

# Putting ATRI's Data to Work for You

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

# ATRI

**ATRI is TRUCKING's not-for-profit research organization, whose mission is to provide the data and analysis to improve the industry's safety and productivity**

**All of ATRI's research is available at no cost on our website:**

**[www.TruckingResearch.org](http://www.TruckingResearch.org)**



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# Research Advisory Committee



# 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  
The American Transportation Research Institute  
October 2022

**ATRI** American  
Transportation  
Research  
Institute

Atlanta, GA • Minneapolis, MN • New York, NY • Sacramento, CA

[ATRI@trucking.org](mailto:ATRI@trucking.org)  
[TruckingResearch.org](http://TruckingResearch.org)

# 2022 Top Industry Issues

Rank	Commercial Drivers	Motor Carriers
1	Truck Parking	Driver Shortage
2	Fuel Prices	Driver Retention
3	Driver Compensation	Fuel Prices
4	Detention / Delay at Customer Facilities	Compliance, Safety, Accountability
5	Speed Limiters	Economy
6	Economy	Lawsuit Abuse Reform
7	HOS Rules	Insurance Cost / Availability
8	ELD Mandate	Diesel Technician Shortage
9	Driver Training Standards	Detention / Delay at Customer Facilities
10	Transportation Infrastructure / Congestion / Funding	Truck Parking

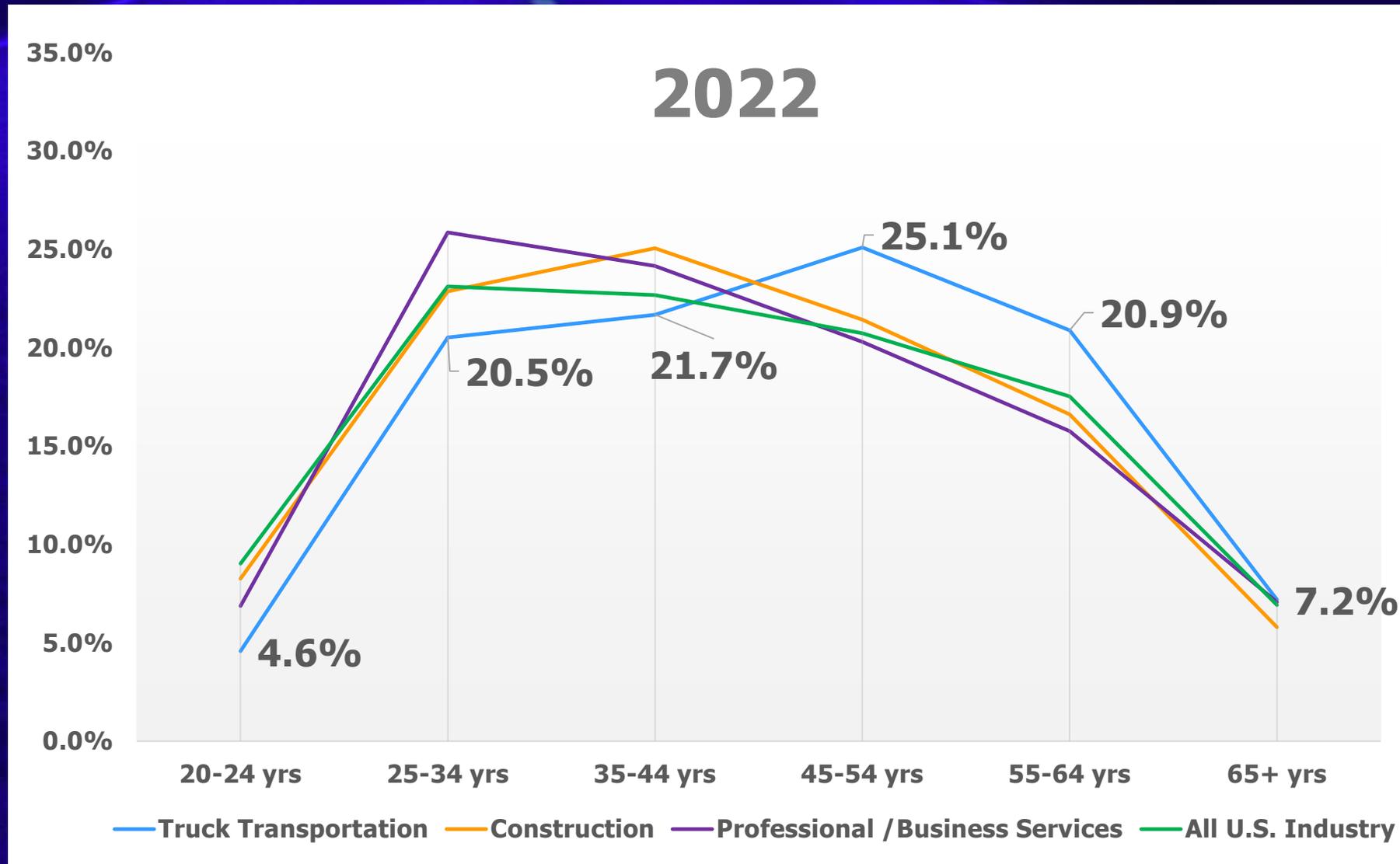
# The More Things Change...

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

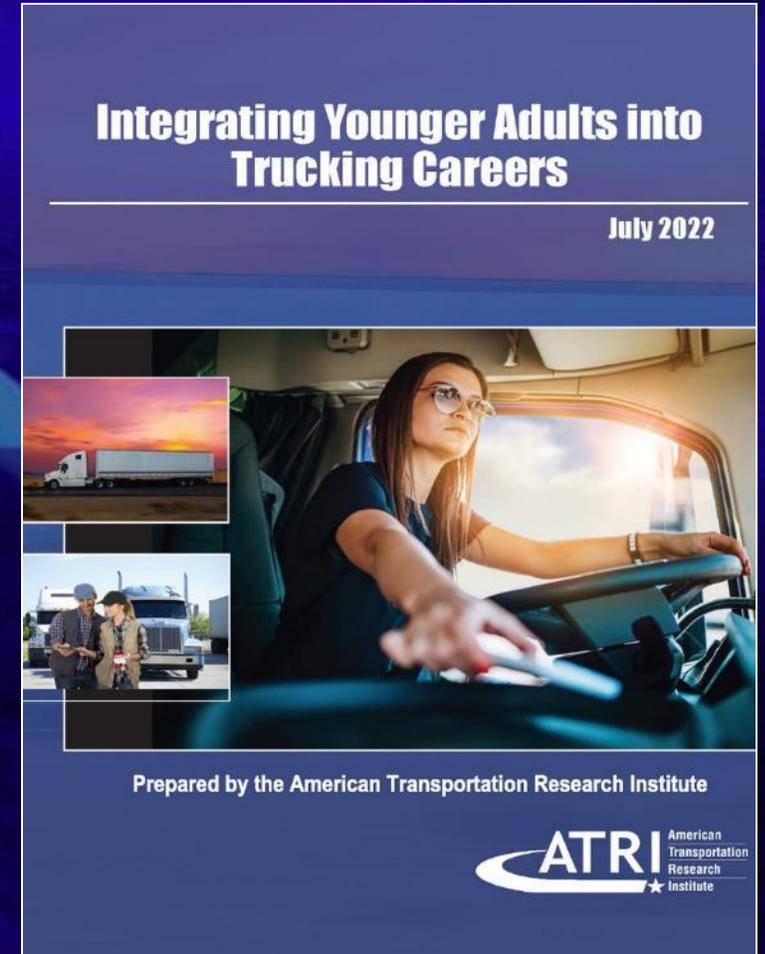
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# Truck Driver Age Demographics



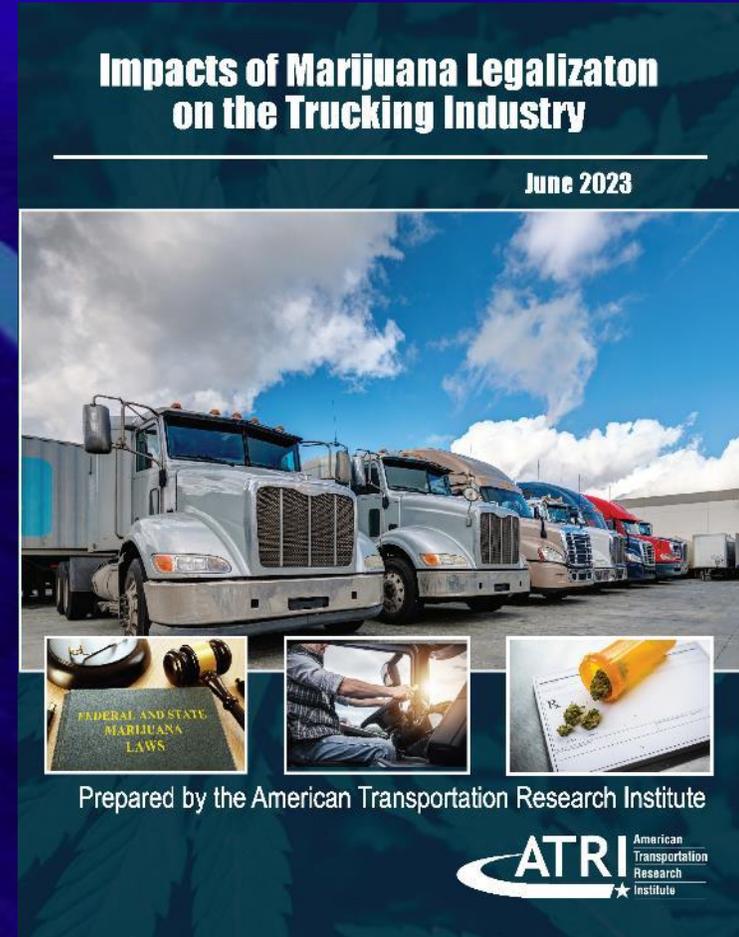
# Integrating Younger Adults into Trucking Careers

- 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



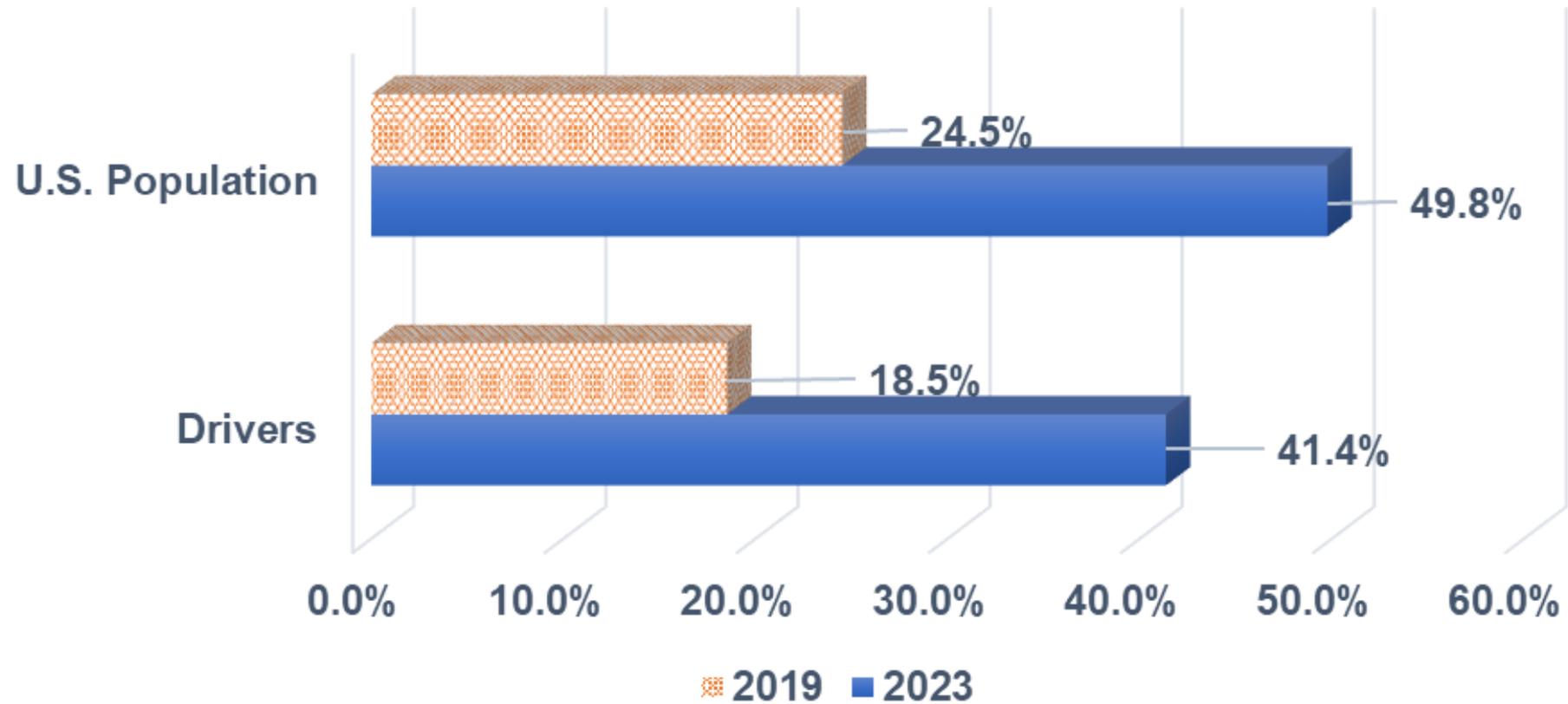
# Impacts of Marijuana Legalization on Trucking

- Top RAC priority for 2022
- Focus on workforce implications from increased legalization
- Includes motor carrier survey (200+ responses) and driver survey (3,300+ responses)

