

Understanding Safety Risks in the Trucking Industry

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Research Institute**



ATRI

Trucking industry's NFP research organization

- Safety
- Mobility
- Economic Analysis
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Crash Predictor History

- **RAC top priority**
- **Prior iterations published in 2005 & 2011**
- **Long running research relationship with the Upper Great Plains Transportation Institute**
- **Next iteration will be a CSA baseline for the new Item Response Theory program**

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

July 2018



Prepared by the American Transportation Research Institute



New in 2018 Update

- Research expanded to include analyses by age and gender
- Industry-average crash costs across six crash types/severity included
 - ◆ Rollover
 - ◆ Jackknife
 - ◆ Run-Off Road
 - ◆ Sideswipe
 - ◆ Head-On
 - ◆ Read End

Top 10 Crash Predictor Behaviors

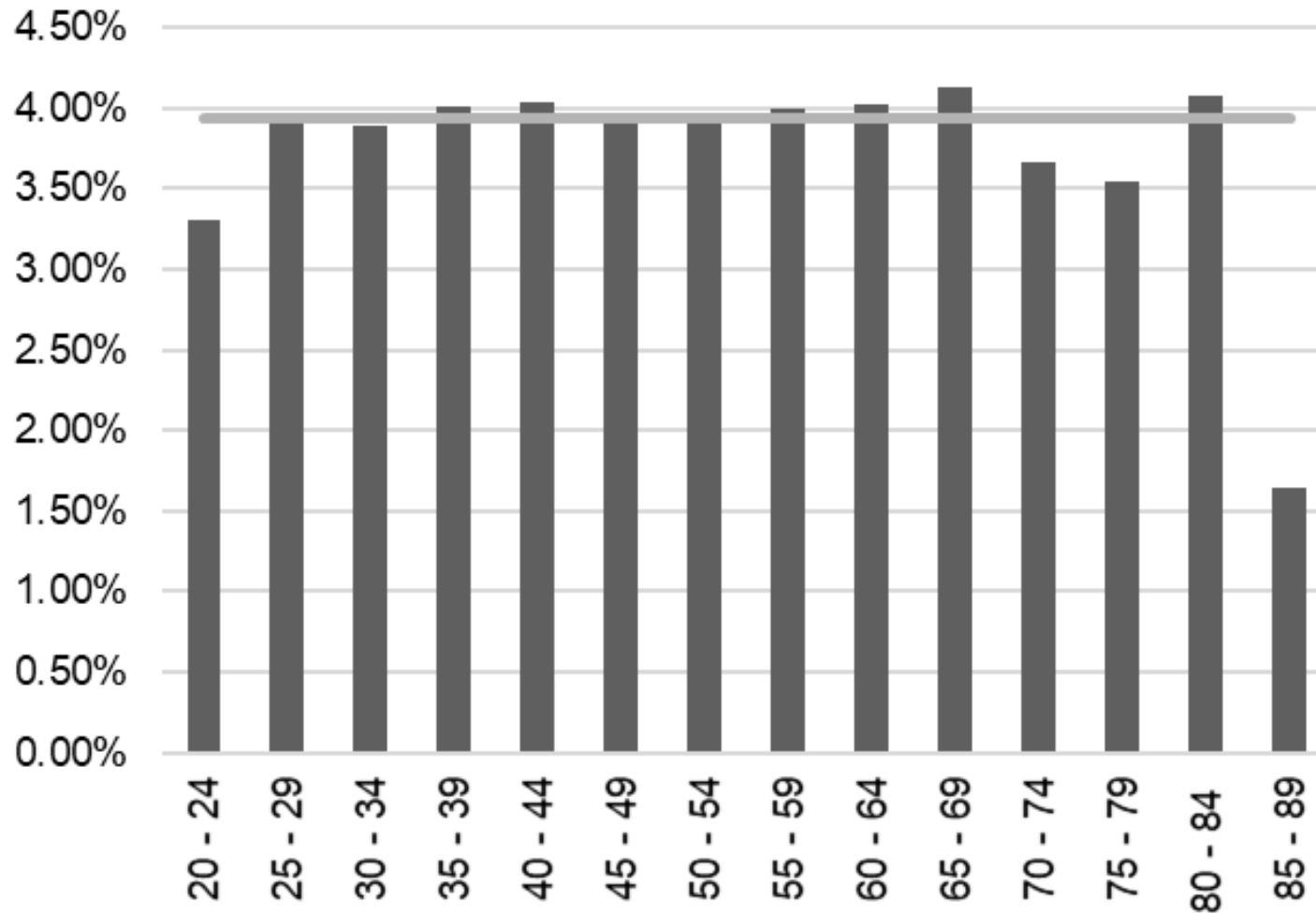
If a driver had:	Crash likelihood increased:
A Reckless Driving violation	114%
A Failure to Yield Right of Way violation	101%
A Failure to Keep in Proper Lane conviction	83%
A Failure to Use / Improper Signal conviction	82%
A Past Crash	74%
An Improper Lane / Location conviction	72%
An Improper Pass 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

