Truck rear underride

Advisory Committee on Underride Protection

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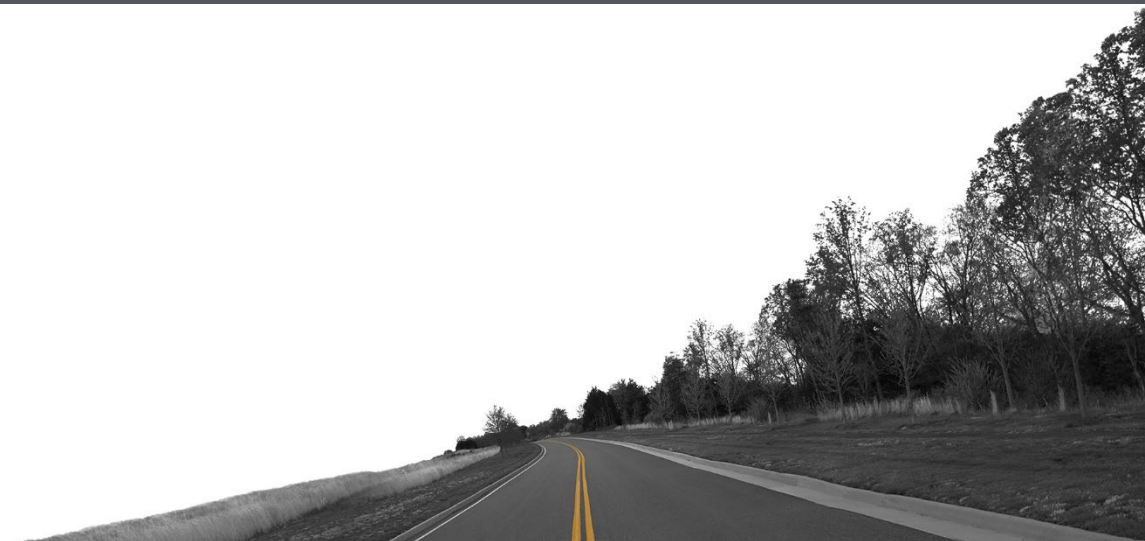
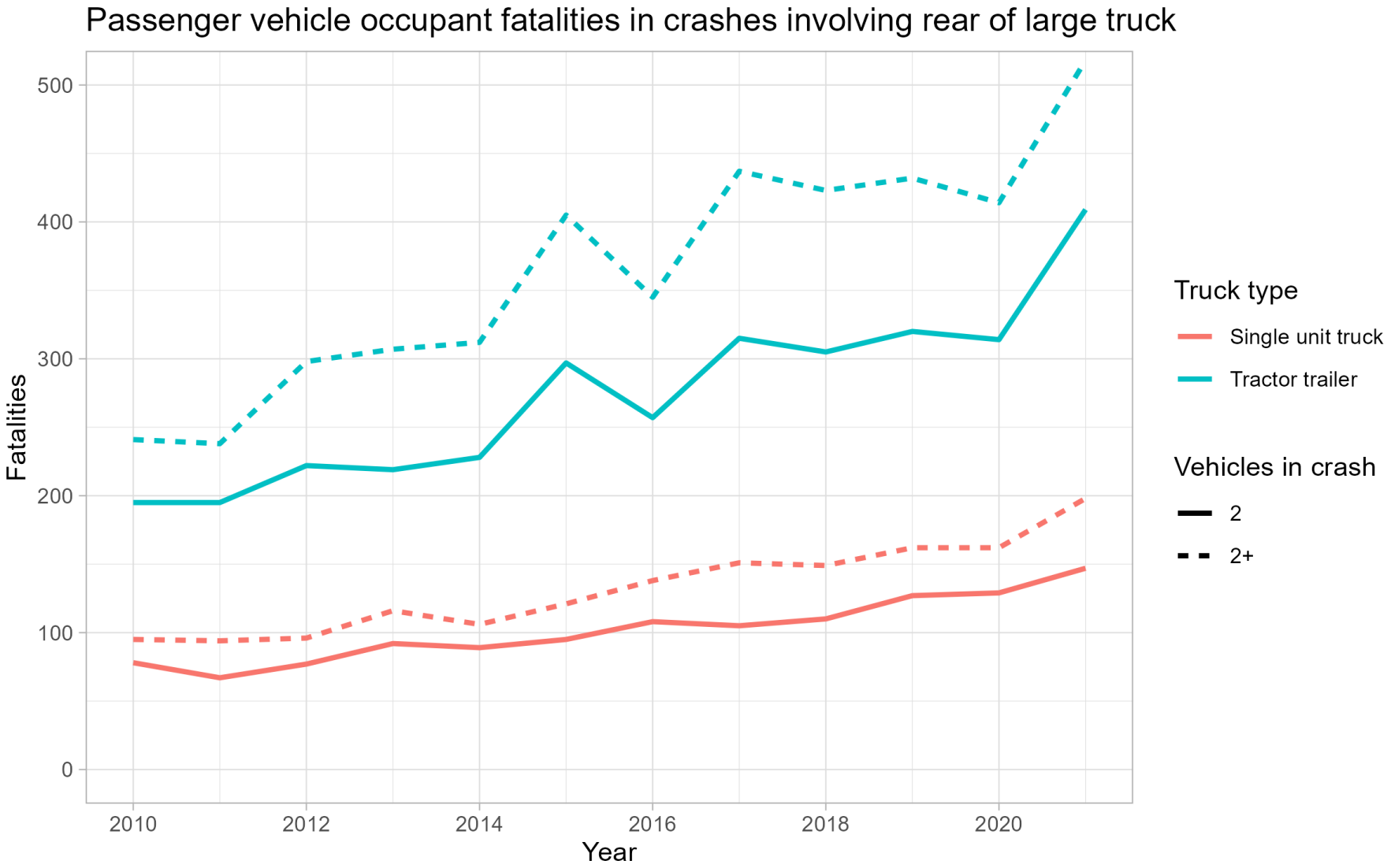


