed on Interstate and maximum distance from kingpin to center of rearmost axle not to exceed 43 ft.

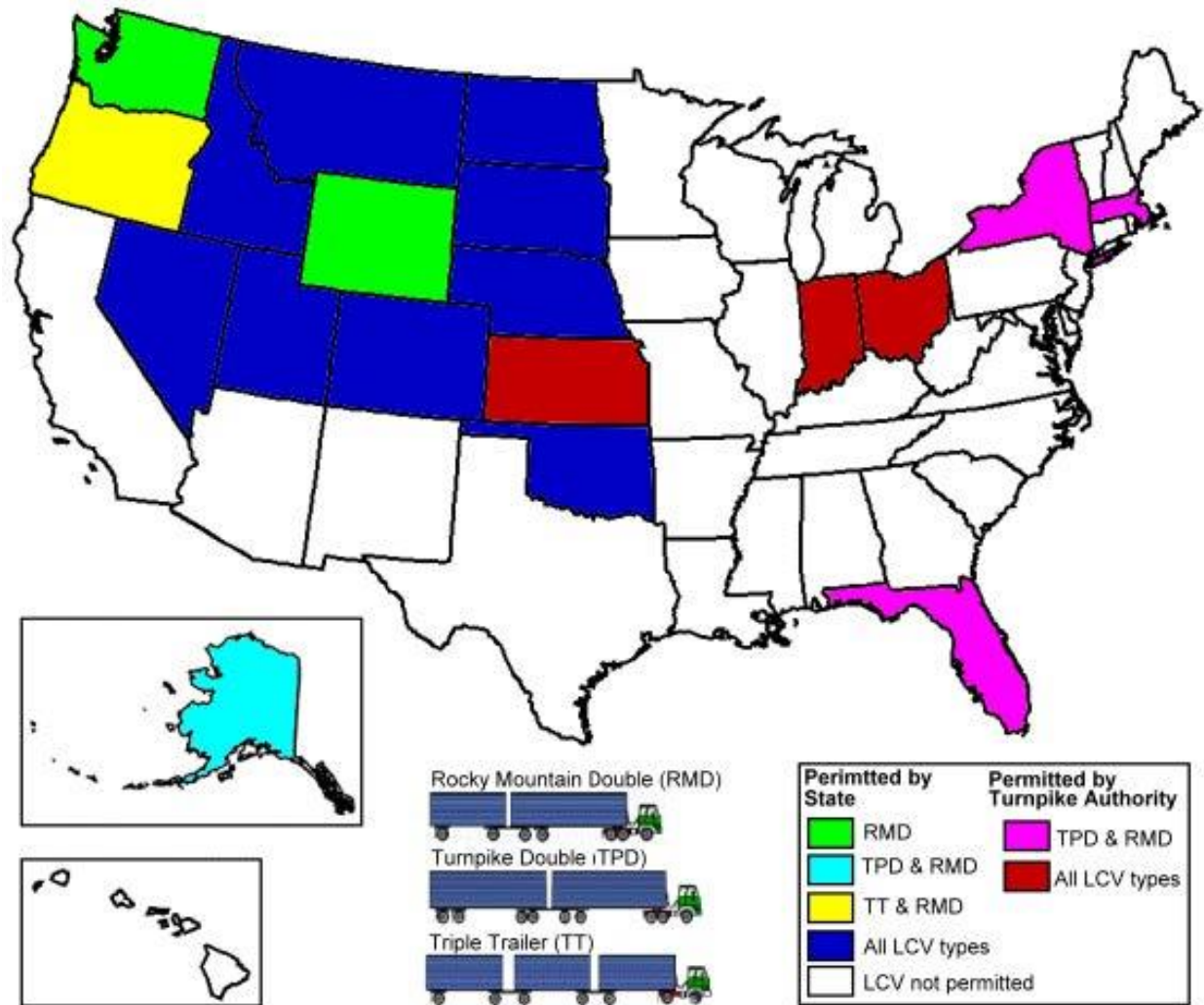
<sup>3</sup> No overall restriction on length. May use two 28.5 ft trailers if the trailers were in actual use on December 1, 1982. These combinations are restricted to 65 ft overall.

<sup>4</sup> If within 10 miles of Interstate or designated highway, 14 ft; 15 ft exclusively in commercial zones.

<sup>5</sup> Total length of trailers is limited; no restriction on overall length.

### *2.1.1 Longer Combination Vehicles*

A longer combination vehicle (LCV) is a vehicle that has a length longer than a 28-foot double trailer combination or one that has three trailers. In the study area, LCVs are allowed on state roads in both Nebraska and South Dakota, and by the turnpike authority in Kansas (see Figure 2). This inconsistency may limit the decisions of companies to operate trucks in a certain region and tolls were one factor that several private trucking companies and brokers noted as an expense that is difficult to recoup. An exception allowing LCVs not shown in Figure 2 is the economic export corridors between Iowa and South Dakota.



Source: U.S. Department of Energy, Fact #411: February 13, 2006 States that Allow Longer Combination Vehicles  
 Notes: Michigan allows double-trailer combinations exceeding 80,000 lb, but with restrictions that prevent the operation of the LCVs illustrated. The economic export corridors between Iowa and South Dakota are not illustrated in the map.

**Figure 2. States that allow longer combination vehicles (LCVs)**

The Iowa Code allows LCVs on economic export corridors to South Dakota, with certain restrictions. Specifically, LCVs authorized to operate on an economic export corridor shall meet all of the following requirements (Iowa Legislature §321.457, 2014):

- (a) The length of the combination of vehicles, excluding the length of the truck tractor, shall not exceed eighty-one and one-half feet.
- (b) The length of either semitrailer or full trailer shall not exceed forty-five feet.
- (c) The weight of the second semitrailer or full trailer shall not exceed the weight of the first semitrailer by more than three thousand pounds.

(d) The gross weight of the combination of vehicles shall not exceed eighty thousand pounds. The combination of vehicles shall not exceed twenty thousand pounds on an axle equipped with pneumatic tires, and shall not exceed fourteen thousand pounds on an axle equipped with solid rubber tires. The gross weight on any tandem axle of a vehicle, or any combination of vehicles, shall not exceed thirty-four thousand pounds on an axle equipped with pneumatic tires.

(e) The load on each semitrailer or full trailer in the combination shall be an indivisible load. For the purpose of issuing permits for height or width, the combination of vehicles shall be considered an indivisible load so long as the load on each semitrailer or full trailer in the combination remains an indivisible load.

Allowing LCVs in states that currently do not permit them is prohibited under the Intermodal Surface Transportation Efficiency Act of 1991. LCVs have a slightly greater benefit to the environment than a typical combination truck, due to the increase in ton-mile fuel economy for an LCV. However, the use of LCVs may shift some freight from rail to truck, which would result in a decrease in the environmental benefit as rail is generally more fuel-efficient than trucks. LCVs require that drivers have the skill to operate a longer, multiple trailer vehicle.

## 2.2 Vehicle Weights

Vehicle weights on the National Network are also governed by federal regulations. Minimum weight limits required are 20,000 pounds single axle weight, 34,000 pounds tandem axle weight, and 80,000 pounds gross vehicle weight, which are the weight restrictions on Interstate highways and designated routes for Iowa and the seven surrounding states that were studied: Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin. Nebraska, however, allows 96,000 pounds gross vehicle weight with a conditional use permit.

Most states allow different weight limits than these on state and local highways. Table 3 lists the weight restrictions on non-designated routes as set by the eight states.

**Table 3. Weight restrictions on non-designated routes**

State	Vehicle Weight Limits (lb)		
	Single Axle	Tandem Axle	Gross Vehicle
Iowa	20,000	34,000	80,000
Minnesota	18,000	34,000	73,280
Wisconsin	20,000	34,000	80,000 (Class A), 48,000 (Class B)
Illinois	18,000	32,000	73,280
Missouri	22,000	36,000	80,000
Nebraska	20,000	34,000	95,000
South Dakota	20,000	34,000	Governed by bridge formula
Kansas	20,000	34,000	85,500

Minnesota and Wisconsin also have frost laws that pose seasonal restrictions on truck weight limits (and speeds) on roadways that are subject to thaw weakening.

## 2.3 Speed Limits

Speed limits for trucks versus automobiles in the study area were not found to be an issue. In the *Upper Midwest Freight Corridor Study* (UMFCS) conducted in 2005-2006, the authors mentioned that Illinois had a 10 mph speed differential for trucks compared to automobiles (Adams et al. 2007).

At that time, the speed limit for trucks more than 4 tons, motor homes, campers, and trailers was 55 mph, while the speed limit for automobiles was 65 mph. This difference was largely removed by 2011 in two steps, the first of which removed the differential on Interstate highways outside Chicago and the second of which included four-lane roads not designated as Interstate highways.

However, these changes did not affect Cook, DuPage, Kane, Lake, McHenry, or Will counties (Illinois Trucking Association 2011). In fact, with the passage of Public Act 98-0511 in 2014, the maximum speed limit for automobiles was raised from 65 mph to 70 mph outside urban areas (Illinois General Assembly 2014), which created a 15 mph speed limit difference at locations in rural parts of the Chicago area (i.e., 70 mph limit for cars and 55 mph for trucks).

As mentioned previously, Minnesota and Wisconsin have frost laws that pose seasonal restrictions on truck speeds (and also on weight limits) on roadways that are subject to thaw weakening.

## 2.4 Weight Compliance Enforcement

Truck weight compliance enforcement varies among the states. As part of the comprehensive truck size and weight limits study required by MAP-21 §32801, a comprehensive literature review on truck size and weight enforcement and compliance can be found in the Federal Highway Administration (FHWA) comparative analysis desk scan (FHWA 2013b).

- In Iowa, all trucks and combinations are allowed to operate in excess of their registration weight by up to 5 percent, or 25 percent if transporting raw agricultural products, but are not allowed to exceed the maximum gross weight.
- In Illinois, state commercial motor vehicle police officers periodically and randomly conduct overweight enforcement detail, as a means to enforce weight compliance on Illinois roads.
- In Kansas, officers may allow a 5 percent tolerance up to a 1,500-pound maximum when portable scales are used, due to the measurement error of the scales. No tolerance is allowed when using fixed scales.

