

The Trucking Industry: The View from the Road

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ATRI

Trucking industry's NFP research organization

- Commercial Drivers
- Congestion and Mobility
- Economic Analysis
- Environment
- Safety
- Security
- Technology
- Transportation Infrastructure
- Trucking Industry Operations

www.atri-online.org



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U.S. Trucking Industry

- 620,784 Registered Interstate Motor Carriers
 - ◆ 90.1% operate 6 > trucks
 - ◆ 97.1% operate 20 > trucks
- \$544.4 billion in freight revenue (82% of U.S. freight bill)
- 8.8 billion tons of freight (68% of total U.S. tonnage)
- 2.4 million class 8 trucks
- 6.8 million employees in truck-related activities
- 3.2 million truck drivers
- 80% of U.S. communities depend solely on truck deliveries

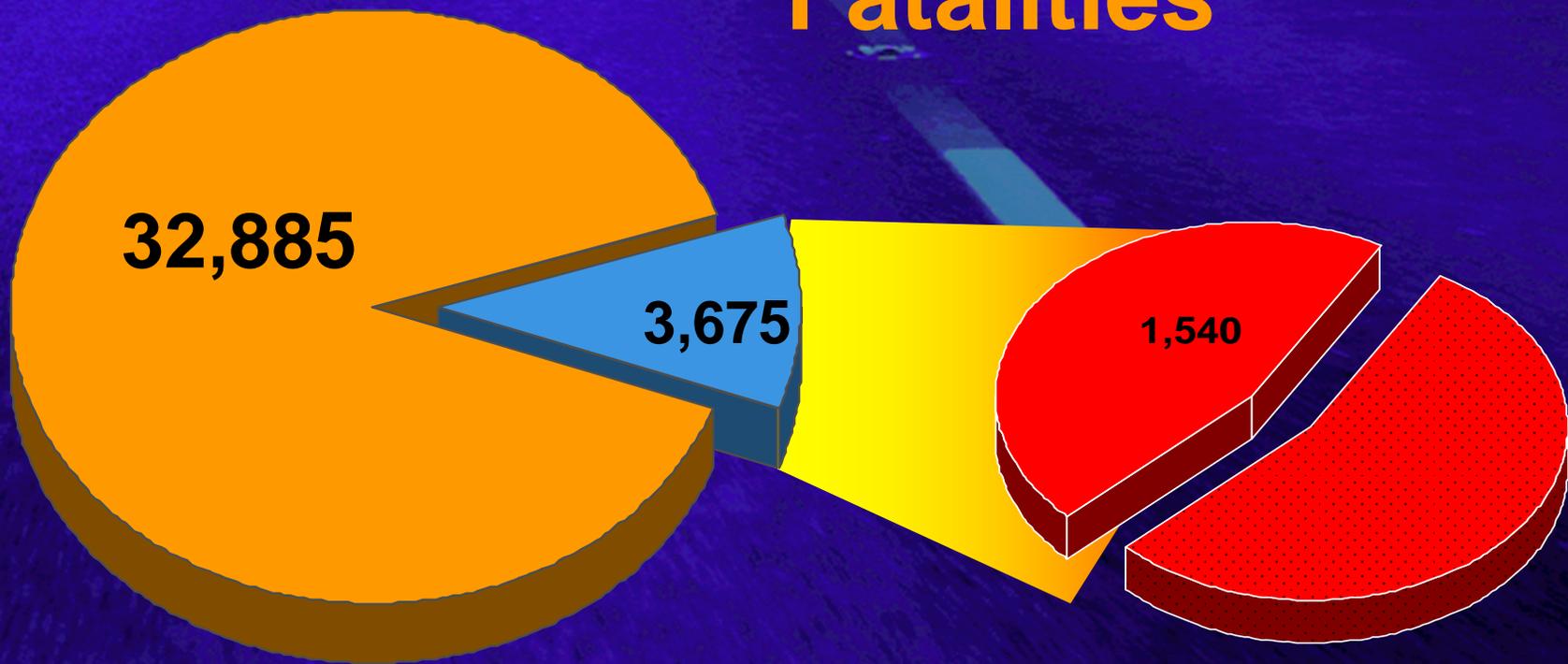
Safety by the Numbers

2010 Vehicle Fatalities

- Total: 32,885
- Truck-Involved: 3,675

- Responsible Party?
 - ◆ 71% - US DOT
 - ◆ 71% - Transport Canada
 - ◆ 75% - AAA Foundation
 - ◆ 55% - LTCCS

The Crash Picture 2010 Highway Crash Fatalities



■ All Highway Crashes

■ Crashes Involving Trucks

■ Truck Contributed Crashes

Source: NHTSA & FMCSA Large Truck Crash Causation Study data

Government Regulation

- FMCSA – carrier/driver safety
- FHWA – truck size & weight
- PHMSA – hazmat regulations
- NHTSA – vehicle design
- CBP – cross border operations
- EPA – engine, fuel economy standards
- Host of state and local regulations as well

Idling Regulations Compendium

- Updated regularly with truck idling limits, exemptions and fines plus hyperlinks to more than 40 idling regulations throughout the U.S.
- Available online free of charge as PDF and formatted as a cab card
- www.atri-online.org



COMPENDIUM OF IDLING REGULATIONS

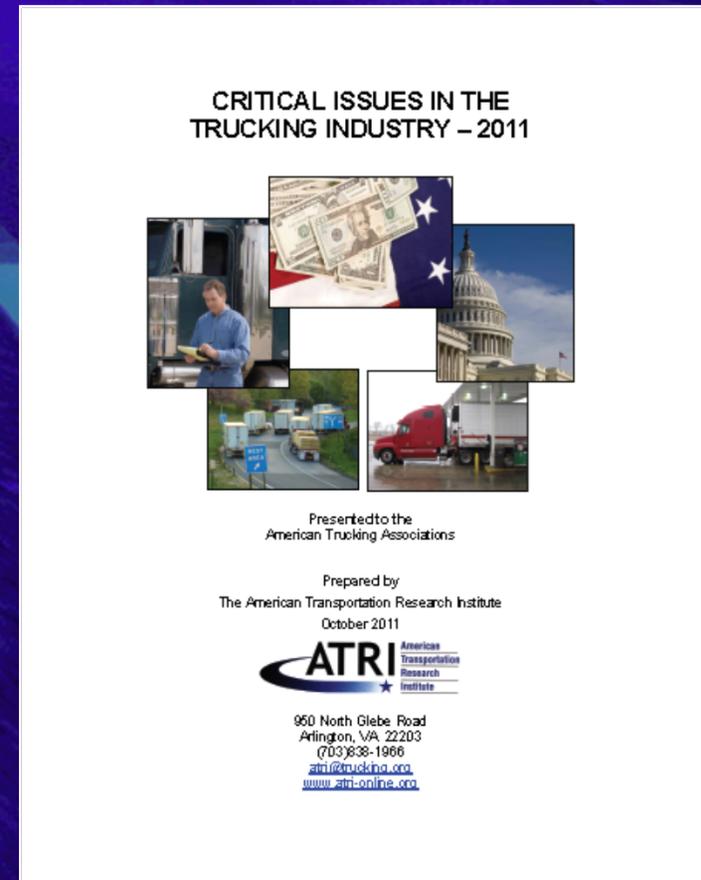
The information in this table is for reference purposes only and should not be relied upon for regulatory compliance. This information may contain errors and omissions and is subject to change. Actual state, county or city codes should be referenced for specific requirements. On-line users may access these codes by clicking on the individual regulations.

