



# **“Fatal Oil and Gas Transportation Incidents: Information from a new Source”**

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# Research on Oil and Gas Transportation Incidents

- Leading cause of death
- Occupants of pickup trucks (51.5%)
- No seatbelt (38%) or Ejected (12%)
- Increased risk: workers of small establishments and service companies



# We need more information

- This data linkage project is first glimpse into Motor Vehicle Crash data set for occupational fatalities;
- Oil and gas is first industry sector



# Data Sources: Fatality Analysis Reporting System (FARS)

- Census of police-reported traffic crashes involving
  - motor vehicle travelling on traffic way open to the public, and,
  - death of a motorist or non-motorist within 30 days of crash
- Hierarchical data system: incident-, vehicle-, and person-level data.
- Work-relatedness based on “injury at work” item in death certificate.



# Data Sources :

## Census of Fatal Occupational Injuries (CFOI)

- Provides counts of all fatal work injuries in the U.S.
  - Analysis limited to highway incidents
    - “those occurring on that part of public highway, street, or road normally used for travel ... where at least one vehicle was in regular operation...”
- Collects data on decedents
  - industry/occupation/employment history
  - demographic characteristics
  - injury case characteristics





# Methods: Matching Procedures

- 2011-2014 CFOI and FARS data files matched at person level.
  - Fars data preparation
  - CFOI data
- Three levels of matches
- Comparative analysis between subsets to identify systematic differences



## Cases Matched: All fatal FARS and CFOI Roadway

	<b>Total cases: fatal FARS</b>	<b>Total Cases: CFOI Roadway</b>	<b>Matched cases</b>	<b>Unmatched CFOI Roadway</b>
2011	28,136	1,103	975	128
2012	29,108	1,153	1,047	106
2013	28,139	1,099	991	108
2014	27,948	1,157	1,047	111



# New expanded data set

- The matched data allows for unprecedented detail
  - CFOI employment
    - NAICS, SOC, ownership
  - CFOI and FARS decedent demographics
  - FARS accident details
    - Road circumstances, driver record, driver impairments and distraction, vehicle details, restraint use, etc.





