IIHS *TOP SAFETY PICK*: Change is coming

2022 ASC Annual Meeting

March 18, 2022

David Harkey
President, IIHS and HLDI

Saving lives. Preventing harm.

IIHS-HLDI mission:

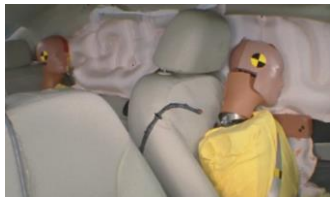
To reduce deaths, injuries and property damage from motor vehicle crashes through **research and evaluation** and through **education** of consumers, policymakers and safety professionals.

Side test update

Original IIHS side test

31 mph impact

3,300-pound cart
Original barrier face

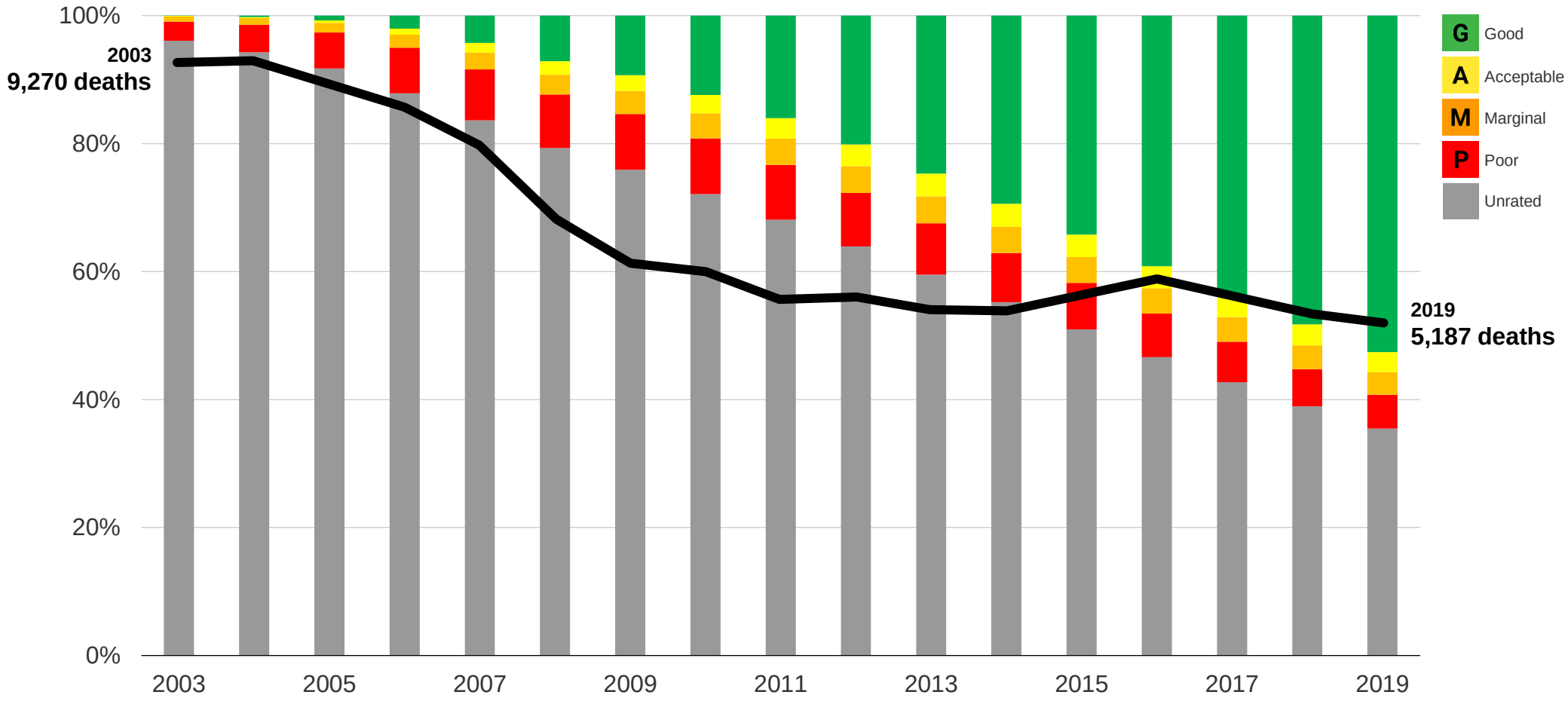


G	A	M	P
Good	Acceptable	Marginal	Poor

Ratings based on dummy injury measures, head protection and vehicle structure

IIHS HLDI

Side test ratings for registered vehicles



Goals for updating side test

- Increase test severity
- Update striking barrier based on modern SUVs
- Adjust ratings boundaries

Updated side test

37 mph impact

82% more energy due to increase in speed and weight

4,180-pound cart with suspension
Updated barrier face

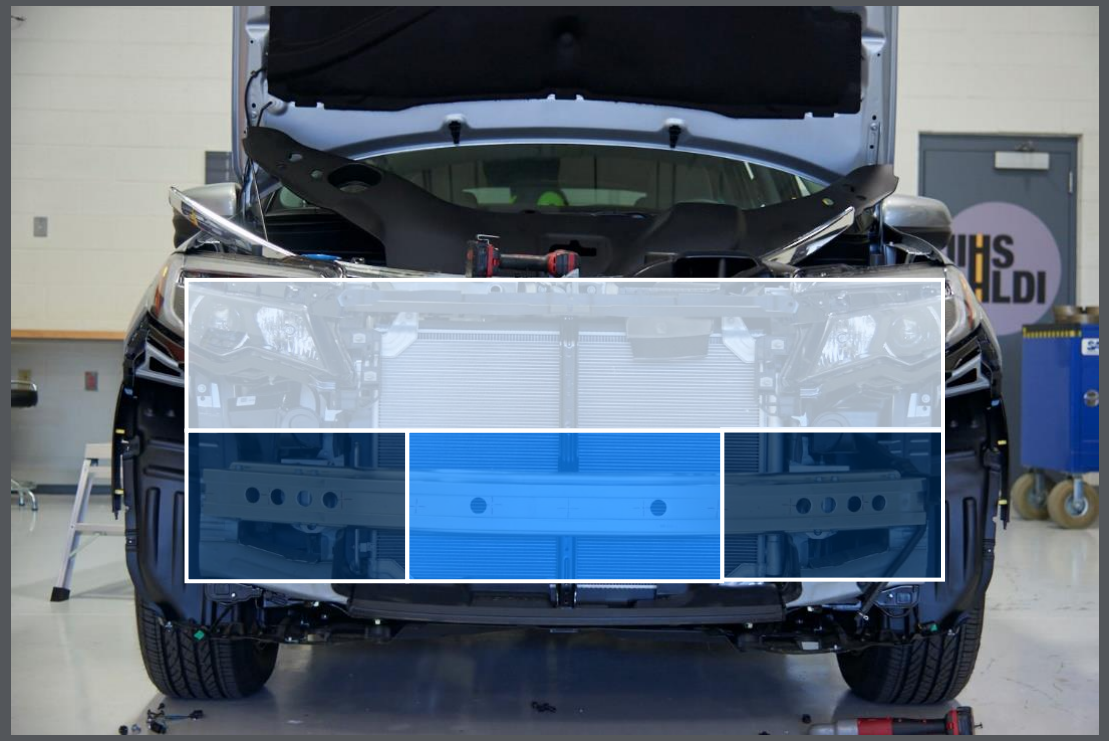
G	A	M	P
Good	Acceptable	Marginal	Poor

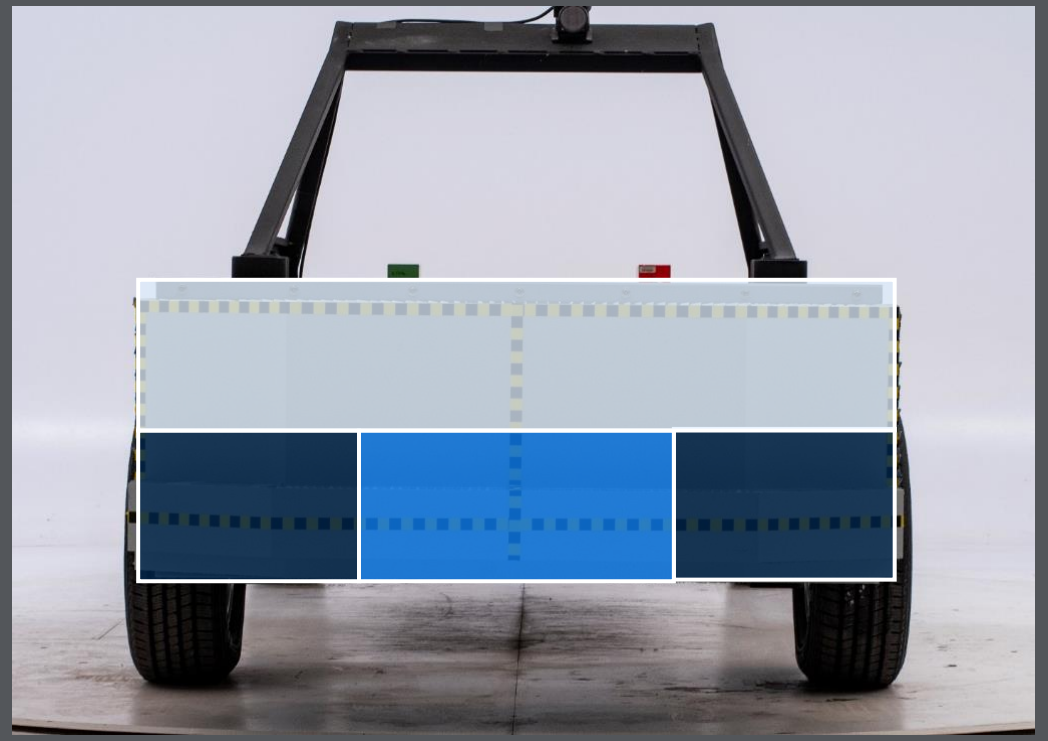
Ratings based on dummy injury measures, head protection and vehicle structure

