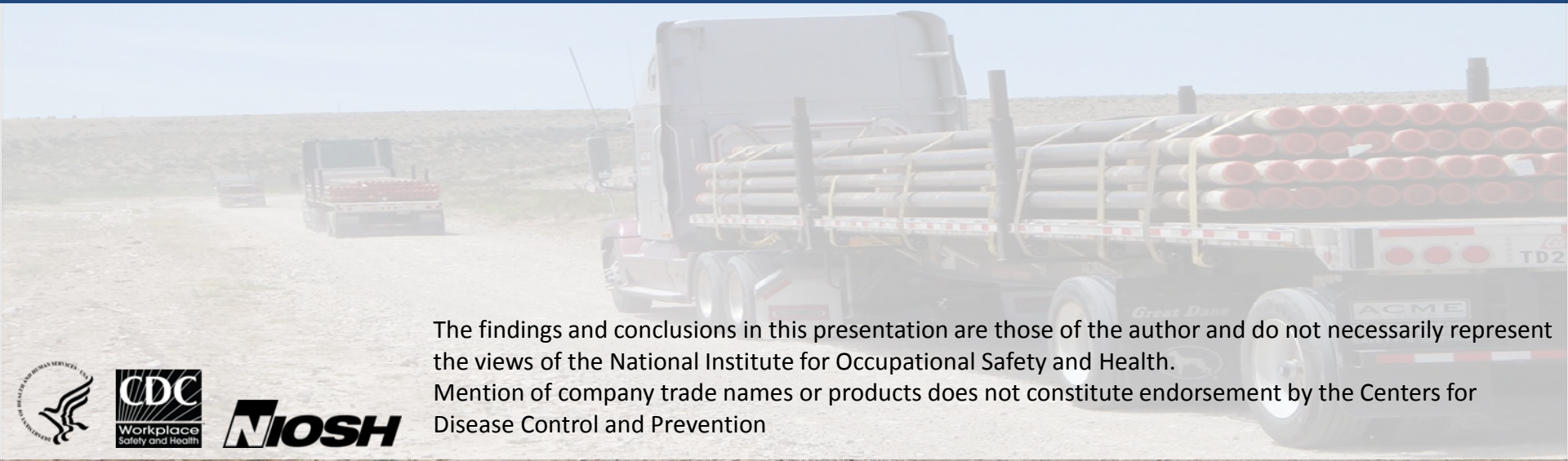
Transportation Trends and Driver Fatigue in the Oil and Gas Extraction Industry

Permian Road Safety Coalition,
September 2017, Pecos, TX

Kyla Retzer, MPH
National Institute for Occupational Safety & Health



The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the National Institute for Occupational Safety and Health.
Mention of company trade names or products does not constitute endorsement by the Centers for Disease Control and Prevention

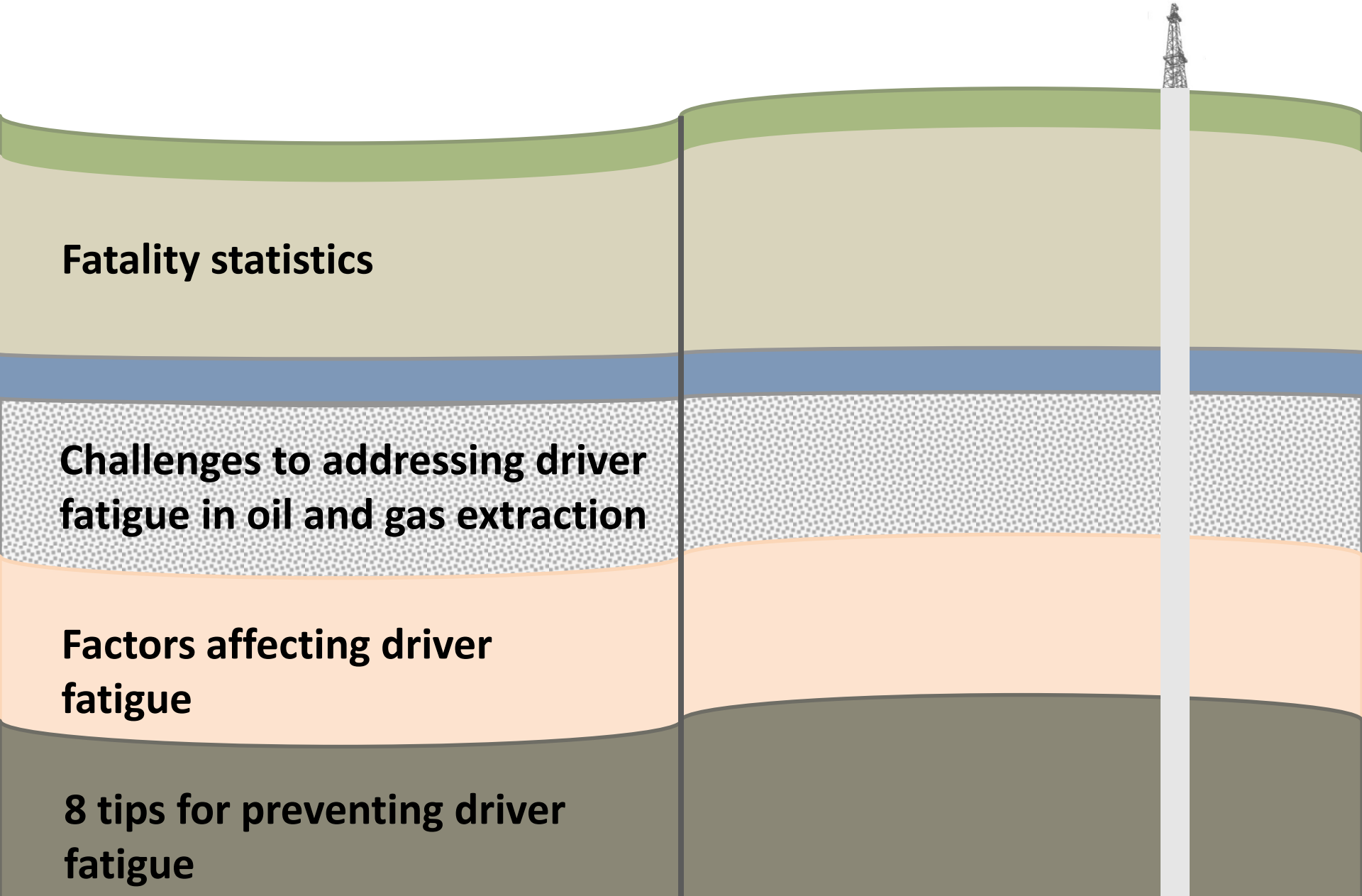
NIOSH Mission

- Part of the Centers for Disease Control & Prevention (CDC)
- Generate new knowledge in the field of occupational safety and health
- Transfer that knowledge into practice
- Not regulatory

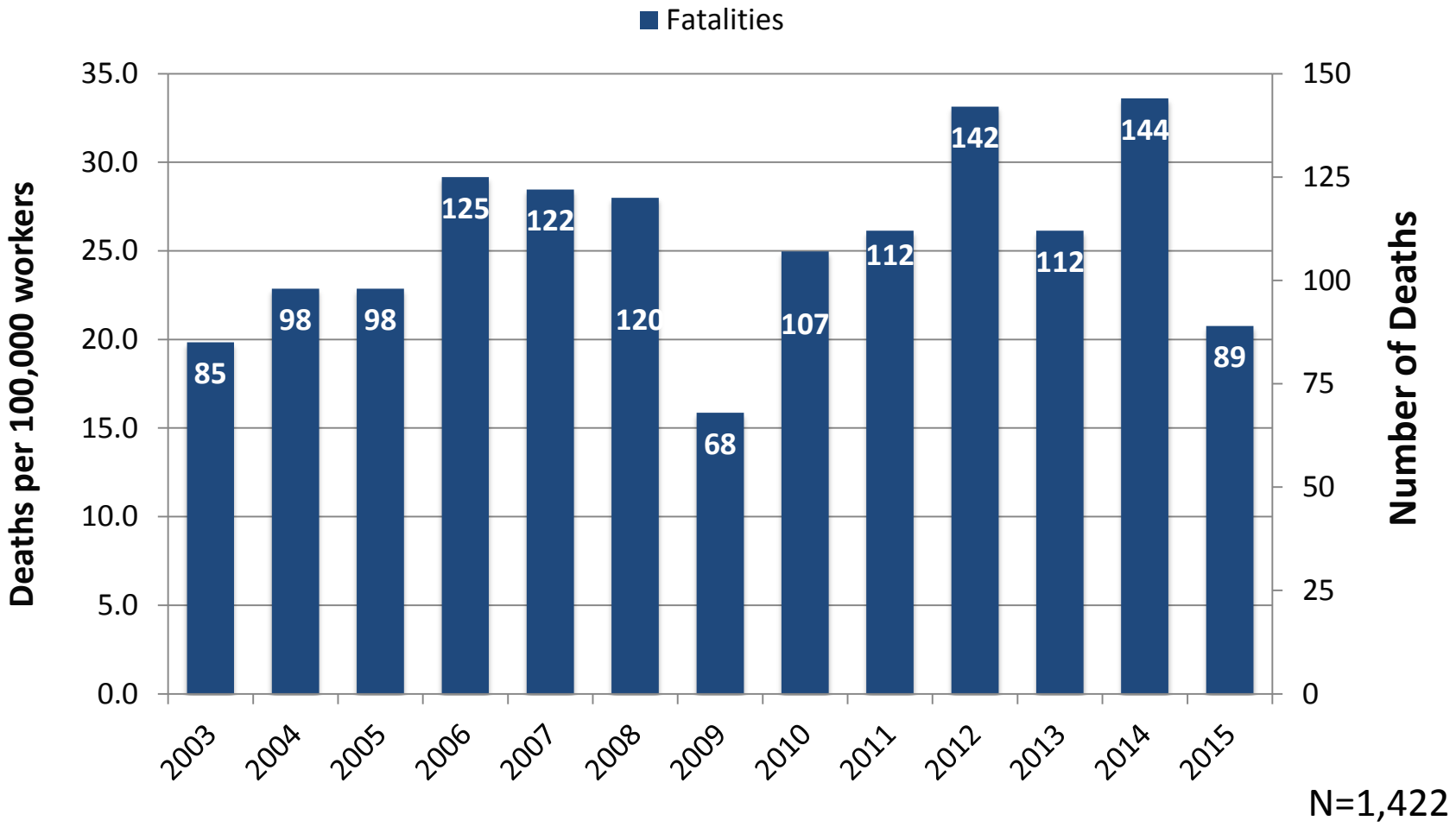
Video from Natl. Road Safety Foundation: Kevin's Dad

- http://www.nrsf.org/programs/drowsy-driving

Session Objectives



Number and Rate of Fatal Work Injuries
U.S. Oil & Gas Extraction Industry, 2003–2015



Note: Fatality counts from BLS Census of Fatal Occupational Injuries. Worker Estimates from BLS Quarterly Census of Employment and Wages (2013). Rate per 100,000 workers per year. Includes NAICS 211, 213111, 213112. *Data for 2014 are preliminary.

