

Critical Issues in Trucking: The View from the Road

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Research Institute

ATRI

Trucking industry's not-for-profit research organization

- **Safety**
- **Mobility**
- **Economic Analysis**
- **Technology**
- **Environment**

www.TruckingResearch.org

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2022 Top Industry Issues

1. Fuel Prices (#8 in 2013)
2. Driver Shortage (1)
3. Truck Parking (5)
4. Driver Compensation (3)
5. Economy (#8 in 2020)
6. Detention / Delay at Customer Facilities (7)
7. Driver Retention (2)
8. Compliance, Safety, Accountability (6)
9. Speed Limiters
10. Lawsuit Abuse Reform (4)

CRITICAL ISSUES IN THE TRUCKING INDUSTRY – 2022



Presented to the
American Trucking Associations

Prepared by
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ATRI American
Transportation
Research
Institute

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2022 Top Industry Issues

Rank	Commercial Drivers	Motor Carriers
1	Truck Parking	Driver Shortage
2	Fuel Prices	Driver Retention
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4	Detention / Delay at Customer Facilities	Compliance, Safety, Accountability
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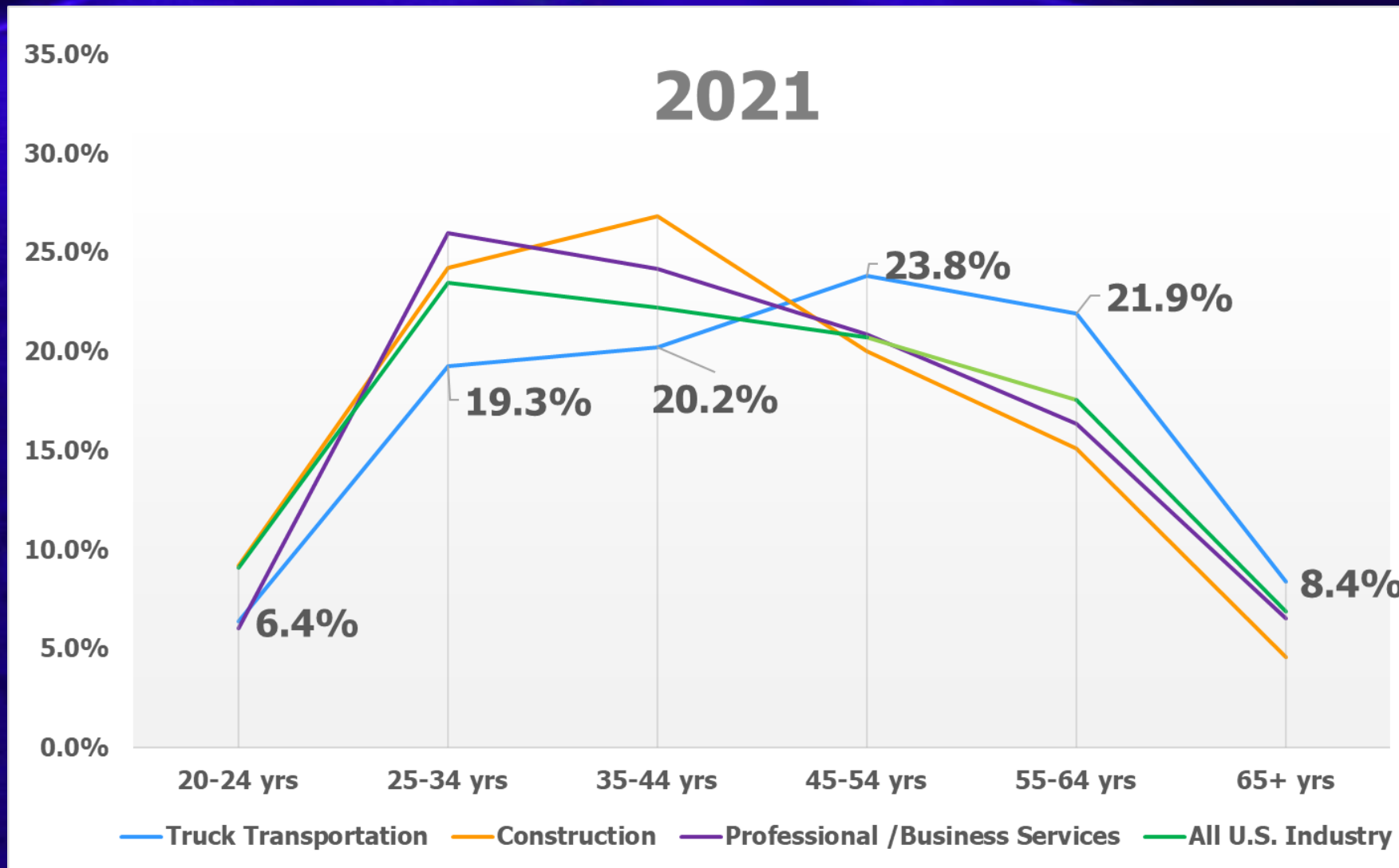
The More Things Change...

2005	2022
1. Fuel Costs	1. Fuel Prices
2. Driver Shortage	2. Driver Shortage
3. Insurance Costs	3. Truck Parking
4. HOS	4. Driver Compensation
5. Tolls / Highway Funding	5. Economy
6. Tort Reform / Legal Issues	6. Detention / Delay at Customer Facilities
7. Overlapping / Burdensome Regulations	7. Driver Retention
8. Congestion	8. Compliance, Safety, Accountability
9. Environmental Issues	9. Speed Limiters
10. Truck Security	10. Lawsuit Abuse Reform

2022 Top Industry Issues

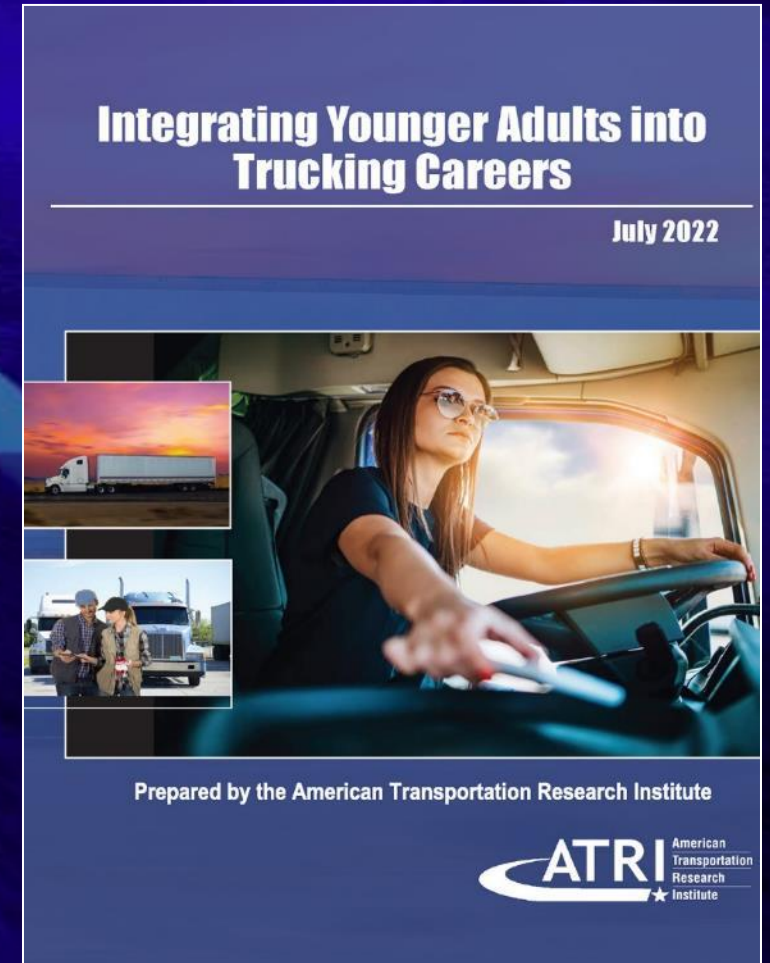
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Truck Driver Age Demographics

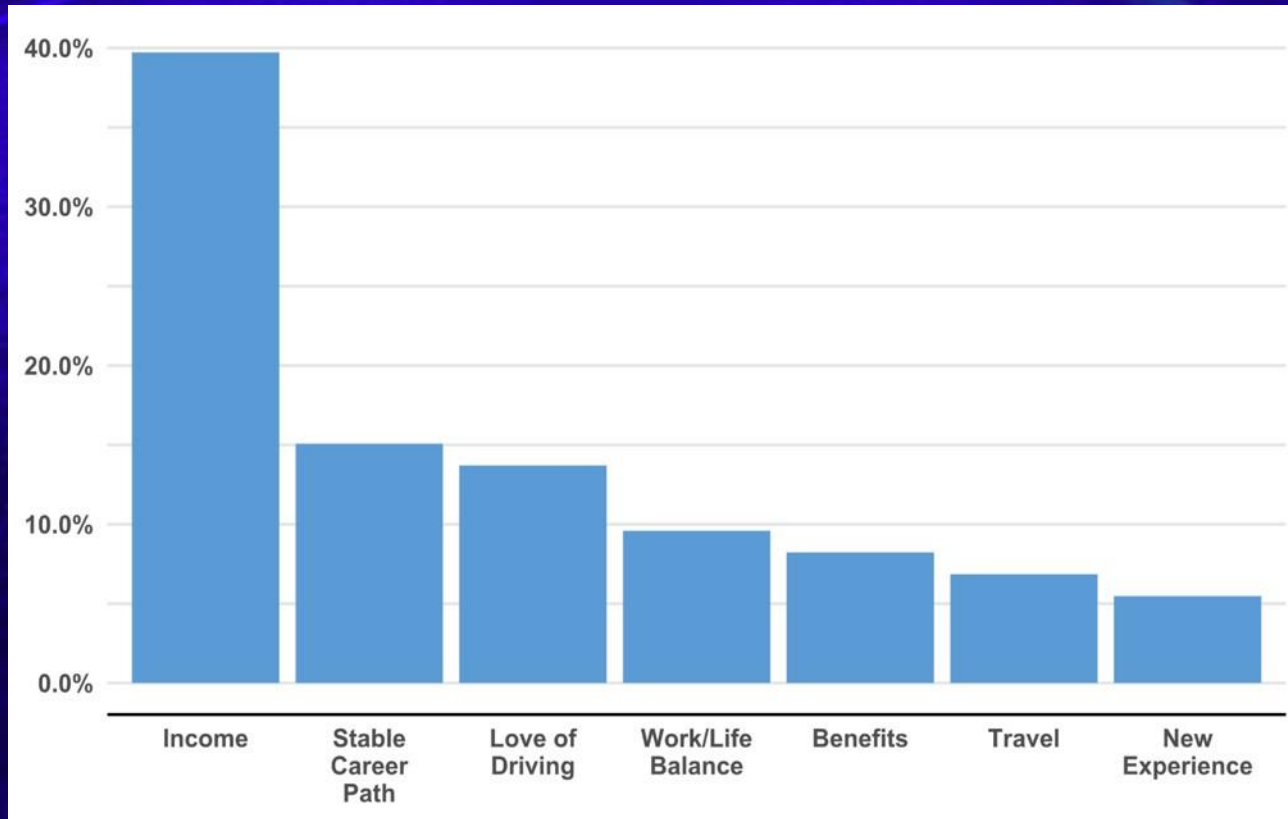


Integrating Younger Adults into Trucking Careers

- Top RAC priority in 2021
- Examines best practices for recruiting, training, retaining younger adults
- Research included younger driver interviews, motor carrier case studies and survey



