

# Indiana's Plan Moving Forward



## FREIGHT PERFORMANCE MEASURES

In order to use public funding in the most effective way, INDOT has identified goals and performance measures to ensure that projects, programs, and policies advance the freight transportation system in a way meaningful to its public and private stakeholders. Performance-based planning allows INDOT to track how its existing assets are performing and changing. Performance measures can also be used to evaluate whether a potential investment will advance a public goal.

### *National and State Freight Goals*

Identifying meaningful performance measures starts with setting goals for how the network should perform. Under the Fixing America's Surface Transportation (FAST) Act, the evaluation of various transportation improvement strategies will need to consider each strategy's effect on the chosen performance measures and strategic goals. National Freight Policy Goals include:

- Improve the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness;
- Reduce congestion on the freight transportation system;
- Improve the safety, security, and resilience of the freight transportation system;
- Improve the state of good repair of the freight transportation system;
- Use advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system; and
- Reduce adverse environmental and community impacts of the freight transportation system.

Similarly, INDOT has identified five goals that will direct how it invests in the State's infrastructure. Current NHFP funds are not sufficient to address all freight mobility needs, so other highway funding will be used for projects that improve freight mobility. The following goals will guide INDOT's investment in freight infrastructure projects:

- **Economic Impact** – Cultivate a strong and diverse economy by growing Indiana as a magnet for jobs.
- **Capacity to Meet Demand** – Reduce bottlenecks to improve the reliability and efficiency of freight movement, leading to less congestion, fewer infrastructure repairs, and lower emissions.
- **Multimodal Integration and Synergy** – Develop and implement transportation networks that support direct truck and rail access, waterborne freight expansion, and air cargo expansion, leading to the improvement and establishment of multimodal and intermodal service facilities.
- **Access to National and International Markets** – Support better connectivity between all modes of freight transportation, including between Indiana's water ports and highway and rail modes.



- **Quality of Life** – Identify opportunities to improve and maintain Indiana's transportation infrastructure, supporting the safe movement of freight through the State.

The goals set at the national and state level are related and complementary. Figure 28 shows the relationship between INDOT's goals and national goals for freight performance.



**Figure 28. INDOT and National Goals**

## NATIONAL AND STATE FREIGHT PERFORMANCE MEASURES

Performance measures must be specific and measurable to be useful in directing investments. The performance measures presented in this plan are designed to be useful for signaling when changes are warranted for strategies and priorities (e.g., in long-range plan updates and in development of capital, maintenance, and operation program budgets).

The FAST Act identified only one freight-specific performance measure: Truck Travel Time Reliability. The Truck Travel Time Reliability Index (TTTR) is a ratio of congested travel times to normal travel times on a segment of the roadway. The National Performance Measure Research Dataset (NPMRDS) provides the data required to calculate median and high (95th percentile) travel times at five different times of day. The TTTR is reported as a single number for State's segments of the National Highway Freight Network.

While TTTR is the only Federally required freight performance measure, this plan has identified at least one potential performance measure for each of INDOT's goals. These quantified measures have potential to be integrated



into the planning process and project selection process by INDOT. Performance measures were chosen such that they can be meaningful to decision-makers, stakeholders, political leaders and the general public. Specific performance measures INDOT may use to assess the suitability of the State’s freight transportation system to maintain and grow the economy are listed in Table 13.

These performance measures could also serve as the basis for target-setting with respect to what various programs will accomplish. The target-setting and monitoring processes accounts for the fact that many performance measures reflect not only results of actions taken by an agency, but external factors as well (e.g., traffic volumes and environmental conditions).