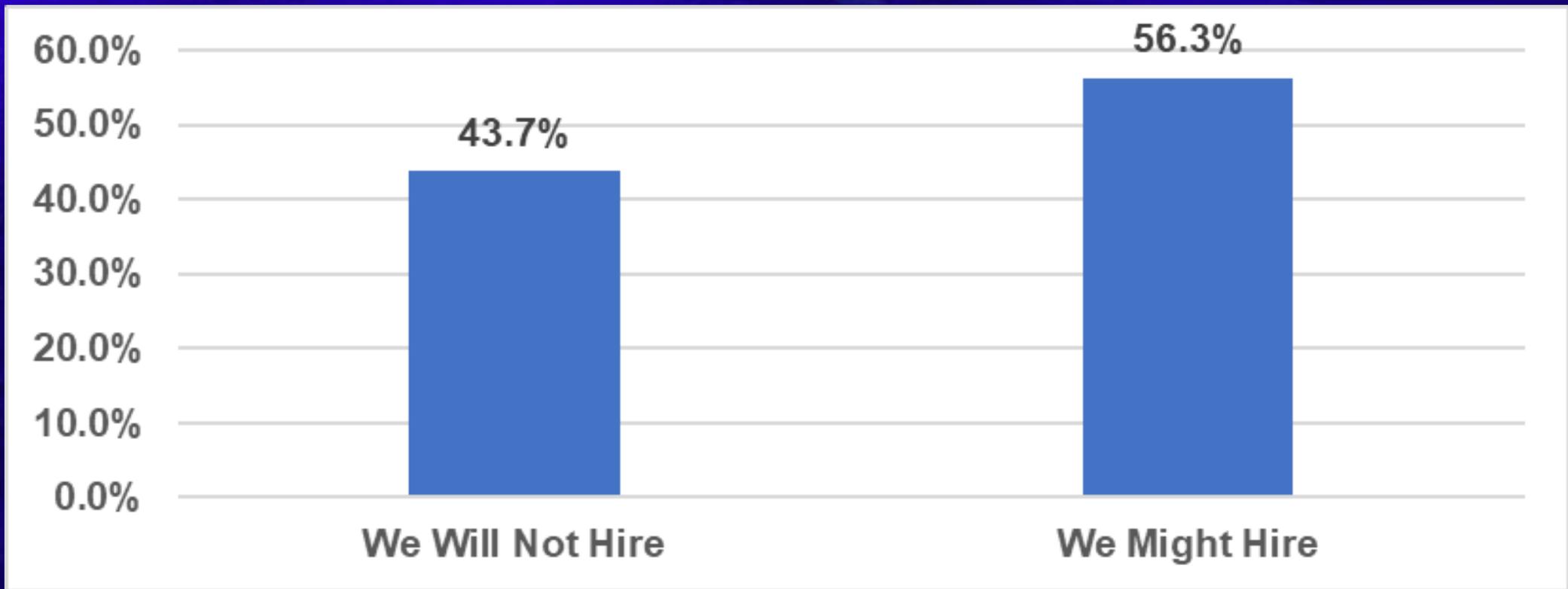




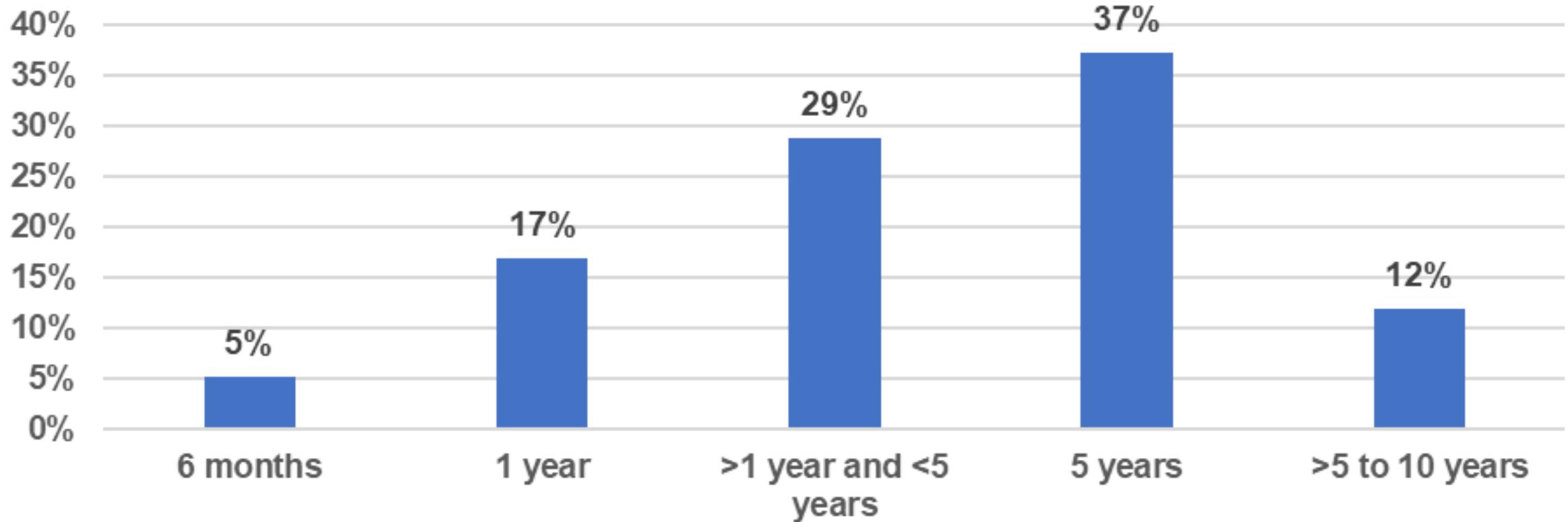
# Percentage of Truck Drivers Residing in States with Legal Recreational Marijuana



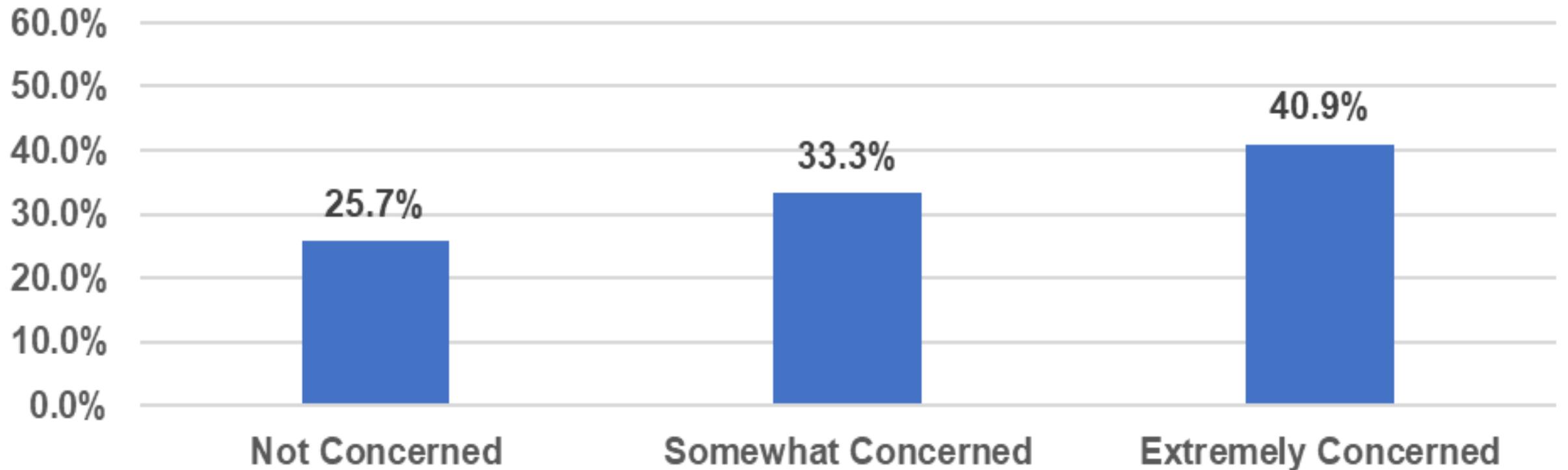
# Based on your company's policies, does a prior positive drug test for marijuana (at any time in the past) automatically disqualify a driver from employment?



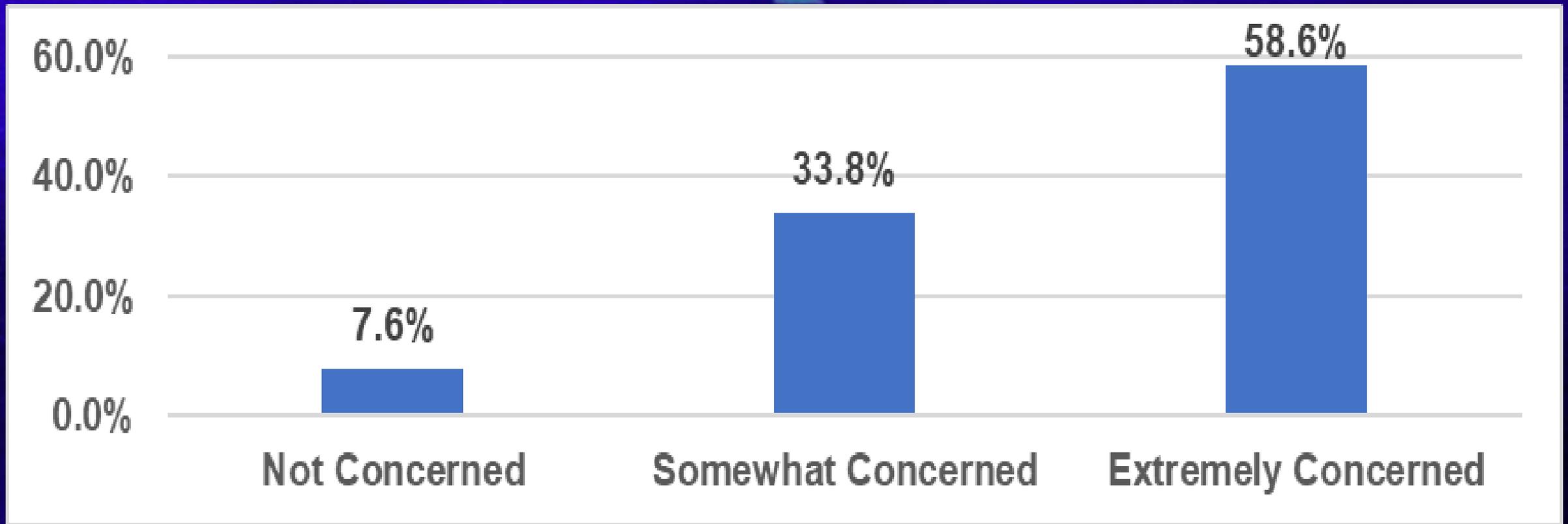
# Is there a specific time period that must pass after a positive marijuana drug test before you will hire or rehire a driver?



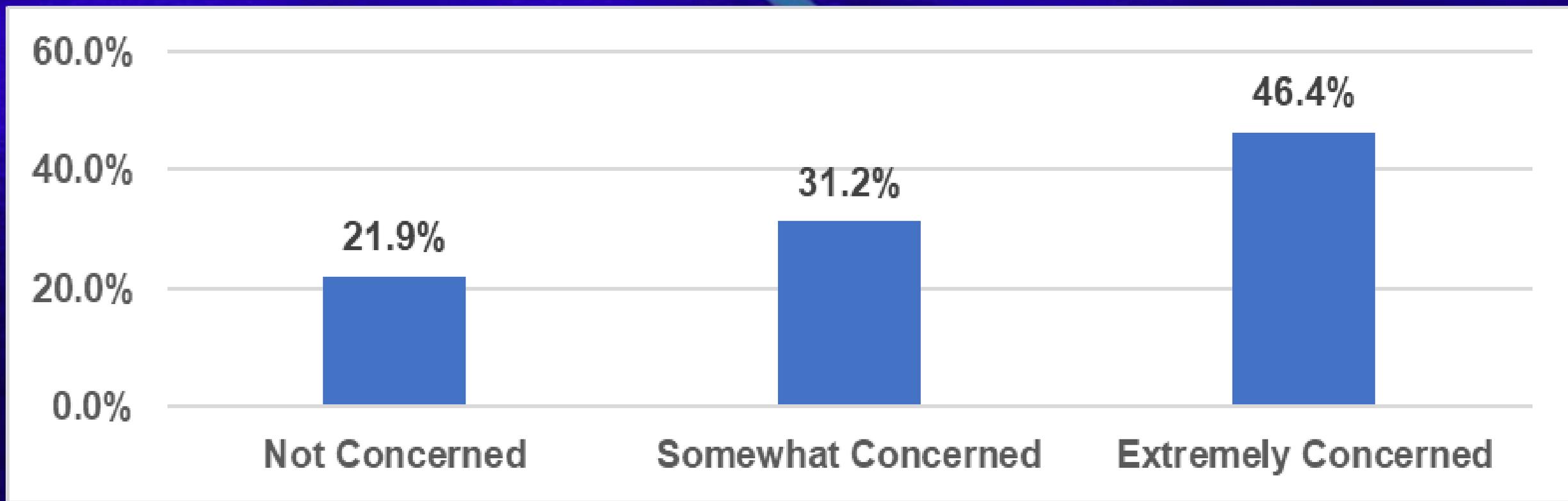
# Concern that Drivers will be More Likely to Drive while Impaired as a Result of Legalization