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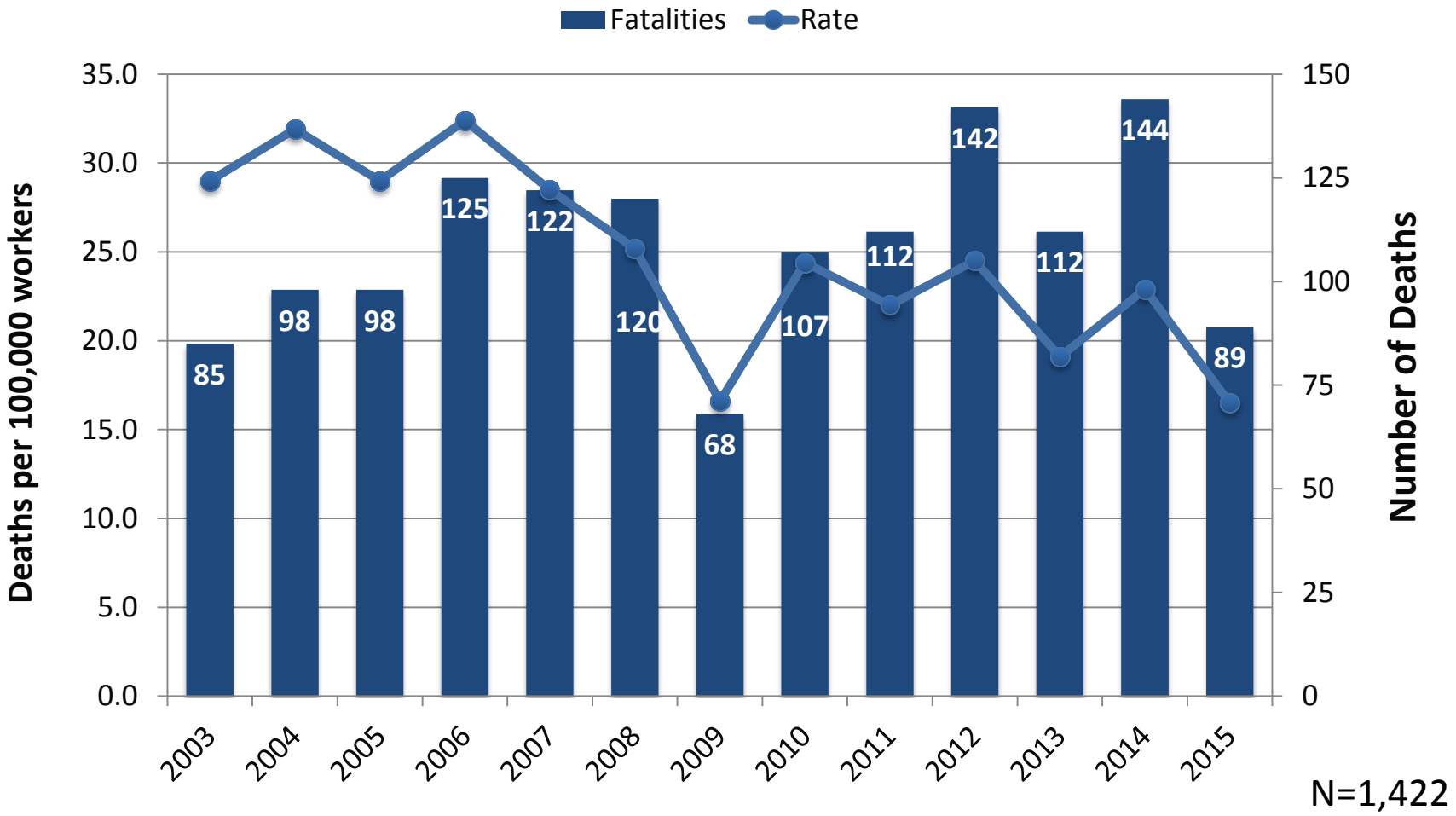

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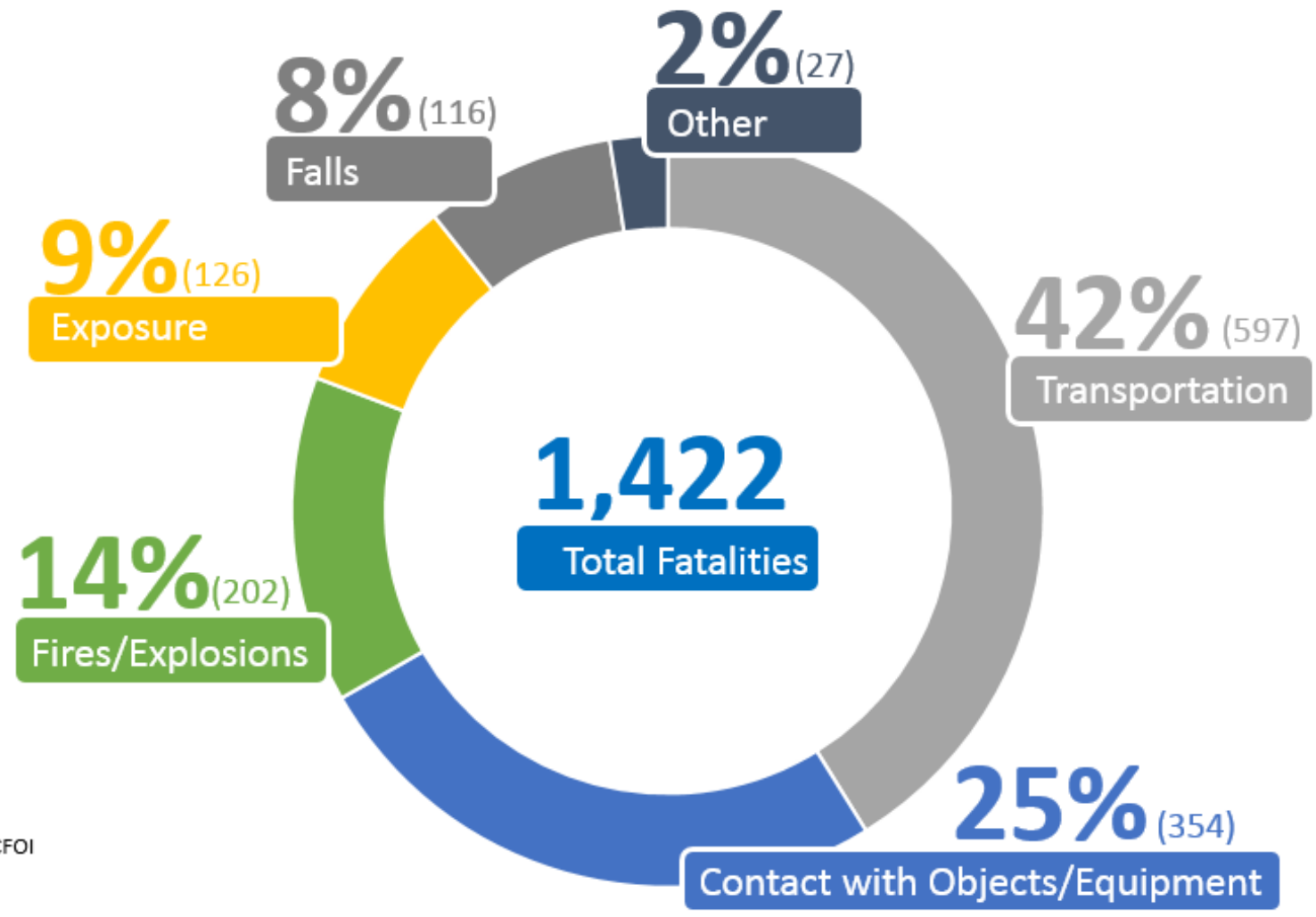
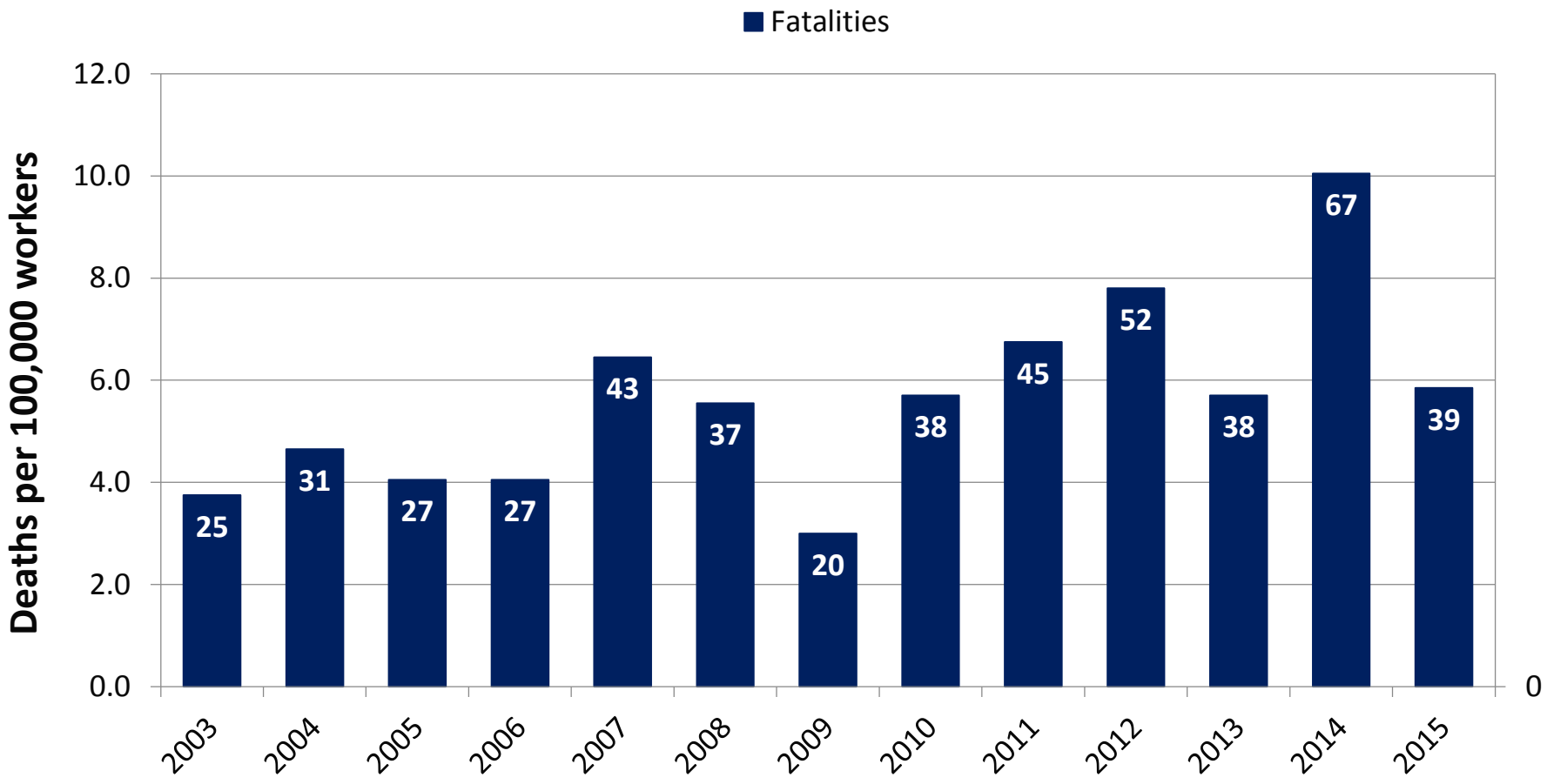
Most Frequent Fatal Events
U.S. Oil & Gas Extraction Industry, 2003–2015



Data Source: BLS CFOI

Number and Rate of Motor Vehicle Fatalities
U.S. Oil & Gas Extraction Industry, 2003–2015



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..

