

# Trucking's Top Industry Issues

**Rebecca M. Brewster**  
**President and COO**  
**American Transportation**  
**Research Institute**

**STEP UP**  
And leave your  
footprint.



# ATRI

## Trucking industry's NFP research organization

- Safety
- Mobility
- Economic Analysis
- Technology
- Environment

[www.atri-online.org](http://www.atri-online.org)

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**ATRI** American  
Transportation  
Research  
Institute



# Research Advisory Committee



# 2016 Top Industry Issues

1. ELD Mandate
2. Hours-of-Service
3. Cumulative Economic Impact of Trucking Regulations
4. Truck Parking
5. Economy
6. CSA
7. Driver Shortage
8. Driver Retention
9. Transportation Infrastructure/ Congestion/ Funding
10. Driver Distraction

## CRITICAL ISSUES IN THE TRUCKING INDUSTRY – 2016



Presented to the  
American Trucking Associations

Prepared by  
The American Transportation Research Institute  
October 2016



950 North Glebe Road  
Arlington, VA 22203  
(703)838-1966  
[atri@trucking.org](mailto:atri@trucking.org)  
[www.atri-online.org](http://www.atri-online.org)





# Top Issues Drivers vs. Carriers

## Commercial Drivers

1. ELD Mandate
2. Hours-of-Service
3. Truck Parking
4. Cumulative Economic Impact of Trucking Regulations
5. Economy
6. CSA
7. Driver Retention
8. Sleep Apnea Rulemaking
9. FMCSA Mission
10. Driver Health/Wellness

## Motor Carrier Execs

1. Driver Shortage
2. ELD Mandate
3. Cumulative Economic Impact of Trucking Regulations
4. Economy
5. Hours-of-Service
6. Driver Retention
7. CSA
8. Transportation Infrastructure/ Congestion/ Funding
9. Federal Preemption of State Regulation of Interstate Trucking (F4A)
10. Driver Distraction

# Hours-of-Service

## Assessing the Impacts of the 34-Hour Restart Provisions

June 2013



Prepared by the American Transportation Research Institute



- Analysis to quantify expected impacts of 34-hour restart changes
- 2,292 driver surveys
- 500+ carrier surveys
- Logbook analysis – 40k+ drivers





# Hours-of-Service

## Operational and Economic Impacts of the New Hours-of-Service

November 2013



Prepared by the American Transportation Research Institute



- Post-rules implementation data collection
- 2,370 driver surveys
- 446 carrier surveys
- Logbook analysis 40k+ drivers





# 34-Hour Restart Impacts



TECHNICAL MEMORANDUM:  
QUANTIFYING IMPACTS FROM THE  
34-HOUR RESTART PROVISIONS

April 2015

Daniel C. Murray  
Vice President, Research  
American Transportation Research Institute  
Minneapolis, MN

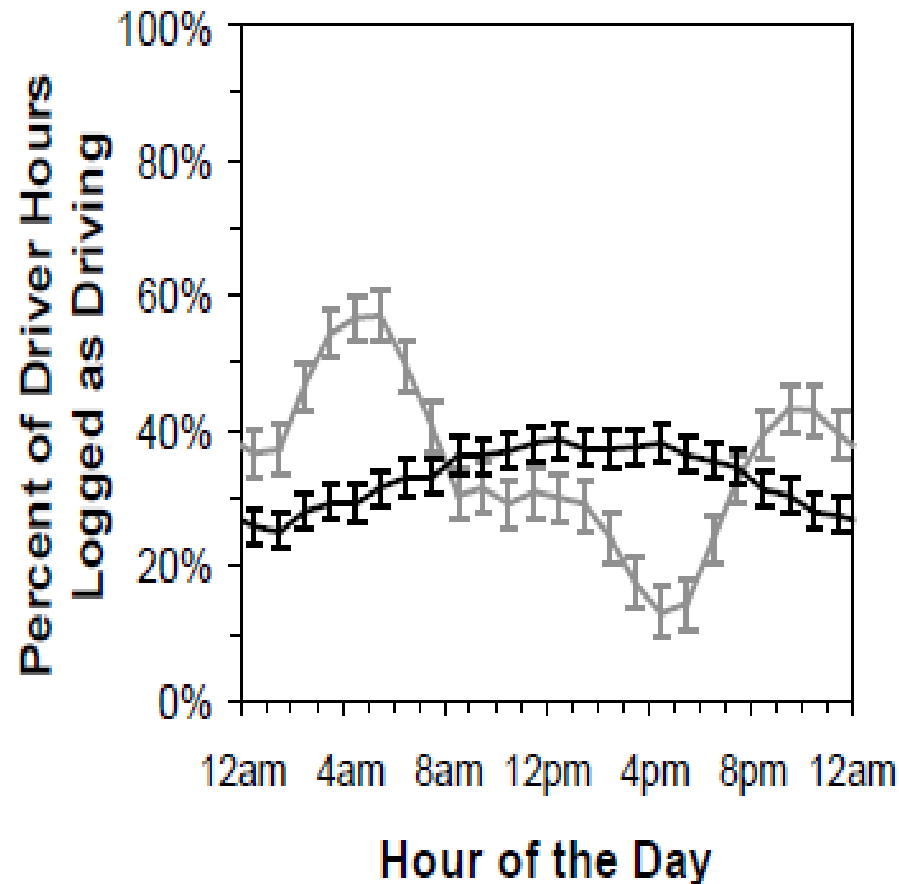
Jeffrey Short  
Senior Research Associate  
American Transportation Research Institute  
Atlanta, GA



- Analyzed full year pre-/post-July 1, 2013 truck GPS and crash data
- Impacts on operations and safety
- RAC priority – 2014



