Operational Costs of Trucking: A View from the Road

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ATRI

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

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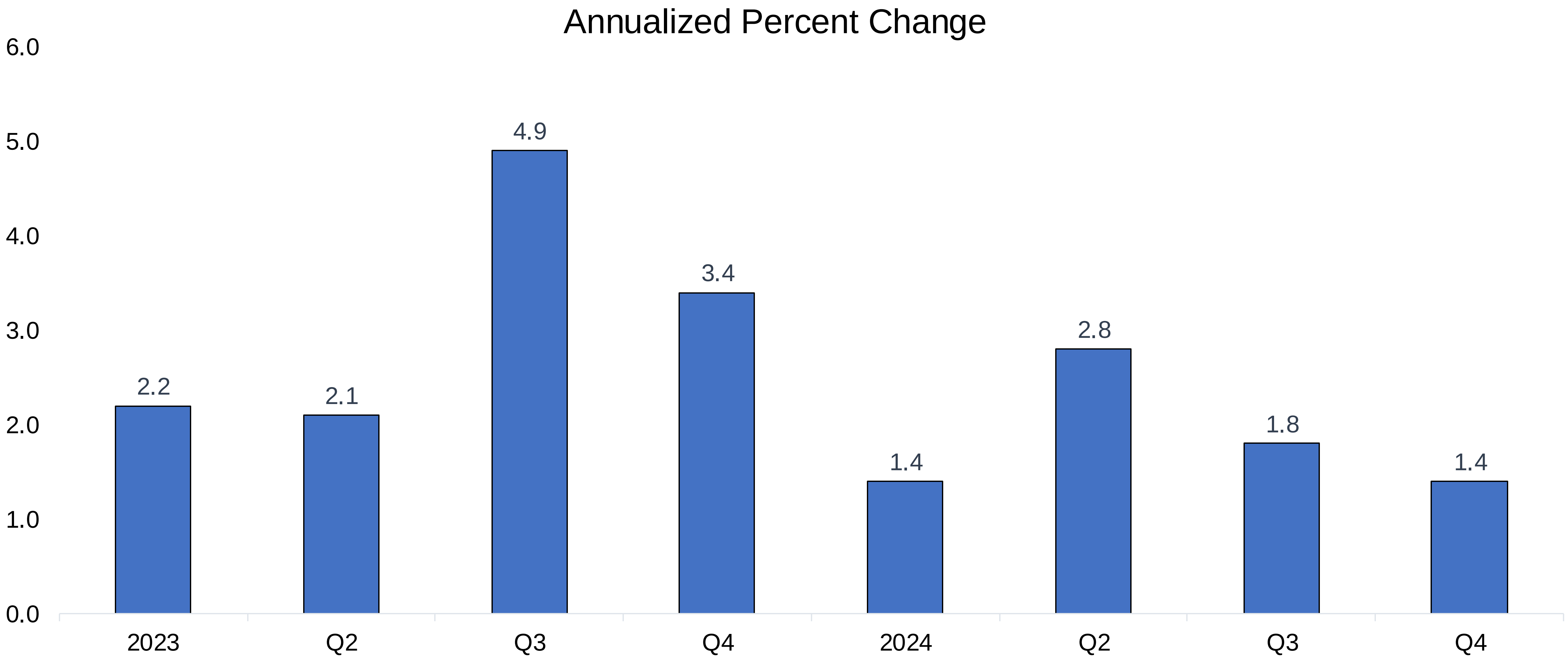
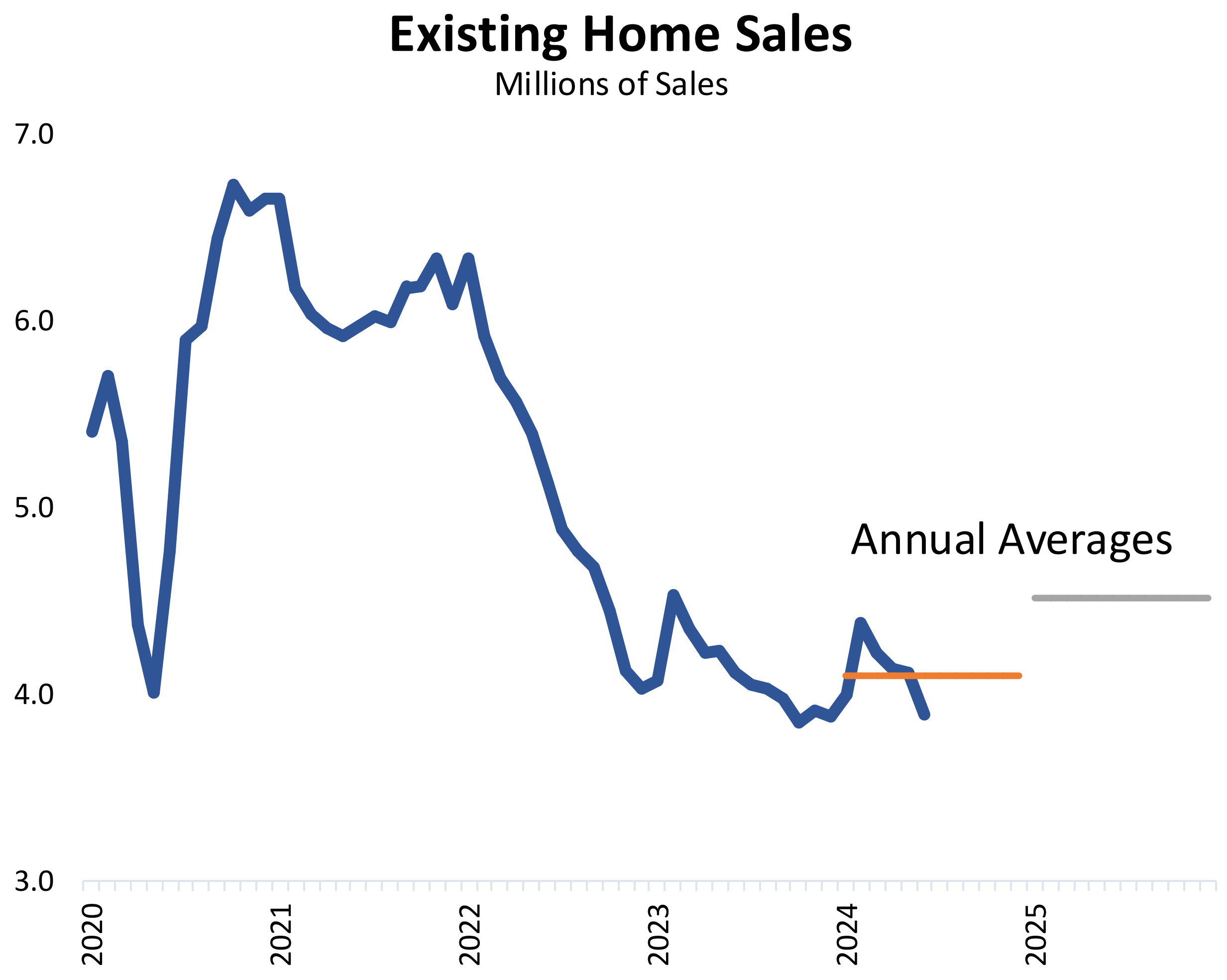
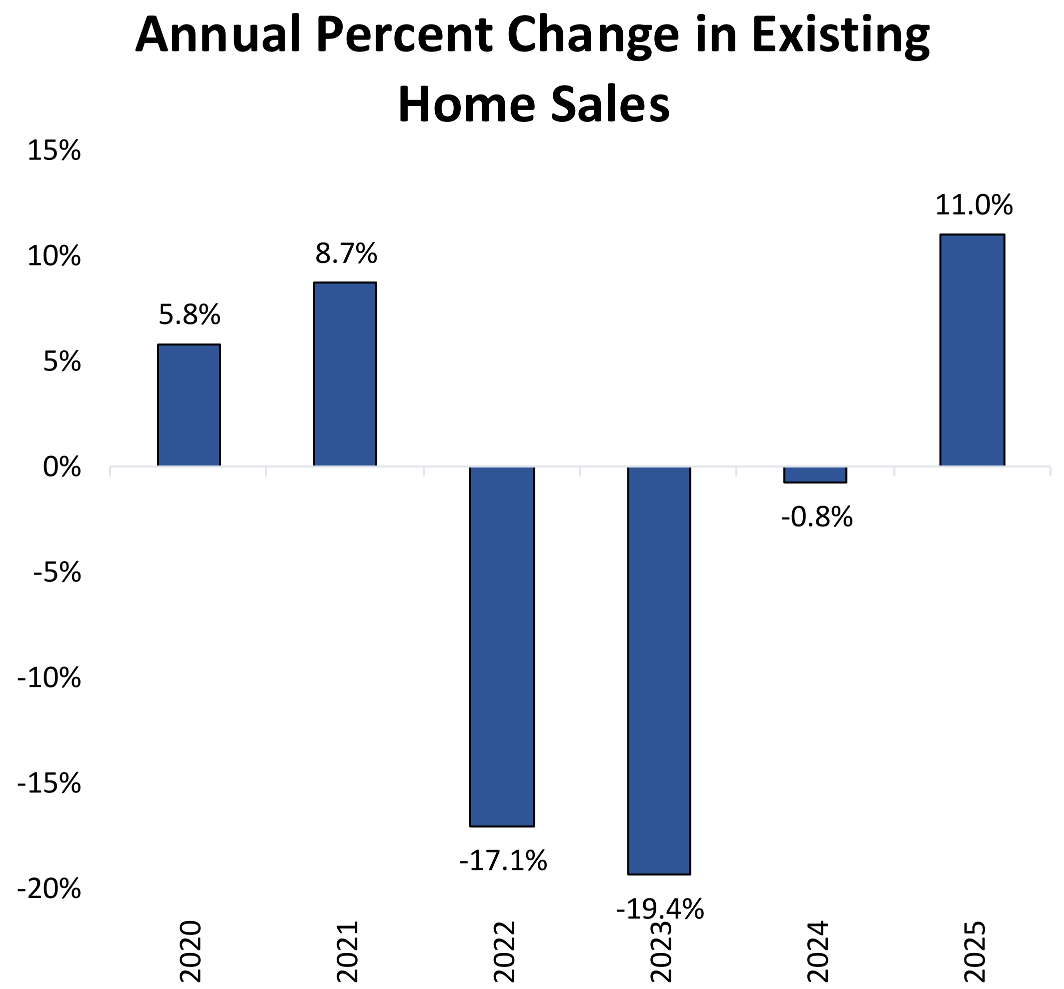
Real Gross Domestic Product