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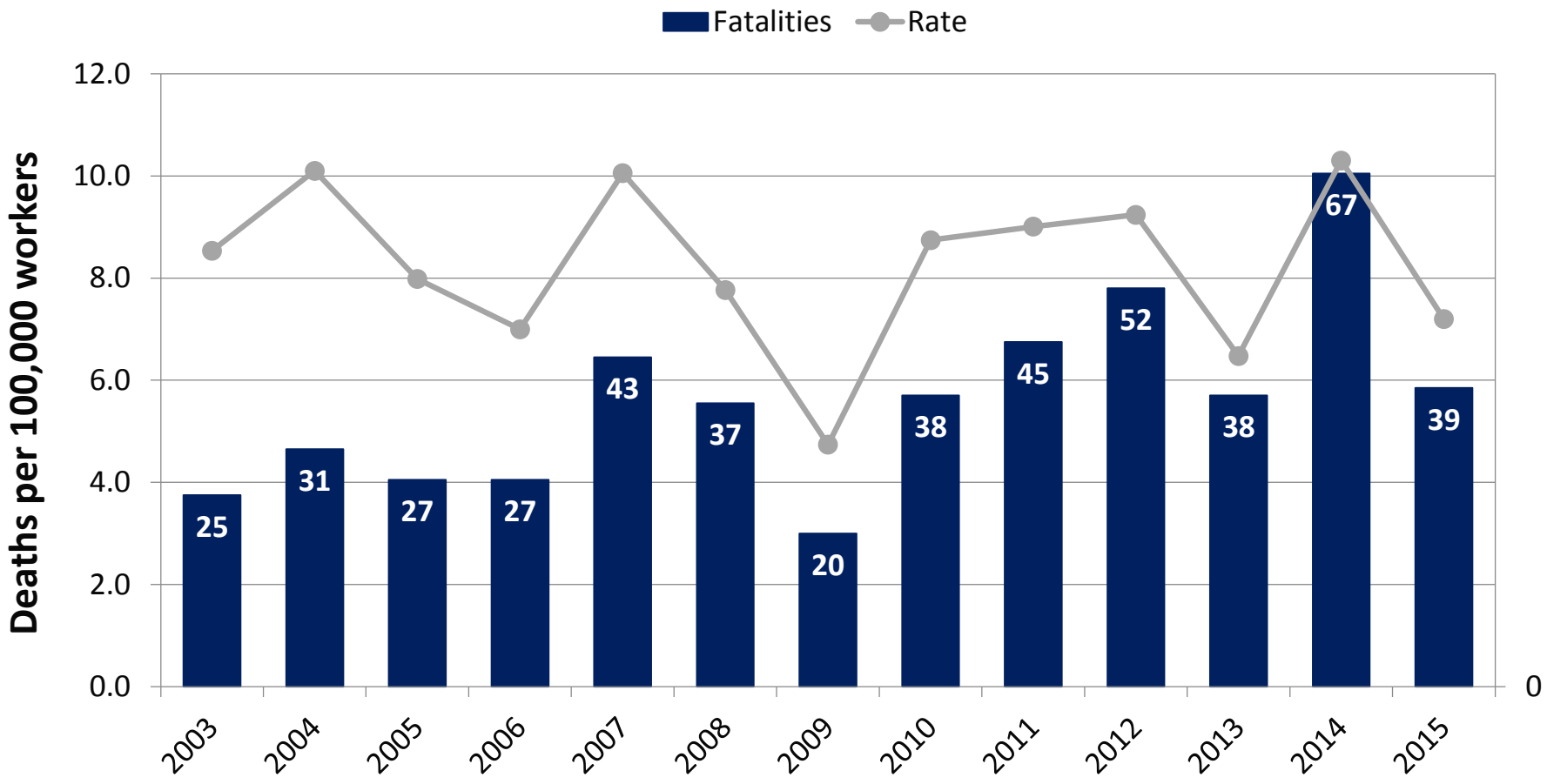
Number and Rate of Motor Vehicle Fatalities U.S. Oil & Gas Extraction Industry, 2003–2015



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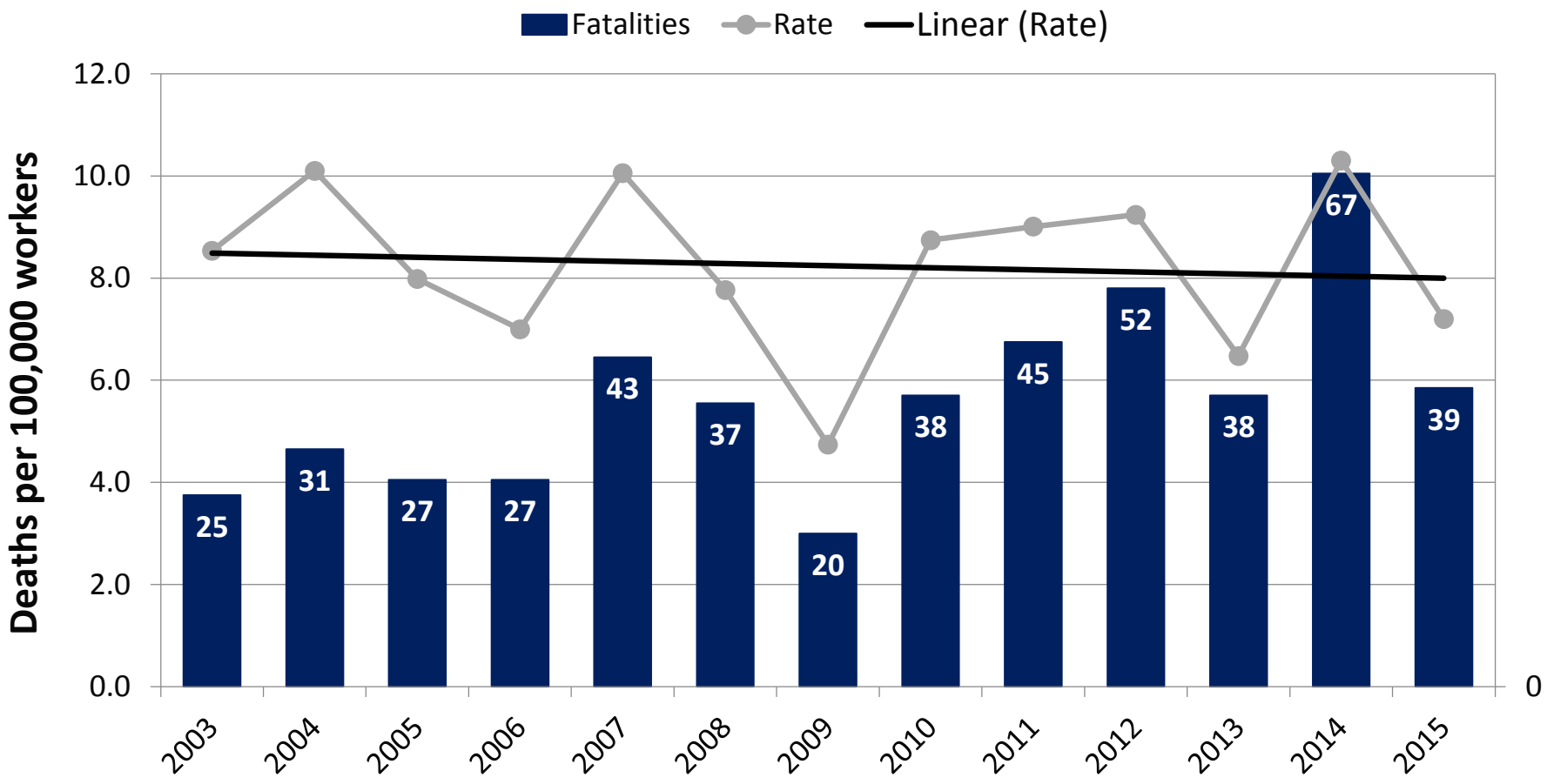

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Recent Texas Oil and Gas Fatalities involving Driver Fatigue

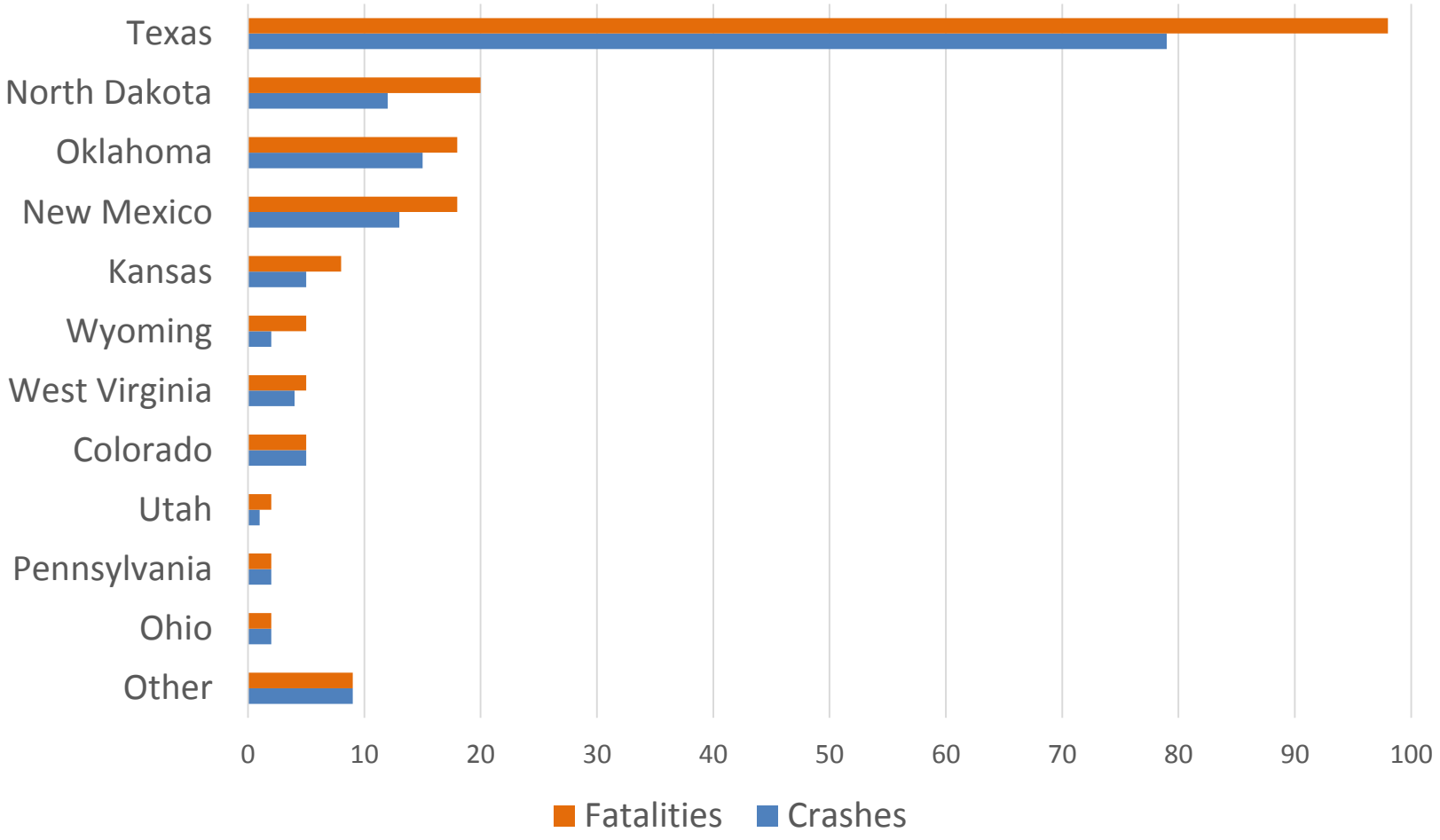
1. (2014, Texas) 3 workers died, 24 hour shift, no designated driver, no on-site resting area, isolated site, only 1 was wearing seatbelt

2. (2013, Texas) 3 workers died after logging 190 hours; worked 14 days straight (13.5 hours per day)

3. (2012, Texas) 2 workers died late at night, isolated site, bunkhouse was full.