# Moving Drivers to Daytime



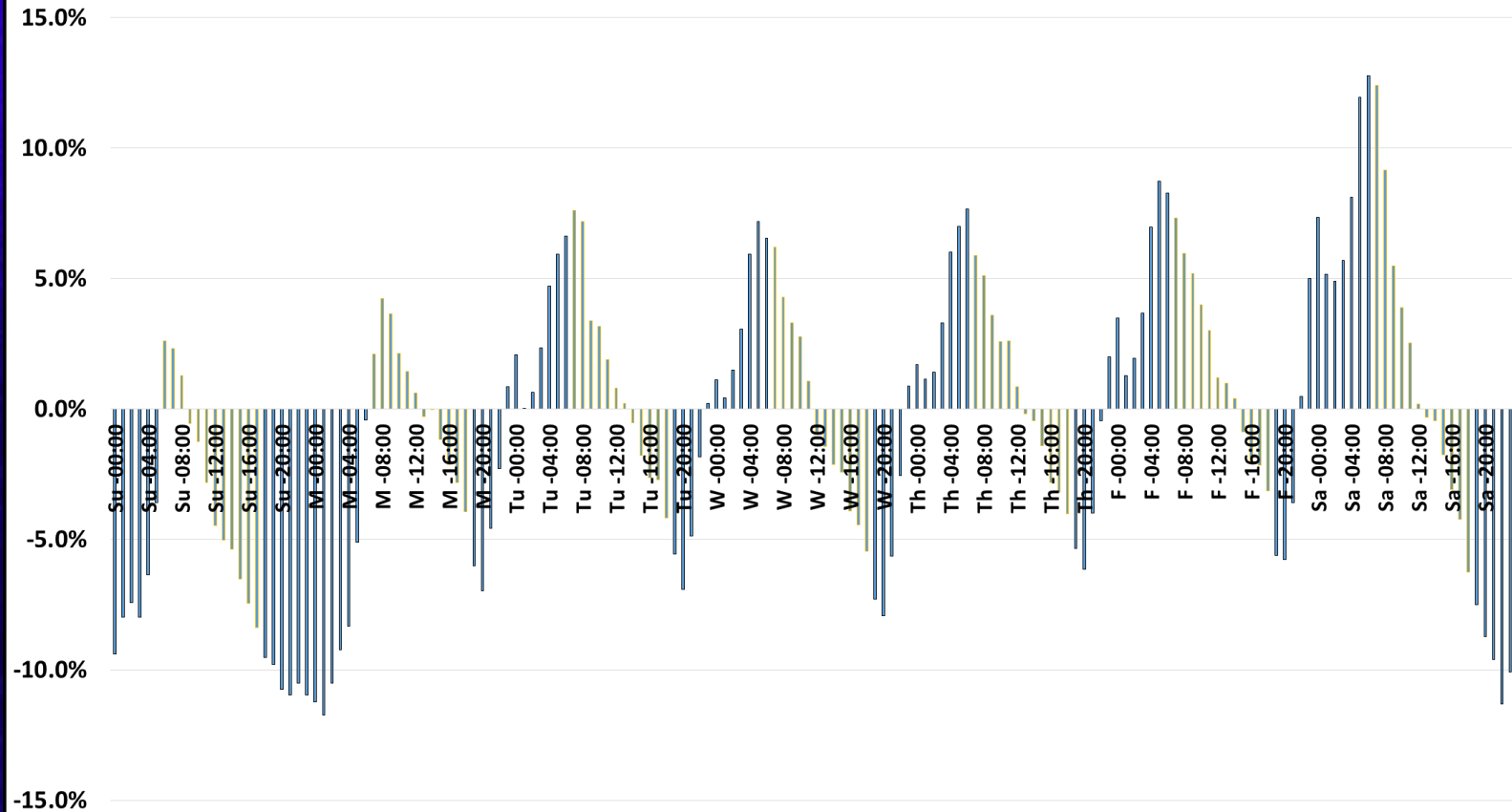
— One nighttime period (1 a.m. to 5 a.m.) in prior restart

— Two or more nighttime periods (1 a.m. to 5 a.m.) in prior restart



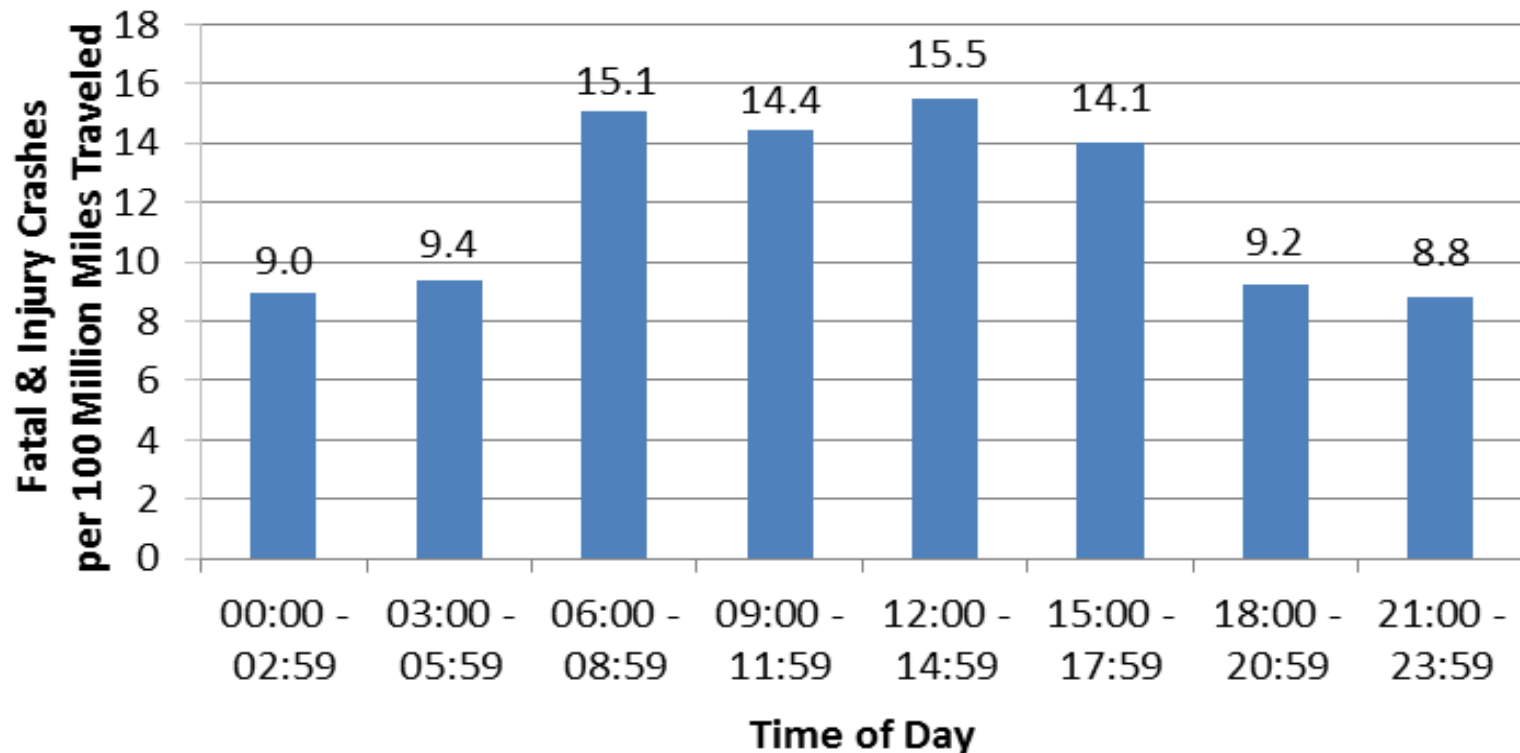
# Moving Drivers to Daytime

Percent Increase/Decrease from Oct/2012 to Oct/2014



# Crash Risk for Drivers by Time of Day

2011 Large Truck Crash Rate by Time of Day



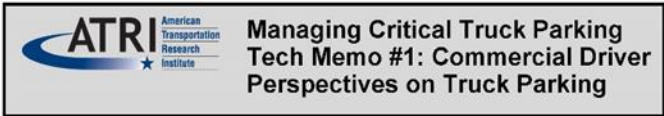


# Safety Impacts Post-July 1, 2013

- Overall – injury and tow-away crashes up for all days and weekdays
- Mondays – all crashes up; injury and tow-away highest increases
- Tuesdays – all crashes up; tow-aways highest increase
- Saturdays – all crashes up; tow-aways highest increase
- Sundays – morning injury crashes up 28%; tow-aways 13.3%

# Managing Critical Truck Parking

- **Top RAC priority for 2015**
- **Research tasks include:**
  - ◆ **Driver data collection – yielded over 1,400 driver surveys**
  - ◆ **Utilizing truck GPS data to assess parking supply and demand**
  - ◆ **Benefit-cost analysis of truck parking reservation systems – impacts on productivity and safety**
  - ◆ **Impacts of lost capacity**



