

Behavioral research driving progress

NYMTC PFAC meeting

June 20, 2024



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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.

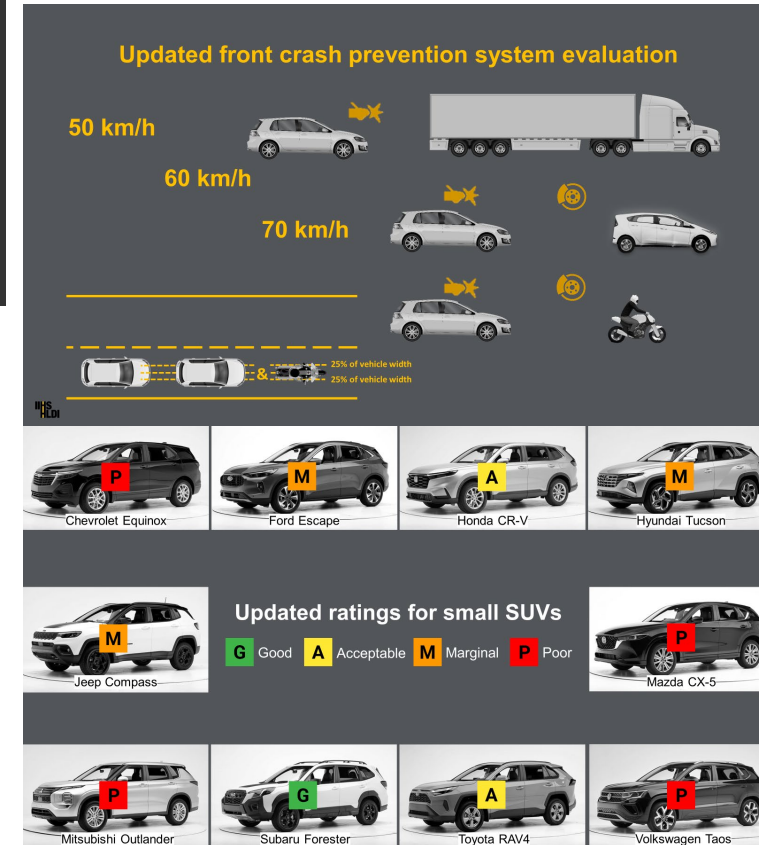
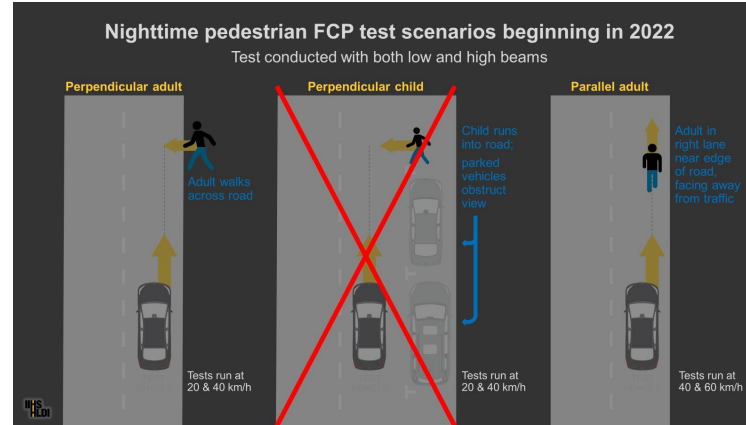
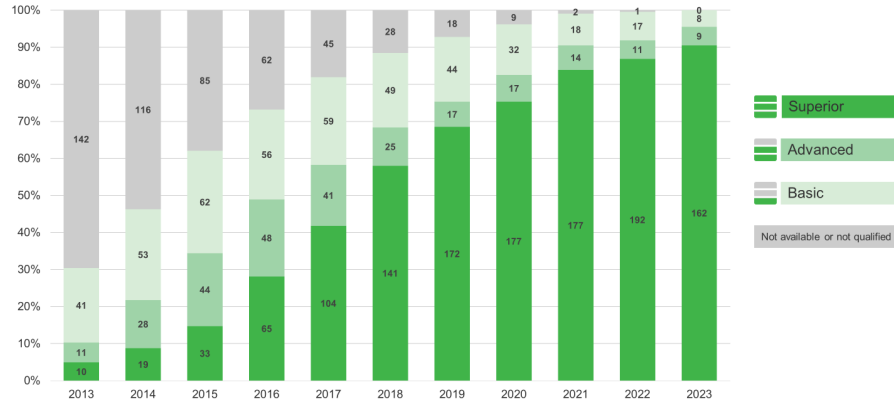
IIHS crashworthiness ratings by model year