TEXAS DPS PHOTO

Number of fatalities and fatal crashes in OGE by state, 2011-2014



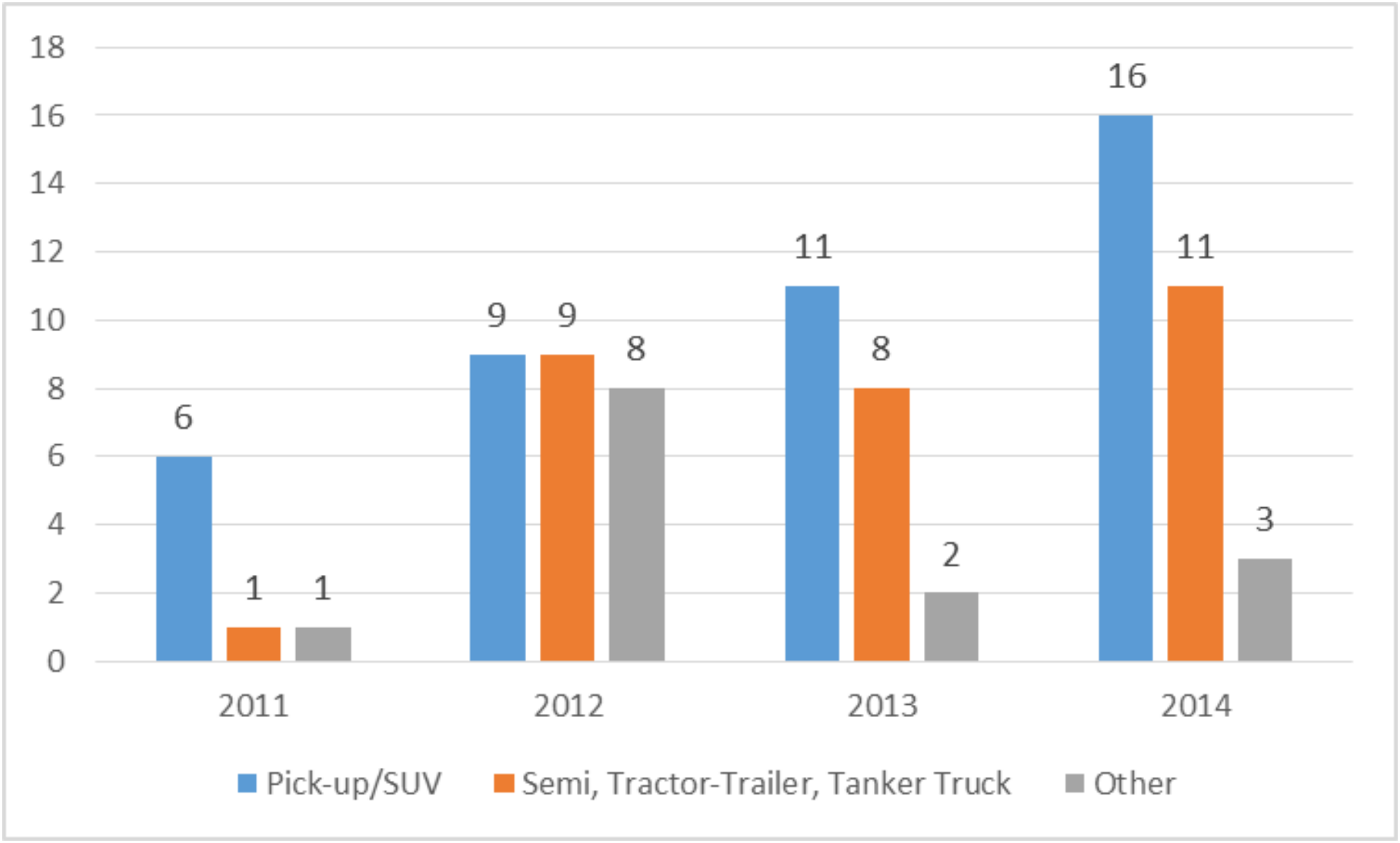
*Data were generated with restricted access to the CFOI Research file.

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

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

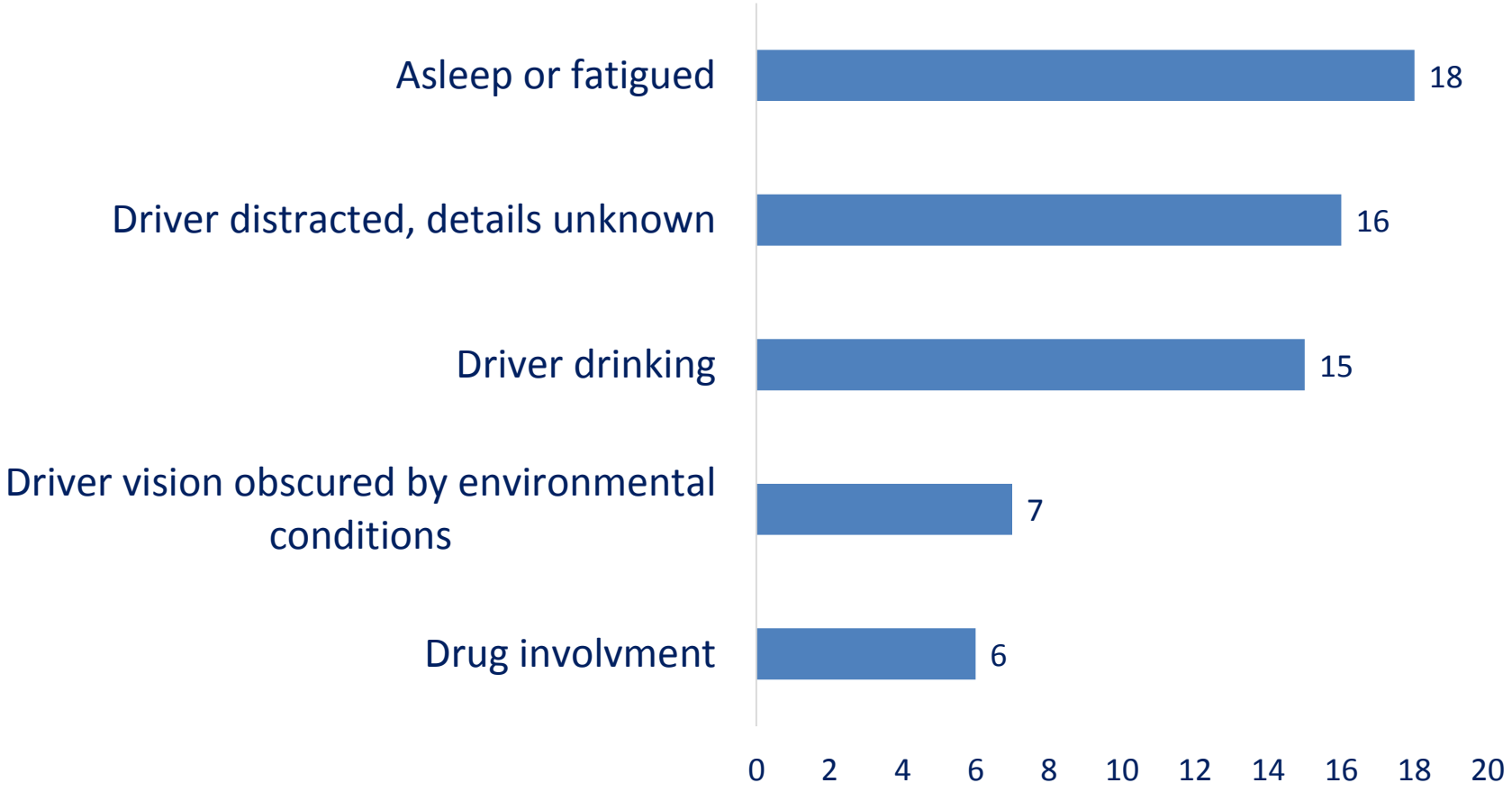
*Data were generated with restricted access to the CFOI Research file.

TEXAS Roadway Fatal Events by Vehicle
U.S. Oil & Gas Extraction Industry, 2011-2014



Source: BLS CFOI

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



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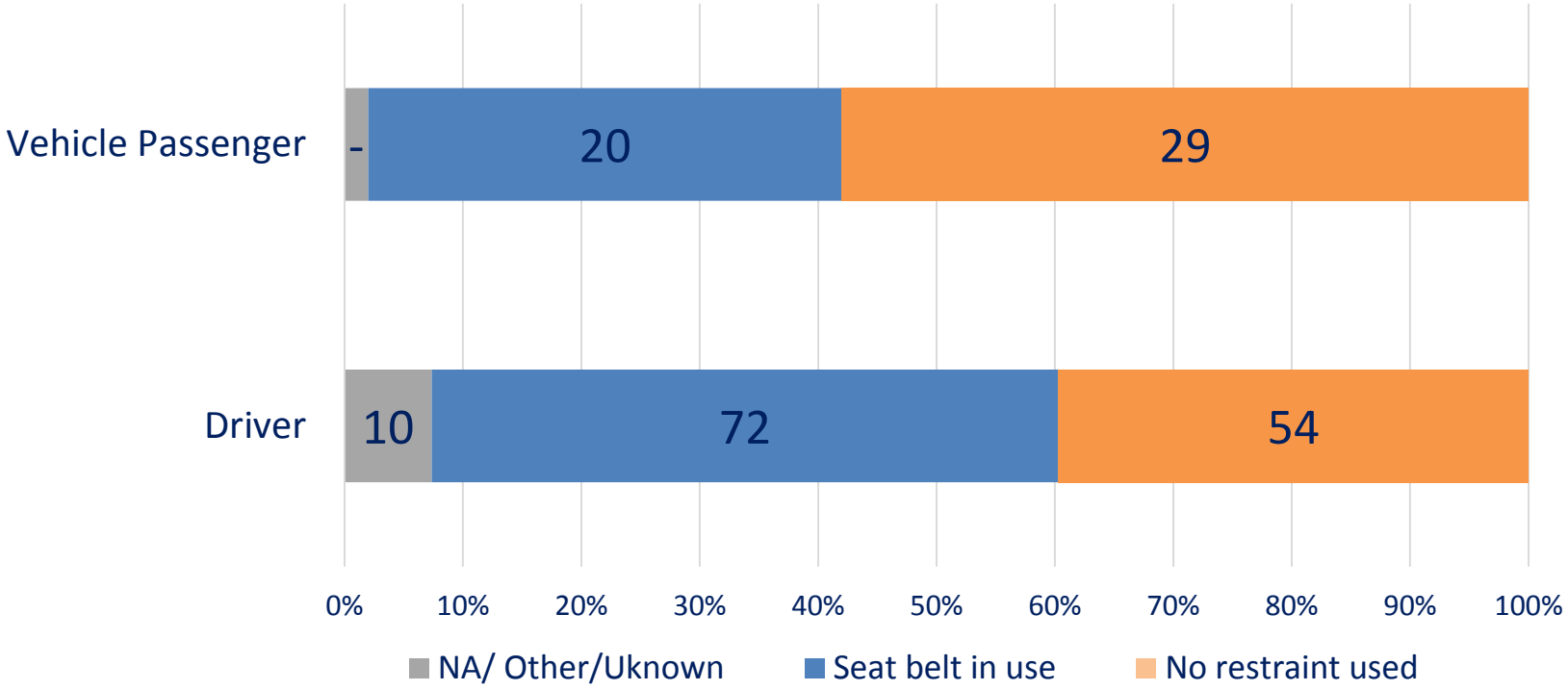
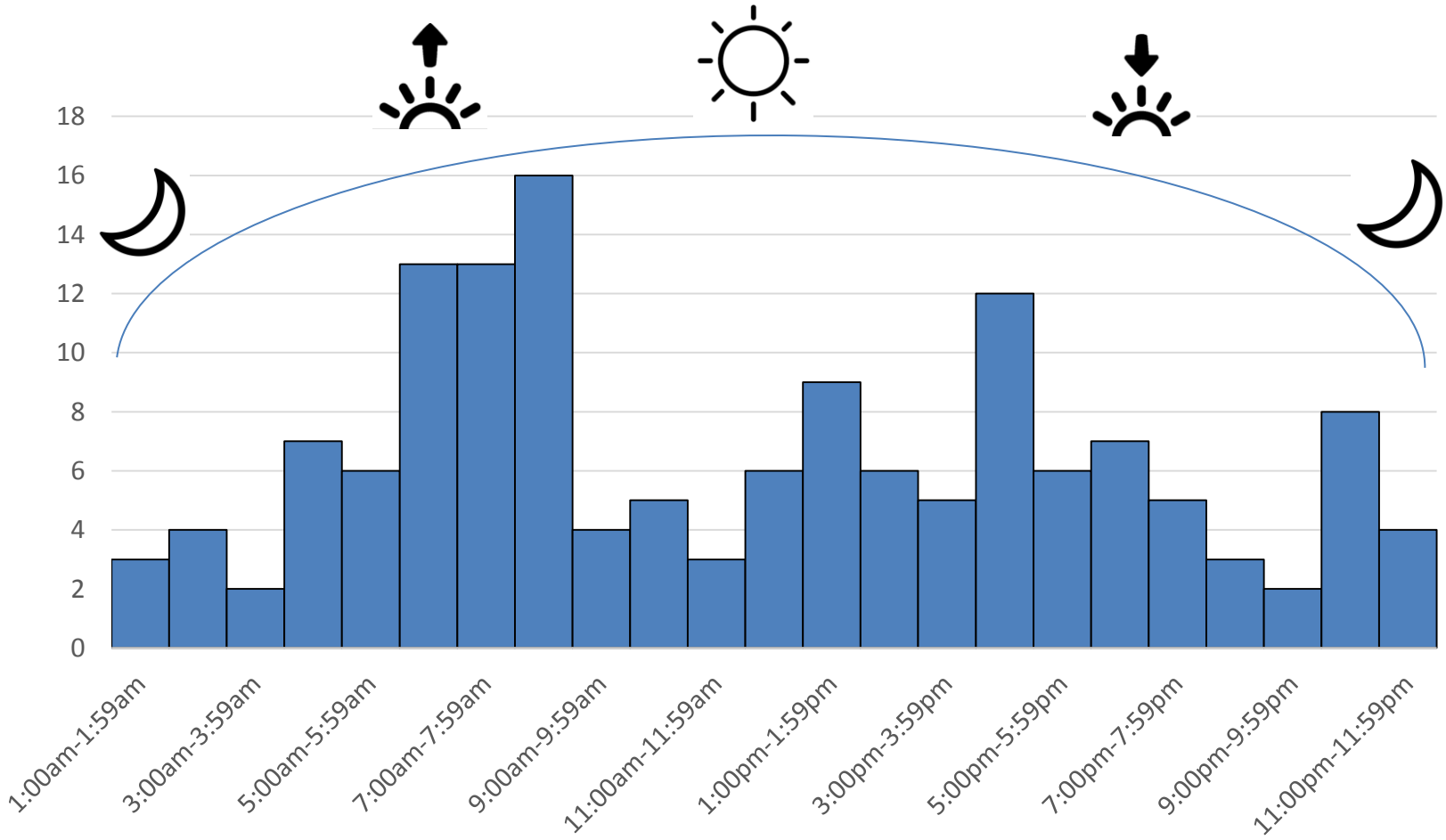
Seating position and restraint use of fatally injured OGE occupants, 2011-2014