**Table 13. Potential Freight Performance Measures**

INDOT GOAL	PERFORMANCE MEASURES	NEED OR ISSUE ADDRESSED
<b>Economic Impact</b>	<ul style="list-style-type: none"> <li>• Percent growth in jobs in freight-intensive industries</li> <li>• Percent growth in export value (domestic or foreign)</li> </ul>	<ul style="list-style-type: none"> <li>• Increase local economic benefit from freight industries</li> </ul>
<b>Capacity to Meet Demand</b>	<ul style="list-style-type: none"> <li>• Percent of lane-miles at level of service C or better</li> <li>• Reduction in hours of truck delay</li> <li>• Improvement in Truck Travel Time Reliability Index</li> </ul>	<ul style="list-style-type: none"> <li>• Increase ability of infrastructure to meet demand</li> <li>• Reduce congestion and air quality impacts of freight</li> <li>• Improve system’s ability to meet demand from shippers</li> </ul>
<b>Multimodal Integration and Synergy</b>	<ul style="list-style-type: none"> <li>• Percent of intermodal connectors with “fair” or better pavement conditions</li> <li>• Number of intermodal or multimodal projects completed</li> </ul>	<ul style="list-style-type: none"> <li>• Address issues on first and last mile connections between modes</li> <li>• Track investment in multimodal integration</li> </ul>
<b>Access to National and International Markets</b>	<ul style="list-style-type: none"> <li>• Hours of delay on roadways within 5 miles of ports and cargo airports</li> </ul>	<ul style="list-style-type: none"> <li>• Improve highway access to trading partners</li> </ul>
<b>Quality of Life</b>	<ul style="list-style-type: none"> <li>• Reduction in truck-involved crashes</li> <li>• Reduction in truck-involved fatal crashes</li> <li>• Removal of rail/highway grade crossings</li> </ul>	<ul style="list-style-type: none"> <li>• Improve safety for the traveling public</li> <li>• Eliminate loss of life on Indiana’s roadways</li> <li>• Improve safety and reliability for the traveling public</li> </ul>

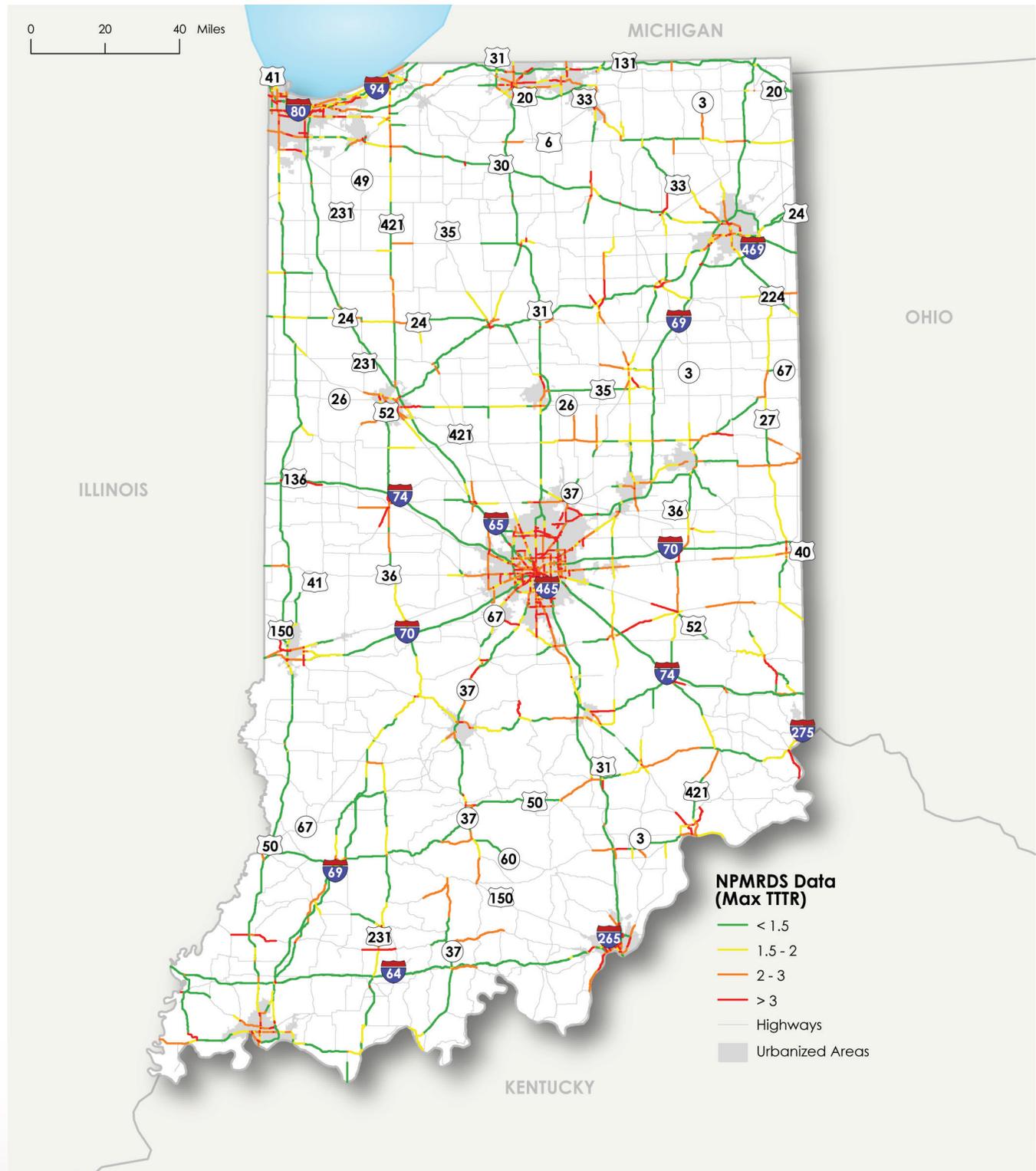
At present INDOT is committing to two of the above goals to guide and measure freight investments. Truck Travel Time Reliability (TTTR) is required by FHWA TPM Rule and described below. Detailed safety statistics are currently maintained by INDOT, though not necessarily queried for freight-related analytics, also described below.