State	Maximum Idling Time	Exemptions
Arizona, Maricopa County	6 minutes (30 min. for bus passenger comfort or 60 min/30 min if greater than 75° F) Fines: \$100 – 1st violation \$300 – 2nd+ violations	<ul style="list-style-type: none"> Traffic or adverse weather conditions Emergency or law enforcement purposes Power takeoff involving cargo or work functions Conform to manufacturer's specifications Maintenance or diagnostics Hours of service compliance
Maricopa County Vehicle Idling Restriction Ordinance Maricopa County Air Quality Department (602) 506-6010, www.maricopa.gov/aq		
California	6 minutes Fines: Minimum \$300 (Subsequent penalties can range from \$1,000 to \$10,000)	<ul style="list-style-type: none"> Bus passengers are onboard or 10 minutes prior to boarding Traffic conditions Queuing beyond 100' of residential Adverse weather conditions or mechanical difficulties Vehicle safety inspection Service or repair Power takeoff involving cargo or work functions Prevent safety or health emergency Emergency vehicles
CA Code of Regs. Title 19, Div. 3, Art. 1, Ch. 10, 52465 California Air Resources Board (800) 242-4460, www.aq.ca.gov		
California, City of Sacramento	6 minutes (prohibits refrigeration unit operation within 100' of residential or school unless loading/unloading) Fines: Not <\$100 nor >\$25,000 per violation (Title 1, Ch. 1.28.010)	<ul style="list-style-type: none"> Traffic conditions/control Traffic conditions Vehicle safety inspection Service or repair Conform to manufacturer's specifications Power takeoffs involving cargo or work functions Prevent safety or health emergency Hours of service compliance @ truck/rest stop To recharge hybrid electric vehicles
Sacramento City Code, Title 8, Ch. A, 116 City of Sacramento Department of Transportation (916) 264-5011, www.cityofsacramento.org/transportation		
California, Placer County	6 minutes (prohibits refrigeration unit operation within 100' of residential or school unless loading/unloading) Fines: \$50 Minimum	<ul style="list-style-type: none"> Traffic conditions/control Traffic conditions Vehicle safety inspection Service or repair Conform to manufacturer's specifications Power takeoffs involving cargo or work functions Prevent safety or health emergency Hours of service compliance @ truck/rest stop To recharge hybrid electric vehicles Operate intermittent equipment Alternatively fueled vehicles Attainment areas
Placer County Code, Article 10.14 Placer County Air Pollution Control District (530) 746-2330 www.placer.ca.gov/airpollution/airpoll14.htm		

Updated: January 2009

2011 Top Industry Issues

1. Economy
2. Hours-of-Service
3. Driver Shortage
4. CSA
5. Fuel Issues
6. Congestion
7. Transportation Funding
8. Tort Reform
9. Onboard Truck Technology
10. Truck Size and Weight



1. Economy



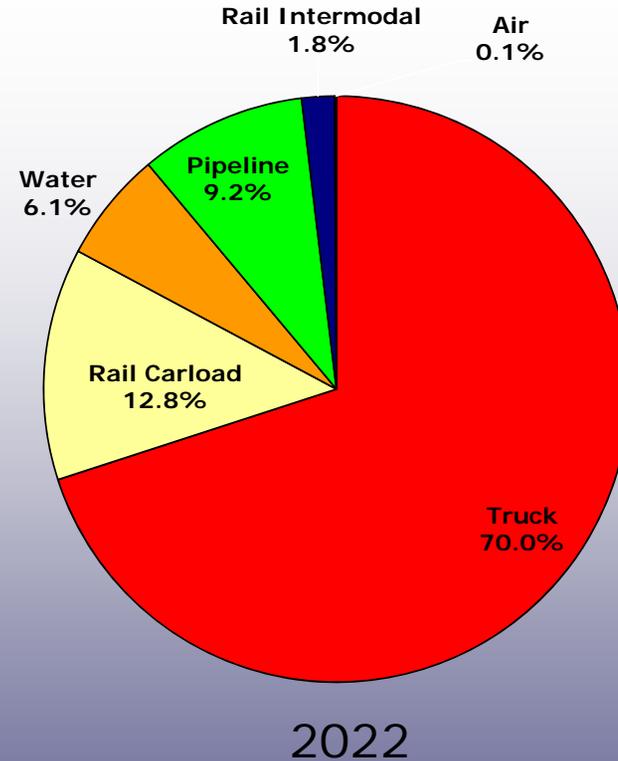
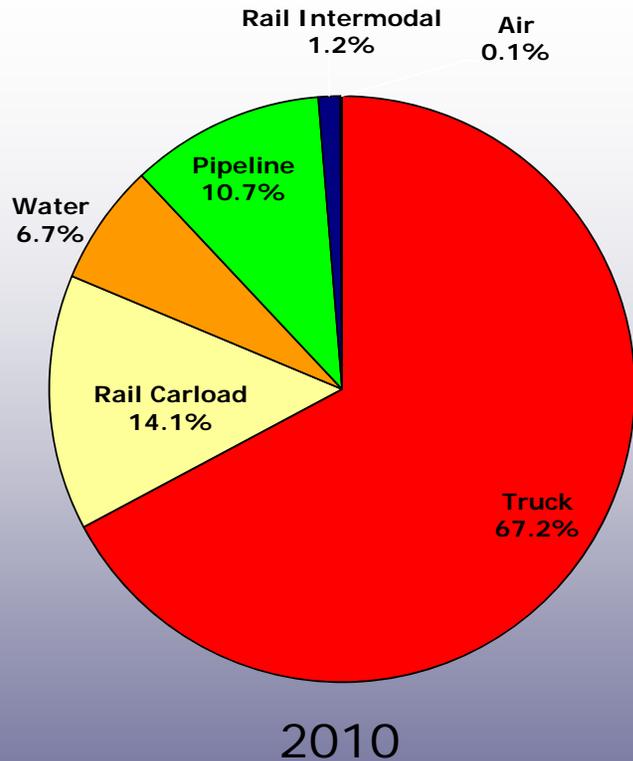
- Debuted at #2 spot in 2008 survey; climbed to 1st in 2009; only issue to stay at #1 for consecutive years
- While still top concern, some sectors of industry seeing recovery
 - ◆ In 2009, 51.6% ranked Economy 1st ; in 2011, down to 31%



Good stuff.