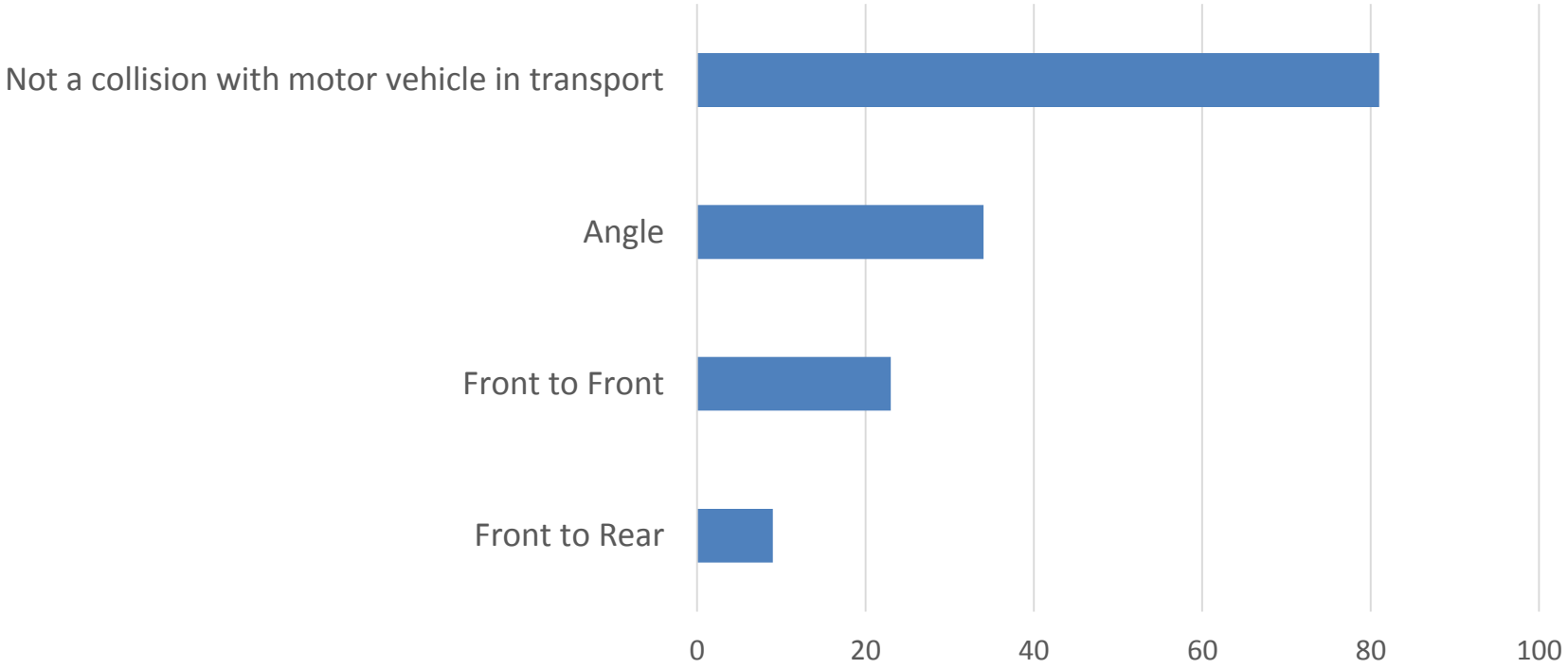
*Data were generated with restricted access to the CFOI Research file.
"Other/Unknown" vehicle occupant position category not shown here.

Fatal crash frequency by time of day, 2011-2014



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

Manner of collision in fatal crashes in OGE, 2011-2014



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Most Frequent Fatal Events
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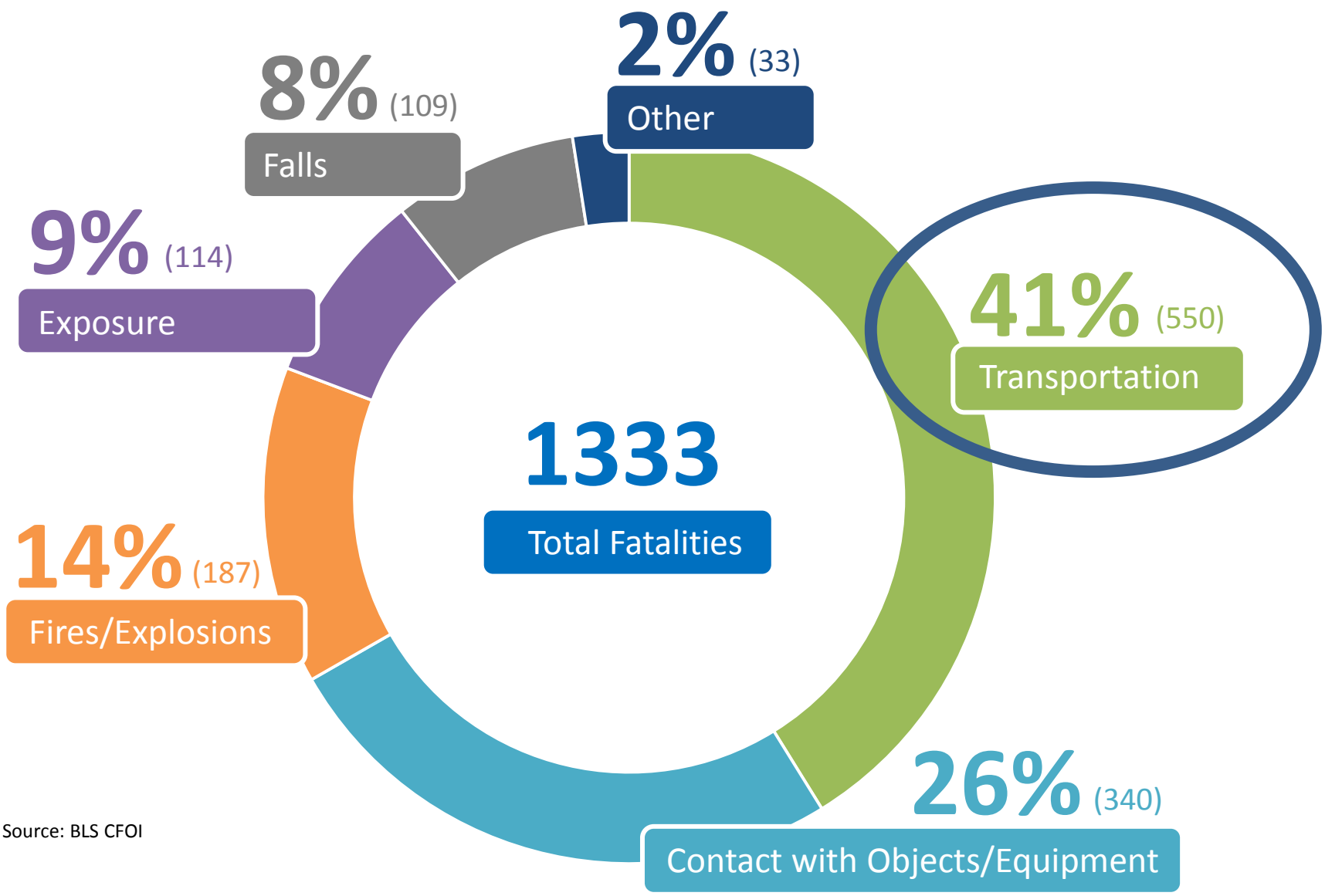
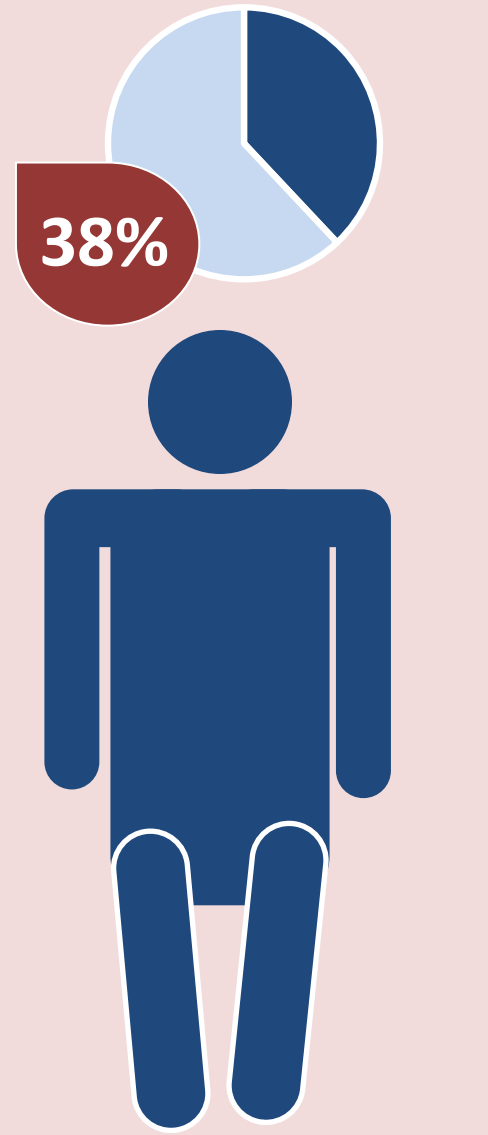