# Concern that a Driver is More Likely to Test Positive in a Post-Crash Screening



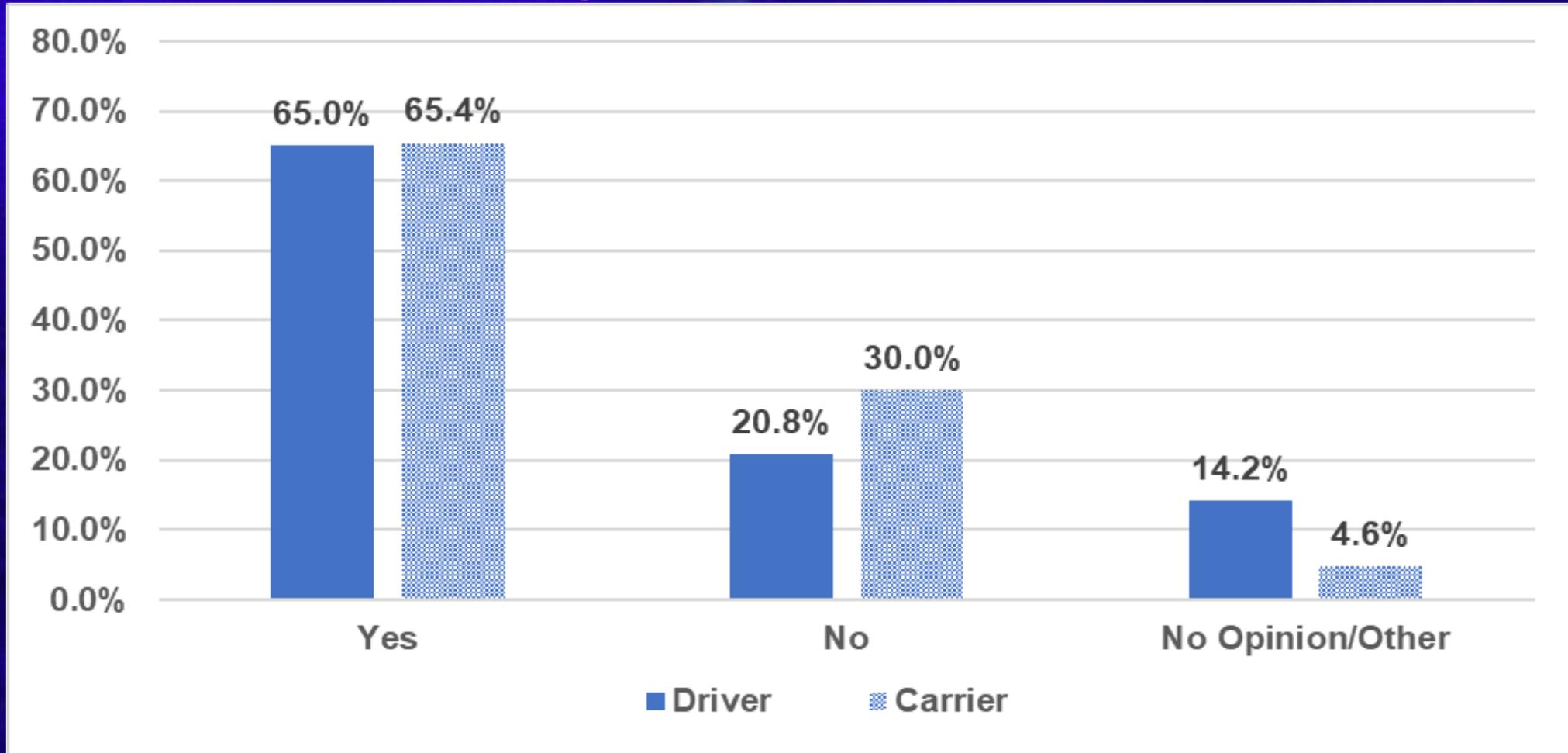
# Concern that Insurance Rates will Increase for Carriers in a Legal State



# Driver Survey

- **19.1% of drivers were not sure if a CDL holder can use marijuana off-duty in a state where it is legal**
  - ◆ 6.6% incorrectly said drivers can use marijuana off-duty in states where it is legal
- **Driver opinions on impairment time after using recreational marijuana:**
  - ◆ Most common response was after 10 hours or more (28.6%)
- **Majority of drivers (55.4%) do not believe highway safety has been impacted by legalized marijuana**

# Should Marijuana Impairment Test Replace Marijuana Use Test?



# 2022 Top Industry Issues

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# Operational Costs of Trucking

- Collects and analyzes real-world motor carrier costs, efficiency, and revenue data
- Data covers 2008-2022
- Calculates costs by mile and by hour
- Includes sector, regional analyses
  - ◆ TL, LTL, Specialized/Other
  - ◆ Small vs Large Fleets
- Costs hit a record high for the second year in a row in 2022, well exceeding inflation

## An Analysis of the Operational Costs of Trucking: 2023 Update

June 2023



Prepared by the American Transportation Research Institute

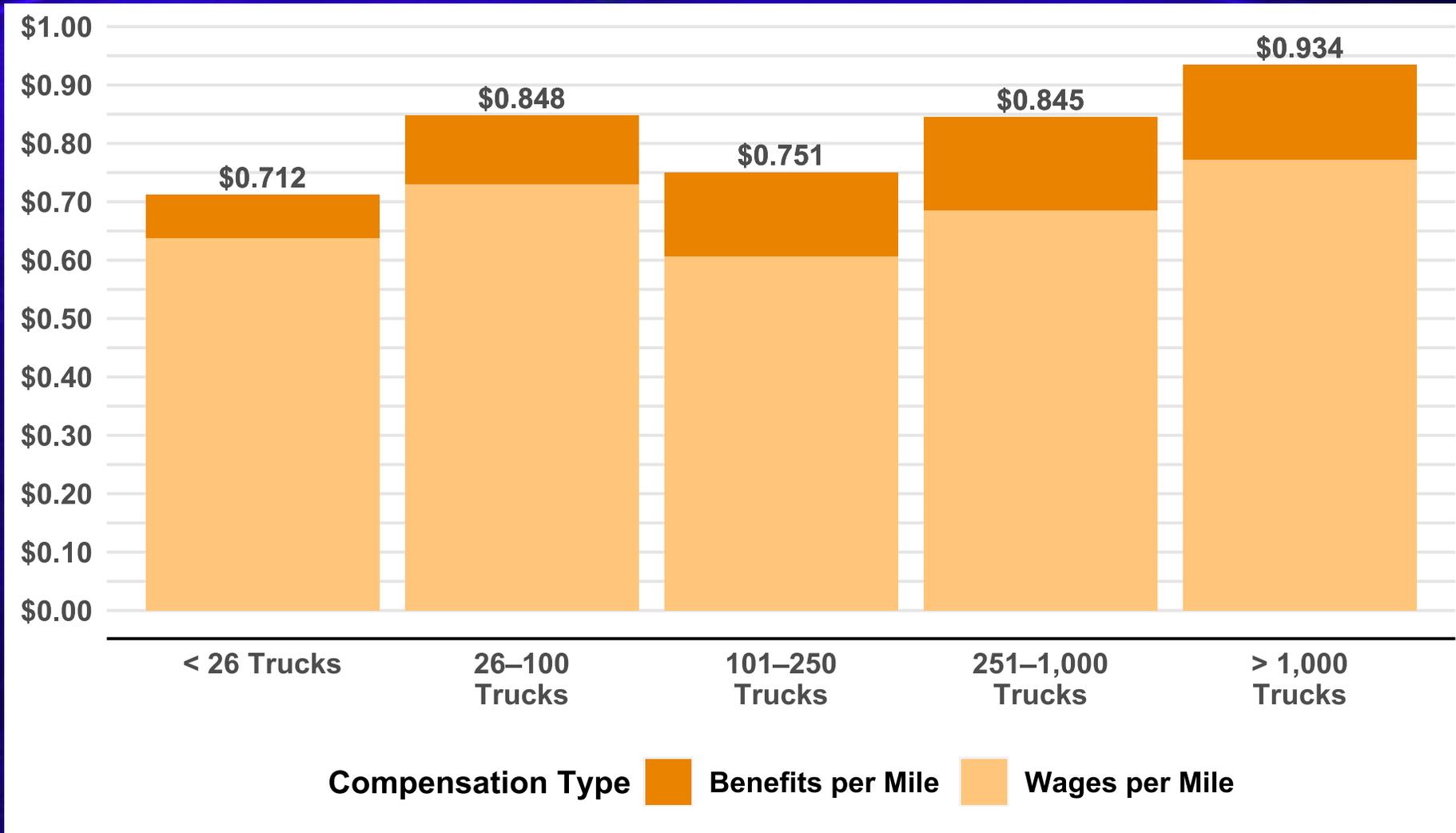


# Operational Costs of Trucking

## Average Carrier Costs per Mile

Motor Carrier Costs	2018	2019	2020	2021	2022	2021-2022 Percent Change
<b>Vehicle-based</b>						
Fuel Costs	\$0.433	\$0.384	\$0.308	\$0.417	\$0.641	53.7%
Truck/Trailer Lease or Purchase Payments	\$0.265	\$0.256	\$0.271	\$0.279	\$0.331	18.6%
Repair & Maintenance	\$0.171	\$0.149	\$0.148	\$0.175	\$0.196	12.0%
Truck Insurance Premiums	\$0.084	\$0.071	\$0.087	\$0.086	\$0.088	2.3%
Permits and Licenses	\$0.024	\$0.020	\$0.016	\$0.016	\$0.015	- 6.3%
Tires	\$0.038	\$0.039	\$0.043	\$0.041	\$0.045	9.8%
Tolls	\$0.030	\$0.035	\$0.037	\$0.032	\$0.028	- 12.5%
<b>Driver-based</b>						
Driver Wages	\$0.596	\$0.554	\$0.566	\$0.627	\$0.724	15.5%
Driver Benefits	\$0.180	\$0.190	\$0.171	\$0.182	\$0.183	0.5%
<b>TOTAL</b>	<b>\$1.821</b>	<b>\$1.699</b>	<b>\$1.646</b>	<b>\$1.855</b>	<b>\$2.251</b>	<b>21.3%</b>

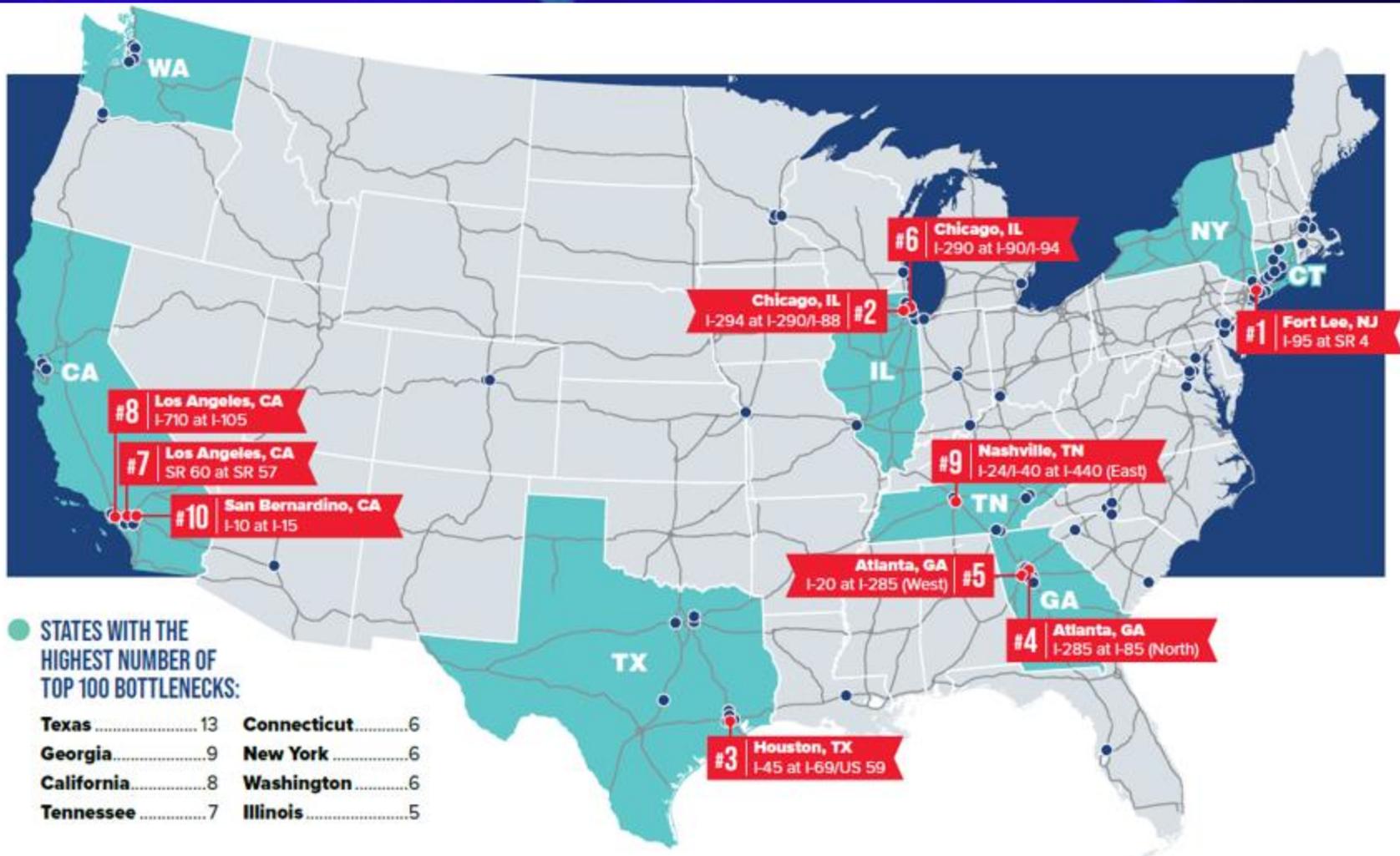
# Driver Compensation: Truckload



# 2022 Top Industry Issues

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# 2023 Top Truck Bottlenecks