Younger Employee Recruitment



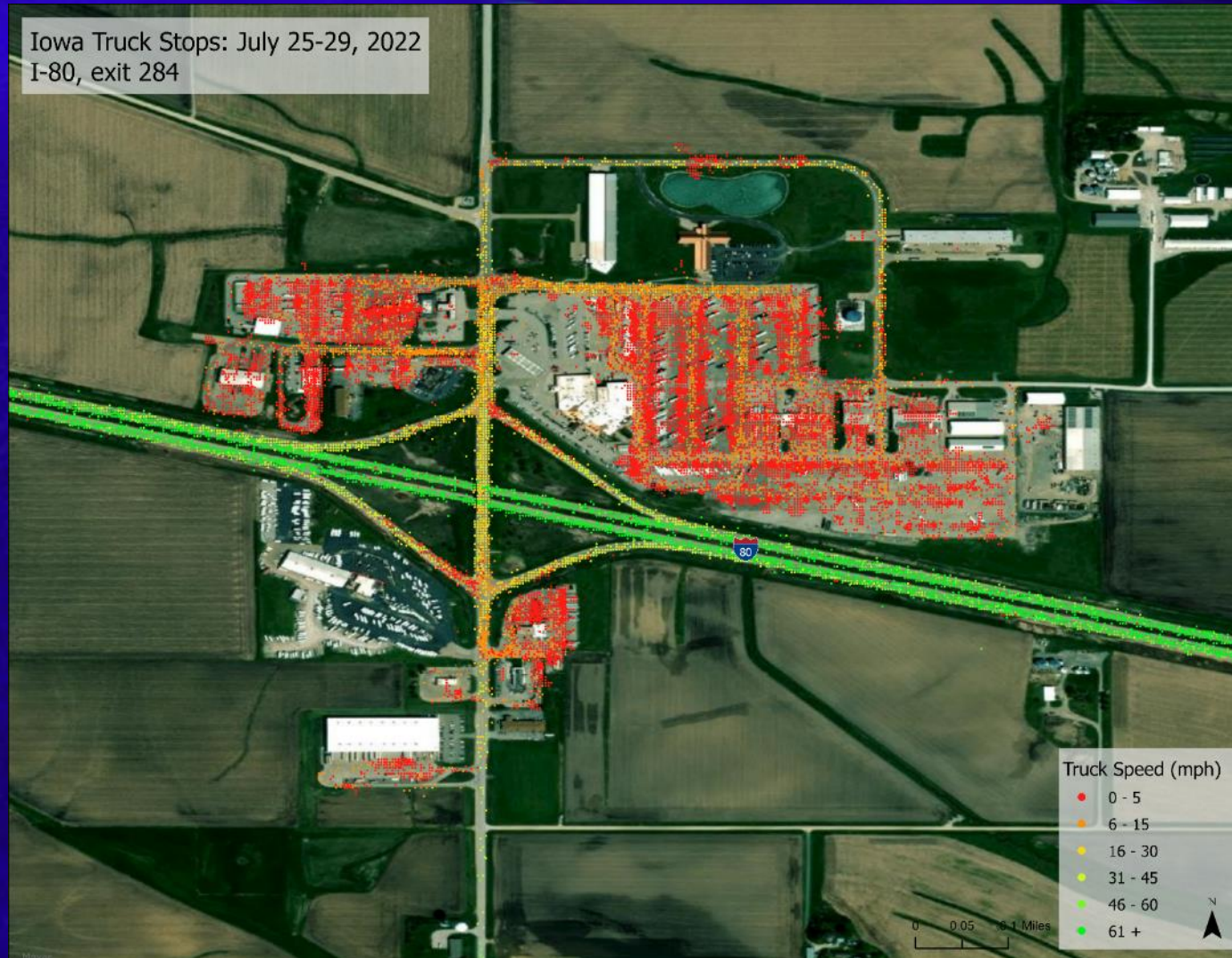
Top Factors Motivating Younger Drivers to Choose Trucking

- **Pay is important, but it isn't everything: 60% of younger drivers say another factor was equally or more important**
- **84% of younger drivers consider company culture important**
- **Accessible, transparent promotional materials directed at younger adults help potential employees discover and understand the industry**

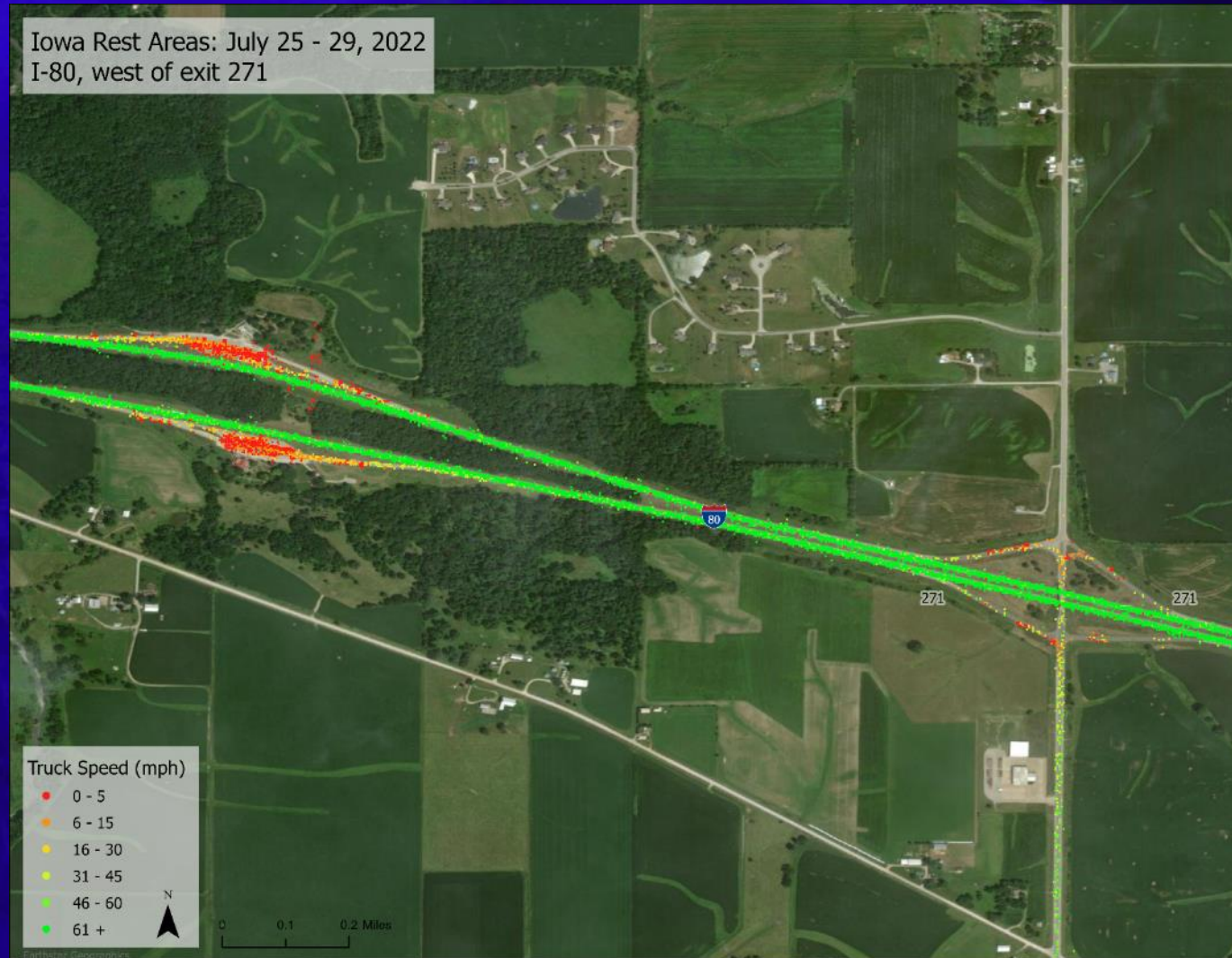
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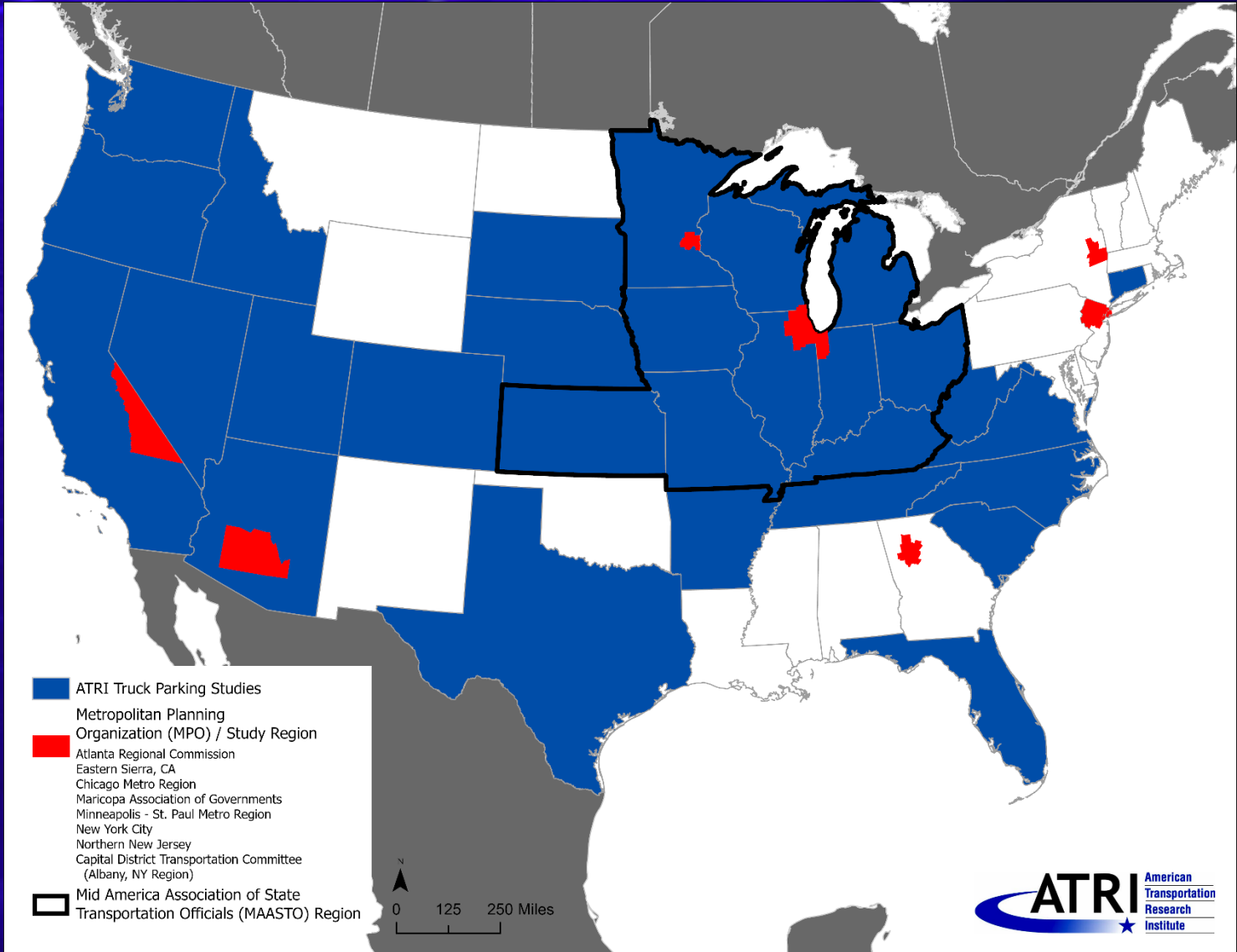
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No Vacancy



No Vacancy



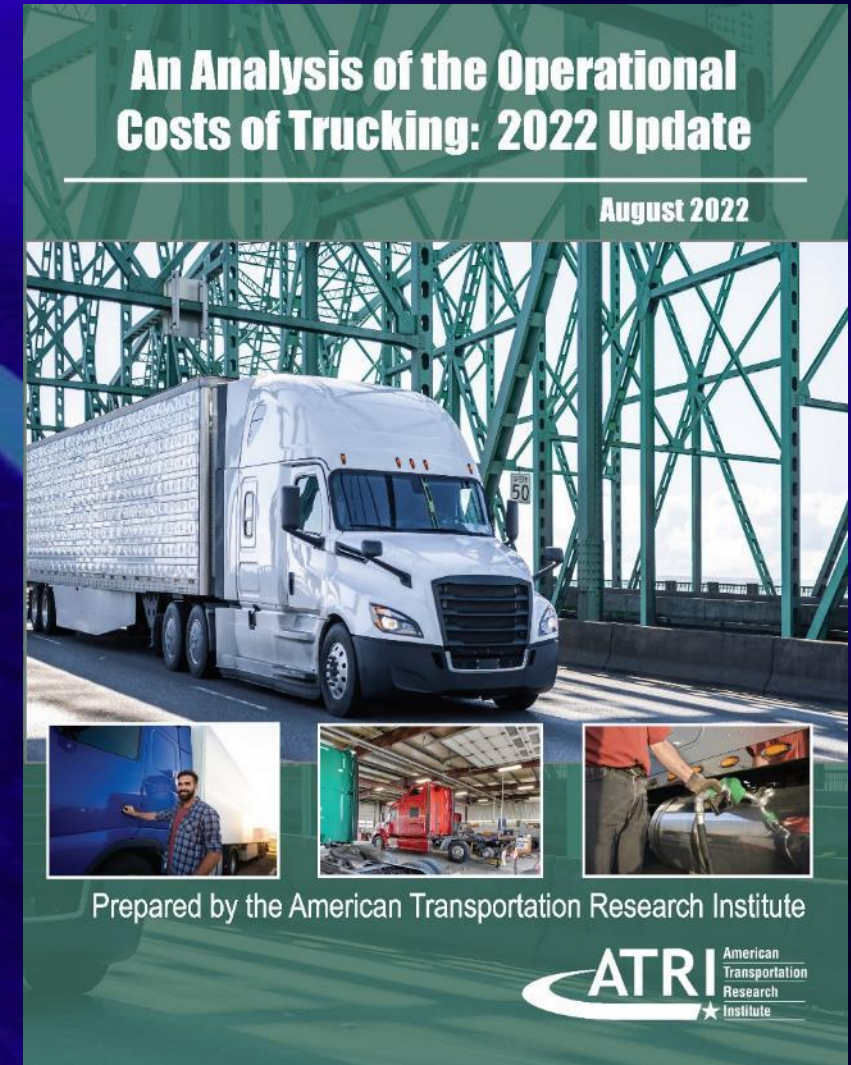


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Operational Costs of Trucking