Improvements beginning in 1995

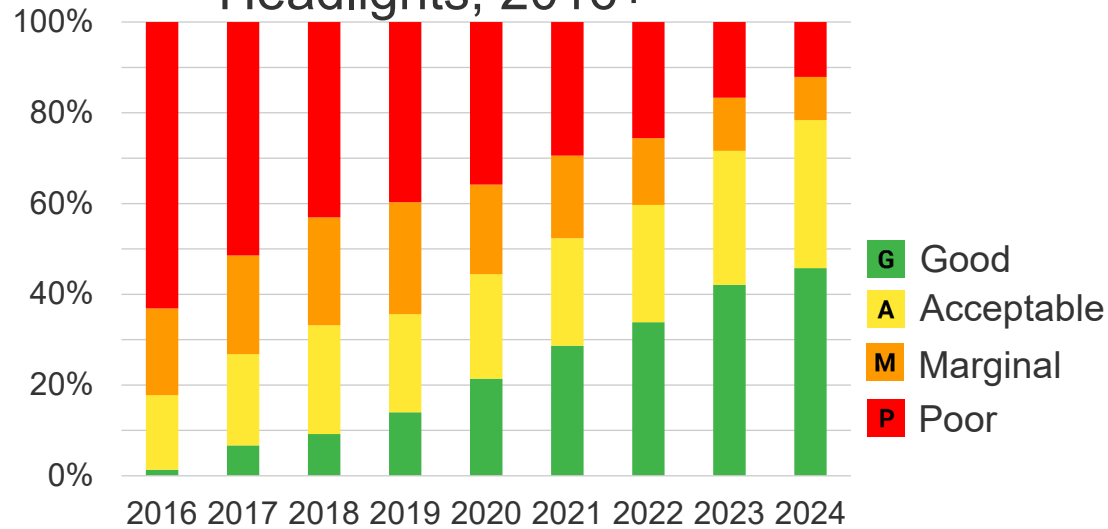


IIHS crash prevention ratings

Front crash prevention ratings
2013-23 models

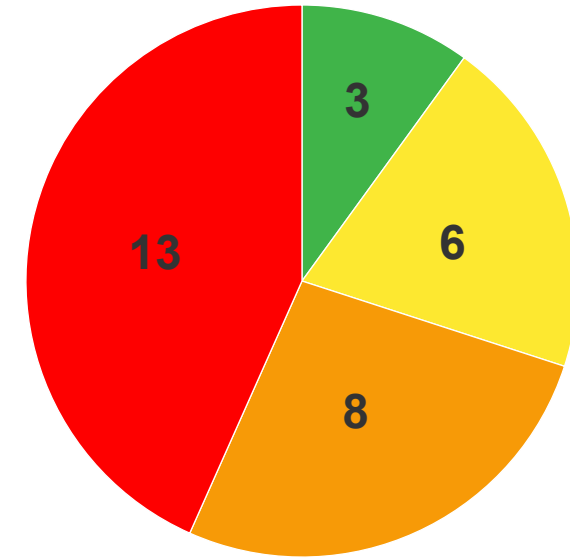


Headlights, 2016+



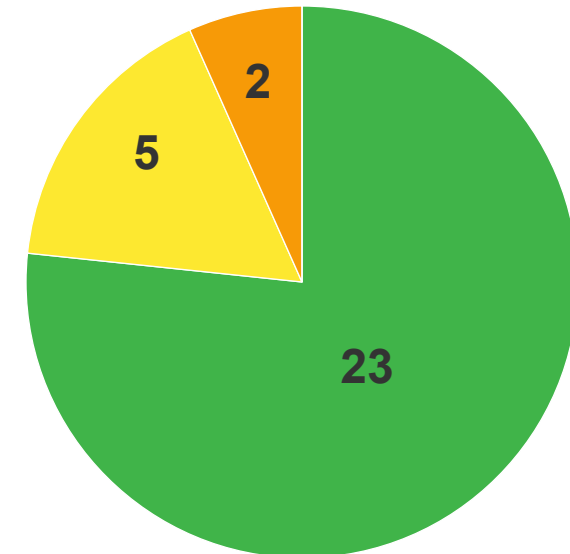
Belt reminders have improved rapidly since IIHS began rating them

PRESS



First 30 vehicles

G Good **A** Acceptable **M** Marginal **P** Poor



Most recent 30 vehicles

IIHS rating system for partial driving automation

Requirements for a good safeguards rating



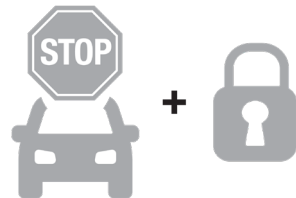
Monitors both the driver's gaze and hand position



Uses multiple types of rapidly escalating alerts to get driver's attention



Fail-safe procedure slows vehicle, notifies manufacturer and keeps automation off limits for remainder of drive



Automated lane changes must be initiated or confirmed by the driver



Adaptive cruise control does not automatically resume after a lengthy stop or if the driver is not looking at the road



Lane centering does not discourage steering by driver



Automation features cannot be used with seat belt unfastened



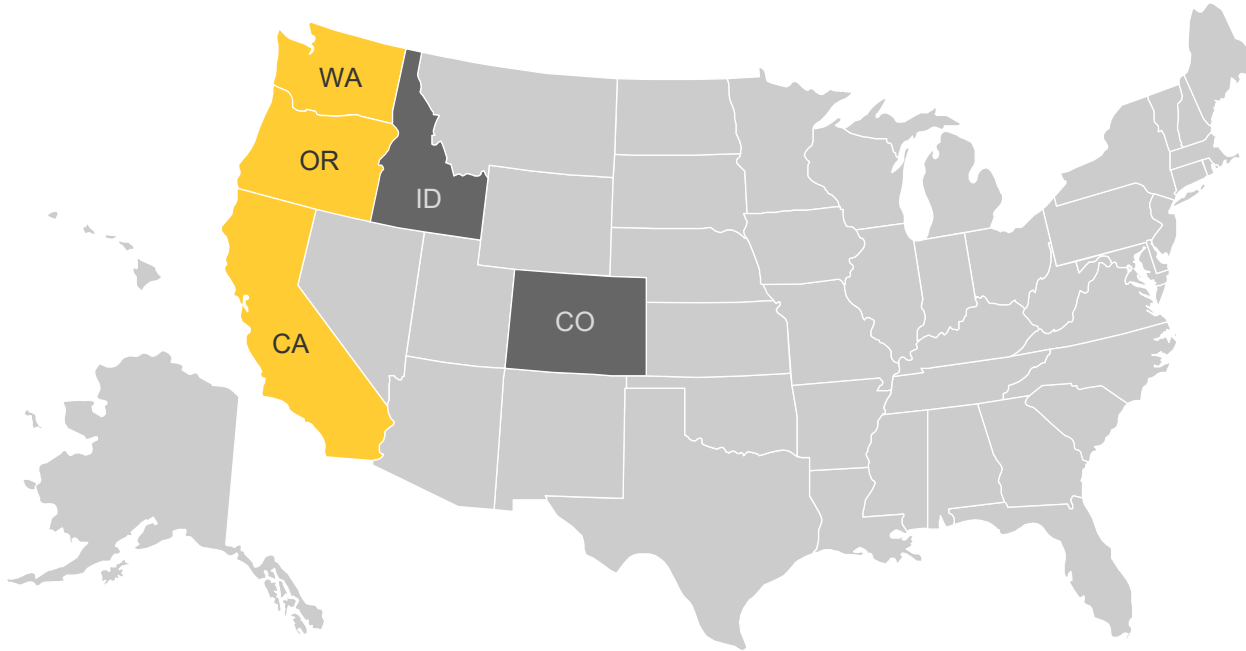
Automation features cannot be used with automatic emergency braking or lane departure prevention/warning disabled