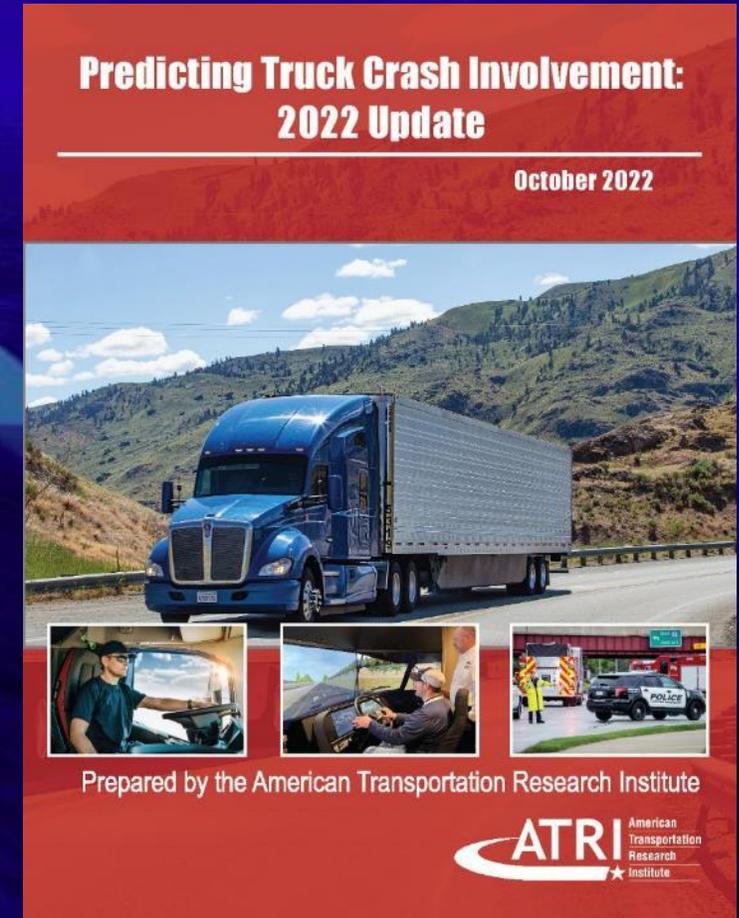


# 2023 Top 10 Truck Bottlenecks

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%

# 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**

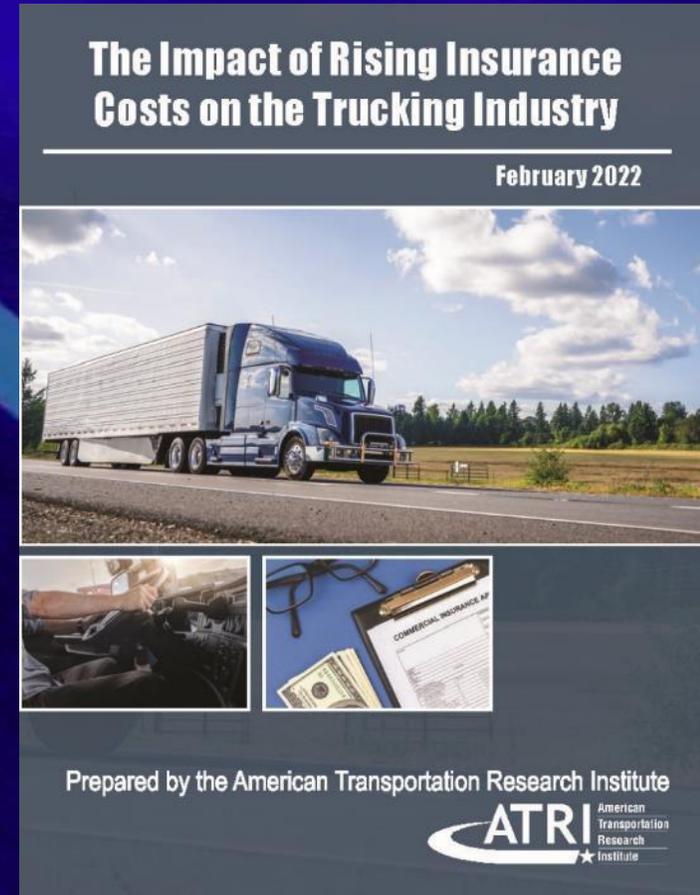
Behavior	Relative to Females, Likelihood for Males Increased by
Improper Lane conviction	221%
Medical Certificate violation	91%
Seat Belt violation	76%
Driving Too Fast for Conditions conviction	57%
Failure to Obey Traffic Sign conviction	51%

# 2022 Top Industry Issues

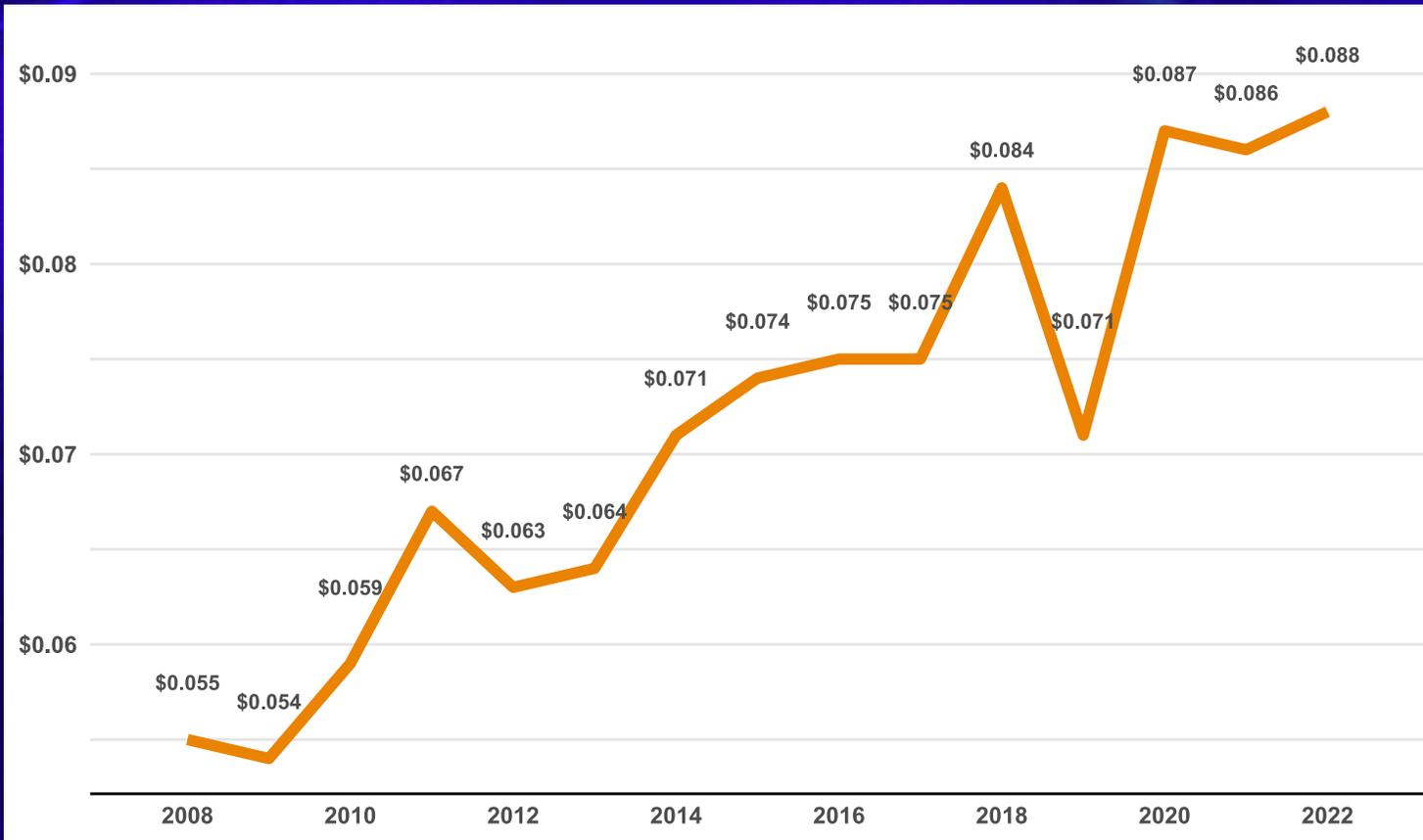
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# The Impact of Rising Insurance Costs on the Trucking Industry