- **Collects and analyzes real-world motor carrier operational data**
- **Covers data 2008-2021**
- **Calculates costs by mile and by hour**
- **Includes sector, regional analyses**
 - ◆ **TL, LTL, Specialized/Other**
 - ◆ **Small vs Large Fleets**

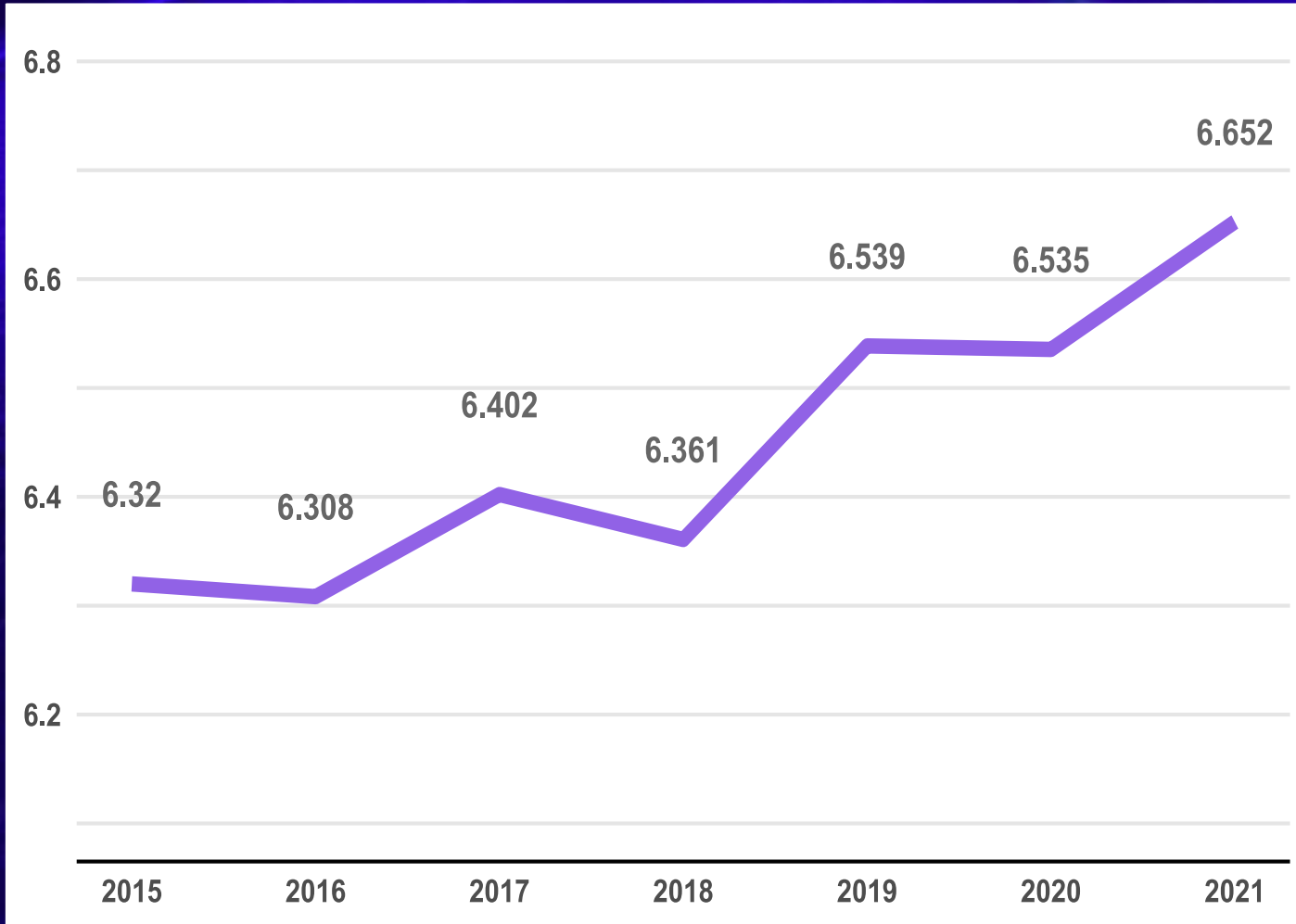


Operational Costs of Trucking

Average Carrier Costs per Mile

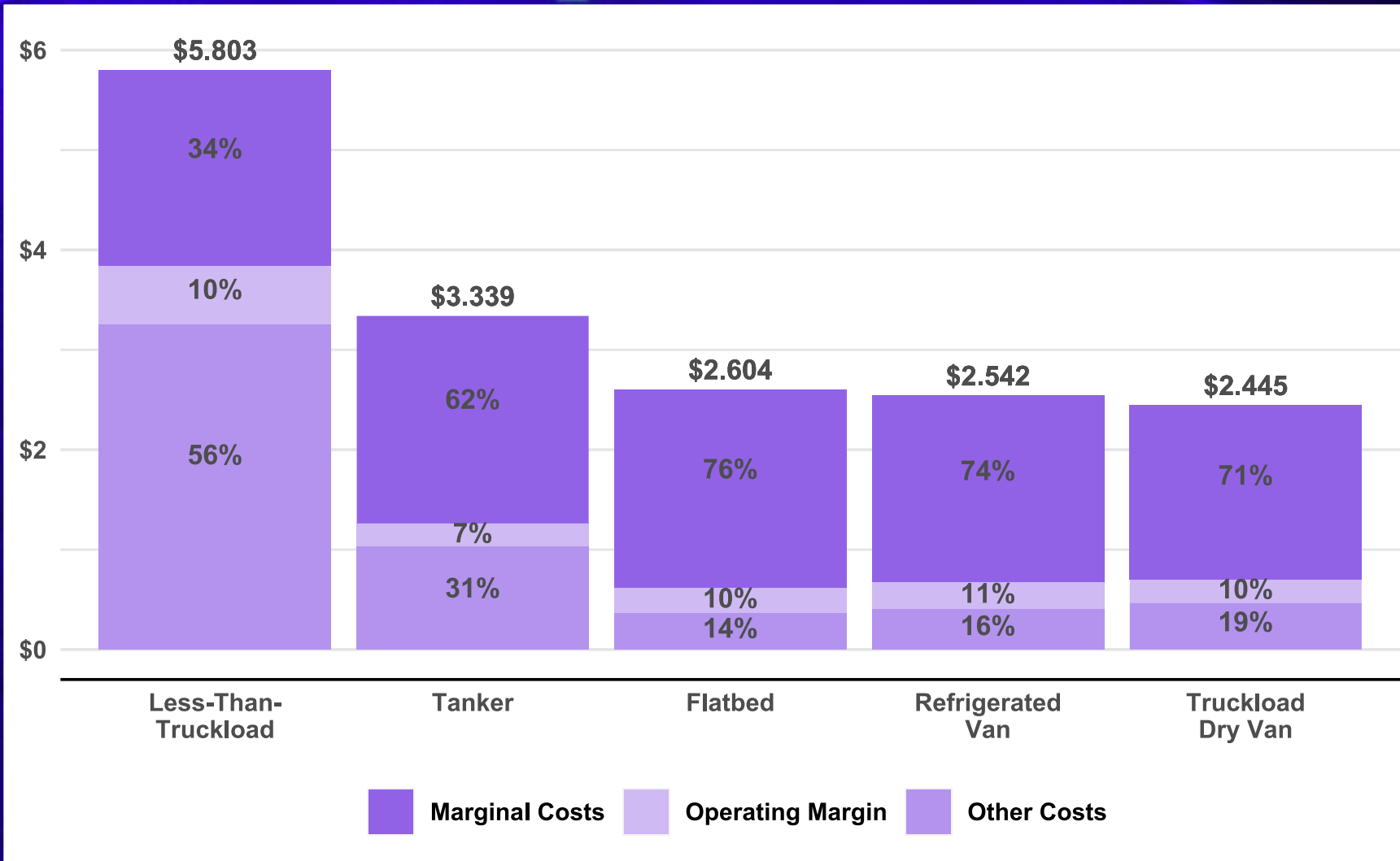
Motor Carrier Costs	2017	2018	2019	2020	2021
Vehicle-based					
Fuel Costs	\$0.368	\$0.433	\$0.384	\$0.308	\$0.417
Truck/Trailer Lease or Purchase Payments	\$0.264	\$0.265	\$0.256	\$0.271	\$0.279
Repair & Maintenance	\$0.167	\$0.171	\$0.149	\$0.148	\$0.175
Truck Insurance Premiums	\$0.075	\$0.084	\$0.071	\$0.087	\$0.086
Permits and Licenses	\$0.023	\$0.024	\$0.020	\$0.016	\$0.016
Tires	\$0.038	\$0.038	\$0.039	\$0.043	\$0.041
Tolls	\$0.027	\$0.030	\$0.035	\$0.037	\$0.032
Driver-based					
Driver Wages	\$0.557	\$0.596	\$0.554	\$0.566	\$0.627
Driver Benefits	\$0.172	\$0.180	\$0.190	\$0.171	\$0.182
TOTAL	\$1.691	\$1.821	\$1.699	\$1.646	\$1.855

Improved Efficiencies



- **MPG on the rise (left)**
- **Deadhead mileage declined to 14.8%**
- **Trailers-per-truck ratio of 2.82 remained higher than in the 2010s**

Per-Mile Revenue Breakdown



OO/IC in the Supply Chain

- Research to identify what motivates drivers to become Company Drivers or OO/IC
- Are expectations being met?
- Potential impacts from reclassification



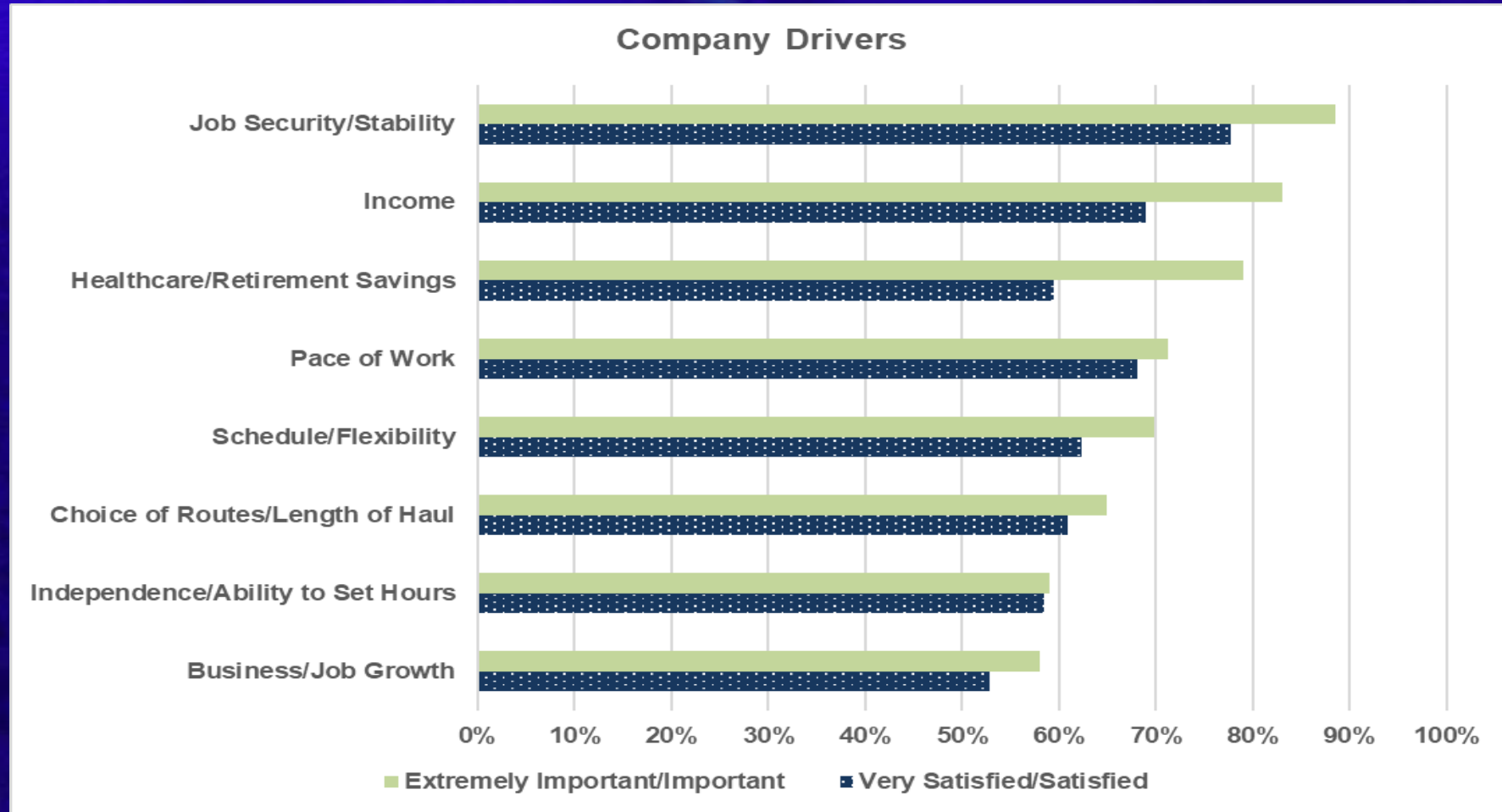
December 2021

Rebecca M. Brewster
President and Chief Operating Officer
American Transportation Research Institute
Atlanta, GA