The National Cooperative Highway Research Program (NCHRP) *Directory of Significant Truck Size and Weight Research* (Carson 2011) categorizes differences in enforcement levels and penalty severities for exceeding weight limits.

- Minnesota is categorized as a state with low levels of enforcement and high penalties.
- Missouri and South Dakota are categorized as states with high levels of enforcement and high penalties.
- Nebraska is categorized as a state with low levels of enforcement and low penalties.
- Wisconsin has low levels of enforcement and low fines, which Adams et al. (2009) found, through public agency outreach, “foster an incentive for noncompliance.”

## **2.5 Fees and Taxes**

### *2.5.1 Fuel Taxes*

All states in the study area are member jurisdictions of the International Fuel Tax Agreement (IFTA). The IFTA, which is an agreement between the lower 48 states of the US and the Canadian provinces, simplifies the reporting of fuel use by the Interstate motor carriers.

Carriers from any IFTA jurisdiction operating in another IFTA jurisdiction must obtain an IFTA permit from their base state or purchase a temporary fuel permit for the jurisdiction in which they are operating. A vehicle is qualified for the IFTA if one of the following applies:

- The vehicle or combination weighs more than 26,000 pounds
- The vehicle or combination is registered for more than 26,000 pounds
- The power unit has three or more axles

Vehicles from IFTA jurisdictions that do not meet any of the three criteria are granted fuel reciprocity when traveling through another IFTA jurisdiction.

Motor vehicles that have IFTA licenses must file quarterly IFTA tax returns to their base jurisdictions. These quarterly reports are used to redistribute taxes from collecting states to states where taxes are due. Each state in the region has defined its own fees for this program, as listed in Table 4.

**Table 4. IFTA fees by state**

State	Fees		
	Annual License	Annual Decal	New Registrants**
Iowa	\$10 (permanent)	\$0.50/set	None
Illinois	None	\$3.75/set	None
Kansas	\$10*	None	None
Minnesota	\$28	\$2.50/set	None
Missouri	None	None	None
Nebraska	\$10*	None	None
South Dakota	\$10	\$2.50/set	None
Wisconsin	\$3	\$2.00/set	\$3 + \$15 application fee

Source: EZ IFTA n.d.

\* \$10 for first qualified vehicle, \$1.00 for each additional vehicle.

\*\* Fees associated with IFTA license application. If the renewal application is not submitted in time, it is considered as a new registrant and the application fee will be imposed as well.

Vehicles that travel Interstate pay fuel tax to cover the miles traveled in each state, unless exempt. Fuel tax payments are accomplished through the IFTA, fuel trip permits, or reciprocity agreements (Iowa DOT 2014). Different fuel tax requirements of the states are specified in their guides and manuals, as follows.

#### *Iowa DOT–Iowa Truck Information Guide*

The IFTA license cost is \$10. A copy of this license must be carried in each vehicle and produced on request. IFTA decals are required to be displayed on the exterior of the power unit, with one on each side. IFTA decals are 50 cents for a set of two.

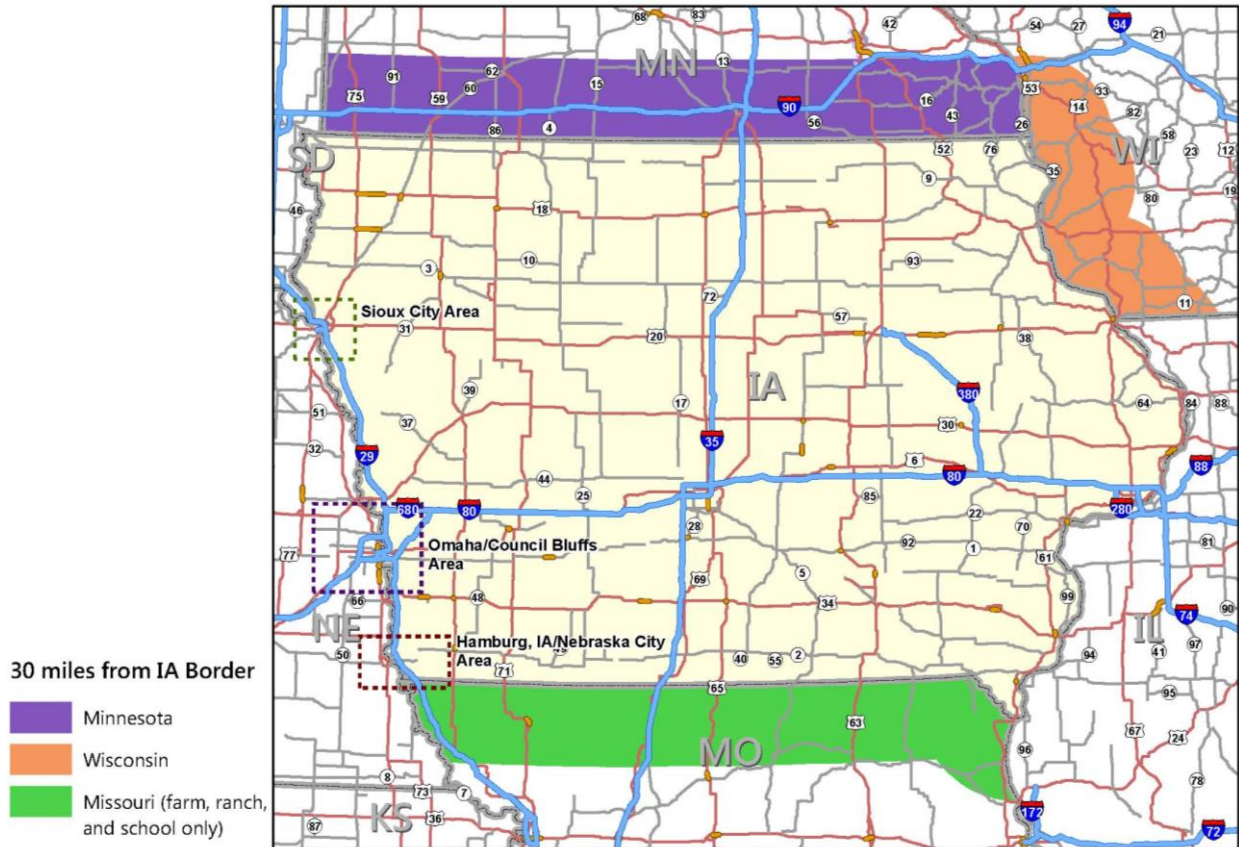
Vehicles based in non-IFTA jurisdictions need to comply with one of the following:

1. Enter Iowa with 30 gallons or less of fuel in the supply tanks of the vehicle, purchase fuel as the vehicle travels through the state, and display evidence of adequate fuel purchases for inspection by law enforcement personnel.
2. Purchase a \$20 temporary fuel permit, which is valid for one trip or 72 hours, whichever comes first. (Upon departure from the state, a new permit is required before re-entering.)

Iowa and Missouri have an agreement to operate IFTA-qualified farm and ranch vehicles by private carriers and school buses within 30 miles of the state border (Figure 3) without a fuel license or decal. The agreement does not include for-hire carriers.

Minnesota and Wisconsin also have agreements with Iowa to allow IFTA-qualified vehicles to operate within 30 miles of the state border (Figure 3) without a fuel license or decal.