Distracted driving



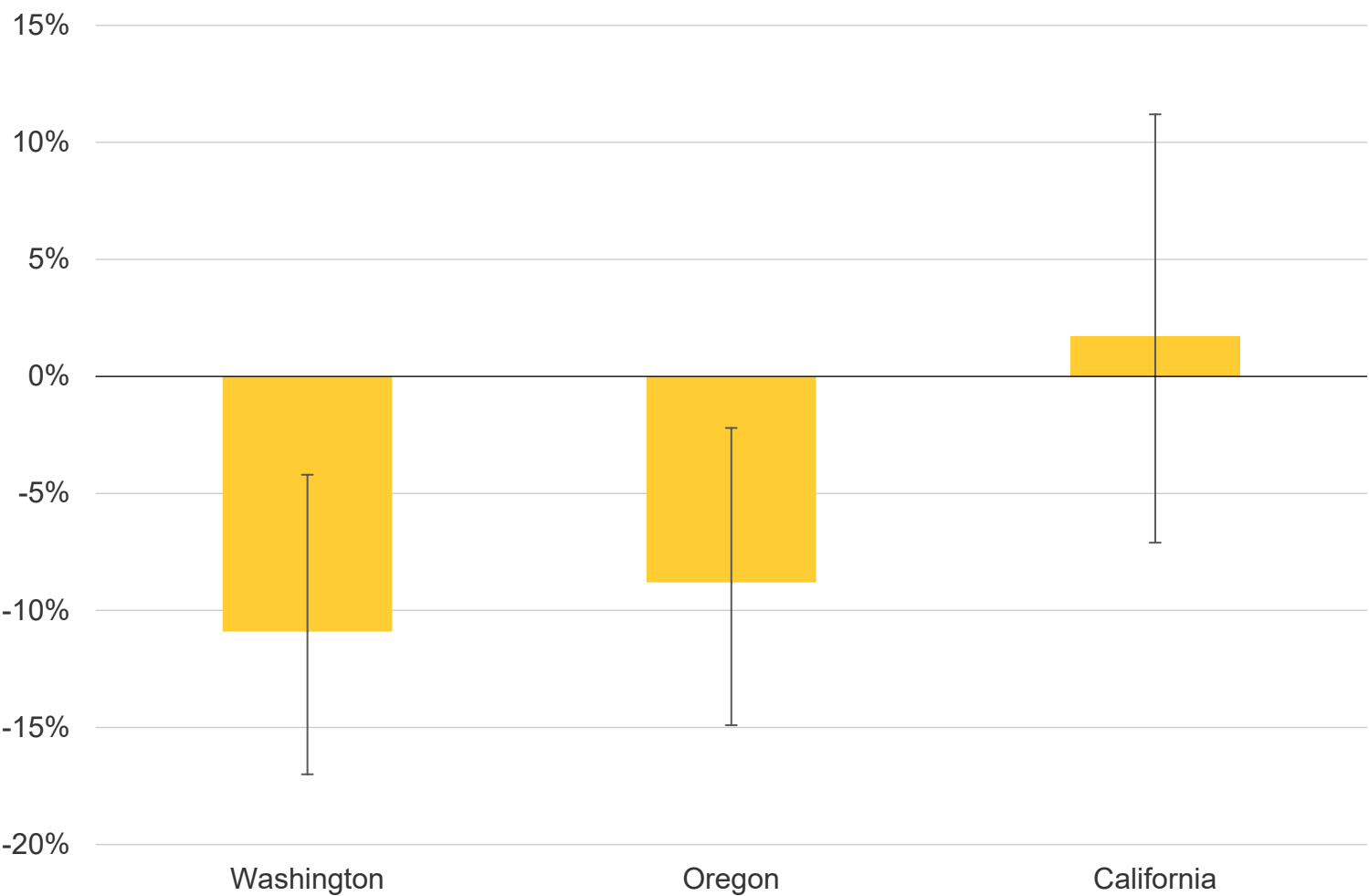
We evaluated stronger laws in California, Oregon and Washington



- ▶ Each state replaced existing laws with stronger bans in 2017
- ▶ Old laws banned “texting” and hand-held “conversations”
- ▶ New laws banned “holding” (OR, WA) “holding and using” (CA) a cellphone
- ▶ Colorado and Idaho were control states
- ▶ Rear-end crashes really sensitive to distraction, so used as surrogate

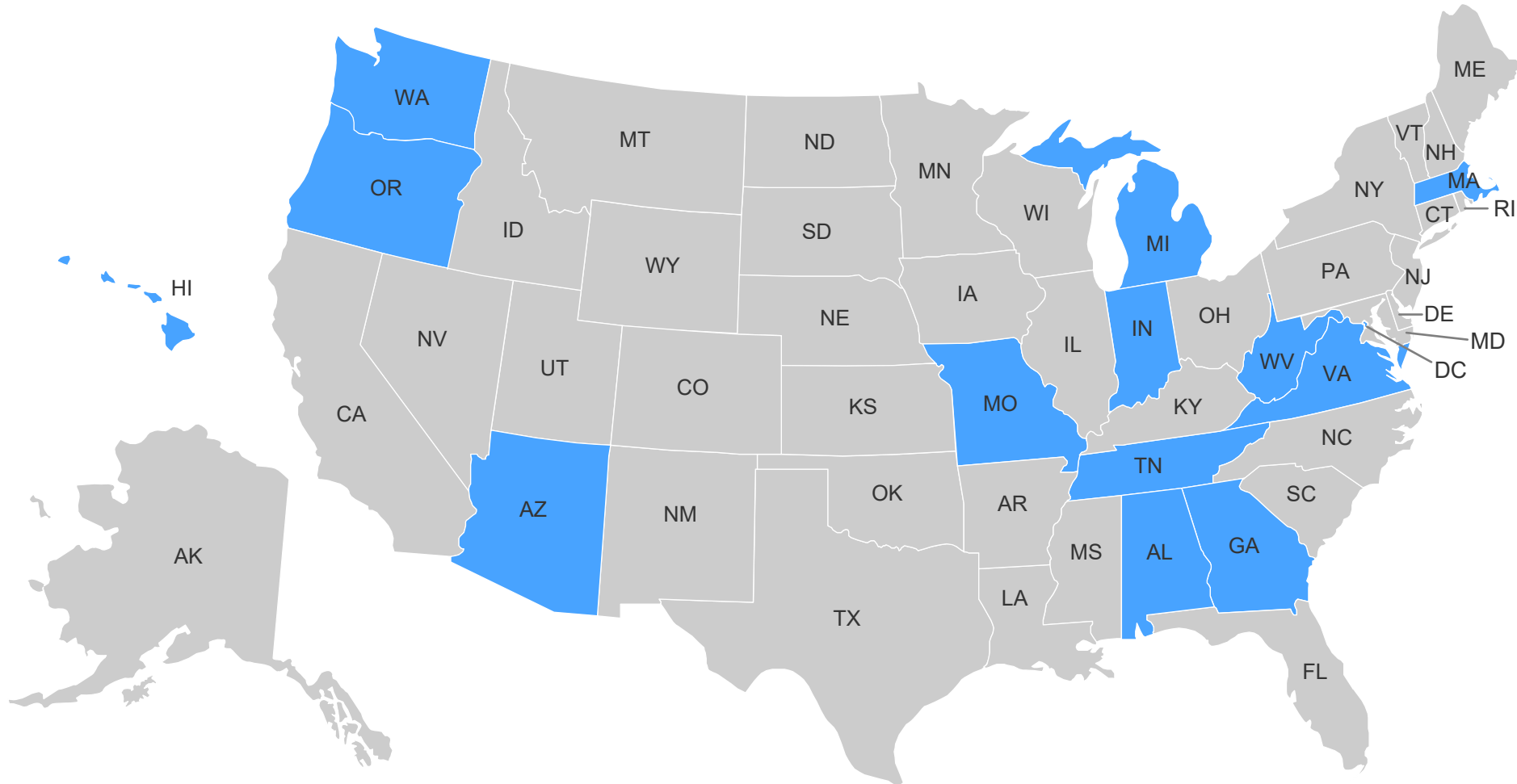
Change in rate of rear-end injury crashes