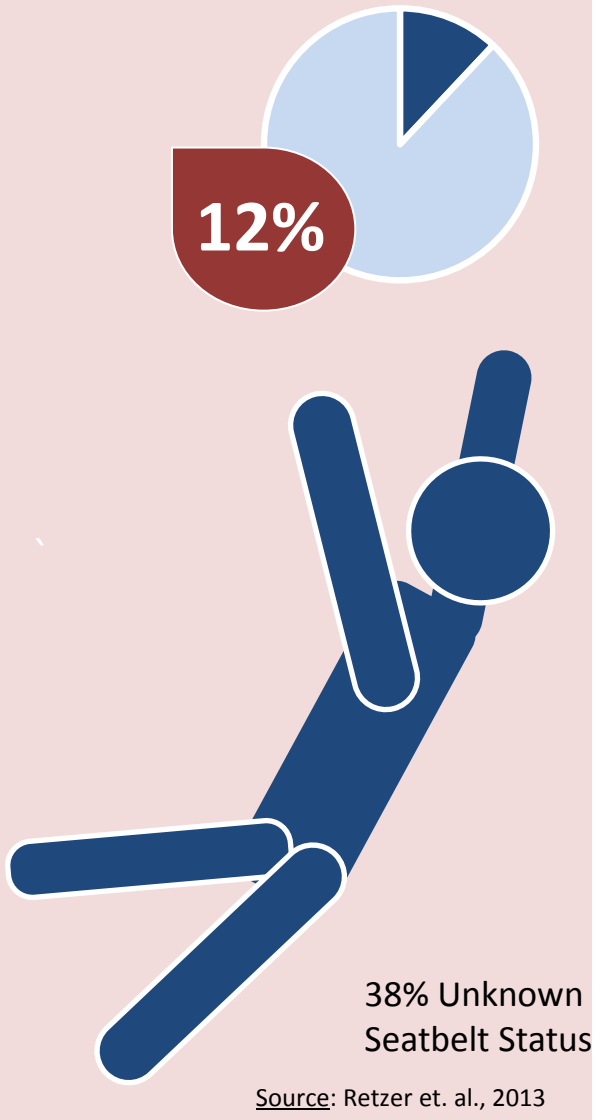
Data Source: BLS CFOI

Motor Vehicle Fatalities by Seatbelt Status

U.S. Oil & Gas Extraction Industry

N=202





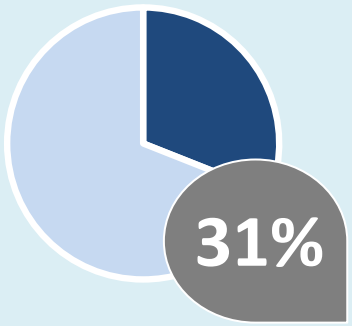
38% Unknown Seatbelt Status

Source: Retzer et. al., 2013

Other Factors Associated with Fatal Motor Vehicle Crashes

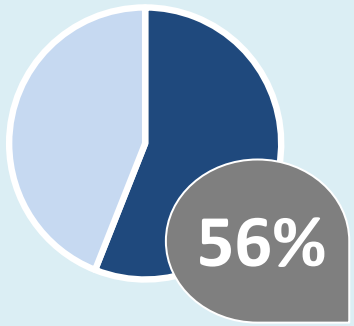
Short Service Employees

< 1 yr. with Current Employer



Company Size

< 100 Workers



Texas Motor Vehicle Fatalities by Company Type
Oil and Gas Extraction Industry

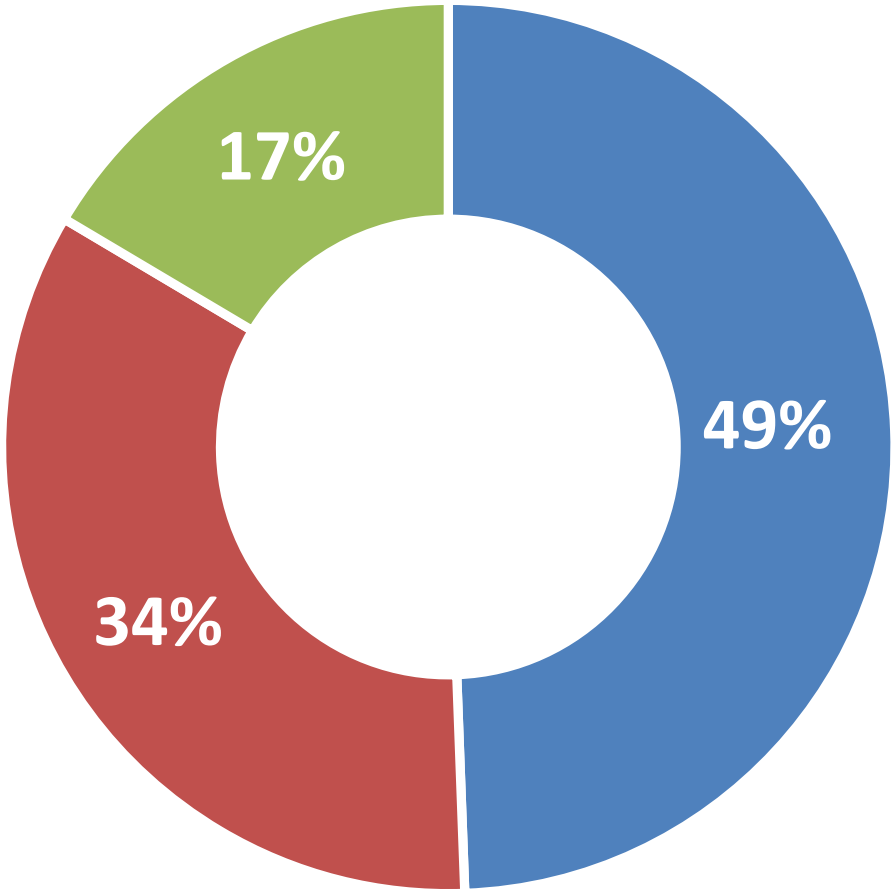
Company Type	2011	2012	2013	2014
Support Activities	8	20	21	30
Drilling Operations	4	6	-	5
Operators	-	-	-	3

- : Data not reportable due to small size

Source: BLS CFOI

Texas Motor Vehicle Fatalities by Vehicle Type

Oil & Gas Extraction Industry, 2011-2014



Pick-up/SUV

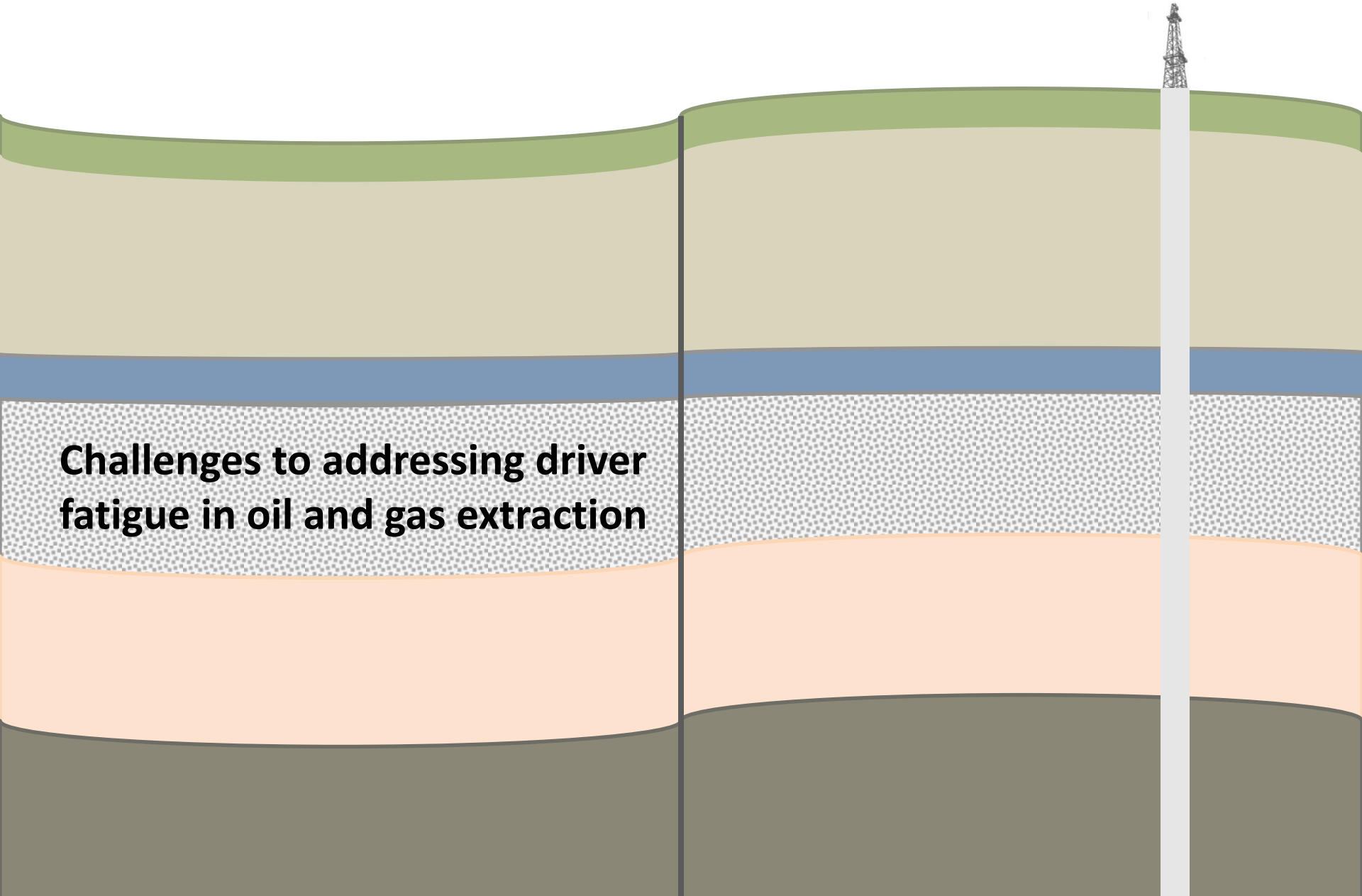
Semitrailer, tractor trailer, tanker truck

Other

Data Source: BLS CFOI

At least 15-20% of crashes involve driver fatigue

Session Objectives



NIOSH/NORA Motor Vehicle Workgroup

Personal Factors Affecting fatigue

- Long commutes to start shift
- Desire to be at home with family until last minute
- Sleep is low priority

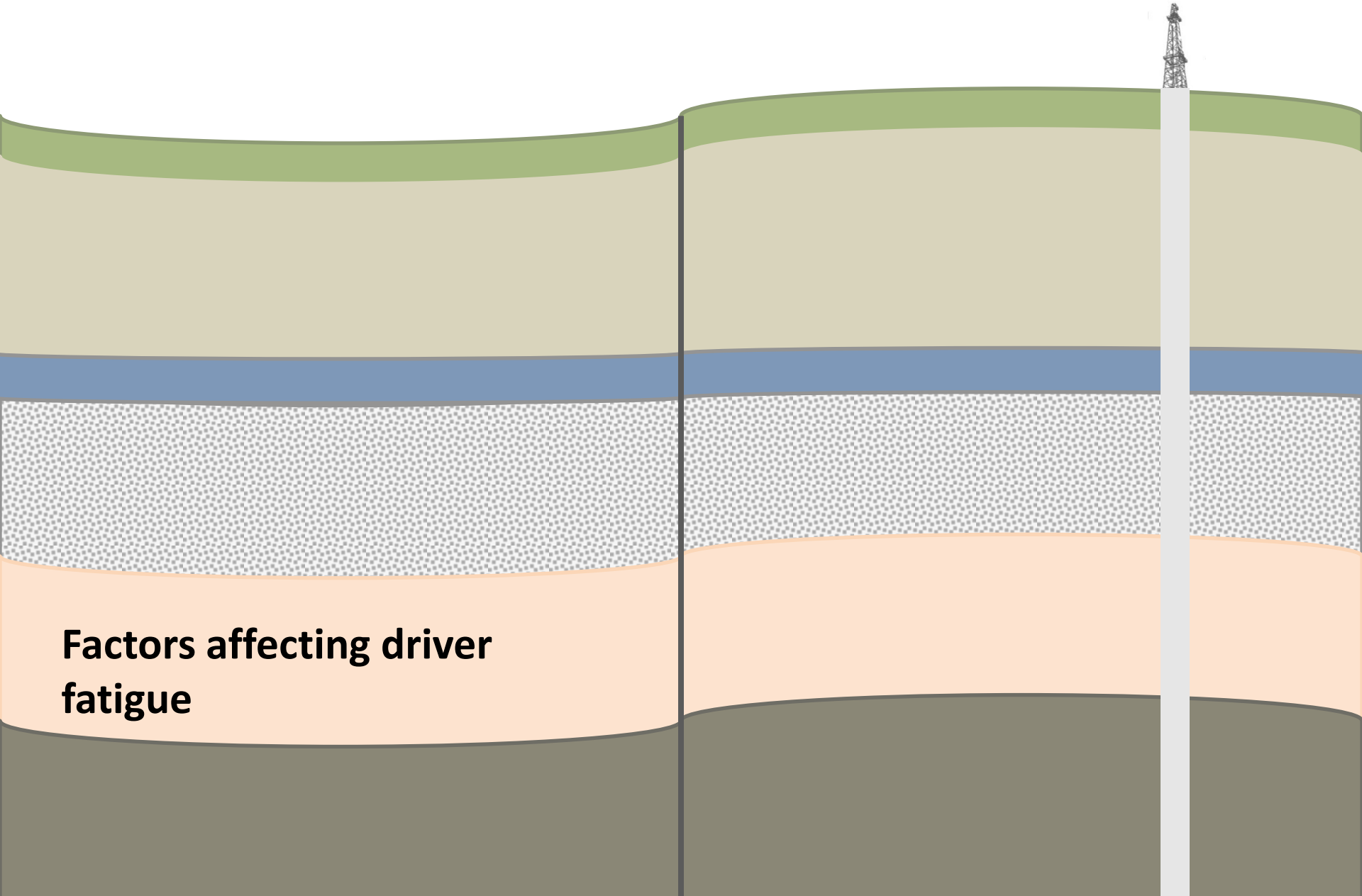
Source: NORA Oil and Gas Motor Vehicle Workgroup Discussion on Driver Fatigue