Distribution of Tonnage by Mode: 2010 vs 2022



Source: *U.S. Freight Transportation Forecast to 2022*

2. Hours-of Service

- Govern commercial driver work and rest hours
- First rules change in 60+ years occurred 2004
 - ◆ Extended driving time from 10 to 11 hours
 - ◆ Off-duty requirement from 8 to 10 hours
 - ◆ Maximum on-duty from 15 to 14
 - ◆ New 34-hour “restart” provision included
- Reduced flexibility in sleeper berth provision in 2005 – driving clock keeps ticking
- No “congestion credit” in driver HOS rules

2. Hours-of Service

New rules will have roadway operational impacts – effective July 2013

- 34-hour “restart” would have to include two periods of 1 a.m. to 5 a.m.
- Mandatory 30 min rest breaks after 8 hours driving
- Available truck parking becomes critical
- Real-time truck parking notification
 - ◆ Minnesota
 - ◆ Wisconsin
 - ◆ I-95 CC

3. Driver Shortage

- Dropped off industry's top ten list in 2009; returned last year at #5
 - ◆ Recession impacts on driver population – decreased freight demand; scaling back of entry-level driver hiring/training; elimination of marginal safety drivers
- Economic recovery leading to tightened driver capacity
- Other labor pool impacts include:
 - ◆ Regulatory – HOS, CSA
 - ◆ Retirements/Leaving for Other Industries

4. Compliance, Safety, Accountability

- New regulatory framework for evaluating motor carriers and drivers
- Pilot tested in nine states; full deployment 12/10
- Intended to provide more targeted safety interventions
- Evaluate carriers and drivers using seven BASICs (Behavior Analysis and Safety Improvement Categories) most likely to lead to crashes:
 - ◆ Unsafe Driving
 - ◆ Fatigued Driving (HOS)
 - ◆ Driver Fitness
 - ◆ Controlled Substances/Alcohol
 - ◆ Vehicle Maintenance
 - ◆ Cargo-Related
 - ◆ Crash Indicator

5. Fuel Issues

- Volatility in fuel prices keeps this issue in top 10
- Top concern in 2005 and 2008; third in 2009
- Diesel fuel hit \$4.70/gallon in July 2008; declined 40% by August 2010
- Fuel traditionally second highest operating expense after labor





On-Highway Diesel Fuel Prices



Note: Higher fuel prices don't generate the number of trucking failures they once did.

Sources: U.S. Department of Energy & ATA



Operational Costs of Trucking

- 2012 Update to research started in 2008
- Released 9/12/12
- Real-world motor carrier operational data

An Analysis of the Operational Costs of Trucking: A 2012 Update

September 2012



Prepared by the American Transportation Research Institute



Operational Costs of Trucking: 2012 Update

Average Carrier Costs per Mile

Motor Carrier Costs	2008	2009	2010	2011
<i>Vehicle-based</i>				
Fuel & Oil Costs	\$0.633	\$0.405	\$0.486	\$0.590
Truck/Trailer Lease or Purchase Payments	\$0.213	\$0.257	\$0.184	\$0.189
Repair & Maintenance	\$0.103	\$0.123	\$0.124	\$0.152
Truck Insurance Premiums	\$0.055	\$0.054	\$0.059	\$0.067
Permits and Licenses	\$0.016	\$0.029	\$0.040	\$0.038
Tires	\$0.030	\$0.029	\$0.035	\$0.042
Tolls	\$0.024	\$0.024	\$0.012	\$0.017
<i>Driver-based</i>				
Driver Wages	\$0.435	\$0.403	\$0.446	\$0.460
Driver Benefits	\$0.144	\$0.128	\$0.162	\$0.151
TOTAL	\$1.653	\$1.451	\$1.548	\$1.706

Operational Costs of Trucking: 2012 Update

Average Carrier Costs per Hour

Motor Carrier Costs	2008	2009	2010	2011
<i>Vehicle-based</i>				
Fuel & Oil Costs	\$25.30	\$16.17	\$19.41	\$23.58
Truck/Trailer Lease or Purchase Payments	\$8.52	\$10.28	\$7.37	\$7.55
Repair & Maintenance	\$4.11	\$4.90	\$4.97	\$6.07
Truck Insurance Premiums	\$2.22	\$2.15	\$2.35	\$2.67
Permits and Licenses	\$0.62	\$1.15	\$1.60	\$1.53
Tires	\$1.20	\$1.14	\$1.42	\$1.67
Tolls	\$0.95	\$0.98	\$0.49	\$0.69
<i>Driver-based</i>				
Driver Wages	\$17.38	\$16.12	\$17.83	\$18.39
Driver Benefits	\$5.77	\$5.11	\$6.47	\$6.05
TOTAL	\$66.07	\$58.00	\$61.91	\$68.21

6. Congestion

- Another issue impacted by recession; returning as critical industry issue as economy recovers
- Deteriorating state of infrastructure and inability to advance long-term funding solutions loom as top concerns
- Operating system more efficiently becomes **KEY** to keeping trucks moving!



Freight Bottleneck Analysis

- Joint FHWA / ATRI analysis of 250 freight significant highway locations
- Monitors congestion in peak and non-peak travel times

Bottleneck Analysis of 250 Freight Significant Highway Locations

September 2011



Prepared by the American Transportation Research Institute



2011 Top Freight Bottlenecks

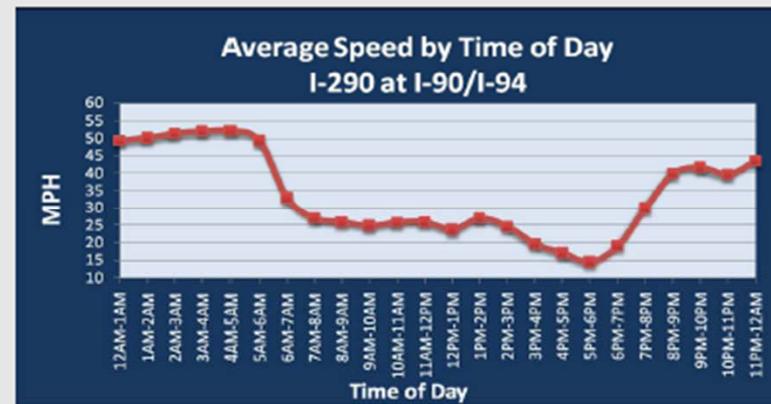
Ranking	Location	Avg. Speed
1	Chicago, IL: I-290 at I-90/I-94	29.41
2	Fort Lee, NJ: I-95 at SR 4	28.98
3	Houston, TX: I-45 at US 59	38.55
4	Houston, TX: I-10 at I-45	41.28
5	Houston, TX: I-10 at US 59	41.01
6	Gary , IN: I-65 at I-80/I-94	47.35
7	Austin , TX: I-35	34.55
8	Chicago, IL: I-90 at I-94 (North)	35.39
9	Atlanta, GA: I-285 at I-85 (North)	45.69
10	Los Angeles, CA: SR 60 at SR 57	46.43