IIHS HLDI

Updated barrier design

Softest components Intermediate stiffness Stiffest components





Barrier’s varied stiffness mimics SUV’s front end

Inaugural test program

Small SUVs

Audi Q3
Hyundai Tucson (Kia Sportage)
Buick Encore (Chevrolet Trax)
Mitsubishi Eclipse Cross
Ford Escape (Lincoln Corsair)
Toyota RAV-4 (Toyota Venza)
Volvo XC40
Mazda CX-5
Nissan Rogue
Subaru Forester
Honda CR-V
Jeep Compass
Honda HR-V
Jeep Renegade
Chevrolet Equinox (GMC Terrain)

Updated overall ratings

Small SUVs

G	A	M	P
1 model	9 models	8 models	2 models

Side ratings for small SUVs

	Original	Updated
Mazda CX-5	G	G
Subaru Forester	G	A
Nissan Rogue	G	A
Buick Encore	G	A
Honda CR-V	G	A
Audi Q3	G	A
Toyota RAV-4	G	A
Volvo XC40	G	A
Toyota Venza	G	A
Chevrolet Trax	G	A

	Original	Updated
Jeep Renegade	G	M
Chevrolet Equinox	G	M
GMC Terrain	G	M
Kia Sportage	G	M
Ford Escape	G	M
Jeep Compass	G	M
Hyundai Tucson	G	M
Lincoln Corsair	G	M
Mitsubishi Eclipse Cross	G	P
Honda HR-V	G	P

IIHS HLDI

Best and worst performers in updated side test

October 2021

2021-22 Mazda CX-5

G

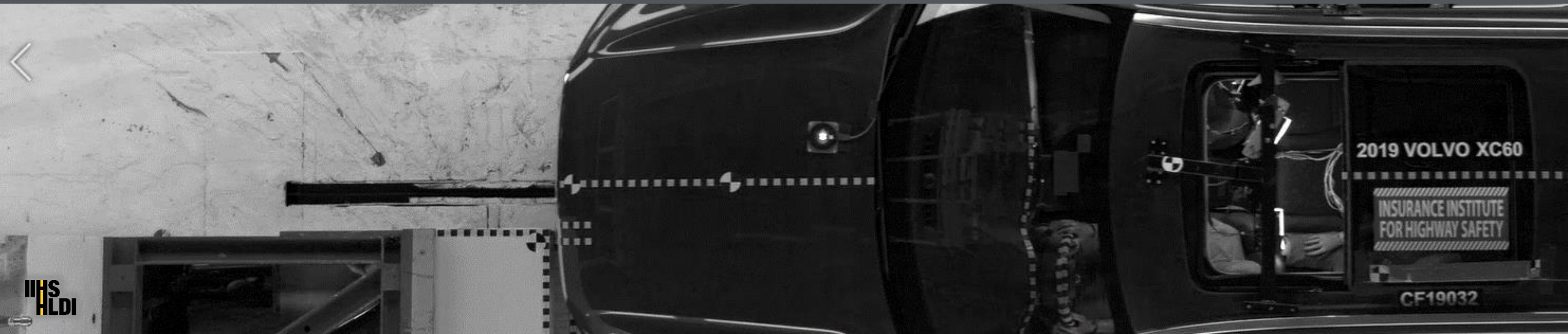
2021-22 Honda HR-V

P

Next steps

- Testing of 40+ vehicle models in 2022
- Next test series: midsize SUVs
- Inclusion in 2023 *TOP SAFETY PICK* awards

Front test update



Rear seat protection hasn't kept pace with the front

Improved front restraint technologies are making the rear less safe by comparison

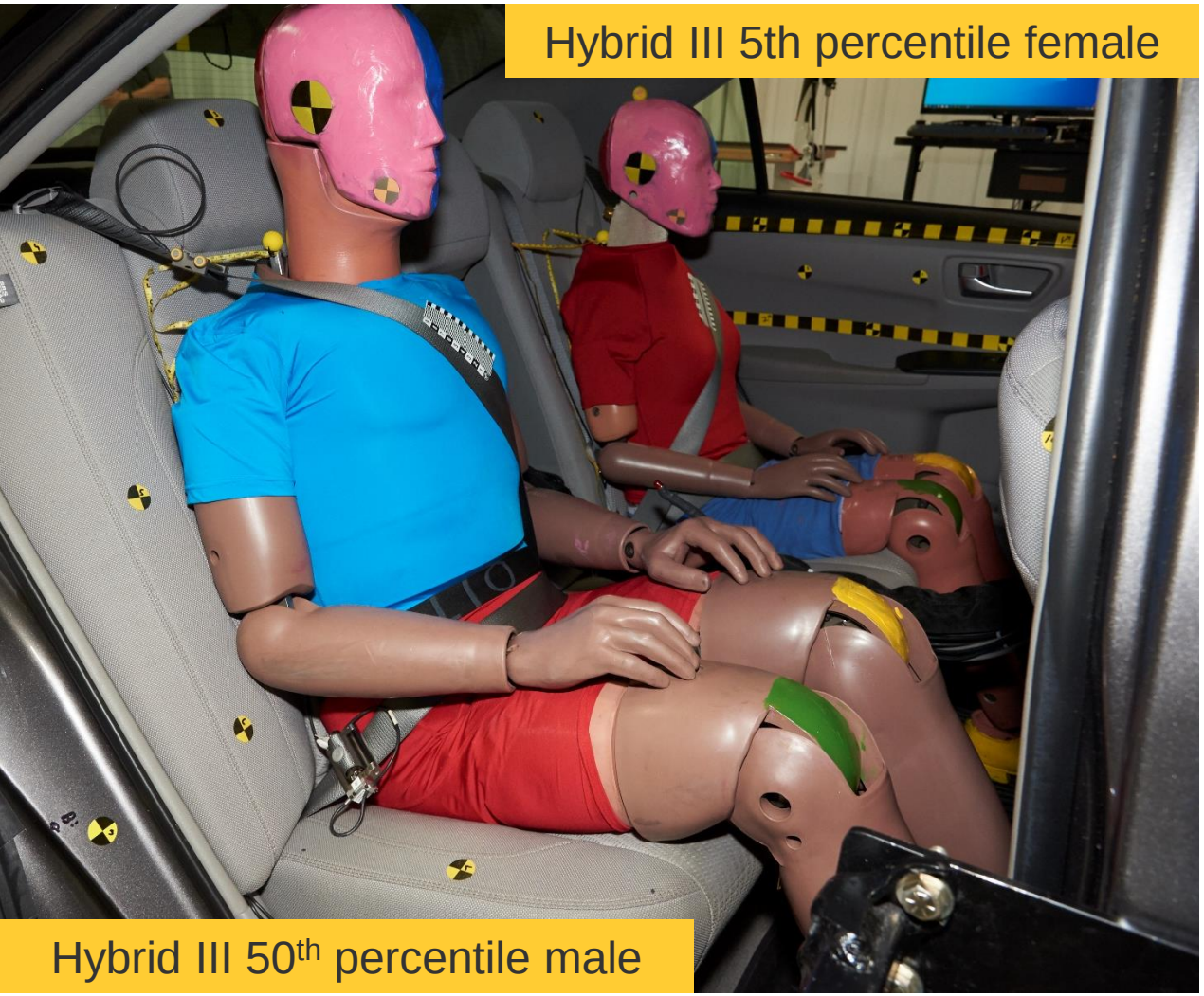
- High seat belt loads exceeding human tolerances

  Older occupants at particular risk

- Countermeasures exist but are not widespread

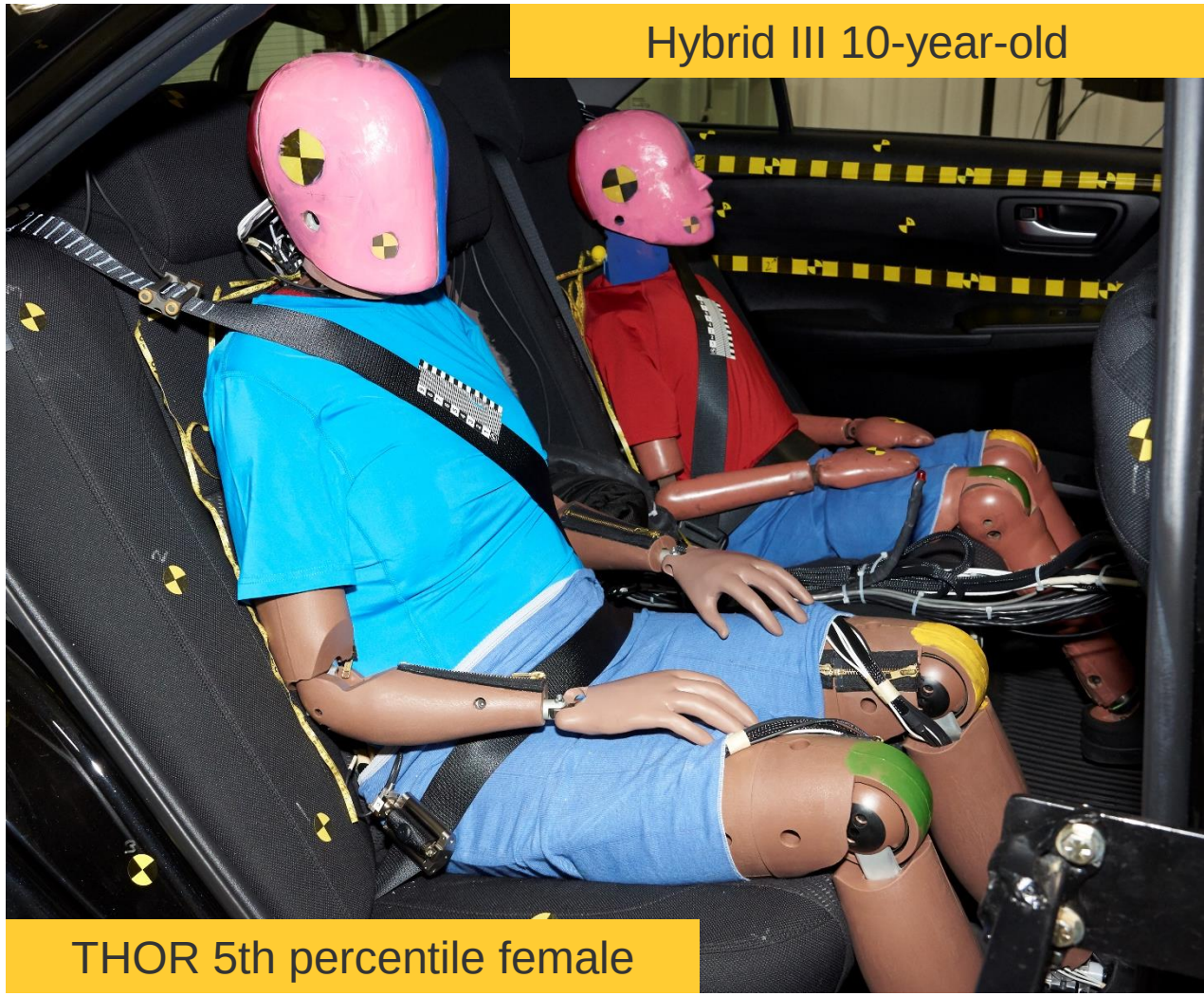
  Current US regulatory and consumer information crash tests do not drive rear seat belt improvements