### Capacity to Meet Demand: Truck Travel Time Reliability

Travel time reliability is an indicator of the highway system’s ability to consistently meet demand for travel. Reliability is particularly important for freight transportation because shippers must schedule routes and drivers to meet customer schedules. A less reliable system results in higher costs as shippers have to include a buffer to ensure on-time delivery. This is increasingly relevant as trends towards just-in-time delivery and lower inventories potentially tighten delivery windows.

The TTTR index is a measure of how much additional time shippers must plan for in order to arrive on time 95 percent of the time. FHWA defines TTTI as “the consistency or dependability in travel times, as measured from day-to-day and/or across different times of day”. Federal performance measures require states to report the worst TTTR Index across five times of day. Figure 29 shows the TTTR Index on Indiana roadways. The least reliable segments tend to be in urbanized





**Figure 29. Indiana Travel Time Reliability**

Source: National Performance Management Research Dataset, 2017



areas or near the intersection of two highways. However, there are at least moderate reliability issues in many parts of the state. Interstate highways and U.S. highways between urbanized areas tend to be more reliable because additional lanes minimize the impact of crashes and other causes of delay. Additional NPMRDS analysis was performed by INDOT using the Regional Integrated Transportation Information System (RITIS) to better understand speed deficits between free flow speed (how fast trucks wish to travel) and peak hour speeds (what speed trucks are actually able to travel) at 27 locations throughout the State. Detailed results and graphs are shown in Appendix G.

## Quality of Life: Safety

One measure of freight safety on Indiana's roadways is the number of truck-involved traffic fatalities. While each crash may have unique factors such as roadways conditions or driver behavior, identifying areas where fatalities occur most often can help direct investment in safety improvements. Statewide rates can serve as an overall indicator of progress in safety advancement.

Over the last 20 years, Indiana has kept pace with national improvement in the number of fatal crashes (decrease of 15 percent in 2015 compared to 1994) as well as in the rate of fatal crashes per mile of travel (decrease of 35 percent in 2015 compared to 1994). Indiana's rate of fatal crashes was consistently lower than the national rate during that period and was ranked 21<sup>st</sup> in lowest fatality rates among states and Washington, D.C. in 2015. Table 14 lists the overall crash rate and the truck-involved crash rate in Indiana for the three most recent years available. The number of truck-involved crashes in the state increased in 2014 and then decreased again in 2015. The reverse is true for the overall crash rate in Indiana which, along with the national average, dipped in 2014 before returning to higher levels in 2015.

**Table 14. Fatalities and Truck-Involved Fatalities in Indiana, 2013-2015**

YEAR	ALL	TRUCK-INVOLVED	ALL PER 100 MM VMT (NATIONAL)	TRUCK-INVOLVED PER 100MM TRUCK VMT
2013	784	117	1.00 (1.10)	Not available
2014	745	128	0.94 (1.08)	1.35
2015	821	117	1.04 (1.13)	1.17