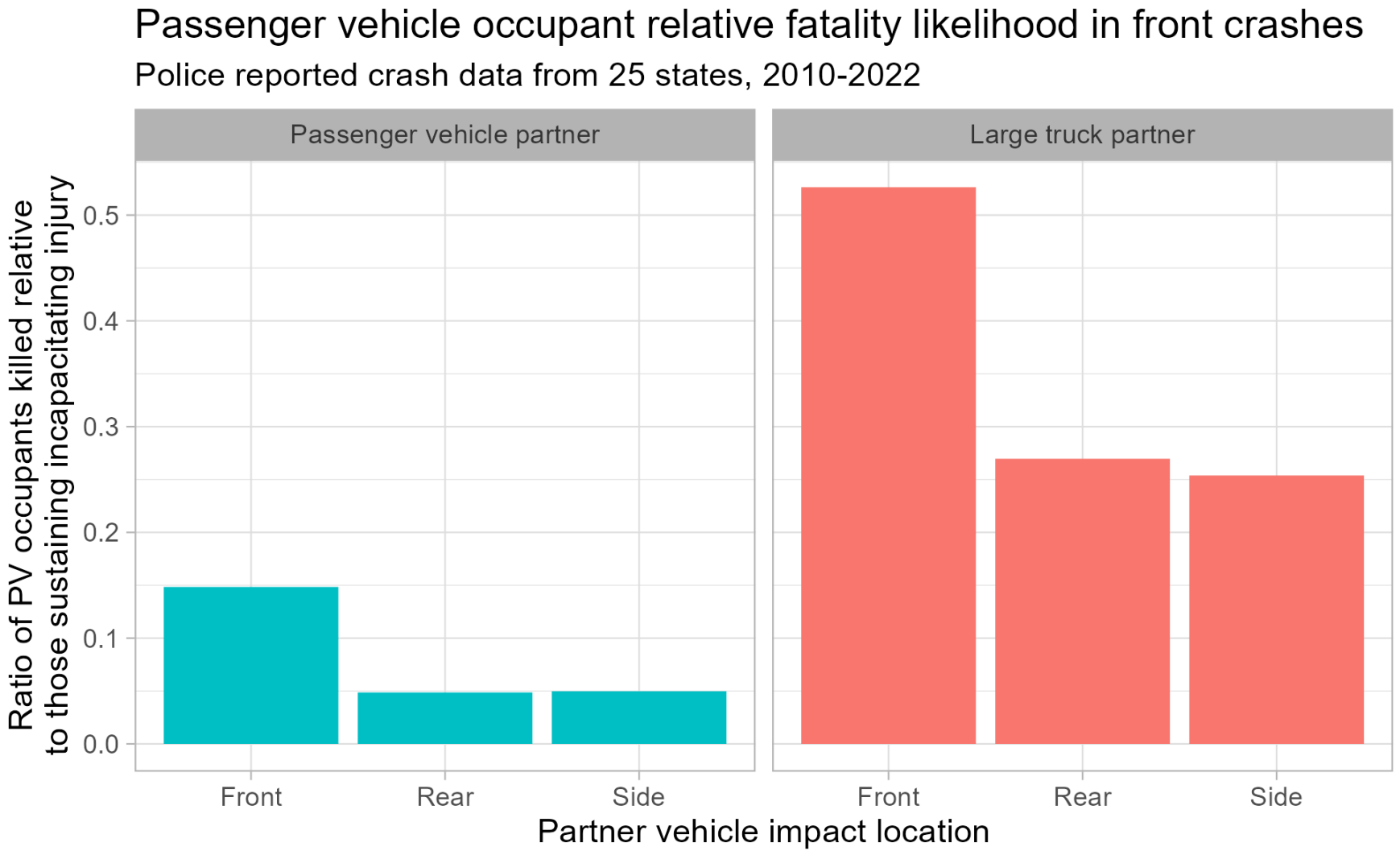
Truck rear impact fatalities are increasing



