#### **Trucking's Top 10**

Rebecca M. Brewster President and COO American Transportation Research Institute



# ATRI

Trucking industry's not-for-profit research organization
Safety
Mobility
Economic Analysis
Technology
Environment

www.TruckingResearch.org







#### **Research Advisory Committee**





SUPPLY CHAIN . GROUND . LTL . TL









### **2019 Top Industry Issues**

- 1. Driver Shortage (1)
- 2. Hours-of-Service (2)
- 3. Driver Compensation (new)
- 4. Detention / Delay at Customer Facilities (new)
- 5. Truck Parking (5)
- 6. Driver Retention (3)
- 7. ELD Mandate (4)
- 8. CSA (6)
- 9. Transportation Infrastructure / Congestion / Funding (8)
- **10. Economy (10)**

#### CRITICAL ISSUES IN THE TRUCKING INDUSTRY - 2019



Presented to the American Trucking Associations

Prepared by The American Transportation Research Institute October 2019



950 North Glebe Road Arlington, VA 22203 (703)838-1966 <u>ATRI@trucking.org</u> <u>TruckingResearch.org</u>



## **2019 Top Industry Issues**

#### **Commercial Drivers**

- **1.** Driver Compensation
- 2. Hours-of-Service
- 3. Truck Parking
- 4. ELD Mandate
- 5. Detention / Delay at Customer Facilities
- 6. Speed Limiters
- 7. Driver Training Standards
- 8. Driver Distraction
- 9. Transportation Infrastructure / Congestion / Funding
- **10.** Autonomous Truck Technology

#### **Motor Carriers**

- **1.** Driver Shortage
- 2. Driver Retention
- 3. Hours-of-Service
- 4. CSA
- 5. Transportation Infrastructure / Congestion / Funding
- 6. Detention / Delay at Customer Facilities
- 7. Economy
- 8. ELD Mandate
- 9. Insurance Cost / Availability
- **10. Tort Reform**



#### **Truck Driver Age Demographics**





### **Driver Safety Assessment Tool**

- Is it possible to identify younger individuals with the same characteristics of safe, older drivers?
- Prior studies focus on relationship between a <u>single</u> driver characteristic and safety outcomes
- ATRI's research has investigated the relationship between multiple driver characteristics and safety outcomes



Developing a Younger Driver Assessment Tool Technical Memorandum #1

#### August 2017

Caroline Boris Research Analyst American Transportation Research Institute

Monica M. Luciana, Ph.D. Professor University of Minnesota Department of Psychology





### **Driver Safety Assessment Tool**

Driver safety in commercial and noncommercial drivers can be reliably predicted by a number of individual factors:

- Personality traits
- Health status
- Driving experience
- le Age
- Cognitive ability
- Attitudes regarding safety

Completed – beta test tool on ~100 drivers of varying ages, safety performance



Collects and analyzes real-world motor carrier operational data

- Covers data 2008-2018
- Calculates costs by mile and by hour
- Includes sector, regional analyses
  - TL, LTL, Specialized/Other Tank Truck

An Analysis of the Operational Costs of Trucking: 2019 Update

November 2019



Prepared by the American Transportation Research Institute





#### Average Carrier Costs per Mile

Motor Carrier Costs	2014	2015	2016	2017	2018
Vehicle-based					
Fuel Costs	\$0.583	\$0.403	\$0.336	\$0.368	\$0.433
Truck/Trailer Lease or Purchase Payments	\$0.215	\$0.230	\$0.255	\$0.264	\$0.265
Repair & Maintenance	\$0.158	\$0.156	\$0.166	\$0.167	\$0.171
Truck Insurance Premiums	\$0.071	\$0.074	\$0.075	\$0.075	\$0.084
Permits and Licenses	\$0.019	\$0.019	\$0.022	\$0.023	\$0.024
Tires	\$0.044	\$0.043	\$0.035	\$0.038	\$0.038
Tolls	\$0.023	\$0.020	\$0.024	\$0.027	\$0.030
Driver-based					
Driver Wages	\$0.462	\$0.499	\$0.523	\$0.557	\$0.596
Driver Benefits	\$0.129	\$0.131	\$0.155	\$0.172	\$0.180
TOTAL	\$1.703	\$1.575	\$1.592	\$1.691	\$1.821