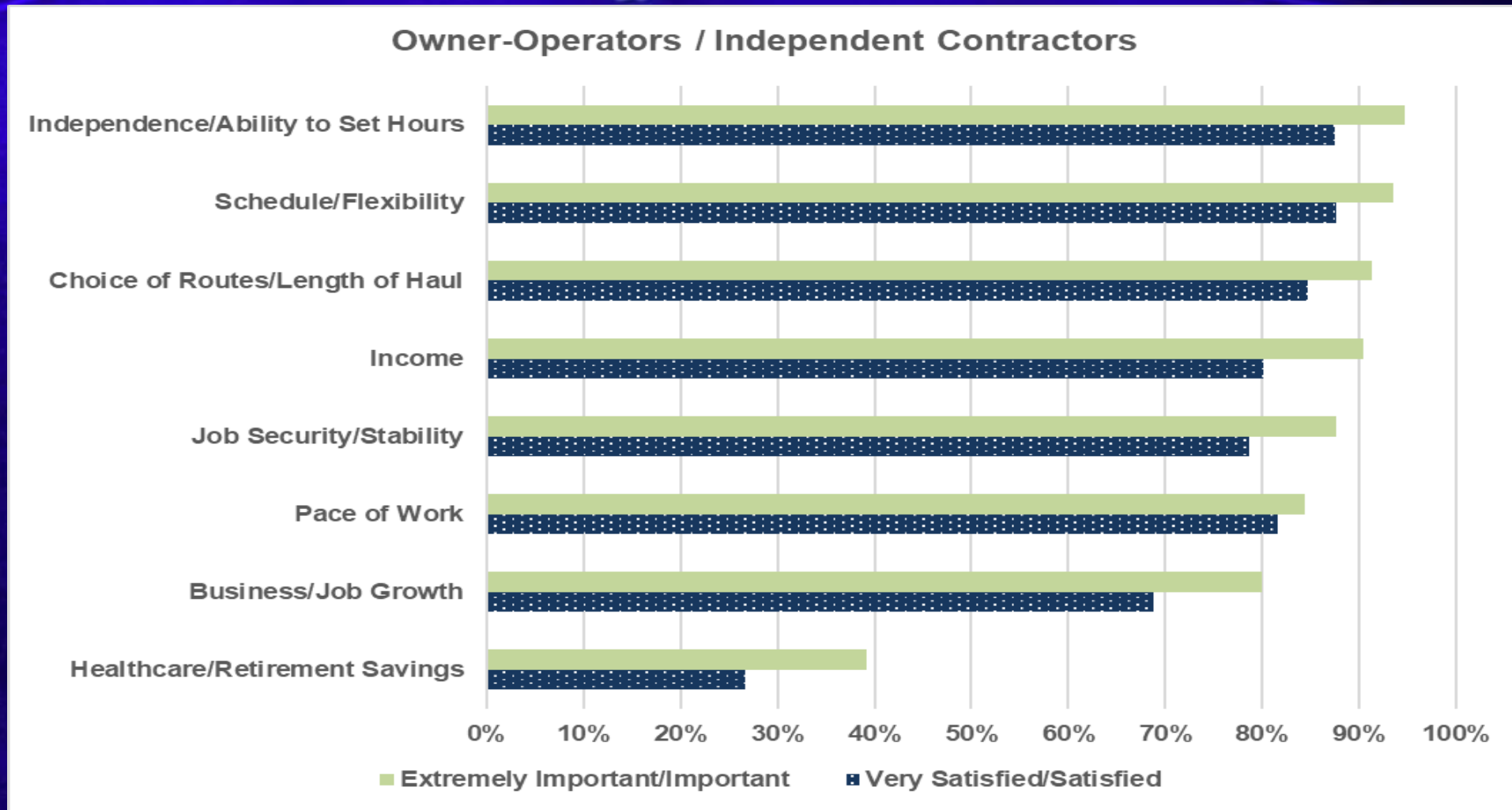


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Company Drivers – Motivators/Level of Satisfaction



OO/IC – Motivators/Level of Satisfaction

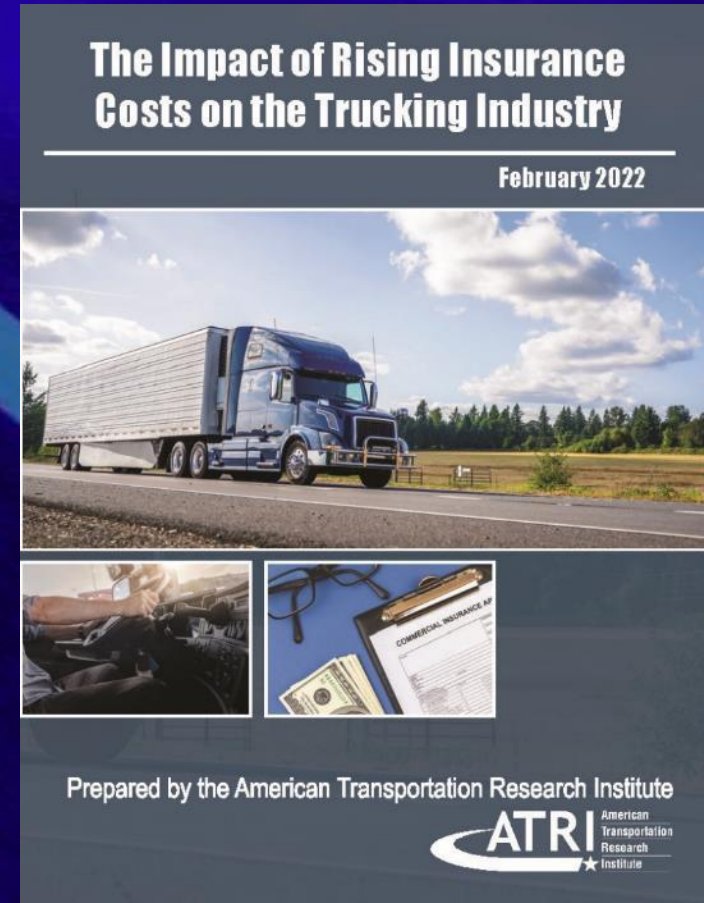


2022 Top Industry Issues

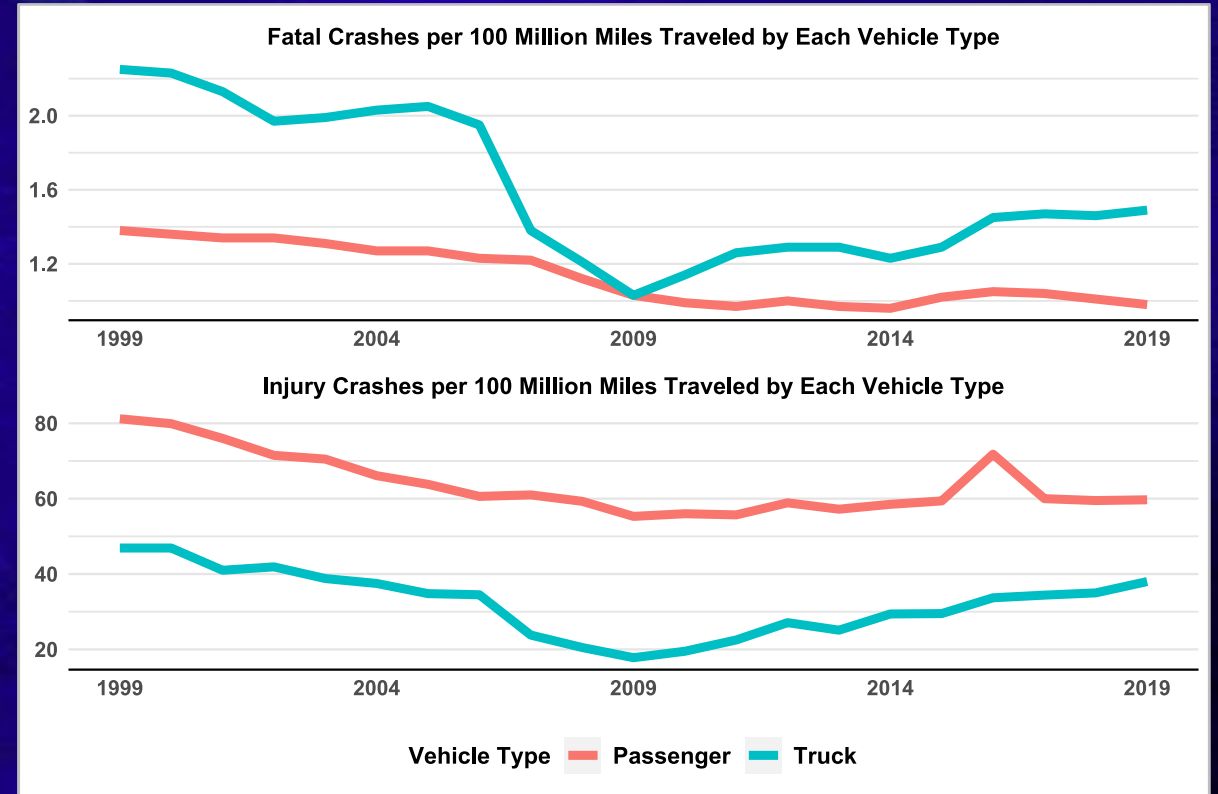
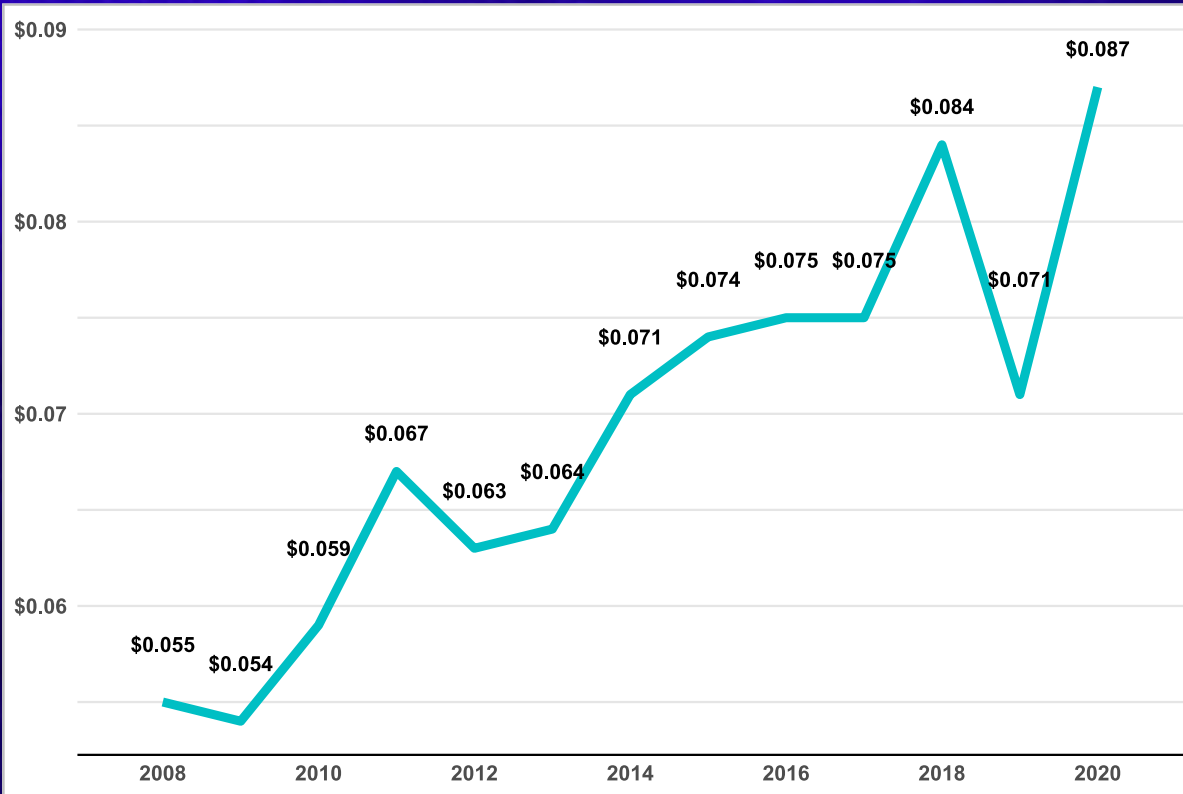
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The Impact of Rising Insurance Costs on the Trucking Industry