- **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**

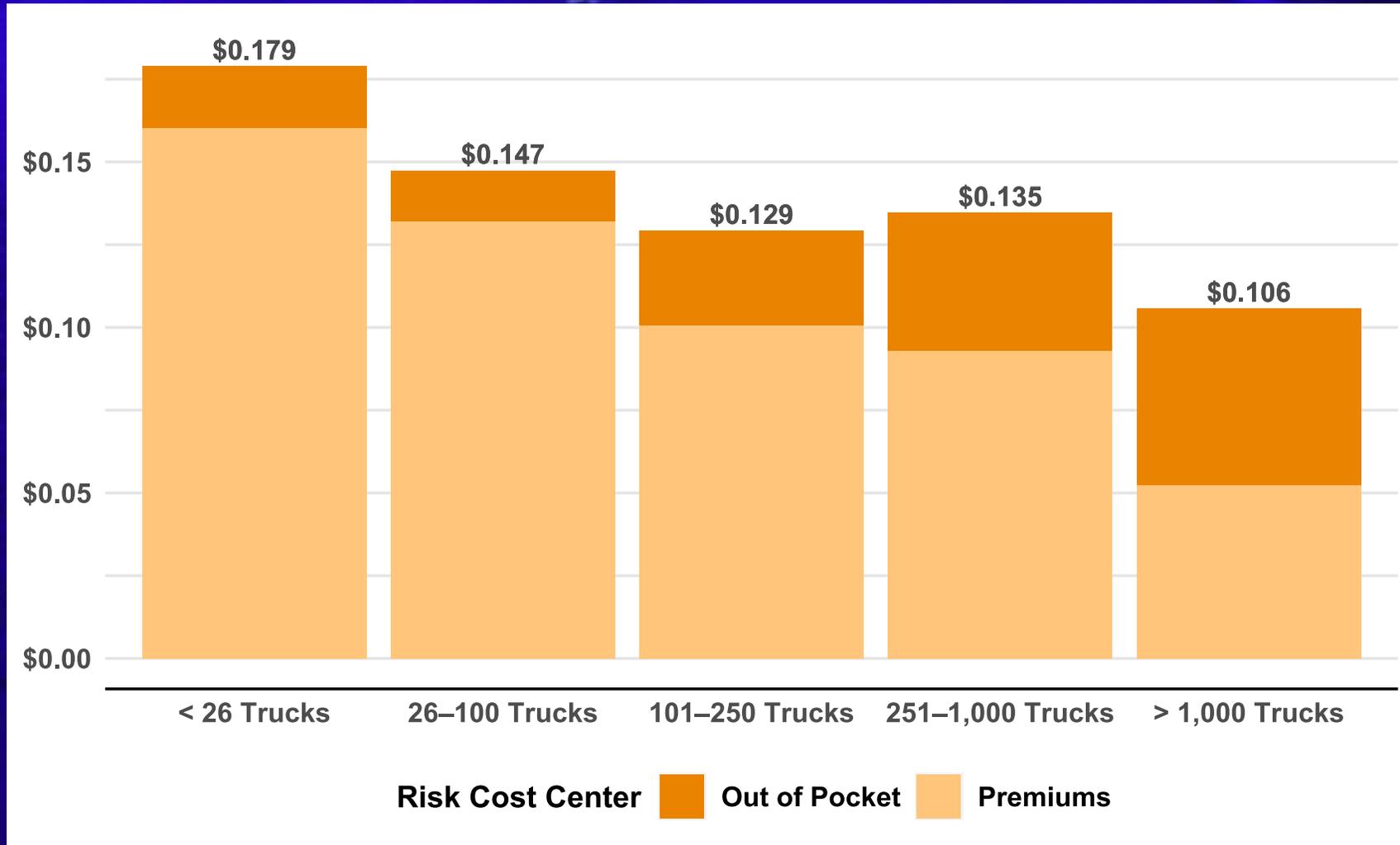


# Insurance Costs over Time

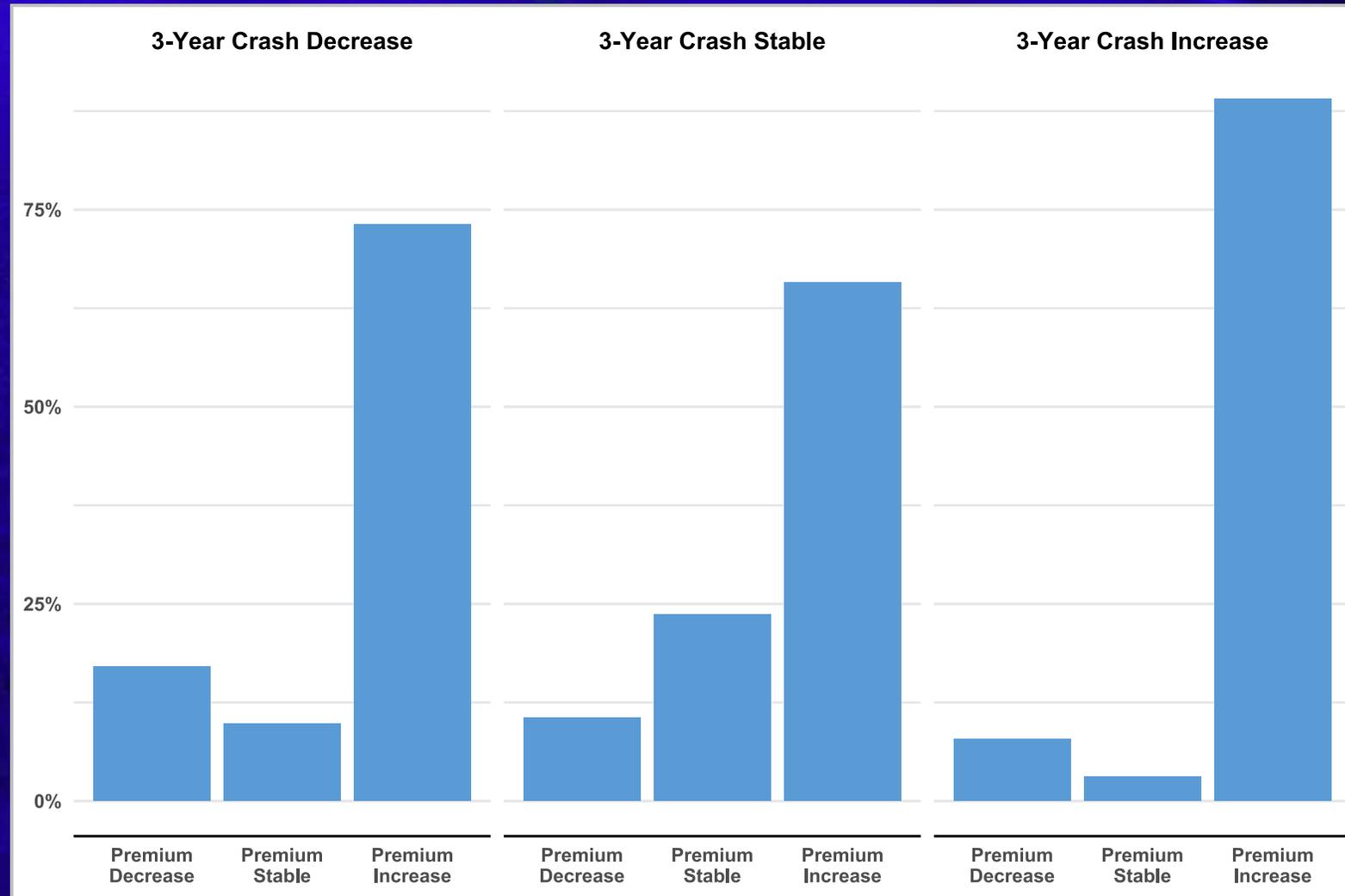


- **Auto liability premium costs per mile rose by 40% in the last ten years**
- **The rate of increase moderated in recent years, rising 5% from 2018 to 2022**

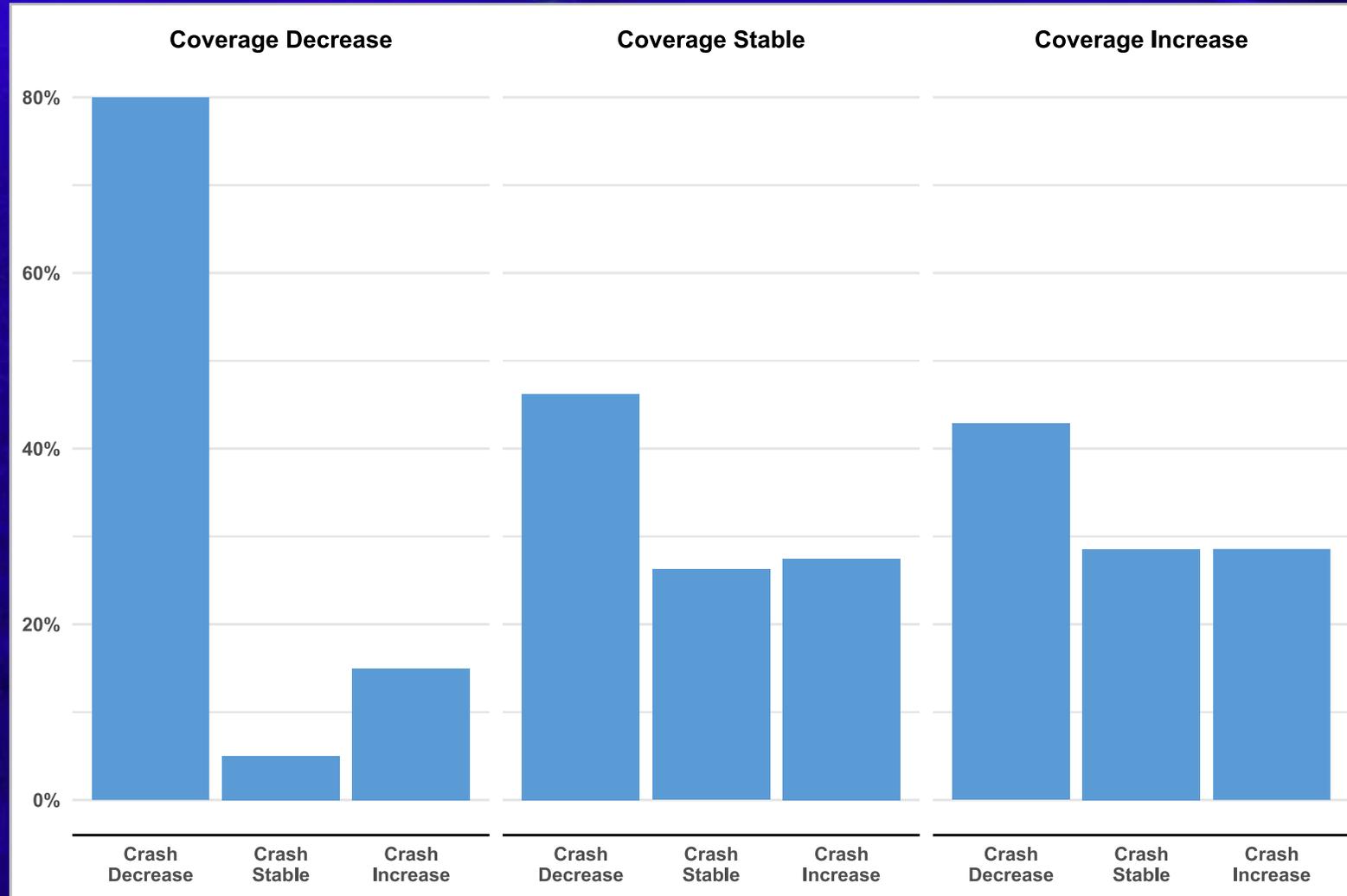
# Insurance Costs Continue to Climb



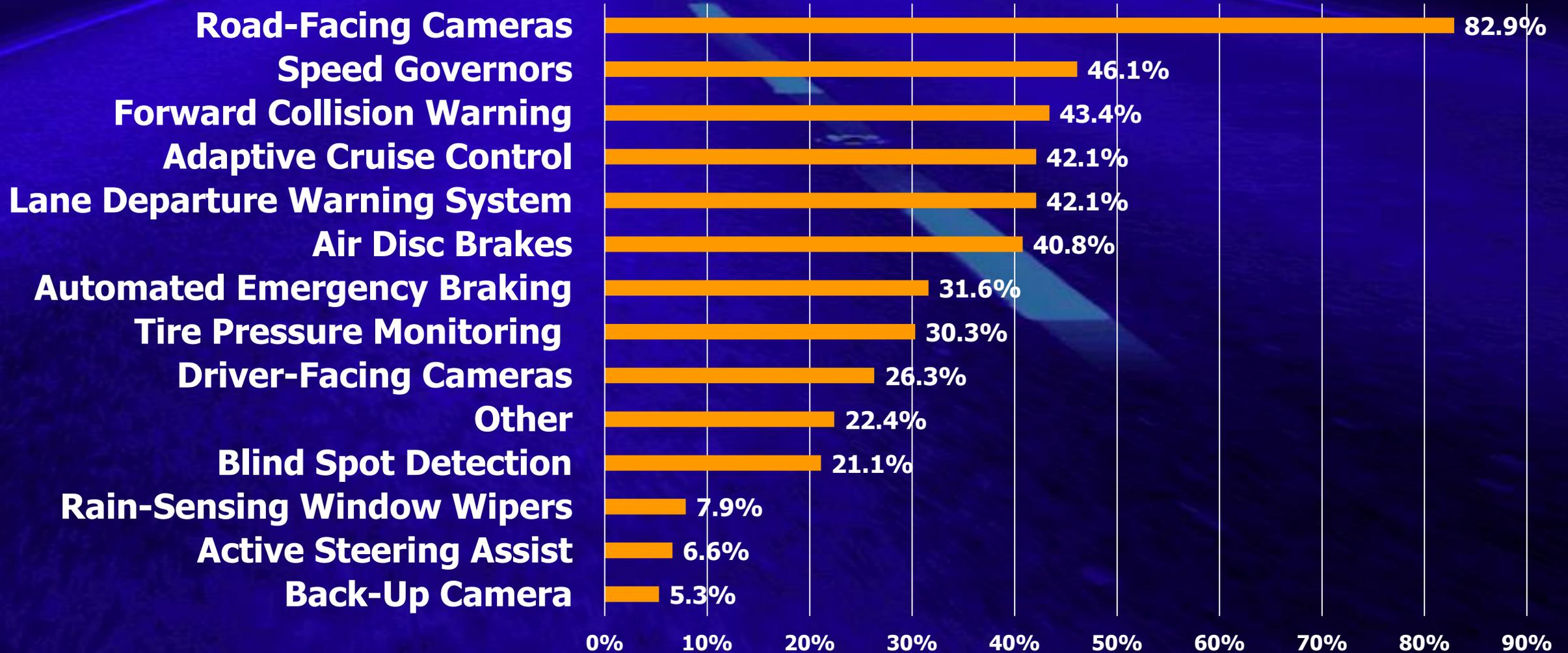
# Impact of 3-Year Crash Rate on Premiums