 Sources: BEA, ATA, S&P Markit

Housing Market

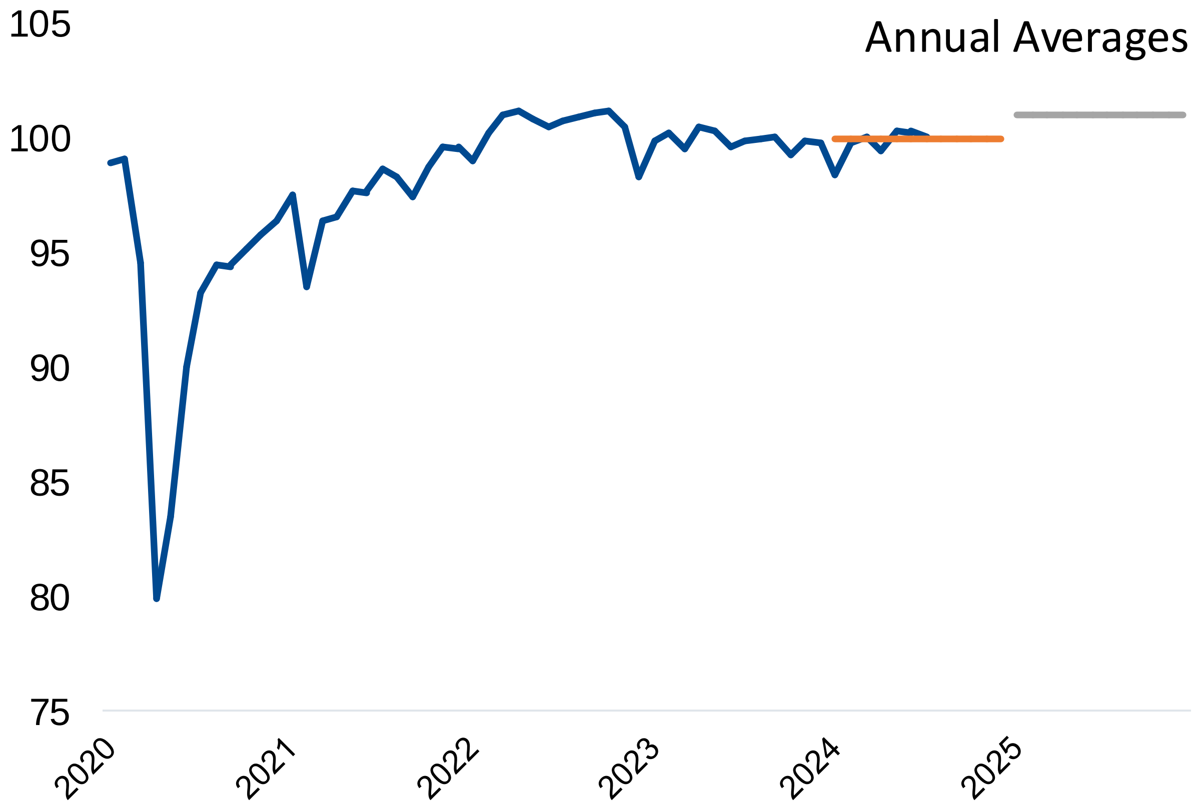




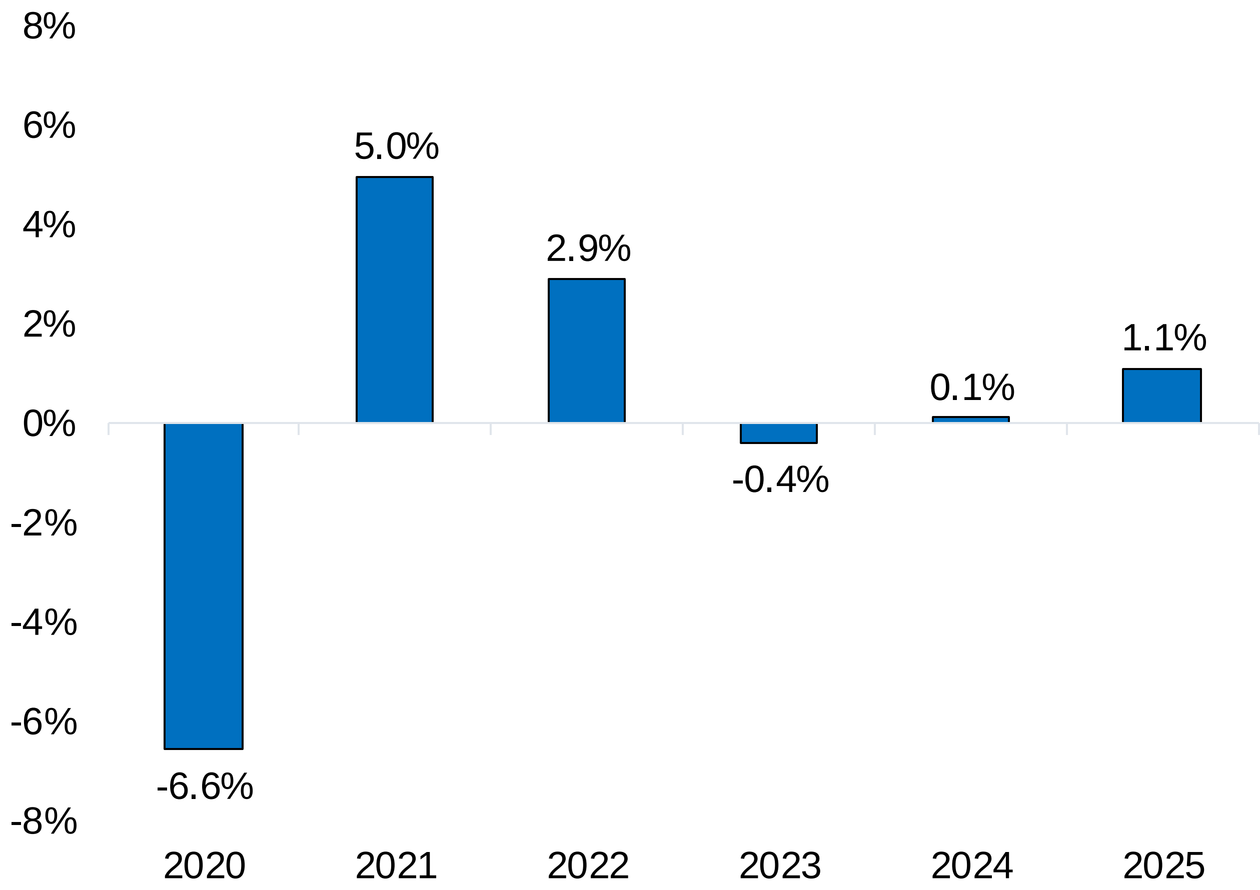
Factory Output

Level of Output

Index, 2017=100



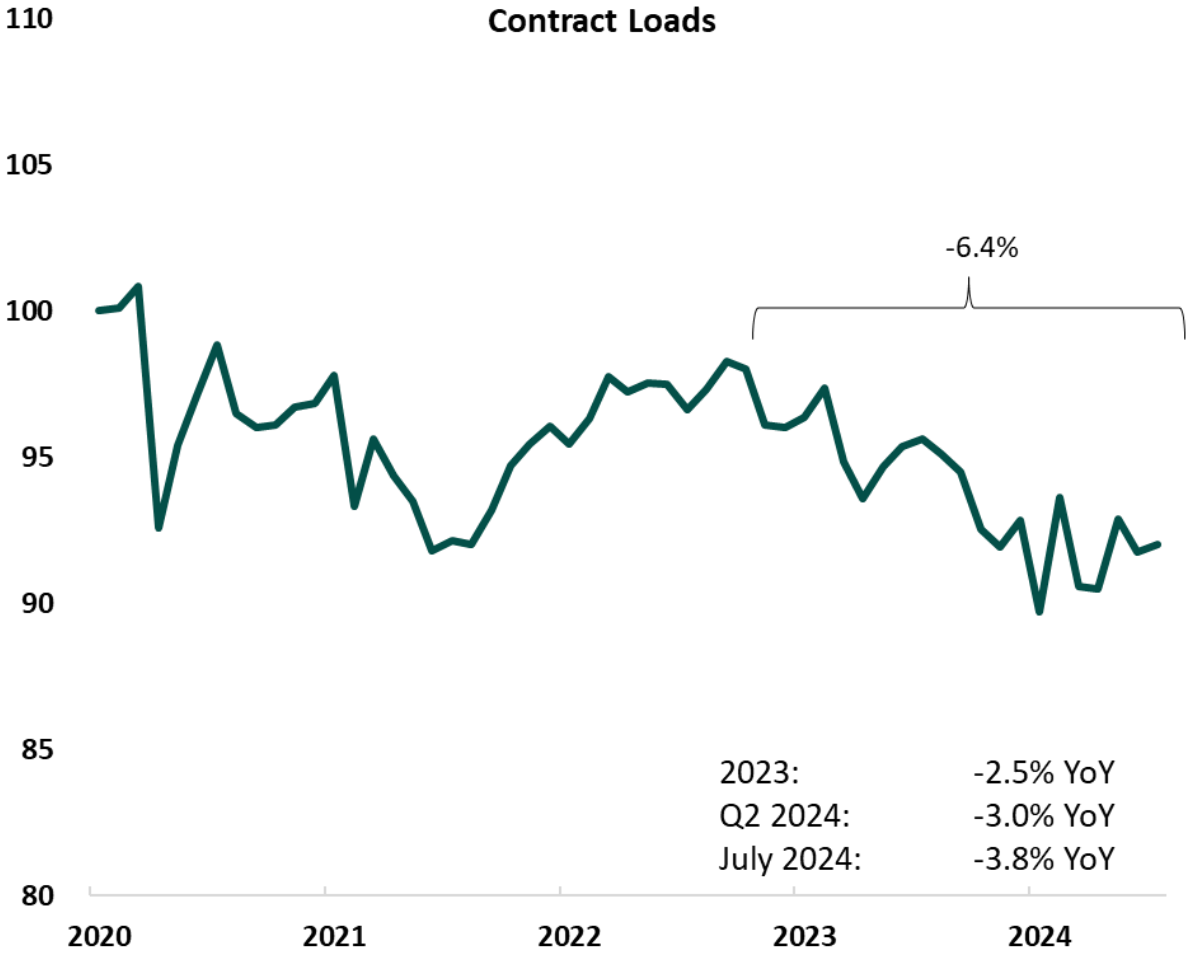
Annual Percent Change in Output

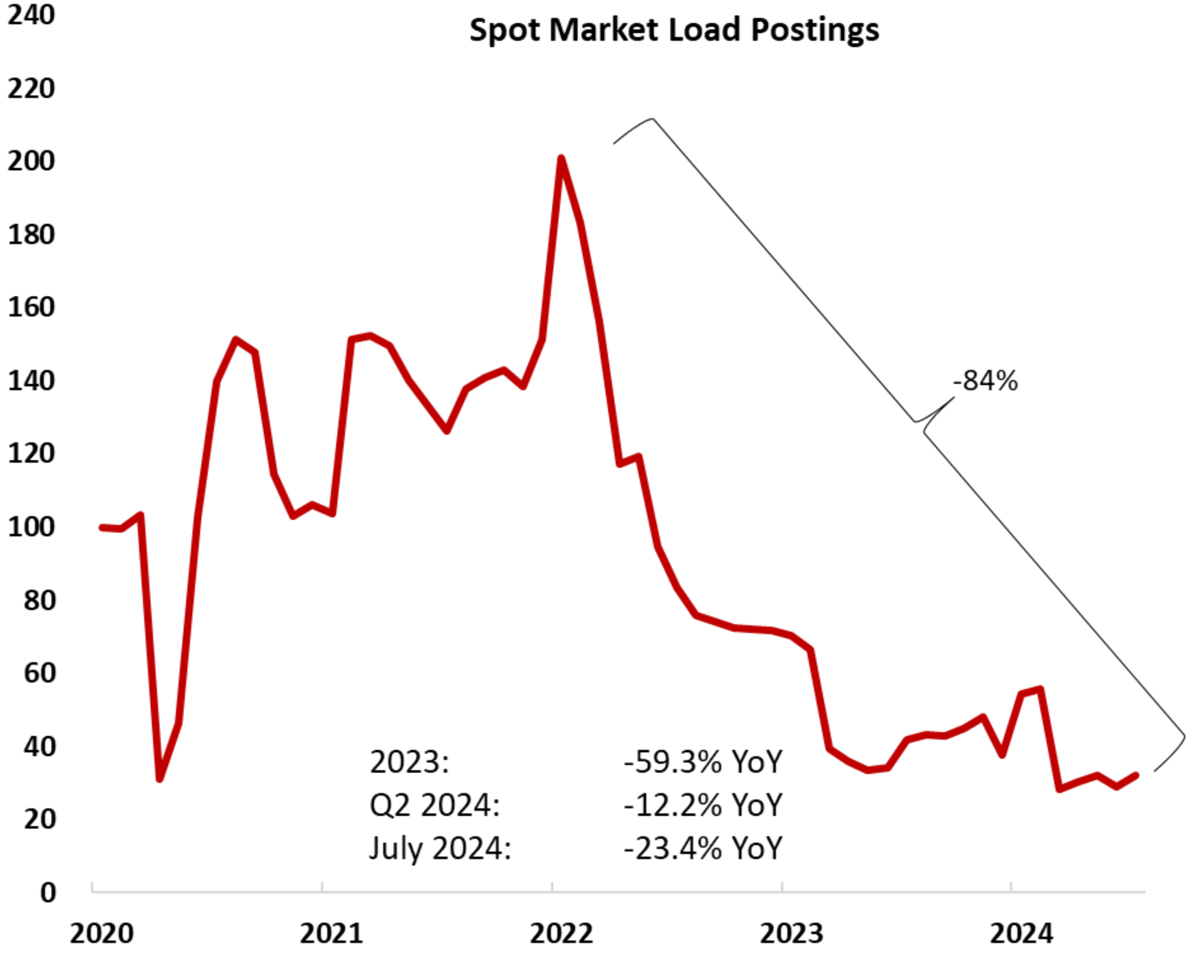


 Sources: Federal Reserve & ATA

Truckload Loads

(Index; January 2020 = 100)



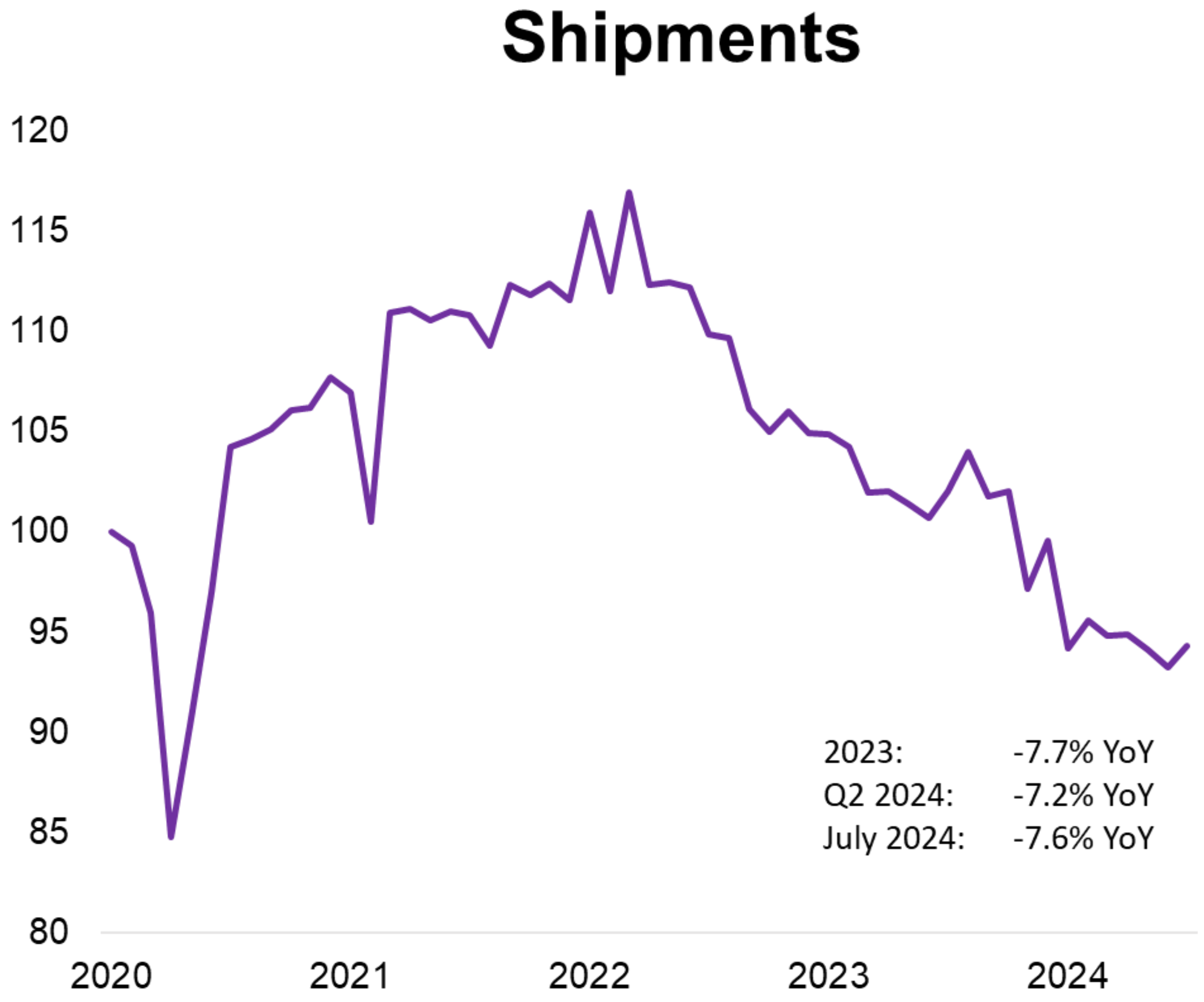


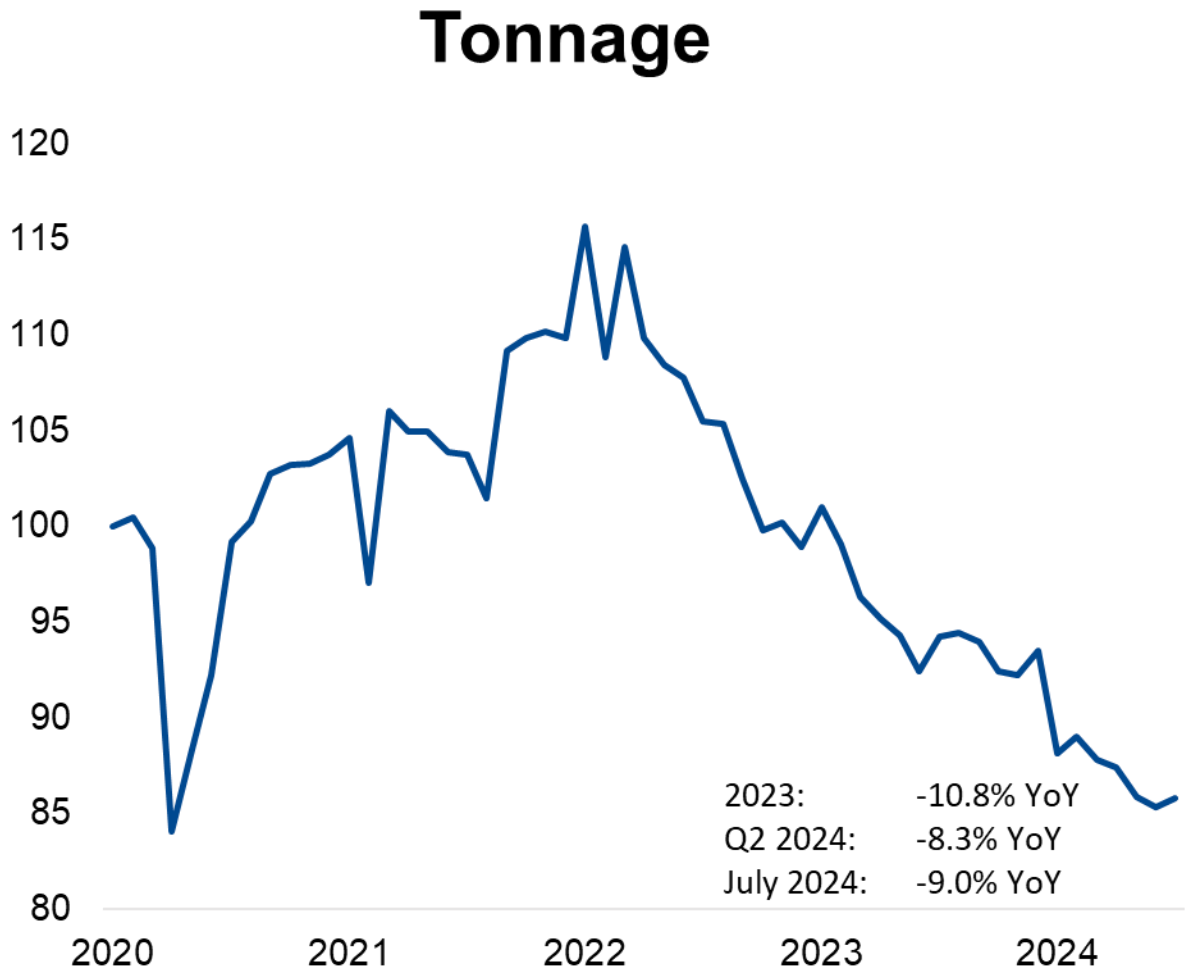
Includes all types of truckload freight.

Sources: ATA's Trucking Activity Report & DAT.com

LTL Shipments and Tonnage

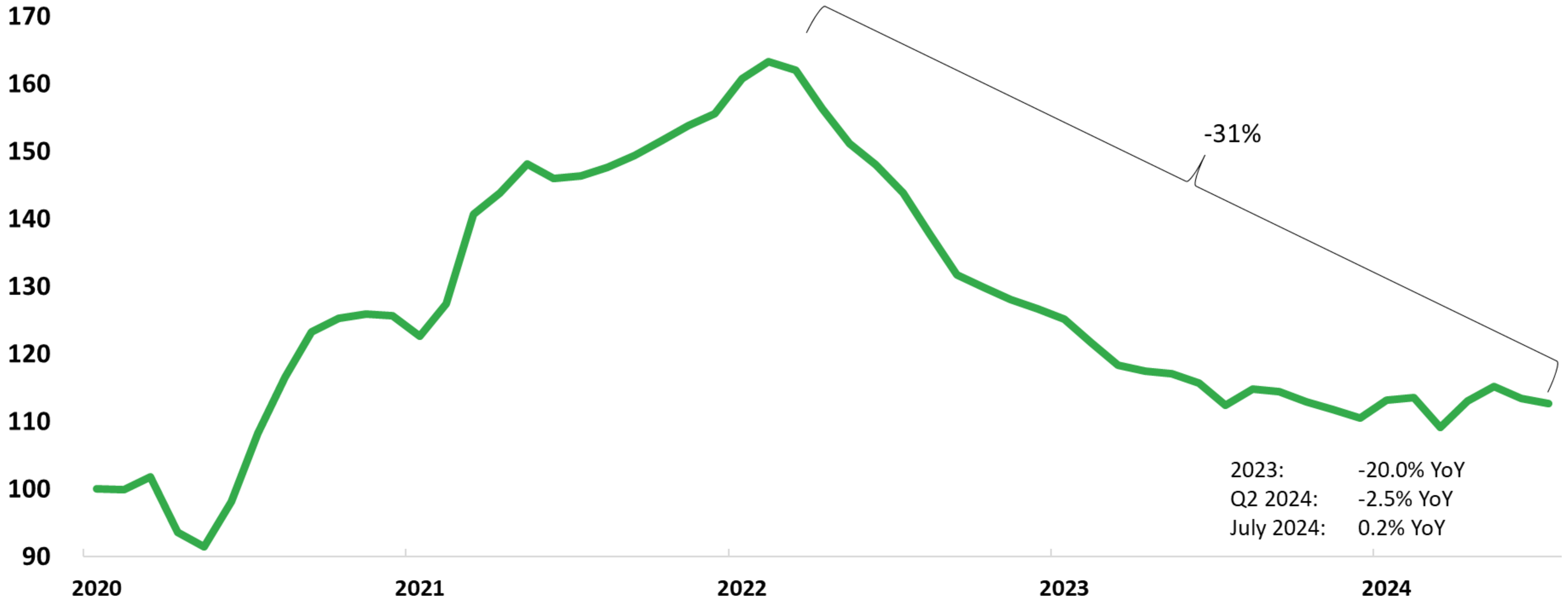
Index, January 2020 = 100



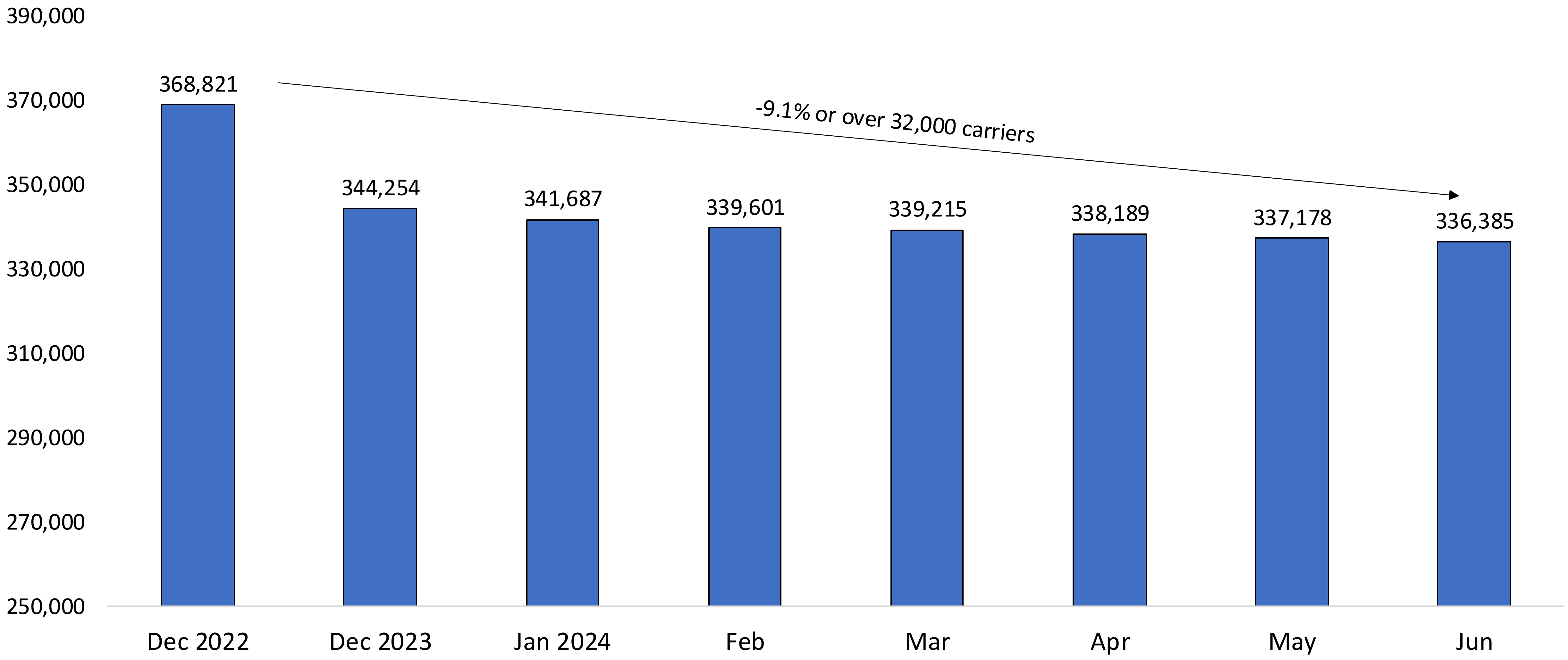


Source: ATA's Trucking Activity Report

Spot Market Rates
(Index; January 2020 = 100)

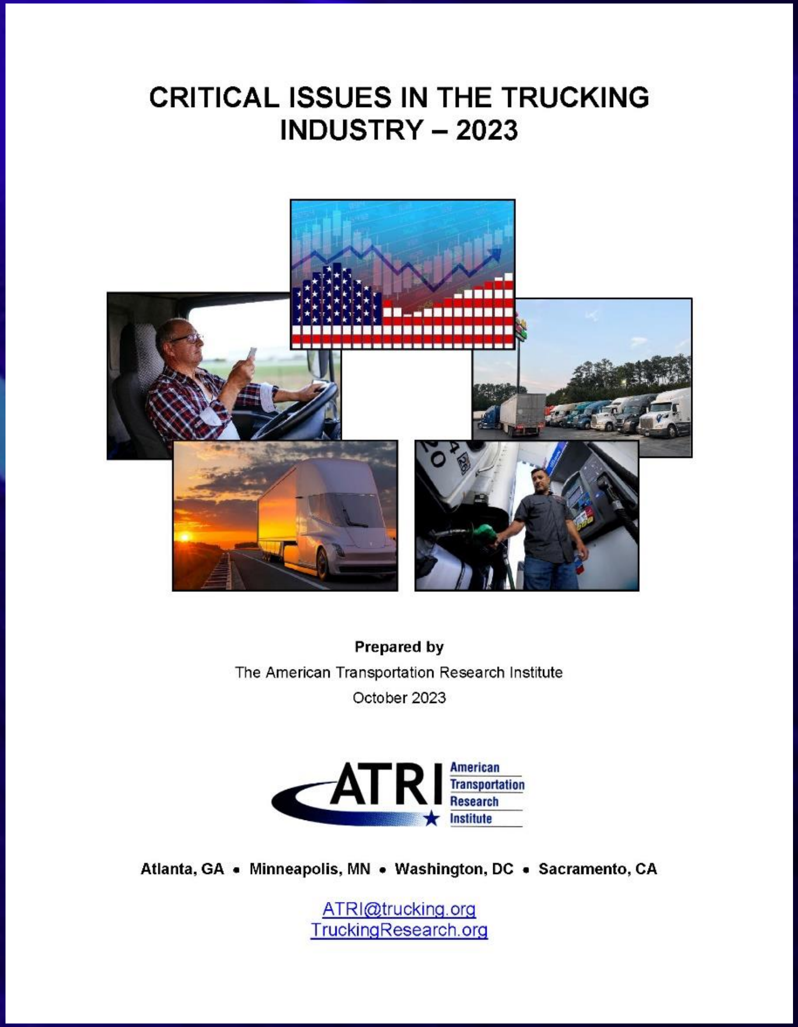


Property Carriers with Interstate Operating Authority are Exiting the Market



2023 Top Industry Issues

1. **Economy (5)**
2. **Truck Parking (3)**
3. **Fuel Prices (1)**
4. **Driver Shortage (2)**
5. **Driver Compensation (4)**
6. **Lawsuit Abuse Reform (10)**
7. **Driver Distraction (#7 in 2018)**
8. **Driver Retention (7)**
9. **Detention / Delay at Customer Facilities (6)**
10. **Zero-Emission Vehicles**