In 2021:

- 400-500 passenger vehicle occupants were killed in crashes with rear of tractor trailer
- 150-200 were killed in crashes with rear of single-unit truck

Truck rear impacts have a high fatality rate relative to injury-only crashes



Relative to the risk of sustaining an incapacitating injury, crashes with the rear of a large truck are 5 times as deadly as crashes with the rear of another passenger vehicle

IIHS HLDI

How often does underride occur?

Different sources used

- FARS: police reports
- IIHS: photographs from special study or Large Truck Crash Causation Study (LTCCS)
- NHTSA rulemaking: phone survey data from University of Michigan Transportation Research Institute (UMTRI)
  - Surveys conducted up to 2 years after the crash
  - Interviewees may not have been at crash scene (e.g. truck owner, carrier's safety director)
  - UMTRI, 2000: "Collecting the data by means of telephone interview with people on the scene well after the fact probably is not sufficient to accurately measure degrees of underride"
  - UMTRI, 2013: "photographs of the trucks and the other vehicles were invaluable in determining override/underride and PCI"

How often does underride occur?

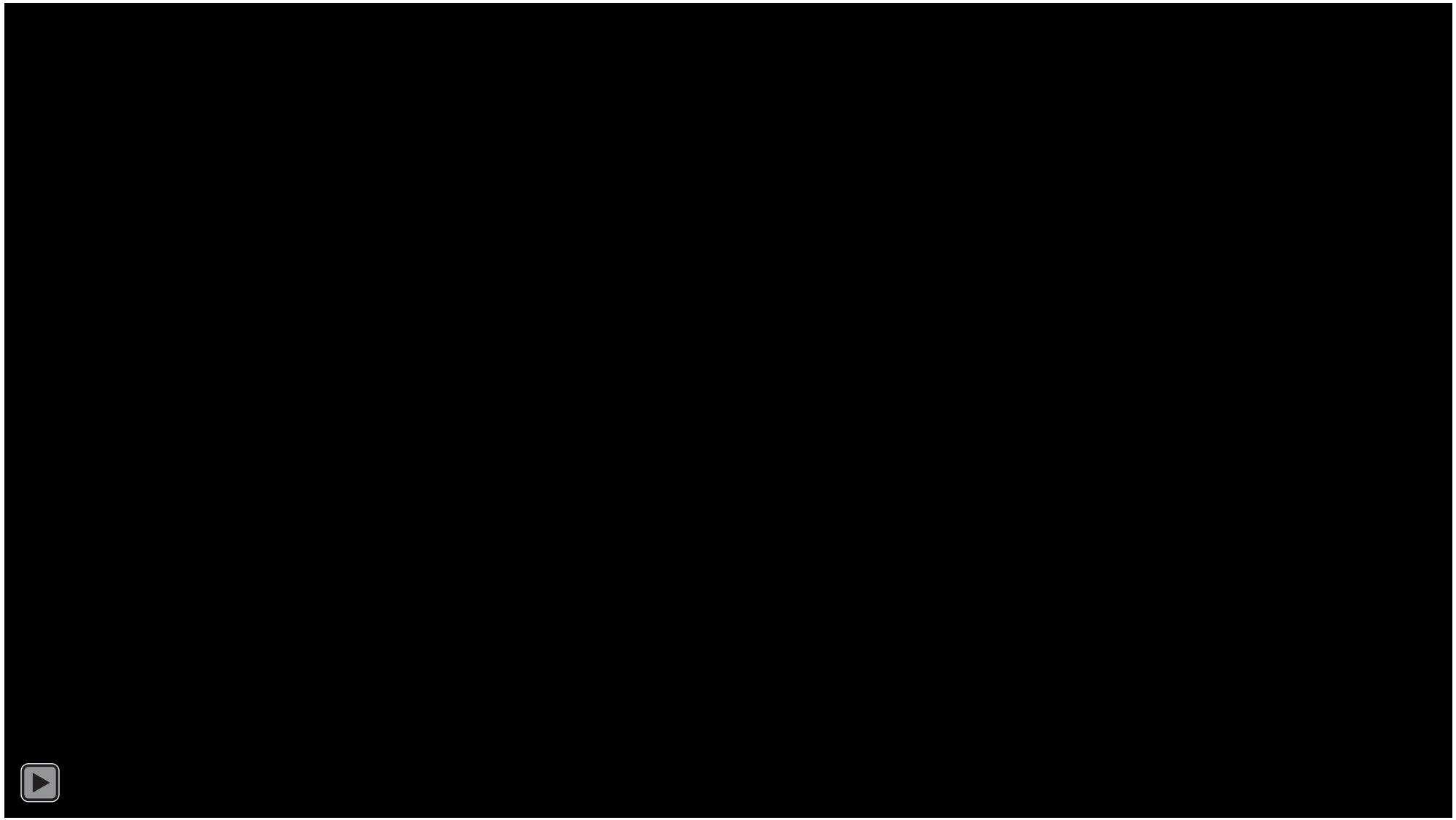
NHTSA rulemaking status

- Semi-trailers: 2022 final rule adopted Canadian regulation, 2 year phase-in
  - NHTSA estimates 93% of US fleet already compliant, will save 0.6 lives per year
  - Does not address small overlap crashes; around half of LTCCS cases involved 50% or less overlap
- Single-unit trucks: 2015 ANPRM stated that any regulation “unlikely to be cost-effective”