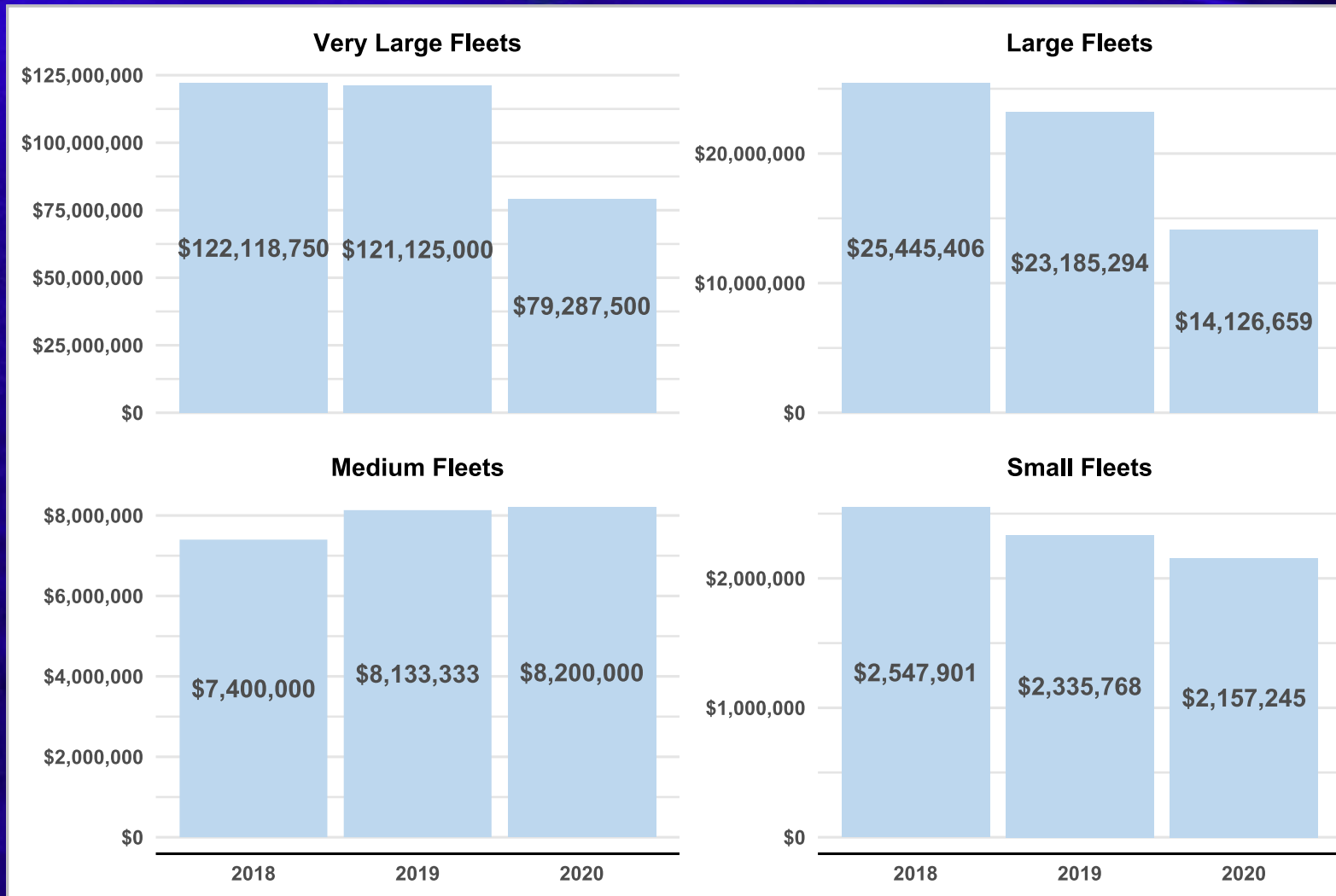
- **ATRI Ops Costs documented multiple years of substantial insurance cost growth**
- **RAC identified as top priority in 2020 to provide a more granular analysis of insurance costs**
- **Data collected from motor carriers and insurers**



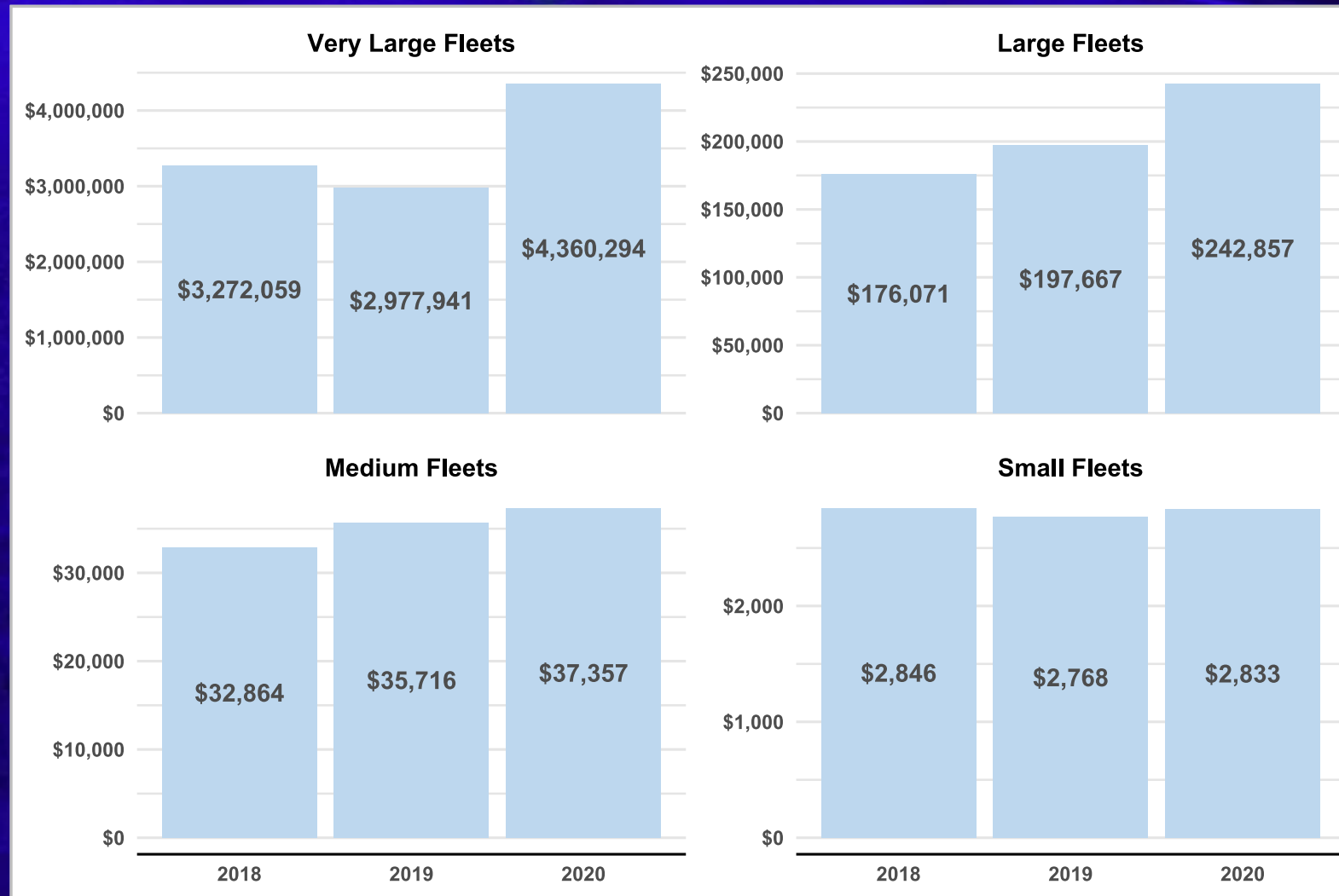
Insurance Costs over Time...