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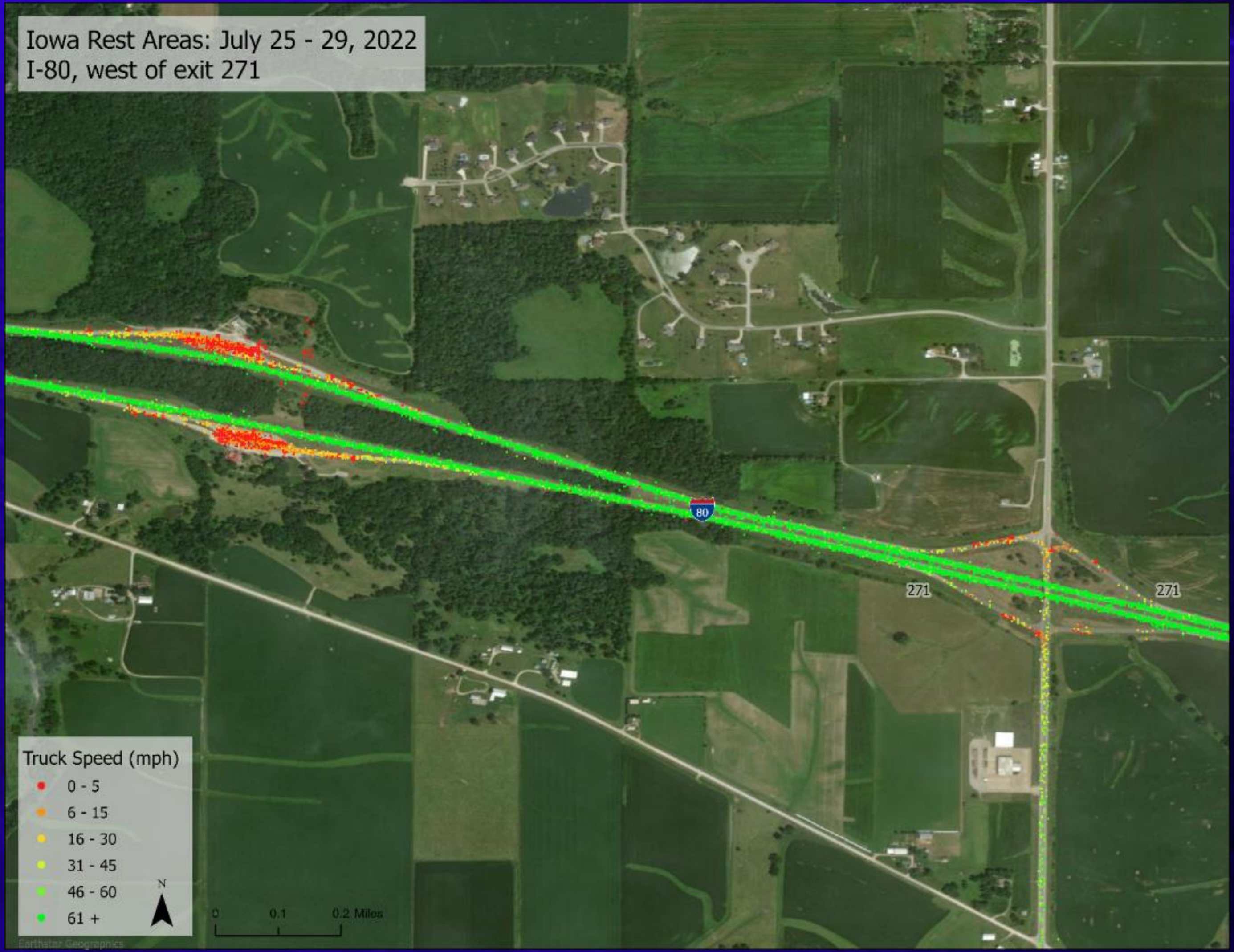
2023 Top Industry Issues

Rank	Commercial Drivers	Motor Carriers
1	Driver Compensation	Economy
2	Truck Parking	Driver Shortage
3	Fuel Prices	Lawsuit Abuse Reform
4	Speed Limiters	Driver Retention
5	Detention / Delay at Customer Facilities	Fuel Prices
6	Driver Training Standards	Insurance Cost / Availability
7	Economy	Zero-Emission Vehicles
8	Broker Issues	Truck Parking
9	ELD Mandate	Diesel Technician Shortage
10	Autonomous Trucks	Driver Distraction

No Vacancy



Iowa Rest Areas: July 25 - 29, 2022
I-80, west of exit 271
Truck Speed (mph)
0 - 5
6 - 15
16 - 30
31 - 45
46 - 60
61 +
N
0
0.1
0.2 Miles
80
271
271

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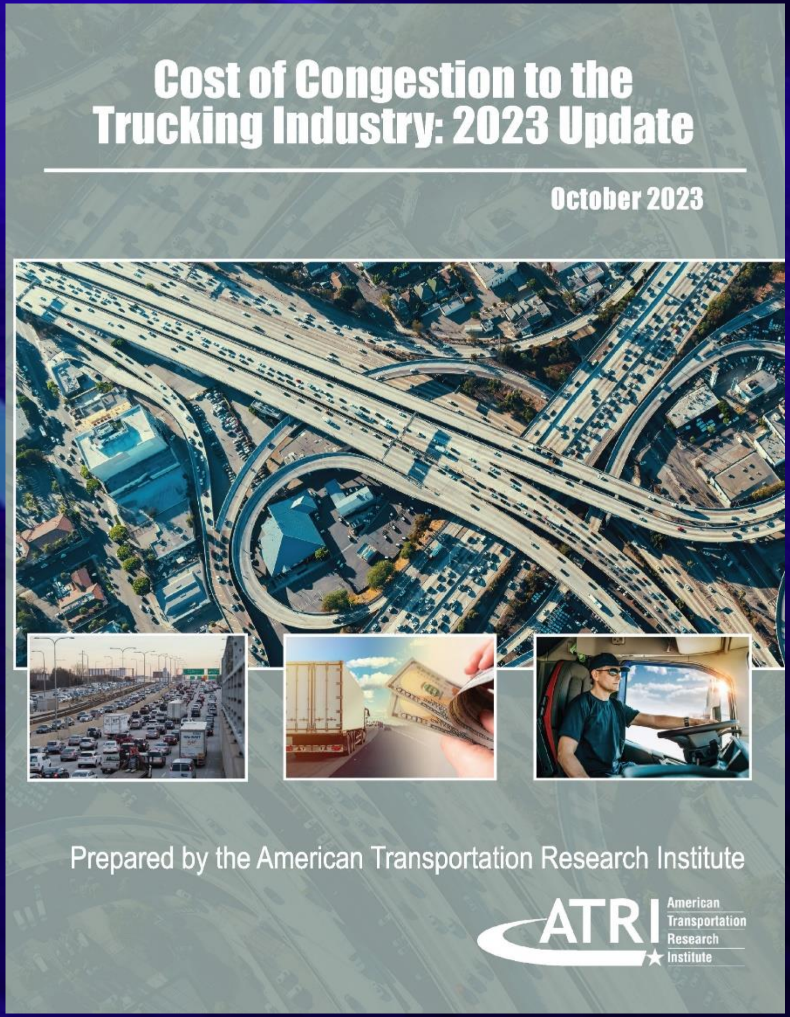
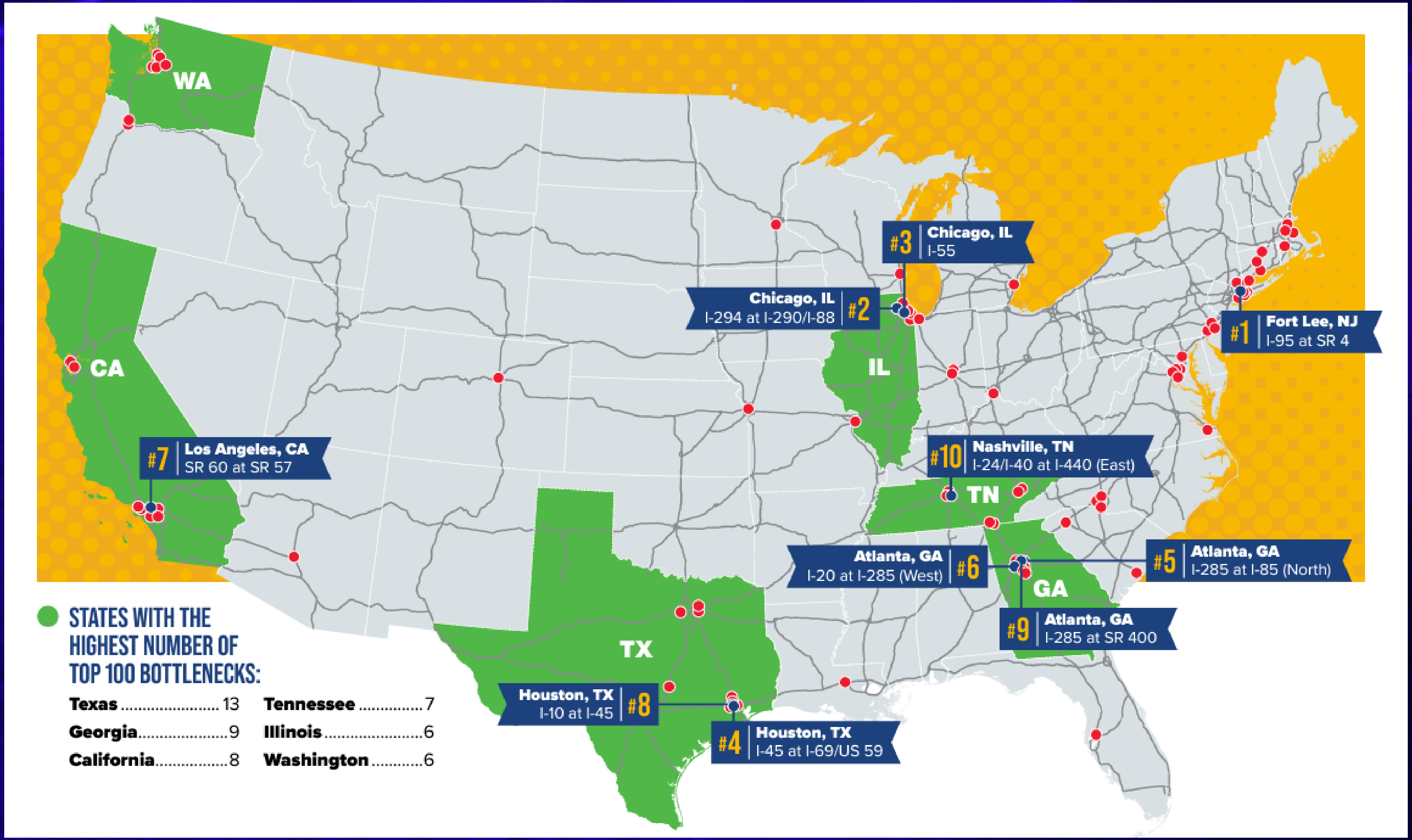
Cost of Congestion

- $94.6 billion in 2021 – highest on record
- Up 27% over 2016 baseline
- 1.27 billion hours of delay
- Equivalent of 460,000 truck drivers sitting still for an entire year
- 6.793 billion gallons of wasted fuel
  - $22.3 billion



2024 Top Truck Bottlenecks



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2024 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	19.9	-1.4%
2	Chicago, IL: I-294 at I-290/I-88	35.4	-6.4%
3	Chicago, IL: I-55	25.2	0.3%
4	Houston, TX: I-45 at I-69/US 59	20.9	-3.6%
5	Atlanta, GA: I-285 at I-85 (North)	26.8	-5.9%
6	Atlanta, GA: I-20 at I-285 (West)	36.4	0.3%
7	Los Angeles, CA: SR 60 at SR 57	35.2	-1.5%
8	Houston, TX: I-10 at I-45	26.3	-4.9%
9	Atlanta, GA: I-285 at SR 400	30.2	-10.3%
10	Nashville, TN: I-24/I-40 at I-440 (East)	28.3	-7.4%

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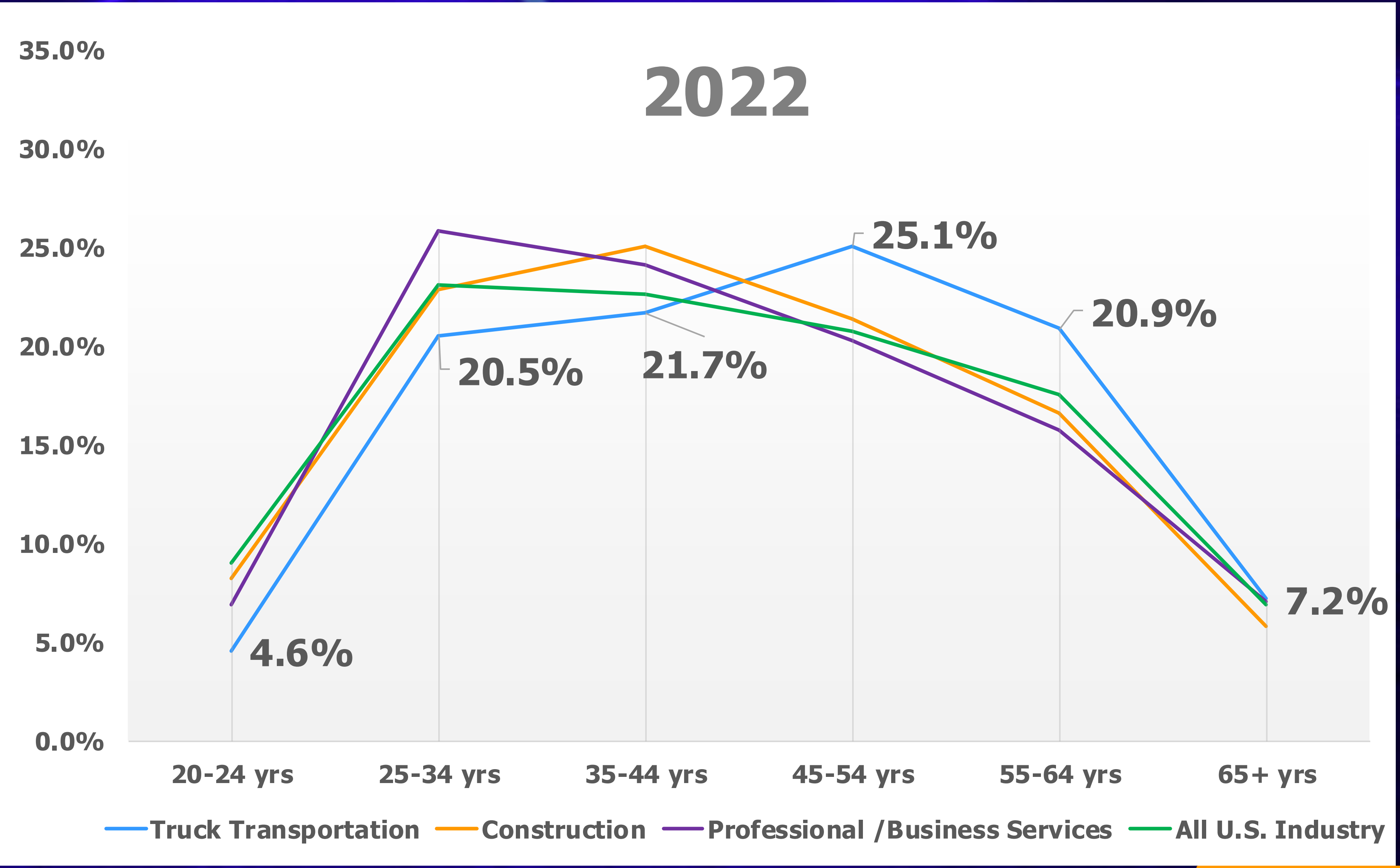
Truck Driver Age Demographics



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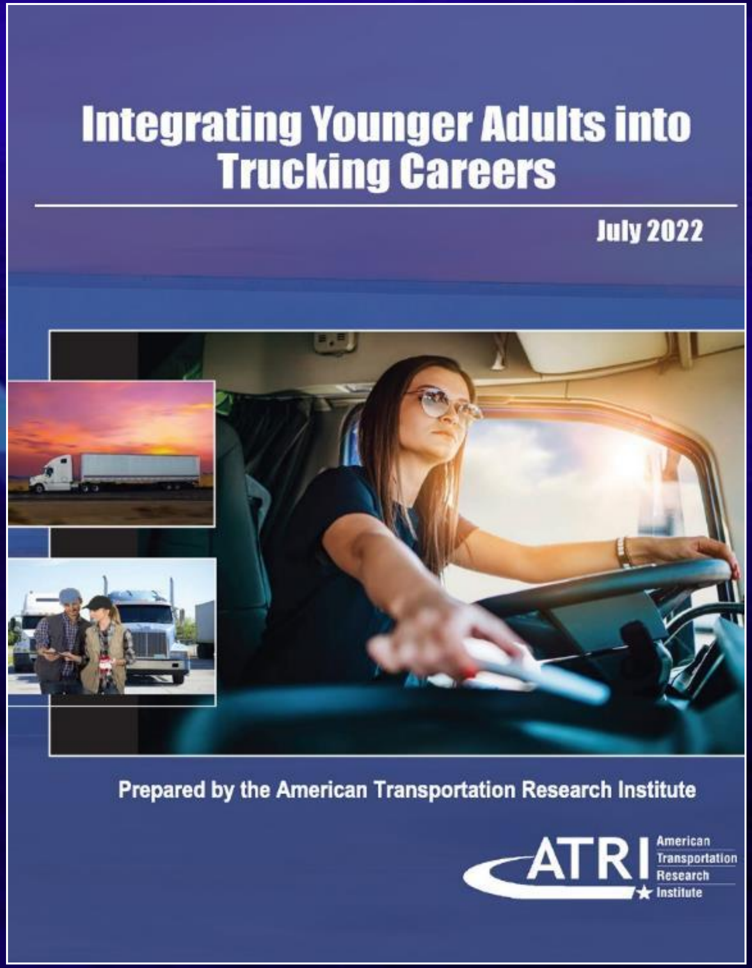
Integrating Younger Adults into Trucking Careers

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



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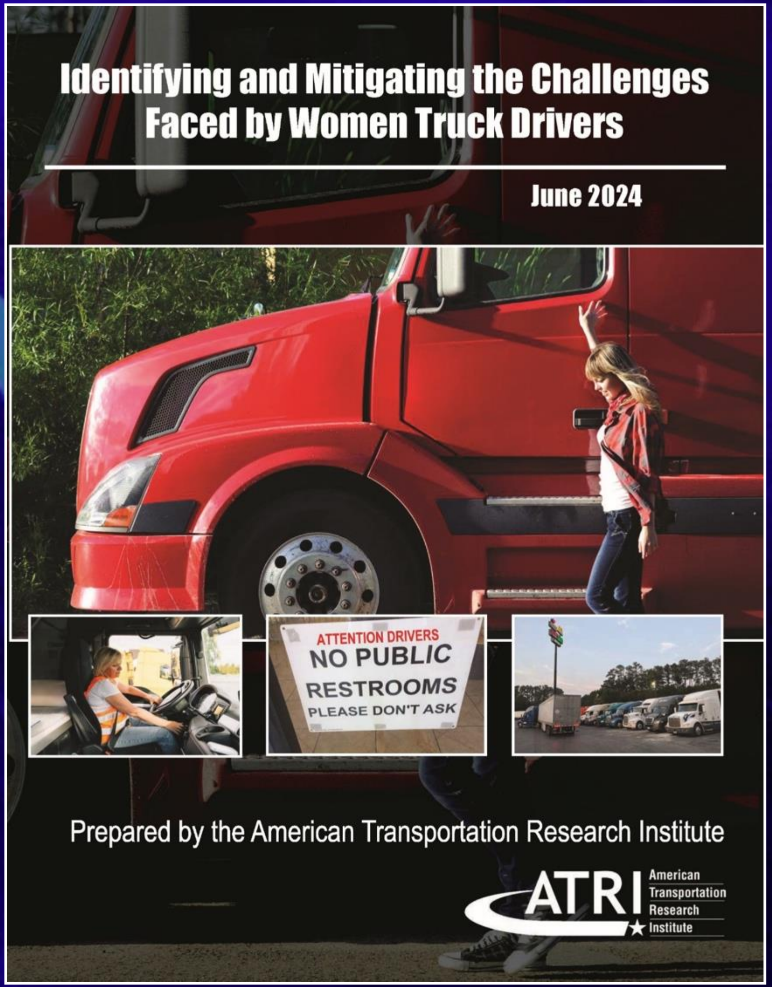
Identifying and Mitigating the Challenges Faced by Women Truck Drivers