Research testing



Hybrid III 5th percentile female

Hybrid III 50th percentile male

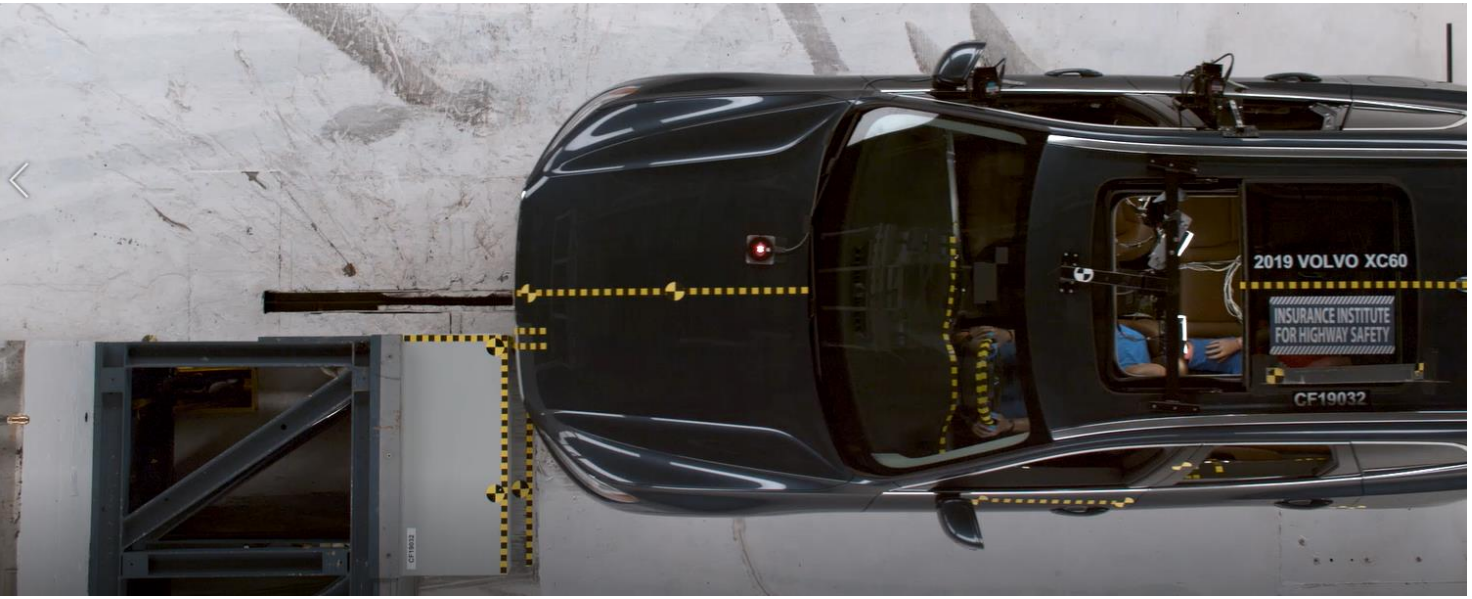


Hybrid III 10-year-old

THOR 5th percentile female

IIHS HLDI

Moderate overlap front crashworthiness evaluation for front and rear occupants



40% overlap into
deformable barrier at 64 km/h

Hybrid III 5th percentile female in left rear
and Hybrid III 50th percentile in front

Pressure sensor on rear occupant

Inaugural test program

Small SUVs

Testing completed
November 2021

Next steps

- First ratings will be released in spring 2022
- Next test series: midsize SUVs
- Inclusion in 2024 *TOP SAFETY PICK* awards

Protecting pedestrians in the dark: Nighttime front crash prevention testing

U.S. pedestrian fatalities
1975-2020
8,000
6,000
4,000
2,000
0
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
59%

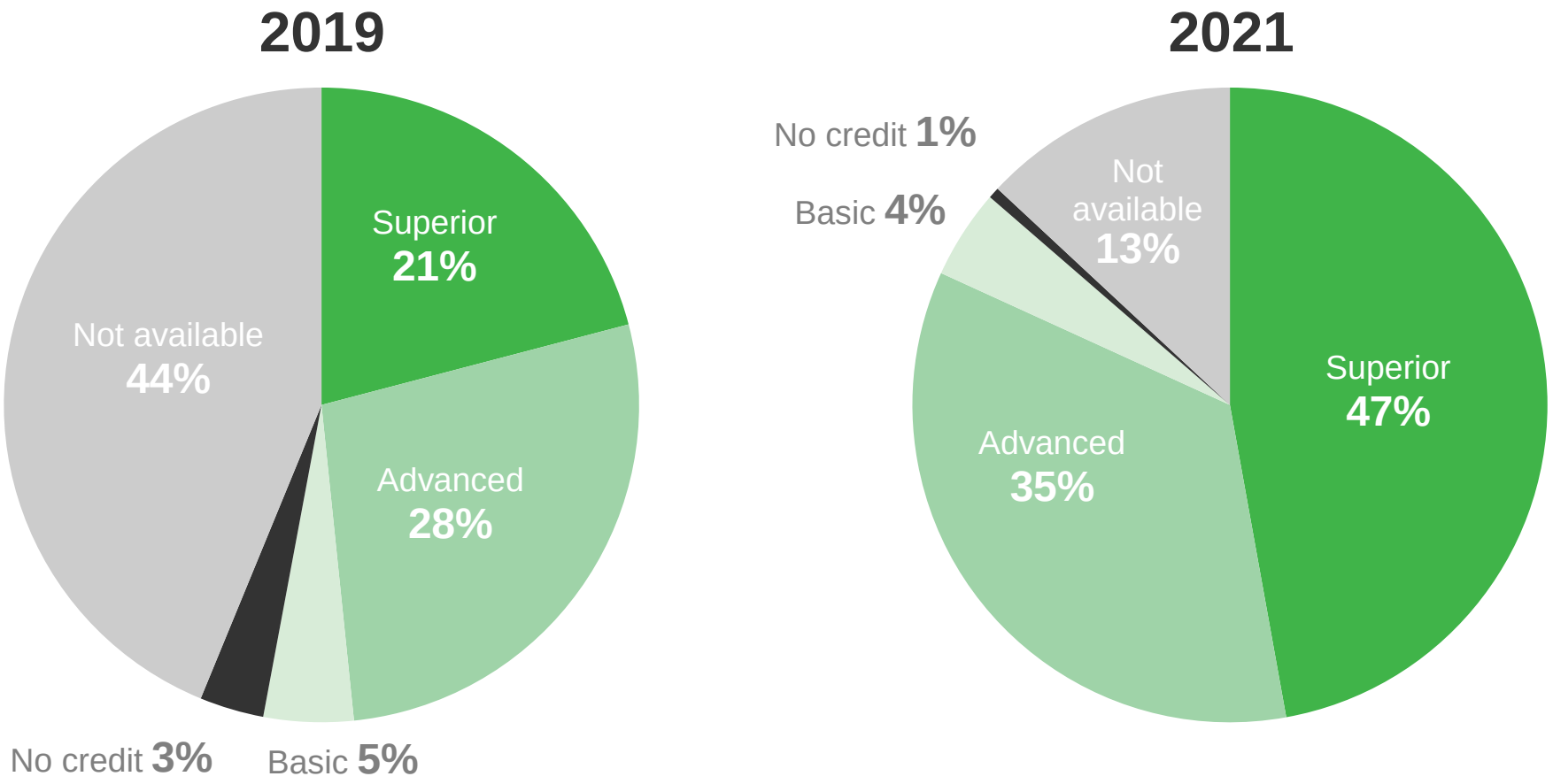
HLDI analysis:
Subaru EyeSight and pedestrians