Motor Carrier Costs	2018 Share of Total Cost
Vehicle-based	
Fuel Costs	24%
Truck/Trailer Lease or Purchase Payments	15%
Repair & Maintenance	9%
Truck Insurance Premiums	5%
Permits and Licenses	1%
Tires	2%
Tolls	2%
Driver-based	
Driver Wages	33%
Driver Benefits	10%

An Analysis of the Operational Costs of Trucking: 2019 Update

November 2019



Prepared by the American Transportation Research Institute





### Driver Wages Up 43% Since 2012; Benefits Up 55%





Motor Carrier Costs	2017-2018 Change	
Vehicle-based		
Fuel Costs	17.7%	
Truck/Trailer Lease or Purchase Payments	0.4%	
Repair & Maintenance	2.4%	
Truck Insurance Premiums	12.0%	
Permits and Licenses	4.3%	
Tires	0.0%	
Tolls	11.1%	
Driver-based		
Driver Wages	7.0%	
Driver Benefits	4.7%	
TOTAL	7.7%	

An Analysis of the Operational Costs of Trucking: 2019 Update



Prepared by the American Transportation Research Institute





### **Detention Time Impacts**

**Multi-year analysis** of detention impacts on industry safety and productivity Based on over 1,900 driver and motor carrier surveys collected in 2014 and 2018



DRIVER DETENTION IMPACTS ON SAFETY AND PRODUCTIVITY

September 2019

Erin Speltz Research Analyst American Transportation Research Institute Minneapolis, MN

Dan Murray Senior Vice President American Transportation Research Institute Minneapolis, MN





### **Detention Getting Worse**

Between 2014 and 2018, drivers reported 27.4% increase in delays of 6+ hours **Nearly 40% increase** in drivers reporting majority of appointments delayed due to customer actions





### **Gender Impacts**



# Women drivers 83.3% more likely than men to be delayed 6+ hours



### **Detention Costs Fleets and Drivers**

Average excessive detention fee per hour charged by fleets was \$63.71, less than \$71.78/hour from ATRI's Operational Costs of Trucking

20% of smaller fleets (<50 power units) do not charge detention in order to stay competitive with larger fleets



### **Crash Predictor 2018 Update**

Analysis of over 435,000 driver records to identify behaviors (prior crashes, violations, convictions) most predictive of future crash involvement

Updates earlier Crash Predictor Models from 2005 and 2011 Predicting Truck Crash Involvement: 2018 Update





### **Top 10 Crash Predictor Behaviors**

If a driver had:	Crash likelihood increased:	
A Reckless Driving violation	114%	
A Failure to Yield Right of Way violation	101%	
A Failure to Keep in Proper Lane conviction	83%	
A Failure to Use / Improper Signal conviction	82%	
A Past Crash	74%	
An Improper Lane / Location conviction	72%	
An Improper Pass conviction	70%	
A Reckless / Careless / Inattentive / Negligent Driving conviction	69%	
An Improper or Erratic Lane Changes conviction	66%	
An Improper Lane Change violation	63%	



### **Impact of Gender**

**Female drivers** safer than males in every statistically significant behavior Men involved in 20% more crashes than women

Event	Relative to Females, Likelihood for Males Increased By:
Reckless / Careless / Inattentive / Negligent Driving conviction	88%
Seat Belt violation	78%
Failure to Obey Traffic Signal / Light conviction	73%
Speeding 1-15 Miles Over Speed Limit conviction	70%



#### Past Crash Involvement by Age





#### **Reckless/Careless/Inattentive/ Negligent Driving Convictions by Age**





#### Improper or Erratic Lane Changes Convictions by Age





### **Stable Predictors of Crash Risk**

Across all three ATRI Crash Predictor Models, the top five stable predictors of crash risk are:

- **1.** A Past Crash
- 2. An Improper Lane / Location conviction
- **3.** A Reckless / Careless / Inattentive / Negligent Driving conviction
- 4. An Improper or Erratic Lane Changes conviction
- **5.** An Improper Lane Change violation



### **Truck Parking**

- Truck Parking Diaries drivers kept 14 days of parking activity
  - Over 2,000 days/4,700+ parking stops
- Includes when, where, how long to find a spot, how many spots occupied by non-CMVs, lost productivity
- ATRI involved in numerous state, multistate and regional Truck Parking research initiatives