- Includes input from thousands of truck drivers, motor carriers, truck driver training schools
- Surveys, interviews, driver focus group
- Identified six key challenges faced by women truck drivers
- Industry action plan with discrete steps for fleets, schools, drivers to advance success in recruiting / retaining women drivers



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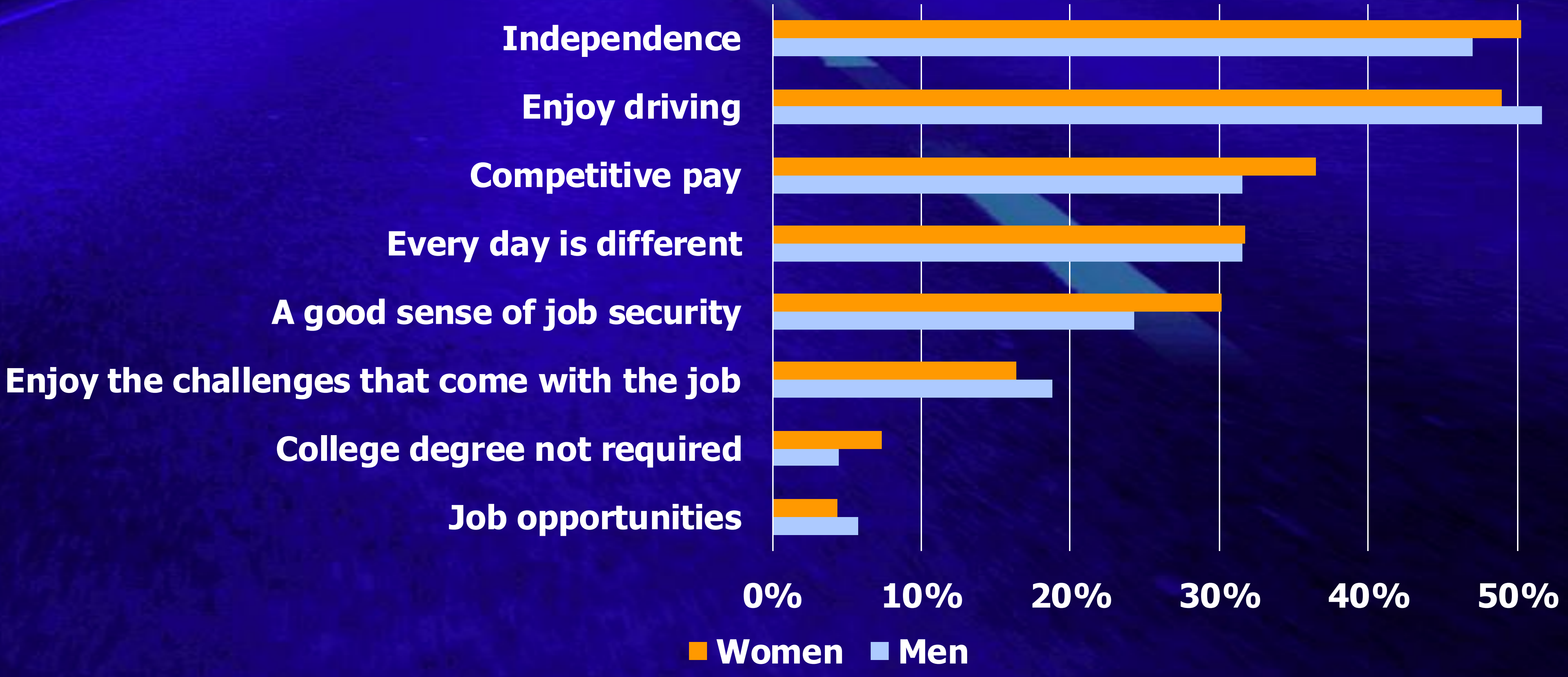
Reasons for Becoming a Truck Driver



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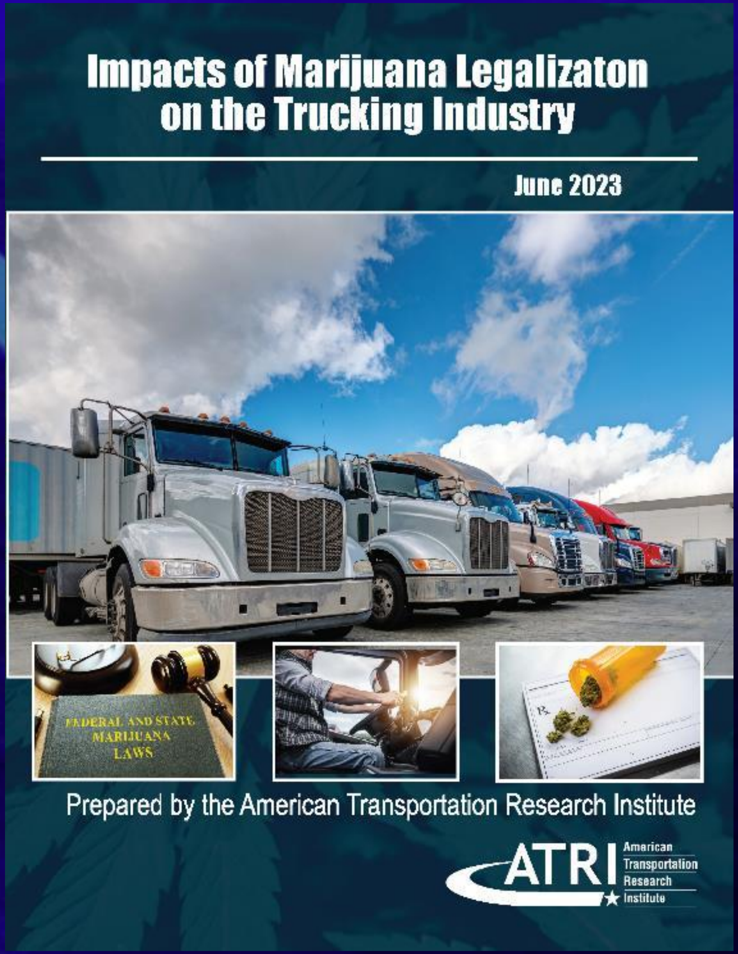
Six Key Challenges

1. Negative Industry Image and Perception
2. Unable to Complete Truck Driver Training
3. Unsatisfactory Motor Carrier Company Culture
4. Inability to Acclimate to the OTR Driver Lifestyle
5. Limited Parking and Restroom Facility Access
6. Excessive Gender Harassment and Discrimination

Impacts of Marijuana Legalization on Trucking

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



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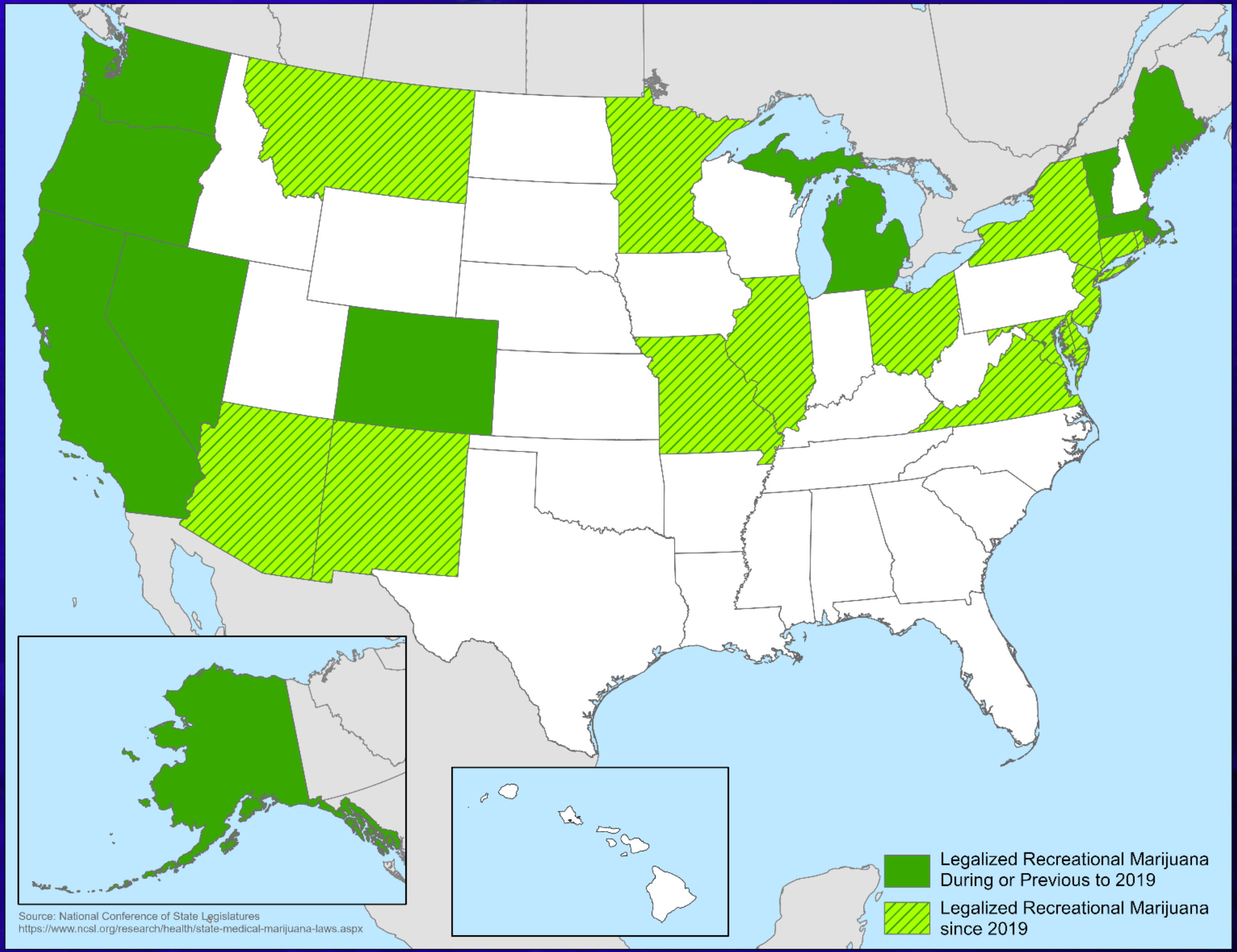
America Goes Green



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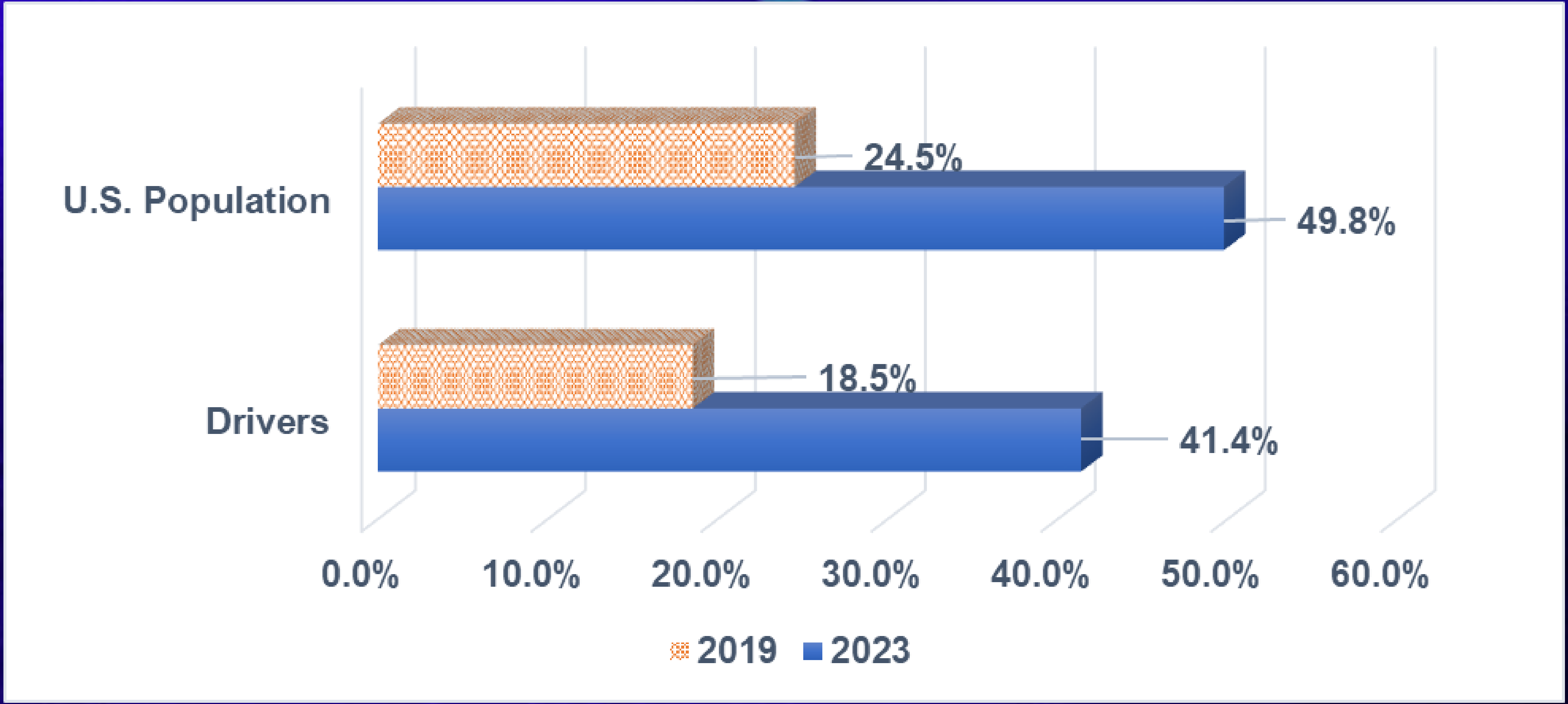
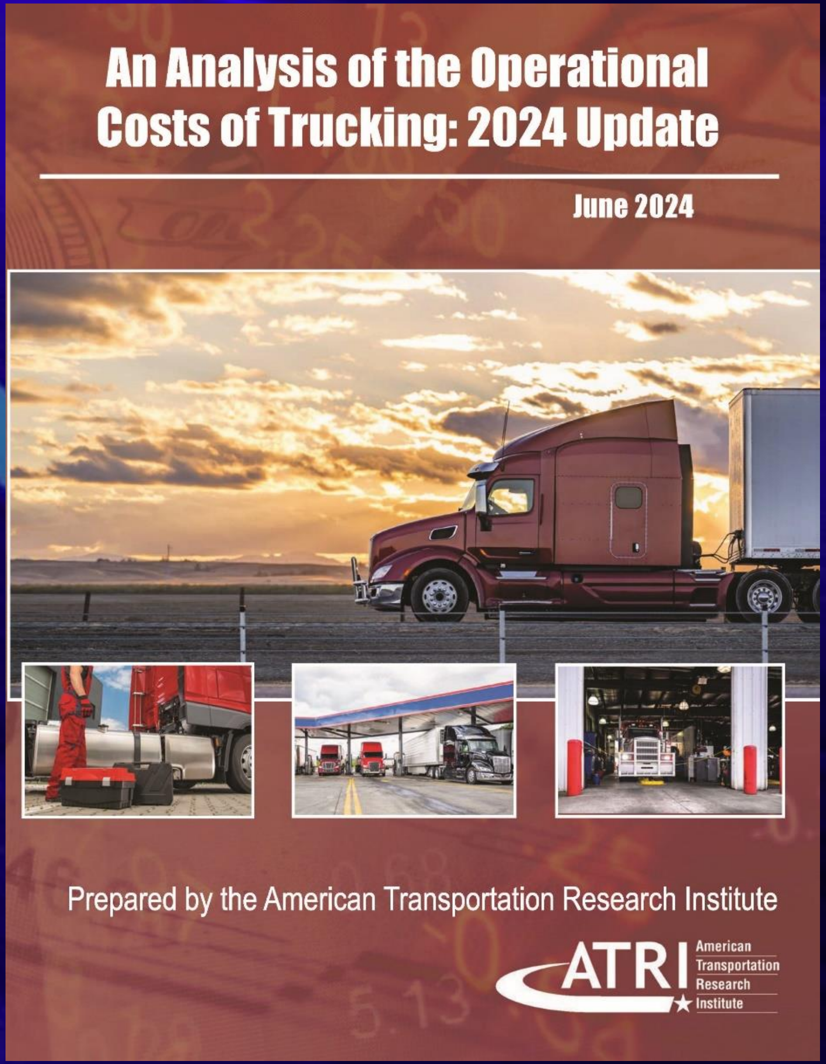
Percentage of Truck Drivers Residing in States with Legal Recreational Marijuana



Ops Costs 2024 Update

- Collects and analyzes real-world motor carrier costs, efficiency, and revenue data
- Data covers 2008-2023
- Calculates costs by mile and by hour
- Includes sector, regional analyses
  - TL, LTL, Specialized/Other
  - Small vs Large Fleets
- Aside from fuel, costs rose in 2023, but at lower rates than in 2022 and with substantial variation by fleet sector and size



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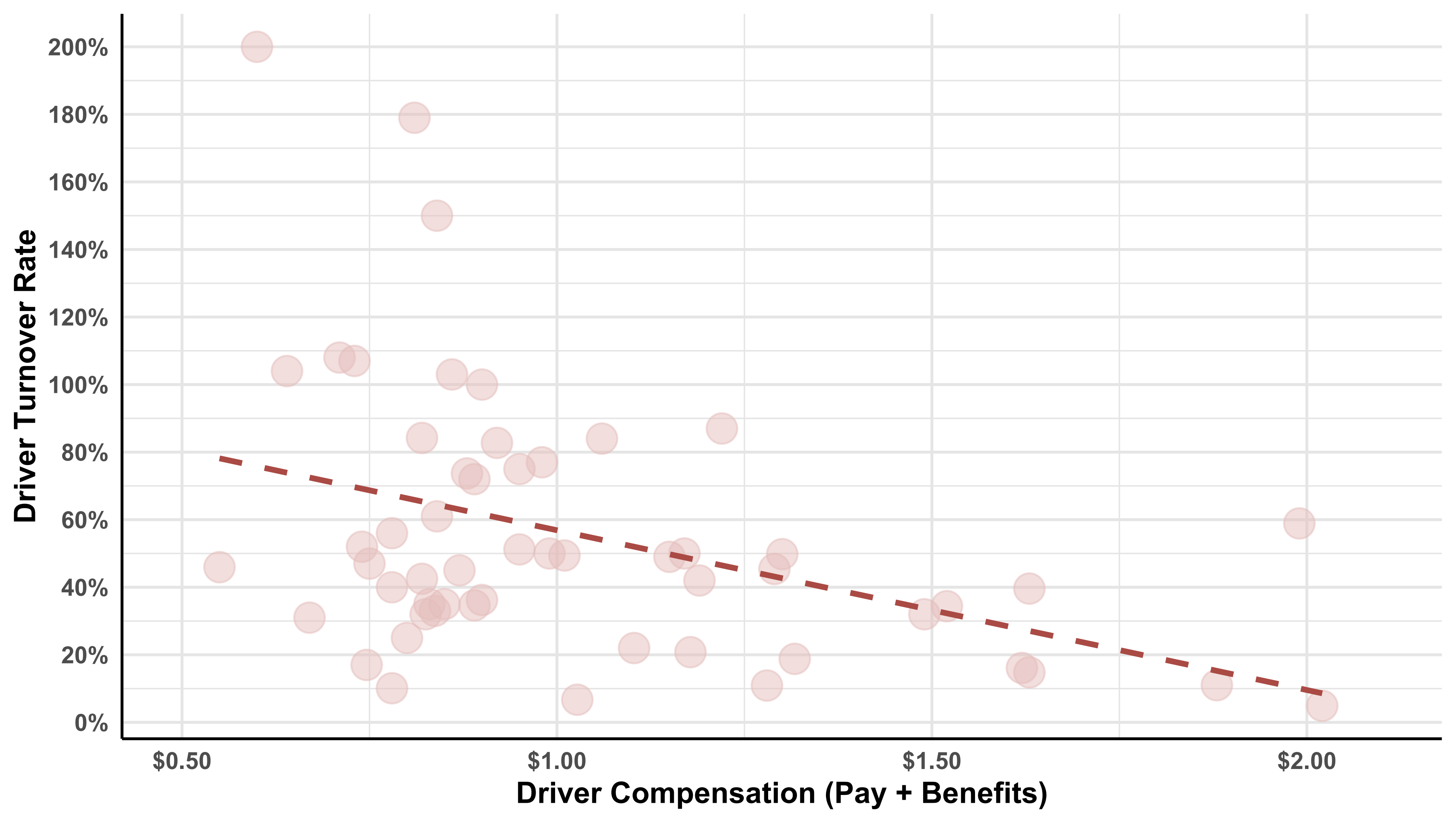
Average Carrier Costs per Mile