# Impact of Coverage Changes on Crashes

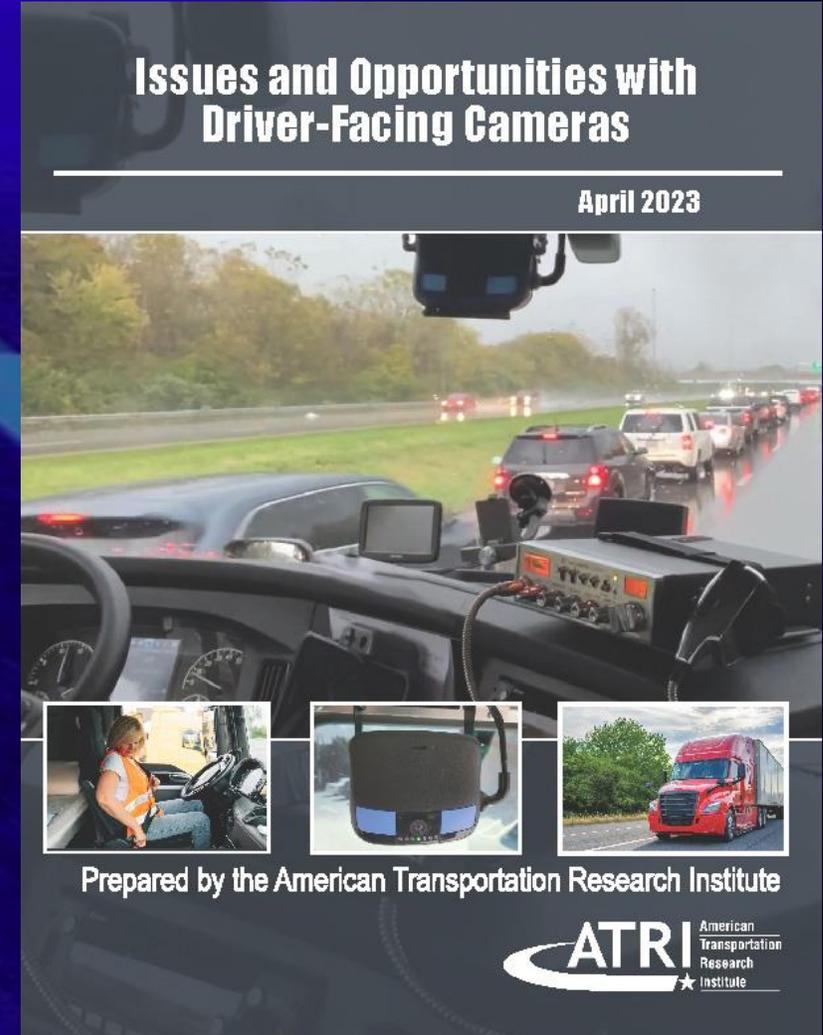


# Safety Technology Deployment 2018 - 2020

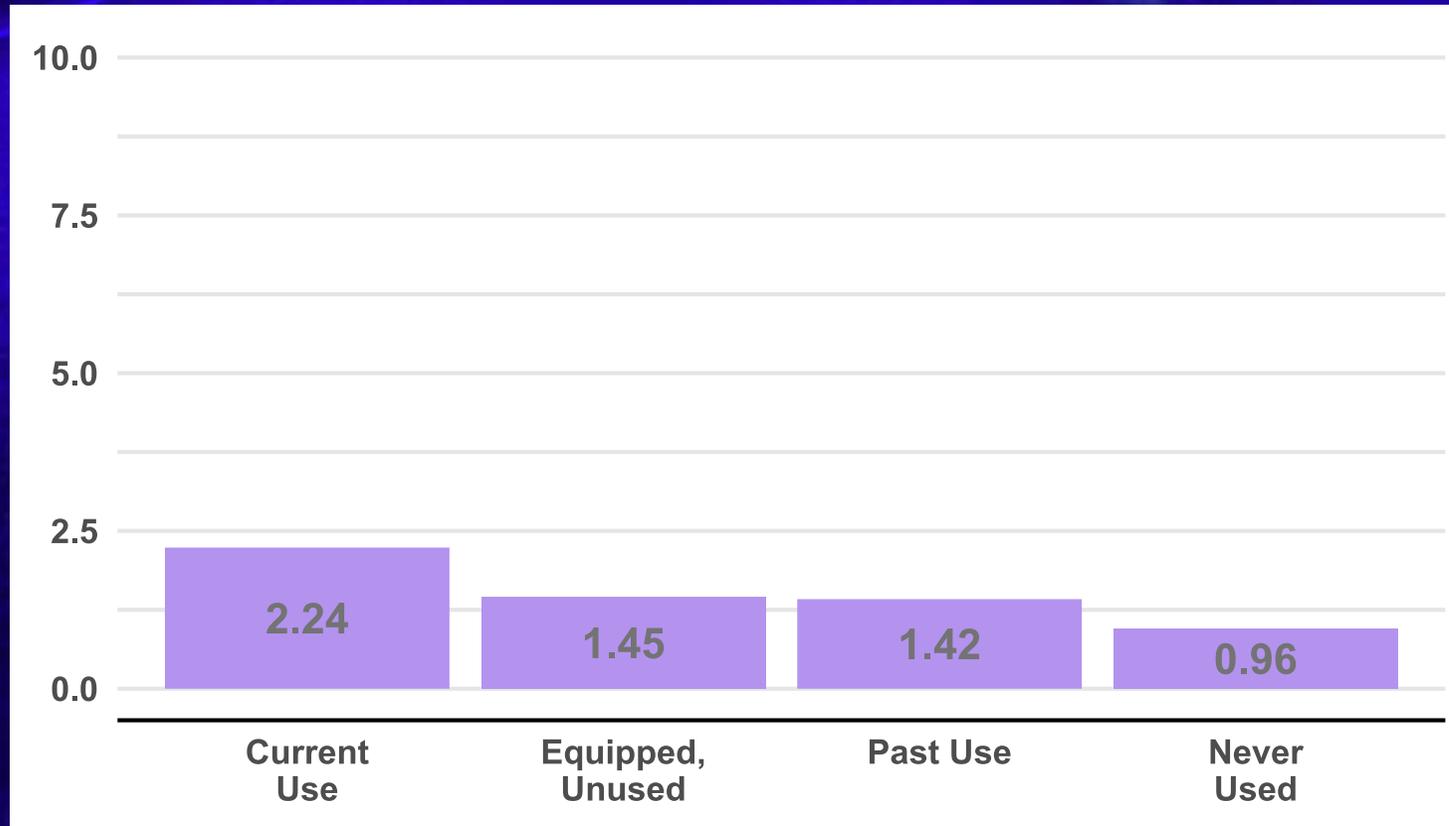


# Issues and Opportunities with DFCs

- Incorporates survey data from 2,100 drivers, legal experts, and insurers
- Identifies points of agreement and potential compromise on optimal DFC use among these key stakeholder groups

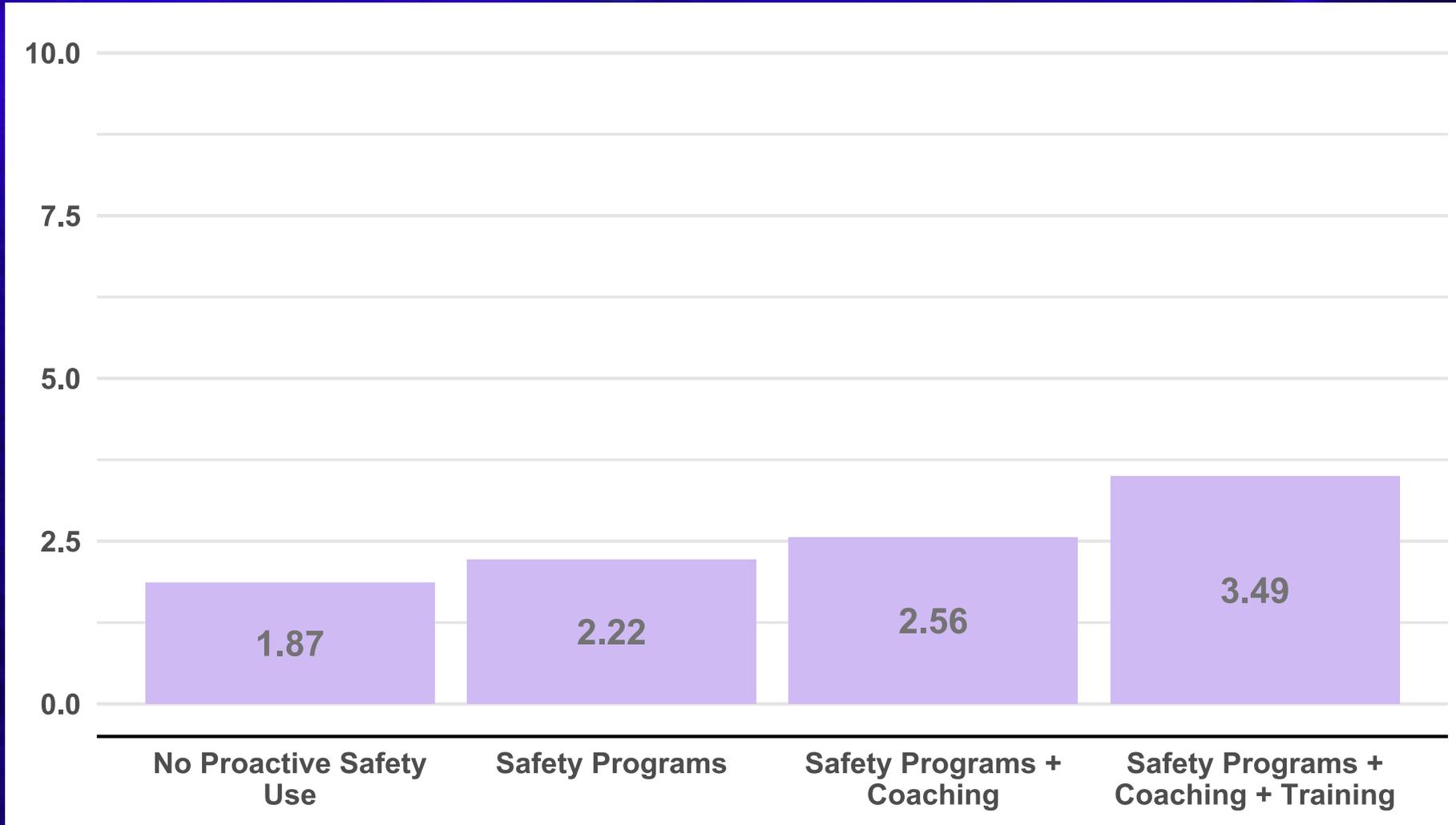


# Driver DFC Approval is Low but Increases with Use

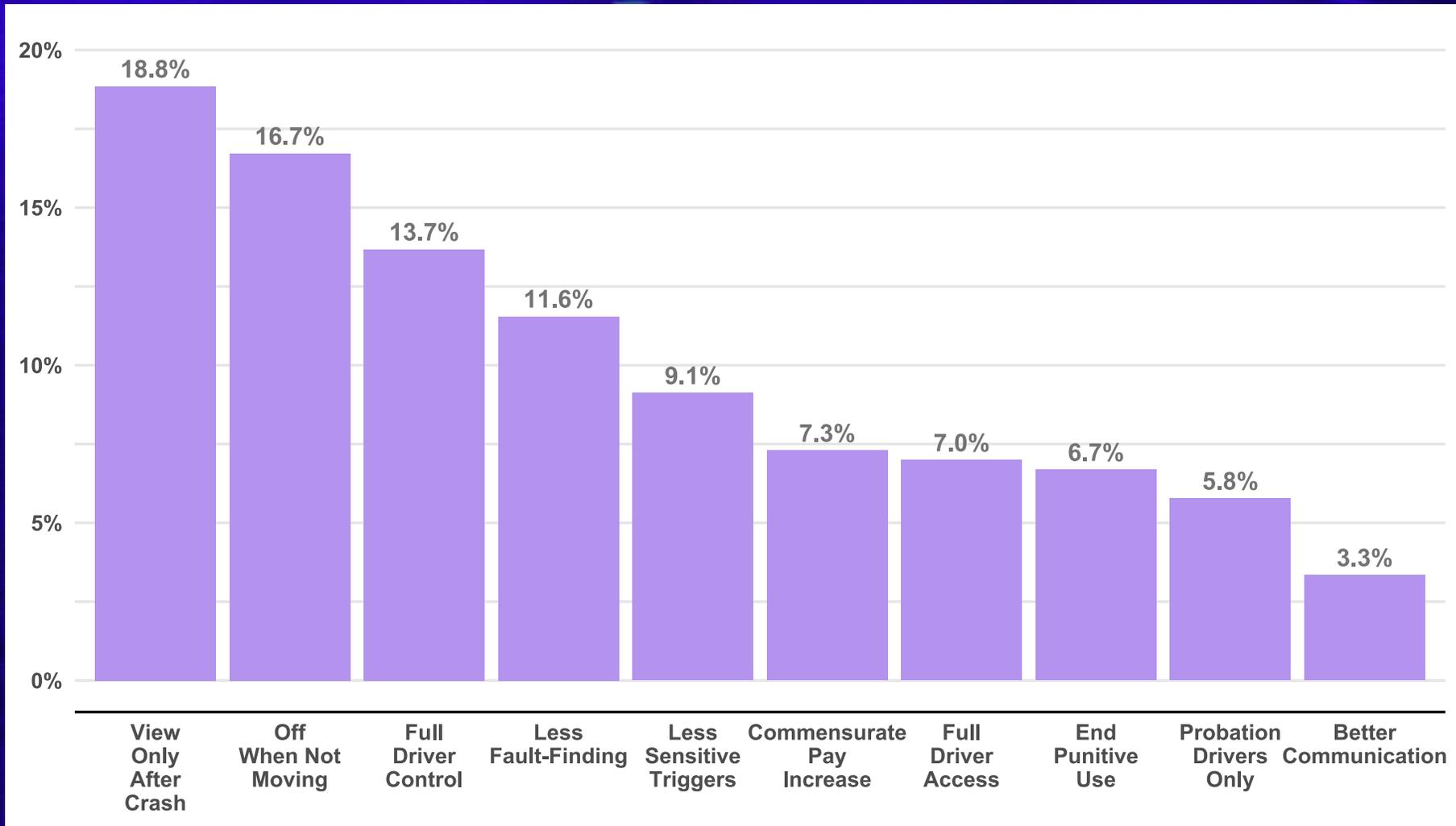


- Driver DFC approval is also higher with event-based DFCs versus continuously recording (by 22%) and new entrant drivers (31%)

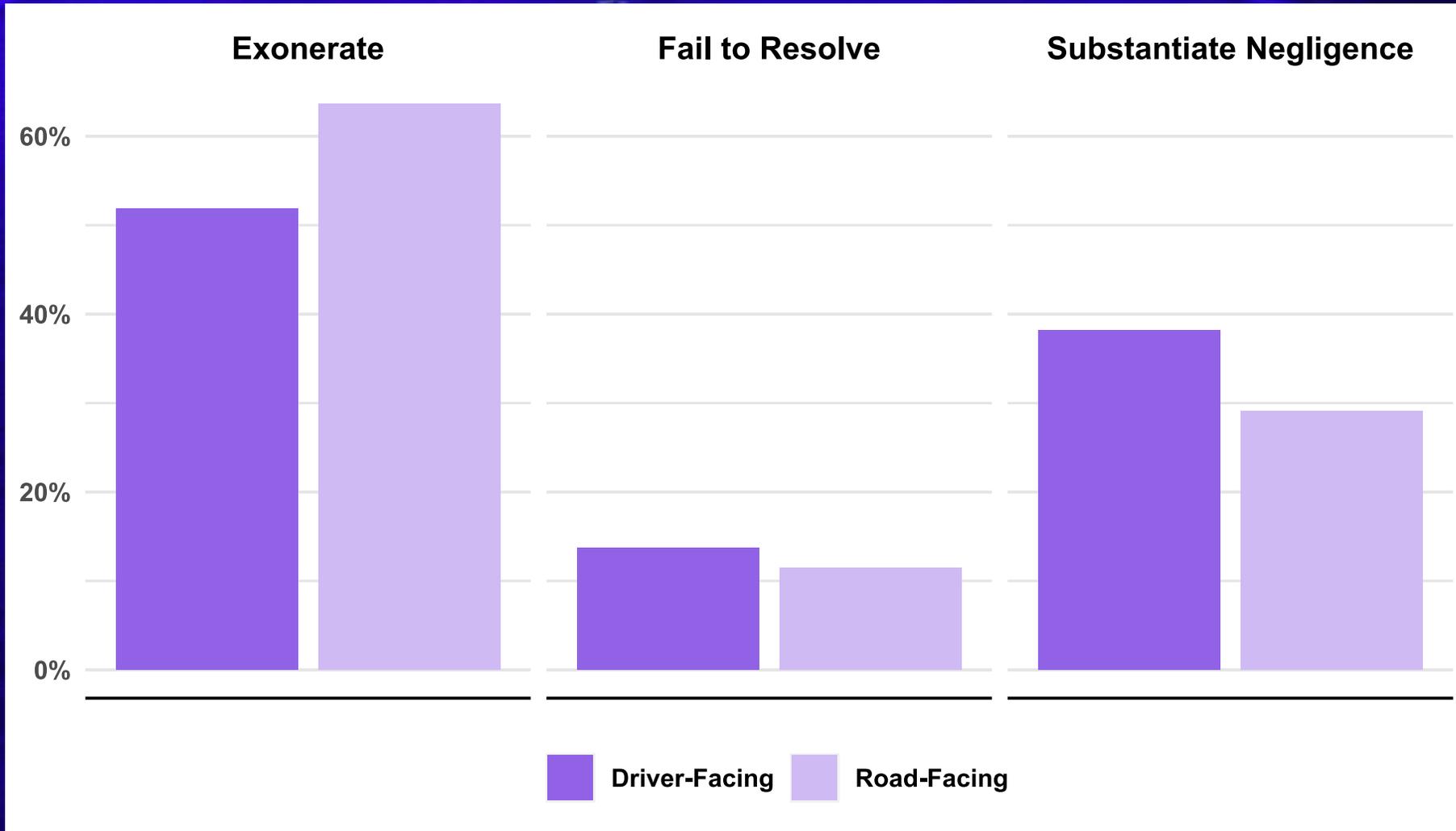
# DFC Use in Preventative Safety Improves Approval