September 2015

Caroline Boris  
Research Analyst  
American Transportation Research Institute  
Minneapolis, MN

Matthew A. Johnson  
Research Analyst  
American Transportation Research Institute  
Minneapolis, MN



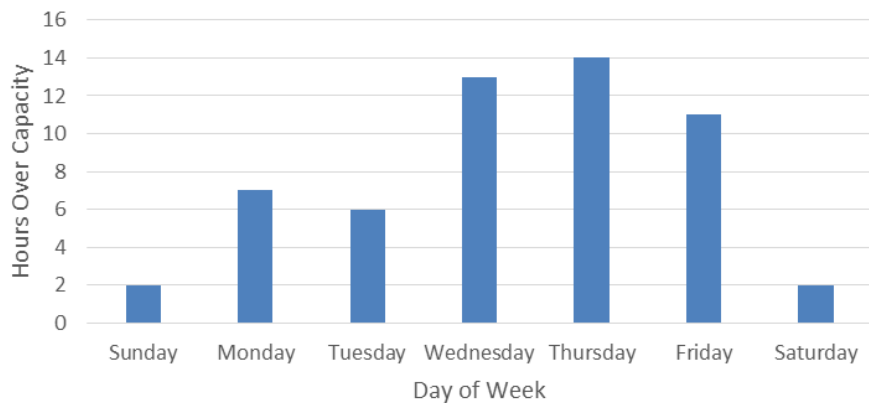


# Assessing Truck Parking Supply/Demand

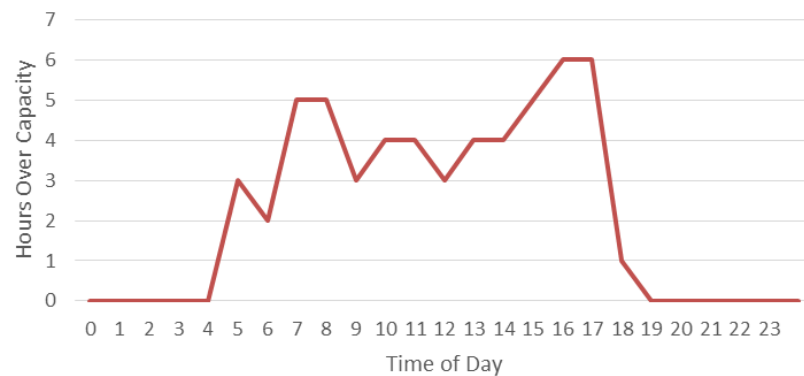
- **Assess supply/demand utilizing ATRI truck GPS data**
- **Proof of concept with MnDOT**
  - ◆ **Analysis to include 5 rest areas**
  - ◆ **Goose Creek Rest Area analysis complete**
- **Created methodology to examine truck parking demand at public rest stops**
- **Findings can inform investment decisions**

# Managing Critical Truck Parking

Overcapacity by Day of Week  
(October 2015)



Overcapacity by Time of Day  
(October 2015)



# Managing Critical Truck Parking

- **Truck Parking Diaries**  
– launched March 21<sup>st</sup>
- **Drivers to keep 14 days of parking activity**
- **Includes when, where, how long to find a spot, how many spots occupied by non-CMV's, lost productivity**



## TRUCK DRIVER DAILY PARKING DIARY



Thank you for participating in this important research. Your input is critical to the success of this study.

Please follow the instructions inside to provide 14 days of truck parking activity before returning the completed diary to ATRI.

[WWW.ATRI-ONLINE.ORG](http://WWW.ATRI-ONLINE.ORG)

Name: \_\_\_\_\_

Email: \_\_\_\_\_

For questions or more information, contact ATRI at 770-432-0628 ext. 1 or [ATRI@trucking.org](mailto:ATRI@trucking.org).





# Crash Accountability

- **Top RAC priority 2013**
- **Analysis completed for 15 carriers using five crash types**
  - ◆ **Being hit by another driver who was under the influence of drugs or alcohol**
  - ◆ **Another driver running a stop sign or light and hitting your truck**
  - ◆ **Being hit while legally parked**
  - ◆ **Collisions with an animal in the roadway**
  - ◆ **Collisions involving a pedestrian attempting to commit suicide by truck**