Motor Carrier Costs	2019	2020	2021	2022	2023
Vehicle-based					
Fuel Costs	$0.384	$0.308	$0.417	$0.641	$0.553
Truck/Trailer Lease or Purchase Payments	$0.256	$0.271	$0.279	$0.331	$0.360
Repair & Maintenance	$0.149	$0.148	$0.175	$0.196	$0.202
Truck Insurance Premiums	$0.071	$0.087	$0.086	$0.088	$0.099
Permits and Licenses	$0.020	$0.016	$0.016	$0.015	$0.009
Tires	$0.039	$0.043	$0.041	$0.045	$0.046
Tolls	$0.035	$0.037	$0.032	$0.028	$0.034
Driver-based					
Driver Wages	$0.554	$0.566	$0.627	$0.724	$0.779
Driver Benefits	$0.190	$0.171	$0.182	$0.183	$0.188
TOTAL	**$1.699**	**$1.646**	**$1.855**	**$2.251**	**$2.270**

Costs Continue to Climb

Motor Carrier Costs Rate of Increase	2020-2021	2021-2022	2022-2023
Vehicle-based			
Fuel Costs	35.4%	53.7%	- 13.7%
Truck/Trailer Payments	3.0%	18.6%	8.8%
Repair & Maintenance	18.2%	12.0%	3.1%
Truck Insurance Premiums	- 1.1%	2.3%	12.5%
Permits and Licenses	0.0%	- 6.3%	- 40.0%
Tires	- 4.7%	9.8%	2.2%
Tolls	- 13.5%	- 12.5%	- 21.4%
Driver-based			
Driver Wages	10.8%	15.5%	7.6%
Driver Benefits	6.4%	0.5%	2.7%
TOTAL	12.7%	21.3%	0.8%
TOTAL Excluding Fuel	**7.4%**	**12.0%**	**6.6%**
Inflation Rate (CPI) YoY	7.0%	6.5%	3.4%

Impact of Driver Compensation on Large Fleet Turnover



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Fuel Prices

- Voted #3 overall industry issue, down two spots from 2022
- Top-ranked issue among Owner-Operators for 3rd year in a row
- ATRI's Ops Costs research documented a decrease of 13.7% from 2022 to 2023

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2023 Operational Efficiencies

- Deadhead Mileage: 16.3%
- Dwell Time: 1 hour 40 minutes
- Miles between Breakdowns: 37,700
- In-House R&M: 54%
- Drivers per Non-Driving Employee: 2.8 (Truckload)
- Driver Turnover: 47%
- Trailer-to-Truck Ratio: 2.63
- Driver-to-Truck Ratio: 0.97

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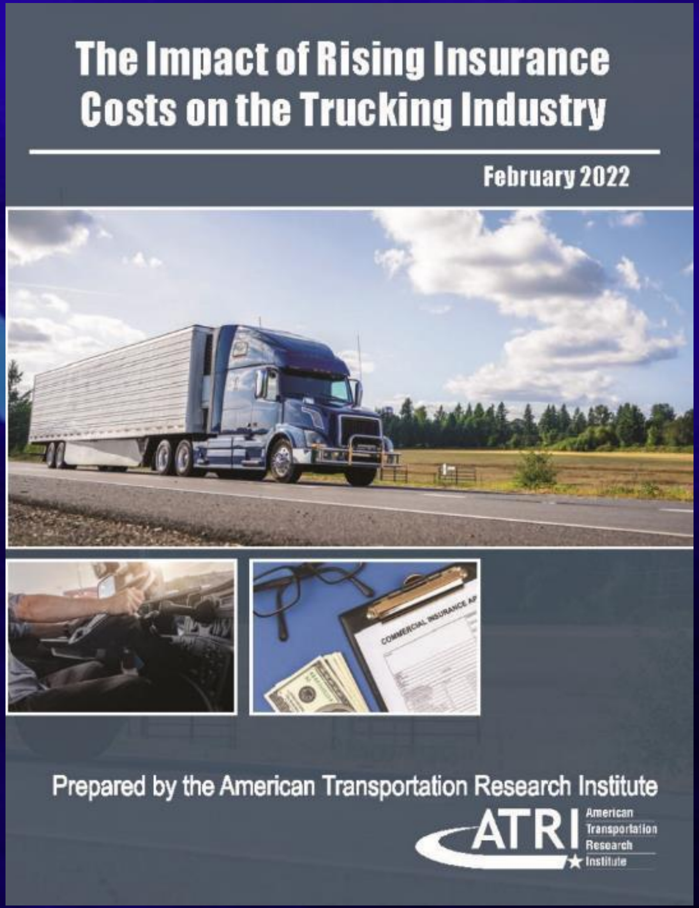
The Impact of Rising Insurance Costs on the Trucking Industry

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



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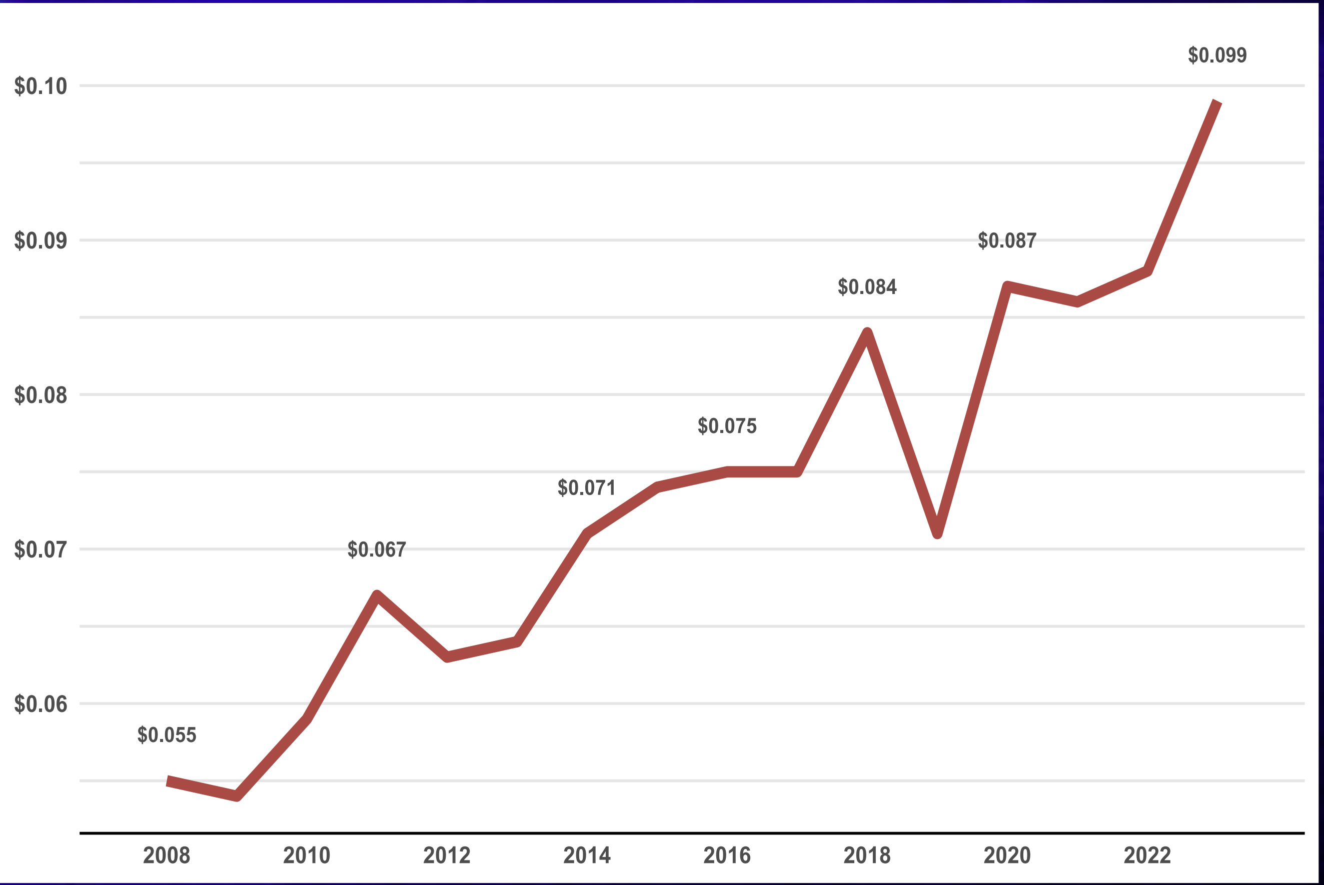
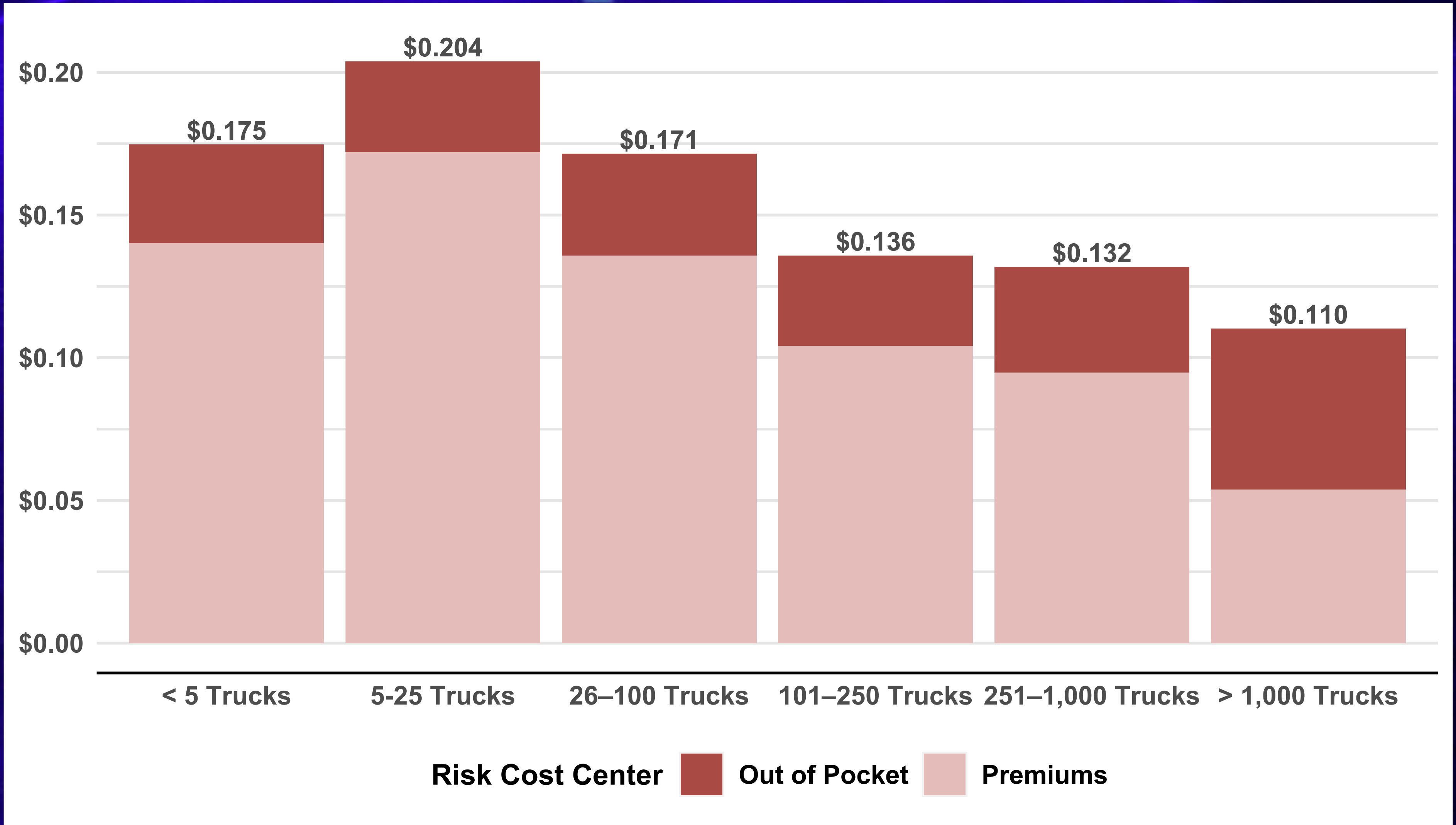
Insurance Costs Resume Rise

- Increase of 12.5% – over one cent per mile – from 2022 to 2023
- Includes auto liability and cargo coverages
- Lower crash rates during COVID led to stabilization in premium costs in 2021 and 2022, but 2023 costs returned to historical trajectory
- Increase of over 33% in the past 8 years



Insurance and Out-of-Pocket Costs



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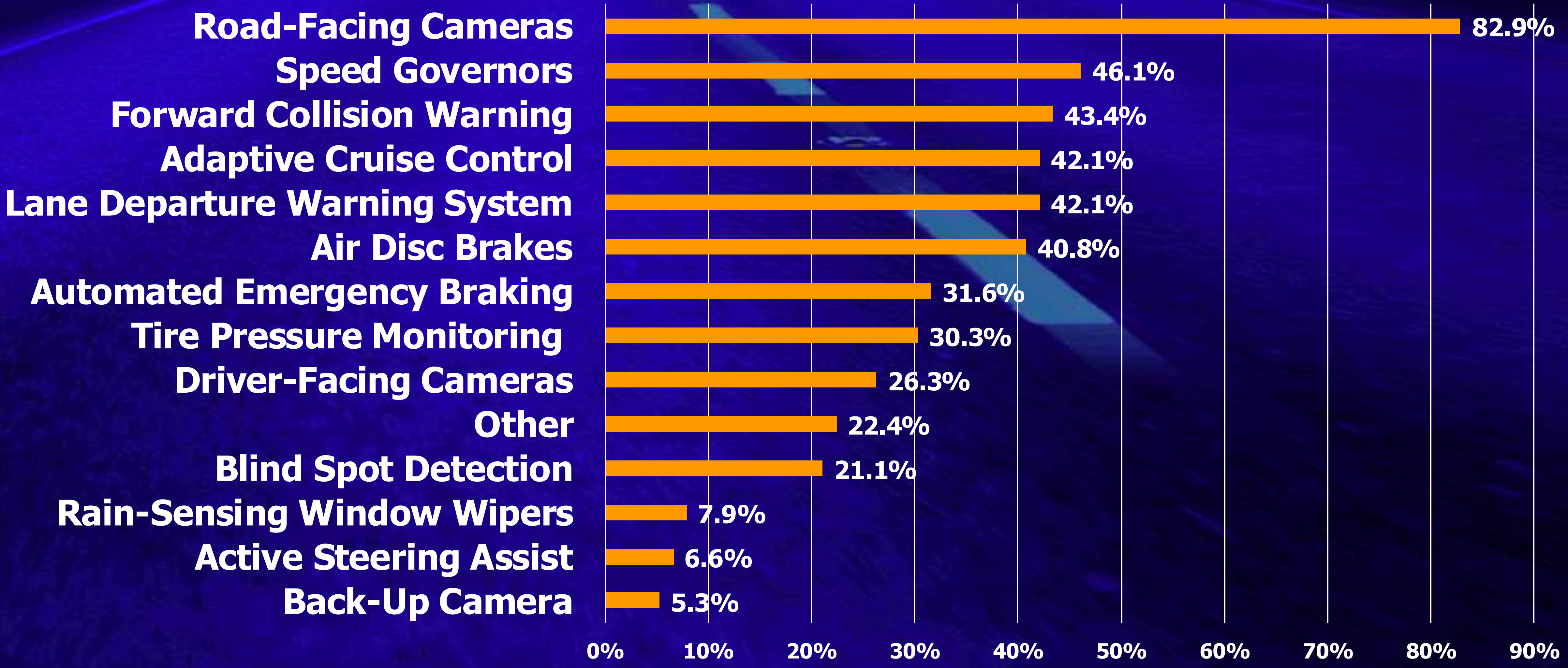
Safety Technology Deployment 2018 - 2020



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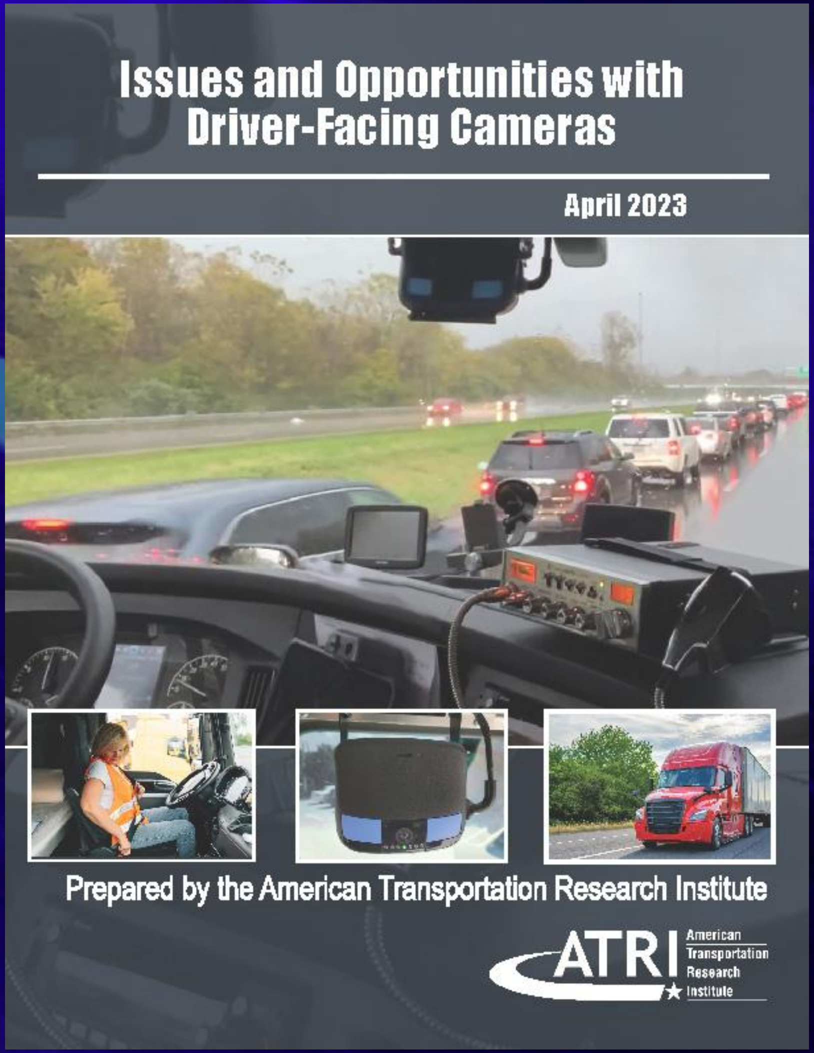
Issues and Opportunities with DFCs