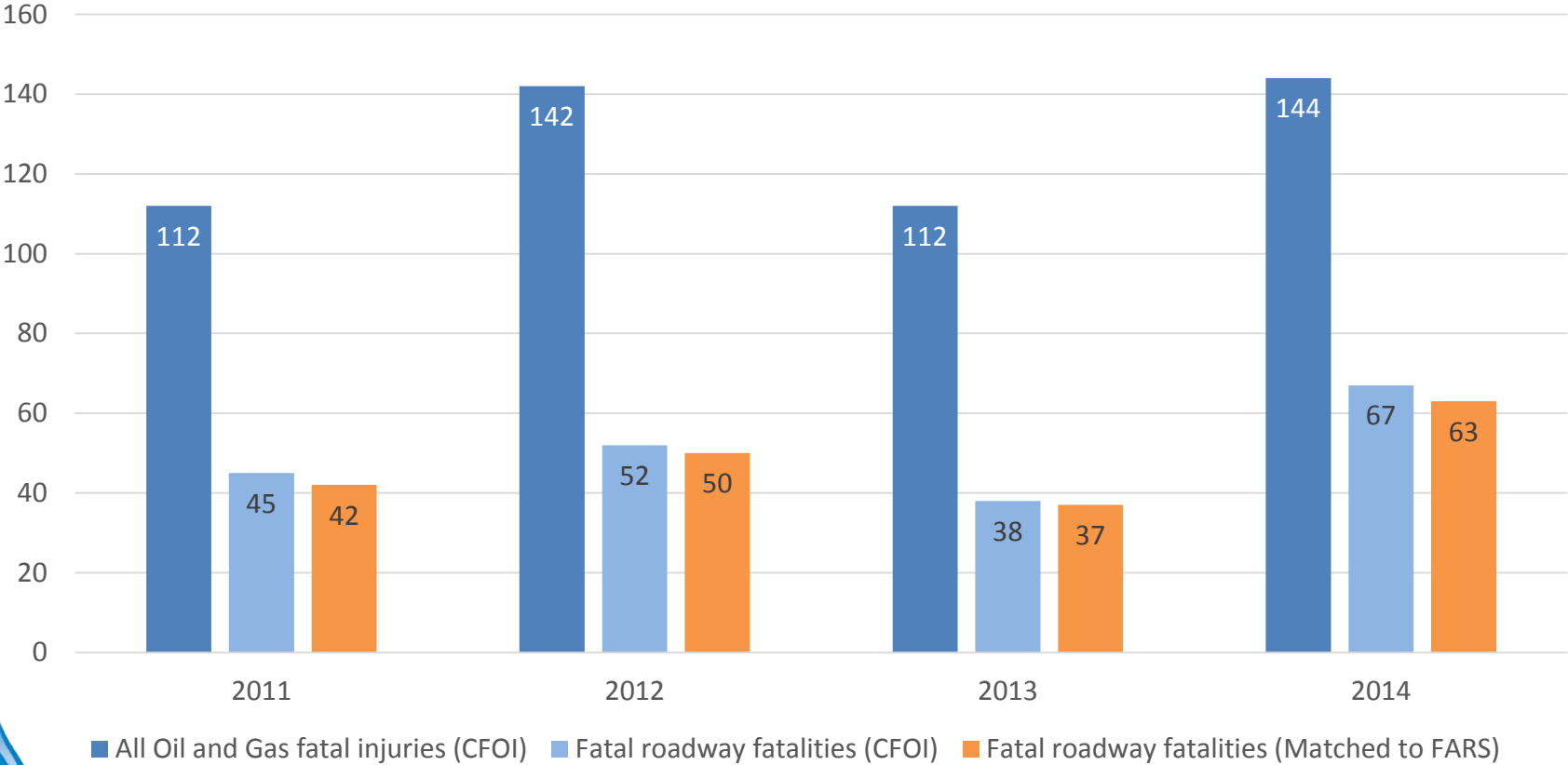
# Results: General



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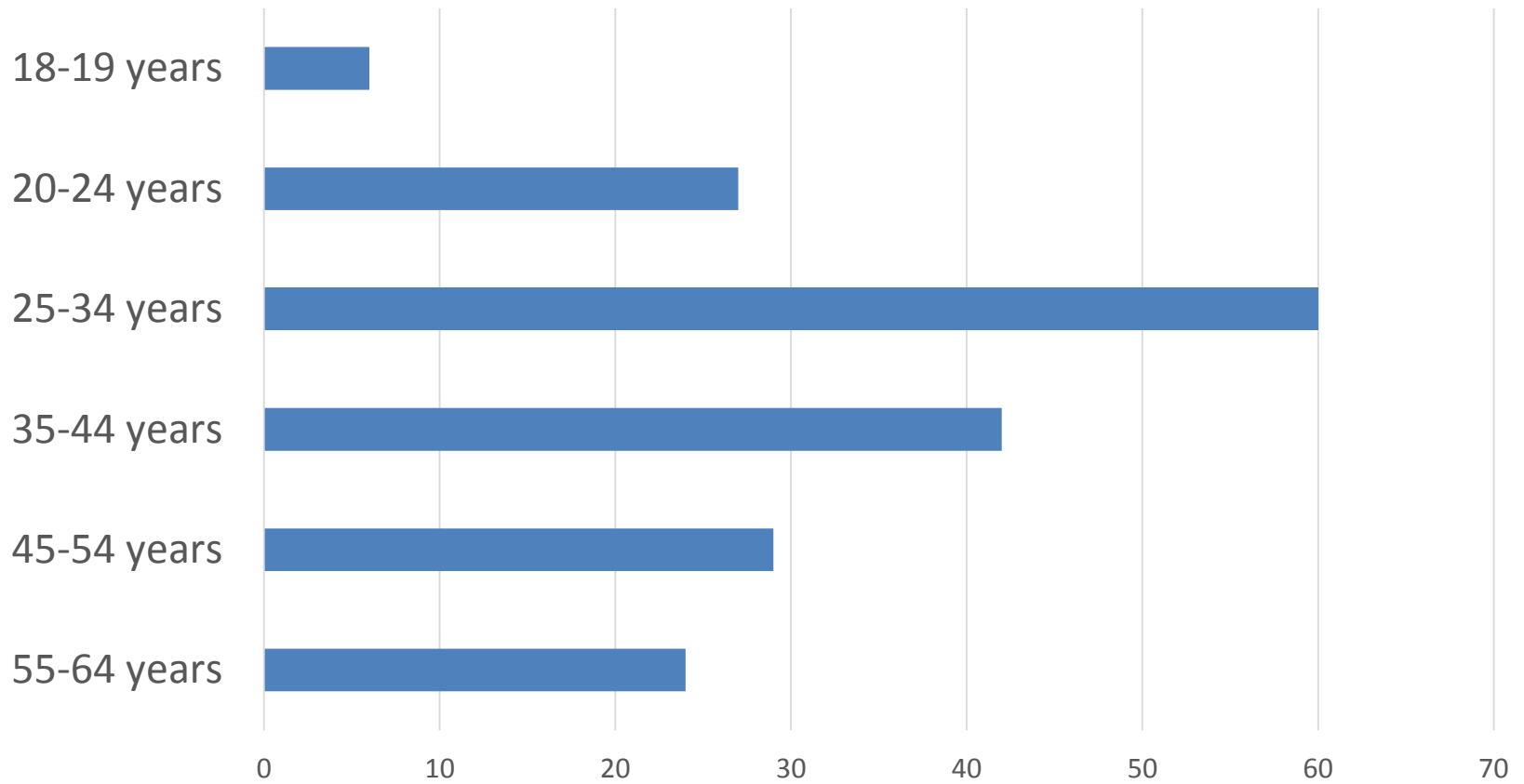
# Oil and Gas sector fatalities: All incidents versus roadway crashes, 2011-2014

Chart Title





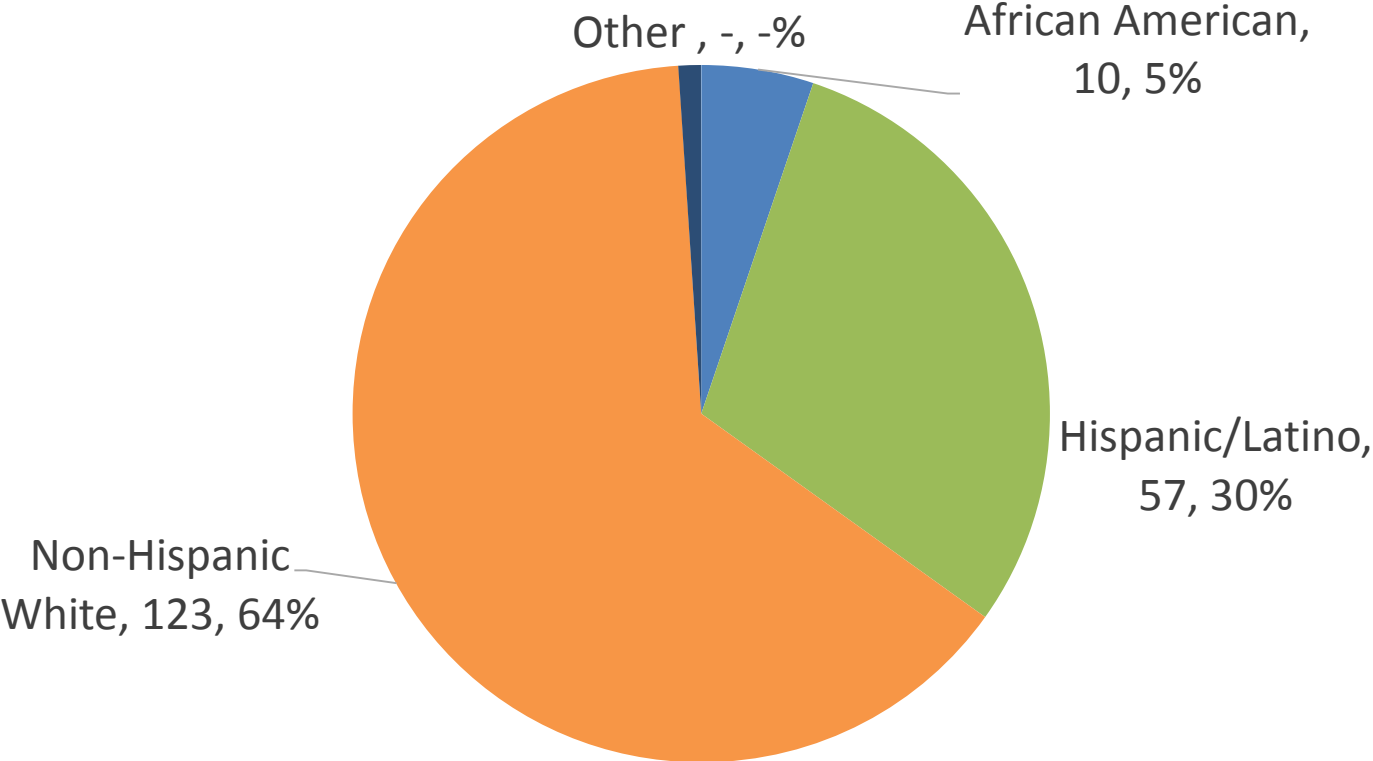
# Number of fatalities by age group, 2011-2014



\*Data were generated with restricted access to the CFI Research file.



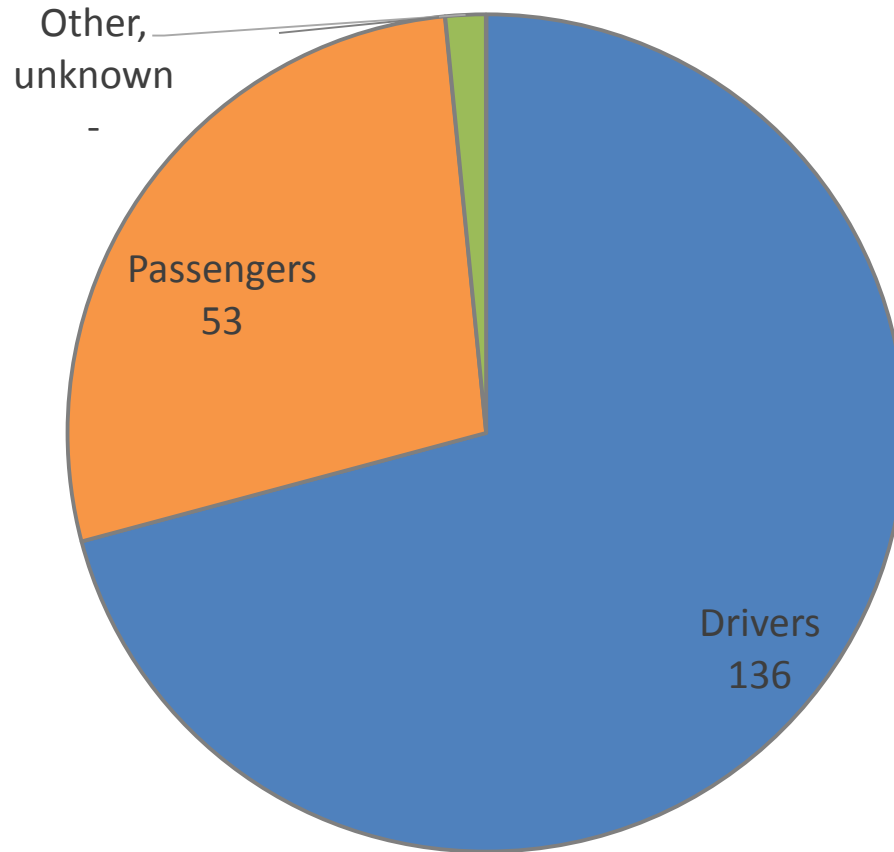
# Number of fatalities by selected race and Hispanic ethnicity (N=192)



\*Data were generated with restricted access to the CFI Research file.