Pedestrian-related insurance claims **reduced by**

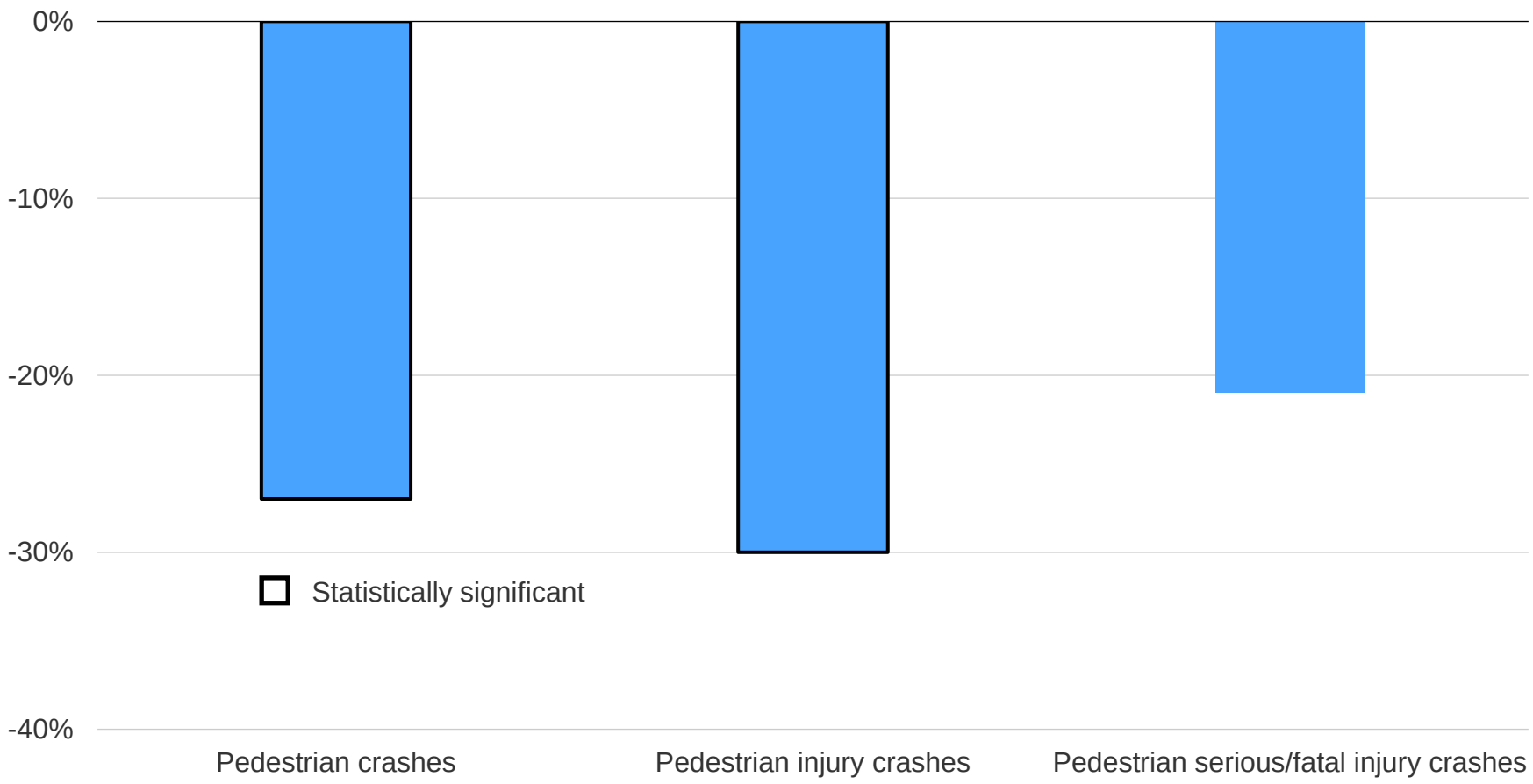
35%

Pedestrian front crash prevention testing began in late 2018

Pedestrian front crash prevention ratings

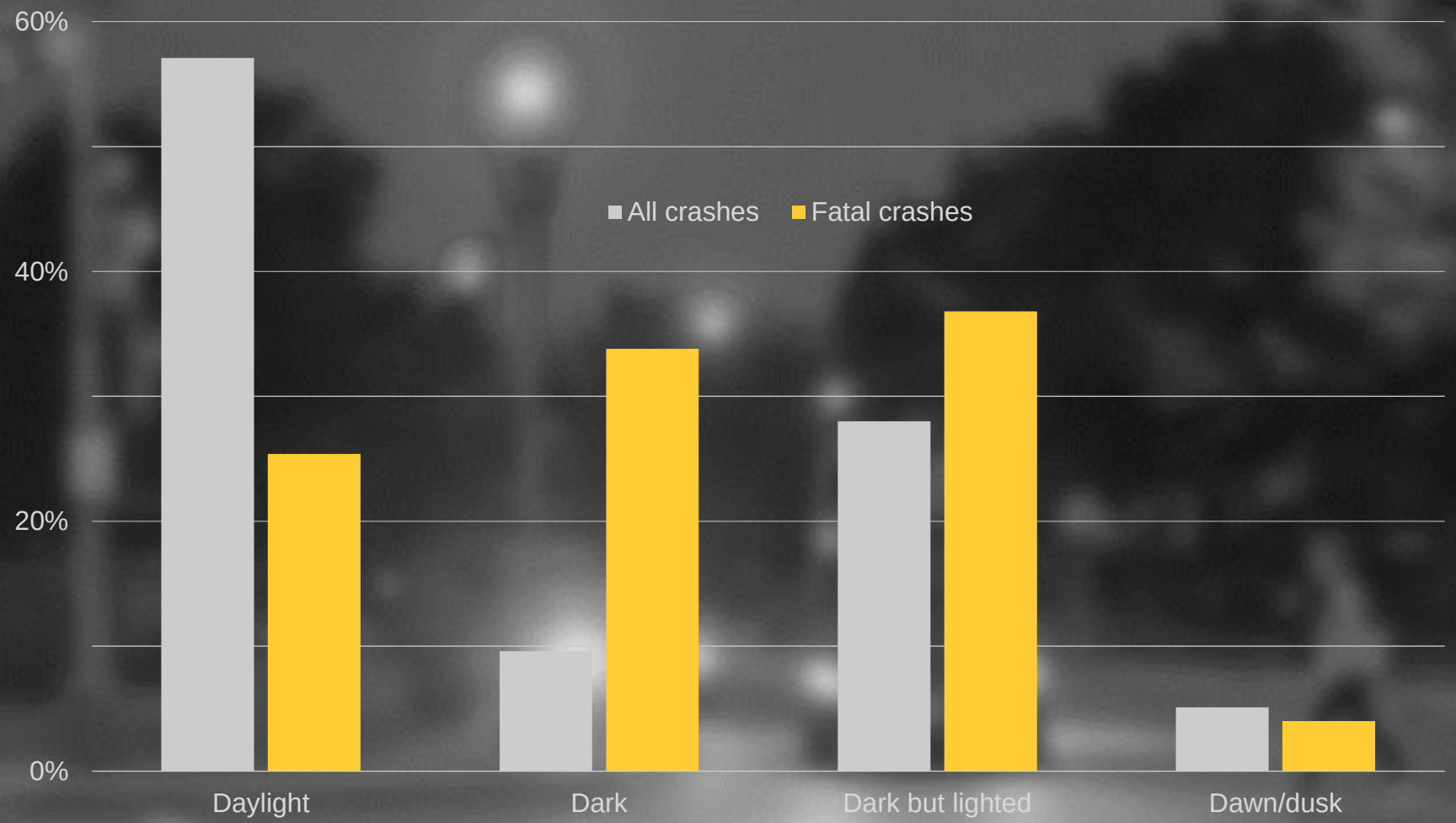


Effects of pedestrian automatic emergency braking (AEB) on police-reported pedestrian crashes