## Assessing the Impact of Non-Preventable Crashes on CSA Scores

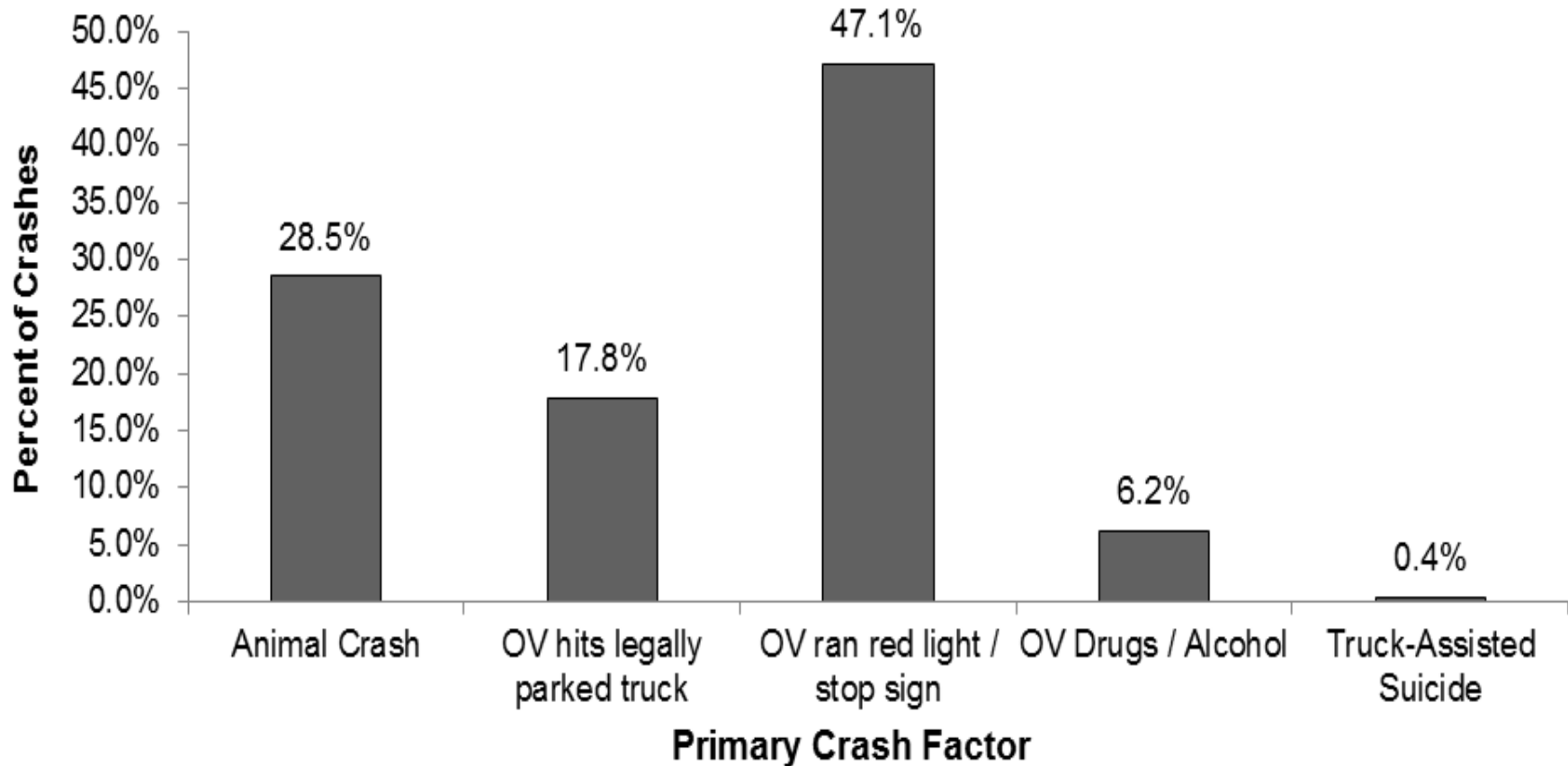
November 2015



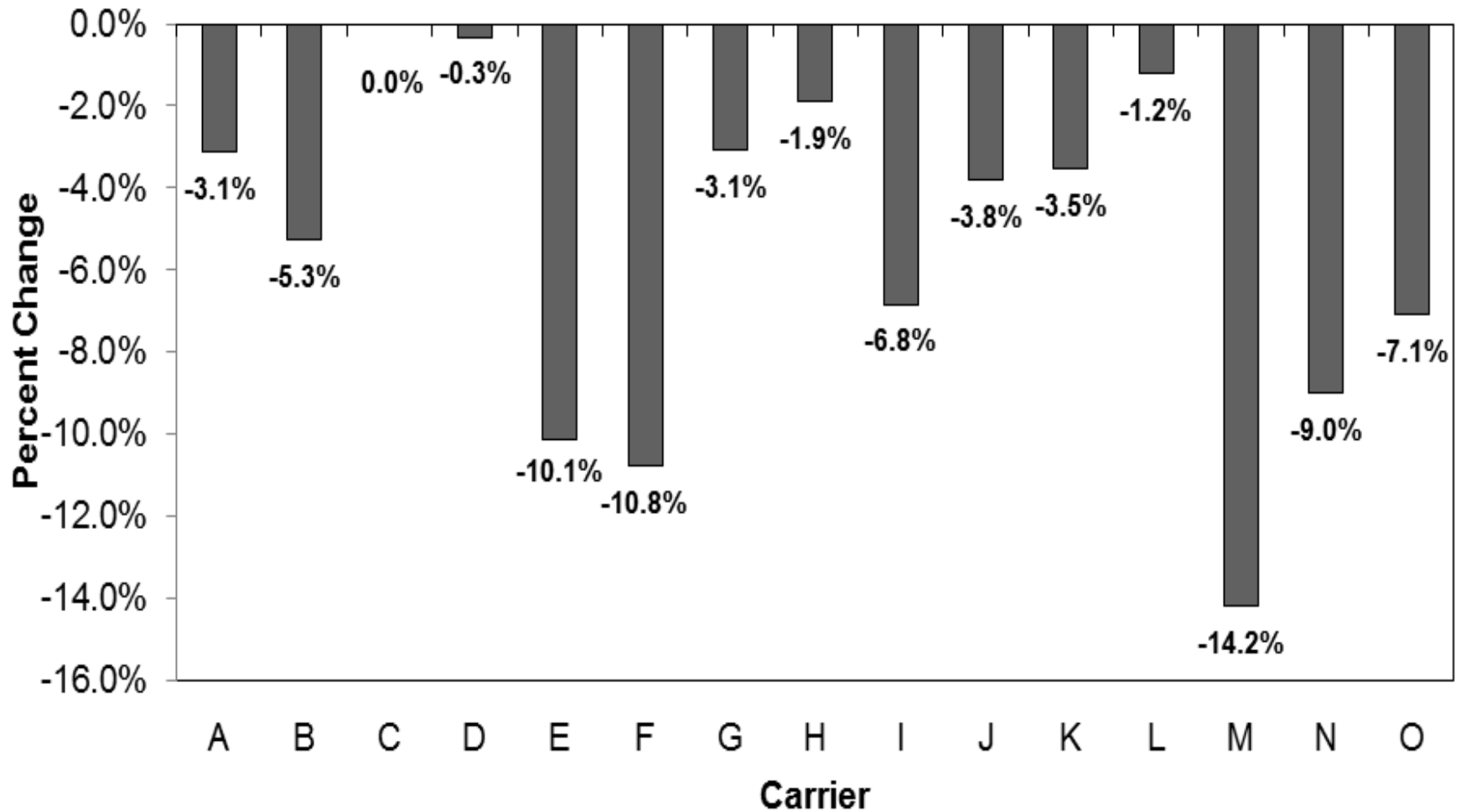
Prepared by the American Transportation Research Institute



# Crash Accountability



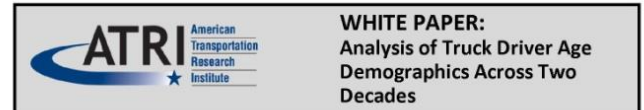
# Crash Accountability





# Analysis of Truck Driver Age Demographics Across Two Decades

- Identified as a top RAC priority – 2013
- Released December 2014
- Analysis of U.S. Census Bureau data
- Examines demographic trends in driver workforce with implications for future