- **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**



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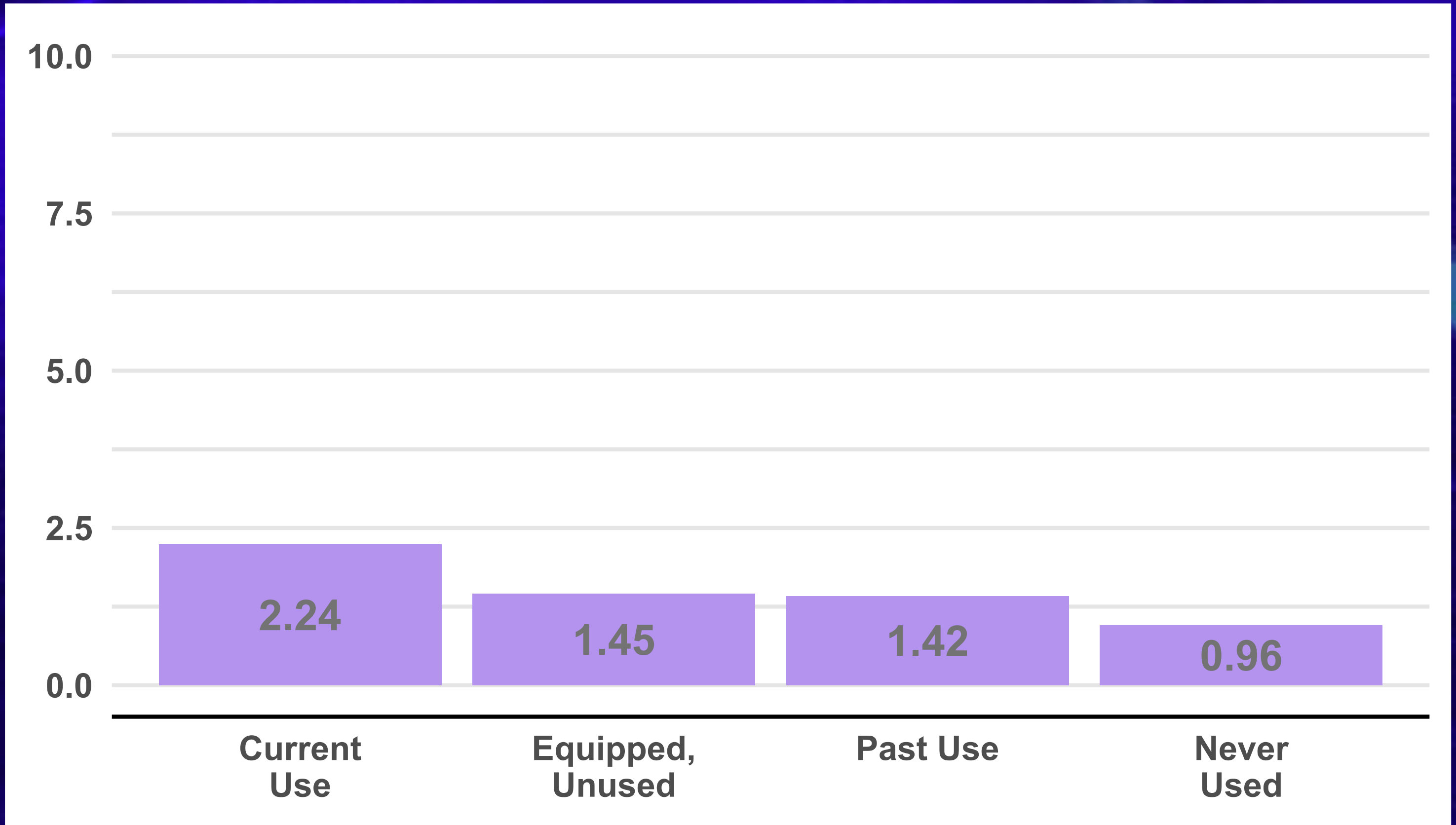
Driver DFC Approval is Low but Increases with Use



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

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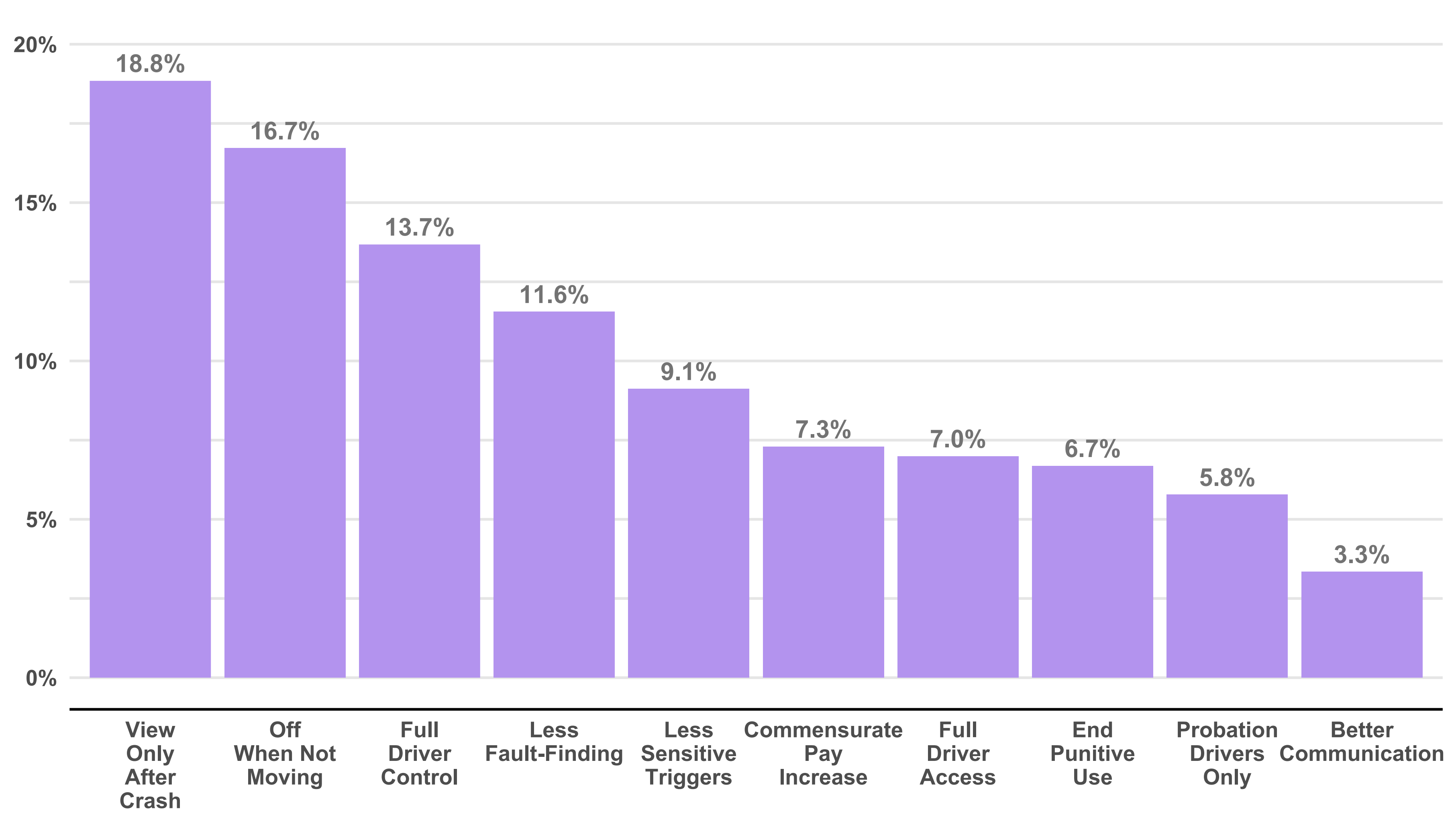
Driver Suggestions to Improve Acceptance



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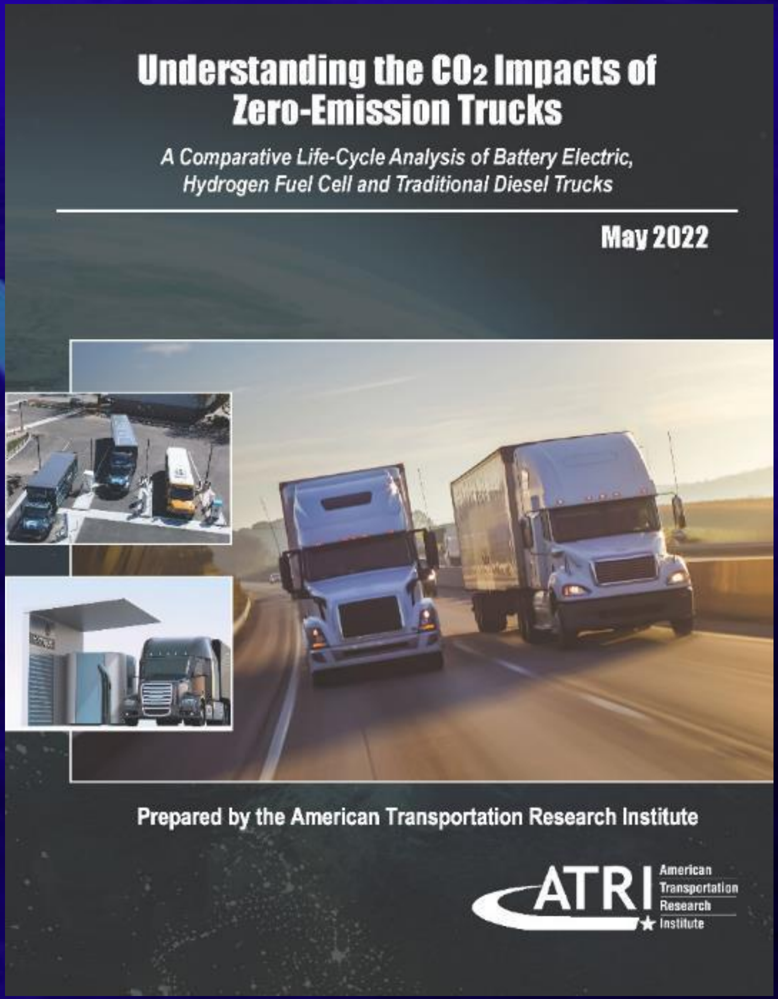
Understanding the CO_2 Impacts of Zero-Emission Trucks

- **Life-cycle CO_2 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 CO_2 emissions across from the full vehicle life-cycle:**
  - Vehicle production
  - Energy production and consumption
  - Vehicle disposal/recycling



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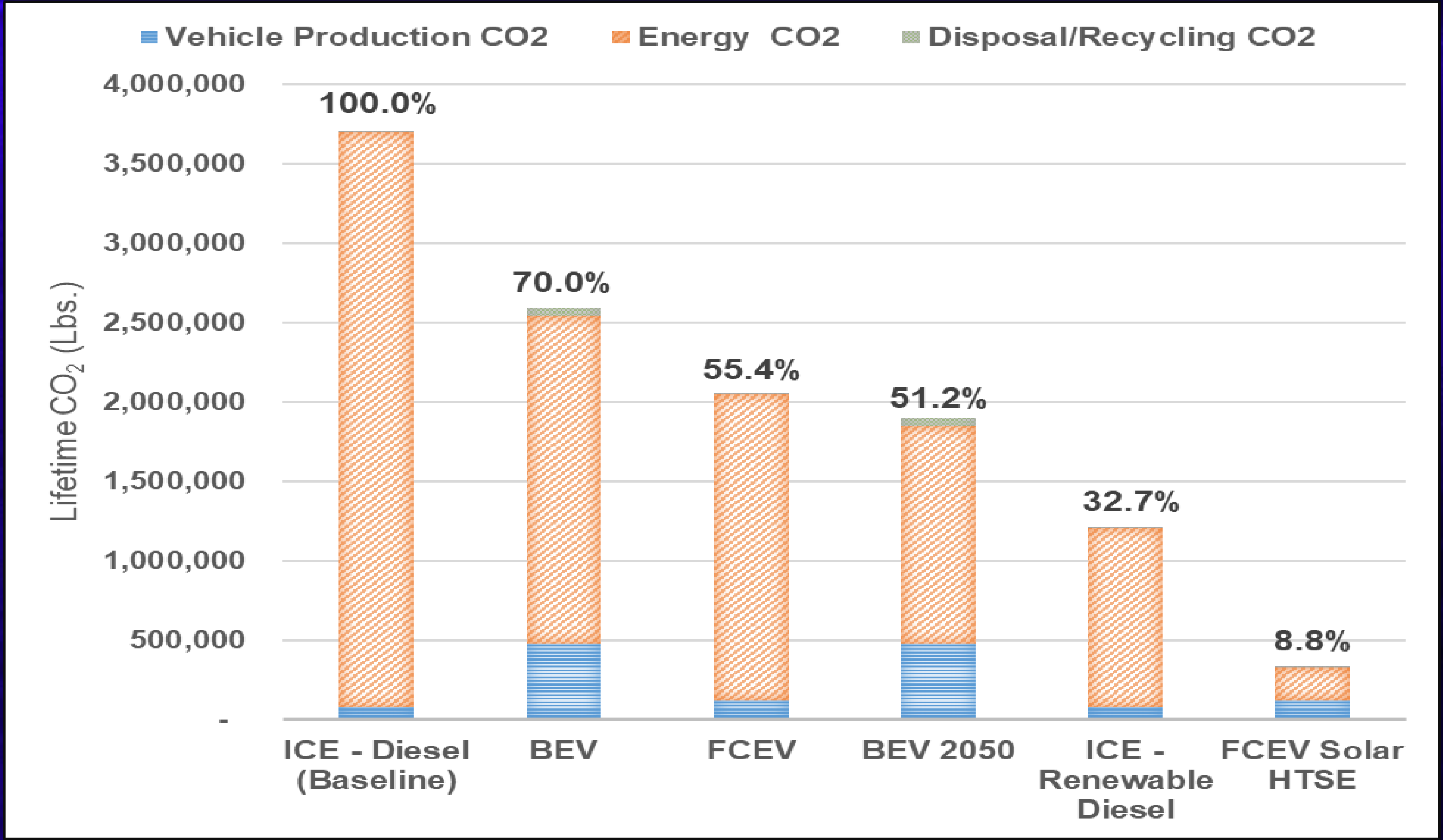
Key Findings



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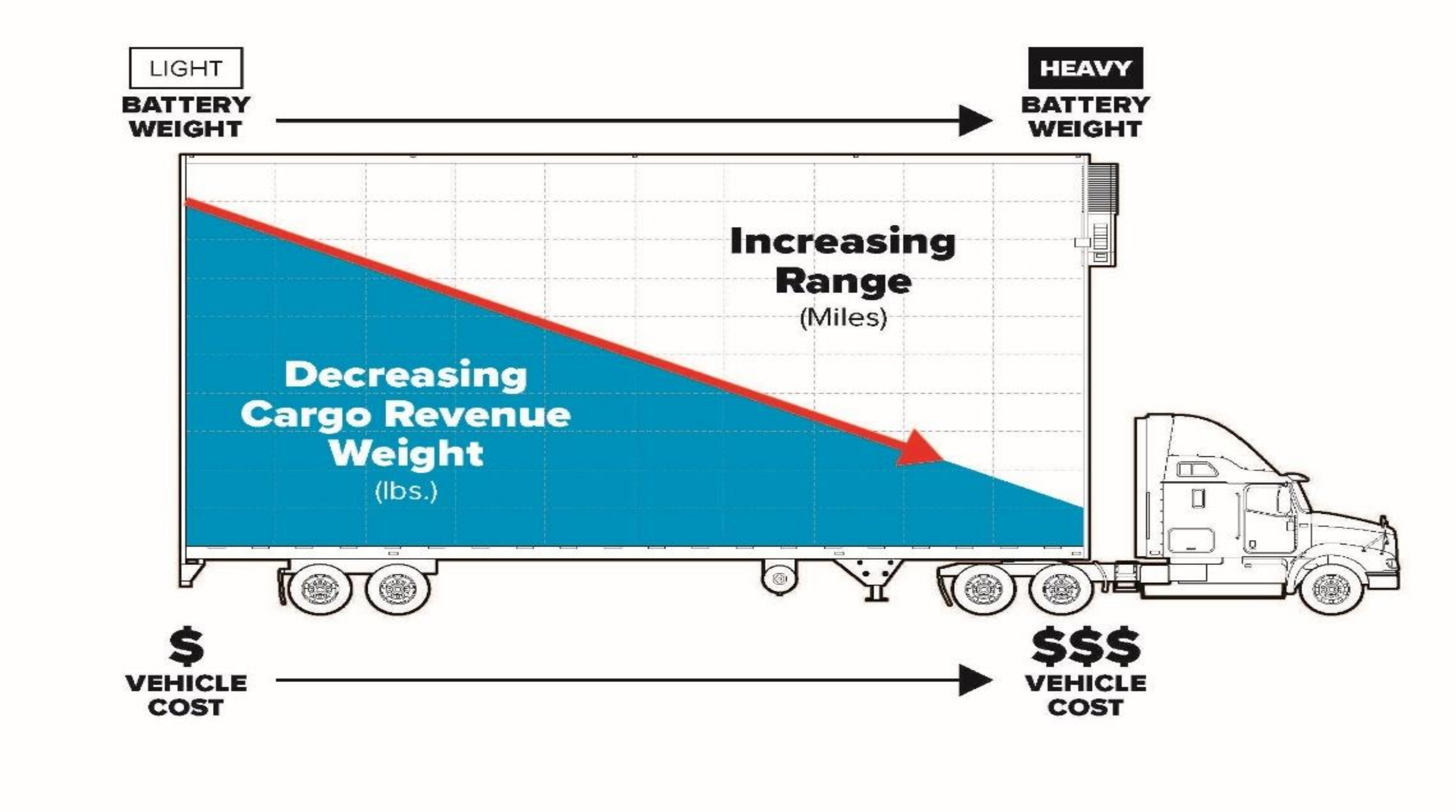
BEV Truck Conundrum



Realities

- Vehicle costs – new Class 8 BEV truck could cost over $425,000
- No refueling infrastructure
- CO_2 emissions are still substantial
- Material sourced from outside U.S.
  - Lithium, graphite, cobalt, manganese and nickel

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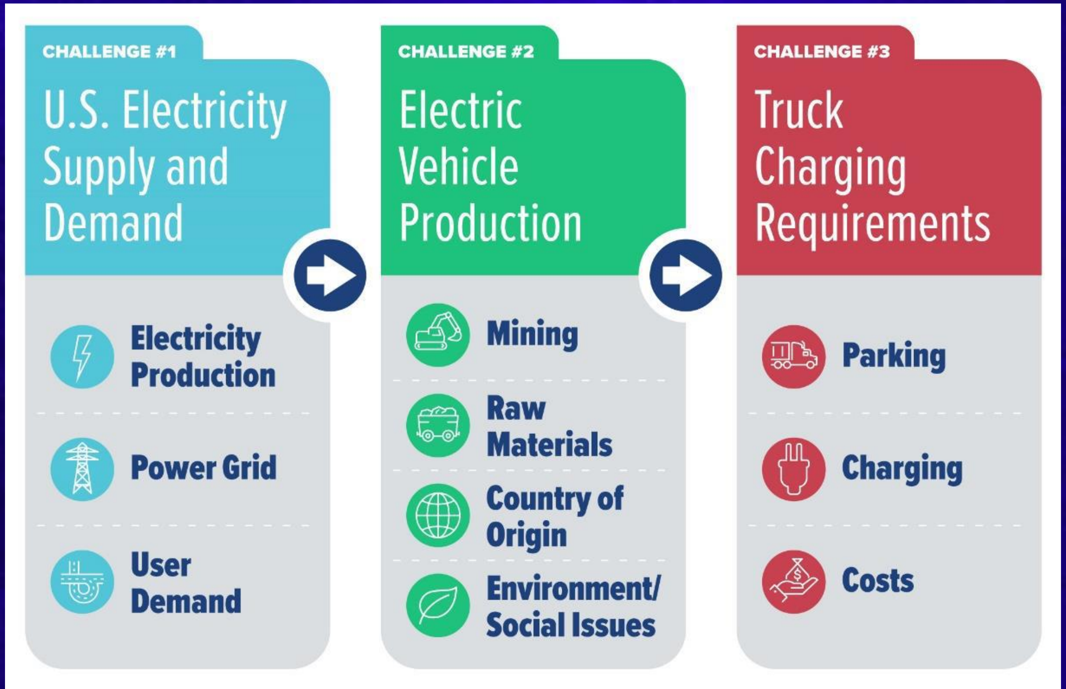
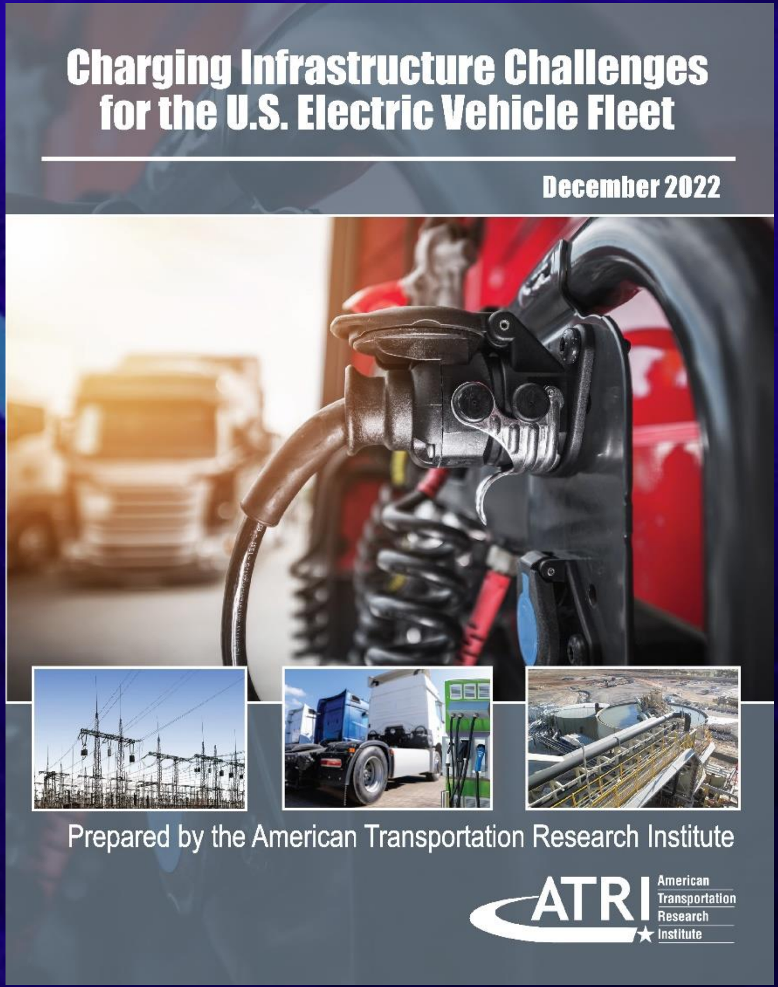
Charging Infrastructure Challenges for the U.S. Electric Vehicle Fleet