Pedestrian crashes and fatalities

By light condition



Night pedestrian front crash prevention test vehicles

By headlight rating

2021 Ford Bronco Sport

2020 Honda CR-V

2021 Toyota CH-R

2022 Volkswagen Taos

2019 Volvo XC40

2021 Chevrolet Trailblazer

2020 Hyundai Venue

2019 Subaru Forester

2021 Toyota CH-R

Night pedestrian front crash prevention test vehicles

By AEB technology

2021 Ford Bronco Sport

2020 Honda CR-V

2021 Toyota CH-R

2022 Volkswagen Taos

2019 Volvo XC40

2021 Chevrolet Trailblazer

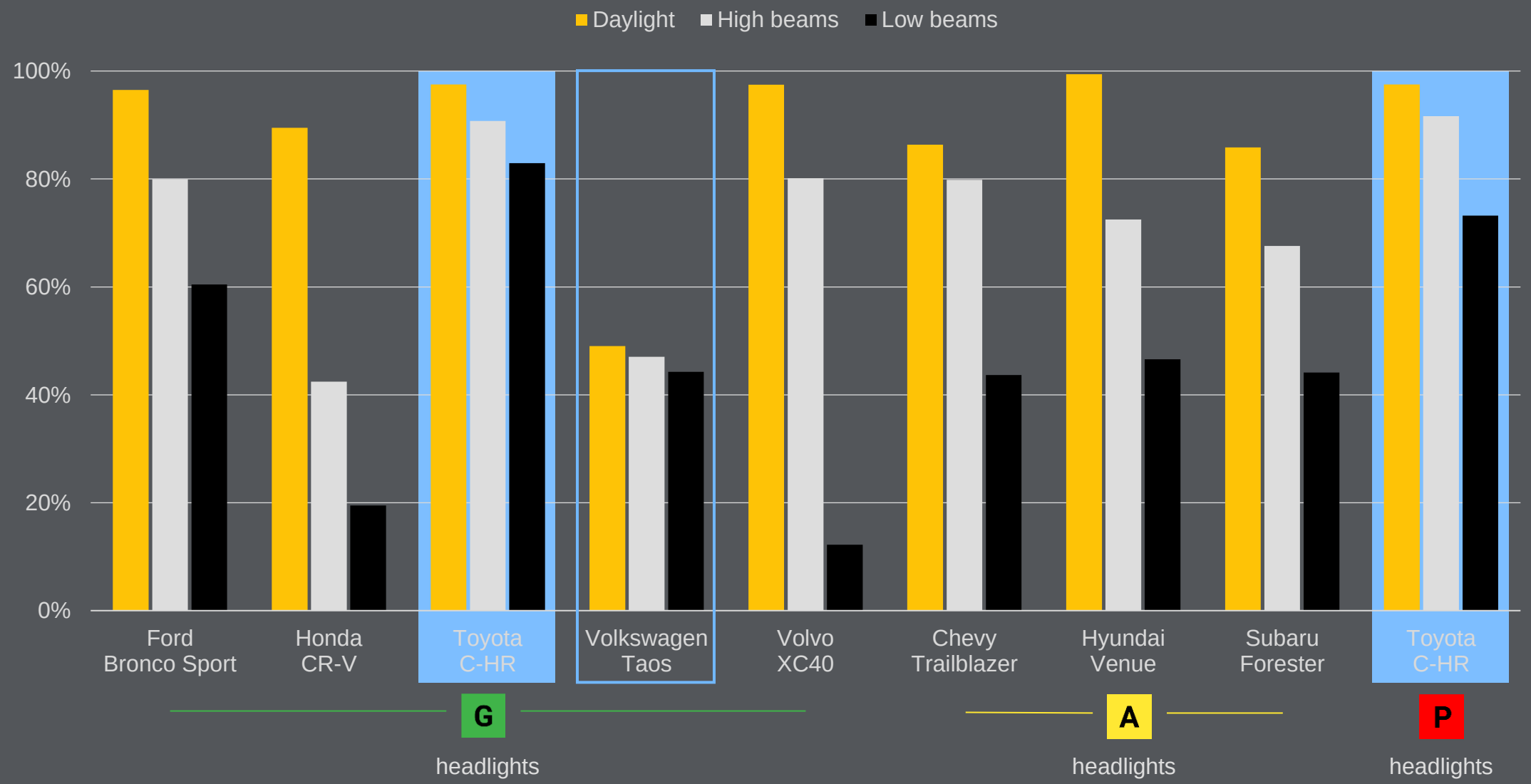
2020 Hyundai Venue

2019 Subaru Forester

2021 Toyota CH-R

Camera Radar

Average speed reductions in pedestrian tests



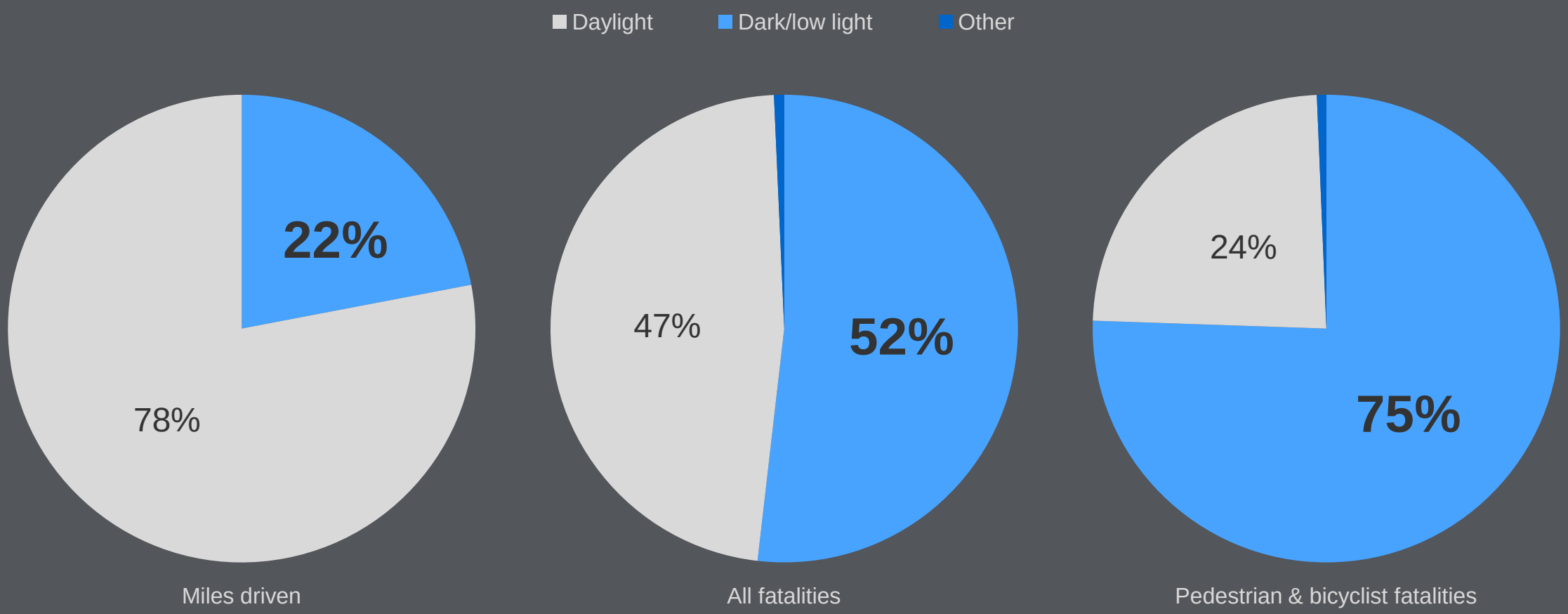
Next Steps

- Night pedestrian front crash prevention ratings for Small SUVs – Spring 2022
- Inclusion in 2023 *TOP SAFETY PICK* awards

IIHS headlight evaluations and industry progress

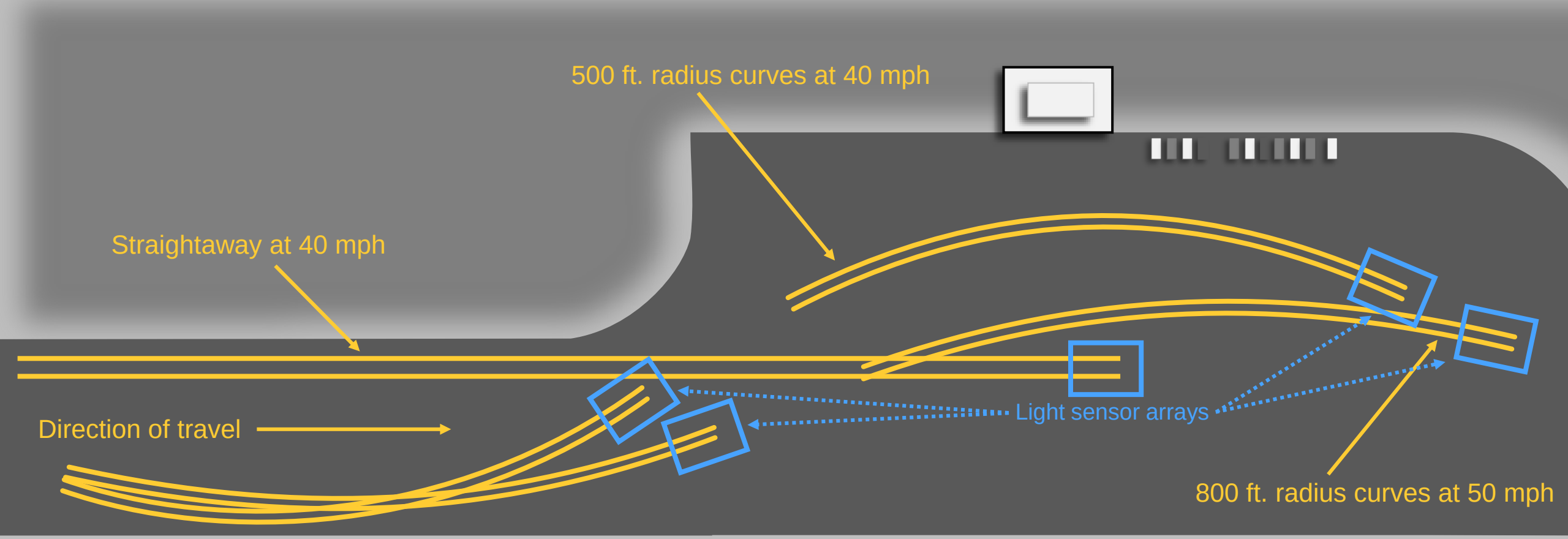
Why are headlights important?

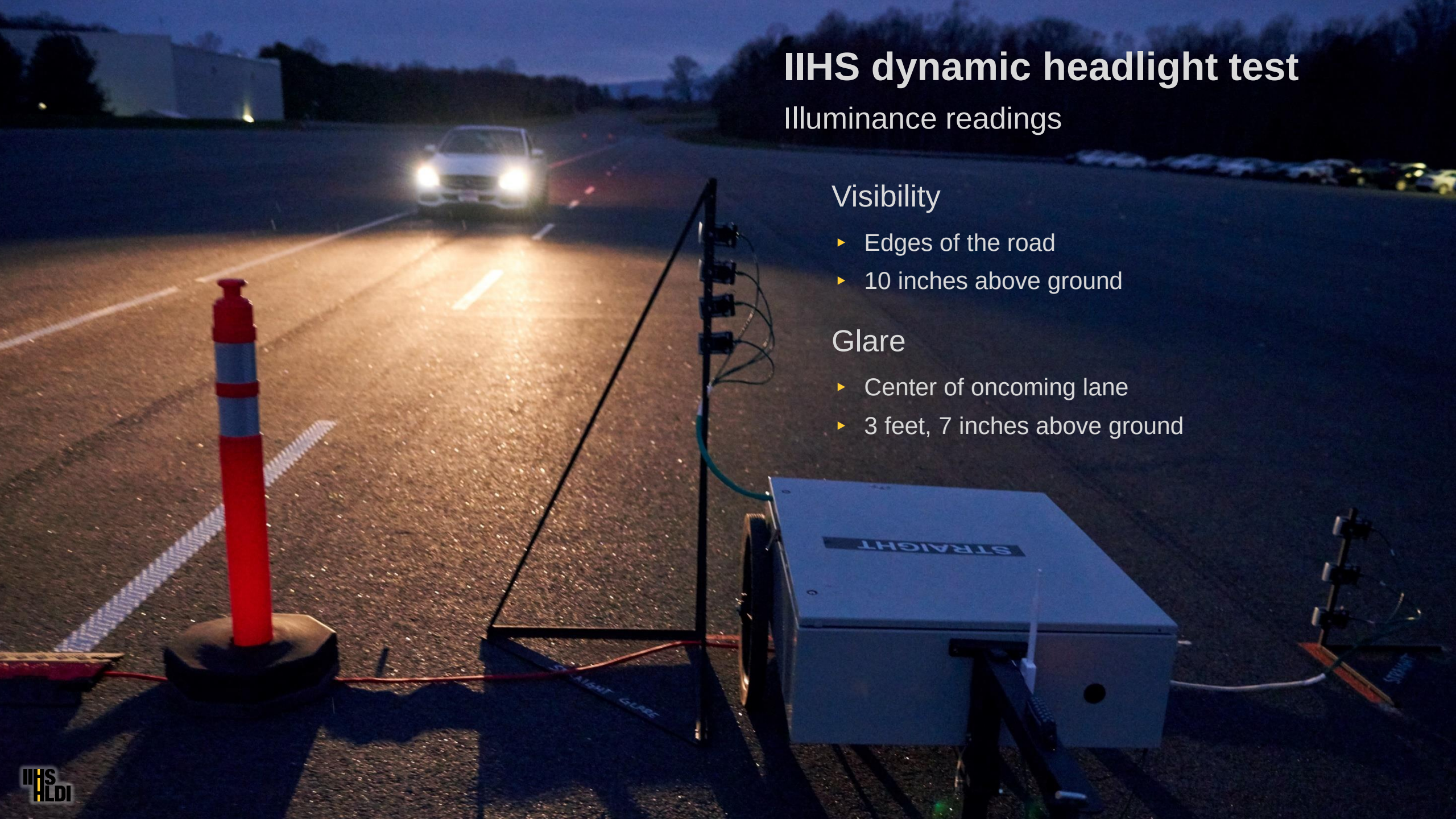
Driving at night is 3 times riskier than driving during the day