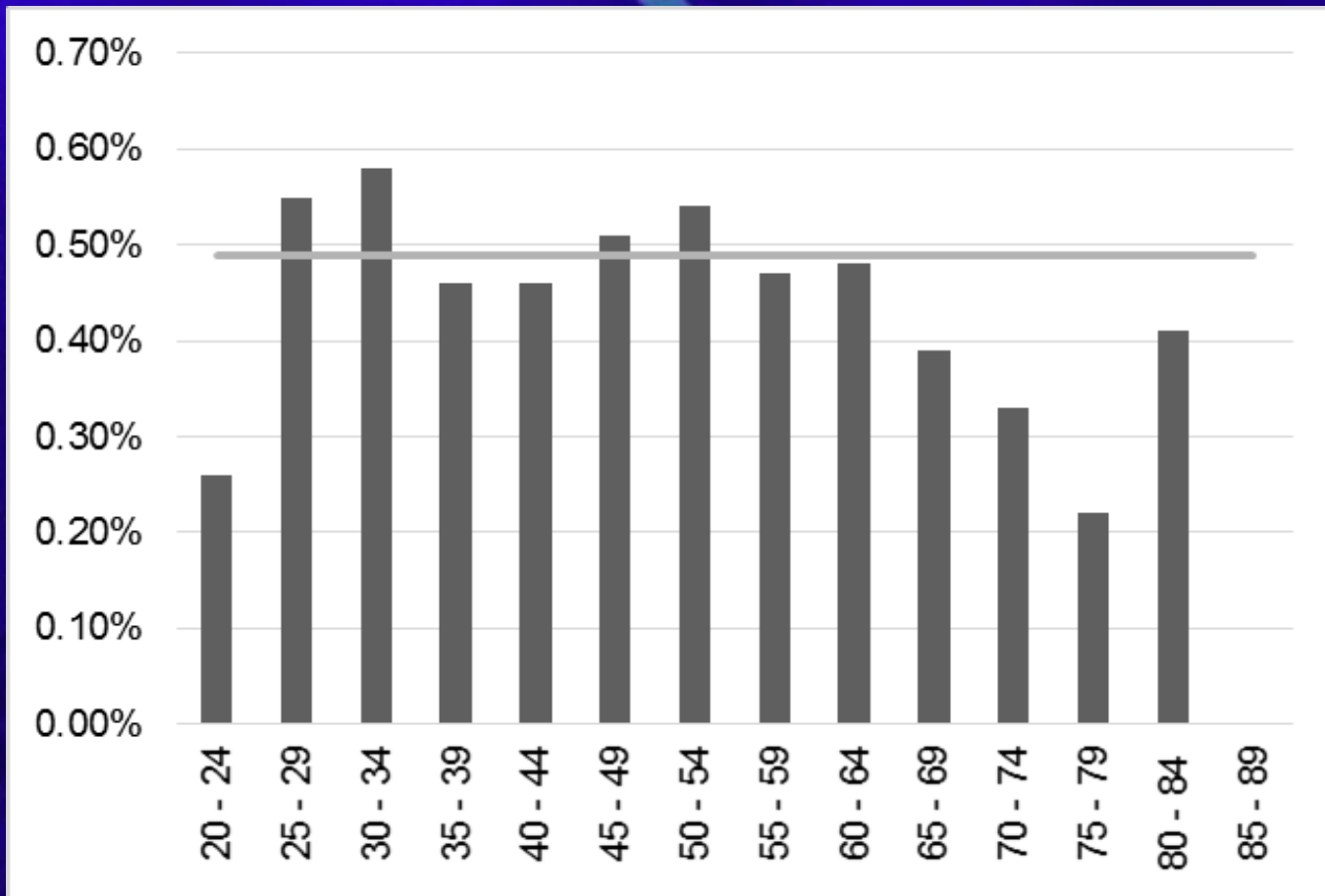
- **Female drivers safer than males in every statistically significant behavior**
- **Men 20% more likely to be involved in crash than women**