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





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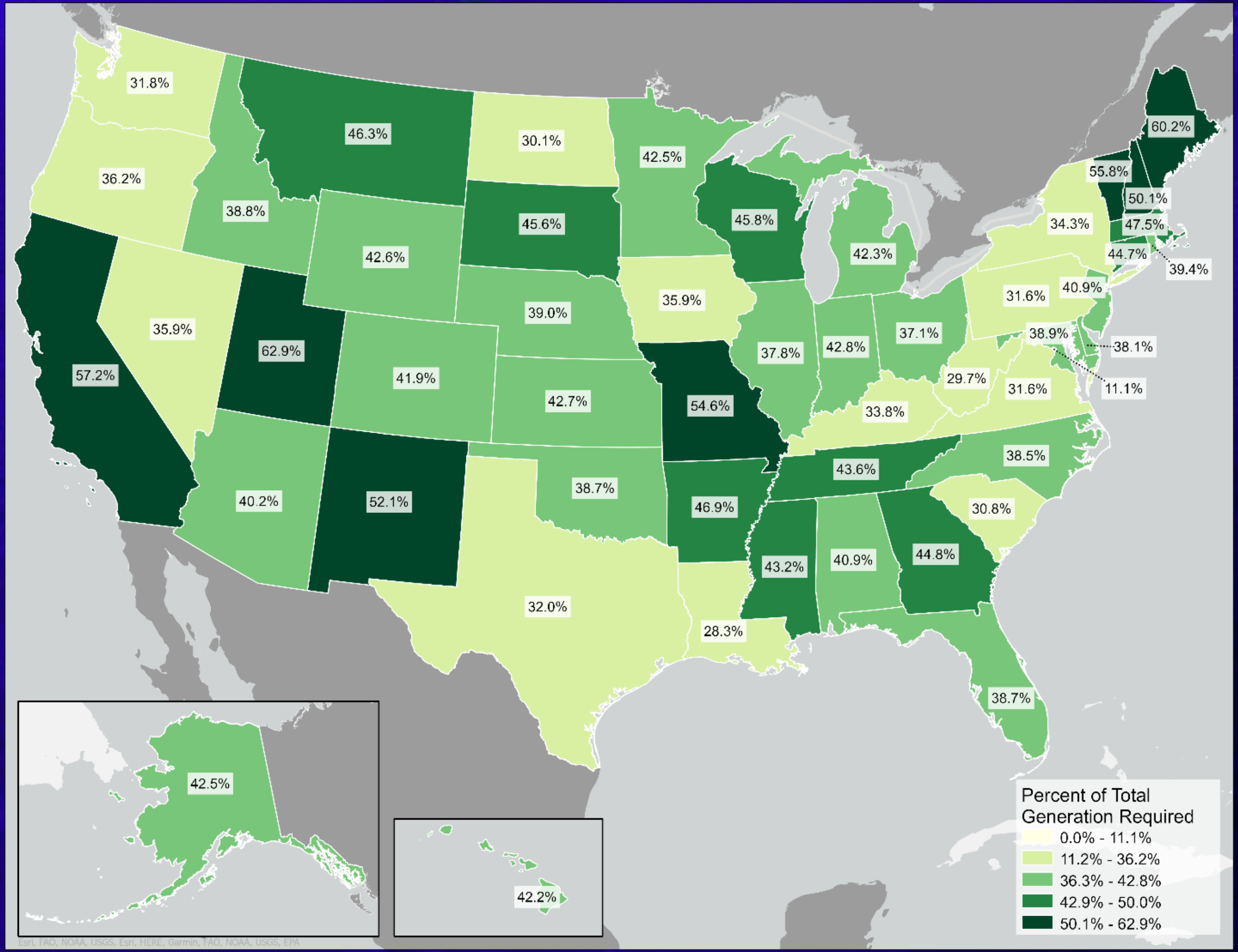
U.S. Electricity Supply and Demand



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Long-Haul Truck Charging Requirements

- Final delivery point – truck parking locations
  - 313,000 spaces – 1 for every 11 truck drivers

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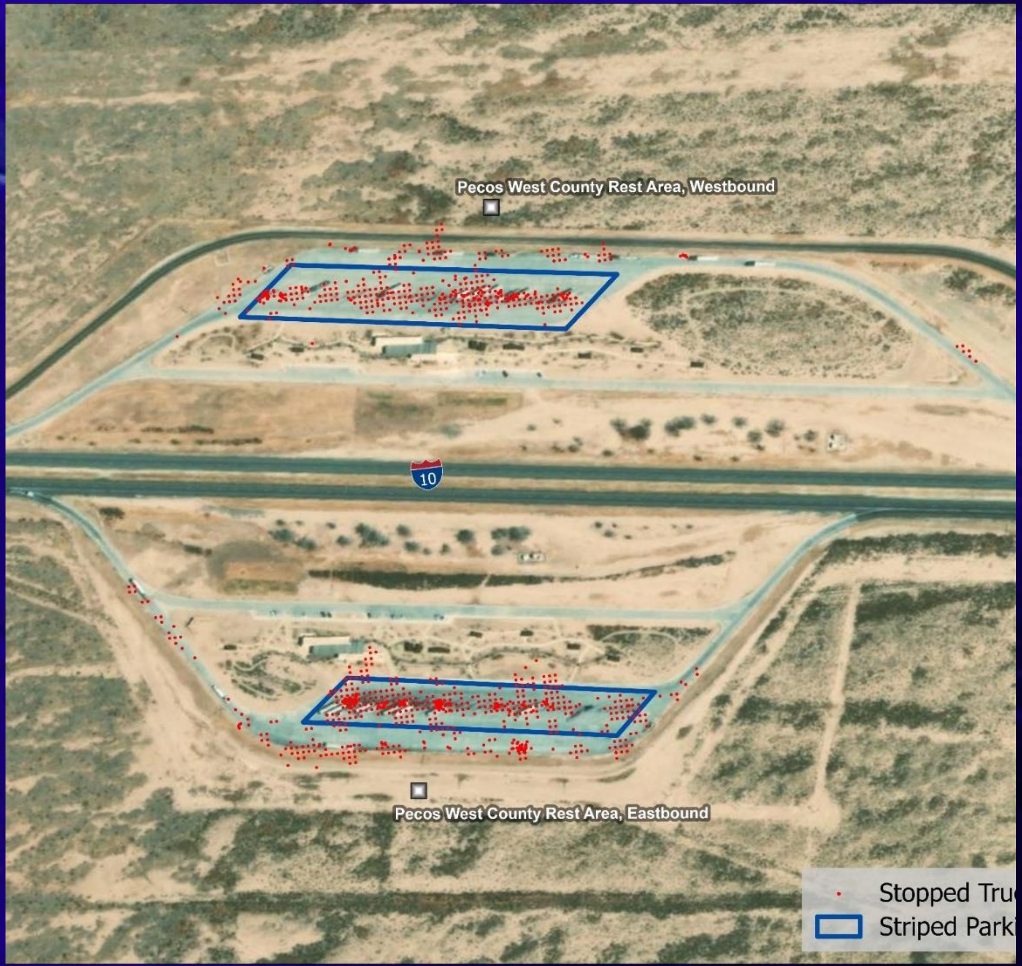
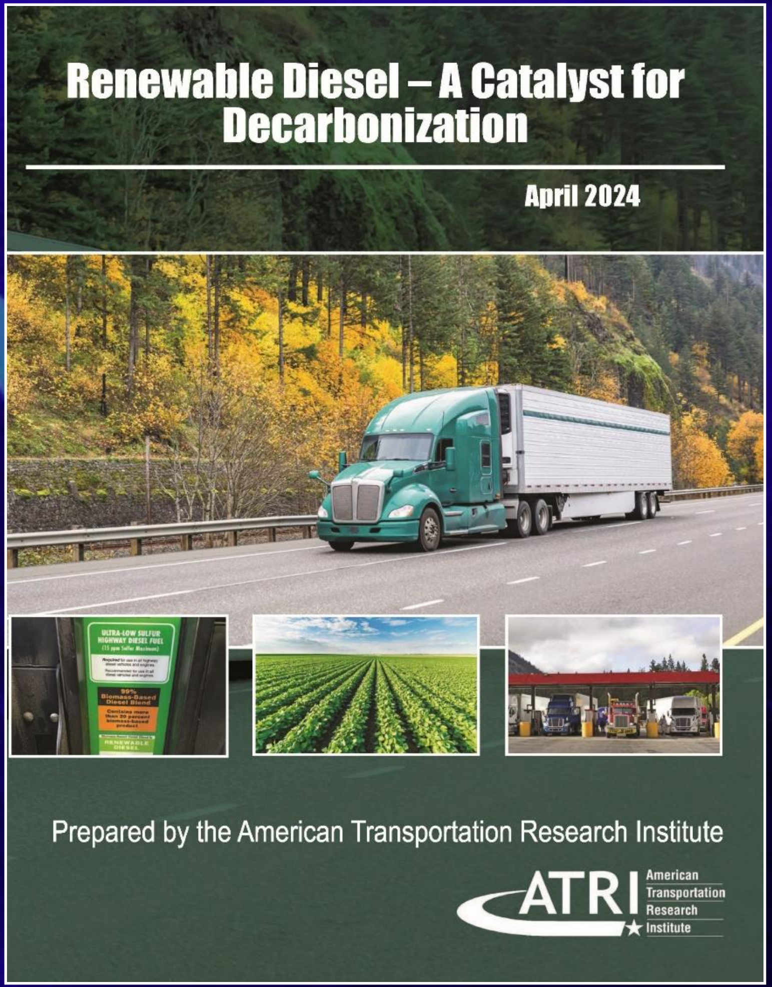
Parking Case Study

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



Renewable Diesel (RD) – A Catalyst for Decarbonization

- RD emissions are less than half that of battery electric vehicle (BEV) trucks
- BEV trucks have substantial operational constraints related to range and weight
- A BEV transition is 5.8 times more expensive than an RD transition – costing $987 billion more for the same environmental outcome



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Renewable Diesel Basics

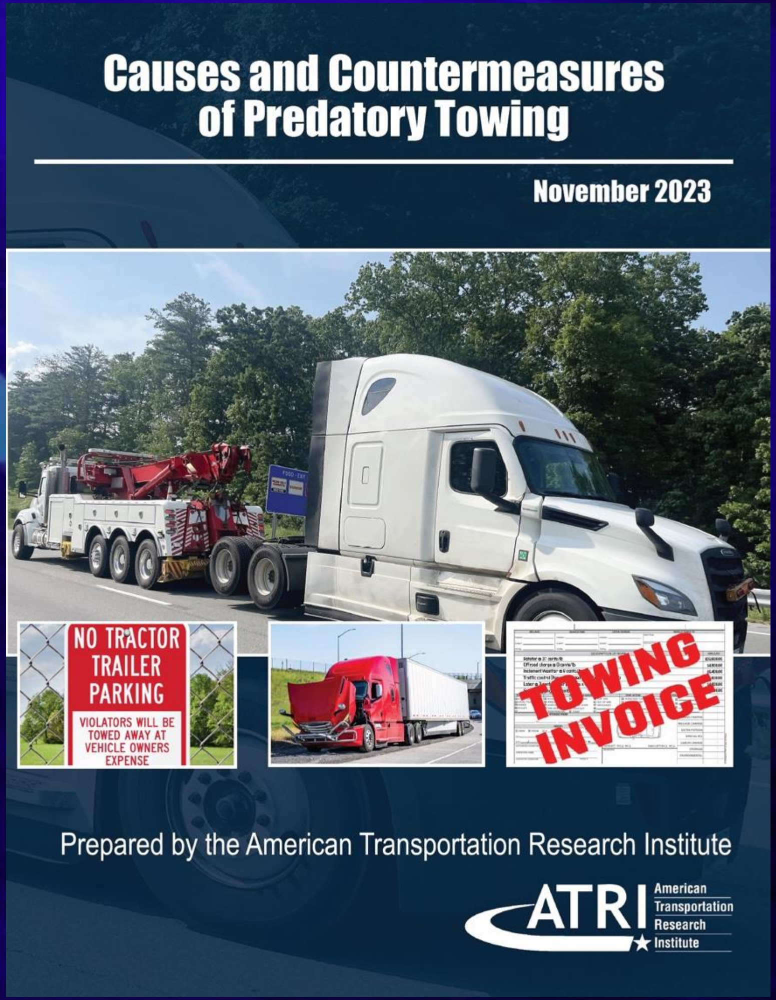
- RD is a fuel that is produced to be "chemically identical" to petroleum diesel
  - Mixed into petroleum diesel or used as a standalone, drop-in fuel
  - RD is different from biodiesel
- RD is made from numerous feedstocks
  - Used cooking oil
  - Soybean, corn and canola oil
  - Tallow
- RD is not a fossil fuel

BEV Transition is 5.8 Times More Expensive

	Transition Costs in Billions of Dollars over 15 Years			
	Vehicle Change	Infrastructure Change	RD Subsidy/Facility (at $2 /gallon)	Total
BEV Costs	$594.30	$596.00	-	$1,190.30
ICE RD Costs	-	-	$203.72	$203.72

Predatory Towing: Causes and Countermeasures

- Research included motor carrier survey to quantify frequency and type of predatory practices
- Detailed invoice analysis of crash-related tows from motor carriers, owner-operators
- Comprehensive online compendium of state-by-state tow regulations
- Defense counsel input on how to avoid/address predatory towing



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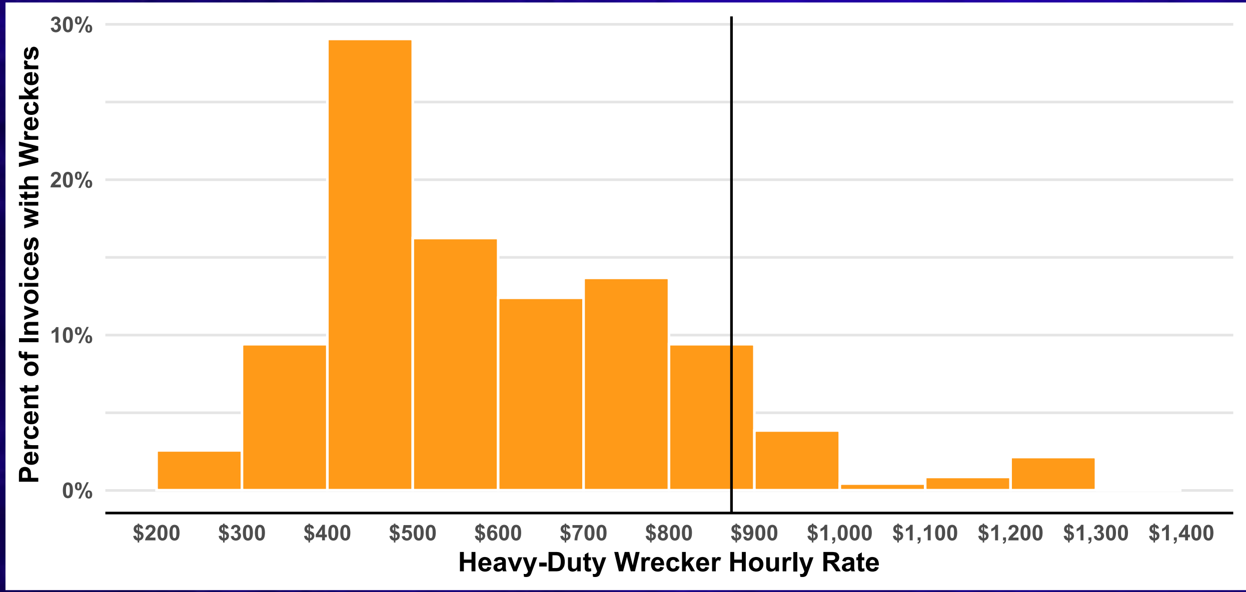
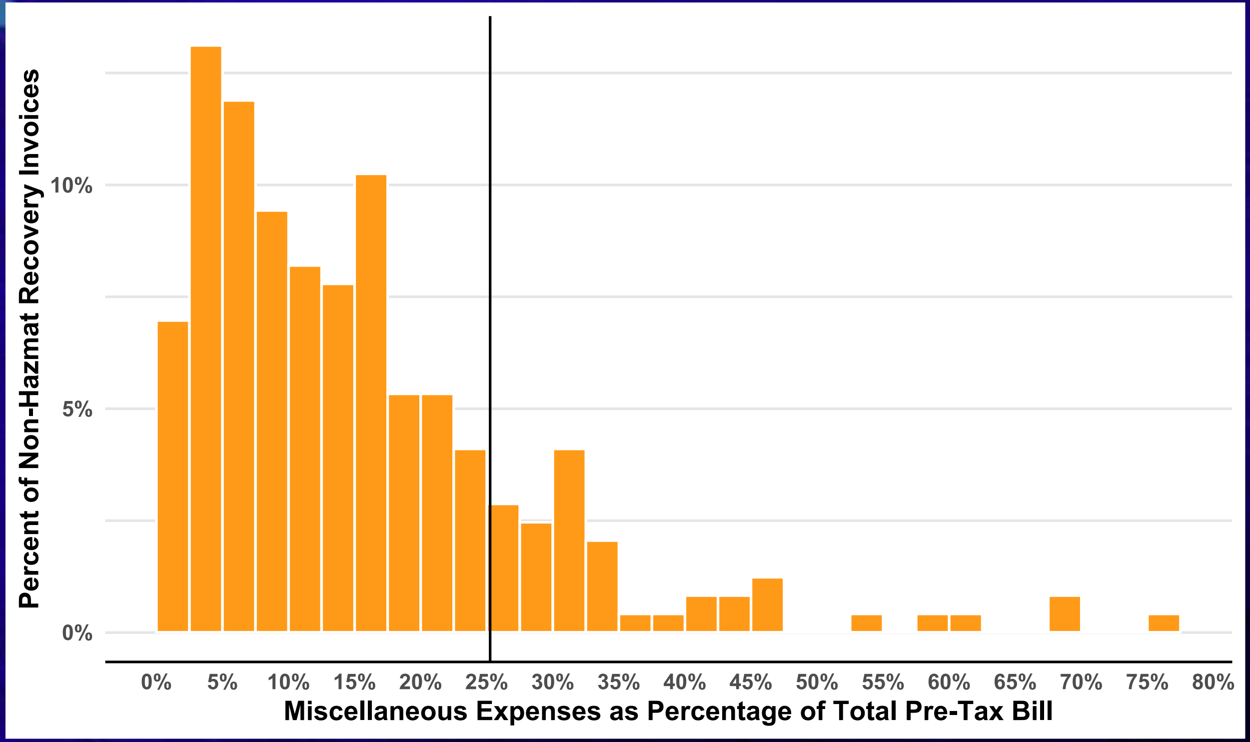
Most Common Predatory Practices

- Excessive Hourly or Per-Pound Rates (82.7%)
- Unwarranted Additional Equipment / Labor Charges (81.8%)
- Excessive Daily Storage Rate (77.7%)
- Vehicle Release Delays or Access Issues (71.7%)

Invoice Analysis

- **29.8% of crash-related tows resulted in some form of predatory billing**





Median Rates and Excessive Rate Thresholds

Service Charge	Median Rate	Excessive Rate
Heavy-Duty Wrecker	$582/hour	$873/hour
Heavy-Duty Rotator	$1,137/hour	$1,705.50/hour
Rollback	$270/hour	$405/hour
Heavy-Duty Towing	$291/hour	$436.50/hour
Extra Labor	$105/hour	$157.50/hour
Supervisor Labor	$195/hour	$292.50/hour
Storage	$120/day	$240/day
Administrative Fees (% of subtotal bill)	5.1% of subtotal	10.2% of subtotal
Miscellaneous Expenses (% of pre-tax bill)	12.6% of pre-tax total	25.2% of pre-tax total