Chicago, IL: I-290 at I-90/I-94

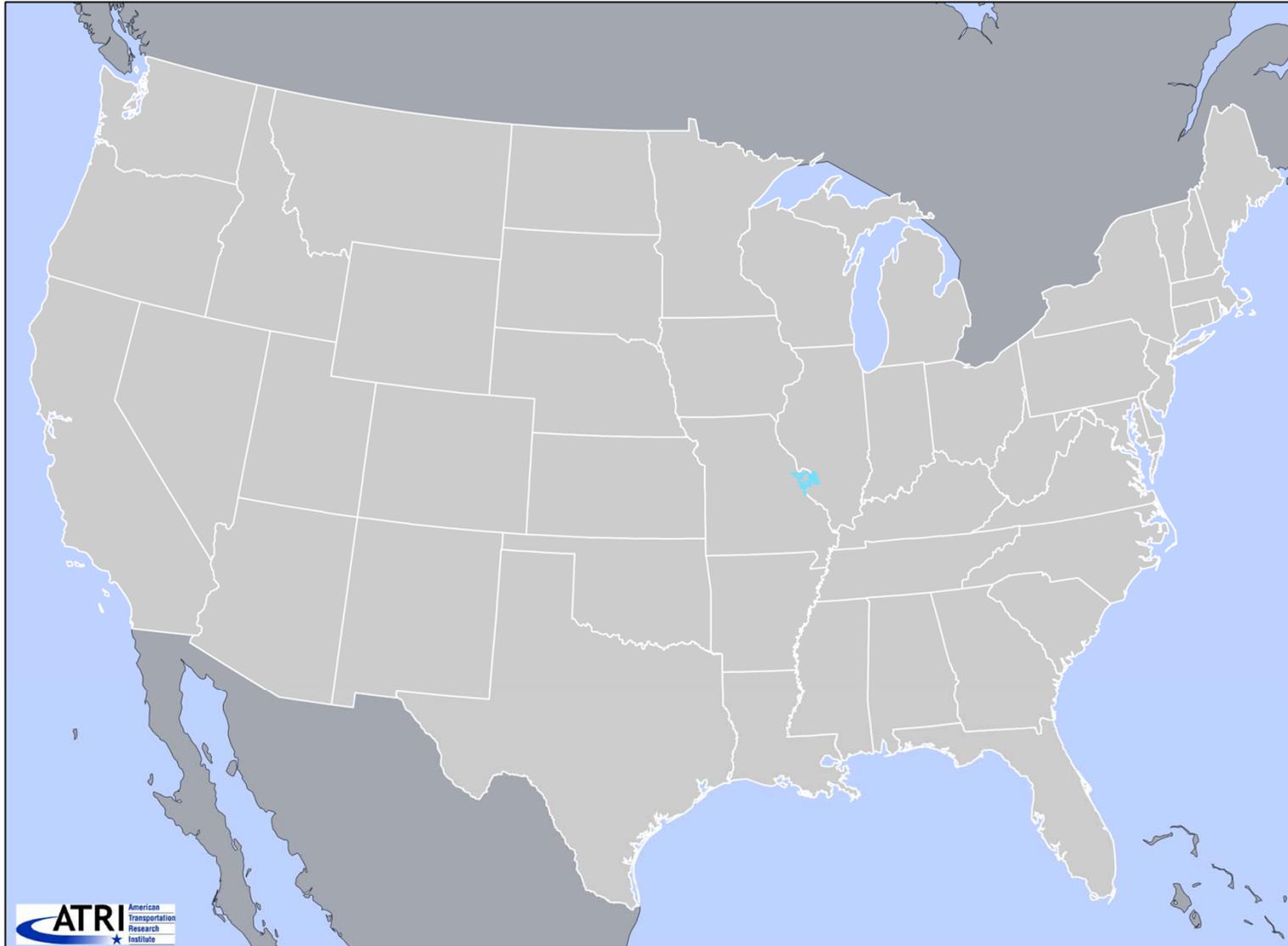


Summary

National Ranking by Congestion Index	1
Average Speed	29
Peak Average Speed	22
Nonpeak Average Speed	32
Nonpeak/Peak Ratio	1.43