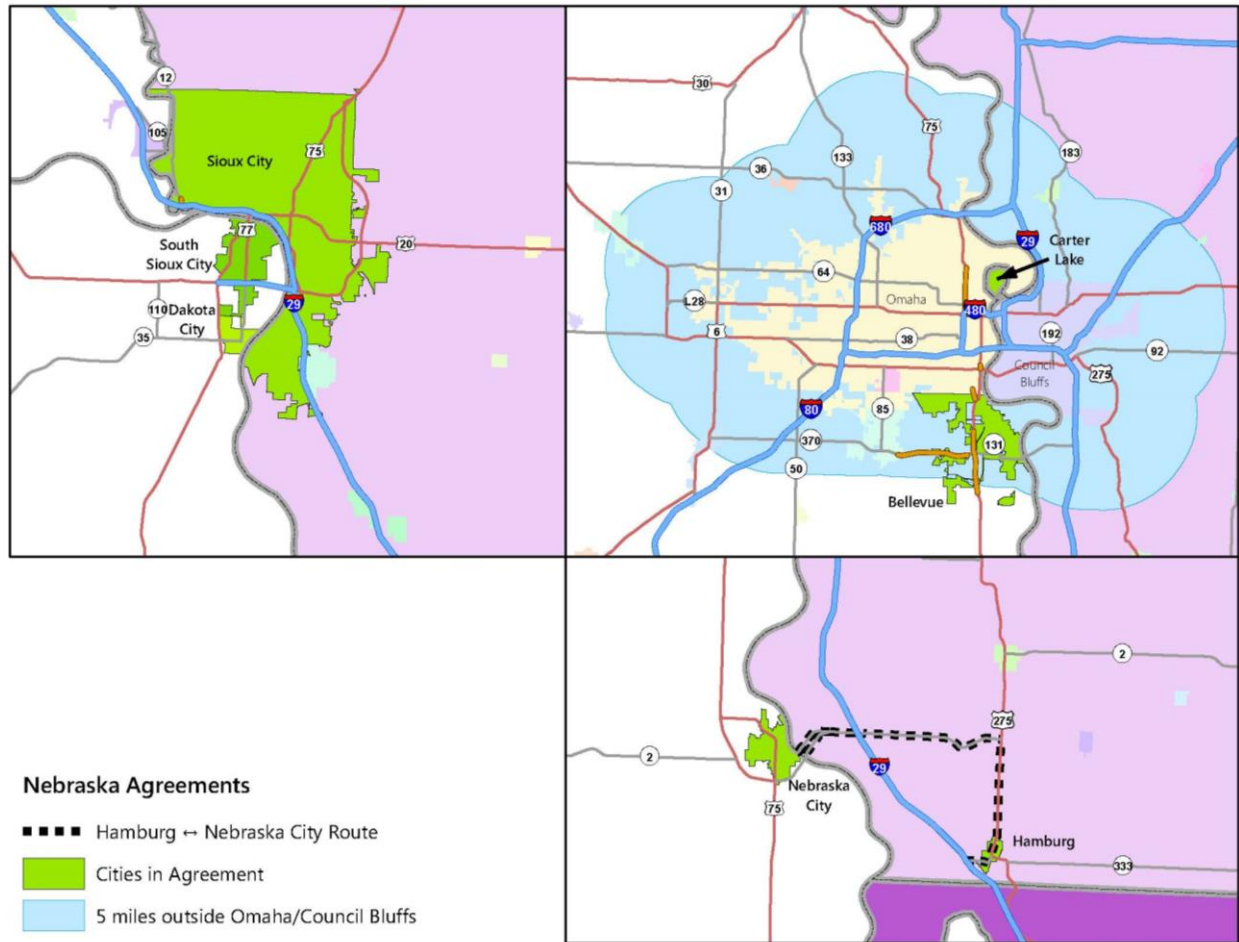




Base Map: US Census Bureau TIGER/Line

**Figure 3. Iowa IFTA border state agreements with Minnesota, Missouri, Nebraska, and Wisconsin**

Iowa and Nebraska have an agreement to operate IFTA-qualified vehicles within Bellevue, Dakota City, and South Sioux City in Nebraska and Carter Lake, Port Neal, and Sioux City in Iowa (Figure 4 top left). An agreement is also in place to allow travel between Nebraska City, Nebraska and Hamburg, Iowa, with travel in Iowa restricted to Highways 2, 275, and 333 from the state line to Hamburg (Figure 4 bottom right). The IFTA border commercial zone agreement between Omaha, Nebraska and Council Bluffs, Iowa extends five miles beyond the corporate city limits (Figure 4 top right).



Base Map: US Census Bureau TIGER/Line

**Figure 4. Iowa IFTA border state agreement with Nebraska showing Sioux City area (upper left), Council Bluffs and Omaha area (upper right), and Hamburg area (lower right)**

*Illinois Department of Revenue—Illinois Motor Fuel Use Tax Carrier Compliance Manual*

A single trip permit is available, valid for 96 hours. Cost is \$40. Illinois does not have fuel tax reciprocity agreements with any of the neighboring states.

*Kansas Legislature §79-34,118*

A 24-hour motor fuel permit costs \$13. A 72-hour motor fuel permit costs \$25.

Kansas does not have fuel tax reciprocity agreements with any of the neighboring states.

*Minnesota DOT (MnDOT) –Minnesota Commercial Truck and Passenger Regulations*

A temporary fuel tax permit is available for \$25 and is valid for five days.

Minnesota has agreements with Iowa and Wisconsin to operate IFTA-qualified vehicles within 30 miles of the border and to operate any state or political subdivision vehicles and school buses used to transport students, with no mileage restriction.

Minnesota also has an agreement with North Dakota—to operate IFTA-qualified vehicles within 20 miles of the border and to operate farm-registered vehicles, state or political subdivision vehicles, and school buses used to transport students, with no mileage restriction.

Minnesota has no reciprocity with South Dakota or the Canadian province of Manitoba.

*Missouri State Highway Patrol Commercial Vehicle Enforcement–Missouri’s Commercial Vehicle Regulations*

A 72-hour trip permit is available for \$10.

As stated in the *Iowa Truck Information Guide*, there is an agreement between Iowa and Missouri to operate farm and ranch vehicles and school buses transporting students within 30 miles of the border. The agreement does not include for-hire carriers. Other than that, Missouri does not have a fuel tax reciprocity agreement with any other states.

*Nebraska State Patrol Carrier Enforcement and Nebraska Motor Carrier Services –Nebraska Truck Information Guide and Nebraska IFTA Procedures Manual*

A 72-hour fuel permit is available through truck permit stations for \$20.

Nebraska has a reciprocity agreement that allows IFTA-qualified vehicles to operate in Iowa within the corporate limits of Council Bluffs, Carter Lake, Port Neal, Hamburg, and Sioux City without IFTA registration.

*South Dakota DOT (SDDOT) and South Dakota Department of Revenue–South Dakota Commercial Vehicle and Agricultural Vehicle Handbook and IFTA South Dakota 2014 Procedures Manual*

Trip permits are available to operate an IFTA-qualified vehicle.

There is no reciprocity with any states. A carrier must purchase a temporary fuel permit if the carrier does not have a cab card. A temporary fuel permit costs \$20 and is good for 72 hours or until the carrier leaves the state, whichever comes first.

## *Wisconsin Department of Transportation –Wisconsin Trucker’s Guide*

A 72-hour trip permit is available for vehicles without proper fuel tax permits. A 72-hour permit is only available for vehicles that are not registered in Wisconsin nor enrolled in IFTA. The permit is valid for 72 hours and costs \$15.

Wisconsin has reciprocity agreements with Iowa, Michigan, and Minnesota. IFTA-qualified vehicles may operate within 30 miles of the border. All Iowa or Minnesota state or political subdivision vehicles and school buses transporting students are not subject to these mileage restrictions.

Wisconsin also has reciprocity with Illinois, Iowa, and Michigan for farm vehicles.

### *2.5.2 Tolls*

Among the states studied, only Illinois and Kansas have toll roads.

#### *Illinois Tollway*

There are four toll highways in Illinois, on I-90, I-94/I-294/I-80, I-88, and I-355. Tolls vary depending on the toll plaza. Tolls are charged at both mainline toll plazas and at interchanges when exiting. Truck tolls are set based on two categories:

1. Medium Truck: 3 and 4 axle or combination; truck, bus, auto/SUV with 1 or 2 axle trailer
2. Large Truck: 5+ axle vehicle or combination; trucks, auto/SUV with 3+ axle trailer

All Illinois Tollways accept Illinois I-PASS and Indiana E-ZPass automated toll collection transponders.

#### *Kansas Turnpike*

The toll road in Kansas follows I-70 from Kansas City to Topeka, I-470 in Topeka, I-335 from Topeka to Emporia, and I-35 from Emporia to the Oklahoma state line. Tolls are charged using a ticket system. A ticket is obtained at the entry point and the proper toll is charged when exiting, based on the distance traveled. Mainline toll plazas exist only at the termini of the turnpike. Different tolls are charged for trucks in Class 5 through Class 9, depending on number of axles.

The Kansas Turnpike uses an automated toll collection transponder called K-TAG. The system is not compatible with E-ZPass or Oklahoma’s PikePass.

## **2.6 Driver Qualifications**

Commercial vehicle drivers are required to obtain a commercial driver's license (CDL). The requirements of the CDL are administered at the federal level with the Federal Motor Carrier Safety Administration (FMCSA) having oversight of state CDL programs. State CDL requirements must meet or exceed federal regulations. Most states have similar requirements for CDLs.

## **2.7 Medical Certification**

Drivers must obtain and carry a medical certificate that shows that the driver has been examined and is medically qualified to operate a commercial motor vehicle. The exam and certification must follow criteria established in the Code of Federal Regulations (CFR): 49 CFR Section 391.43.

Drivers may obtain waivers under certain circumstances by either a state authority for intrastate commerce or the Federal Motor Carrier Safety Administration (FMCSA) for Interstate commerce. FMCSA has waivers from vision and diabetes standards for drivers who are unable to obtain a medical certificate. FMCSA can only grant exemptions for interstate commerce.

As of January 30, 2012, drivers are required to self-certify which category they operate in: non-excepted interstate, excepted interstate, non-excepted intrastate, or excepted intrastate. An excepted category means that the driver is not subject to the requirements in 49 CFR 391.43 and is not required to obtain a medical certificate. The requirements of excepted Interstate operation are as follows:

1. To transport school children and/or school staff between home and school;
2. As Federal, State or local government employees;
3. To transport human corpses or sick or injured persons;
4. Fire truck or rescue vehicle drivers during emergencies and other related activities;
5. Primarily in the transportation of propane winter heating fuel when responding to an emergency condition requiring immediate response such as damage to a propane gas system after a storm or flooding;
6. In response to a pipeline emergency condition that requires immediate action such as a pipeline leak or rupture;
7. In custom harvesting on a farm or to transport farm machinery and supplies used in the custom harvesting operation to and from a farm or to transport custom harvested crops to storage or market;
8. Beekeeper in the seasonal transportation of bees;
9. Controlled and operated by a farmer, but is not a combination vehicle (power unit and towed unit), and is used to transport agricultural products, farm machinery or farm supplies (no placardable hazardous materials) to and from a farm and within 150 air-miles of the farm;
10. As a private motor carrier of passengers for non-business purposes; or
11. To transport migrant workers.

To claim exception under these categories, the driver must also meet requirements under state laws. For example, Minnesota requires all CDL holders with a school bus endorsement to obtain a medical certificate, and therefore exception number 1 in the above list would not apply in Minnesota.

Medical certification exceptions for intrastate commerce are listed in Table 5.