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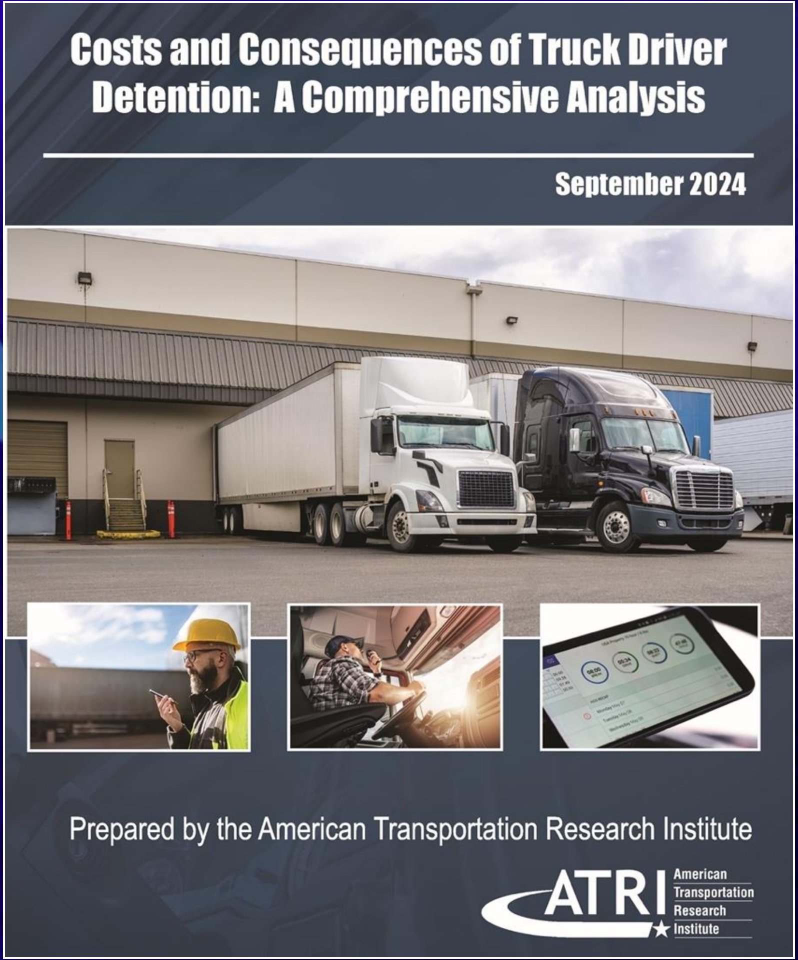
Steps to Avoid or Address Predatory Tows

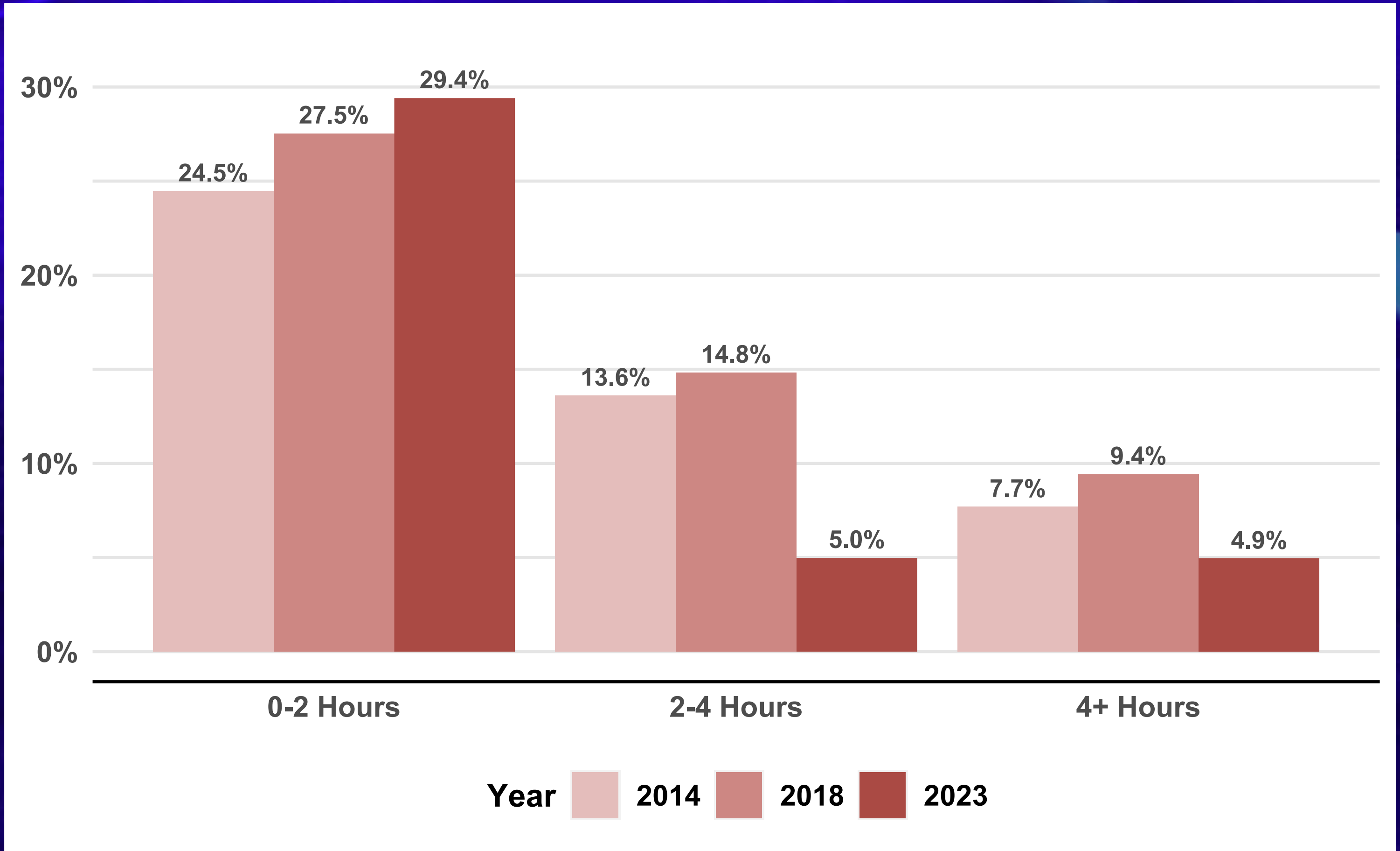
- Drivers should never sign consent forms during police-initiated tows
- Carriers and their insurers should ensure adequate auto liability, cargo, and physical damage coverage with the same insurer to avoid delays
- Consult ATRI's towing regulations compendium

Costs and Consequences of Truck Driver Detention

- 2023 RAC priority
- Tracks driver experiences across 3 surveys over the last decade
- Quantifies lost productivity, income, revenue, and more from federal and motor carrier data
- Analysis of ATRI's large truck GPS database shows impact of detention on truck speeds



Driver Detention: 10-Year Trend



Detention in 2023:

- Nearly 40% of all stops
- Women drivers detained more – 49.1% of stops vs 37.2% for men drivers
- 42.5% of spot market freight vs 33.8% of contract freight

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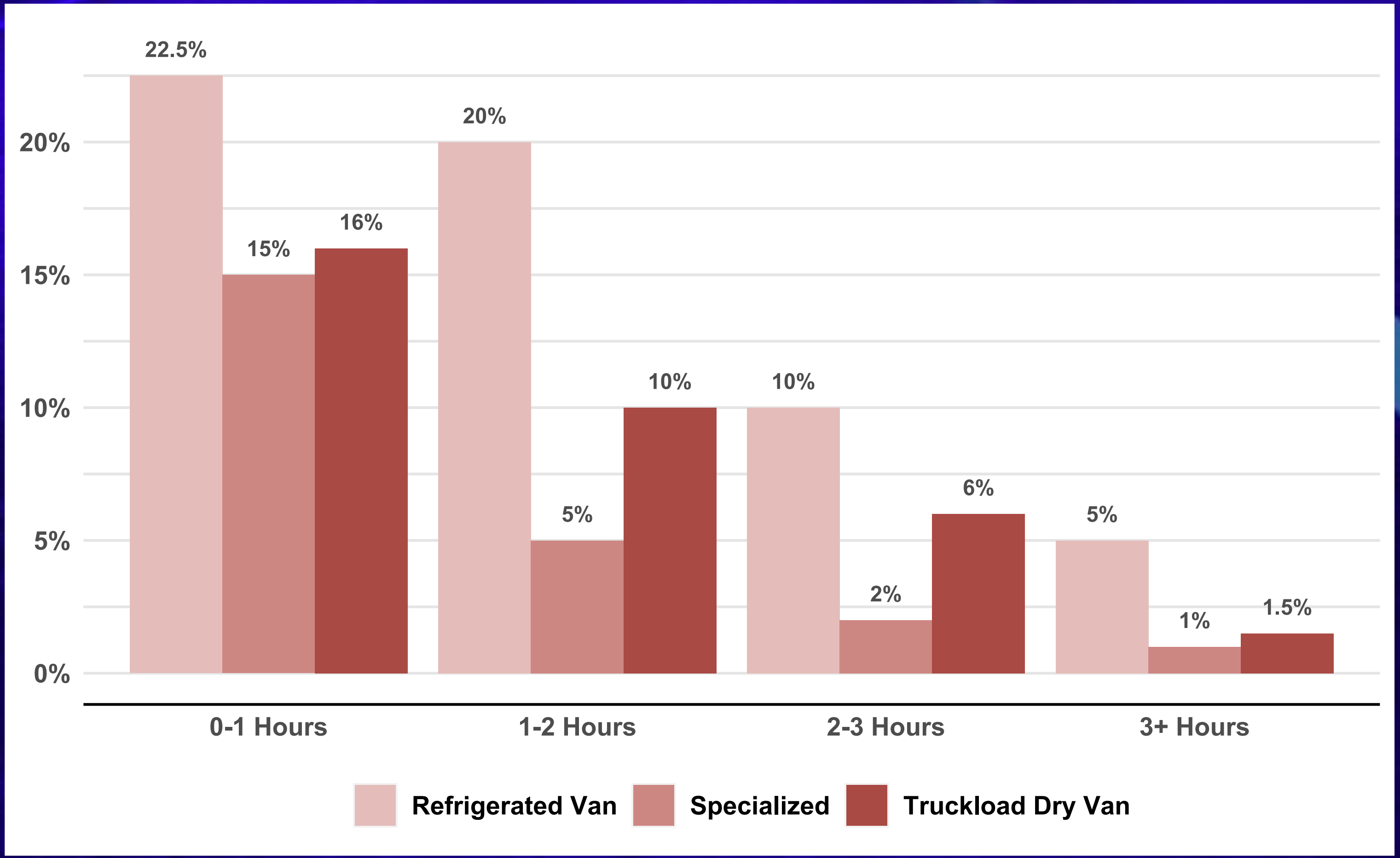
Detention Frequency by Sector & Duration



- **Refrigerated van drivers detained more frequently (57.5% of stops) than TL (33.5%) and Specialized (23%)**

Lost Driver Productivity and Income

Sector	Average Driver Pay per Hour	Median Driver Detention Pay per Hour	Lost Driver Pay per Hour of Detention	Annual Hours of Detention per Driver	Annual Lost Income per Driver
Refrigerated	$26.13	$20	$6.13	209.4	$1,283.62
Specialized	$34.45	$29	$5.45	117.5	$640.38
Truckload	$28.14	$23	$5.14	173.0	$889.22

Cost of Detention per Driver

Sector	EXPENSE: Driver Detention Pay	EXPENSE: Wasted Diesel	EXPENSE: Additional Detention-Impacted Costs	REVENUE: Detention Fees Received	TOTAL: Unreimbursed Costs of Detention
Refrigerated	$4,188.00	$970.20	$5,538.63	$4,524.00	$6,172.83
Specialized	$3,407.50	$198.06	$3,050.30	$4,312.00	$2,343.86
Truckload	$3,979.00	$291.61	$4,598.34	$3,765.00	$5,103.95

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For-Hire Trucking Industry Total Costs of Detention

- 135.9 million lost productive hours
- 72.6 million wasted gallons of diesel
- 5.4 billion lost miles
- $3.6 billion unreimbursed direct expenses
- $11.5 billion lost revenue

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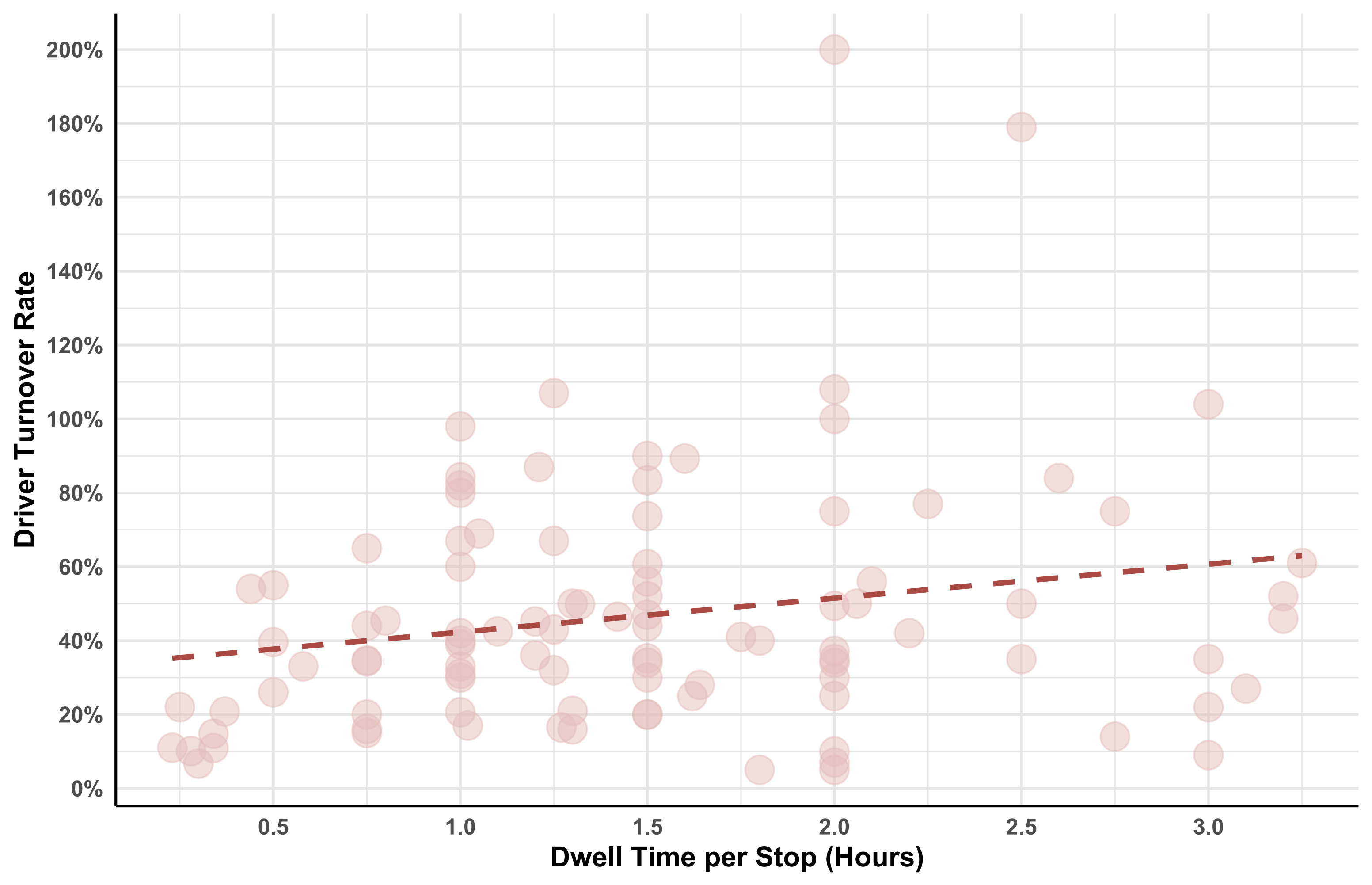
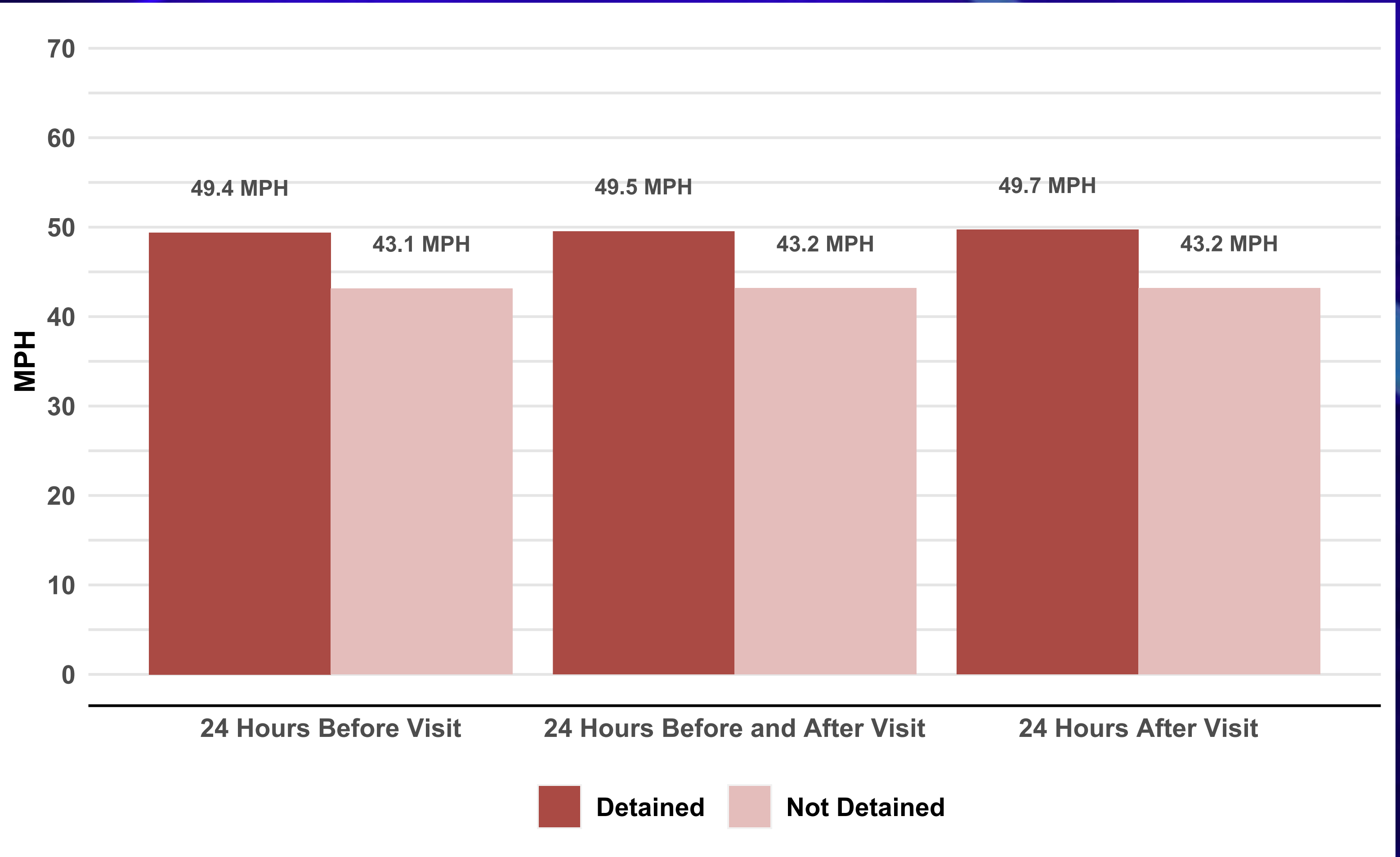
Longer Dwell Time Leads to Driver Turnover



Detained Trucks Drive Faster



- **Detained trucks drive faster 24 hours after *and* before detention**
- **14.6% faster in full 48-hour period**
- **Similar findings for each sector**

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2024 Top Research Priorities

- Mining Driver Demographic Data to Identify New Pathways to Trucking Careers
- Impact of Nuclear Verdicts – Update
- Comprehending the Scope of Cargo Theft in the U.S.
- Calculating the Cost of Truck Bottlenecks
- FET Cost-Benefit Analysis

Questions?

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