St. Louis 2,000 Truck Sample



Same 2,000 Trucks After 24 Hours



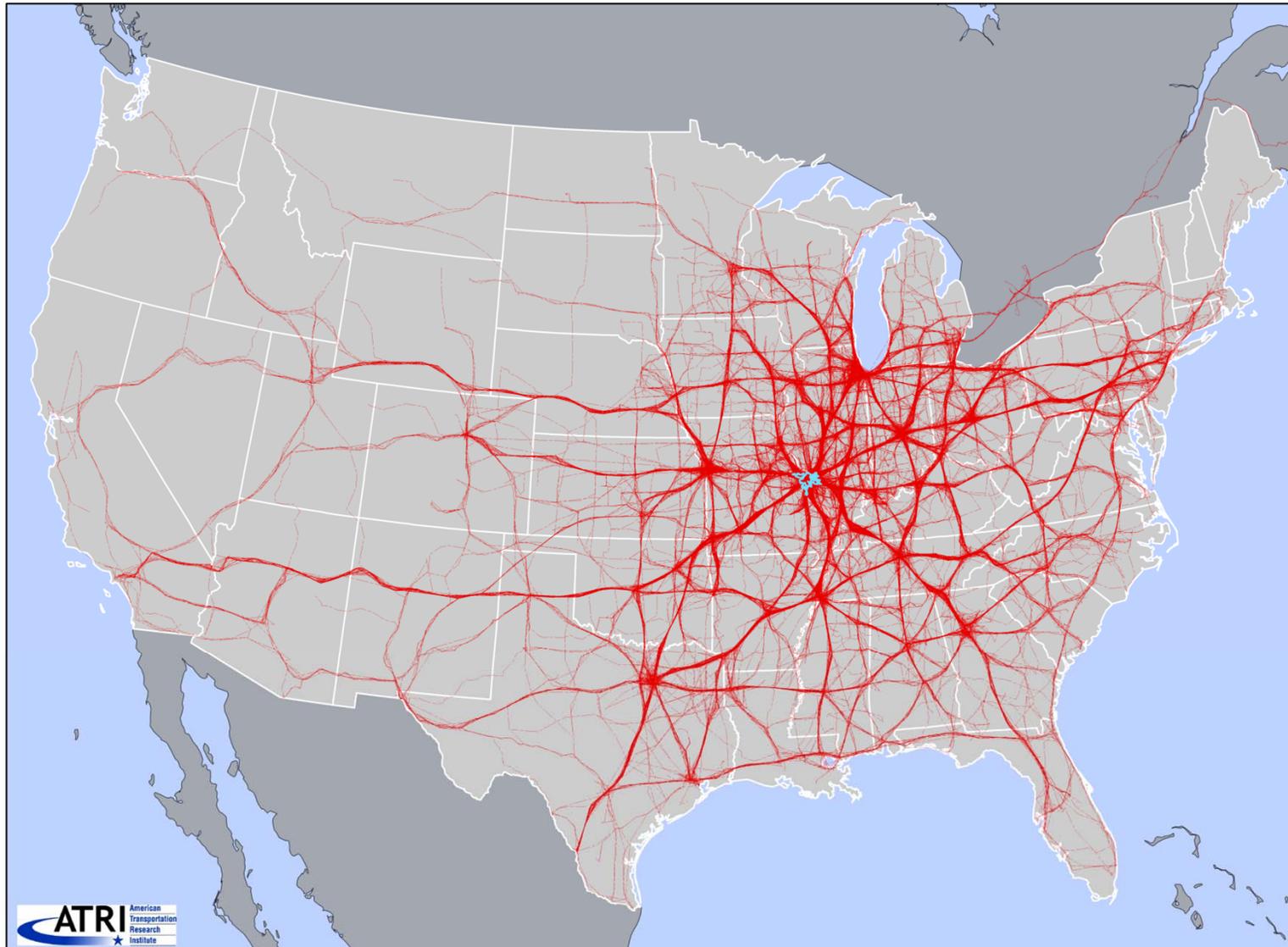
Same 2,000 Trucks After 48 Hours



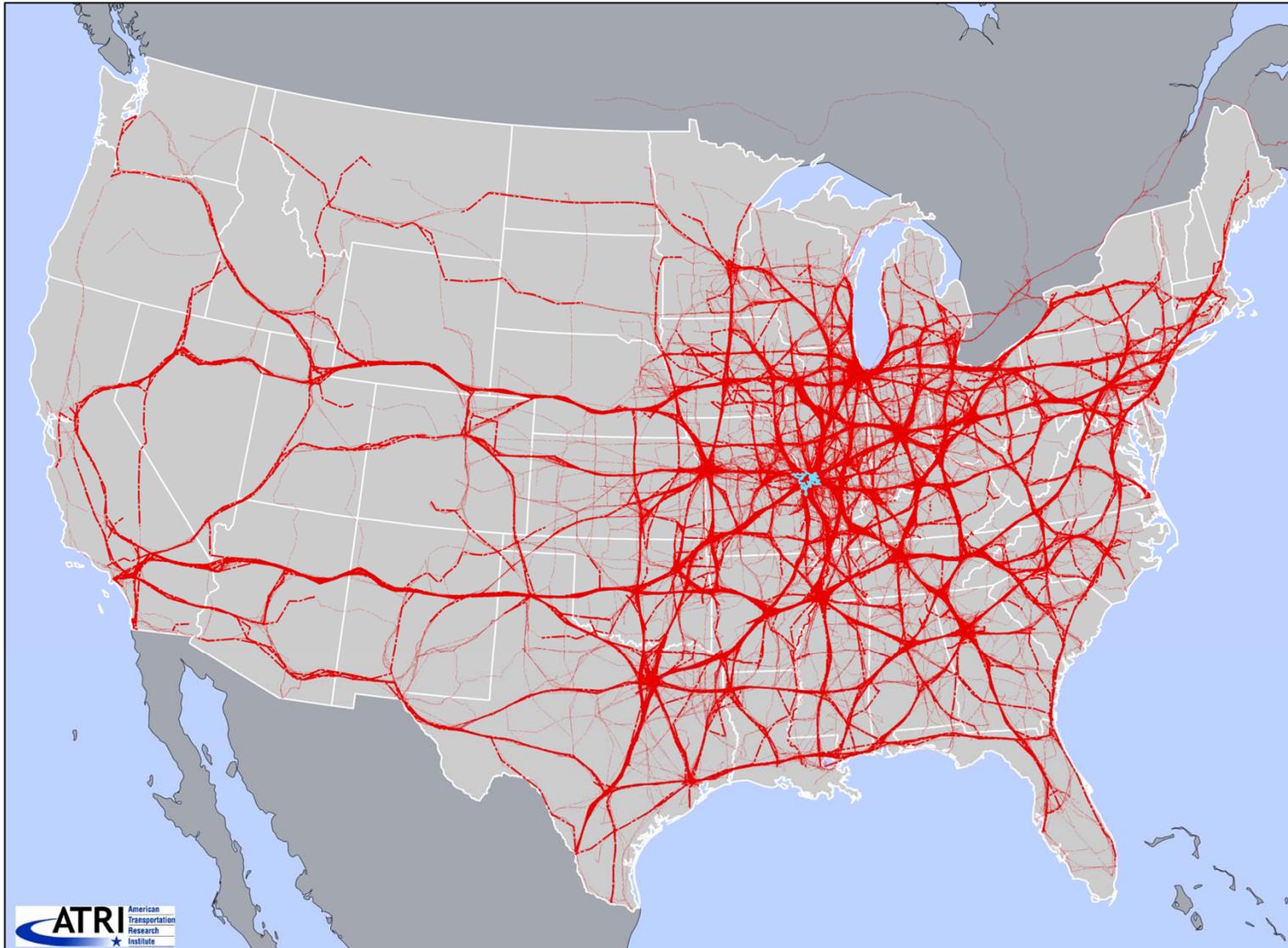
Same 2,000 Trucks After 72 Hours



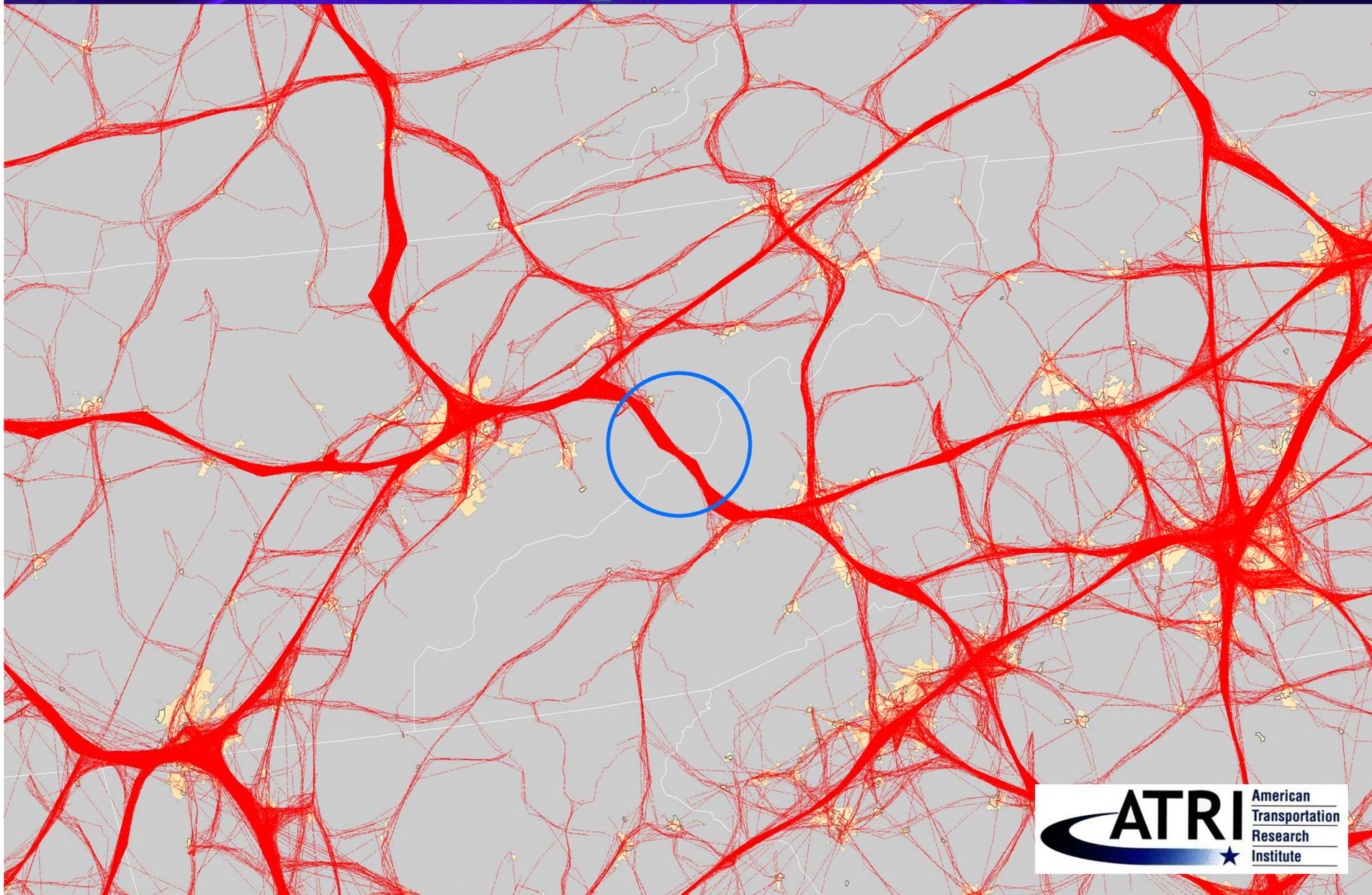
Same 2,000 Trucks After 5 Days



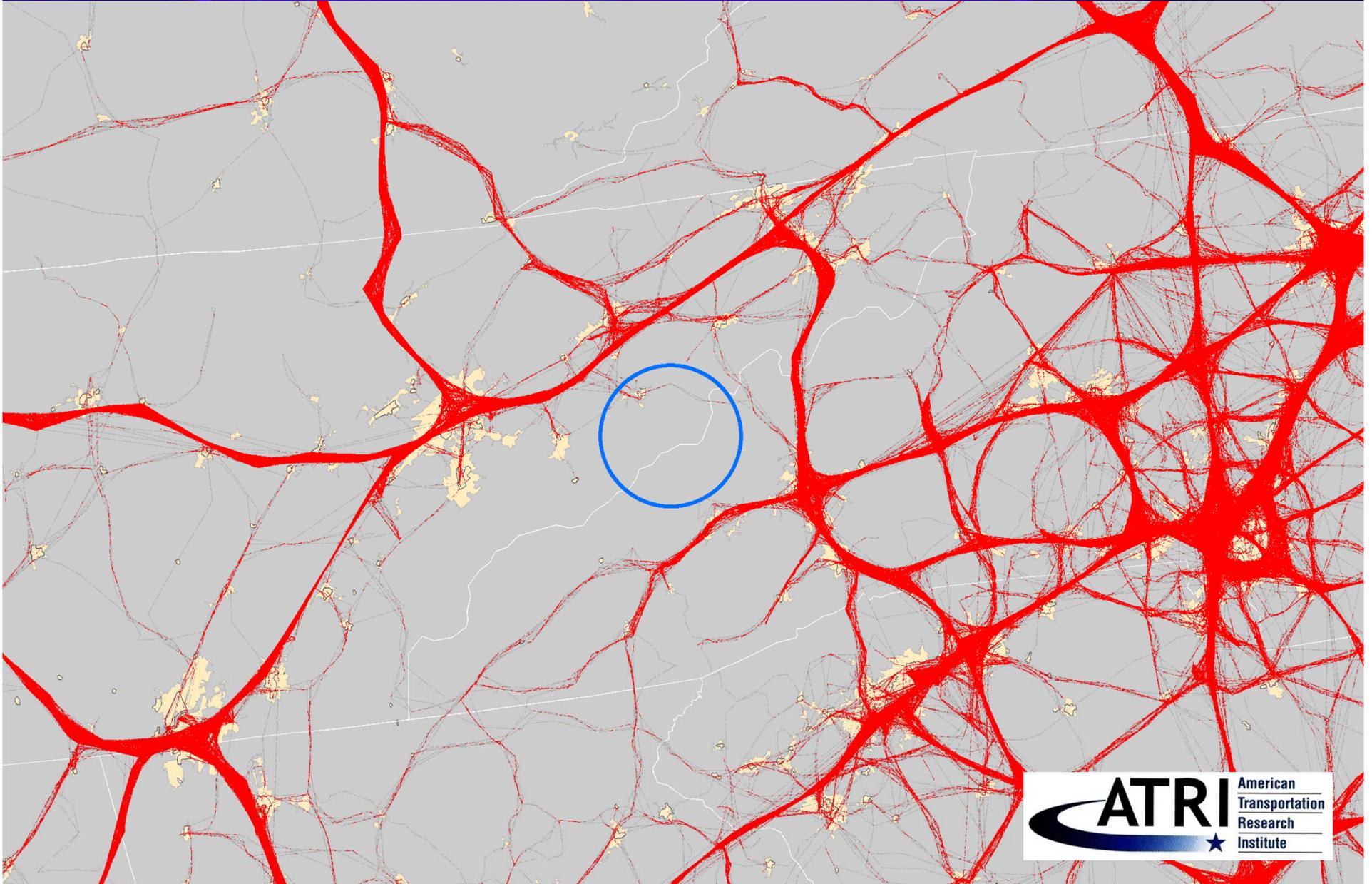
Same 2,000 Trucks After 7 Days



Truck Flow Analysis Before I-40 Rockslide



Truck Flow Analysis After I-40 Rockslide

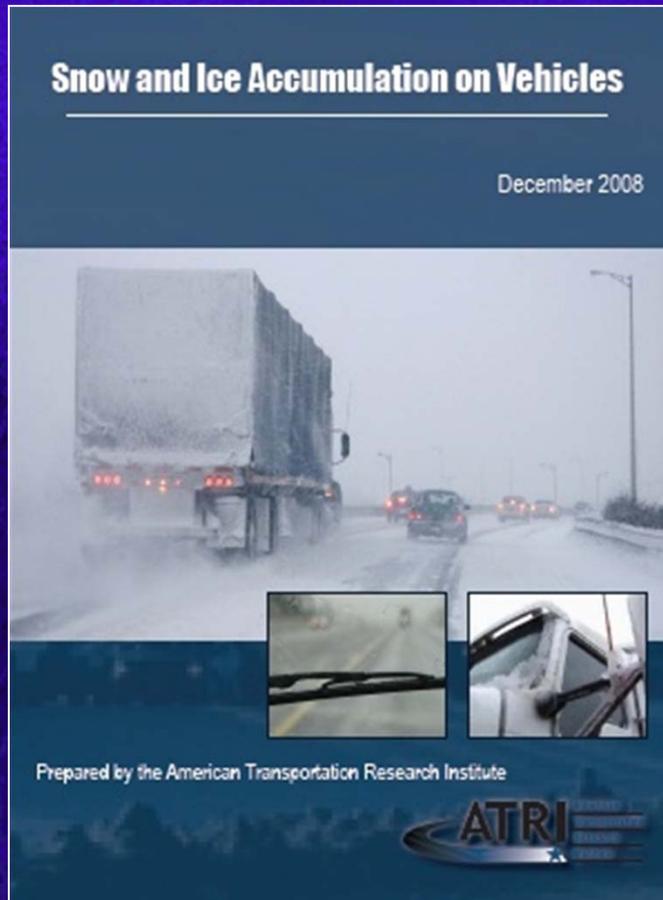


Weather Impacts on Trucking

- **Real-Time Weather Notification System Design**
 - ◆ **Data-feed from NOAA**
 - ◆ **Weather event data geo-fenced and pushed in real-time to commercial drivers via in-cab communication devices**



Snow and Ice



- Several states and provinces have regulations specifically citing snow/ice coming from trucks
- Other states/provinces cite drivers for weight/height limits, unsecured load, unsafe vehicle operation
- Little data on frequency of events

Snow and Ice

- Proposals require drivers or other personnel to clean tops of trailers