After cellphone prohibitions broadened



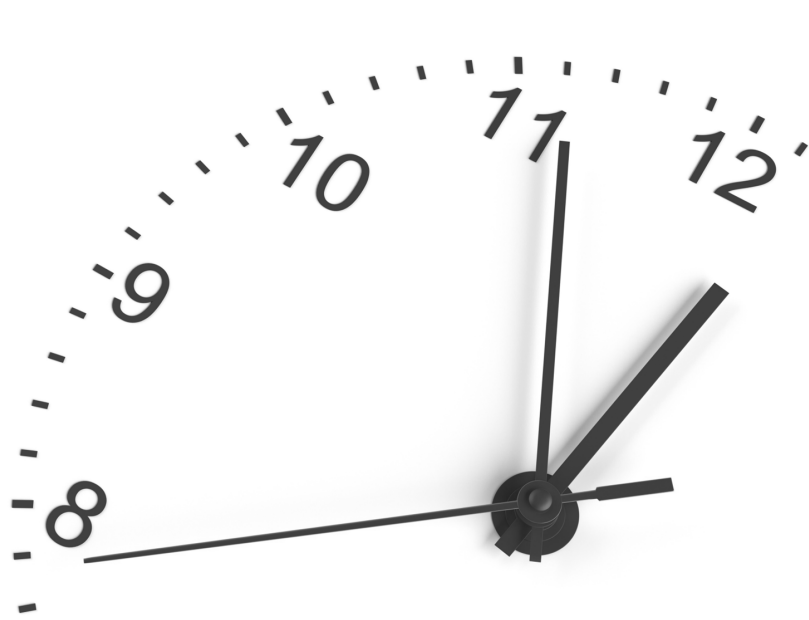
14 states have passed bans on holding a phone

Michigan, Alabama, Missouri, and Vermont passed bans since April 2023





- ▶ IIHS test track experiment compared camera system with experienced roadside data collector
- ▶ Camera system and human observer stationed at same point on track
- ▶ 6 drivers drove several hundred laps on track
- ▶ Drivers were instructed to engage in different distractions (phone to ear, phone in hand, manipulate phone, hold other, infotainment use, eat or drink) or drive with no distraction.



What can telematics tell us about driver cellphone use?

Data collected from participants' phones automatically

Not a random sample, but has other advantages

Phone use, location, etc. throughout trips



‘Do not disturb’ apps have potential

- ▶ Apps use sensors built into the phone to detect if the owner is driving and then mute incoming notifications or limit manual interactions
- ▶ iPhone and Android have built-in settings

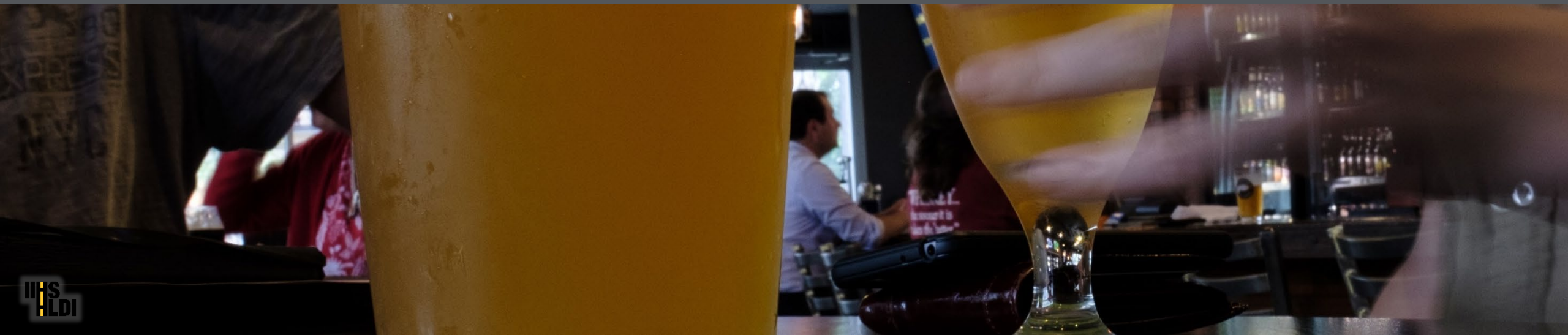
National Distracted Driving Coalition

Formed in March 2021



- ▶ Government, insurers, research institutions, universities, safety advocates, transportation, telecommunications and technology companies and associations
- ▶ Collect and share information, accelerate progress in reducing distracted driving
- ▶ National Action Plan
- ▶ Website: usnddc.org

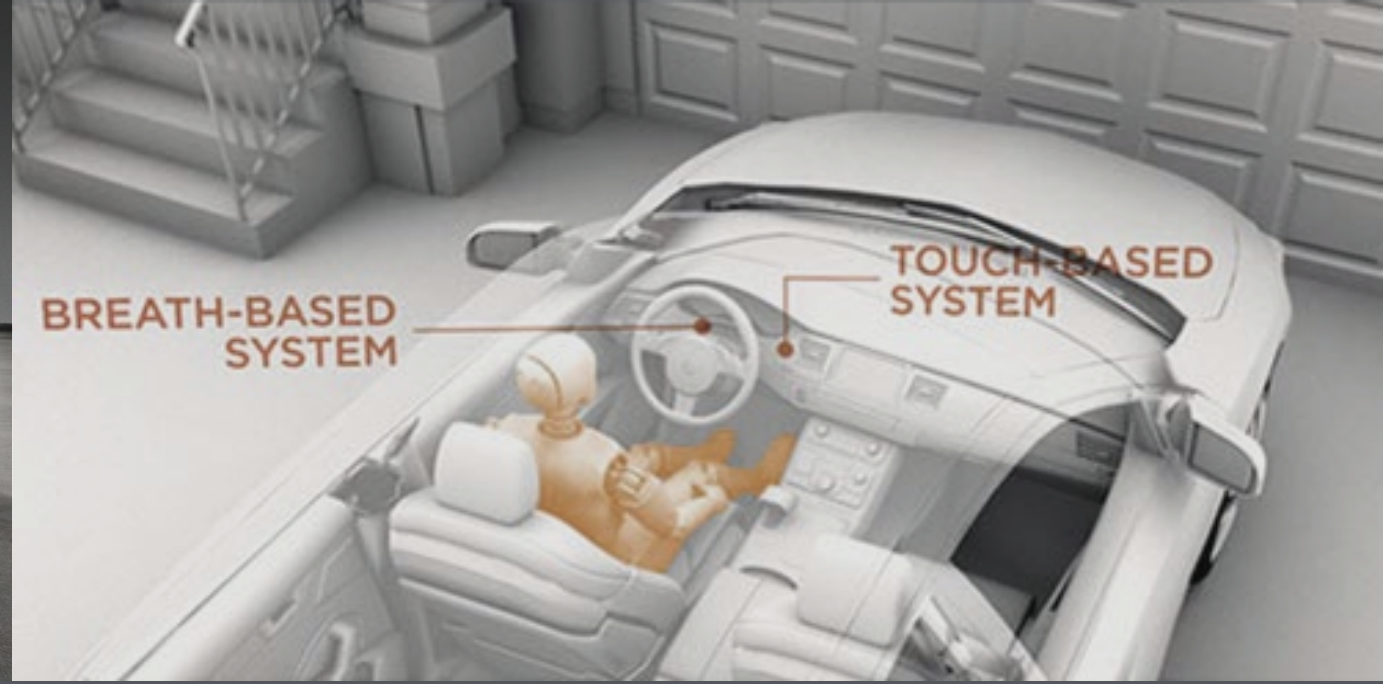
Impaired driving





The number of impaired drivers in fatal crashes falls (BAC $\geq$ 0.08%)