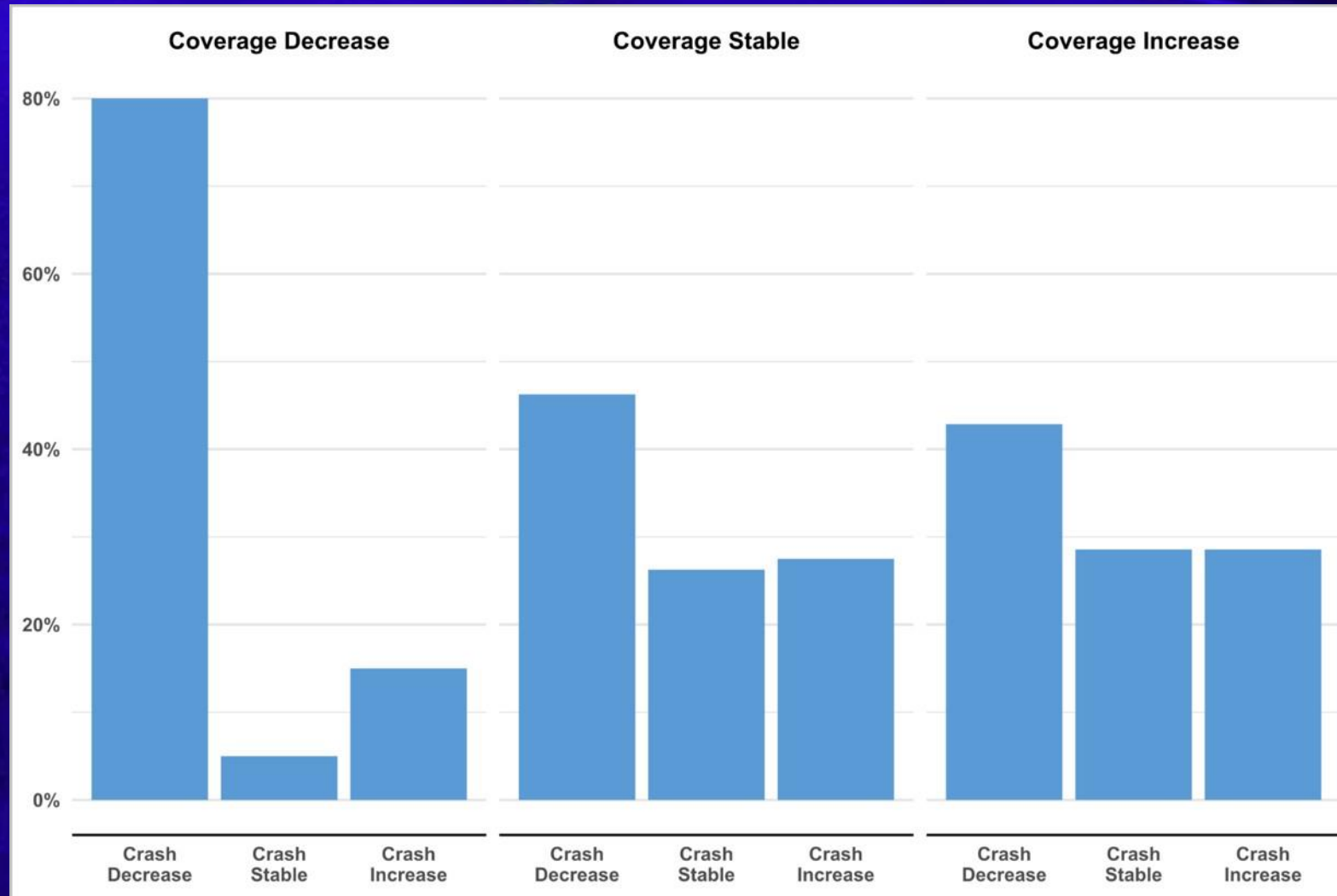
Excess Coverage Levels



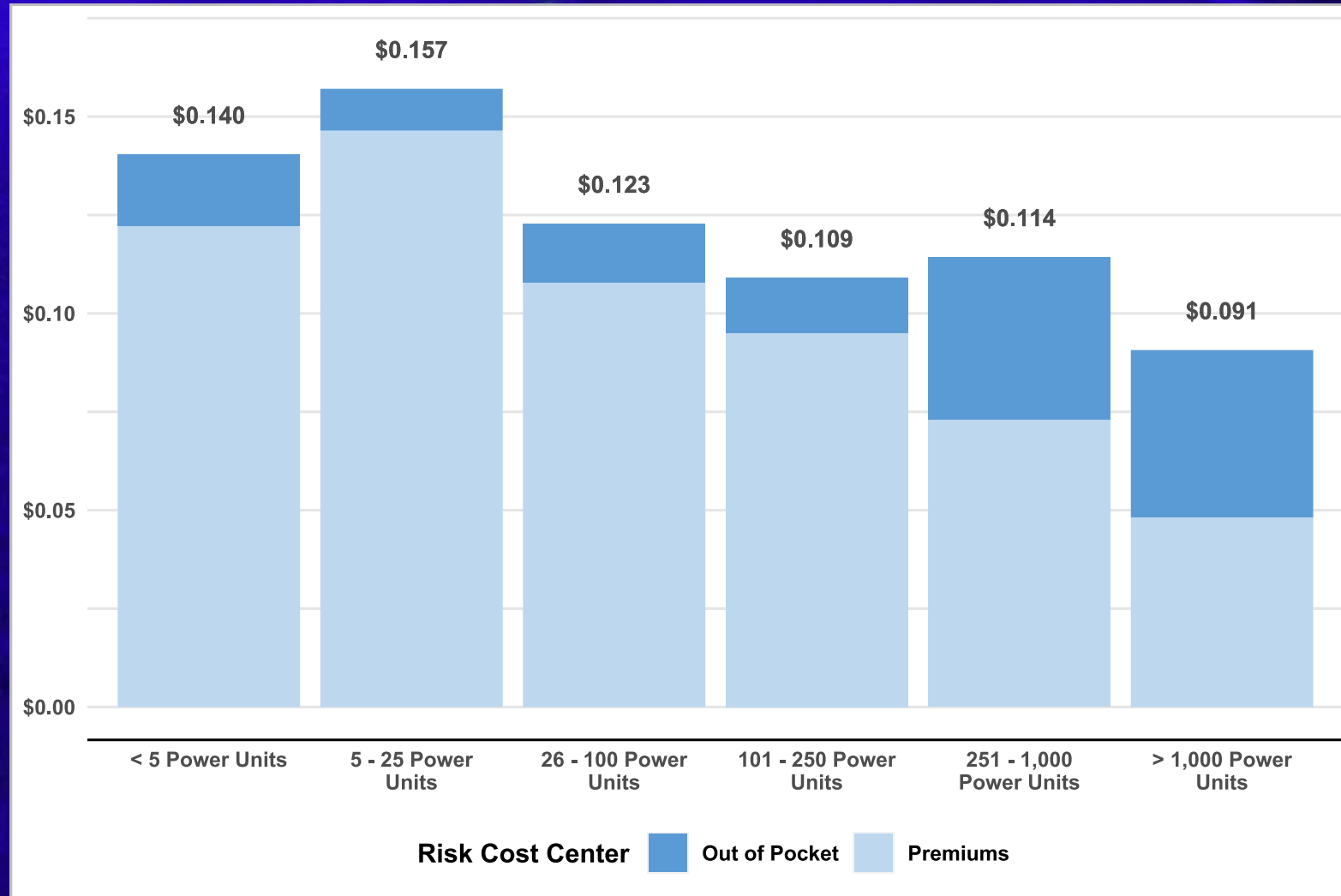
Deductibles and Self-Insured Retentions



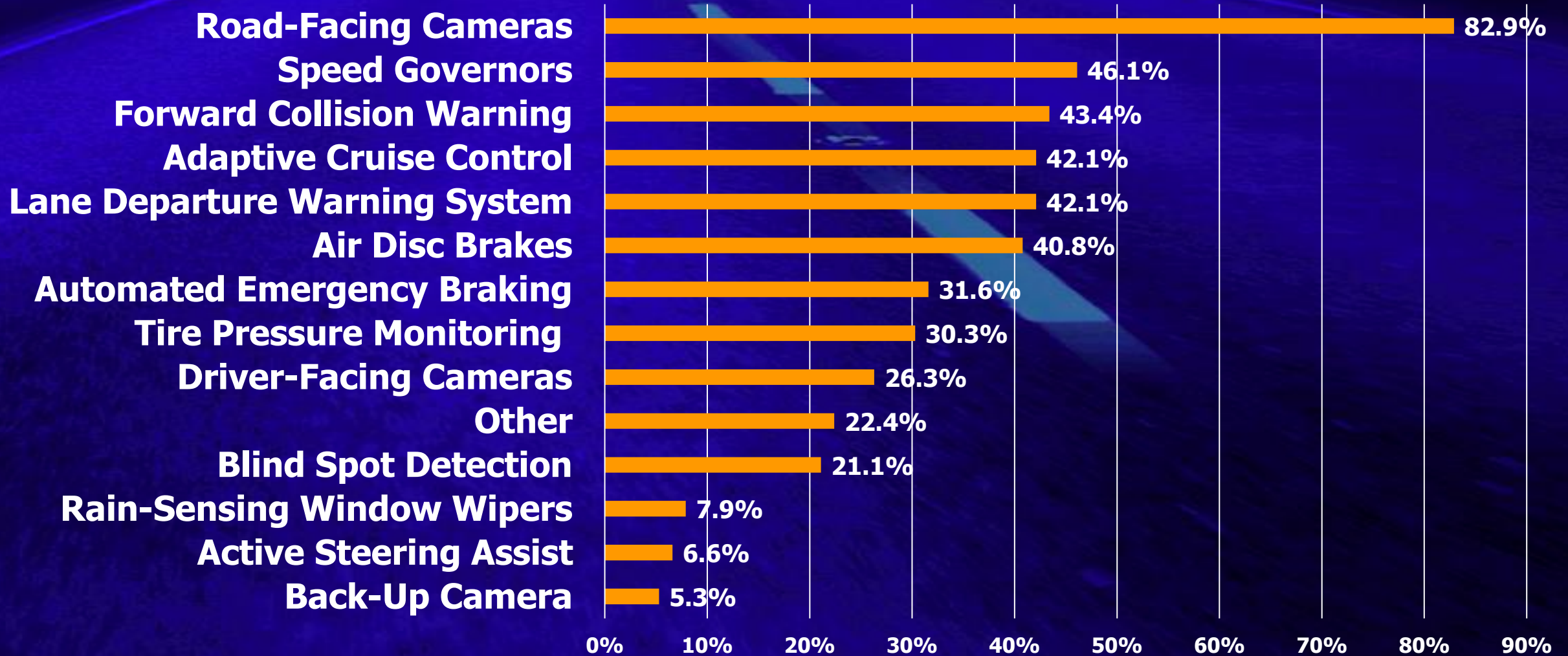
Impact of Coverage Changes on Crashes



Insurance Cost Impacts by Fleet Size



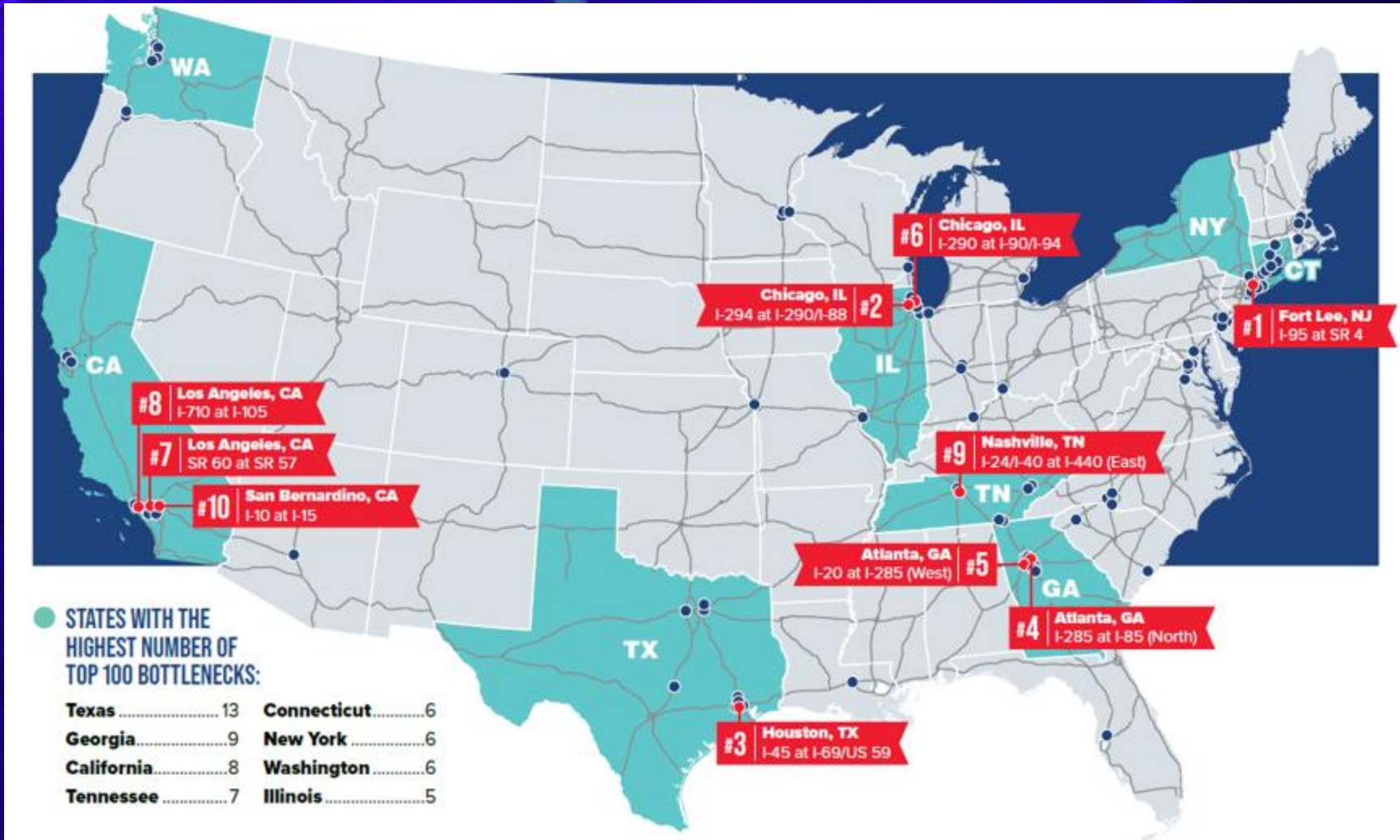
Safety Technology Deployment 2018 - 2020



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2023 Top Truck Bottlenecks

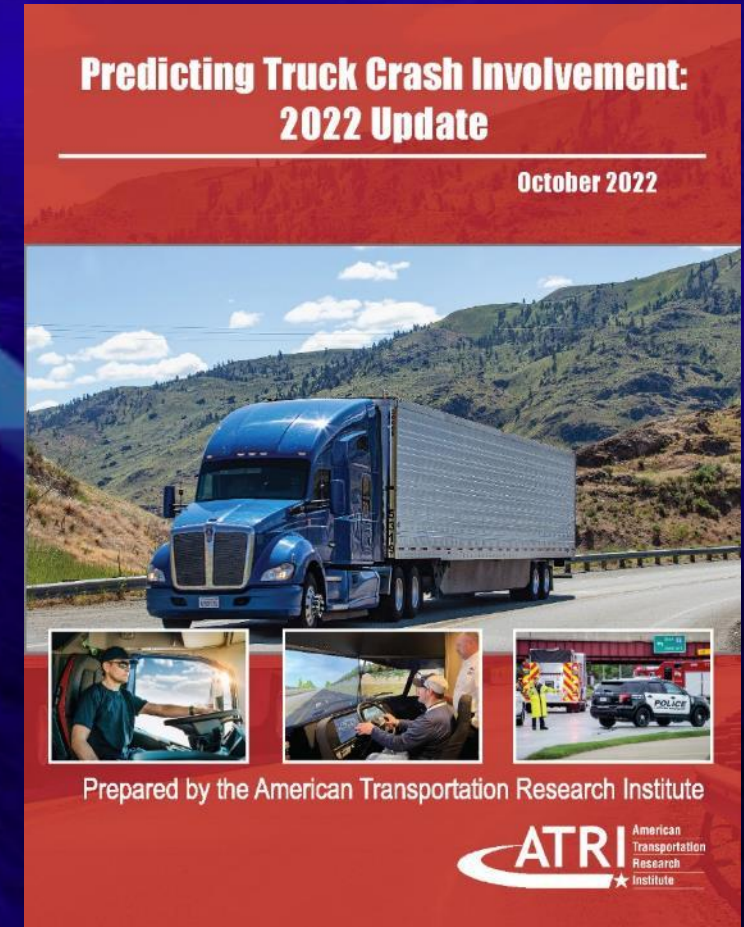


2023 Top 10 Truck Bottlenecks

Rank	Location	Average Peak Speed	Y-o-Y Change in Average Peak Speed
1	Fort Lee, NJ: I-95 at SR 4	20.2	-9.9%
2	Chicago, IL: I-294 at I-290/I-88	37.8	-5.9%
3	Houston, TX: I-45 at I-69/US 59	21.7	-11.0%
4	Atlanta, GA: I-285 at I-85 (North)	28.5	-6.2%
5	Atlanta, GA: I-20 at I-285 (West)	36.3	-2.6%
6	Chicago, IL: I-290 at I-90/I-94	18.2	-10.3%
7	Los Angeles, CA: SR 60 at SR 57	35.7	-3.1%
8	Los Angeles, CA: I-710 at I-105	28.5	-32.6%
9	Nashville, TN: I-24/I-40 at I-440 (East)	30.6	-12.5%
10	San Bernardino, CA: I-10 at I-15	34.1	-4.6%