- Creates serious safety hazard for workers – in many cases violates OSHA regulations
- Snow removal devices include scrapers, blowers, catwalks/platforms with safety harnesses
 - ◆ Most are better for removing snow, less effective with ice
 - ◆ Create additional issues with snow that is removed
 - ◆ Depending on device, prices range from \$12,000 to \$70,000

Snow and Ice

- Other solutions proposed involve redesigned trailers that impede formation of ice sheets or reduce snow accumulation
 - ◆ Trailer manufacturers claim little market demand for vehicle solutions

7. Transportation Funding

- Industry strongly supports fuel tax as most efficient means for collecting highway revenues
- Are Alt Funding Mechanisms “Better”?
 - ◆ More Efficient?
 - ◆ More Equitable?
 - ◆ More Enforceable?
 - ◆ Less Costly?
 - ◆ Returns More \$\$ to Roads?
 - ◆ Less Manipulation?

9. Onboard Truck Technologies

- Lane Departure Warning
- Roll Stability Control
- Forward Collision Warning Systems (with Adaptive Cruise Control)
- Electronic Logging Devices (ELDs, also known as Electronic Onboard Recorders)
- Speed Governors/Limiters

Roll Stability Control Analysis

ROLL STABILITY SYSTEMS:
COST-BENEFIT ANALYSIS OF ROLL STABILITY CONTROL
VERSUS ELECTRONIC STABILITY CONTROL USING
EMPIRICAL CRASH DATA



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August 2012

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- Top RAC priority for 2012
- Released 8/10/12
- NHTSA proposed FMVSS #136 - Electronics Stability Control Systems on Heavy Vehicles – mandates ESC on all large trucks

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Roll Stability Control Analysis

- Data collection resulted in crash and cost data on over 135,000 trucks
 - ◆ Included RSC-equipped, ESC-equipped, no RSS
- Analysis found RSC-equipped trucks with lower crash rates and crash costs than ESC-equipped
- RSC much less expensive than ESC
 - ◆ \$1,181 per unit (ESC) versus \$467 per unit (RSC)

Mapping Large Truck Rollovers: Identification and Mitigation Through Spatial Data Analysis

Mapping Large Truck Rollovers: Identification and Mitigation Through Spatial Data Analysis