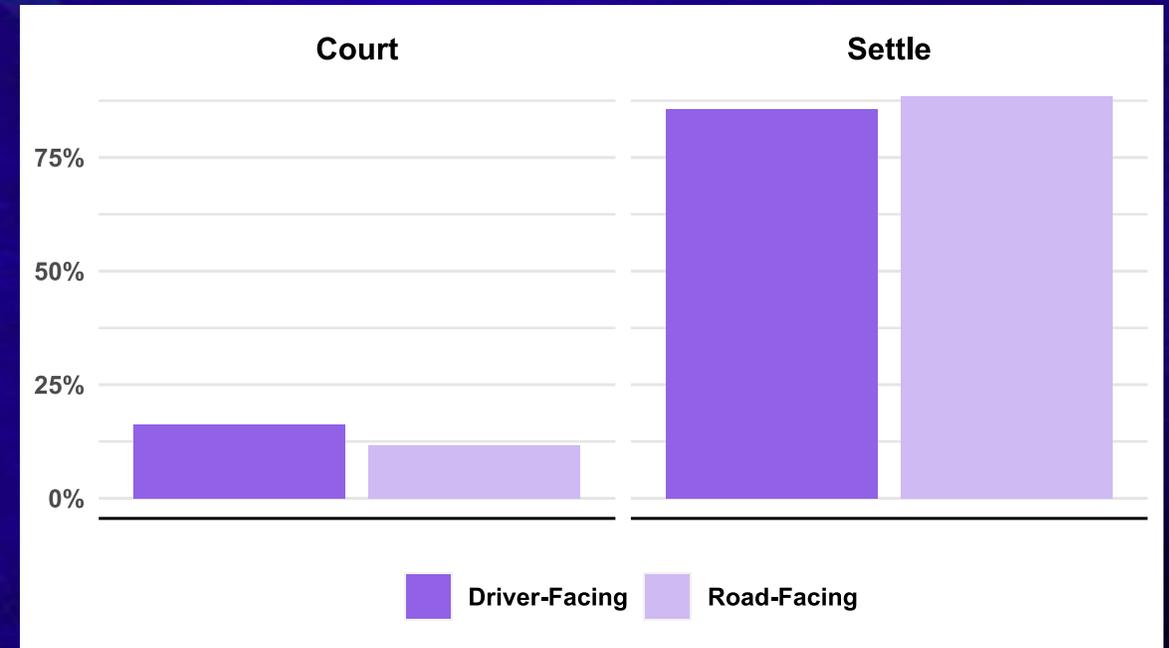
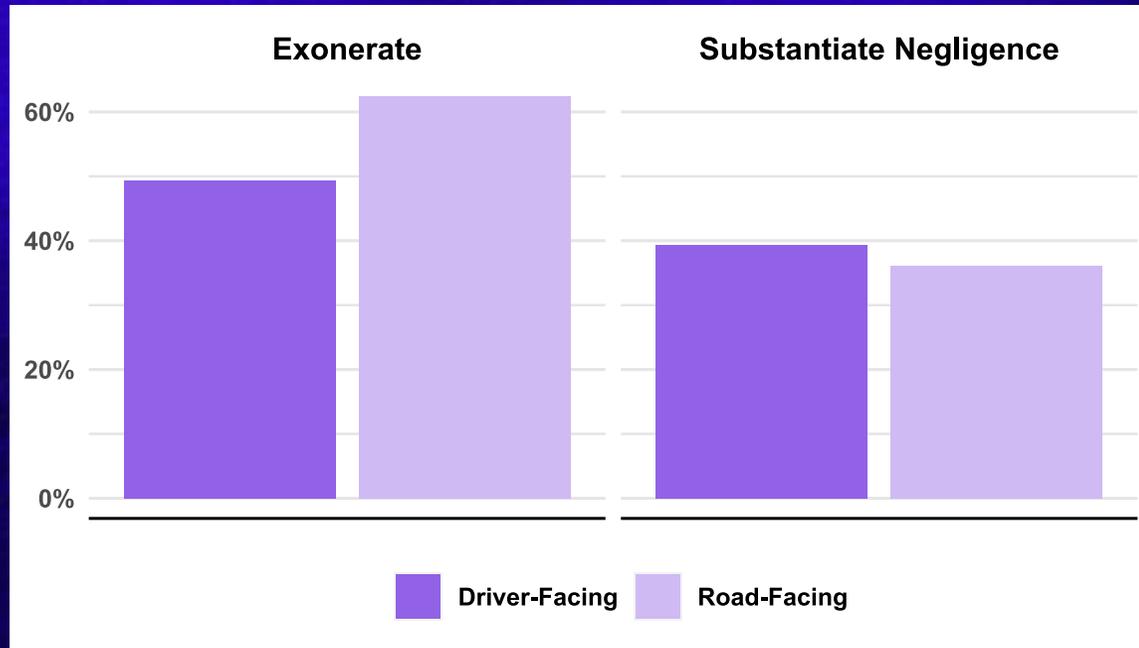
# Driver Suggestions to Improve Acceptance



# Impacts of Camera Footage on Insurance Claims



# Impacts of Camera Footage on Litigation Outcomes



- DFC benefits in litigation are highly dependent on the development of explicit, thorough, and consistently-applied DFC policies and procedures

# Membership Counts: Associations with Safety

- Statistical analysis to quantify impact of association membership on motor carrier safety performance



**MEMBERSHIP COUNTS:  
ASSOCIATIONS WITH SAFETY**

August 2023

**Abigail Markus**  
Research Analyst  
American Transportation Research Institute  
Minneapolis, MN

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



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# Research Question

- **Correlation vs Causation: Do trucking associations make members safer, or do safe carriers join trucking associations?**
  - ◆ **Correlation only: safer motor carriers are members of state trucking associations**
  - ◆ **Causation: data trend analysis to corroborate role of trucking associations in making carrier members safer**

# Data Overview

## ■ Eight State Trucking Associations

- ◆ Two from each TAEC Region; various membership sizes
- ◆ Lists of current and former members from each STA
- ◆ Never members from FMCSA's MCMIS database

## ■ ATA

- ◆ List of current and former members
- ◆ Never members from FMCSA's MCMIS database
- ◆ Trends toward larger carriers

# Membership Definitions

- **Current members joined STA on or before March 1, 2023**
- **Former members left their respective STA on or before March 1, 2023**
- **Never members = random sample of motor carriers from the MCMIS census file, checked against membership data to eliminate current / former members from the random sample**

# Association Membership Numbers

	Data from Associations	After Confirming U.S. DOT Numbers	After Matching Membership Data with MCMIS Census Data	After Applying Filters Final Data
<b>Current Members</b>				
<b>Total</b>	<b>3,300</b>	<b>2,997</b>	<b>2,977</b>	<b>678</b>
<b>Former Members</b>				
<b>Total</b>	<b>5,019</b>	<b>2,055</b>	<b>1,700</b>	<b>224</b>

# Statistical Test

## ■ Welch's Two-Sample T-Test

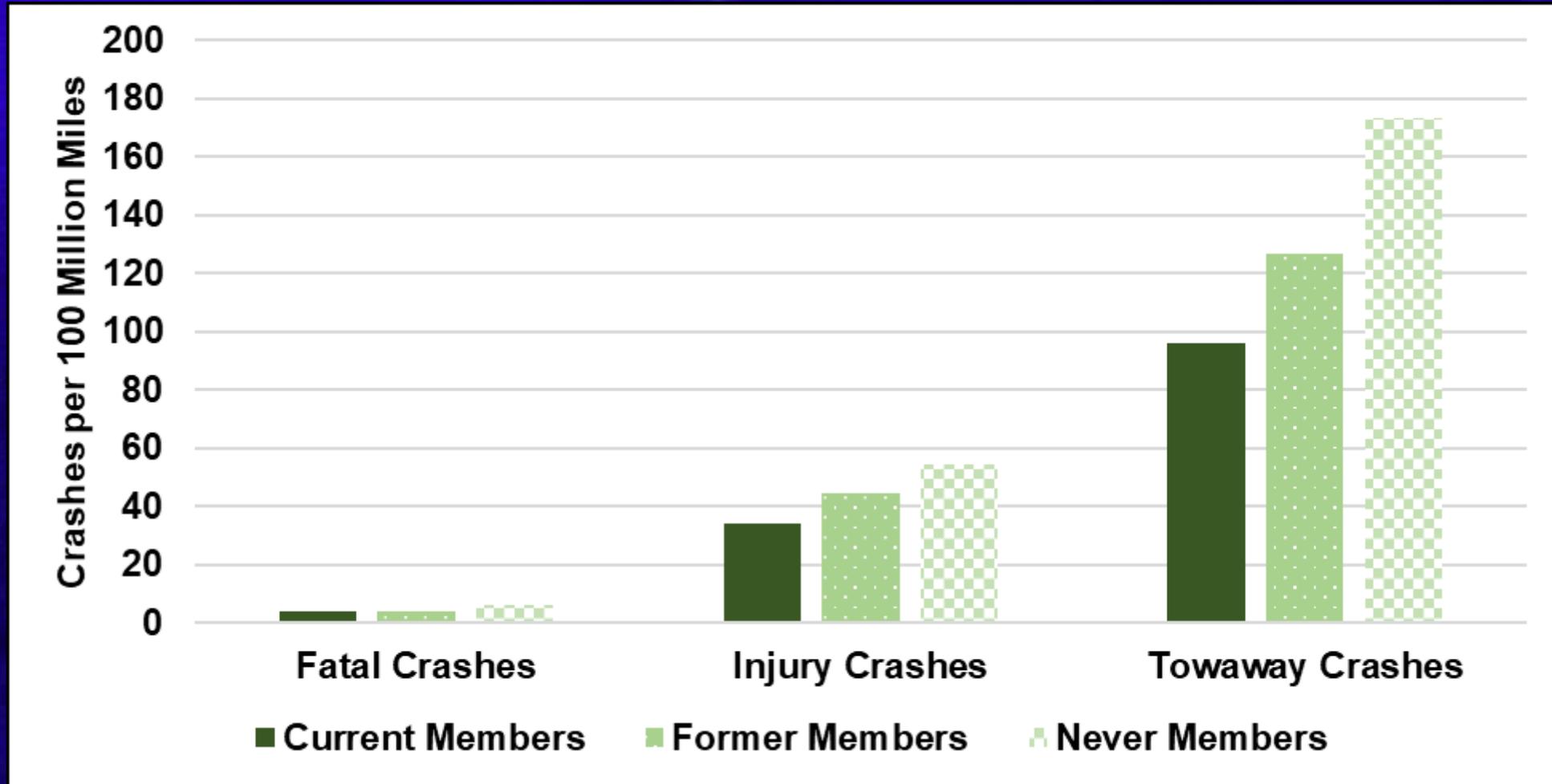
- ◆ Assumes that two means are equal; if a p-value of less than 0.10 is returned, there is evidence that the two means tested are different
- ◆ The smaller the p-value, the more confidence in the result

Most Significant	More Significant	Significant	Not Significant
< 0.01	< 0.05	< 0.10	$\geq 0.10$