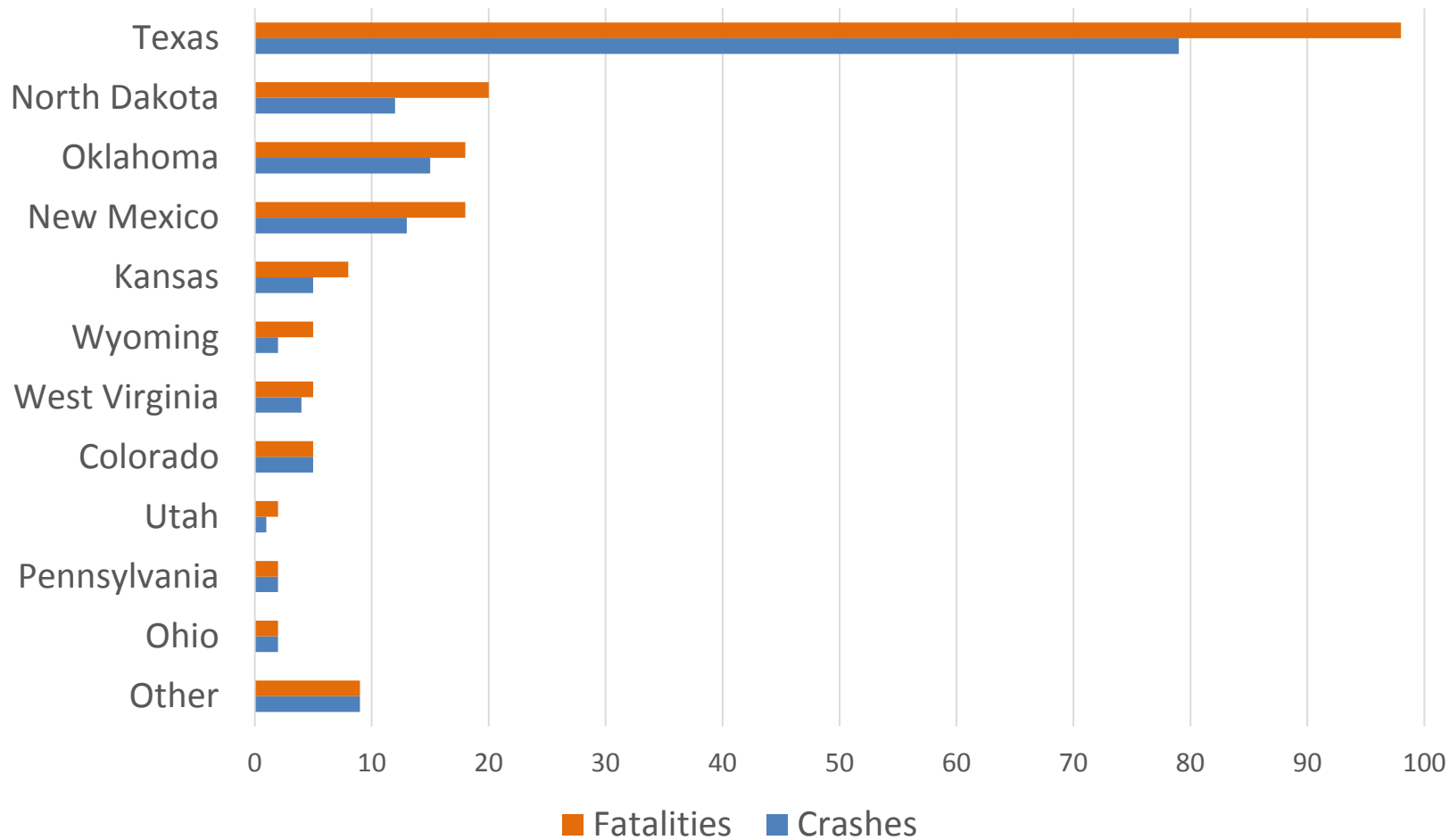
# Position of fatally injured vehicle occupants (N=192)



\*Data were generated with restricted access to the CFI Research file.



# Fatal crashes in the Oil and Gas sectors by state, 2011-2014



\*Data were generated with restricted access to the CFI Research file.



# Results: Vehicle Information



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# Body type of vehicles with a fatally injured occupant(s), 2011-2014

<b>Passenger cars</b>	5
<b>Light trucks and vans--Utility vehicles</b>	4
<b>Light trucks and vans--Vans</b>	5
<b>Light trucks and vans--Pickup trucks</b>	65
<b>Light trucks and vans--Other light trucks</b>	-
<b>Large trucks -- Medium trucks</b>	19
Flatbed	6
Other	6
<b>Large trucks -- Large trucks</b>	53
Enclosed Box	4
Cargo Tank	32
Flatbed	7
Grain/ Chips/Gravel	-
No Cargo Body Type	4
<b>Farm/Construction equipment</b>	3
<b>Unknown</b>	-
<b>Total</b>	<b>156</b>

\*Data were generated with restricted access to the CFI Research file.

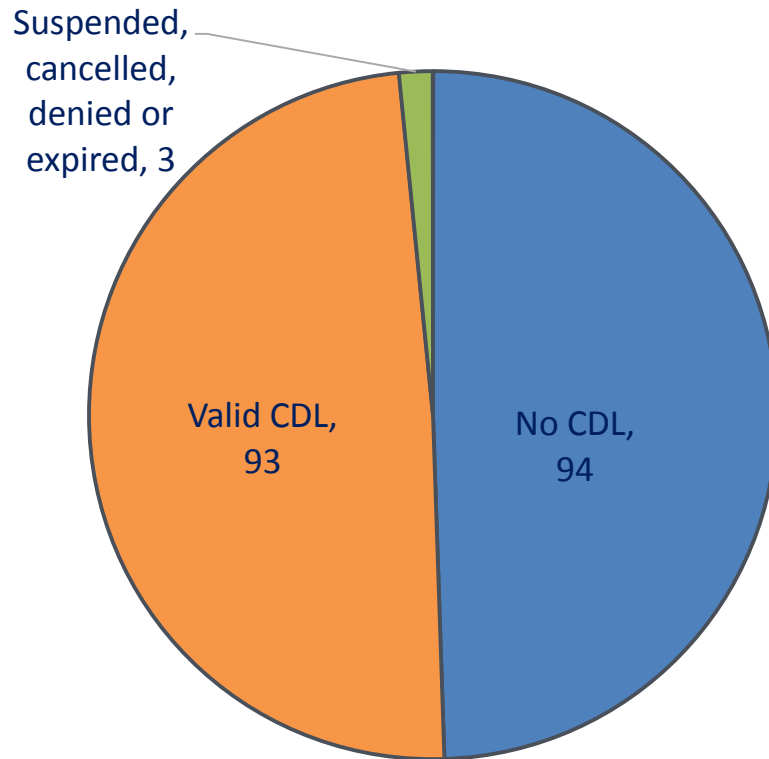




# Results: Driver information



# Driver CDL Status



Around half of all drivers of vehicles in which a fatal injury occurred had a valid CDL.