IIHS dynamic headlight test

Vehicle approaches





IIHS dynamic headlight test

Illuminance readings

Visibility

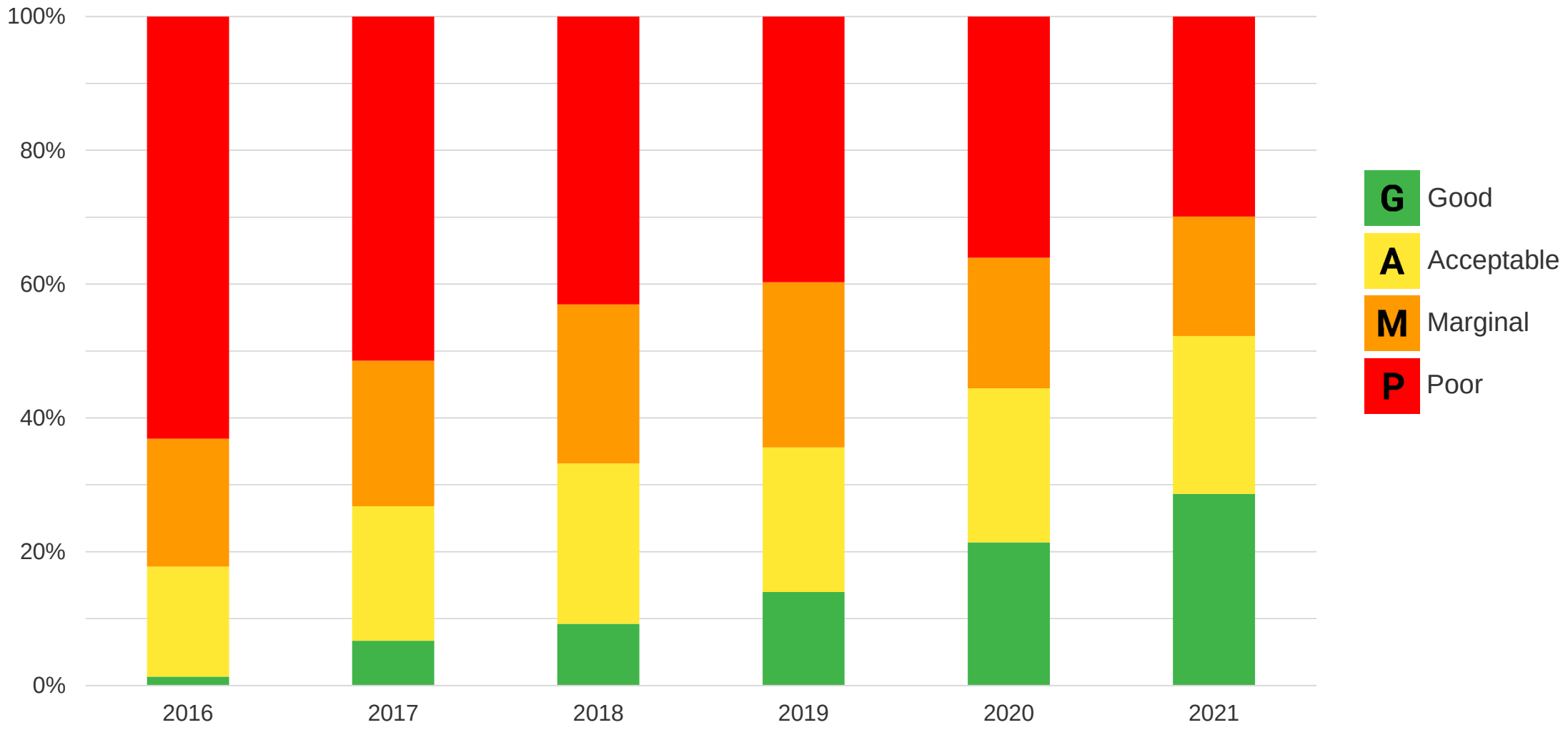
- Edges of the road
- 10 inches above ground

Glare

- Center of oncoming lane
- 3 feet, 7 inches above ground

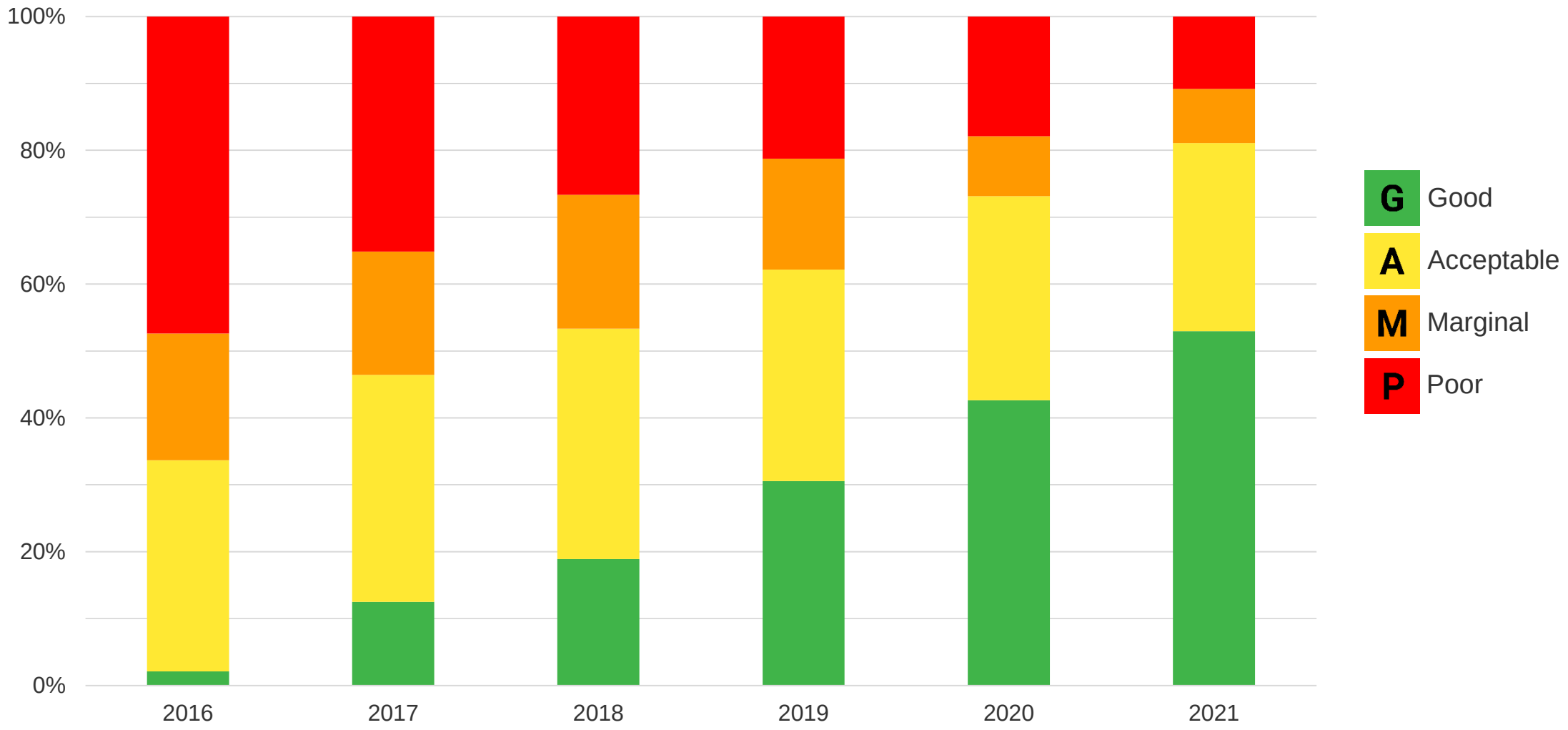
All headlight ratings for 2016-21 models