Predicting Truck Crash Involvement: 2022 Update

- Latest update to ATRI's Crash Predictor model; prior reports in 2005, 2011 and 2018
- Examines likelihood of crashes based on specific violations, convictions, and crash involvement
- Analysis includes over 580,000 drivers



Top 10 Crash Predictor Behaviors

Driver Behavior	Future Crash Likelihood Increase
Failure to Yield Right-of-Way violation	141%
Failure to Use / Improper Signal conviction	116%
Past Crash	113%
Reckless Driving violation	104%
Failure to Obey Traffic Sign conviction	85%
Failure to Keep in Proper Lane conviction	78%
Improper or Erratic Lane Changes conviction	77%
Reckless / Careless / Inattentive / Negligent Driving conviction	62%
Improper Lane / Location conviction	61%
Failure to Obey Traffic Signal / Light conviction	55%

Top 5 Stable Predictors of Crash Risk

Driver Behavior	Median Crash Likelihood Across All Four ATRI Crash Predictor Models
Reckless Driving violation	114%
Failure to Use / Improper Signal conviction	89%
Past Crash	88%
Failure to Yield Right-of-Way violation	85%
Improper or Erratic Lane Changes conviction	79%

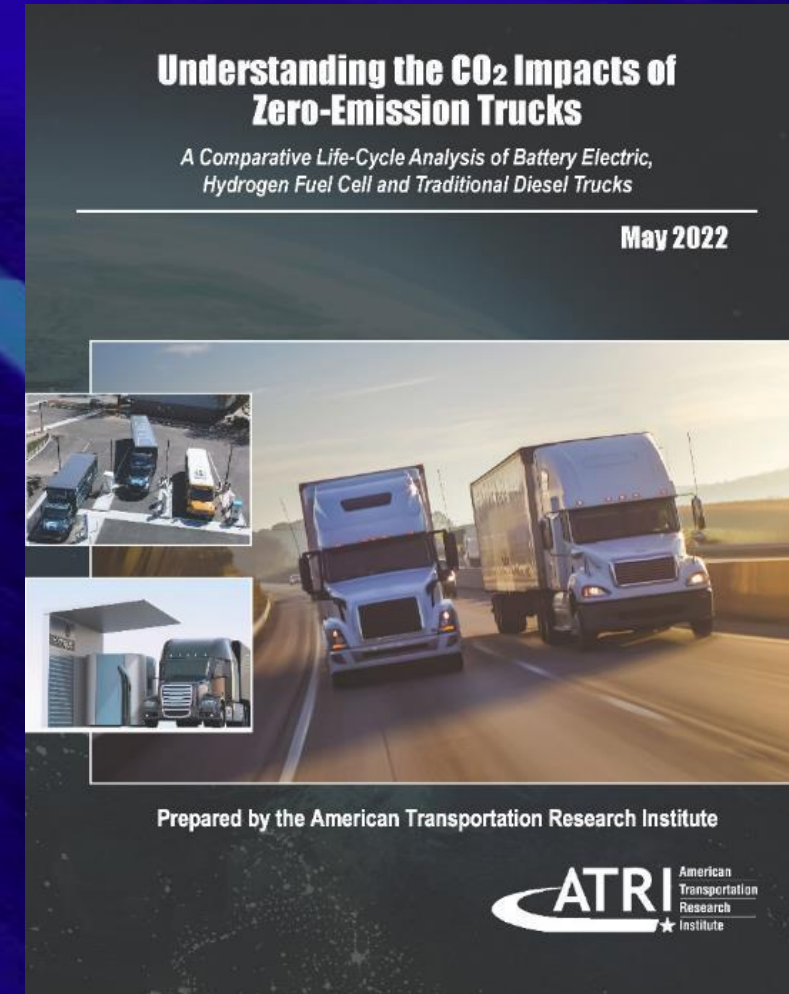
Gender Analysis

- **Female drivers outperformed males in every statistically significant behavior**
- **Male drivers 14% more likely to be involved in a crash, down from 20% in 2018 report**

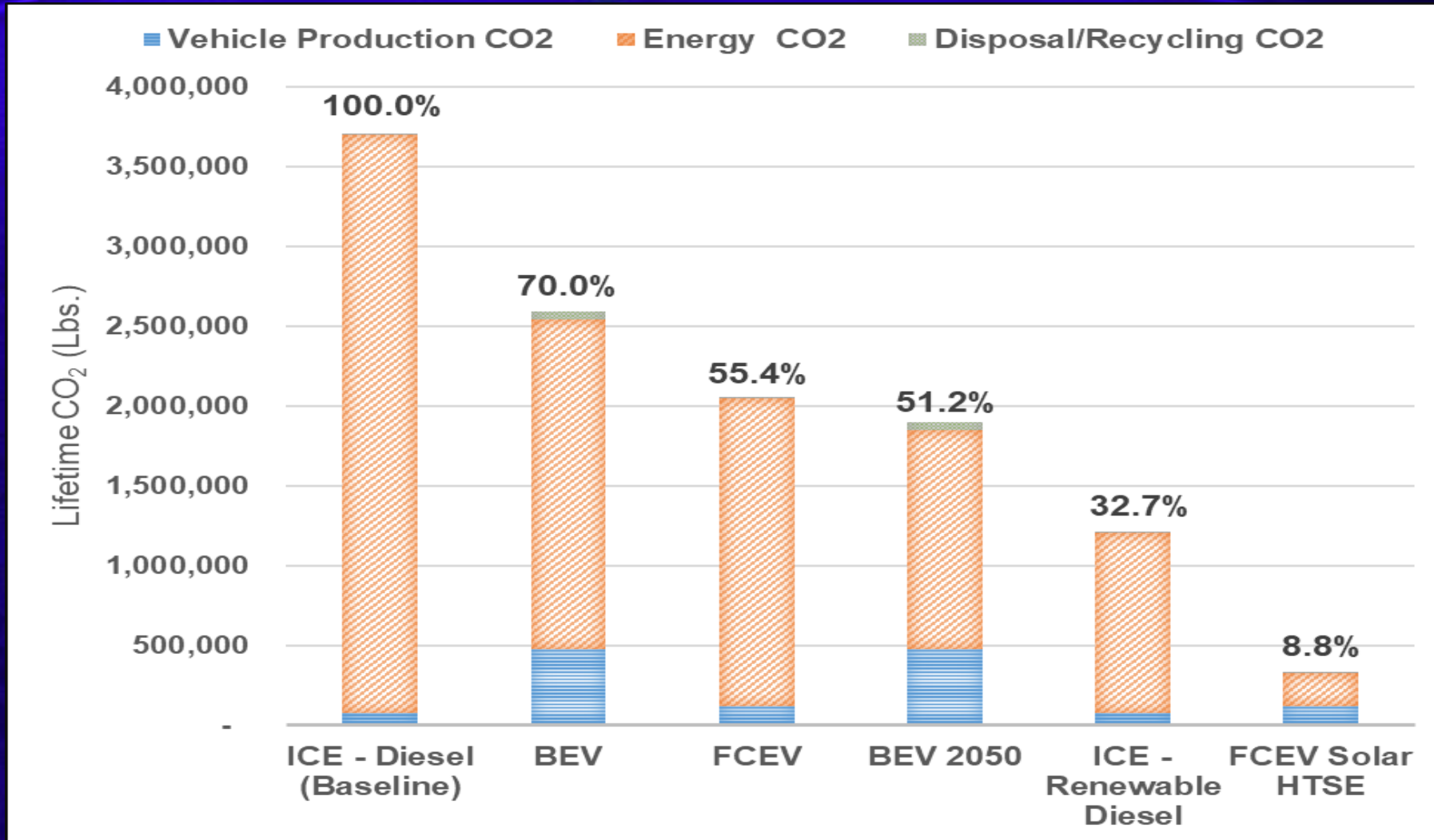
Behavior	Relative to Females, Likelihood for Males Increased by
Improper Lane conviction	221%
Medical Certificate violation	91%
Seat Belt violation	76%
Driving Too Fast for Conditions conviction	57%
Failure to Obey Traffic Sign conviction	51%

Understanding the CO₂ Impacts of Zero-Emission Trucks

- **Life-cycle CO₂ emissions study for:**
 - ◆ **Internal combustion engine (ICE) trucks powered by diesel**
 - ◆ **Battery electric vehicle (BEV) trucks powered by electricity**
 - ◆ **Fuel cell electric vehicle (FCEV) trucks powered by hydrogen**
- **Compares CO₂ emissions across from the full vehicle life-cycle:**
 - ◆ **Vehicle production**
 - ◆ **Energy production and consumption**
 - ◆ **Vehicle disposal/recycling**