\*Data were generated with restricted access to the CFI Research file.



# Previous violations of drivers of vehicles with fatally injured occupant(s), 2011-2014

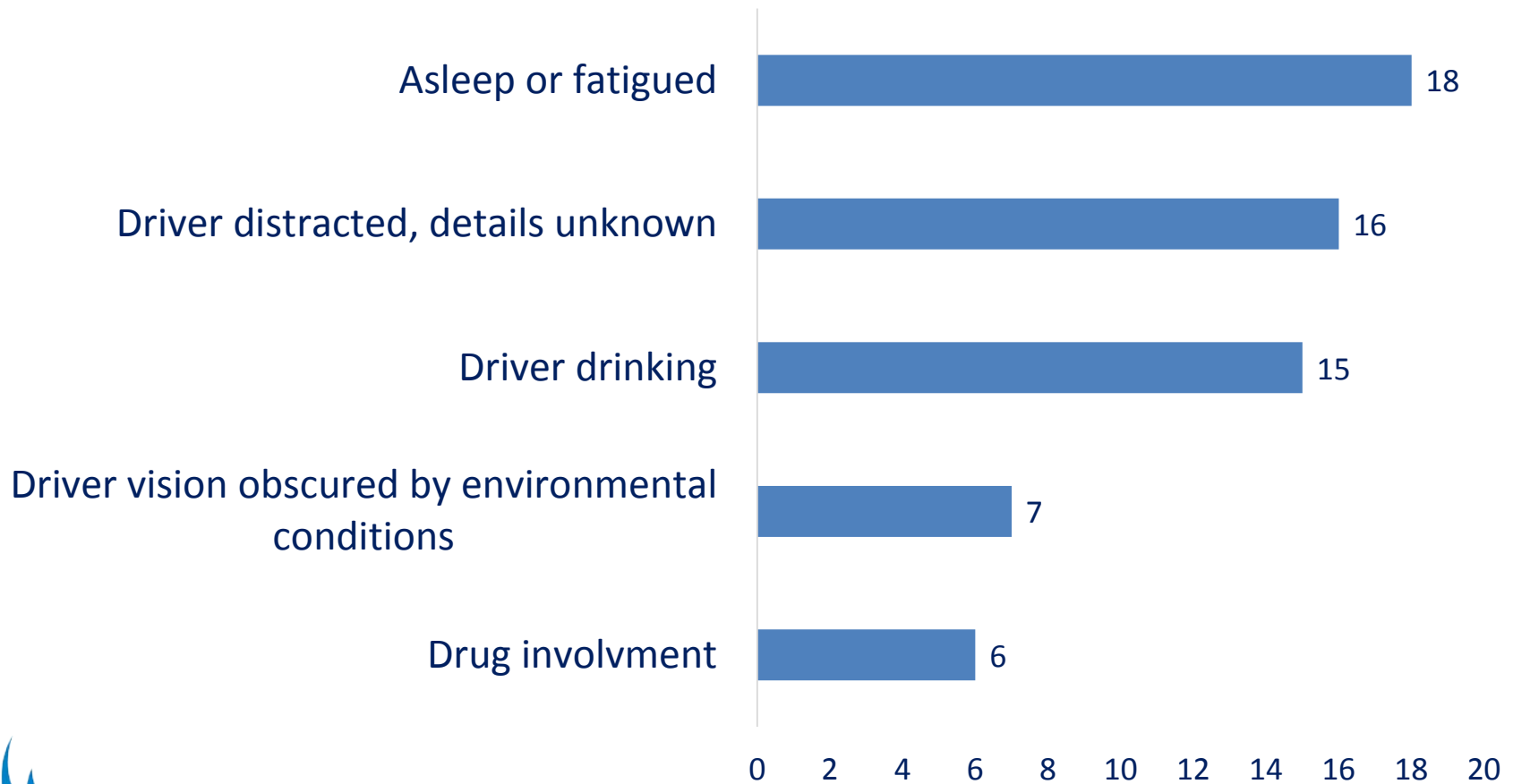
<b>Violation Type</b>	<b>No Violation</b>	<b>One Violation</b>	<b>More than one Violation</b>
Previous Recorded Crashes	153	15	-
Previous Recorded Suspensions and Revocations	158	9	21
Previous DWI Convictions	185	-	-
Previous Speeding Convictions	131	35	22
Previous Other Harmful MV Convictions	156	18	14

\*Data were generated with restricted access to the CFI Research file.

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# Condition or impairment of drivers of vehicles with fatally injured occupant(s), 2011-2014



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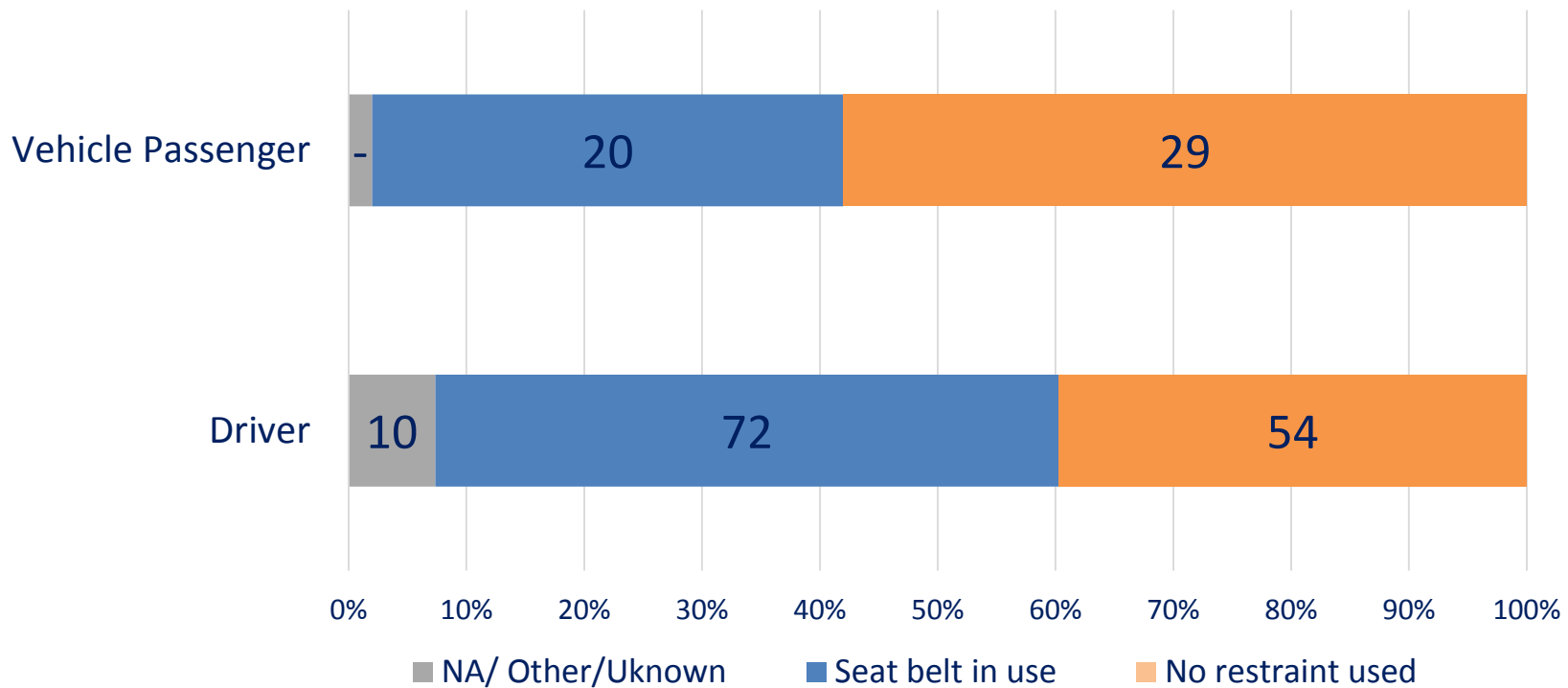
# Results: Seatbelt Status