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%

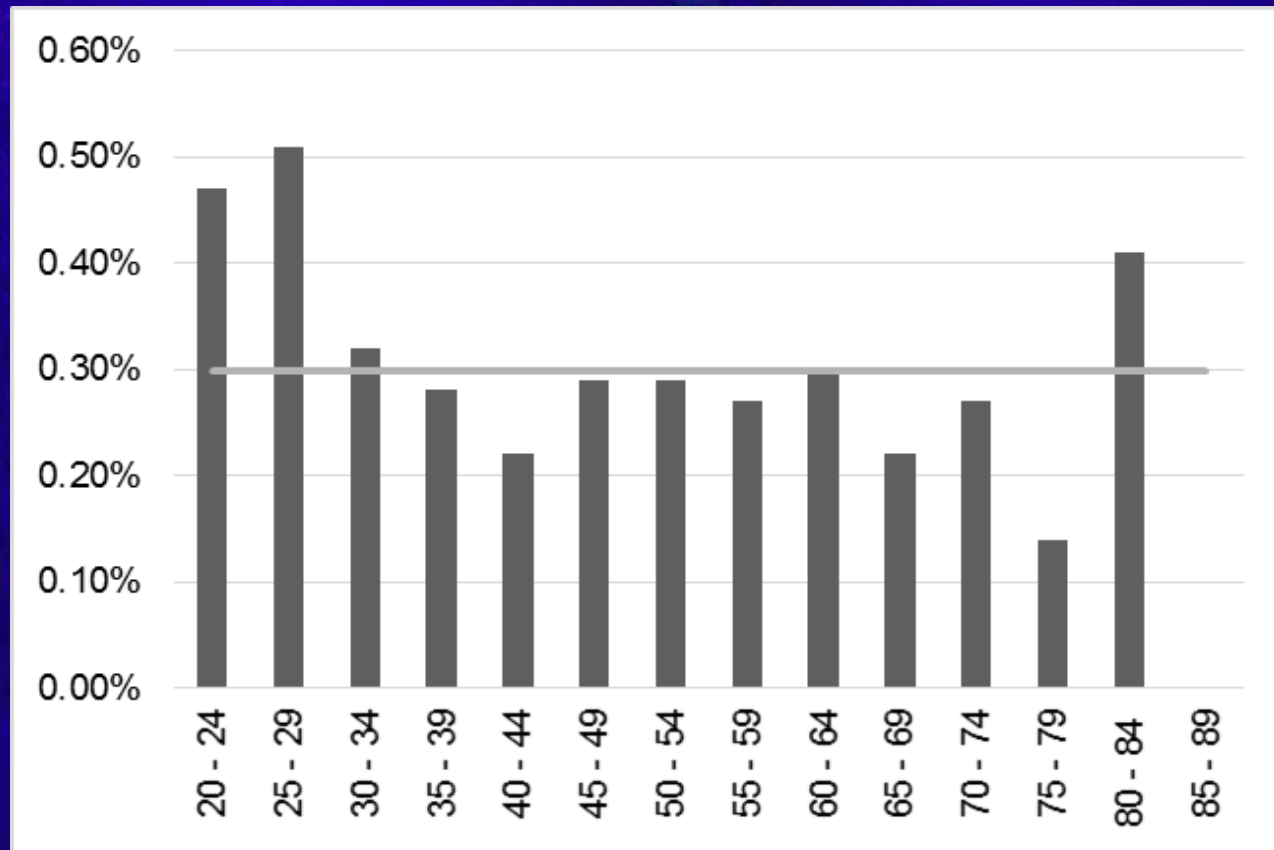
Crash Involvement by Age



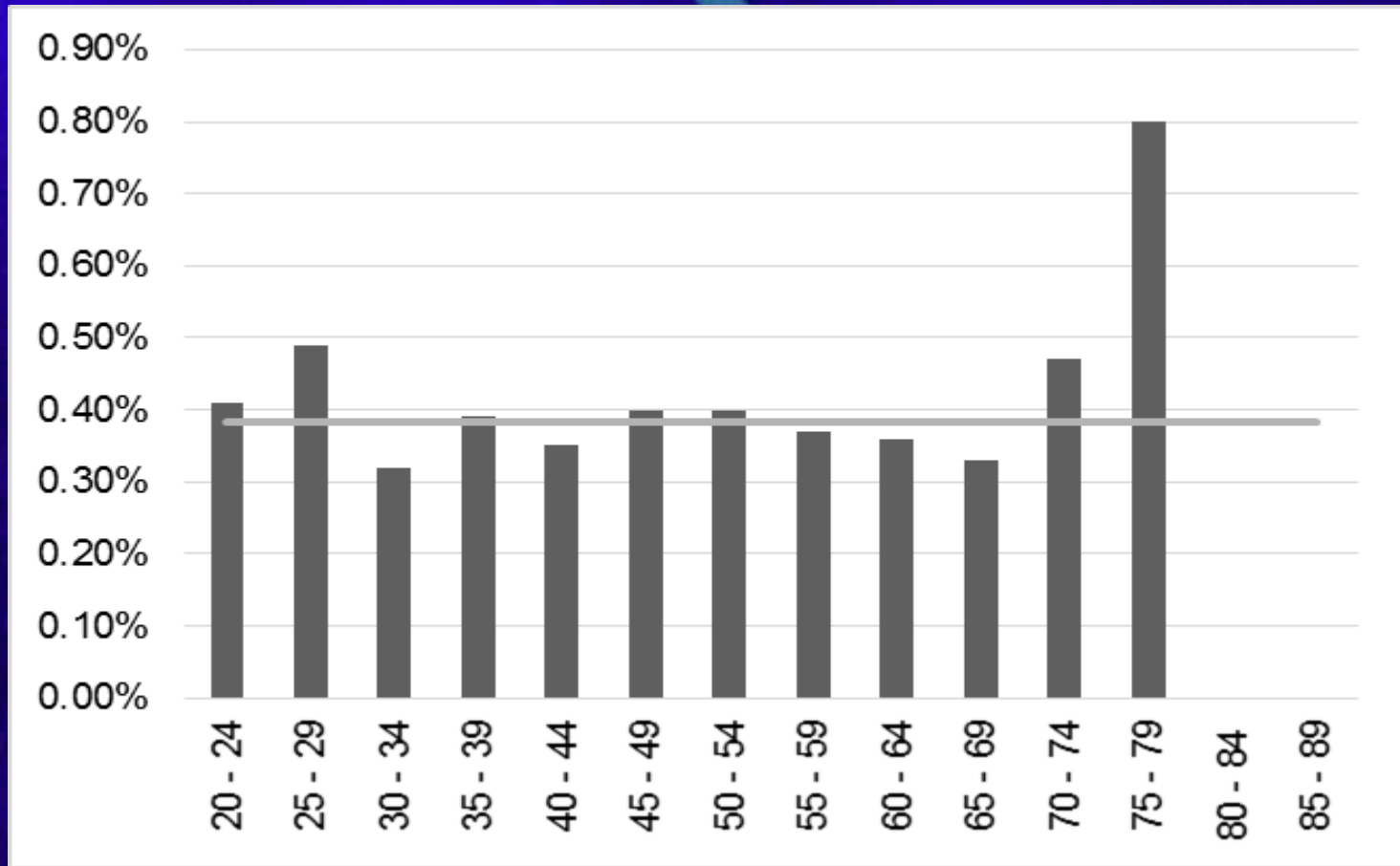
Improper Lane/Location Convictions by Age



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

State Enforcement Analysis

Rank	State	Traffic Enforcement Inspections	Percent	Crashes	Percent	Difference
1	IN*	31,023	8.31%	4,833	3.45%	-4.86%
2	NM*	13,800	3.70%	725	0.52%	-3.18%
3	WA*	14,058	3.77%	1,624	1.16%	-2.61%
4	CA*	37,318	9.99%	10,755	7.68%	-2.32%
5	MD*	12,967	3.47%	2,083	1.49%	-1.99%
6	IA*	9,795	2.62%	1,794	1.28%	-1.34%
7	NV*	5,105	1.37%	360	0.26%	-1.11%
8	AZ*	9,985	2.67%	2,353	1.68%	-0.99%
9	KY*	11,118	2.98%	2,802	2.00%	-0.98%
10	IL	21,673	5.80%	7,080	5.05%	-0.75%

* One of the "Top Tier" states in 2011

Questions?

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