Operational Demands in the Oilfield

- Critical path nature
- Calling crews out early
- If you won't do it, somebody else will
- Company man is a consultant
- Paid by the mile/load
- Disconnect between corporate policy and practice
- No good place to rest
- Conflicts with priorities of operators/dispatchers

Source: NORA Oil and Gas Motor Vehicle Workgroup Discussion on Driver Fatigue

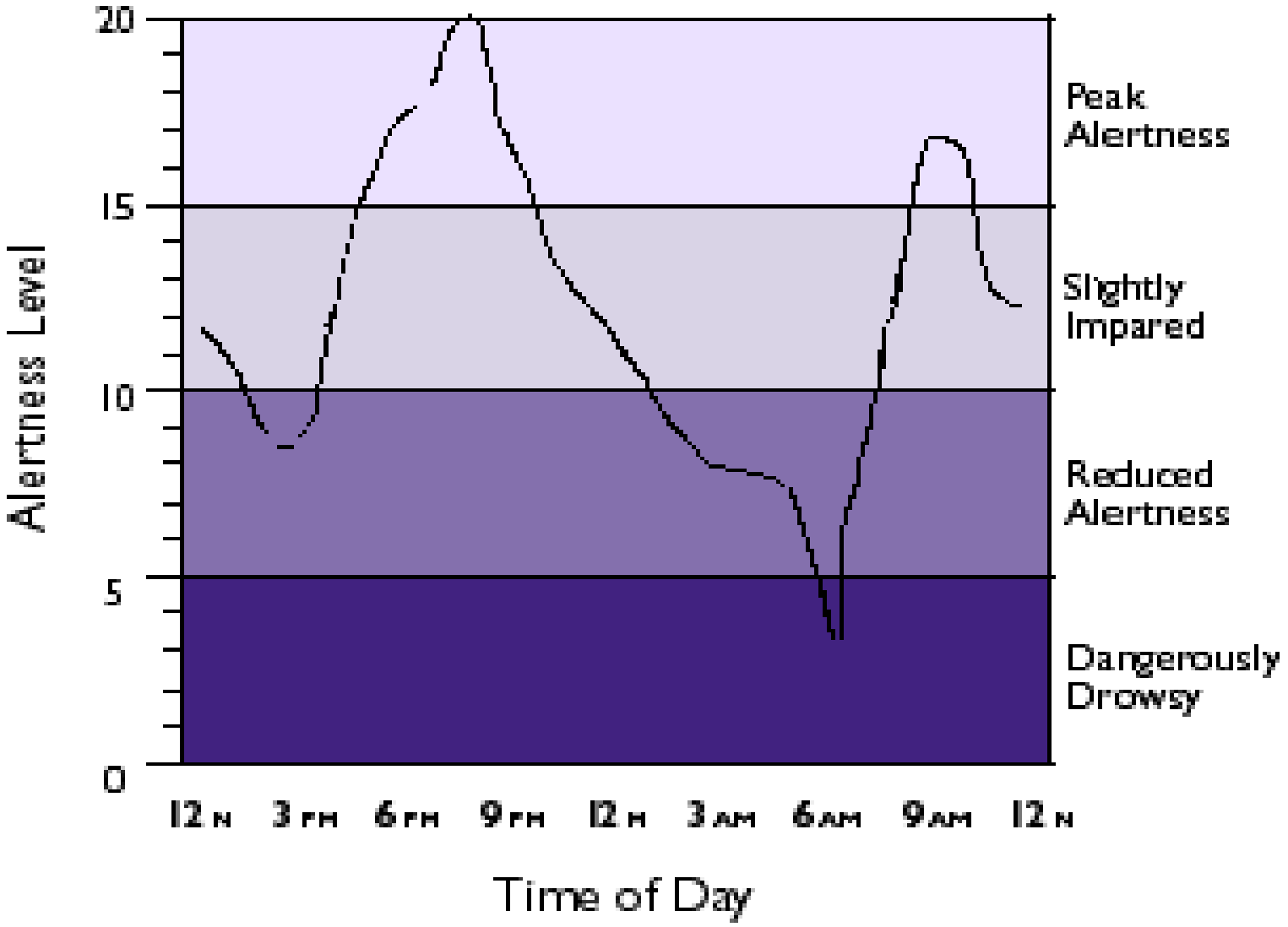
Session Objectives



Factors increasing risk of fatigued driving

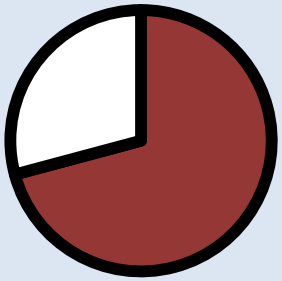
1. Time of day/circadian rhythms
2. Length of time awake
3. Sleep debt (cumulative)
4. Medications and Health Conditions
5. Mundane tasks

Alertness over a 24 hour period



Fatigue Is Like Intoxication

17 Hours

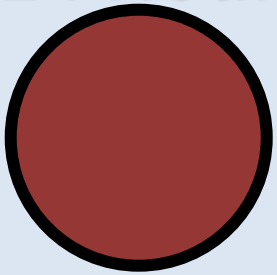


Awake

= .05% BAC

170 LBS male over 2 hrs.

24 Hours



Awake

= .10% BAC

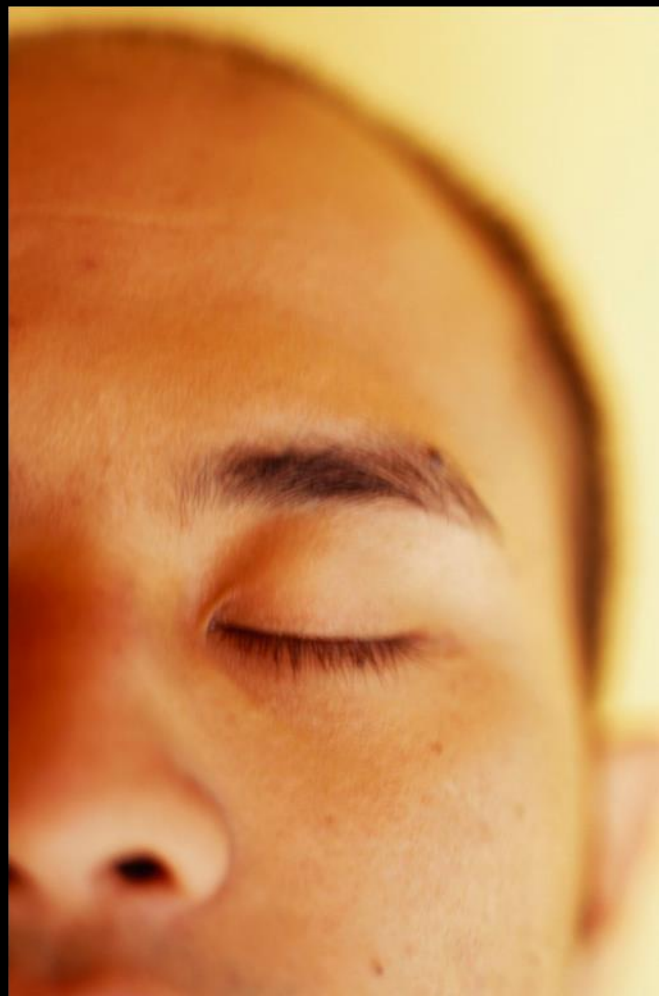
170 LBS male over 2 hrs.

Dawson & Reid, 1997; Williamson & Feyer, 2000; Falleti et al. 2003; Arendt et al. 2005; Howard et al., 2007; Yegneswaran & Shapiro, 2007; Elmenhorst et al., 2009)

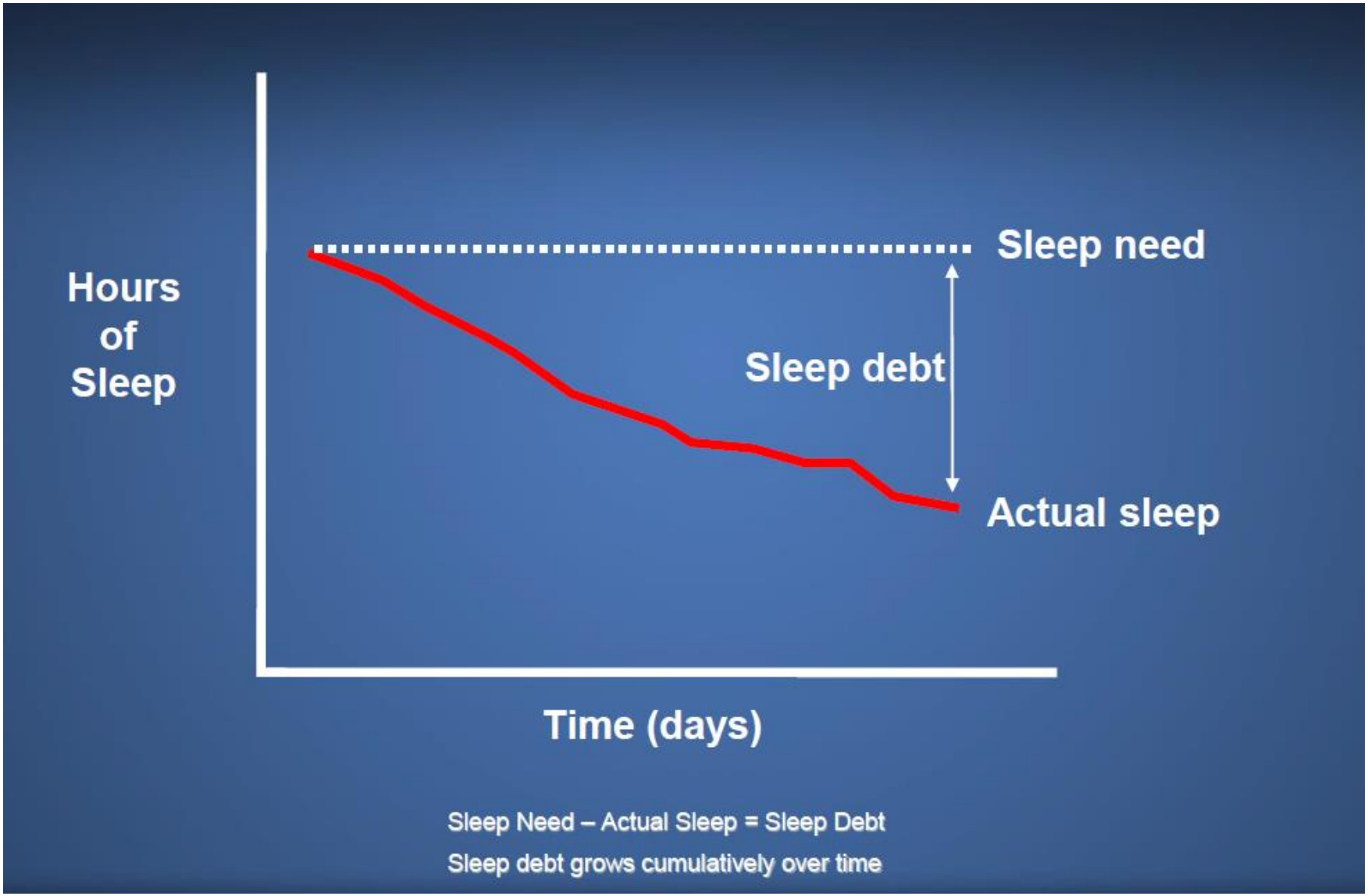
http://www.dot.wisconsin.gov/safety/motorist/drunkdriving/calculator.htm

SLEEP IS IMPORTANT FOR LIFE AND HEALTH

- During sleep, our brain & body are BUSY recovering from the day and getting us ready for a new day
- Inadequate sleep has deleterious effects