**Table 5. Intrastate commerce medical certification exceptions**

State	Intrastate Commerce Medical Certification Exceptions
Iowa	<ul style="list-style-type: none"> <li>• As a public utility truck per Iowa Code 321.449</li> <li>• As a truck hauling gravel per Iowa Code 321.449*</li> <li>• As a construction truck or equipment per Iowa Code 321.449*</li> <li>• As a truck moving implements of husbandry per Iowa Code 321.449*</li> <li>• As a special truck, other than a truck tractor per Iowa Code 321.449</li> <li>• As a school district-employed school bus driver</li> <li>• As a government driver per adoption of federal rules in 761 IAC 520</li> <li>• Other farm and agricultural exemptions per Iowa Code 321.449 and 450</li> </ul> <p>* Does not include truck-tractor semi-trailer combinations and trucks for hire</p>
Kansas	<ul style="list-style-type: none"> <li>• The owner of livestock or producer of farm products transporting livestock of such owner or farm products of such producer to market in a motor vehicle of such owner or producer, or the motor vehicle of a neighbor on the basis of barter or exchange for service or employment, or to such owner or producer transporting supplies for the use of such owner or producer in or producer, or in the motor vehicle of a neighbor on the basis of barter or exchange for service or employment.</li> <li>• The transportation of children to and from school, or to motor vehicles owned by schools, colleges, and universities, religious or charitable organizations and institutions, or governmental agencies, when used to convey students, inmates, employees, athletic teams, orchestras, bands, or other similar activities.</li> <li>• Motor vehicles, with a gross vehicle weight rating of 26,000 pounds or less, carrying tools, property or material belonging to the owner of the vehicle, and used in repair, building or construction work, not having been sold or being transported for the purpose of sale, except vehicles transporting hazardous materials, which require placards, motor vehicles, with a gross vehicle weight rating of 26,000 pounds or less, carrying tools, property or material belonging to the owner of the vehicle and used in repair, building or construction work and such tools, property or material are being transported to or from an active construction site located within a radius of 25 miles of the principal place of business of the motor carrier.</li> <li>• Persons operating motor vehicles which have an ad valorem tax situs in and are registered in the state of Kansas, and used only to transport grain from the producer to an elevator or other place for storage or sale for a distance of not to exceed 50 miles.</li> <li>• The operation of hearses, funeral coaches, funeral cars, or ambulances by motor carriers.</li> <li>• Motor vehicles owned and operated by the United States, the District of Columbia, any state, any municipality or any other political subdivisions of this state.</li> <li>• Motor vehicles used to transport water for domestic purposes, as defined by subsection (c) of K.S.A. 82a-701, and amendments thereto, or livestock consumption.</li> </ul>

State	Intrastate Commerce Medical Certification Exceptions
Kansas (continued)	<ul style="list-style-type: none"> <li>Any motor vehicle with a normal seating capacity of not more than the driver and 15 passengers while used for vanpooling or otherwise not for profit in transporting persons who, as a joint undertaking, bear or agree to bear all the costs of such operations, or motor vehicles with a normal seating capacity not more than the driver and 15 passengers for not-for-profit transportation by one or more employers of employees to and from the factories, plants, offices, institutions, construction sites, or other places of like nature where such persons are employed or accustomed to work.</li> <li>The operation of vehicles used for servicing, repairing, or transporting of implements of husbandry, as defined in K.S.A. 8-1427, and amendments thereto, by a person actively engaged in the business of buying, selling, or exchanging implements of husbandry, if such operation is within 100 miles of such person's established place of business in this state, unless the implement of husbandry is transported on a commercial motor vehicle.</li> <li>Motor vehicles used to transport water for domestic purposes, as defined by subsection (c) of K.S.A. 82a-701, and amendments thereto, or livestock consumption.</li> </ul>
Illinois	Not specifically outlined.
Minnesota	Not specifically outlined,
Missouri	<ul style="list-style-type: none"> <li>Held a chauffeur's license prior to May 13, 1988 and have a "K" restriction printed on the CDL</li> </ul> <p>Other exceptions not specifically outlined.</p>
Nebraska	<ul style="list-style-type: none"> <li>An operator who holds or has held a Nebraska CDL prior to 7/30/96 (NSS 75-63(4))</li> <li>An operator of a farm plated vehicle (NSS 75-363(5))</li> <li>An employee of a government or political subdivision (NSS 75-363(7))</li> <li>A custom harvester (NSS 75-363(7))</li> <li>A bee keeper (NSS 75-363(7))</li> <li>A private motor carrier of passengers used for non-business purposes (churches, private schools, civic organizations, scout groups, etc.) (NSS 75-363(3)(f))</li> </ul>
South Dakota	<ul style="list-style-type: none"> <li>Bona fide farmer or rancher operating articulated farm vehicles within a 150-mile radius of the farm or ranch and does NOT cross state lines. A medical certificate is required if crossing state lines.</li> <li>Business vehicles 10,001 to 26,000 pounds gross vehicle weight rating (GVWR) that do NOT cross state lines, do NOT transport hazardous material that requires placarding, and are NOT designed to transport 16 or more people, including the driver.</li> <li>Intrastate drivers are exempt from the CDL medical requirements (CFR Part 391.41) in South Dakota in accordance with SDCL 49-28A-3 except for school bus drivers.</li> </ul>
Wisconsin	<ul style="list-style-type: none"> <li>Tow trucks (if requested by a federal, state, or local officer to move a wrecked or disabled vehicle).</li> <li>Grandfathered (held valid CDL since July 29, 1996, that has not been revoked).</li> <li>Wisconsin diabetes exemption to the Fed Med card.</li> <li>Wisconsin vision exemption to the Fed Med card.</li> </ul>

## 2.8 Hours of Service

By law, commercial vehicle drivers must follow hours of service requirements under 49 CFR Part 395. These requirements apply under any of the following circumstances:

- Weighs 10,001 pounds or more
- Has a gross vehicle weight rating or gross combination weight rating of 10,001 pounds or more
- Is designed or used to transport 16 or more passengers (including the driver) not for compensation
- Is designed or used to transport 9 or more passengers (including the driver) for compensation
- Is transporting hazardous materials in a quantity requiring placards

Hours of service requirements are set by the FMCSA, which outlines how long drivers are allowed to drive. The basic regulations for a property-carrying commercial vehicle driver are a 14-hour driving window limit, an 11-hour driving limit, and 60 hours per 7-day and 70 hours per 8-day duty limits.

The 14-hour driving window limit allows drivers a 14-consecutive-hour period that can have up to 11 driving hours after being off duty for 10 or more consecutive hours. After June 30, 2013, the new rest-break requirement states driving is not permitted if more than 8 hours has passed since the end of the driver's last off duty or sleeper berth period of at least 30 minutes. After 8 hours of driving, a driver must take an off-duty break for at least 30 minutes before resuming driving.

The 60- and 70-hour rules for 7- and 8-day operation are based on a floating week. One of two limits must be followed. The first is for companies that do not operate vehicles every day of the week. A driver for this company would not be allowed to drive after being on duty for 60 hours during any consecutive 7 days. The second limit is for companies that do operate vehicles every day of the week. A driver for this company may be assigned to a 70-hour/8-day schedule. This would allow 70 hours on duty in any consecutive 8 days.

The 60- or 70-hour time limit may be restarted after having at least 34 consecutive hours off duty. After July 1, 2013, the 34-hour restart is subject to the restriction that the 34 consecutive hours include at least two off duty periods from 1:00 a.m. to 5:00 a.m. The 34-hour restart is also limited to being used once a week (i.e., once every 168 hours).

On-duty time is considered as any of the following activities:

- All time at a plant, terminal, facility, or other property of a motor carrier or shipper, or on any public property, waiting to be dispatched, unless you have been relieved from duty by the motor carrier;
- All time inspecting, servicing, or conditioning any truck, including fueling it and washing it at any time;



- All driving time, as defined in the term driving time;
- All other time in or on a commercial motor vehicle other than: (i) Time spent resting in or on a parked vehicle, except as otherwise provided in Section 397.5 of the Federal Motor Carrier Safety Regulations; (ii) Time spent resting in a sleeper-berth; (iii) Up to 2 hours riding in the passenger seat of a property-carrying vehicle moving on the highway immediately before or after a period of at least 8 consecutive hours in the sleeper-berth (NOTE: Paragraphs (i) and (iii) of the definition of on-duty time in Section 395.2 became effective on February 27, 2012; paragraph (ii) has been in effect for many years);
- All time loading, unloading, supervising, or attending your truck; or handling paperwork for shipments;
- All time taking care of your truck when it is broken down;
- All time spent providing a breath, saliva, or urine sample for drug/alcohol testing, including travel to and from the collection site;
- All time spent doing any other work for a motor carrier, including giving or receiving training and driving a company car; and
- All time spent doing paid work for anyone who is not a motor carrier, such as a part-time job at a local restaurant.

Travel time that is taken at the direction of a driver's motor carrier is considered on-duty time.

Off-duty time is time in which a driver has been relieved of all duty and is free to leave the place that the vehicle is parked. A driver must also not be doing any paid or unpaid work for a motor carrier or doing any paid work for anyone else.

Drivers who use a sleeper berth must take at least 8 consecutive hours in the berth, along with 2 consecutive hours either in the berth, off duty, or any combination of the two.

For a passenger-carrying commercial vehicle driver, the same regulations apply, with the differences that the driving limit is reduced from 11 hours to 10 hours and the driving window limit is extended from 14 hours to 15 hours. Passenger-carrying drivers who use the sleeper berth must take at least 8 hours and may split the sleeper berth time into two periods of not less than 2 hours.

Exceptions from hours of service are allowed for certain situations. States may define intrastate hours of service regulations, provided that the following limits are followed: A 12-hour driving limit with a driving window limit of not more than 16 hours. Drivers who have been on duty for 70 hours in 7 consecutive days or 80 hours in 8 consecutive days are not permitted to drive. The state-specific intrastate hours of service are listed in Table 6.