- ↓ **9%** when states require interlocks for repeat offenders only
- ↓ **20%** when states require interlocks for repeat offenders and first offenders with high BACs
- ↓ **26%** when states require interlocks for all DUI offenders, including first offenders



Passive alcohol detection

Driver alcohol detection system for safety (DADSS)

IIHS has been a member of the DADSS stakeholder team since the beginning

Lives saved annually

3 years – 1,000

12 years – 4,600

Long-term – 9,400



Reboot of high-visibility alcohol-impaired driving campaign in North Carolina

IHS is partnering with

- ▶ NC Governor's Highway Safety Program
- ▶ NC Conference of District Attorneys
- ▶ NC Highway Patrol
- ▶ Vaya Health



The North Carolina Governor's Highway Safety Program and the Insurance Institute for Highway Safety are leading an effort with local law enforcement and other partners to update the iconic "Booze It & Lose It" campaign for 2023 with a pilot project in Western North Carolina.

What's new?

-  **NEW COMMUNICATIONS** — emphasizing the human costs of impaired driving, along with a new ad campaign and updated logo.
-  **NEW PARTNERSHIPS** — Court officials, treatment centers and local media will work together to eliminate impaired driving in Western North Carolina. And we're working in new ways with law enforcement and other traditional partners.
-  **NEW TOOLS** — We'll be training partners about tools such as Continuous Alcohol Monitoring bracelets that can help reduce recidivism and save lives.
-  **NEW TRAINING** — We're offering training to our partners on topics such as alcohol treatment options, new alcohol surveillance techniques and new ways to use data to address impaired driving before it happens.

When?

This project begins in January 2023 and will continue through June. At that time, we'll evaluate our successes and make any needed changes to continue the project through the rest of 2023.

Where?

The pilot campaign is being conducted in seven counties.



Speed



U.S. cities are lowering speed limits



Reduction in odds of speeding

**Exceeding
25 mph**

↓3%

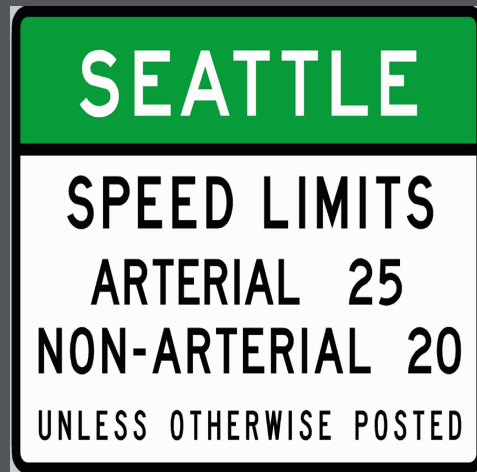
**Exceeding
30 mph**

↓8%

**Exceeding
35 mph**

↓29%

U.S. cities are lowering speed limits



Reduction in odds of a crash
involving injury on arterials

Downtown

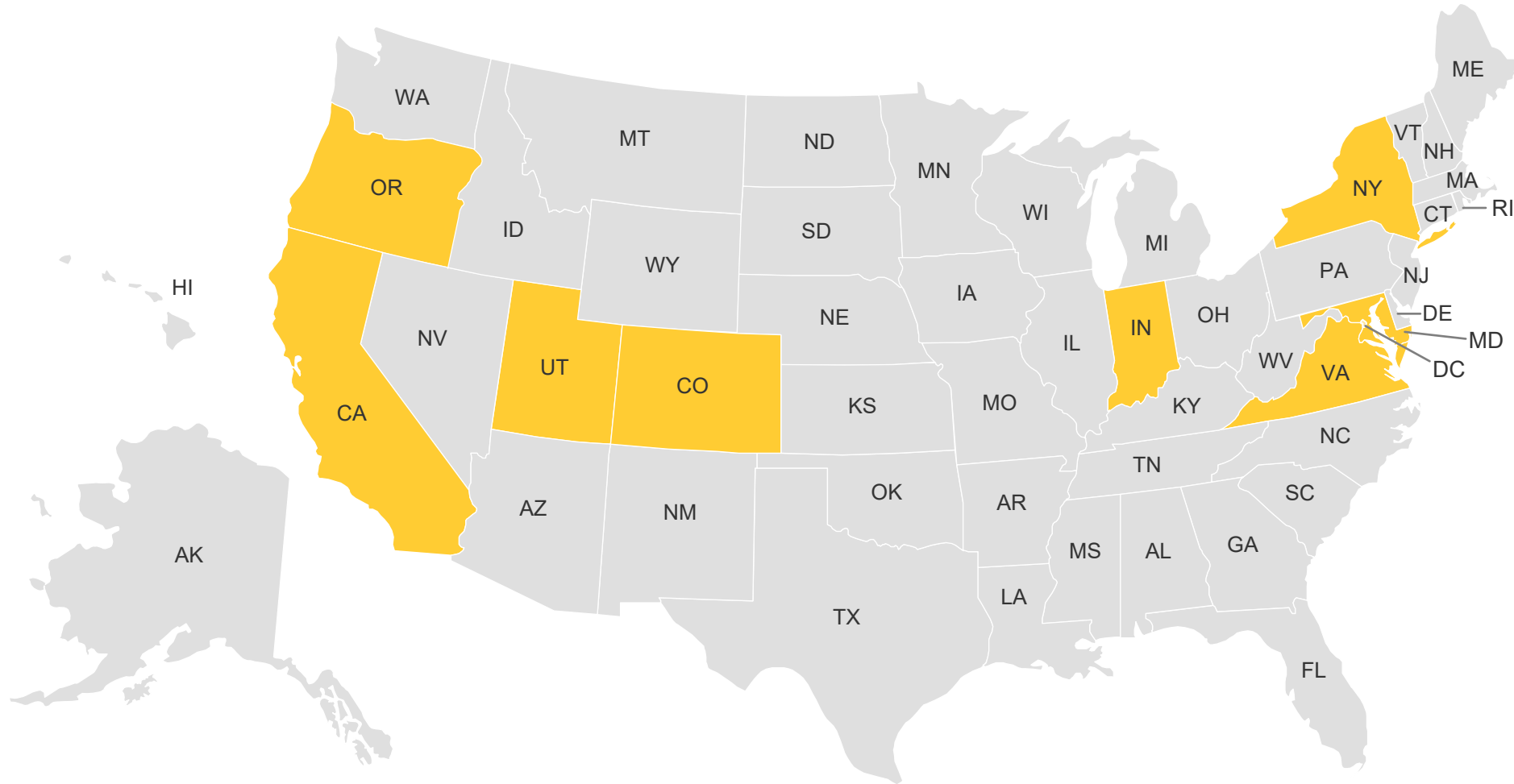
↓20%

**Outside
downtown**

↓11%

More states have granted flexibility for local jurisdictions to set speed limits

Since 2018





Intelligent speed assist can help

Vehicle/device detects travel speed vs speed limit

- ▶ Warn the driver and/or limit speed
- ▶ Potential for aftermarket systems for existing vehicles
- ▶ Mandated in E.U. in 2004, optional on some U.S. models