  - Estimated 4.7 lives per year could be saved
  - Based on low estimate of underride rate
  - Based on estimate of crash speeds from police reports; no relationship to EDR-measured speeds
  - Based on assumption of no benefit above 35 mph
  - Based on erroneous estimate of underride guard weights: 224 lb. vs. 137 lb., increasing estimated manufacturing and fuel costs
    - Incorrect weights used even after IIHS warned NHTSA about faulty analysis by contractor

IIHS semi-trailer crash test program

- Launched in 2012 to encourage voluntary underride guard improvements
- 35 mph test speed selected based on passenger vehicle regulatory rigid wall tests
- Midsize sedan bullet vehicle
- 3 overlap conditions: 100%, 50%, 30%
- Smaller overlap tests conducted only after passing with larger overlap
- IIHS **TOUGH**GUARD recognizes guard designs that prevent PCI in all 3 conditions
- In 2012, 1 of 8 manufacturers passed all tests; today 9 pass

Voluntary guard redesigns improve performance beyond 2022 regulation



Summary

- The largest trailer manufacturers have voluntarily improved guard designs, as verified by IIHS crash testing
  - Some of these designs remain optional; standard guards may not perform as well
- The remaining trailer manufacturers will be required to meet upgraded FMVSS requirements; most already do so
- It will take time for improved guard designs to penetrate most of the trailer fleet
- Fatalities in truck and trailer rear impacts continue to increase, as do fatalities in most crash types
- Small overlap guard performance and single-unit trucks are still not addressed by regulation