**Table 6. State-specific intrastate hours of service**

State	State-Specific Intrastate Hours of Service
Iowa	<ul style="list-style-type: none"> <li>• A driver operating intrastate for a farm operation as defined in Iowa Code section 352.2, or for an agricultural interest when the commercial vehicle is operated between the farm as defined in Iowa Code section 352.2 and another farm, between the farm and a market for farm products, or between the farm and an agribusiness location.</li> <li>• A driver or a driver-salesperson for a private carrier, who is not for hire and who is engaged exclusively in intrastate commerce, may drive 12 hours, be on duty 16 hours in a 24-hour period, and be on duty 70 hours in 7 consecutive days or 80 hours in 8 consecutive days.</li> <li>• For-hire drivers who are engaged exclusively in intrastate commerce and who operate trucks and truck tractors exclusively for the movement of construction materials and equipment to and from construction projects may also drive 12 hours, be on duty 16 hours in a 24-hour period, and be on duty 70 hours in 7 consecutive days or 80 hours in 8 consecutive days.</li> </ul>
Illinois	<ul style="list-style-type: none"> <li>• Federal regulations apply.</li> </ul>
Kansas	<ul style="list-style-type: none"> <li>• The maximum driving and on-duty times do not apply to intrastate drivers of agricultural commodities or farm supplies, as long as the transportation is limited to an area within a 100 air-mile radius from the source of the commodities or distribution point for the supplies.</li> </ul>
Minnesota	<ul style="list-style-type: none"> <li>• Agricultural commodities or farm supplies for agricultural purposes in Minnesota during the planting and harvesting seasons from March 15 to December 15 of each year.</li> <li>• Sugar beets during the harvesting season from September 1 to May 15 of each year.</li> <li>• The transportation of agricultural commodities or farm supplies, if the transportation is limited to an area within a 150 air-mile radius from the source of the commodities or from the retail or wholesale distribution point of the farm supplies.</li> </ul>
Missouri	<ul style="list-style-type: none"> <li>• 49 CFR Part 395 does not apply to farm trucks or vehicles operated in intrastate construction.</li> <li>• The maximum driving and on-duty times do not apply to intrastate drivers of agricultural commodities or farm supplies for agricultural purposes, as long as the transportation is limited to an area within a 100 air-mile radius when transporting happens during planting and harvesting seasons.</li> </ul>
Nebraska	<ul style="list-style-type: none"> <li>• 12 hours driving after 8 consecutive hours off duty.</li> <li>• 16 hours driving and on duty after 8 consecutive hours off duty.</li> <li>• 70 hours maximum on duty in 7 consecutive days or 80 hours maximum on duty in 8 consecutive days.</li> <li>• Hours of service limits do not apply to drivers transporting agricultural commodities and/or farm supplies for agricultural purposes when the transportation occurs within a 100 air-mile radius of the source or distribution point of the commodities and/or supplies and the transportation occurs from February 15 through December 15 each year.</li> </ul>
South Dakota	<ul style="list-style-type: none"> <li>• Maximum driving and on-duty times do not apply to intrastate drivers of agricultural commodities or farm supplies for agricultural purposes, as long as the transportation is limited to an area within a 100 air-mile radius.</li> </ul>

State	State-Specific Intrastate Hours of Service
Wisconsin	<p>In general, a driver may not drive:</p> <ul style="list-style-type: none"> <li>• More than 12 cumulative hours following 10 consecutive hours off duty.</li> <li>• After being on duty 16 hours following 10 consecutive hours off duty.</li> <li>• After having been on duty 70 hours in any period of 7 consecutive days if the motor carrier does not operate commercial motor vehicles every day of the week.</li> <li>• After having been on duty 80 hours in any period of 8 consecutive days if the motor carrier operates commercial motor vehicles every day of the week.</li> <li>• The rest period options and the 34-hour restart provision are the same as the federal hours of service regulations.</li> </ul>

### 3. SURVEY AND INTERVIEW RESPONSES

Prior to surveying the state agencies responsible for oversight of trucking regulations, the researchers sent inquiries to more than 30 trucking companies. This was done to obtain the private sector's view on specific trucking regulations in Iowa. Representatives from four companies that operate in the state responded and were interviewed; including Jacobson Companies, C.H. Robinson, Archer Daniels Midland Company (ADM), and Transport Designs, Inc.

Their responses are summarized into the following general areas:

- There were very few concerns regarding driver qualifications or medical certification. Although concerns with the more restrictive medical requirements (such as body mass index (BMI) calculations) were noted by one company representative, none of the requirements are attributable specifically to Iowa. Almost all medical certification regulations are federal.
- Concerning enforcement and hours of service, there were no serious concerns noted for operations within Iowa. Hours of service are a significant, somewhat contentious, issue (34-hour restart, breaks, etc.), but are federally mandated. A few enforcement issues were noted, such as training inconsistency between states, but Iowa was not seen as one of the states of concern.
- Concerning fees and taxes, once again nothing significant was noted for Iowa. Tolls, which Iowa does not have, were noted as an issue at times for some haulers. Toll fees were noted as difficult to account for and recoup from shippers. Overall, it was noted that Iowa's fees and taxes were in line with or lower than its neighboring states.
- One issue impacting driver availability is the North Dakota oil boom, but, once again, this and overall driver shortage is not a regulatory issue for Iowa.
- Finally, concerning vehicle size and weight (including oversize-overweight permits), opinions on changing limits vary greatly. It seems that private sector trucking firms are either strongly against or strongly for increasing limits to some extent. In general, it appears large trucking companies are advocating for increasing limits, while smaller firms are against it.

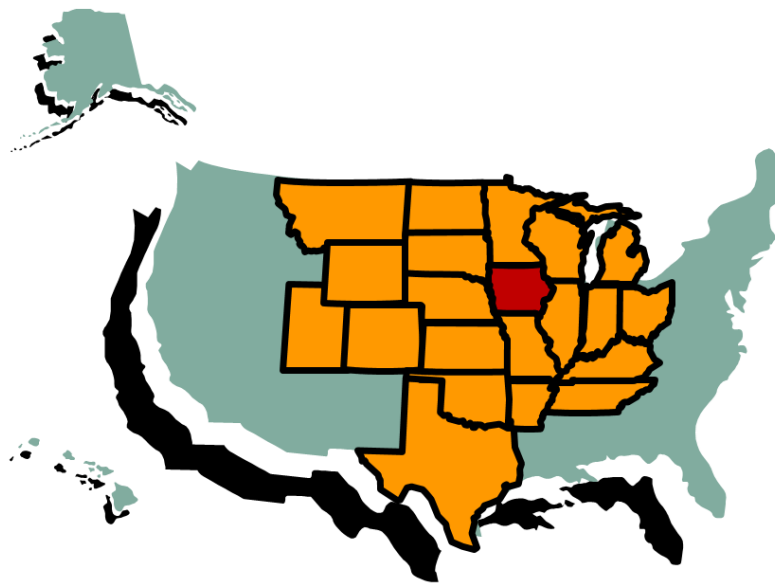
Based on the results from the private sector interviews, a survey for state DOTs was designed to focus on oversize-overweight permitting and overall size and weight issues. The survey questions developed and reviewed by the project technical advisory committee were as follows:

1. Has your agency been investigating or actually made changes to your truck size and weight regulations in the past 15 years? (Y/N) ... If so, what changes have been made?
2. What other potential changes have been suggested?

3. Has your agency received pressure/inquiries on regulatory changes in the past 10-15 years? (Y/N) ... If suggested changes were not made, what was the rationale for keeping them the same? (Safety, Cost, Other)
4. Regarding CDL learner permits, do you have specific training criteria for longer combination vehicles? (Y/N)
5. What other trends have been seen by your agency in recent years (10-15 years) concerning freight regulations?
6. Would your agency be interested in participating in a peer-to-peer exchange on these issues? (Y/N)

The survey was intended to be kept as short as possible to support a higher response rate and as an initial tool to identify major areas/issues for further investigation in follow-up interviews.

In addition to the neighboring states noted in the previous chapter, the survey was sent to many other states in the central portion of the US to correspond to several of the through and parallel trucking routes that impact Iowa, as shown in Figure 5.



**Figure 5. States surveyed**

In all, the survey was sent to agencies in 20 surrounding states: Arkansas, Colorado, Illinois, Indiana, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, Texas, Utah, Wisconsin, and Wyoming.

Initial investigation into survey respondents was difficult as, in many states, the regulatory authority is dispersed among different state agencies, with almost every state being different in some way.

To assist in soliciting a response from each of the identified states, the trucking associations (or motor carrier associations, etc.) in each of these states were later contacted. Although only a few state DOTs ultimately responded to the survey, the additional feedback from the trucking associations helped yield the following pertinent details.

### *Arkansas*

The Arkansas Trucking Association noted that membership was divided, primarily along the same large versus small company divisions seen in other states, on increases in size and weight limits.

### *Colorado*

The Colorado DOT (CDOT) noted that the only recent changes to truck size and weight regulations have been in regard to single-vehicle gross weight limits. The changes were made to bring the Colorado statute in compliance with the federal regulations. In addition, the cost of protecting the state's infrastructure was noted as the primary rationale behind not changing regulations. Finally, one trend noted by CDOT was the creation, through state-level legislation, of new permits allowing divisible overweight loads on non-Interstate highways.

The Colorado Motor Carrier Association noted very good experience to date with LCVs and would like to see the Interstate system weight limit increased, similar to the state-level roads.

### *Illinois*

Permitting for oversize and overweight trucks is of utmost concern for the Illinois Trucking Association. The importance of coordinating with Iowa was also noted.

### *Minnesota*

As expected, size and weight issues were of primary concern for the Minnesota Trucking Association, noting a lack of harmonization in size and weight limits across the state, regional, and local networks. Increase in size/length limits seems to be of interest to a specific group of haulers (FedEx, UPS, etc.), but changing the weight limits based on a per-axle formula is of greatest interest to the association.

### *South Dakota*

The South Dakota Trucking Association was very interested in the expansion of LCVs to neighboring states, as well as higher weight limits within and around the state.

## *Texas*

The Texas DOT (TxDOT) noted that, in the past decade or so, increased fees and an additional time permit requirement for some specific types of loads, such as timber and concrete ready-mix. In addition, safety was noted as the rationale behind not changing regulations. Finally, one trend noted in Texas was the increase in requests for ocean container permits.

TxDOT also noted an interest in a peer-to-peer exchange on trucking regulatory issues.