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# Seating position and restraint use of fatally injured vehicle occupants, 2011-2014

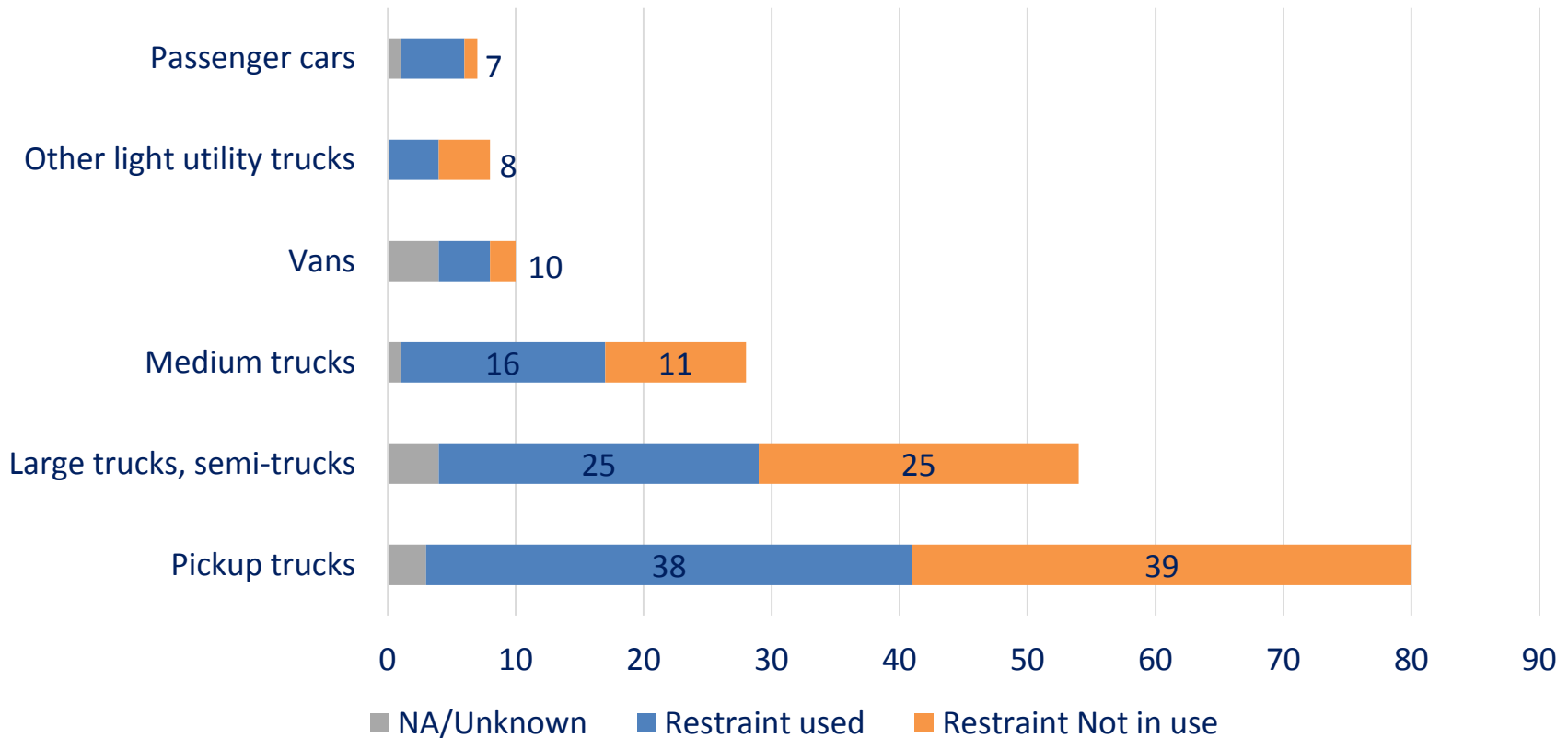


\*Data were generated with restricted access to the CFOI Research file.  
"Other/Unknown" vehicle occupant position category not shown here.

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# Restraint use by vehicle type in vehicles with fatally injured occupant(s), 2011-2014



\*Data were generated with restricted access to the CFOI Research file.