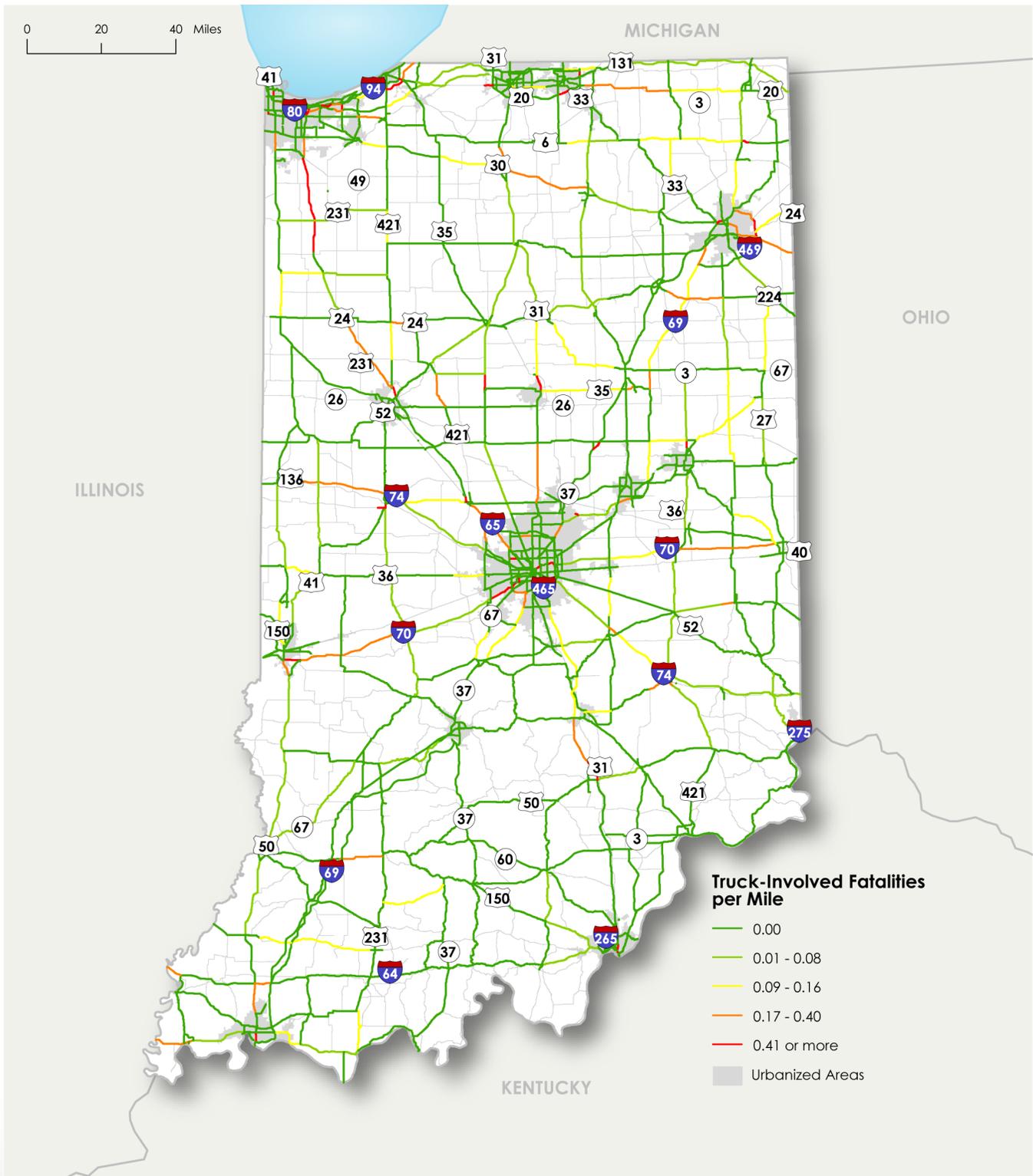
Source: National Highway Traffic Safety Administration, Fatality Analysis Reporting System; Truck VMT from INDOT Traffic Data.

Figure 30 and Figure 31 show the location of truck-involved fatalities in Indiana between 2013 and 2015. Interstate highways are commonly the locations with the most truck-related fatalities, and these are also the locations with the most truck traffic and highest speeds. Some locations with high crash incidence are:

- I-65 for about 30 miles south of Lake Michigan.
- I-65 for about 15 miles north of Lafayette.
- I-70 near Terre Haute and in west Indianapolis.
- I-70 near the Indiana/Ohio state line.
- US 20 between South Bend and Angola.
- US 30 near Plymouth and Warsaw.
- SR 32 between I-65 and I-74.







**Figure 31. Truck-Involved Fatalities per Mile, 2013-2015**

Source: National Highway Traffic Safety Administration, Fatality Analysis Reporting System.