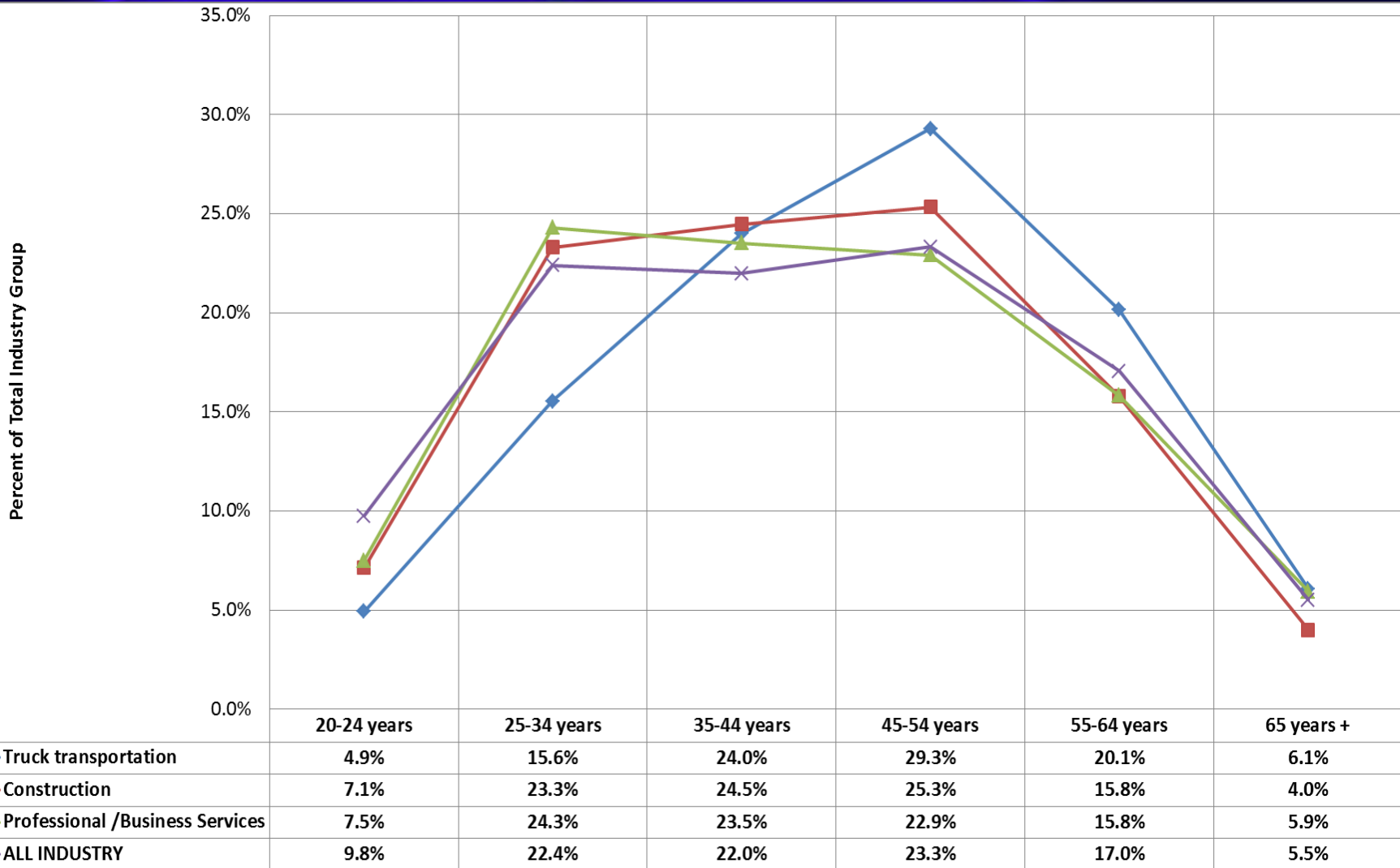


December 2014

Jeffrey Short  
Senior Research Associate  
American Transportation Research Institute  
Atlanta, GA



# Truck Driver Age Demographics



# Truck Driver Age Demographics

Program Type	Public Schools Offering Program
Business	96.5%
Computer Technology	94.4%
Mechanics and Repair	81.9%
Precision Production	78.9%
Construction	73.5%
Childcare and Education	68.3%
Healthcare	64.9%
Agriculture	62.4%
Other Technology	58.3%
Marketing	57.9%
Food Service and Hospitality	57.4%
Communications and Technology	53.6%
Other Occupational Programs	48.2%
Personal and Other Services	48.0%
<b>Trade and Industry/Transportation</b>	<b>28.8%</b>
Protective Services	25.8%

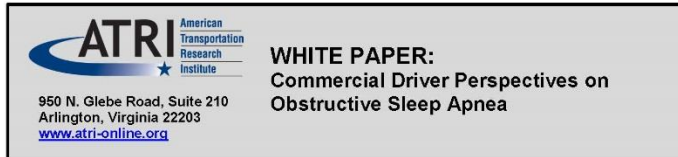


# What to Do?

- **Maintain current employee base**
- **Research best ways to engage 25-34 year olds (and younger)**
- **Identify ways to encourage/foster vocational learning focused on trucking**
- **Bridge gap between high school and trucking career**
  - ◆ **Graduated CDL**

# Obstructive Sleep Apnea ANPRM

- Top RAC priority for 2016
- FMCSA Advanced Notice of Proposed Rulemaking on OSA; comment period open through July 8, 2016
- Over 800 drivers participated in ATRI survey



May 2016

Caroline R. Boris  
Research Analyst  
American Transportation Research Institute  
St. Paul, MN

Rebecca M. Brewster  
President and COO  
American Transportation Research Institute  
Atlanta, GA



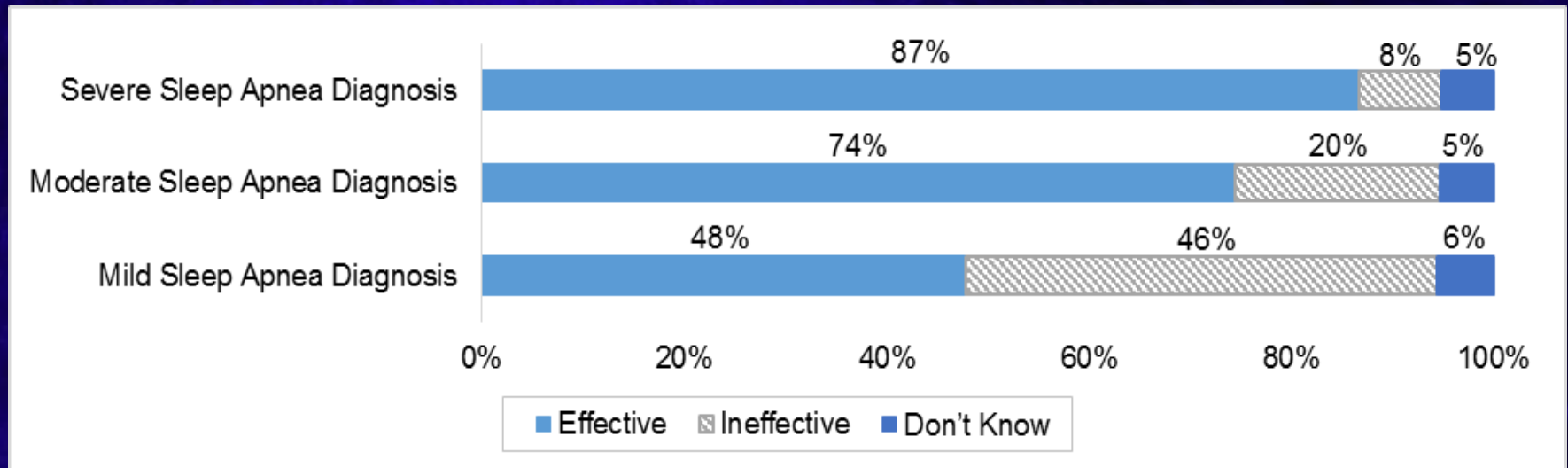
# Driver Expense for Sleep Study

- **53% paid out-of-pocket costs**
- **Average driver out-of-pocket cost \$1,220; nearly 1.5 weeks of average driver pay at \$835/week**
- **67% of employee drivers said health insurance covered some portion of sleep study costs**
- **15% of employee drivers said employer covered some portion of sleep study costs**
- **61% of drivers with no health care coverage of sleep study out-of-pocket costs >\$1,000 vs. 32% with health care coverage of sleep study with out-of-pocket costs >\$1,000**



# Driver Treatment for OSA

- **CPAP most prescribed treatment – 94%**
  - ◆ 72% found CPAP effective
  - ◆ 21% did not find CPAP effective
  - ◆ 7% unsure of treatment efficacy
- **Perceived efficacy impacted by OSA severity**



# CPAP Treatment Impacts

	OSA Severity	Agree	Disagree	Don't Know	No Change
My blood pressure has decreased	Mild	0%	0%	14%	86%
	Moderate	30%	0%	0%	70%
	Severe	75%	0%	0%	25%
Amount of sleep has increased	Mild	32%	43%	0%	25%
	Moderate	54%	23%	1%	22%
	Severe	71%	13%	2%	13%
My weight has decreased	Mild	29%	0%	14%	57%
	Moderate	50%	10%	0%	40%
	Severe	50%	25%	0%	25%
I feel better when I wake up	Mild	44%	26%	1%	28%
	Moderate	75%	13%	0%	13%
	Severe	84%	3%	1%	12%