# Results: Environmental and Road Conditions

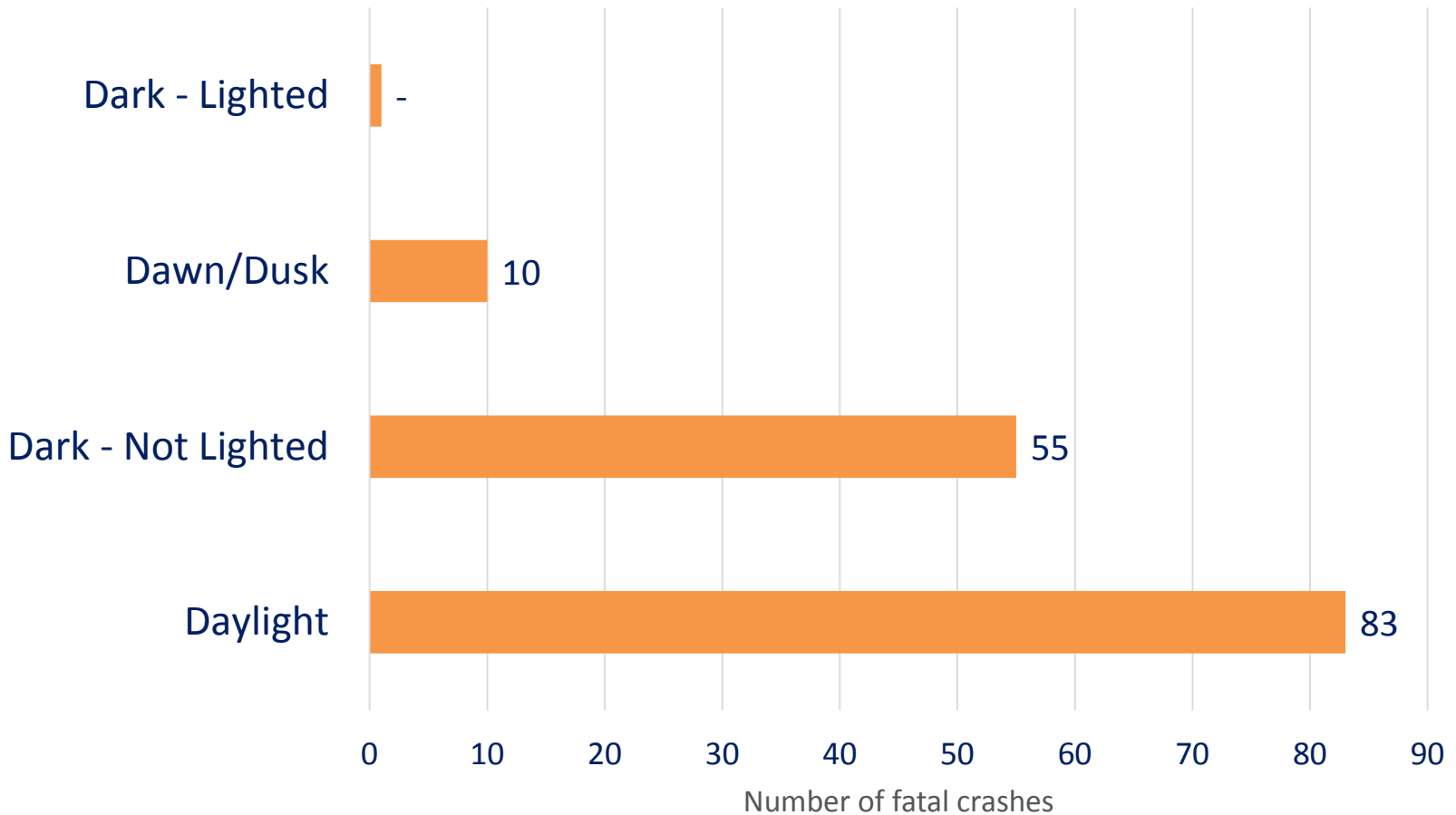


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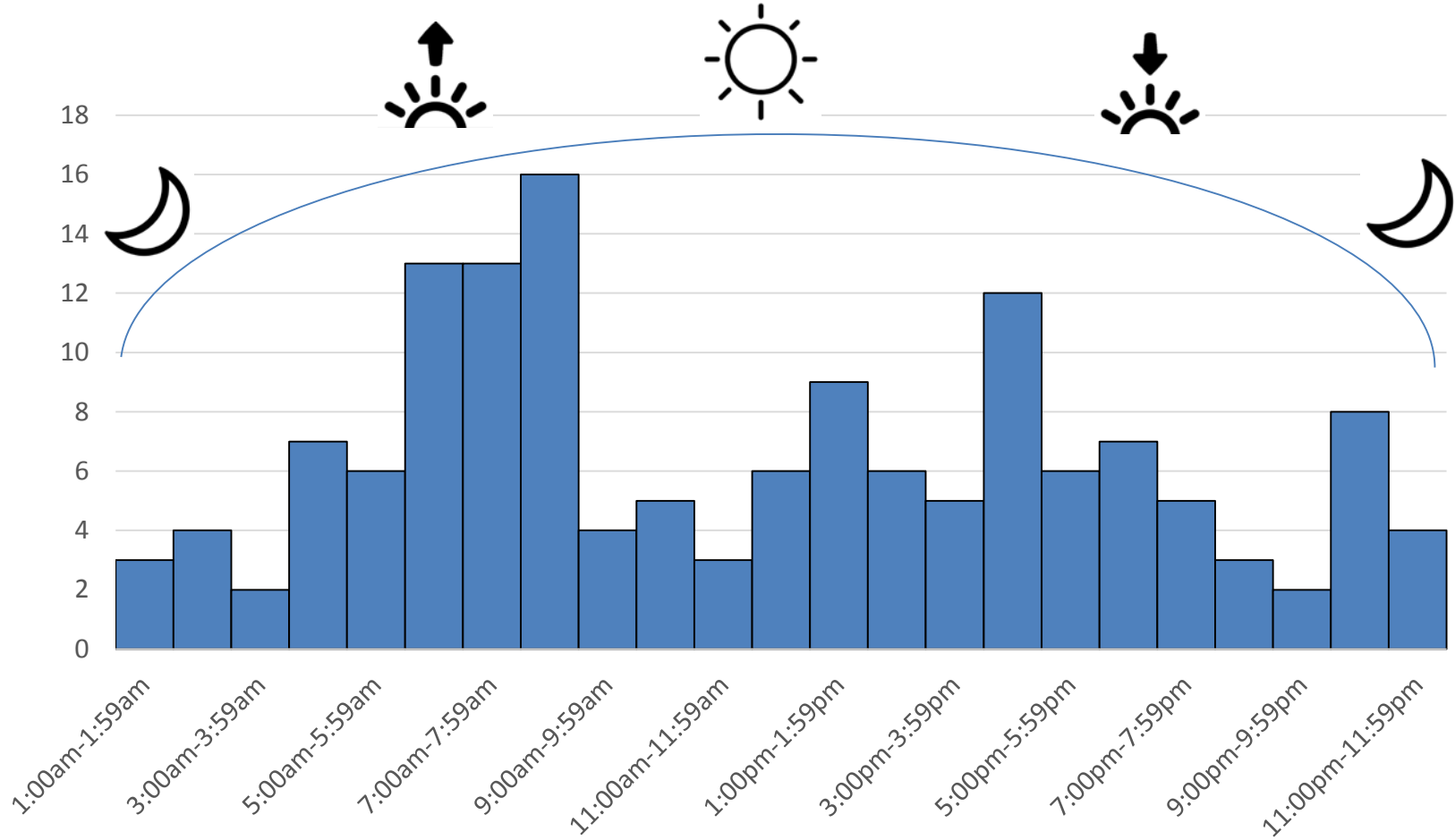
# Light conditions of fatal crash, 2011-2014



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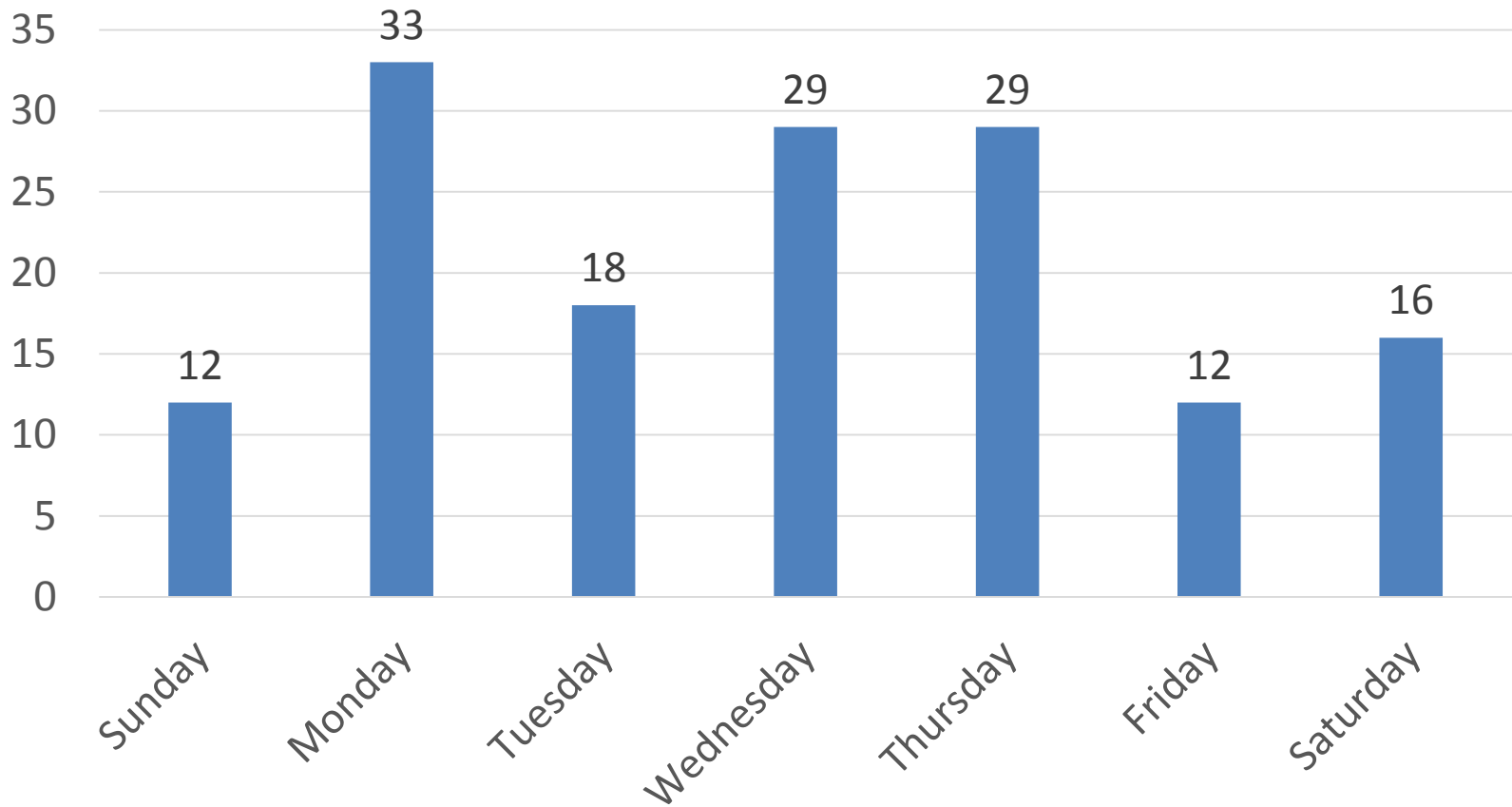
# Fatal crash frequency by time of day, 2011-2014