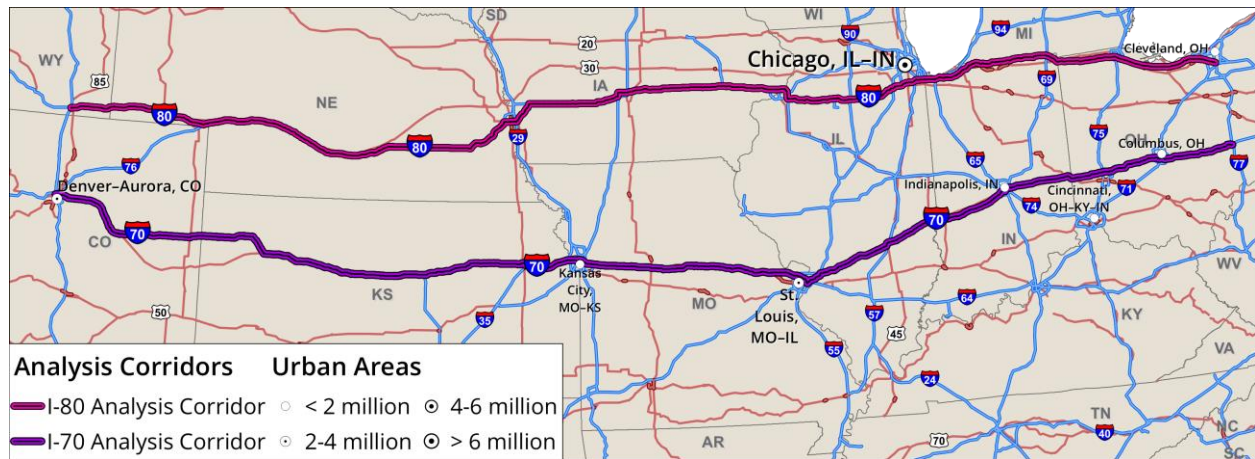
## **Interview/Survey Conclusions**

The most important conclusions from the interviews/survey were the need and interest in a peer-to-peer event focused on identifying regulatory trends and issues, as well as potential for Iowa and other states to find and prioritize possible regulatory changes to improve freight movement in Iowa and other Midwest states.

The Iowa Motor Truck Association has shown interest in hosting a peer-to-peer exchange.

## 4. CORRIDOR ANALYSIS

The national highway network provides shippers with multiple possible routes for long-haul shipping by truck. Two major east-west Interstate routes pass through the Midwest: I-70 and I-80. The two routes can be considered alternatives for each other for goods shipped between coasts due to their proximity and similarity. This chapter describes the performance of these two truck freight corridors: I-70 and I-80 between I-25 in Colorado and Wyoming, respectively, and I-77 in Ohio (see Figure 6).



**Figure 6. Overview of analysis corridors**

Both corridors cross more than one state in the region. Some of the characteristics of the roads are similar, while the differences in their performance, in terms of congestion, crashes, weather and tolls, may impact shippers' decisions on which route to take.

While the investigation of the relationship between the corridors' performance and the existing regulations is beyond the scope of this study, this corridor analysis is intended to offer some insights for a follow-up study on quantifying the impacts of freight regulations on the safe and efficient movement of freight via trucks.

In this study, the two equivalent analysis sections passing through the Midwest were chosen. The sections have the following characteristics:

- Both sections cover a vast area, yet have similar makeups. The characteristics of the routes differ more to the east due to the presence of large cities. To the west, each has different characteristics when crossing the Rocky Mountains.
- Both sections pass through similar cities in terms of both population and congestion. The one exception is that I-80 passes through the south side of the Chicago metropolitan area, which is much larger than any city along the I-70 analysis corridor.



- The corridors are closest at the ends (approximately an hour and a half apart). They are separated the most through Iowa and Missouri (approximately three hours).

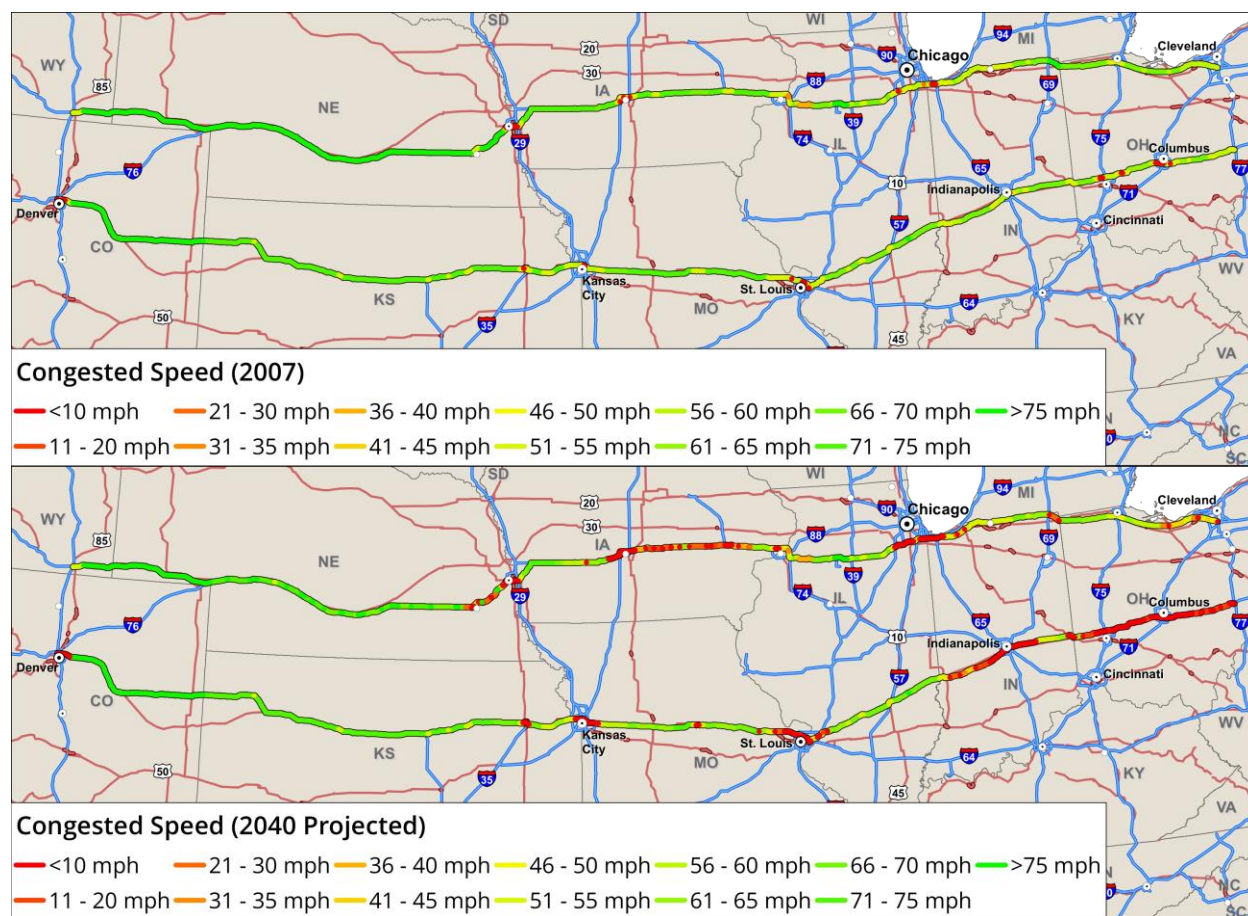
#### 4.1 Congestion

Table 7 and Figure 7 detail the travel times and speeds for each corridor using the FHWA Freight Analysis Framework version 3 (FAF<sup>3</sup>) database.

**Table 7. 2007 and projected 2040 travel times and speeds along the analysis sections**

Route	Length (mi)	Travel Time (hr:min)			Speed (mph)		
		2007 Peak	2040 Peak	Free-Flow	2007 Peak	2040 Peak	Free-Flow
I-70	1,348.3	31:52	288:17	20:07	42.3	4.68	67.0
I-80	1,292.5	29:28	146:43	19:09	43.9	8.81	67.5

Speed Data: FAF<sup>3</sup>



**Figure 7. Congested speeds along I-70 and I-80 in 2007 (top) and projected in 2040 (bottom)**

FAF<sup>3</sup> incorporates commodity flow survey data and other sources to come up with comprehensive freight flows in the US. It also produces road network data with truck volumes in 2007 as well as 2040 predicted freight volumes.

Overall, for both the 2007 peak-hour and free-flow conditions, travel time is comparable between the two analysis corridors. There were a few areas of congestion, mostly in metropolitan areas along the corridors. Small sections where peak-hour speeds are less than 10 mph for I-80 include Omaha, Nebraska; Des Moines, Iowa; and Chicago, Illinois. I-70 has speeds dip below 10 mph in Denver, Colorado; Topeka, Kansas; Kansas City and St. Louis, Missouri; and Columbus, Ohio.

FAF<sup>3</sup> projected speeds in 2040 have a few extremely congested sections. Along I-80, they occur between Lincoln and Omaha, Nebraska; Des Moines and Iowa City, Iowa; and near Chicago. Along I-70, they occur near the Kansas City and St. Louis, Missouri areas and through most of Indiana and Ohio.

#### *4.1.1 Speed Limits*

The maximum speed limit varies along the corridor. Each state has a statutory maximum speed limit for Interstates (see Table 8).

**Table 8. State statutory maximum speed limits through I-70 and I-80 corridors**

<b>70 mph</b>	<b>75 mph</b>	<b>80 mph</b>
Illinois Indiana Iowa Missouri Ohio	Colorado Kansas Nebraska	Wyoming

The actual speed limit is often much less than the statutory maxima, especially in metropolitan areas.

## **4.2 Safety**

Safety is an important factor in freight crashes. For each Interstate corridor, the fatality rate, or fatalities per hundred million truck vehicle miles traveled (HM TVMT), among different road types (see Table 9) was calculated.

Fatality information was acquired from the National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) using all crashes involving a large truck for 10 years—from 2003 through 2012. TVMT was calculated using the 2007 data from FAF<sup>3</sup>. Table 9 shows that, in every category, I-80 has a lower fatality rate than I-70.