# Driver Perceptions – OSA

- **Rationale for OSA rulemaking**
  - ◆ Clarify relationship OSA and crash risk
  - ◆ Quantify affected population of CMV drivers with OSA
- **Driver acceptance of sleep study referral criteria**
  - ◆ Drivers do not believe neck circumference and BMI should be used as sole metrics for referral to sleep study
- **Driver sleep study costs are significant**
  - ◆ Flexibility for home sleep studies will reduce cost impacts and reduce time off work for study



# Driver Perceptions – OSA

- **OSA screening procedures must be clarified**
  - ◆ 36% of ATRI sample who completed sleep study did not require treatment
- **CPAP not effective for treating all OSA drivers**
  - ◆ Among mild OSA drivers in ATRI sample, 91% treating with CPAP (though not required)
  - ◆ Less than half experienced improved sleep with CPAP treatment
- **Preventing conflicts of interest – CMEs, sleep clinics, treatment providers – will be critical**

# National Registry of Certified Medical Examiners

- Joint initiative with Mayo Clinic to evaluate effectiveness of NRCME process
- Three separate surveys
  - Motor Carriers
  - Commercial Drivers
  - Medical Examiners



Survey Research Center



As you know, there have been significant regulatory changes in who can perform DOT/FMCSA medical certification exams and how those exams are conducted. Medical examiners are now required to take an approved course, pass a secure test, and be listed in the National Registry of Certified Medical Examiners (NRCME) in order to issue medical certificates. These changes were implemented more than two years ago; therefore, all commercial drivers requiring a medical certificate have now completed the process of seeing an examiner since those changes were made.

The American Transportation Research Institute (ATRI) and Mayo Clinic are collaborating on research to better understand how effective these changes have been, and to identify motor carrier concerns with the NRCME process.

Please take a few minutes to complete the survey below to provide your input on the DOT/FMCSA medical certification process. The survey does not ask for your name or other individually identifying information. All responses to this survey will be kept strictly confidential and will only be reported in

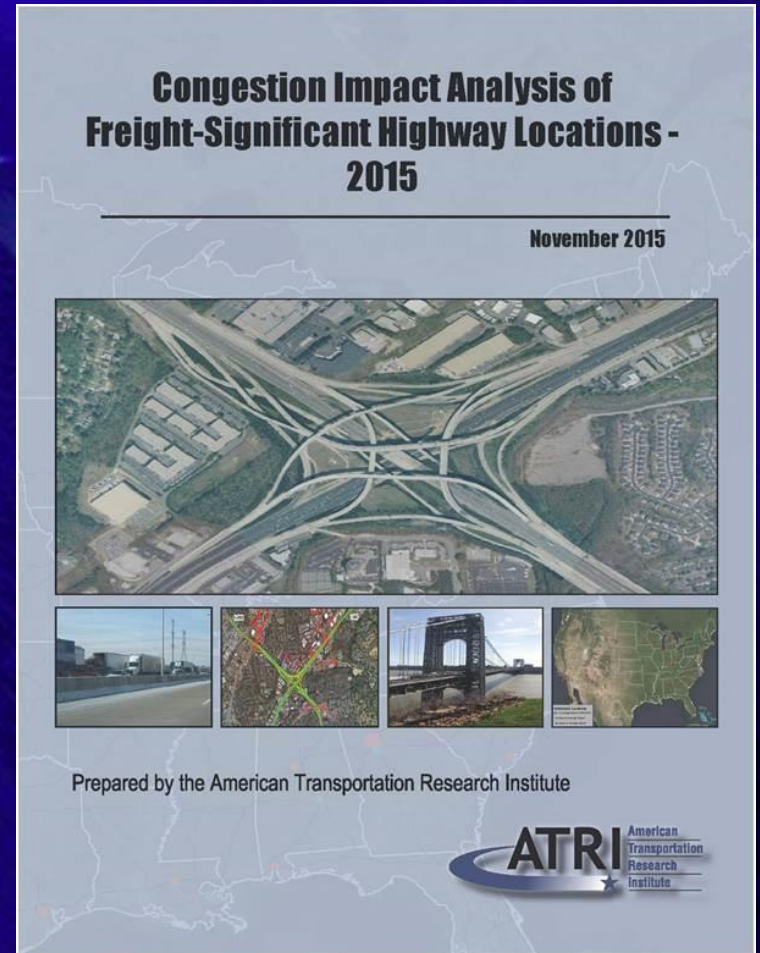




# Freight Bottleneck Analysis

- Ongoing monitoring of 250 truck freight-significant locations
- Avoiding/scheduling around truck freight congestion chokepoints

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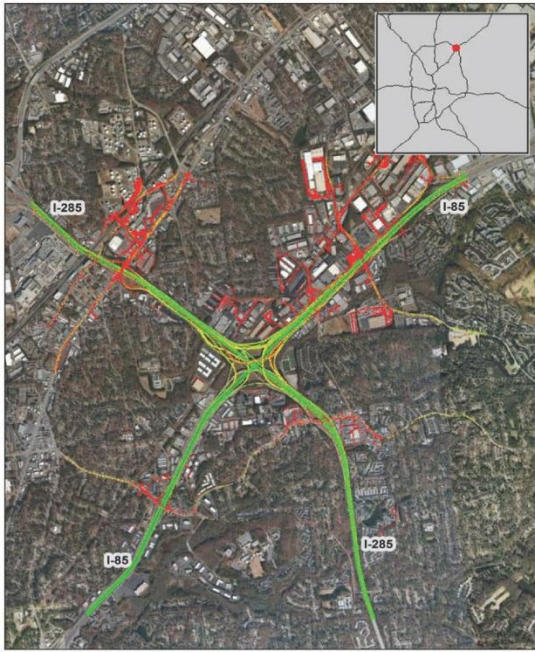




# 2015 Top 10 Freight Bottlenecks

Rank	Location	Average Speed	2014 Rank	Change
1	Atlanta, GA: I-285 at I-85 (North)	40	3	+2
2	Chicago, IL: I-290 at I-90/I-94	27	2	0
3	Fort Lee, NJ: I-95 at SR 4	36	1	-2
4	Louisville, KY: I-65 at I-64/I-71	44	9	+5
5	Houston, TX: I-610 at US 290	38	6	+1
6	Houston, TX: I-10 at I-45	42	13	+7
7	Cincinnati, OH: I-71 at I-75	47	4	-3
8	Houston, TX: I-45 at US 59	39	5	-3
9	Los Angeles, CA: SR 60 at SR 57	45	8	-1
10	Houston, TX: I-10 at US 59	43	16	+6