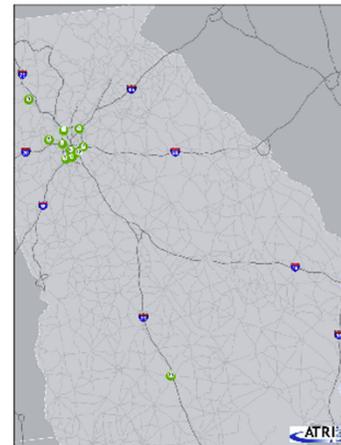
May 2012



Prepared by the American Transportation Research Institute



Georgia



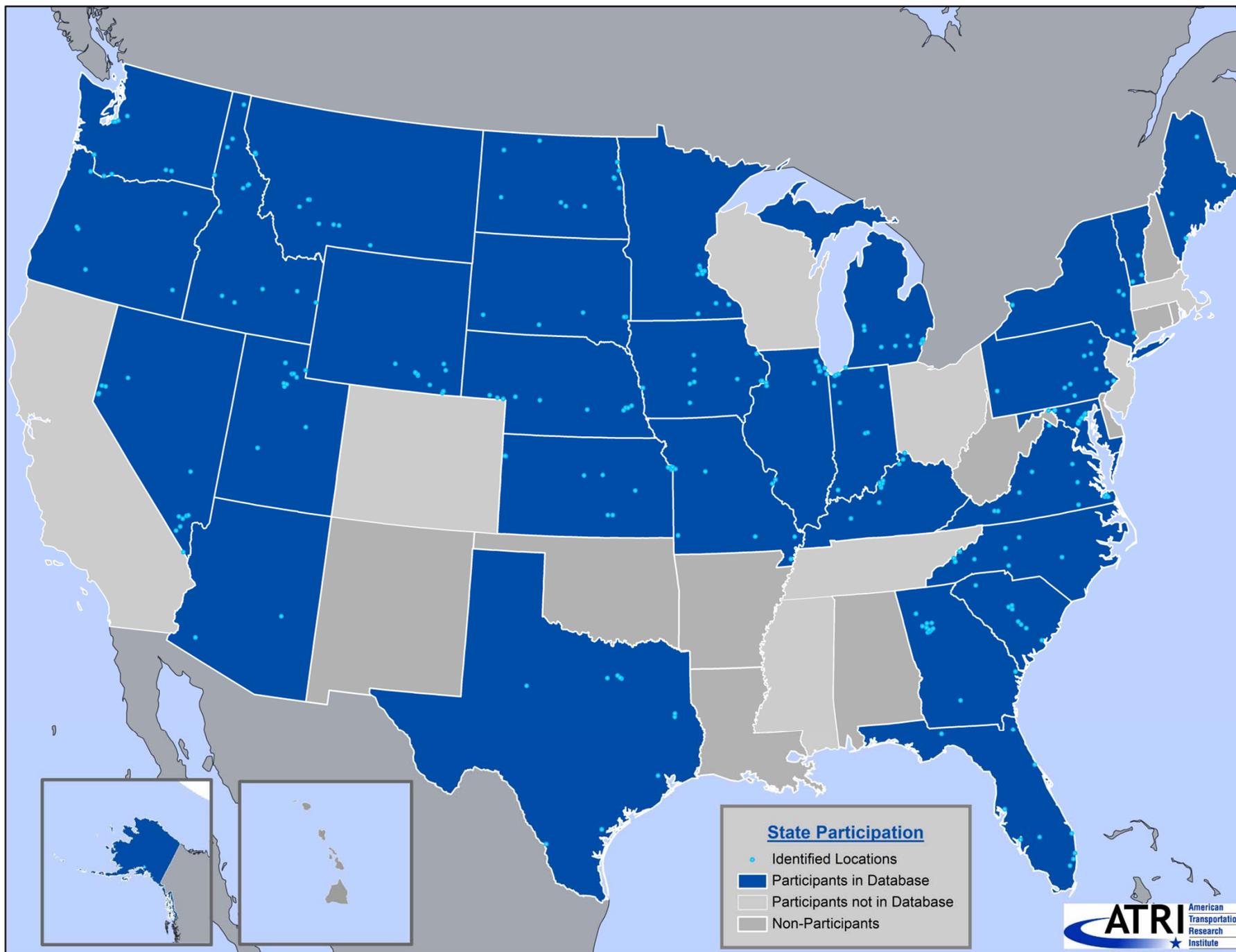
Rollovers by Year and Severity			
Year	Fatal	Non-Fatal	Total Rollovers
2001	16	451	467
2002	18	421	439
2003	21	524	545
2004	15	563	578
2005	18	630	648
2006	26	600	626
2007	28	488	516
2008	23	471	494
2009	19	249	268
All Years	184	4397	4581



Top Rollover Locations		
ID	Location	Number of Rollovers
1	I-285 and I-75 (South Side)	35
2	I-285 and I-20 (East Side)	32
3	I-285 and I-85 (South Side)	31
4	I-285 and I-85 (North Side)	17
5	US 278 and Spur 6	16
6	I-75 between SR 166 and I-85	16
7	I-95 and I-16	15
8	I-285 and I-20 (West Side)	14
9	US 411 and US 41/Joe Frank Harris Pkwy SE	11
10	I-75 between US 319 and Old Omega Rd	11
11	I-285 and I-75 (North Side)	11
12	I-285 and US 23/Moreland Ave	11

Please refer to the full report, *Mapping Large Truck Rollovers: Identification and Mitigation Through Spatial Data Analysis*, available from ATRI at www.atri-online.org for methodology and data sources.





Mapping Large Truck Rollovers



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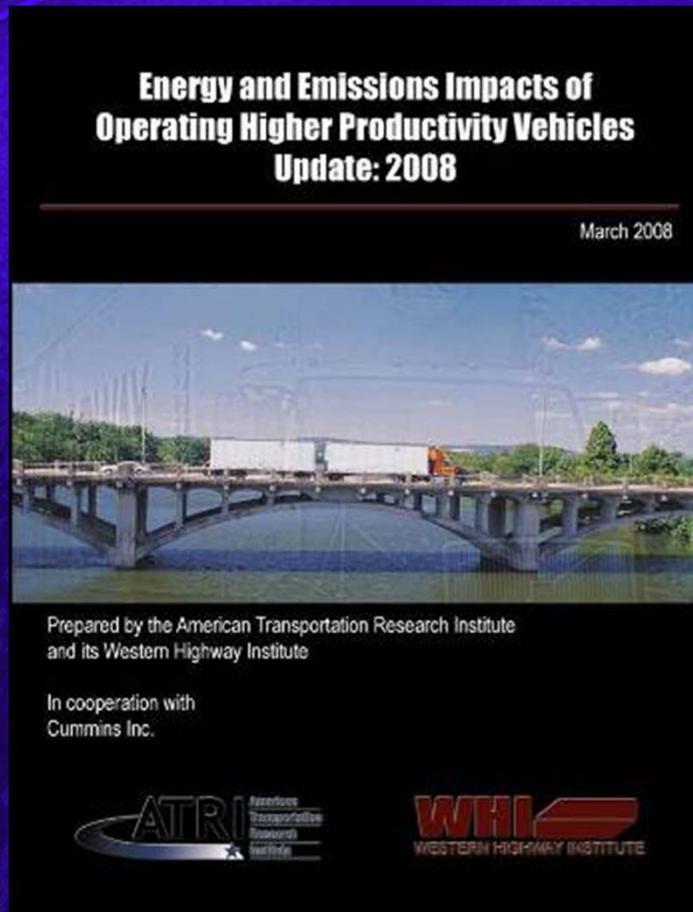
Mapping Large Truck Rollovers: Interactive Map

Click in the interactive map below to zoom in to rollover locations. Click on a rollover location to link to the state report.



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10. Truck Size and Weight



- Industry looking for productivity through increased truck size and weight
 - ◆ 88,000 lbs GVW on 5 axles w/ additional braking capacity
 - ◆ 97,000 lbs GVW on 6 axles
- ATRI study to identify potential energy use and emissions benefits from HPVs
- Increases in ton miles per gallon ranged from 17% - 33% based on configuration

Trucking and TIM

- Early 1990s research identified incident management as effective tool for mitigating congestion
 - ◆ Incident-induced congestion ~ 25 – 50%
- Leadership of NIMC (predecessor to NTIMC)
- Charter member of NTIMC – Chair Research Working Group
- Endorsed National Unified Goal (NUG)



Traffic Incident Management

- Nearly 20-year involvement in TIM research
- TIM Self-Assessment – tool for state and local TIM program managers to evaluate progress in key TIM program components
- Safe, Quick Clearance Outreach
 - ◆ Move It
 - ◆ Authority Removal
 - ◆ Move Over
- Development of SHRP 2 TIM Responder Training

Questions?

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