As of March 2022



Best-rated headlight for 2016-21 models

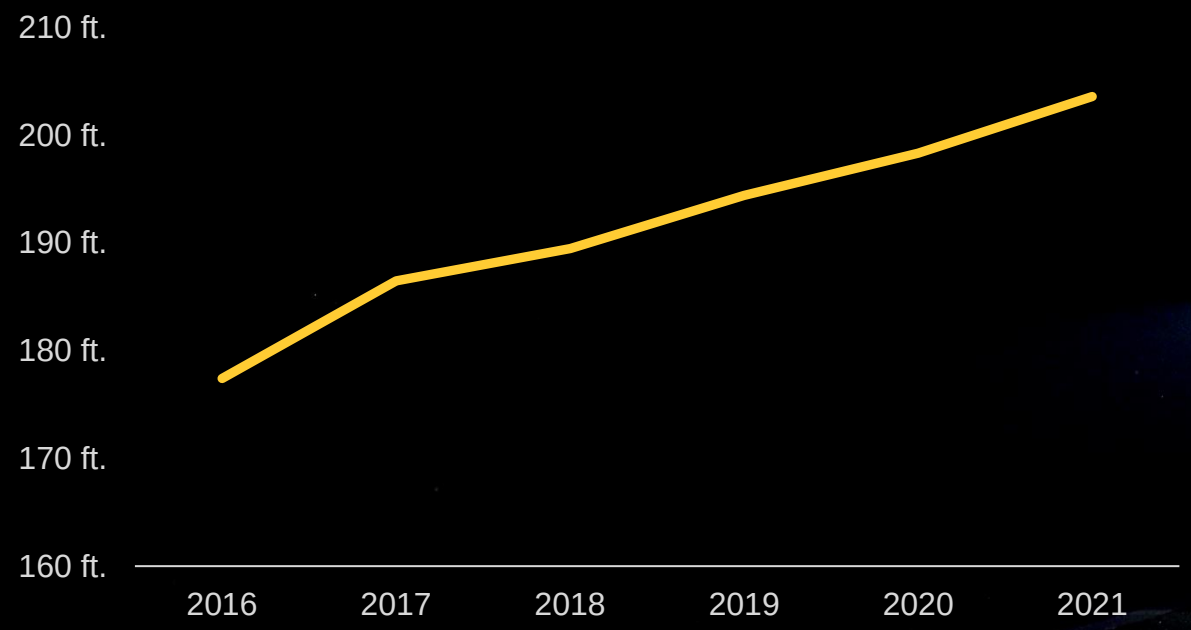
As of March 2022



IIHS HLDI

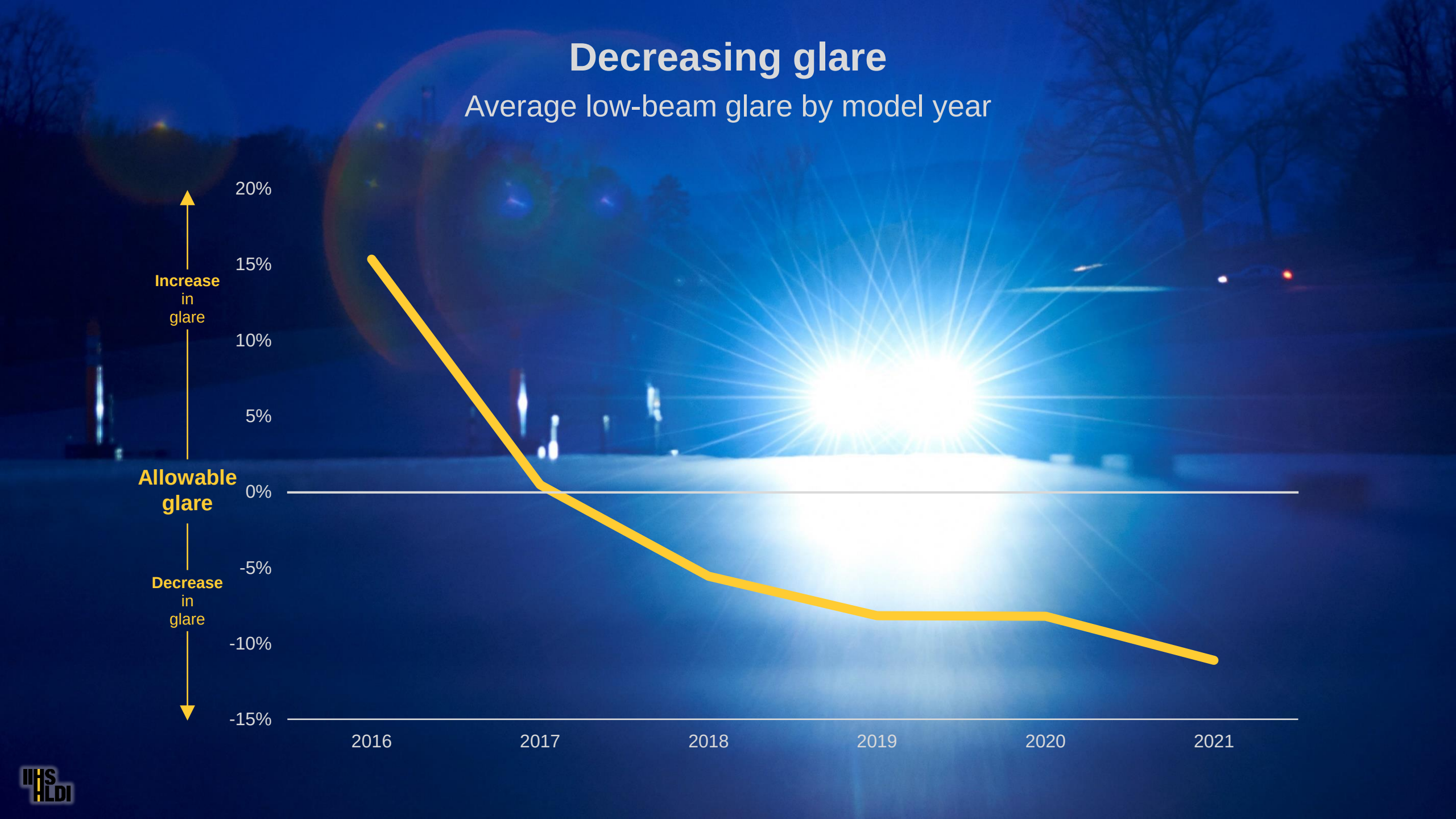
Increasing low-beam visibility

Average low-beam visibility distance by model year



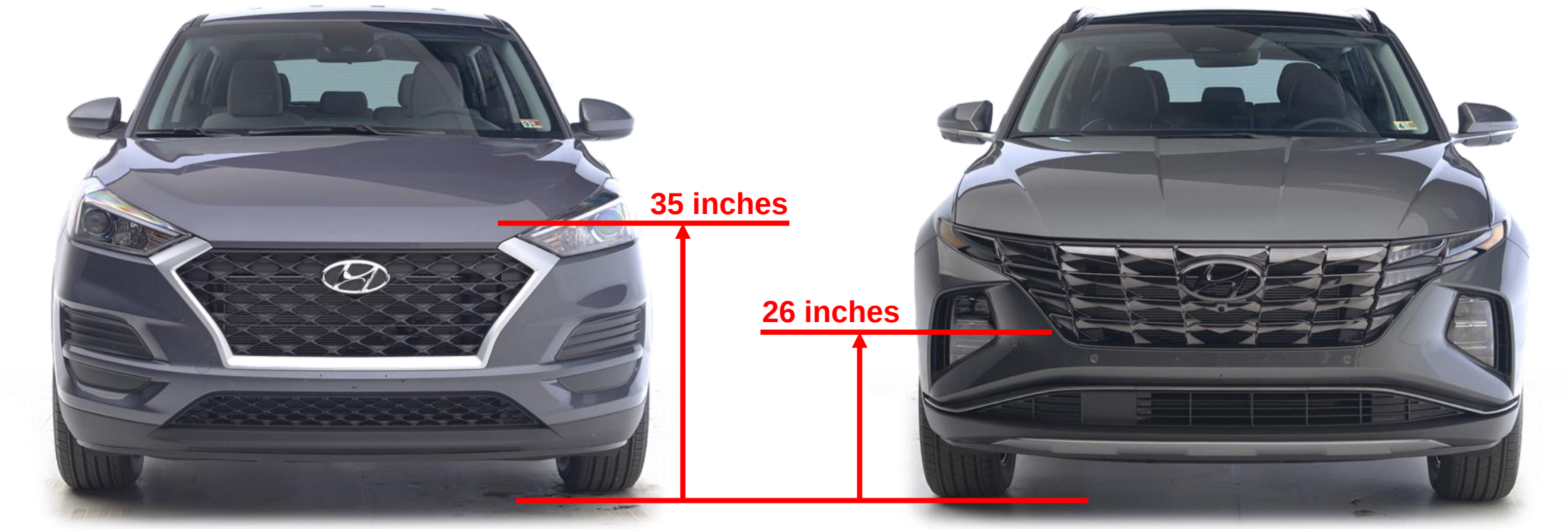
Decreasing glare

Average low-beam glare by model year



Headlight height

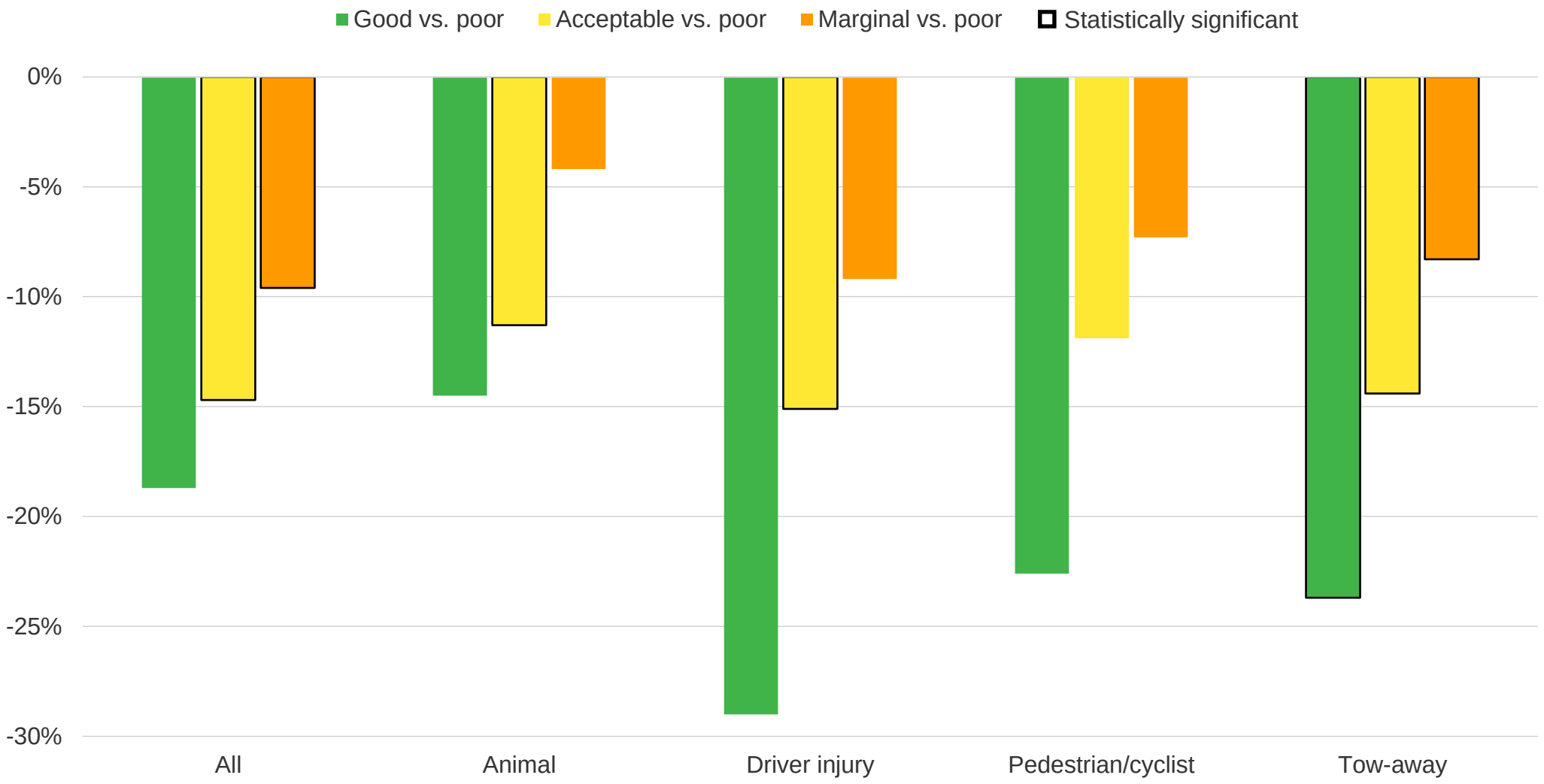
Hyundai Tucson



2021 model

2022 model

Nighttime crash risk relative to poor-rated headlights



Coming soon: non-*TSP* Ratings

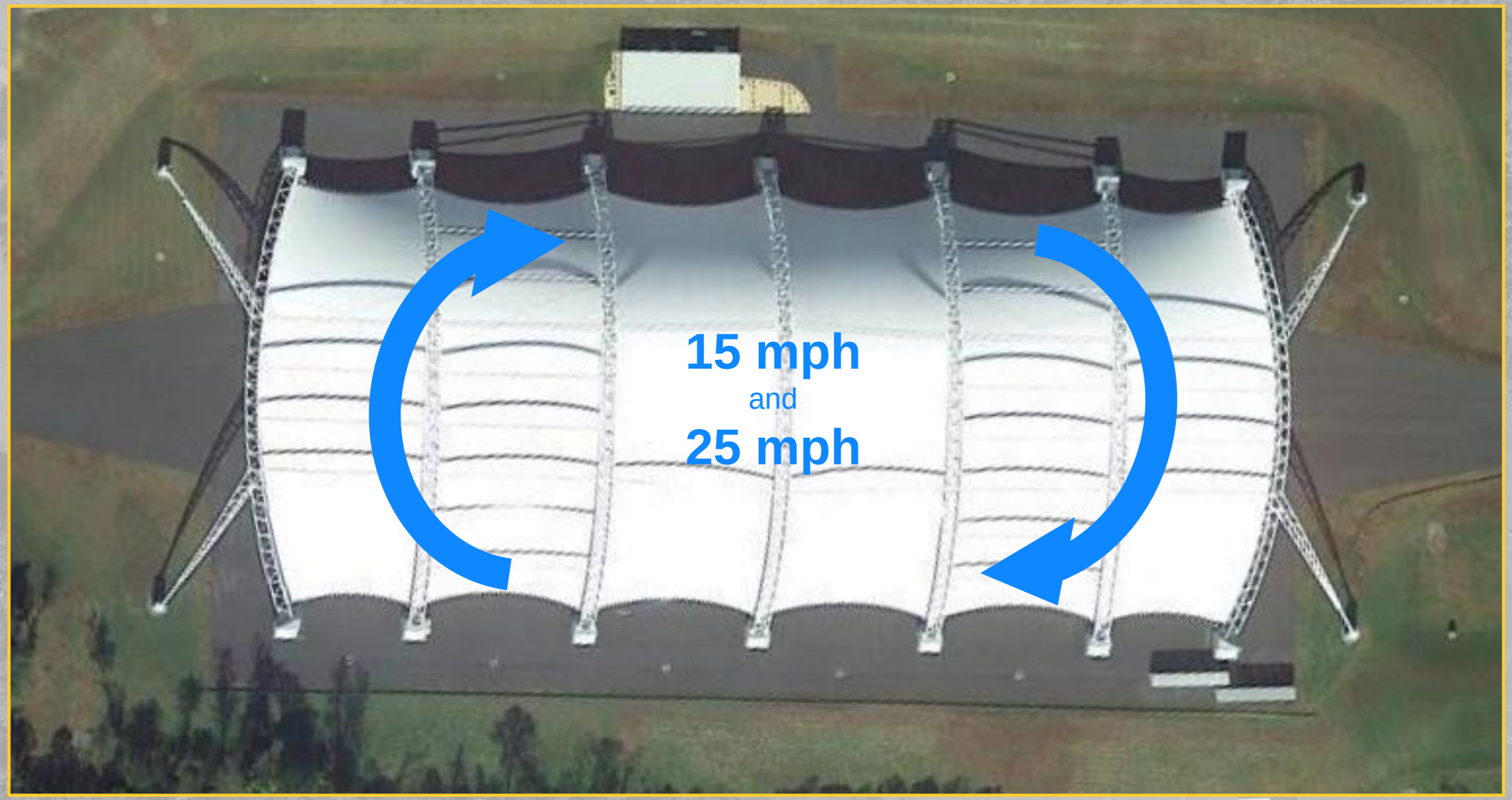
Seat belt reminder systems

IIHS ratings to encourage better belt reminder systems

Belt reminders should:

- Notify when front-seat occupant is unbelted and vehicle is moving
- Remind long enough to motivate occupant to buckle up
- Be “loud and clear”
- Provide timely information about rear belt use

Evaluations performed on the covered track

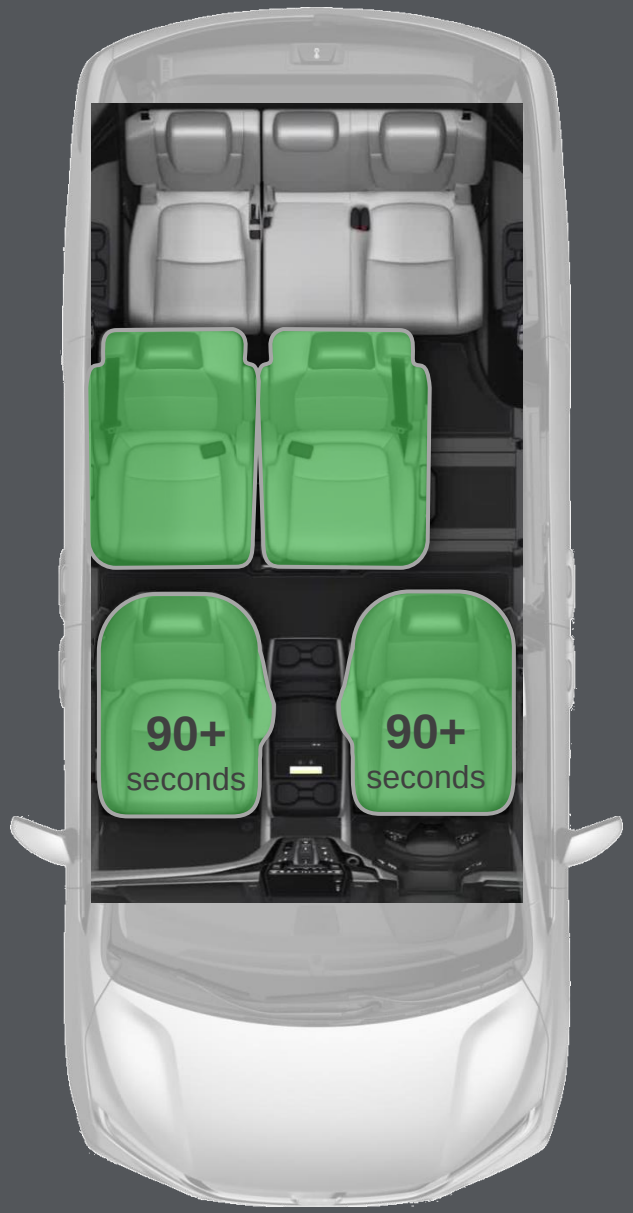

15 mph
and
25 mph

Assess timing, duration, frequency and amplitude of audible reminders

Assess presence, timing and duration of rear reminders

2021 Honda Accord

2022 Nissan Pathfinder



Seat belt reminder system rating

G **Information about second-row belt use and when it changes** plus an acceptable front reminder