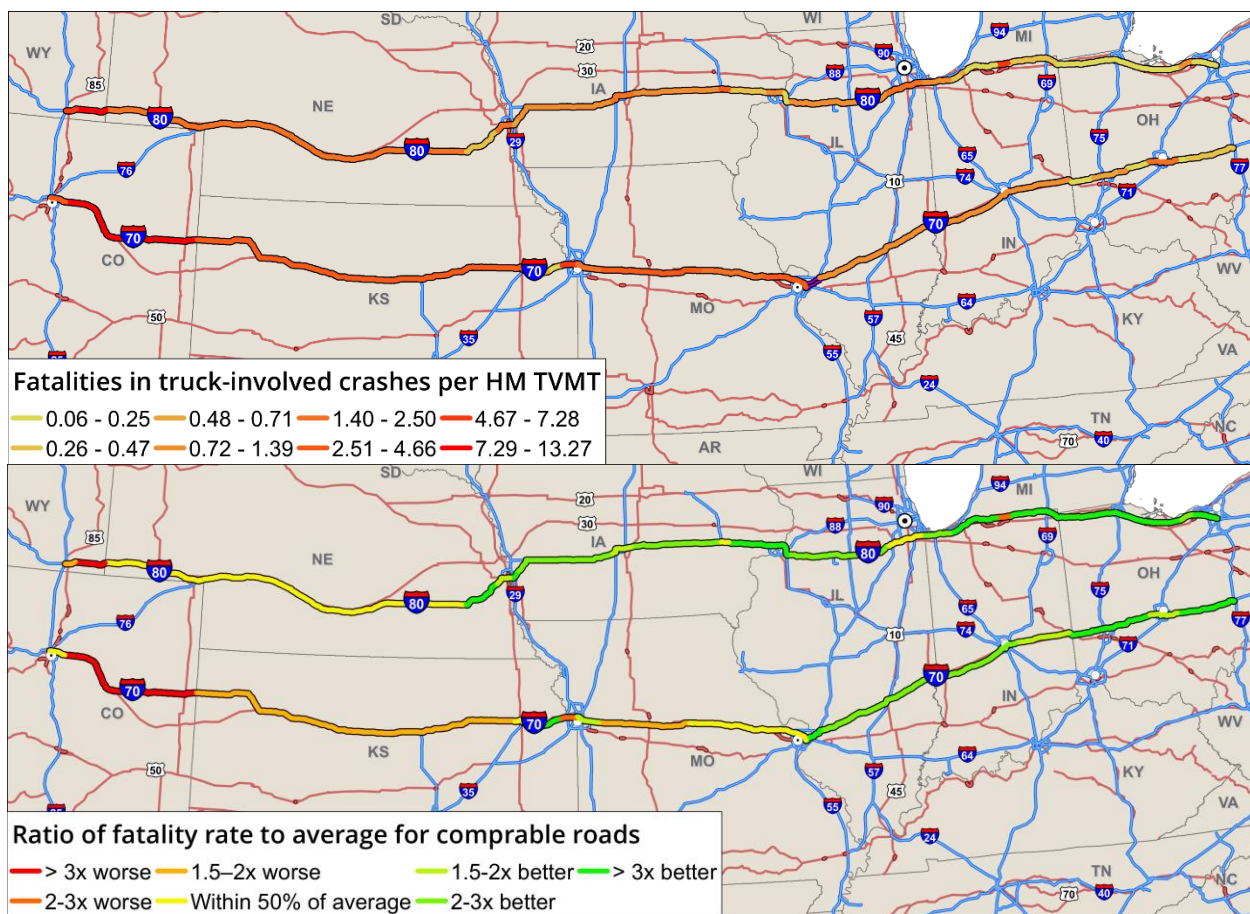
**Table 9. Fatality rate (fatalities per HM TVMT) by Interstate corridor and road type**

Road Type	I-70	I-80	Overall
Rural and Small Urban*	2.89	1.59	2.14
Medium Urban (50,000-250,000)	3.25	3.13	3.20
Large Urban (more than 250,000)	3.75	2.39	3.13

\* The small urban and rural fatality rates are comparable when excluding instances where Interstates touch the edge of a small urban area (oftentimes less than a tenth of a mile).

Crash Data: FARS (2003-2012), TVMT: FAF<sup>3</sup>

Figure 8 shows the raw truck fatality rates per HM TVMT (top) and the ratios of the crash rate compared to roads of the same type (bottom).



Crash Data: FARS (2003-2012), TVMT: FAF<sup>3</sup>, Base Map: US Census Bureau TIGER/Line

**Figure 8. Fatality rate (fatalities per HM TVMT) (top) and ratio compared to average (bottom) along I-70 and I-80 for crashes involving large trucks**

Segments are broken when the state or the road type changes and are not comparable lengths to give a rough estimate per region. Overall, I-80 preforms better than average and the east

performs better than the west. This is likely due to higher congestion, which results in lower crash severity and fatality rates.

### **4.3 Weather**

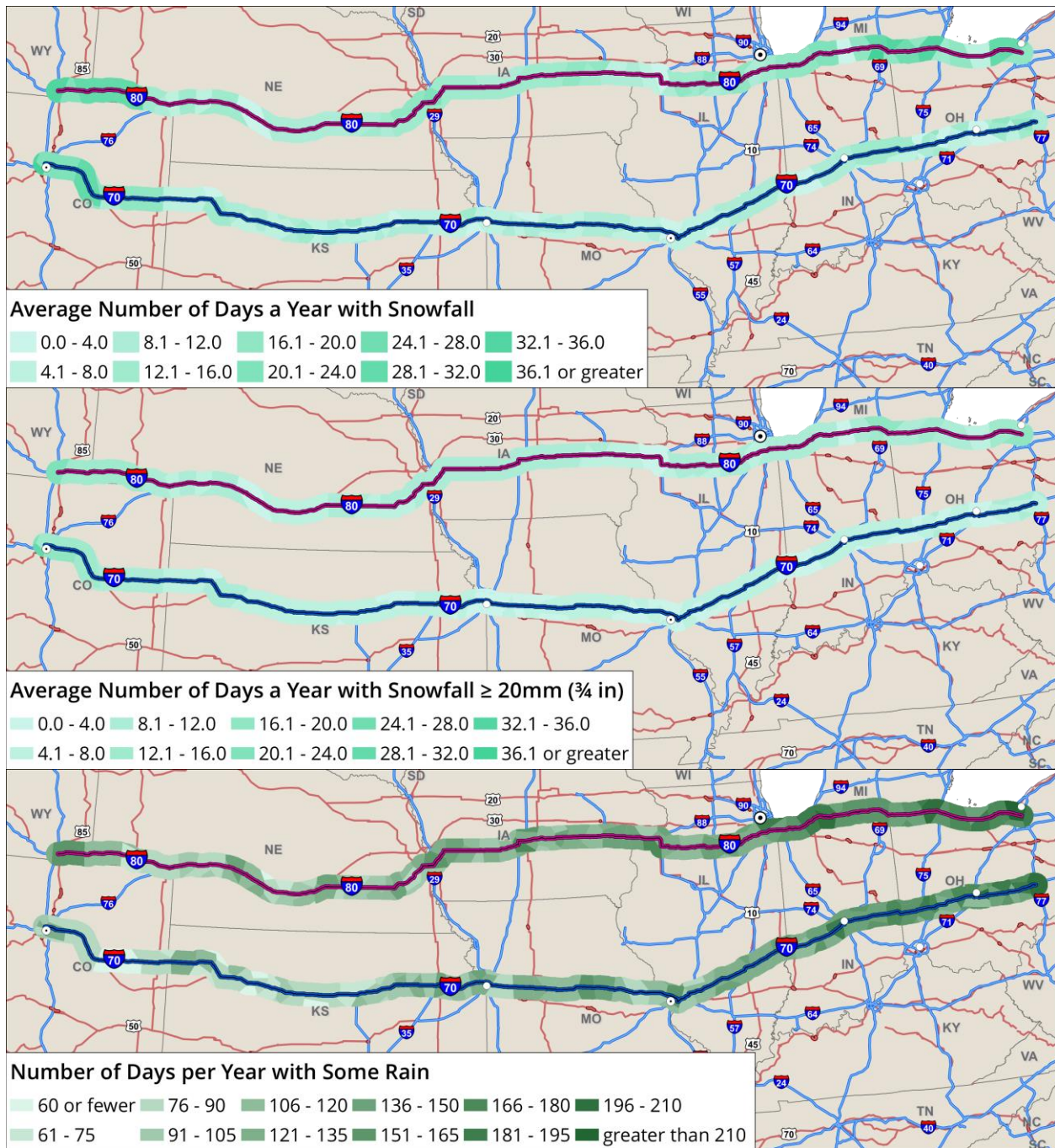
Weather is an important factor affecting freight movements. Adverse weather conditions can cause massive delays and increased crash risk. A route with better weather conditions (e.g., good visibility and pavement conditions) is more attractive to shippers for reliable travel time and a safe driving environment.

Data from the National Oceanic and Atmospheric Administration (NOAA) Global Historical Climatology Network (GHCN) were used in the following analysis. Only stations that had at least 30 years of data for each metric and observations that passed all quality-assurance checks were included.

#### *4.3.1 Precipitation*

Precipitation tends to be a more serious hazard to large trucks compared to passenger vehicles. Figure 9 shows the frequency of different precipitation events along I-70 and I-80.