\*Data were generated with restricted access to the CFI Research file.



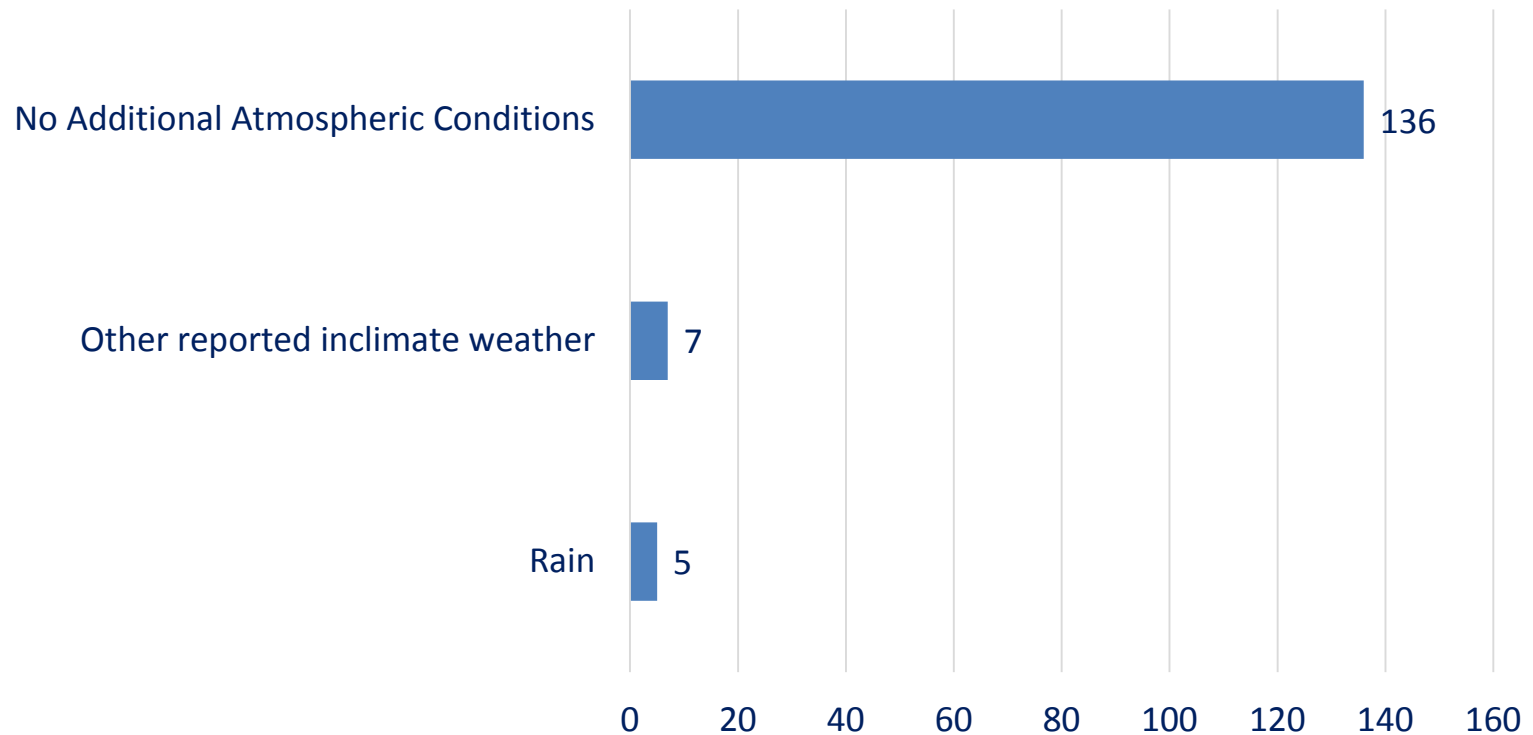
# Fatal crashes by day of the week, 2011-2014



\*Data were generated with restricted access to the CFI Research file.



# Weather conditions of fatal crash



\*Data were generated with restricted access to the CFI Research file.



# Route type and rural/urban designation of location of fatal roadway crashes, 2011-2014

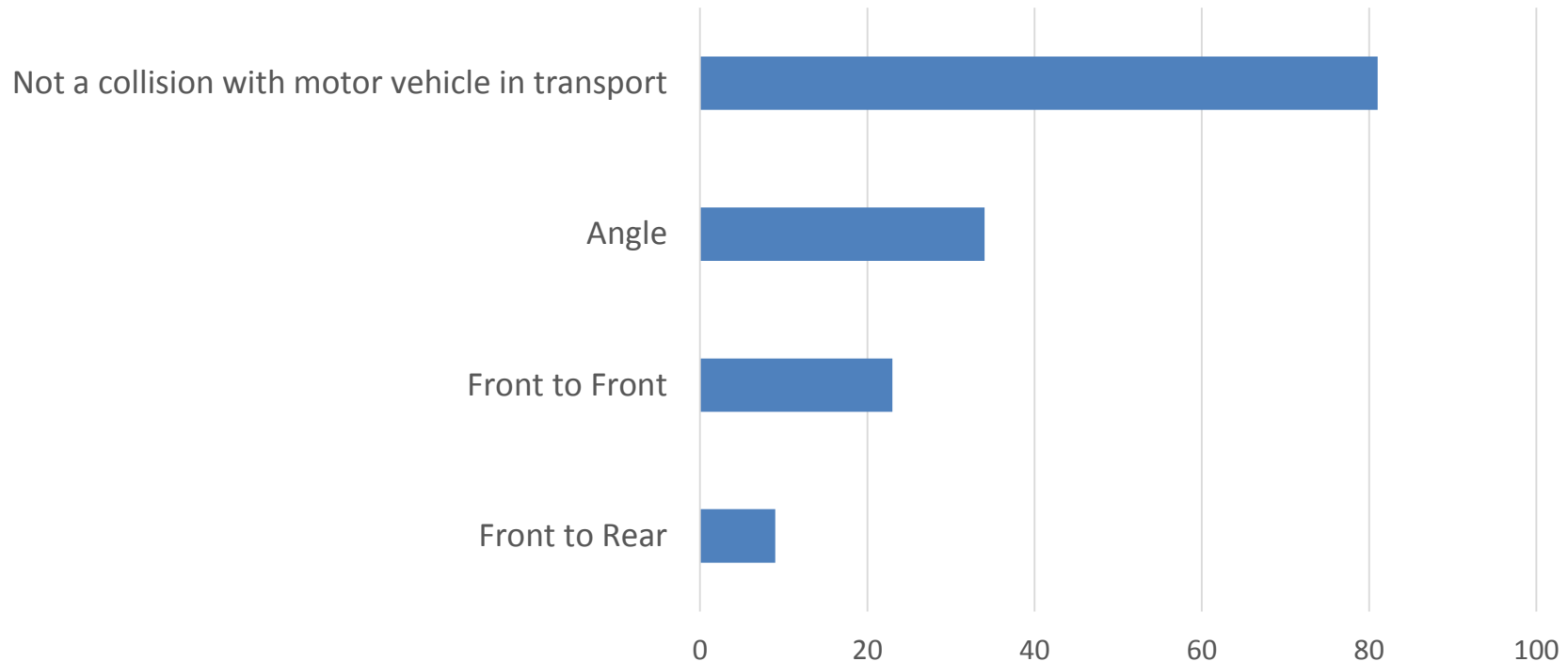
Route type	Rural	Urban	Total
Interstate	9	5	14
U.S. Highway	31	-	33
State Highway	52	-	53
County Road	13	-	13
Local Street	5	-	7
Other/ Unknown	24	5	29
Total	134	15	149