Cumulative Sleep Debt

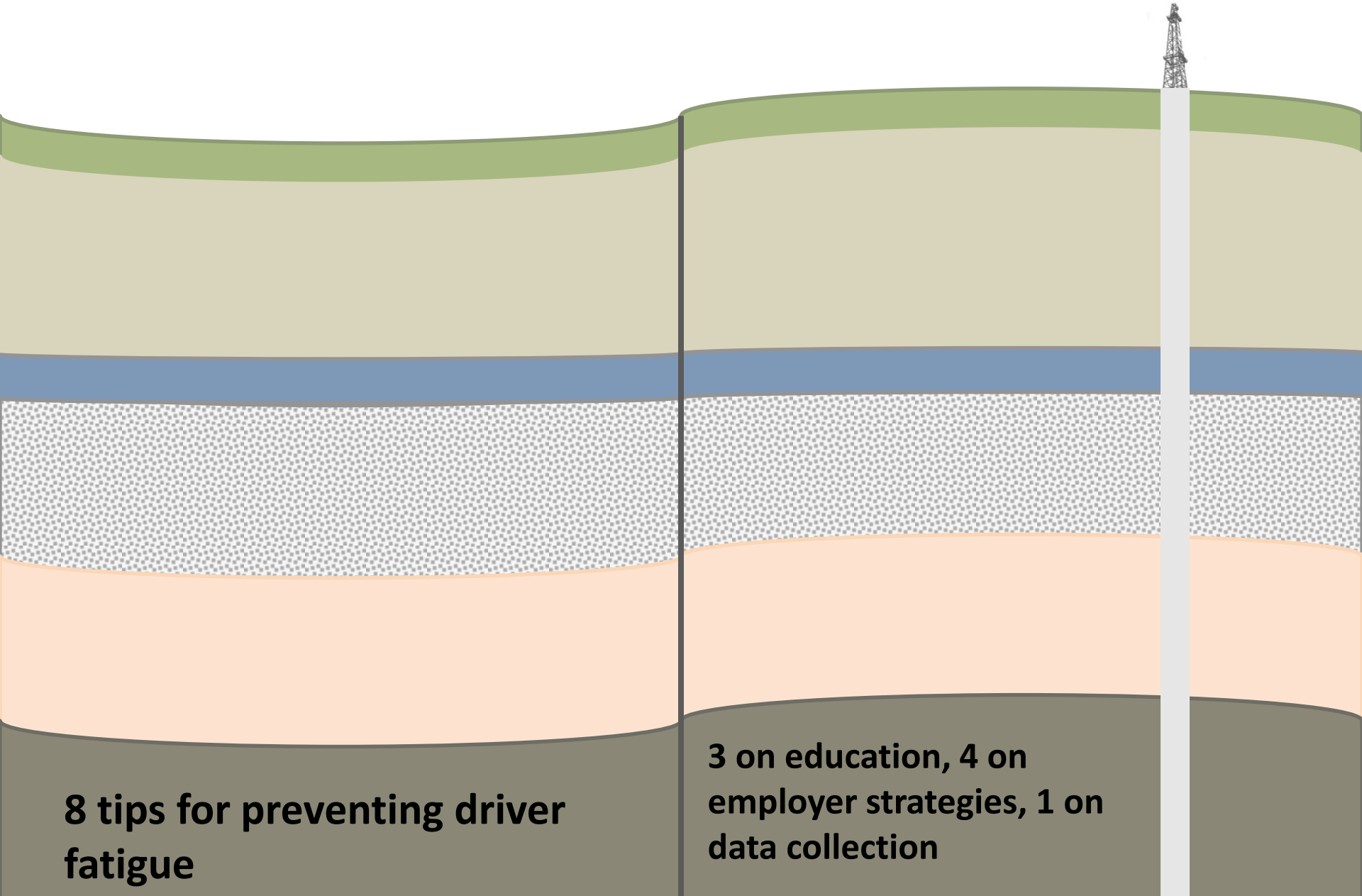


Critical Misconceptions About Ability to Overcome Poor Performance Due to Sleep Loss

- DO NOT recognize declines in own poor performance
- NO EVIDENCE that experience, motivation, professionalism help

(Arendt et al., 2005; Van Dongen 2009)

Session Objectives



Educate Drivers about Sleep and Warning Signs

- Need at least 7-9 hours of continuous sleep per day

Warning Signs:

- Yawning or blinking frequently
- Difficulty remembering the past few miles driven (microsleeps)
- Missing your exit
- Drifting from your lane/hitting rumble strip

What to do:

- Pull over to rest or change drivers

Educate Drivers about Impact of Health

Physical Activity:

- Two and a half hours per week

Nutrition:

- Avoid sugar-rich and low-fiber carbohydrate foods

Medications and health conditions:

- Chronic diseases; prescriptions/over-the-counter

http://www.roadwiserx.com

Do you have a sleep disorder?

See your doctor if you spend enough time in bed but:

- You consistently take more than 30 minutes to fall asleep.
- You consistently awaken several times or for long periods.
- You take frequent naps.
- You often feel sleepy, especially at inappropriate times.

OTHER RESOURCES

- http://www.cdc.gov/niosh/topics/workschedules
- http://www.cdc.gov/sleep
- http://www.sleepfoundation.org/
- http://drowsydriving.org/
- http://www.nhlbi.nih.gov/health/public/sleep/healthy_sleep.pdf

For more strategies on how to sleep better and to reduce the risks associated with fatigue, visit

http://www.healthysleepfortruckers.org

This site contains information for both truck drivers and trucking companies.

To obtain information about other occupational safety and health topics, contact NIOSH at

Telephone: **1–800–CDC–INFO** (1–800–232–4636)
TTY: 1–888–232–6348 • E-mail: cdcinfo@cdc.gov

or visit the NIOSH Web site at **www.cdc.gov/niosh**

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January 2012

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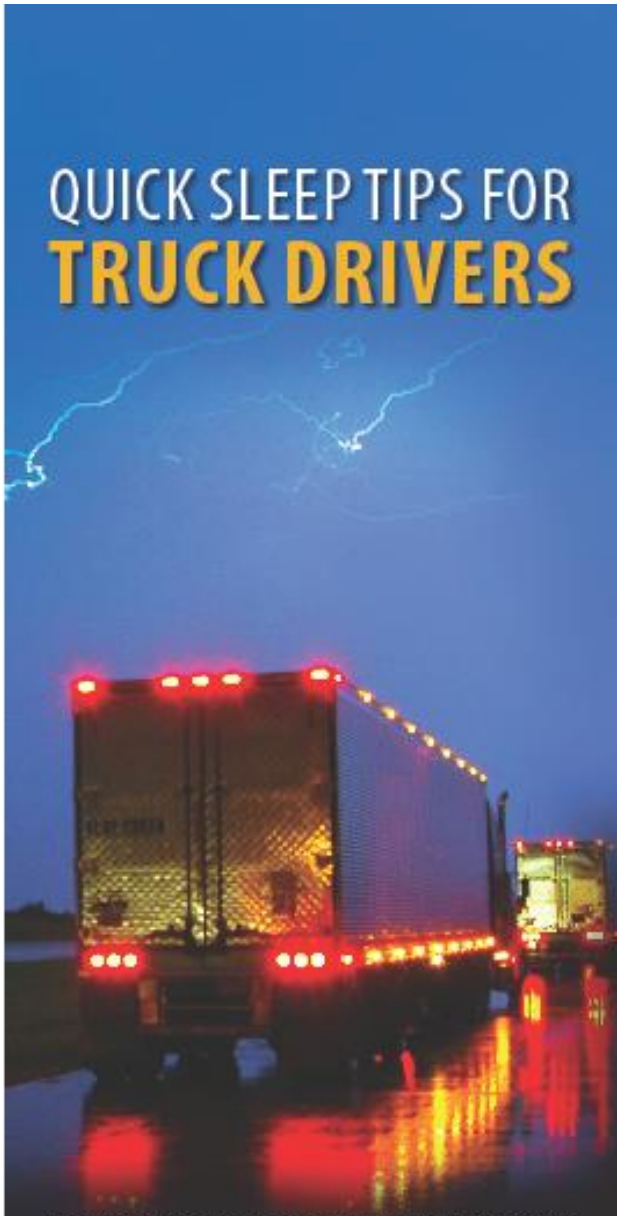
DHHS (NIOSH) Publication No. 2012–XXX

QUICK SLEEP TIPS FOR **TRUCK DRIVERS**



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

NAFMP
North American Fatigue Management Program

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Online

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Downloads

The following downloads are in English. To download these files in a different language, please select the appropriate website language.

The North American Fatigue Management Program offers its training in a number of formats, allowing users to select the one that best fits their individual needs. For the most comprehensive training experience, including online testing, you are encouraged to use the NAFMP Online Courses. Once there, you can register as a user of the system, free of charge, and work through the training at your own pace. Commercial truck and bus fleets can encourage their drivers and other personnel to register and complete the appropriate courses.

The PowerPoint versions below are formatted in PowerPoint version 2010. A free PowerPoint reader is available here if you do not currently have PowerPoint version 2010.

Powerpoint Versions (with audio narration)

This version of the NAFMP training allows users to view and hear the training but does not allow for knowledge testing and scoring. This option is best suited for users who simply want to step through the training at their computer without participation in any of the quizzes or other knowledge checks.

- Module 1 (MS Powerpoint)

Language Switcher

- Français
- English

Top 5 Most Read Pages

- Home Page
- Downloads
- Project History
- Introduction
- Motor Carrier Executives and Managers

Alert Light Duty Drivers to Sleep Disorders

Approximately 90 different sleep disorders; affects 70 million Americans

See doctor if you:

- Take more than 30 minutes to fall asleep
- Wake several time during sleep or for long periods
- Take frequent naps
- Often feel sleepy, especially at inappropriate times

4

Encourage workers to "Stop the Job" instead of driving fatigued; intervene with co-workers too

Consider Use of Technologies

5

Example: MiX Mobileye

In-vehicle tracking:

- laneway departures
- proximity to other vehicle and pedestrians
- headway distance
- speed limit infractions

Example: OPTALERT

- wearable fatigue monitors based on blink rate, eyelid closure and other eye metrics

Examine your operations for activities that put workers at risk for driver fatigue

6

- Crews that regularly drive after wakefulness periods 17 hours or longer (including commute and work time)
- Contractor activities
- Early morning commutes (4-6am)
- Night and rotating shifts
- INCLUDE LIGHT DUTY VEHICLES

Develop Company Policy and Use Journey Planning

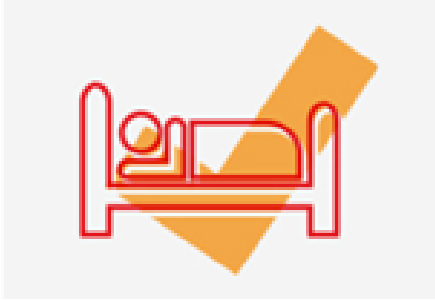
- Limit driving distances
- Limit commute time before shift
- Ensure rested driver available
- Plan rest breaks and locations
- Mandate Seatbelt use

OGP Land Transport Safety Recommended Practice, Journey Management: http://www.ogp.org.uk/pubs/365-2.pdf

Provide On-site or Nearby Resting Areas

8

- Block out all light (curtains, eye mask)
- Block out noise (ear plugs, white noise app, silence phones)
- Keep temperature cool
- Comfortable



Incorporate Fatigue into Incident Investigations/Tracking

9

- Identify if fatigue factors were present (time of day, etc.)
- Determine #/severity of fatigue factors
- Reconstruct sleep/awake/on-duty schedule for 72 hours
- Number of days worked in a row
- Encourage near miss reporting

Be a Good Example:
How are You Doing?

Resources

National Road Safety Foundation

http://nrsf.org/programs/drowsy-driving

Drowsy Driving Prevention Week Materials

http://drowsydriving.org

NIOSH Oil and Gas Extraction Field Survey
In Permian Basin next week! Consider participating!

Objectives

-Identify health and safety concerns of workers
-Determine factors that contribute to motor vehicle incidents

Participants

500 oil and gas workers in 5 states

Content

General Topics

- -Demographics
- -Health and personal habits
- -Workplace/Job characteristics
- -Safety culture

Topics of Concern

- -Tank gauging and sampling
- **-Driving behaviors**
- -Chemical exposures
- -Respirable silica

Results

Guide interventions and future research

Closing Thought

Regarding young OGE workers:

" The biggest challenge is impressing upon them that driving is a critical part of their job and not simply something they do every day to get to a job site. Young or new employees try hard to make a good impression on their supervisors so they work hard and often end up rushing things. Many have inadequate safe driving schools or an inappropriate attitude about work related driving....It's our job to build a culture of driving safety into their work routine to ensure they get home safely every day."

Colonel Mark Trostel, Driving Safety Advisor, Encana Oil and Gas

Contact Information

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NIOSH Oil & Gas Homepage
www.cdc.gov/niosh/programs/oilgas

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