## Atlanta, GA: I-285 at I-85 (North)



### Summary

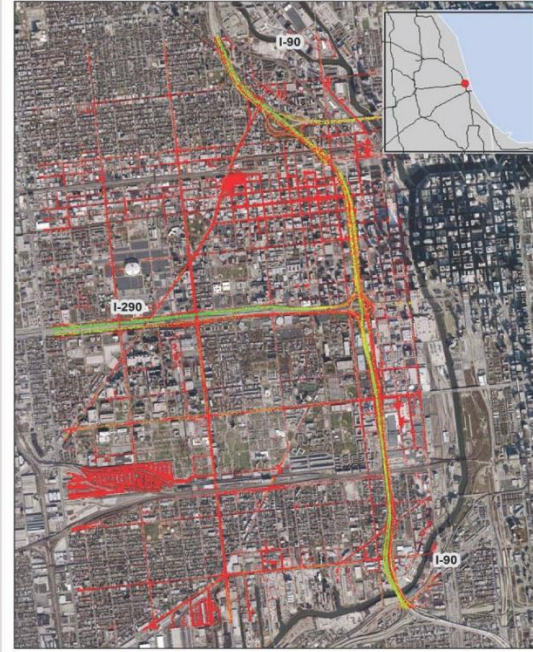
National Ranking by Congestion Index	1
Average Speed	40
Peak Average Speed	28
Nonpeak Average Speed	47
Nonpeak/Peak Ratio	1.68

Average Speed by Time of Day  
I-285 at I-85 (North)



Congestion Impact Analysis of Freight-Significant Highway Locations - 2015

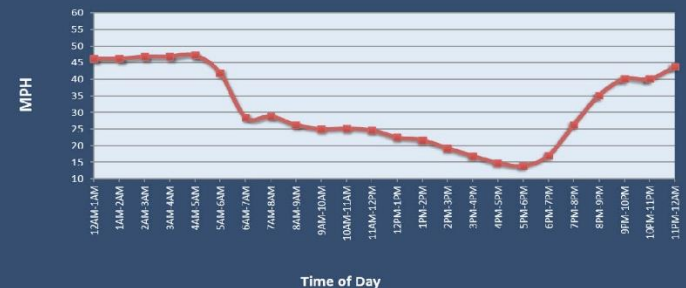
## Chicago, IL: I-290 at I-90/I-94



### Summary

National Ranking by Congestion Index	2
Average Speed	27
Peak Average Speed	21
Nonpeak Average Speed	29
Nonpeak/Peak Ratio	1.38

Average Speed by Time of Day  
I-290 at I-90/I-94



Congestion Impact Analysis of Freight-Significant Highway Locations - 2015





# Cost of Congestion

- Congestion on U.S. NHS cost trucking industry \$49.6B in 2014
- Lost productivity = 728 million hours
  - ◆ Equates to 264,500 commercial drivers sitting idle for entire year