A Front reminders **are at least 90 seconds and meet every audible signal requirement**

M Front reminders **are 8 to 89 seconds or do not meet every audible signal requirement**

P At least one front reminder **is less than 8 seconds**

IIHS HLDI

45%
of front-seat occupants
in fatal crashes are unbelted
Belt use
in 2019
Belt use with
good-rated reminder
systems
91%
Front seat
93%
Front seat
77%
Rear seat
85%
Rear seat
1,600
Lives saved annually

Small SUV seat belt reminder system ratings

2021 Audi Q3

2021 Buick Encore

2021 Chevrolet Equinox

2021 Ford Escape

2021 Honda CR-V

2021 Honda HR-V

2021 Hyundai Tucson

2021 Jeep Compass

2021 Jeep Renegade

2021 Mazda CX-5

2022 Mitsubishi Eclipse Cross

2021 Nissan Rogue

2021 Subaru Forester

2021 Toyota RAV4

2021 Volvo XC40

Safeguard ratings for partial driving automation

IIHS safeguards for partial driving automation ratings program

1. Driver monitoring

2. Attention reminders

3. Emergency escalation

4. Automated lane changing

5. ACC auto-resume

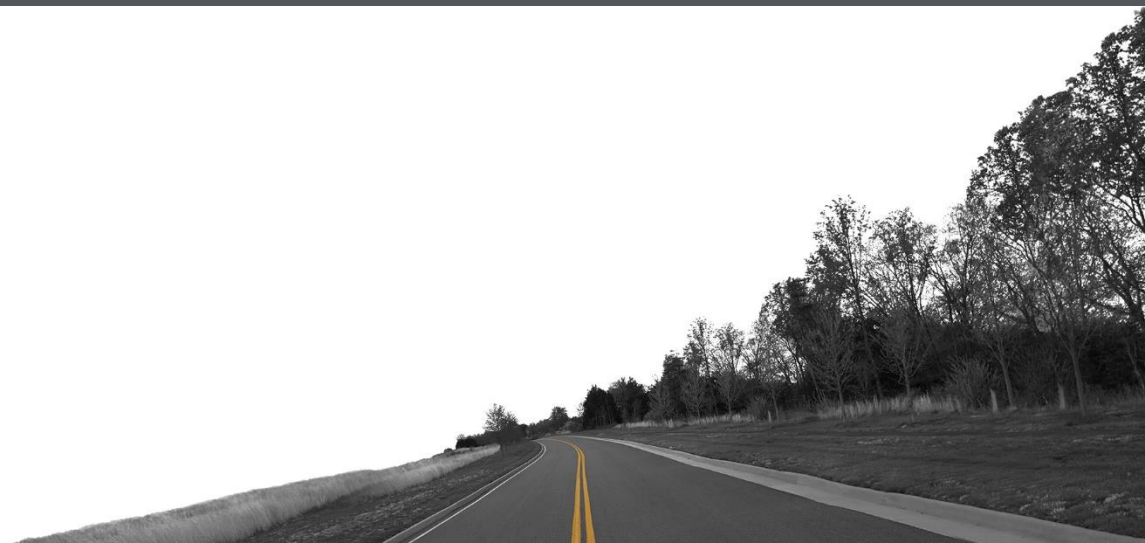
6. Cooperative steering assistance

7. Safety feature use

Insurance Institute for Highway Safety
Highway Loss Data Institute

iihs.org

/iihs.org
@IIHS_autosafety
@iihs_autosafety
IIHS
/company/iihs-hldi

THANK YOU

David Harkey
President, IIHS and HLDI
dharkey@iihs.org