Weather Data: GHCN (1984-2013), Base Map: US Census Bureau TIGER/Line

**Figure 9. Average number of days annually with snowfall (top two) and with rain (bottom) along I-70 and I-80**

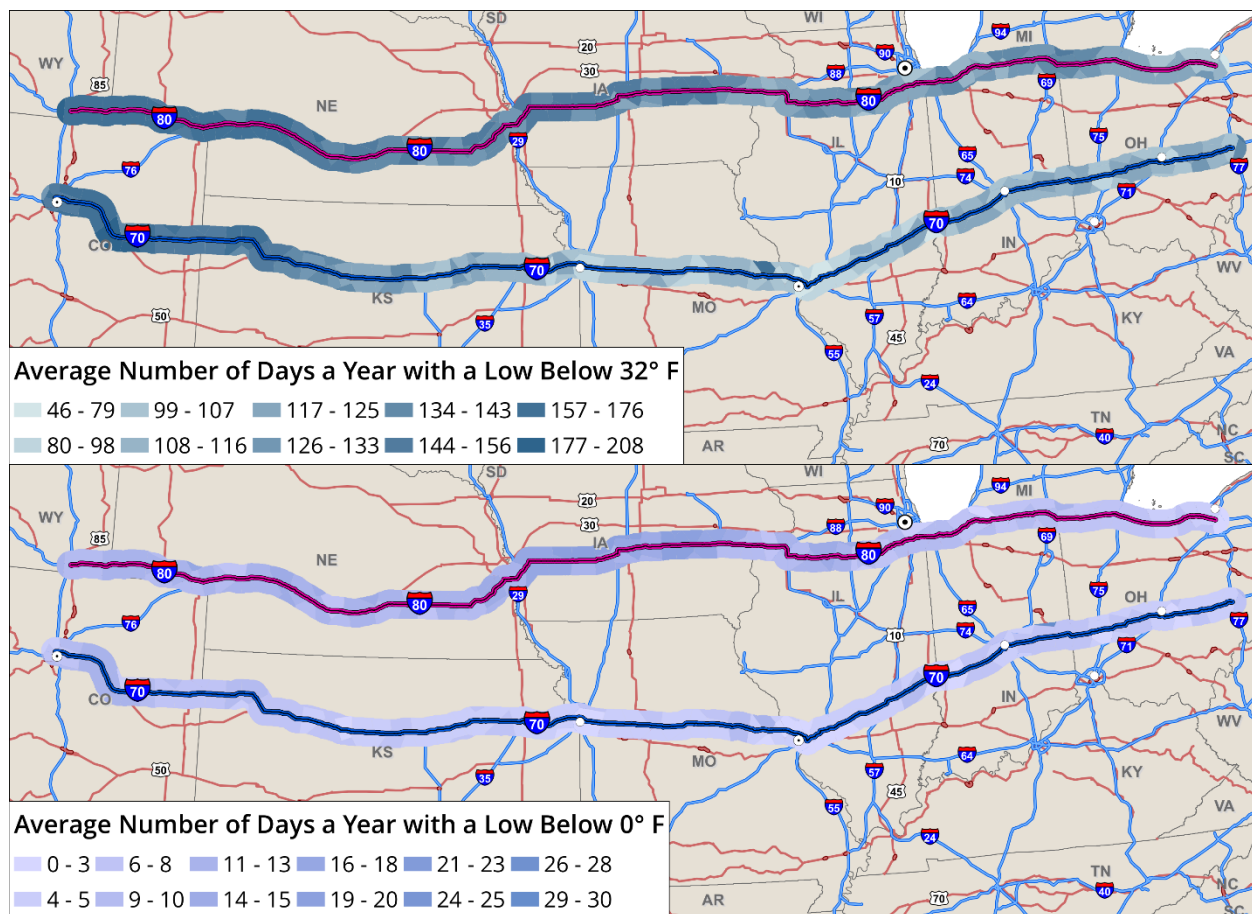
I-80 receives markedly more snow per year than I-70. Major areas that receive heavier snowfall include Colorado, Wyoming, and the Great Lakes region. The pattern is similar when only including snowfall events of 3/4 inch or greater.

Rain is less of a nuisance to freight cargo compared to snow, yet heavy rain can be disruptive, especially in the regions with high traffic volumes. As discussed in Mahmassani et al. (2009), during heavy rain, drivers slow down because of not only the low visibility and slippery road surface, but sometimes due to the traffic congestion along the road as well. The Great Lakes region receives much more rain than the west. Overall, I-80 has slightly more days with rainfall than I-70. These data do not include incidence of extremely severe thunderstorms and tornado activity.

#### 4.3.2 Temperature

Temperature is another measure that approximates poor weather conditions. In particular, extremely cold days can interfere with the operation of vehicles and encourage the formation of ice.

Figure 10 shows the average number of days annually that have lows below 32°F (top) and below 0°F (bottom).

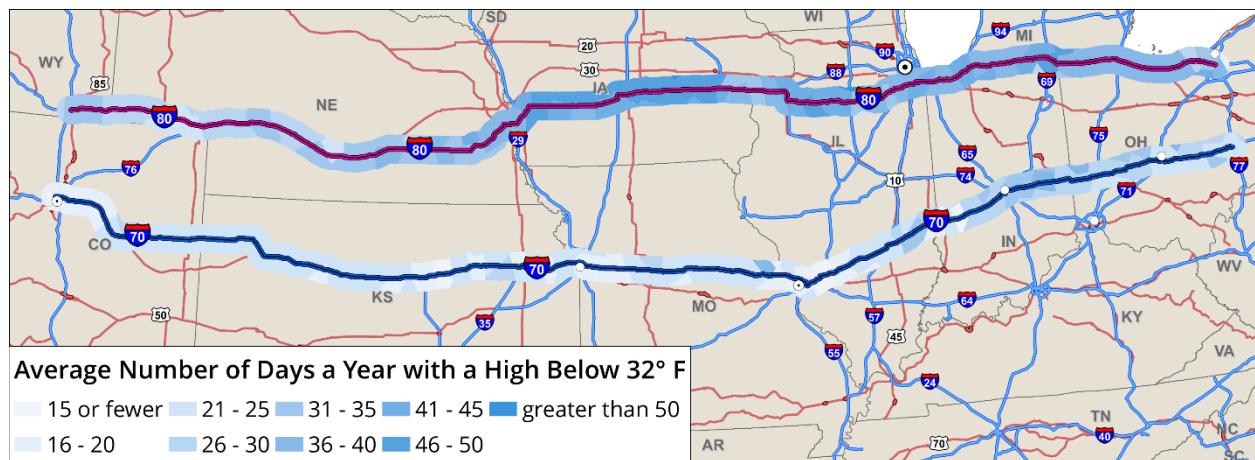


Weather Data: GHCN (1984-2013), Base Map: US Census Bureau TIGER/Line

**Figure 10. Average number of days annually with a low temperature below freezing (top) and 0°F (bottom) along I-70 and I-80**

These are days that some ice formation or snow could be expected. Also, extremely low temperatures can cause problems starting vehicles, which can ground vehicle fleets. The western portion of the analysis sections and Iowa experience the most days where the low dips into freezing temperatures.

Figure 11 shows the average number of days annually that have highs below 32°F. These are days when ice will not melt at all during the day, potentially leading to impassable roads.



Weather Data: GHCN (1984-2013), Base Map: US Census Bureau TIGER/Line

**Figure 11. Average number of days annually with a high temperature below freezing along I-70 and I-80**

#### 4.4 Tolls

Some states have routed I-70 and I-80 along previous turnpike routes. The toll is in addition to any use fees paid. These tolls depend on the class of vehicle. The tolls to pass through each toll highway are detailed in Table 10.

**Table 10. Tolls along I-70 and I-80 corridors using electronic toll collection (as of December 16, 2014)**

Interstate	State	Route	Length	Toll: 4-Axle	Toll: 5-Axle
I-70	Kansas	Kansas Turnpike	53 mi	\$6.41	\$8.08
I-80	Illinois	Tri-State Tollway	5 mi	Daytime: \$1.70 Overnight: \$1.35	Daytime: \$3.00 Overnight: \$2.25
	Indiana	Indiana Toll Road	136 mi	\$28.33	\$36.92
	Ohio	Ohio Turnpike	173 mi	\$22.00	\$25.75

Sources: [www.ksturnpike.com](http://www.ksturnpike.com), [www.illinoistollway.com](http://www.illinoistollway.com), [www.ezpassin.com](http://www.ezpassin.com), [www.ohioturnpike.org](http://www.ohioturnpike.org)

## **5. CONCLUSIONS AND FUTURE RESEARCH**

From this study, we identified the following potential efficiencies that may improve freight movements in the Midwest:

- Provide more streamlined regulatory services along the I-80 and I-35 freight corridors (e.g., oversize-overweight permit portal at [www.gotpermits.com](http://www.gotpermits.com))
- Conduct benefit-cost analysis on allowing LCVs in Iowa, considering the impact of large trucks on the infrastructure
- Promote advanced vehicle technologies that may mitigate truck driver fatigue and improve safety

In future research, it is important to study the relationship between freight corridor performance and the existing regulations and to quantify the impacts of freight regulations on the safe and efficient movement of freight via trucks.

However, as pointed out by the committee of a recent truck size and weight study, projecting the impact of changes in truck size and weight limits is difficult due to the lack of robust methods (TRB 2014).



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## APPENDIX: STATE AGENCY SURVEY

### Regulatory Issues Affecting Truck Freight Movement in Region VII

As part of an Iowa Department of Transportation study of the regulatory issues affecting truck freight movement, we are conducting this survey in order to obtain a better understanding of the experiences of Iowa's neighboring states in changing freight/trucking regulations and policies. Ultimately, the goal of this research effort is to improve freight movement across Iowa and the entire region.

You have been identified as a likely responder to this survey based on our best information, but please feel free to forward this email/survey to others in your agency. The survey should take about 5 minutes, and results will be shared with the participating agencies.

Name:

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Agency:

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Current Position:

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Email/Phone:

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Has your agency been investigating or actually made changes to your truck size and weight regulations in the past 15 years? (Y/N) ... If so, what changes have been made? \_\_\_\_\_

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What other potential changes have been suggested? \_\_\_\_\_

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Has your agency received pressure/inquiries on regulatory changes in the past 10-15 years? (Y/N) ... If suggested changes were not made, what was the rationale for keeping them the same?

- Safety
- Cost
- Other:

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Regarding CDL learners permits, do you specific training criteria for longer combination vehicles? (Y/N)

What other trends have been seen by your agency in recent years (10-15 years) concerning freight regulations? \_\_\_\_\_

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Would your agency be interested in participating in a pee-to-peer exchange on these issues? (Y/N)