IIHS research

- ▶ Observations of ADAS settings in vehicles serviced at dealerships
- ▶ National survey of acceptability of ISA



Left-turn traffic-calming treatments

Speed management pilot program

Maryland received \$100,000 in grant funding

Countermeasures included:

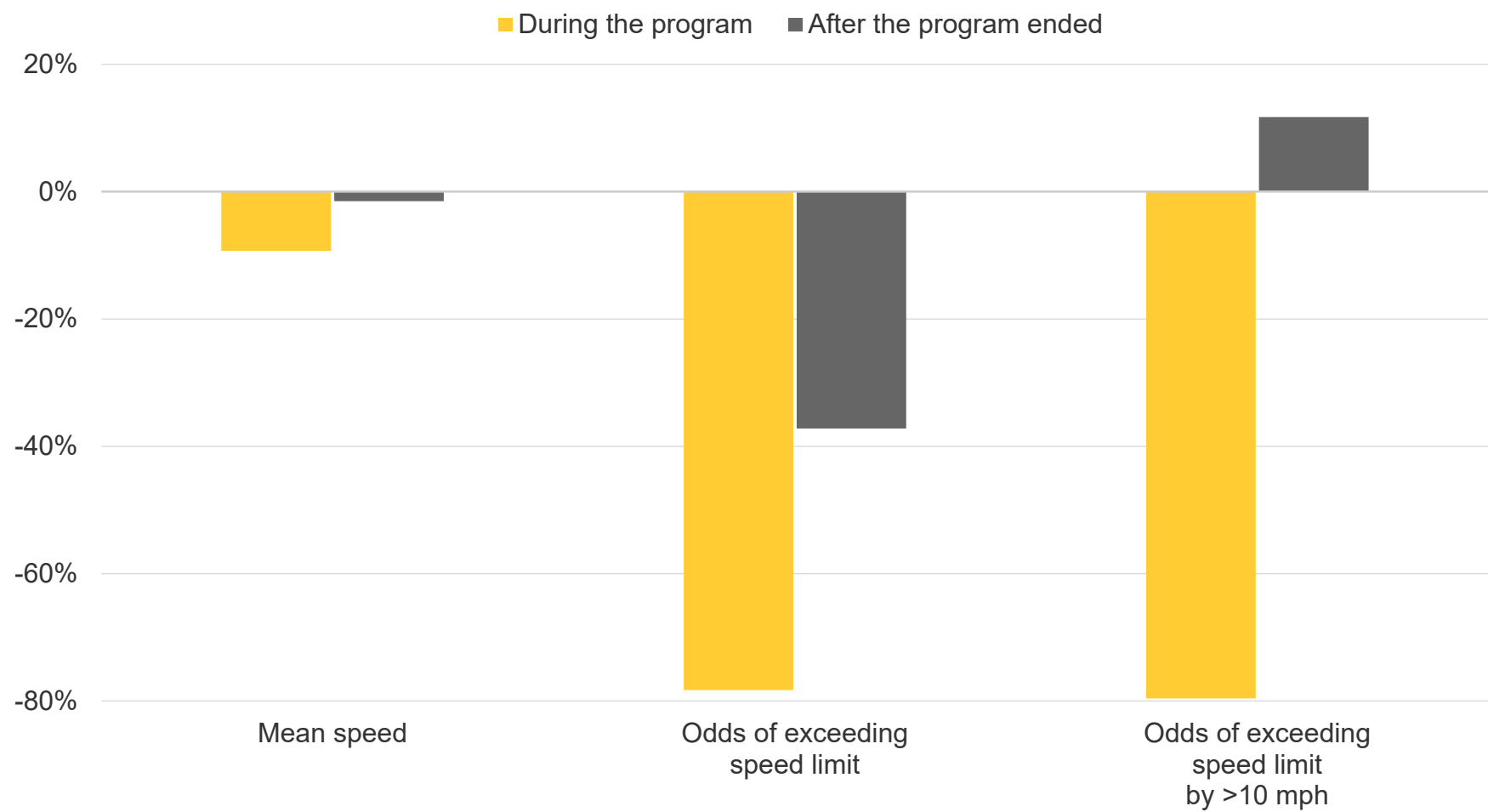
- Roadway improvements
- Increased speed enforcement
- Public outreach