**Cost of Congestion to the Trucking Industry**

April 2016

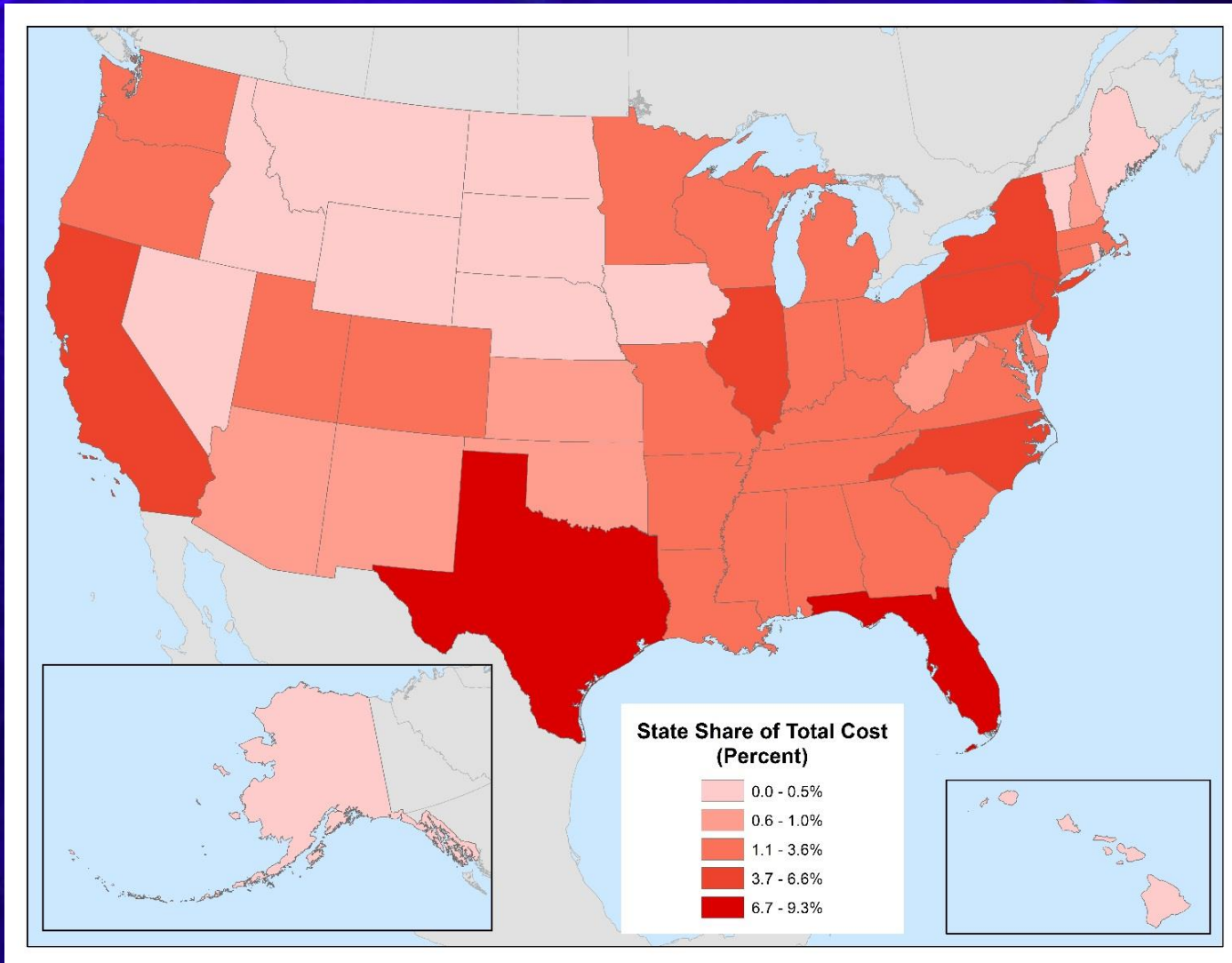


Prepared by the American Transportation Research Institute

**ATRI** American Transportation Research Institute



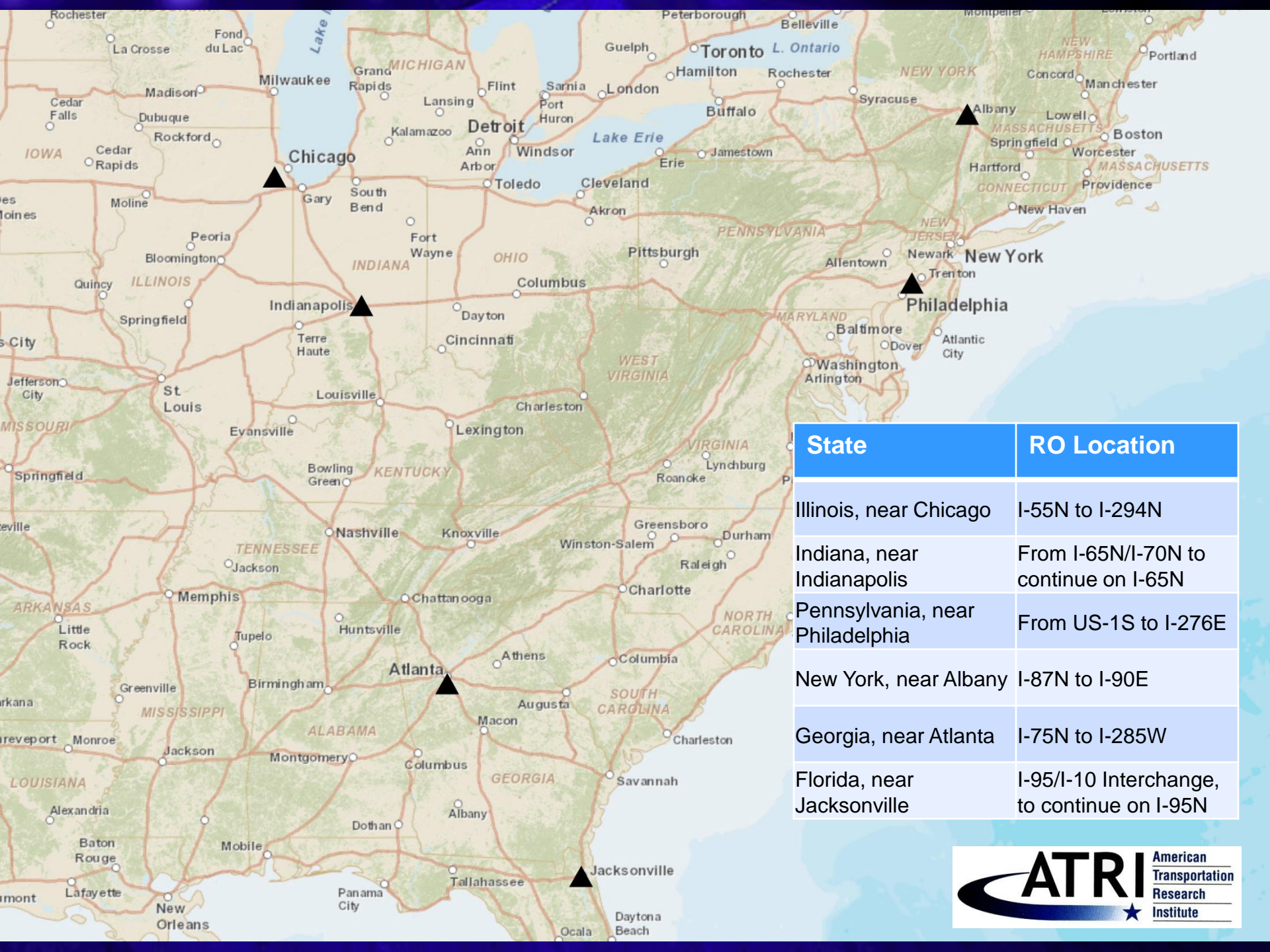
# State Share of Total Cost of Congestion



# Mapping Rollovers Pilot Test

- **Launched June 28, 2016**
- **Two motor carriers; 90+ drivers**
  - ◆ Drivers selected based on frequency of driving past six identified locations
- **Data collection includes:**
  - ◆ Mid-pilot test driver questionnaire
  - ◆ Post-pilot test online survey for drivers to complete
  - ◆ Data file from telematics provider on date/time entering rollover location, speed at warning, speed 5 seconds post-warning, if onboard event recorder (OER) event occurs





State	RO Location
Illinois, near Chicago	I-55N to I-294N
Indiana, near Indianapolis	From I-65N/I-70N to continue on I-65N
Pennsylvania, near Philadelphia	From US-1S to I-276E
New York, near Albany	I-87N to I-90E
Georgia, near Atlanta	I-75N to I-285W
Florida, near Jacksonville	I-95/I-10 Interchange, to continue on I-95N





# Rollover Location Notification Design



Known Rollover Location Ahead



2640 ft (0.5 miles) ahead

OK



1618 - On Duty: 368:42

2/17/16 6:42 AM



- **Visual and audible notification to occur at 0.5 miles and 0.25 miles before the known rollover location**

# Operational Costs of Trucking

- Annual report first issued in 2008
- Collects and analyzes real-world motor carrier operational data
- Calculates costs by mile and by hour

## An Analysis of the Operational Costs of Trucking: 2016 Update

September 2016



Prepared by the American Transportation Research Institute



# Operational Costs of Trucking

## Average Carrier Costs per Mile

Motor Carrier Costs	2009	2010	2011	2012	2013	2014	2015
<b>Vehicle-based</b>							
Fuel Costs	\$0.405	\$0.486	\$0.590	\$0.641	\$0.645	\$0.583	\$0.0403
Truck/Trailer Lease or Purchase Payments	\$0.257	\$0.184	\$0.189	\$0.174	\$0.163	\$0.215	\$0.230
Repair & Maintenance	\$0.123	\$0.124	\$0.152	\$0.138	\$0.148	\$0.158	\$0.156
Truck Insurance Premiums	\$0.054	\$0.059	\$0.067	\$0.063	\$0.064	\$0.071	\$0.092
Permits and Licenses	\$0.029	\$0.040	\$0.038	\$0.022	\$0.026	\$0.019	\$0.019
Tires	\$0.029	\$0.035	\$0.042	\$0.044	\$0.041	\$0.044	\$0.043
Tolls	\$0.024	\$0.012	\$0.017	\$0.019	\$0.019	\$0.023	\$0.020
<b>Driver-based</b>							
Driver Wages	\$0.403	\$0.446	\$0.460	\$0.417	\$0.440	\$0.462	\$0.499
Driver Benefits	\$0.128	\$0.162	\$0.151	\$0.116	\$0.129	\$0.129	\$0.131
<b>TOTAL</b>	<b>\$1.451</b>	<b>\$1.548</b>	<b>\$1.706</b>	<b>\$1.633</b>	<b>\$1.676</b>	<b>\$1.703</b>	<b>\$1.593</b>



# 2015 Top Research Priorities

**Managing Critical Truck Parking - Underway**

**Onboard Safety Systems (OSS) Analysis**

**Phase 1 – Truck Crash Costs by Severity – Underway**

**Phase 2 – Deployment of OSS, Lives Saved, Injuries Avoided**

**Getting Younger Drivers in the Driver's Seat**

**Younger Driver Assessment Tool – Underway**

**Fixing the 12% – Underway**

**Baseline Class 8 Truck MPG – Underway**

# 2016 Top Research Priorities

Effect of Autonomous Vehicles on the Trucking Industry –  
**Underway**

Beyond Compliance: Recognizing Safety Contributions

Safety Fitness Determination Impacts

Impacts of Commercial Driver Sleep Apnea Proposed  
Rulemaking – **Underway**

Highway Funding Analysis 2016

Collision Avoidance Technology Deployment in Cars and Trucks

Standardizing State/Regional Freight Plans – **Underway**

# Supporting the Industry's Research Agenda

- Participate in ATRI surveys and data collection – TII, Operational Costs
- Recommend research ideas
- Join the Research Advisory Committee
- STEP UP with a Charitable Contribution

[www.atri-online.org](http://www.atri-online.org)

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# Questions?

Rebecca Brewster

[rbrewster@trucking.org](mailto:rbrewster@trucking.org)

770-432-0628

[www.atri-online.org](http://www.atri-online.org)



@ATRIPREZ

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