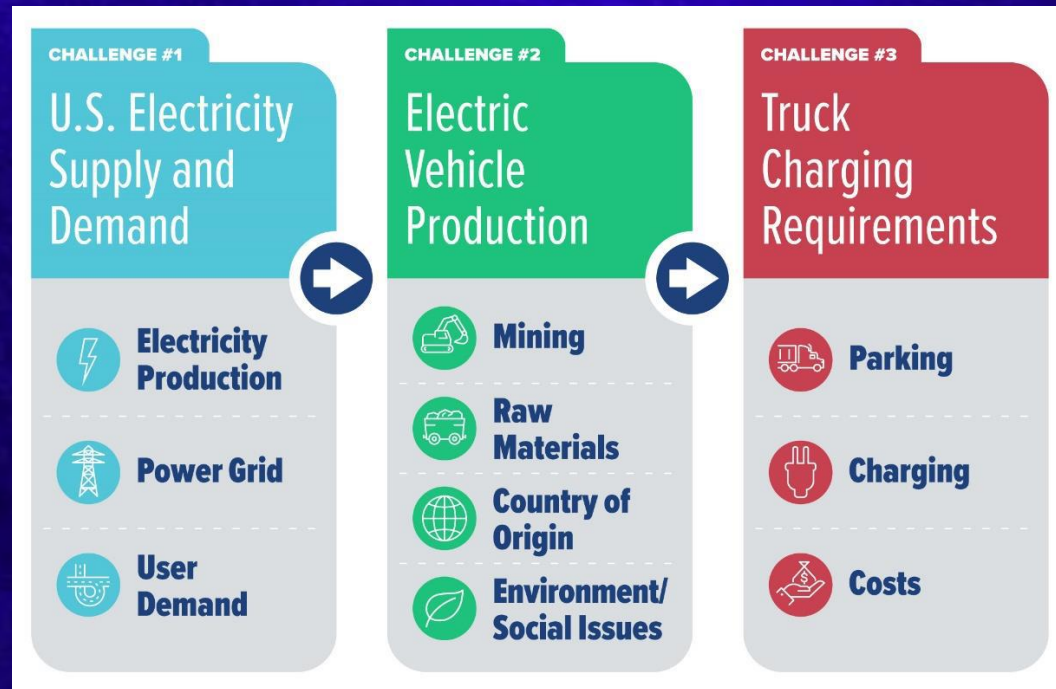


Key Findings



Charging Infrastructure Challenges for the U.S. Electric Vehicle Fleet

- Analysis of three distinct challenges for EVs – with a focus on trucking



Charging Infrastructure Challenges for the U.S. Electric Vehicle Fleet

December 2022



Prepared by the American Transportation Research Institute

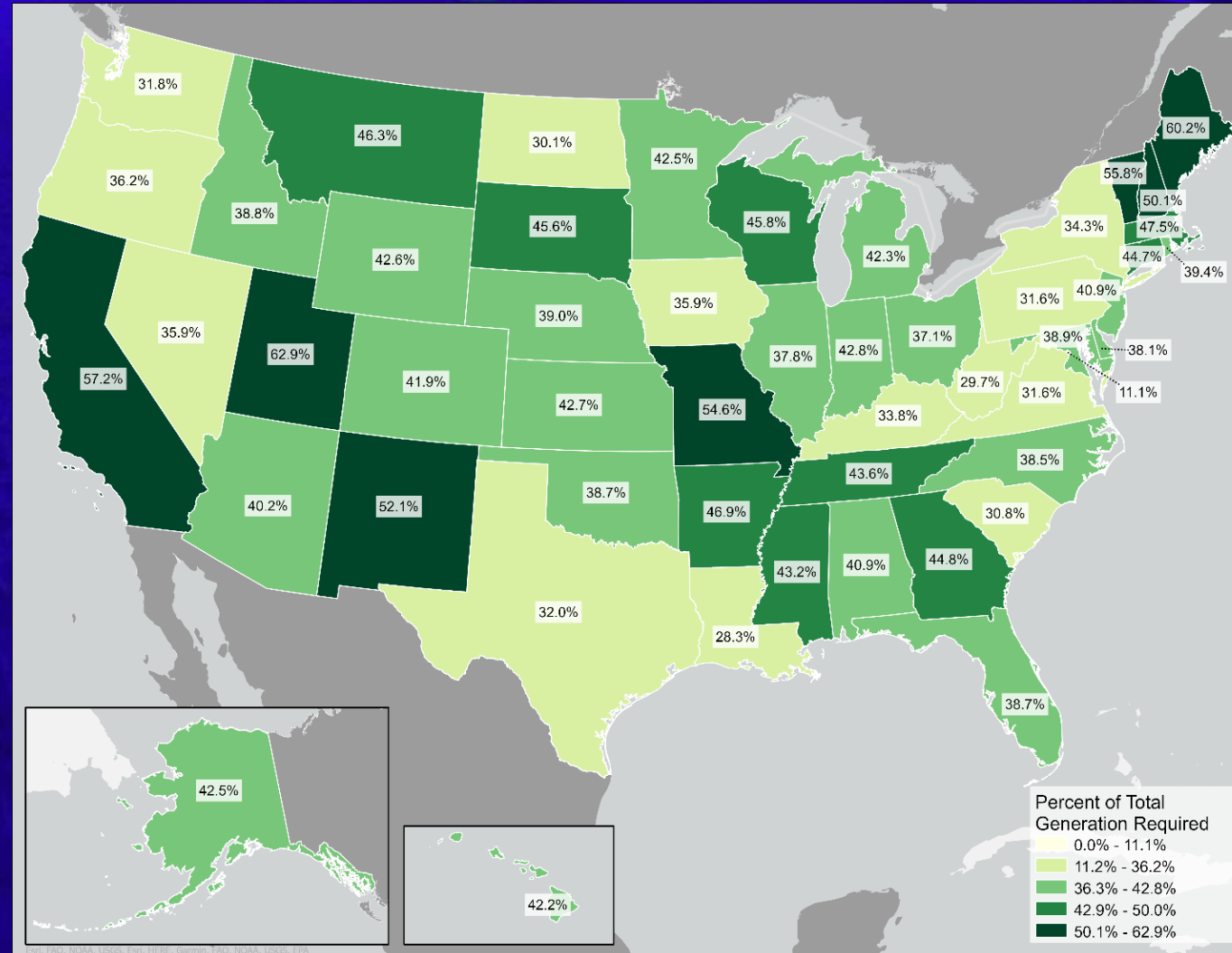


U.S. Electricity Supply and Demand

■ U.S. Vehicle Fleet

- ◆ **Autos: >253 million cars/light duty trucks**
 - **Electricity Needs: 1,039.9 billion kWh representing 26.3% of total U.S. consumption**
- ◆ **Trucks: >12 million medium- and heavy-duty trucks**
 - **Electricity Needs: 553.5 billion kWh representing 14% of U.S. consumption**
 - **10.6% for 2.95 million combo trucks**
- ◆ **Total: 1,593.8 billion kWh representing 40.3% of U.S. consumption**

U.S. Electricity Supply and Demand



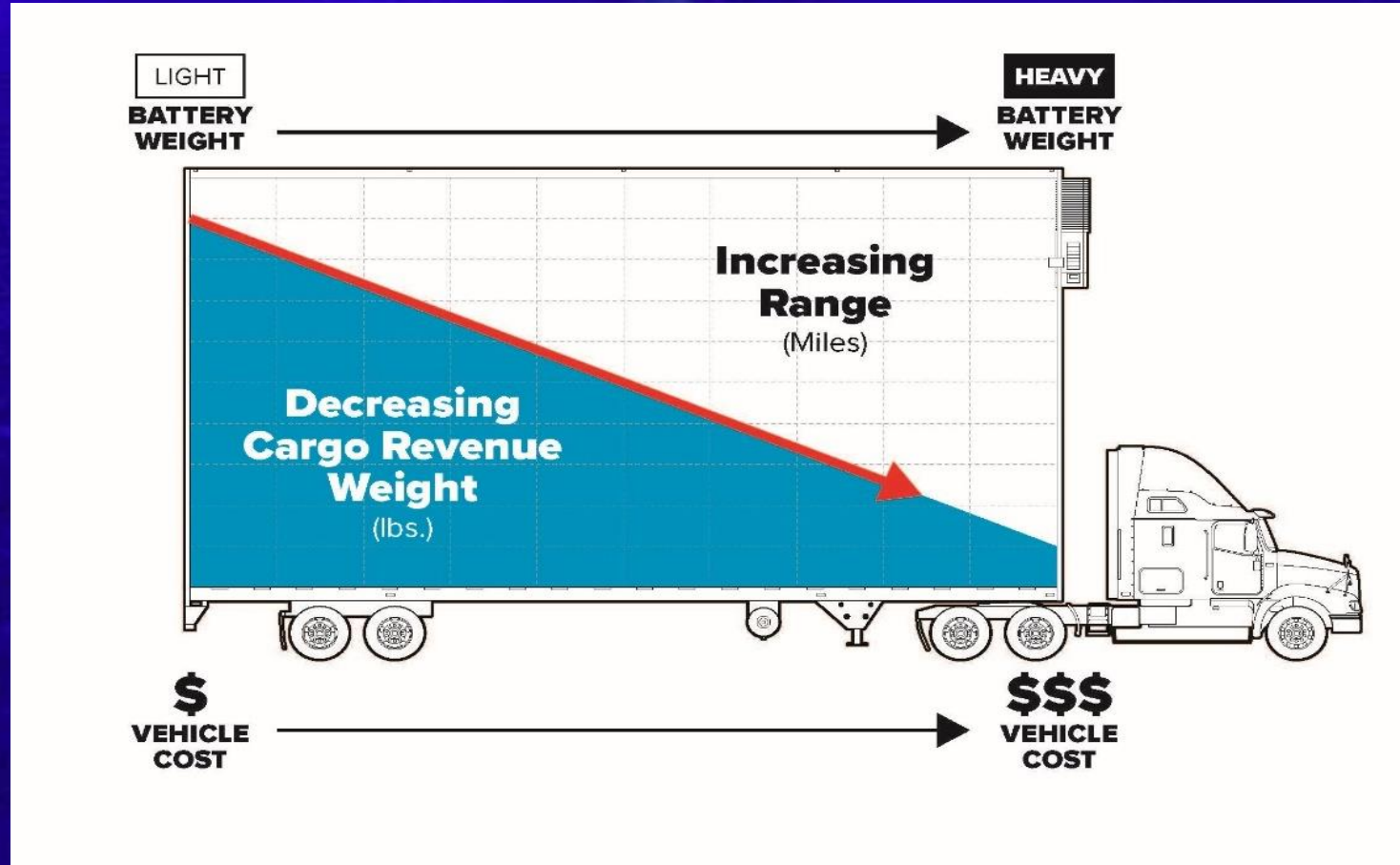
Electric Vehicle Production

- **Electric battery materials are the central issue**
 - ◆ **Mining: Cobalt, Graphite, Lithium, Nickel**
 - Project cost/lead time
 - Energy use and emissions (pollution and CO₂)
 - Geopolitical and social issues
 - ◆ **Refining of raw materials**
 - Heating, cooling, corrosive chemical reactions, mostly done in China
 - ◆ **Transportation sector requires staggering amount of these materials**

Tons of Material Needed to Replace U.S. Fleet

	Cobalt	Graphite	Lithium	Nickel
Annual Global Production (Tons)	187,393	1,102,310	110,231	2,976,237
Total U.S. Vehicle Fleet Requirements	5,396,733	29,586,708	3,842,239	18,807,908
Total U.S. Vehicle Demand/Years of Global Production	28.8	26.8	34.9	6.3

BEV Truck Conundrum

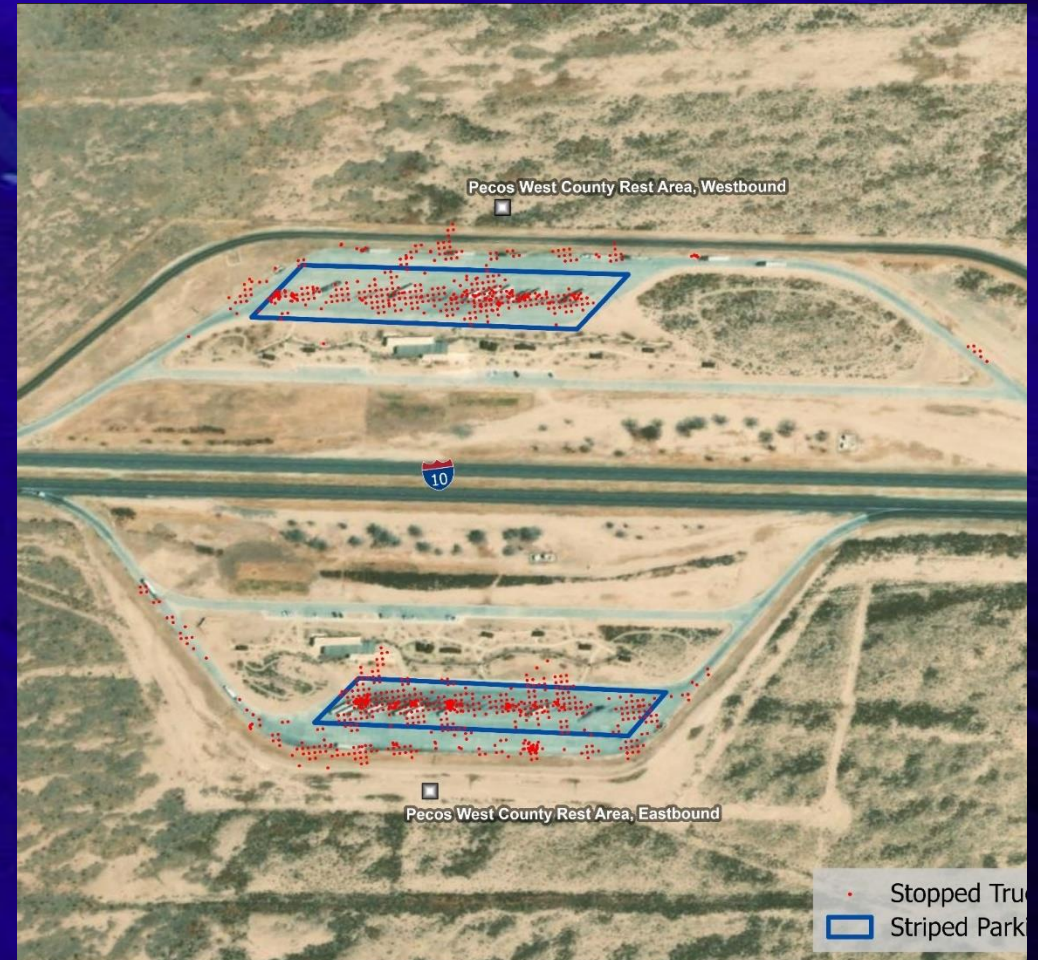


Long-Haul Truck Charging Requirements

- **Truck Charging Availability = Truck Parking Crisis 2.0**
- **BEV charging impacted by federal hours-of-service rules and parking availability**
- **At minimum every truck parking space would need a charger – 313,000 spaces**
 - ◆ **Initial equipment, installation costs – \$35 billion**

Parking Case Study

- Requires enough daily electricity to power more than 5,000 U.S. households for 126 truck charging events



Realities

- **Vehicle costs – new Class 8 BEV truck could cost over \$400,000**
- **No refueling infrastructure**
- **CO₂ emissions are still substantial**
- **Material sourced from outside U.S.**
 - ◆ **Lithium, graphite, cobalt, manganese and nickel**

CALIFORNIA FLEX ALERT

- SET THERMOSTATS TO 78 DEGREES OR HIGHER
- AVOID USE OF MAJOR APPLIANCES
- TURN OFF UNNECESSARY LIGHTS
- AVOID CHARGING ELECTRIC VEHICLES

FOX 13

6:49 90°

Questions?

Dan Murray

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