Goal was to develop template that can be promoted to other states



Percent change in mean speeds and odds of exceeding speed limit

Relative to what would be expected without pilot program

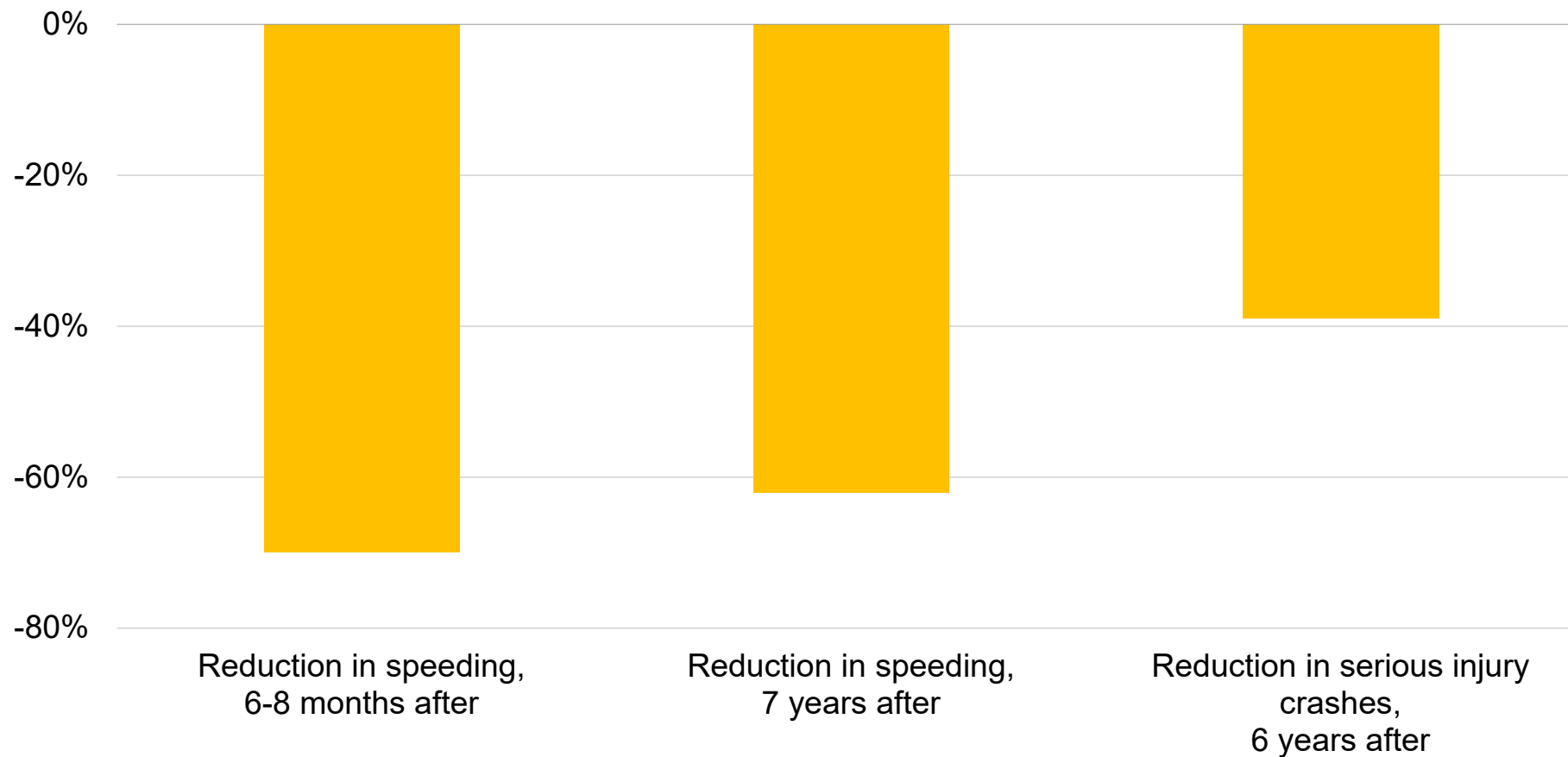


Automated enforcement



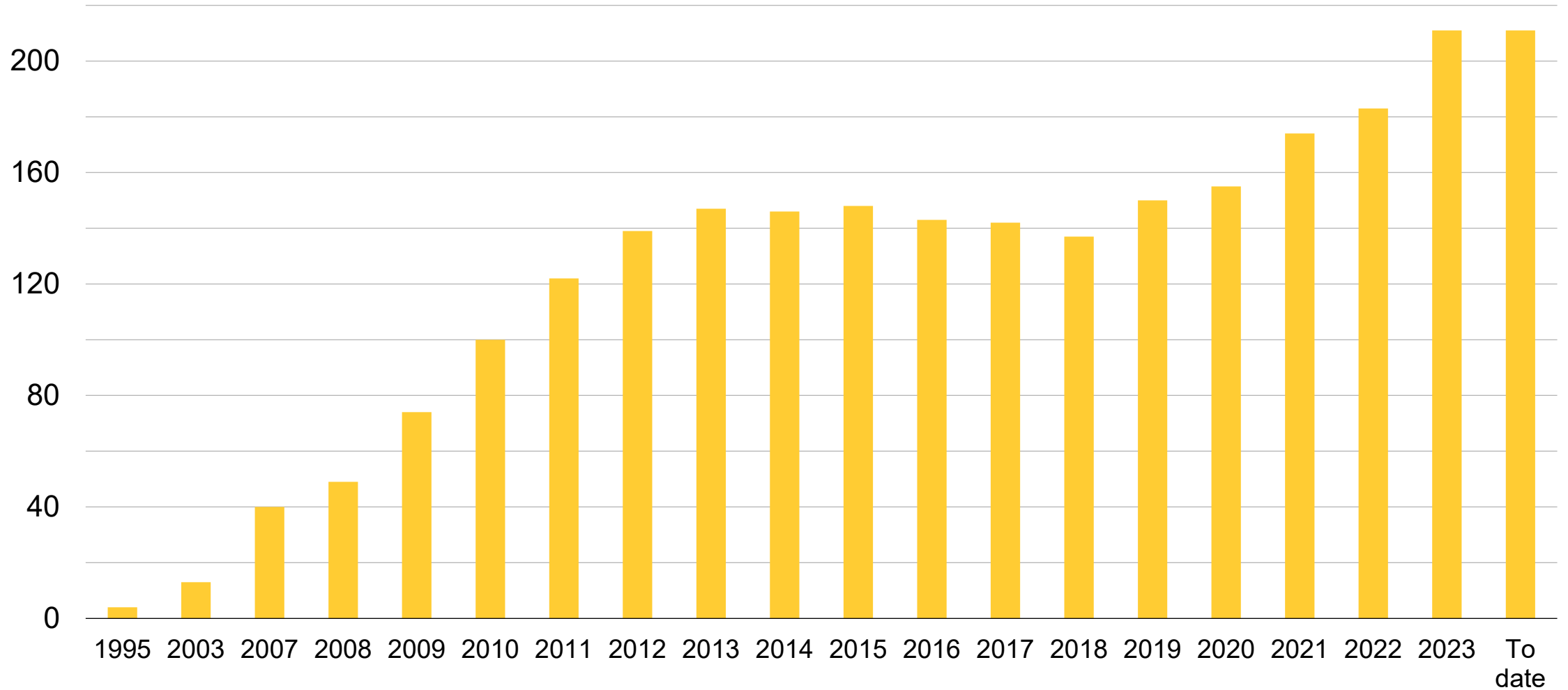
Reductions in speeding and serious injury crashes associated with speed safety cameras