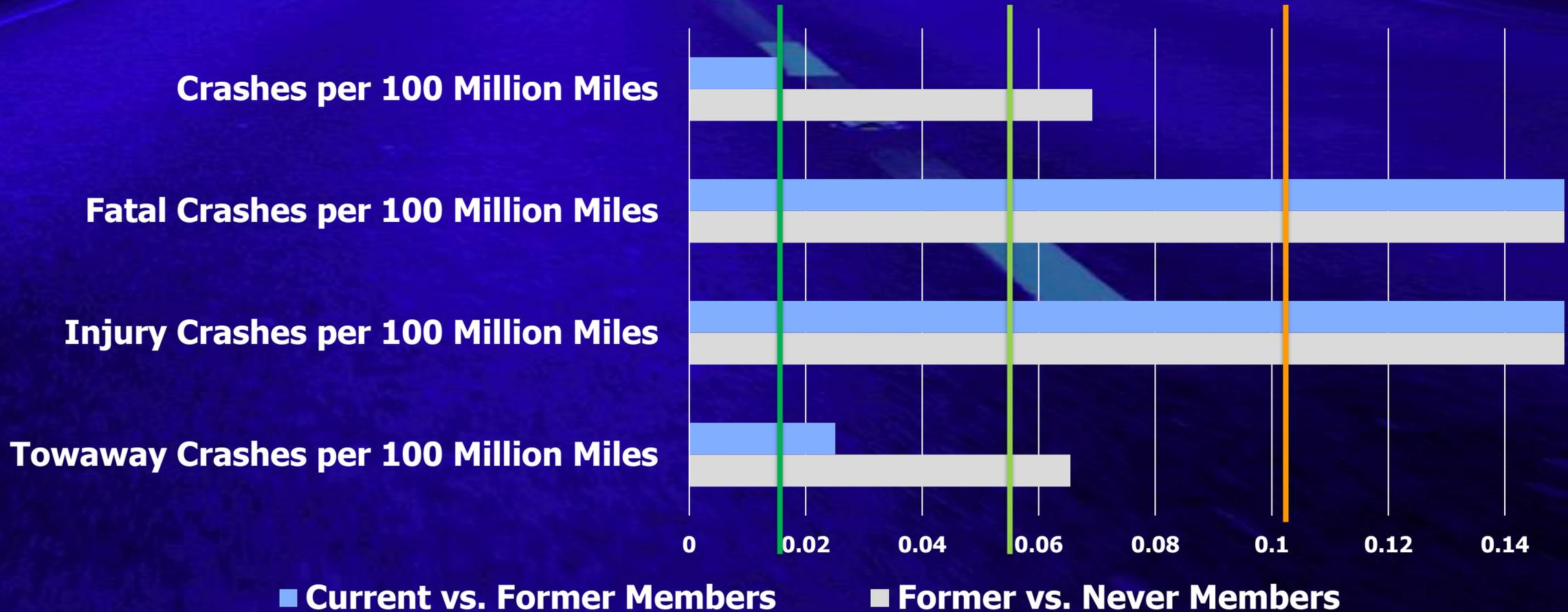
# Crashes per 100 Million Miles Results

Crash Type	All Crashes	Fatal Crashes	Injury Crashes	Towaway Crashes
Current and Former Member Significance	95%	Not Significant	Not Significant	95%
Former and Never Member Significance	90%	Not Significant	Not Significant	90%

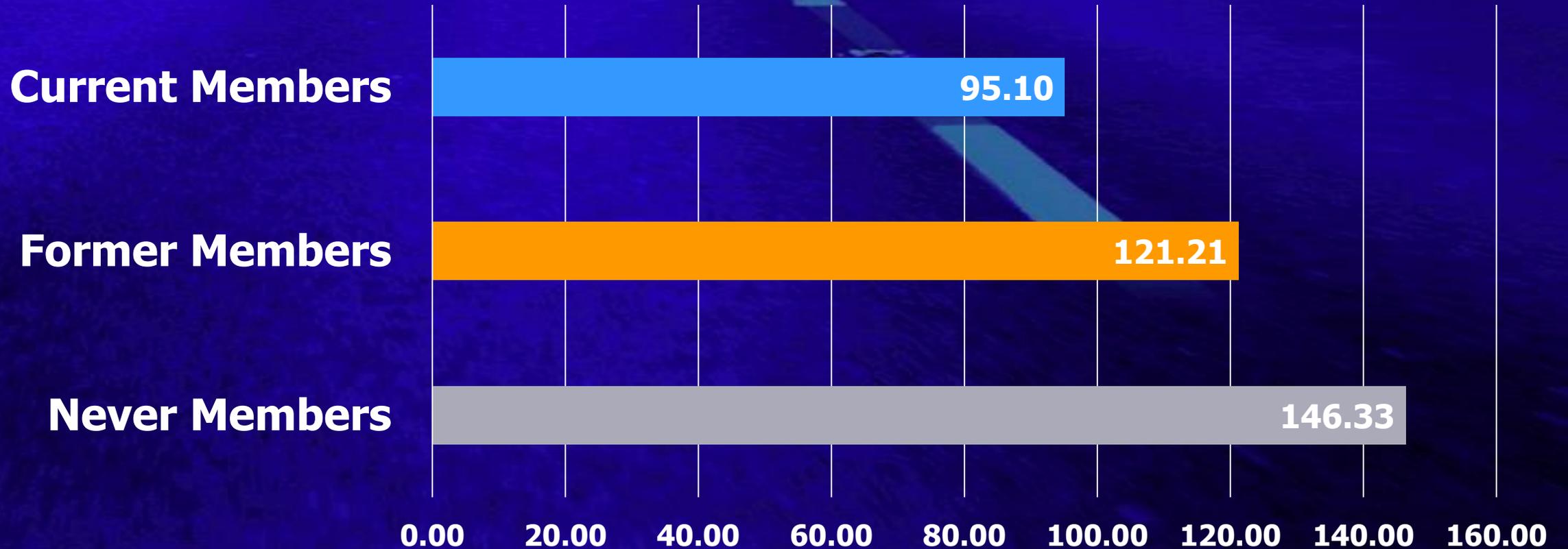
# Crashes per 100 Million Miles



# Fatal / Injury / Towaway Crashes per 100 Million Miles P-Values



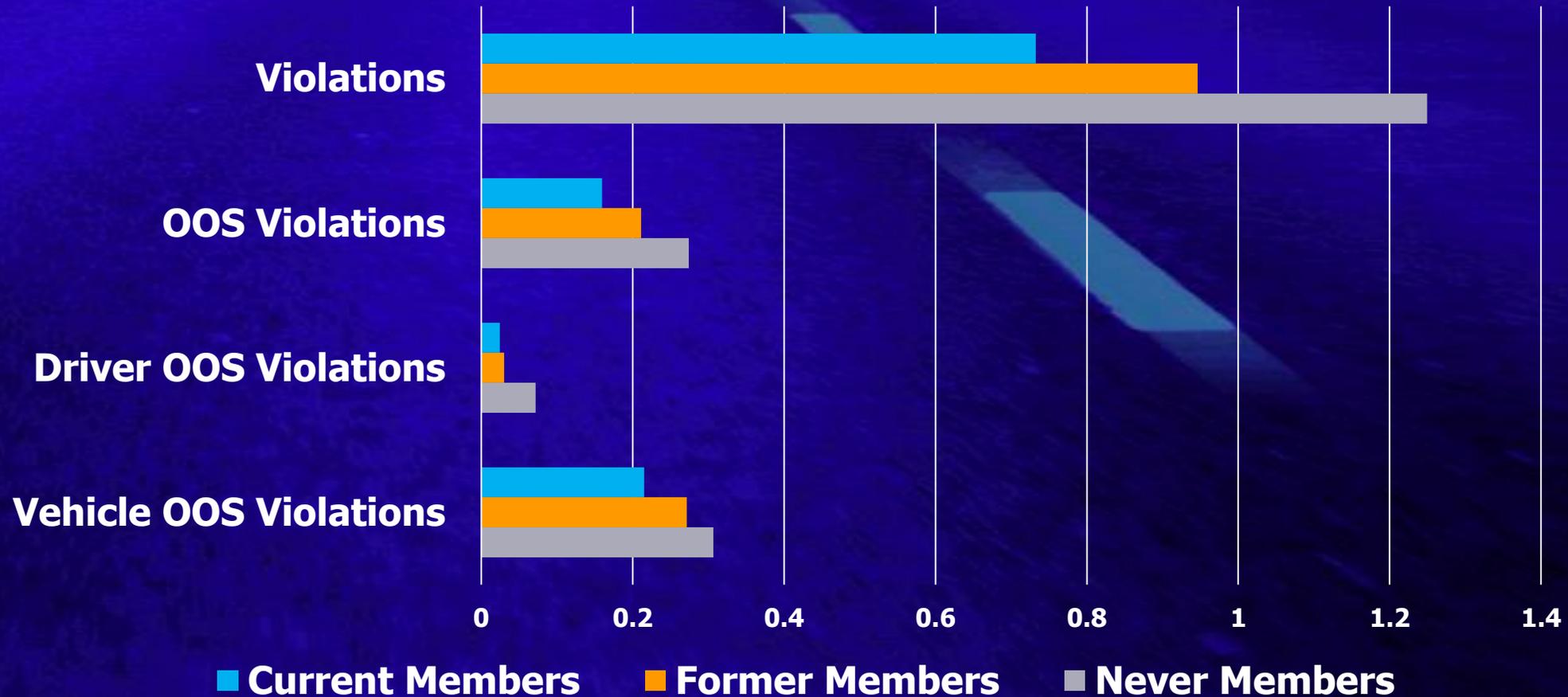
# Crashes per 100 Million Miles by Membership Status



# Violations per Inspection Confidence and P-Value

Membership Status Comparisons	All Violations	All OOS Violations	Driver OOS Violations	Vehicle OOS Violations
<b>Current and Former Member Significance</b>	<b>99%</b>	<b>99%</b>	<b>90%</b>	<b>99%</b>
	(0.00000609)	(0.0000921)	(0.08238)	(0.0001625)
<b>Former and Never Member Significance</b>	<b>99%</b>	<b>99%</b>	<b>99%</b>	<b>90%</b>
	(0.00000434)	(0.007476)	(0.00000857)	(0.06951)

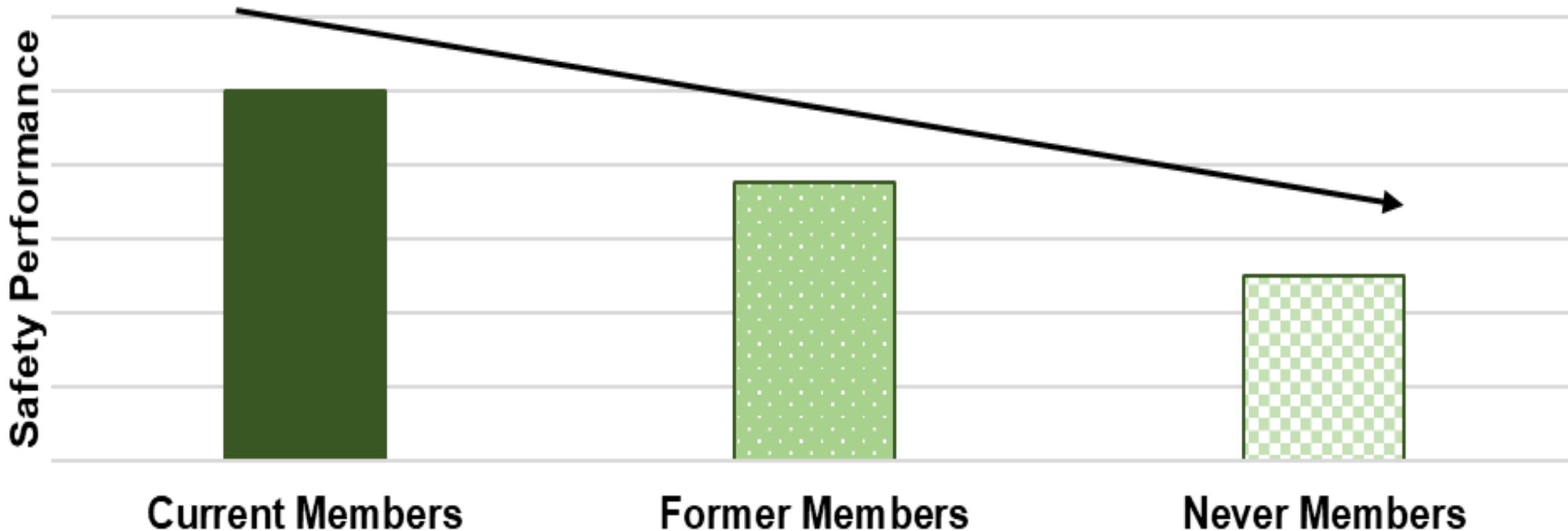
# Violations per Inspection



# Conclusions

- **STA members are involved in fewer crashes than those who are not members of the STA**
- **STA members receive fewer violations than those who are not members of the STA**
- **Strength of the chronological relationship between membership and safety is KEY TAKEAWAY**

# Membership Improves Safety



# 2023 Top Research Priorities

- 1. Expanding Truck Parking at Public Rest Areas**
- 2. Identifying Barriers to Entry for Female Truck Drivers**
- 3. Complete Streets Impact on Freight Mobility**
- 4. Examining the Diesel Technician Shortage**
- 5. The Cost of Driver Detention**

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## Impacts of Marijuana Legalization on the Trucking Industry

"Minnesota recently joined the growing list of states legalizing recreational marijuana. This action underscores the critical need for tools to effectively determine marijuana impairment by current and prospective employees. As an industry committed to workplace and roadway safety, we owe it to ourselves and our families to make sure we can screen to maintain a clean and sober workforce," said Minnesota Trucking Association President John Hausladen.

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### Latest News



#### ATRI's Newest Operational Costs Research Details Spikes in Equipment, Wage, and Total Costs in Trucking

June 21, 2023

The American Transportation Research Institute (ATRI) released today the findings of its 2023 update to An Analysis of the Operational Costs

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#### ATRI Releases New Research that Evaluates the Impacts of Marijuana Legalization on the Trucking Industry and its Workforce

June 5, 2023

The American Transportation Research Institute (ATRI) today released a new report that assesses the impacts of marijuana legalization on the trucking

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#### Jim Burg Appointed to ATRI Board of Directors

May 10, 2023

James Burg Trucking Company President Jim Burg has been appointed to the Board of Directors of the American Transportation Research Institute

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# Supporting the Industry's Research Agenda



[www.TruckingResearch.org](http://www.TruckingResearch.org)



# Questions?

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

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