Managing Critical Truck Parking Case Study – Real World Insights from Truck Parking Diaries

**December 2016** 



Prepared by the American Transportation Research Institute





#### Frequency of Unauthorized/Undesignated Parking





# **Truck Parking Analyses**

Cumberland County, PA Rest Area: I-81 Northbound January, 2017





# **Truck Parking Analyses**





### **Cost of Congestion**

- Congestion on U.S. NHS cost trucking industry \$74.5B in 2016
- Lost productivity = 1.2 billion hours
  - Equates to 425,533 commercial drivers sitting idle for entire year

#### Cost of Congestion to the Trucking Industry: 2018 Update



Prepared by the American Transportation Research Institute









### **2019 Top 10 Truck Bottlenecks**

Rank	Location	Average Peak Speed	Y-o-Y Change in Average Peak Speed
1	Fort Lee, NJ: I-95 at SR 4	23.0	-7.65%
2	Atlanta, GA: I-285 at I-85 (North)	22.9	-7.35%
3	Atlanta, GA: I-75 at I-285 (North)	27.4	<b>-9.91%</b>
4	Los Angeles, CA: SR 60 at SR 57	34.5	1.05%
5	Houston, TX: I-45 at I-69/US 59	24.2	<b>-9.46%</b>
6	Cincinnati, OH: I-71 at I-75	36.2	-7.42%
7	Chicago, IL: I-290 at I-90/I-94	17.6	<b>-16.74%</b>
8	Nashville, TN: I-24/I-40 at I-440 (East)	28.1	-11.75%
9	Atlanta, GA: I-20 at I-285 (West)	38.3	-5.06%
10	Los Angeles, CA: I-710 at I-105	26.8	-12.35%







ATRI American Transportation Presentation

Top Truck Bottlenecks - 2019

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







Top Truck Bottlenecks - 2019



### Marijuana Legalization and Impaired Driving

- Identifies issues and solutions for addressing marijuana-impaired car drivers
  - Roadside detection
  - Testing challenges
  - Judicial training

Marijuana Legalization and Impaired Driving: Solutions for Protecting our Roadways

March 2019



Prepared by the American Transportation Research Institute









### Marijuana Legalization and Preventing Impaired Driving

- Marijuana impairs safety critical functions
  - Divided attention
  - Reaction time
- Factors complicating identification of impairment:
  - Peak impairment differs from peak THC blood content
  - Low levels of THC in blood do not necessarily indicate recent use
  - THC deteriorates rapidly in blood



### **Autonomous Trucking**

**Identifies positive /** negative impacts from gov't policies, programs, regulations that target AT development and testing **Proposes framework** for developing AT standards

Redefining the Role of Government Activities in Automated Trucking





# **AV Pilot Tests**





# **AV Regulatory Action**





# **Truck Platooning**





### **Key Recommendations**

#### **Key Recommendations**

Exert stronger federal leadership in establishing national policy and AV standards.

Determine top decision-making agency for AV policy and establish clear hierarchy for regulatory agencies.

Allow for exemption to licensing requirements so potential new jobs like on-board technicians are not precluded.

States should coordinate to develop standardized product liability policy for AV technologies.

Establish strict ownership criteria and use limits for data generated by AV technologies.

Address known AV and cooperative automation cybersecurity risks and develop protocols to respond to unforeseen vulnerabilities.

Study potential barriers to testing and deployment of AV technologies.



### **Upcoming Releases**

- Tolls: Who Pays and Where Does the Money Go?
- 2020 Top Truck Bottlenecks
- Strategies for Managing the Driver Shortage
- Impact of "Nuclear" Verdicts on Trucking
- Standardizing Truck Parking Information Systems
- Younger Driver Assessment Tool Beta Test Findings



### Supporting the Industry's Research Agenda

- Participate in ATRI surveys/data collection Operational Costs, Top Industry Issues Survey
- Encourage your drivers to participate
   Recommend research ideas

#### www.TruckingResearch.org



## Supporting the Industry's Research Agenda



#### www.TruckingResearch.org



**Questions? Rebecca Brewster** rbrewster@trucking.org 770-432-0628 www.TruckingResearch.org **@Truck\_Research @ATRIPREZ** 