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# Manner of collision in fatal crashes in the Oil and Gas sector, 2011-2014



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# Relation to the road of fatal roadway crashes in the oil and gas sectors, 2011-2014

Relation to the Road	Number of fatal crashes
On Roadway	75
On Roadside/ shoulder	59
Outside Trafficway	6
On Median	6
Separator	-

\*Data were generated with restricted access to the CFI Research file.

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# Limitations

- Definitional differences in CFOI and FARS make complete matches impossible
  - 10% of CFOI cases were not matched
- If it is not in CFOI, we cannot find it in FARS
  - CFOI excludes normal commutes
  - We lose some Oil and Gas contractors due to the way that contractors are defined in the CFOI program





# Driver Record Checks Essential

- For both CDL and non-CDL are important: 30 drivers (out of 158) involved drivers with more than one suspension/revocation





# We still need to talk about Seatbelts!

- A more complete picture finds:
- High **passenger** proportion of non-seatbelt use
- Half of even **large truck** occupants were not wearing seatbelt
- More intervention is needed (i.e. observations, IVMS)



# Journey Management Essential

- Crash time:
  - morning is greatest (6-9am); the most common time for drowsy-related fatal crashes.
  - 55 fatal crashes occurred on dark unlit roads
- Evaluate operations to limit night driving
- Conduct Road Hazard Assessments
- Refer to IOGP Land Transport Recommended Practice: RP 365





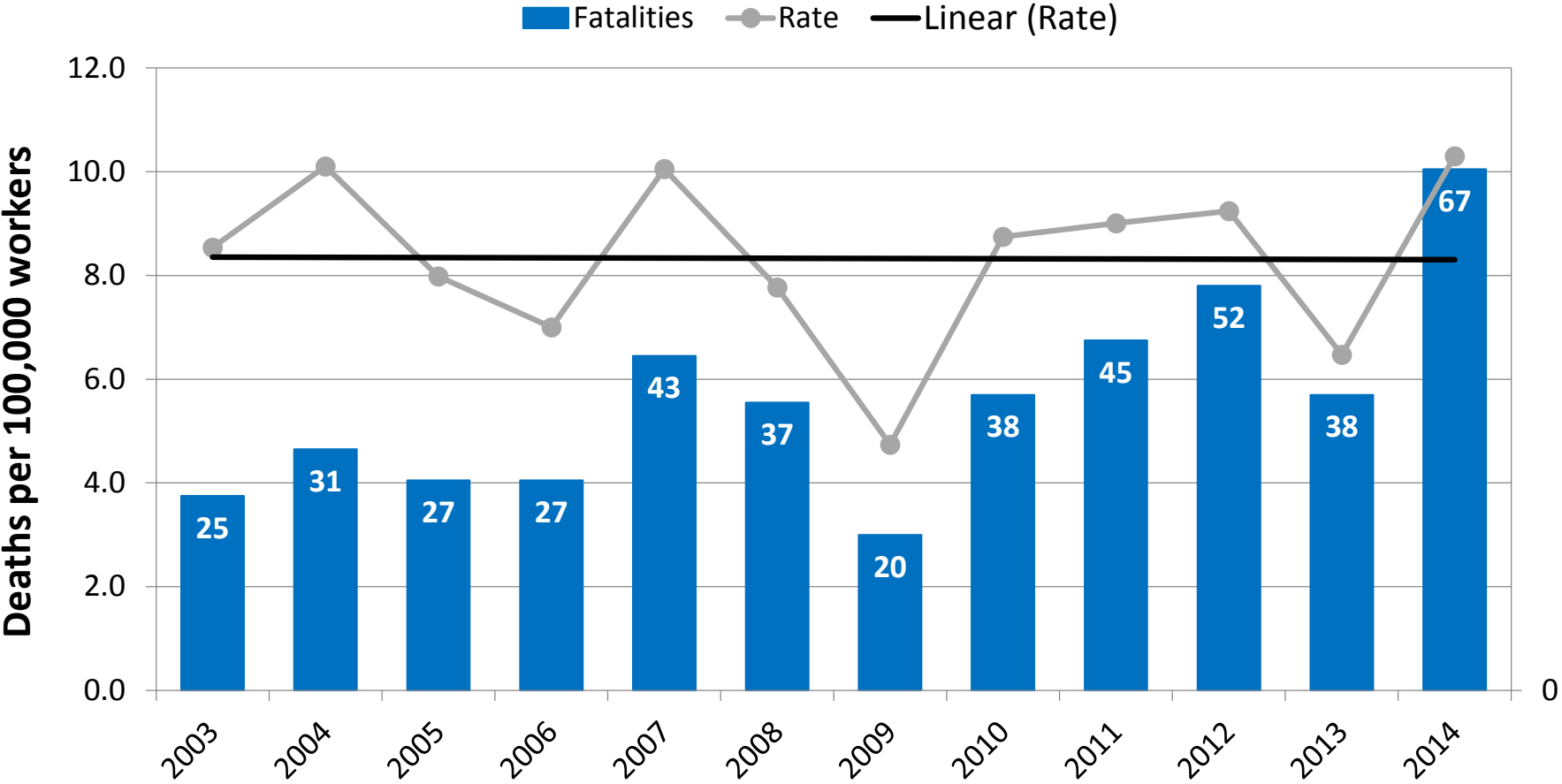
# Addressing Fatigue and Distraction

- Factor in **at least** 1 out of 5 crashes
- Large proportion of crashes were non-collision incidents (MAY be related)
- Large number on roadside/shoulder
- Educate about importance of sleep
- Arrange for safe drivers after long shifts
- Implement no-mobile device policies



# MV fatality rate is flatlined!

## We need to act



Data Source: NIOSH Oil and Gas Program

Note: Fatality counts from BLS Census of Fatal Occupational Injuries. Worker Estimates from BLS Quarterly Census of Employment and Wages. Rate per 100,000 workers per year. Includes NAICS 211, 213111, 213112..

# Questions?

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