Montgomery County, Maryland



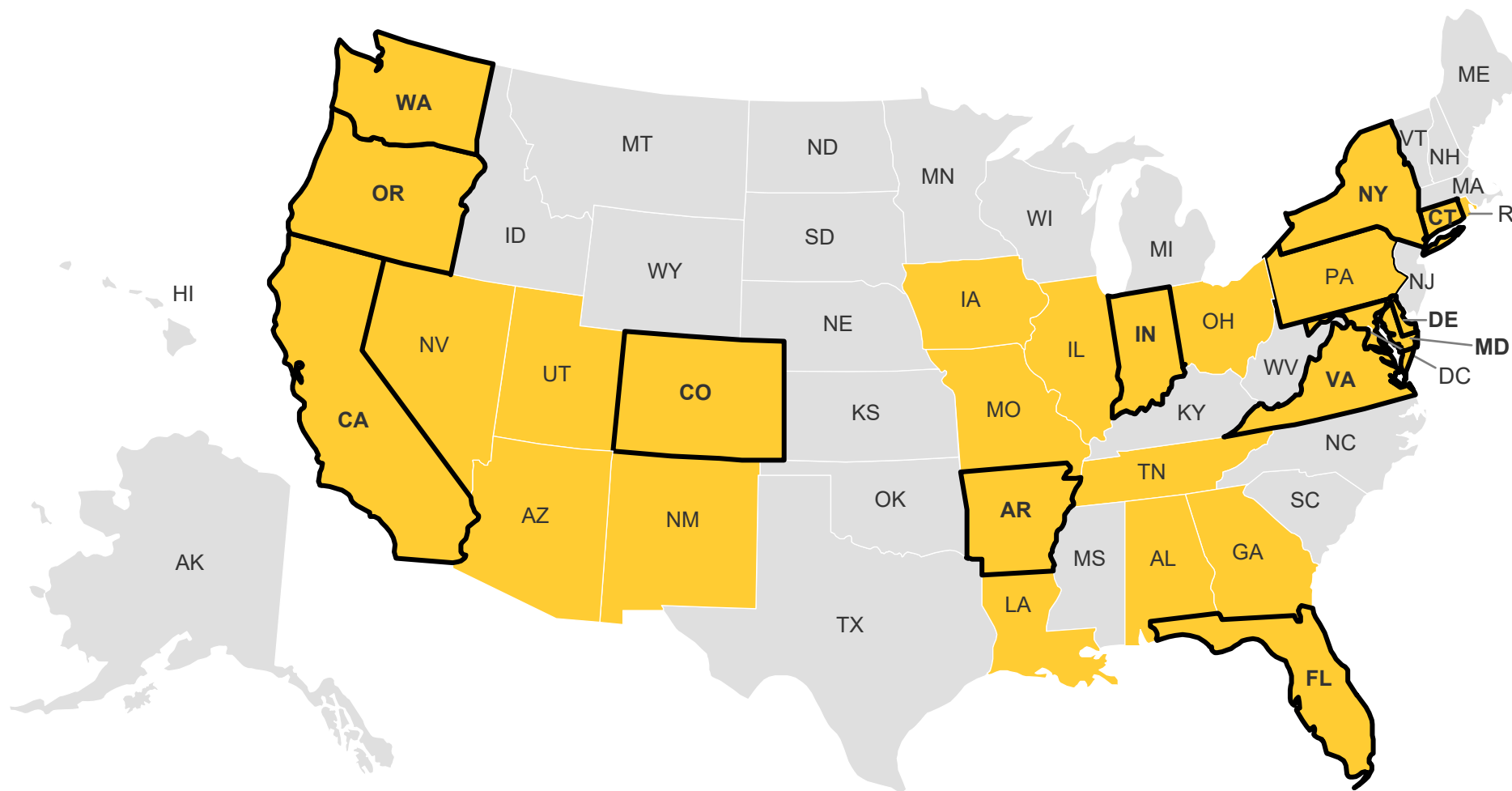
U.S. communities with speed safety cameras

1995 to date



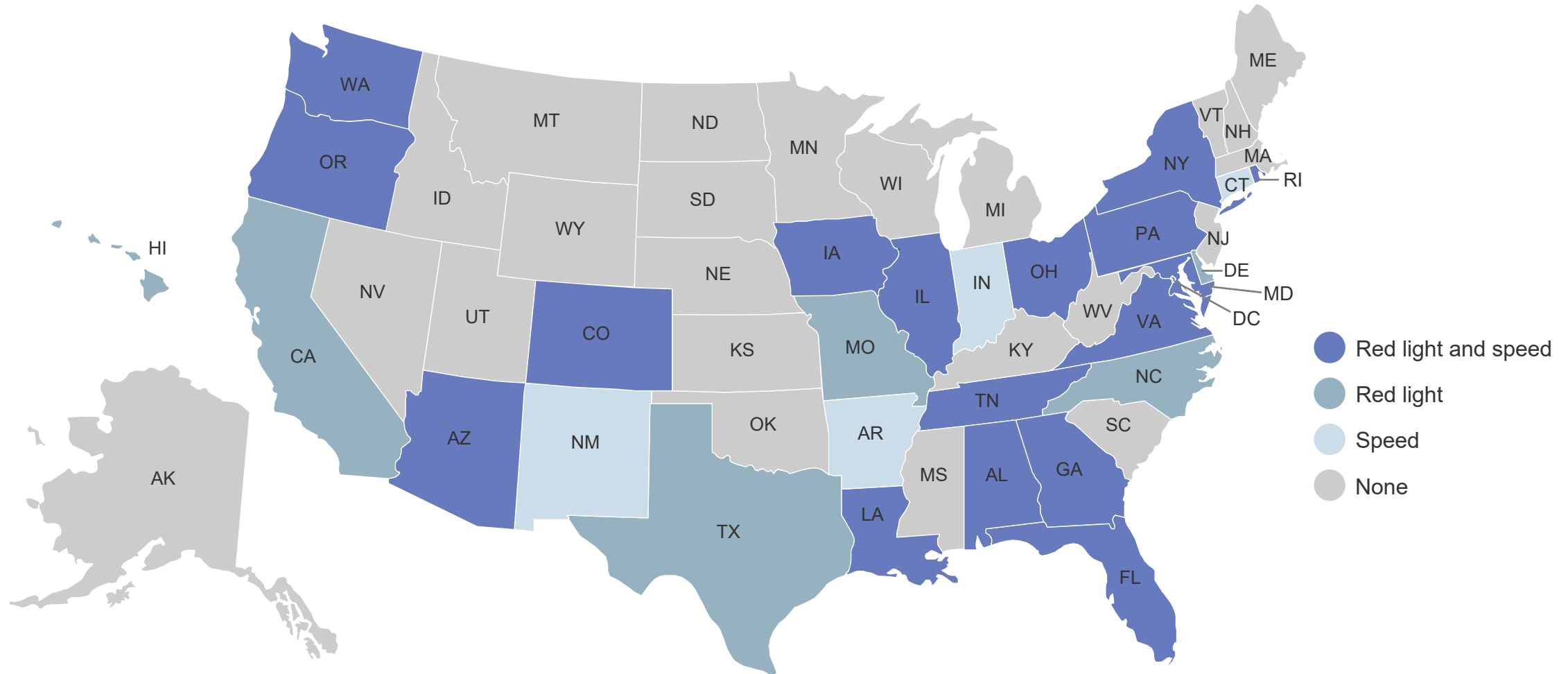
13 states have enacted laws permitting or expanding speed safety cameras

Since 2020



States where speed cameras or red light cameras are currently used

As of March 2024



Automated enforcement program checklist

Outlines best practices for establishing successful red light and speed safety camera programs with broad public support.



ADVOCATES
FOR HIGHWAY
& AUTO SAFETY



AUTOMATED ENFORCEMENT PROGRAM CHECKLIST

For red light cameras and automated speed enforcement

Automated enforcement is an effective tool to make roads safer. Research shows that red light cameras reduce violations and injury crashes, especially the violent front-into-side crashes most associated with red light running. Speed cameras have been shown to reduce vehicle speeds, crashes, injuries and fatalities. Both types of programs should be designed, implemented and administered properly. Poorly run programs are less likely to be durable and may undermine support for automated enforcement generally.

Speed and red light camera programs augment traditional enforcement to improve traffic safety by deterring dangerous driving behaviors. Automated enforcement does not require traffic stops, and well-designed programs can improve safety for all road users in a neutral manner.

Successful programs are transparent and have a strong public information component. Communities should take into account racial and economic equity when making decisions about camera placement and fines. Automated enforcement programs should be data-driven and should prioritize safety, not revenue. In fact, communities should expect that revenue will decline over time as fewer drivers run red lights or violate speed limits.

This checklist assumes your community is already legally authorized to set up a program. It provides a minimum list of considerations to help you follow best practices. The goal is to operate a successful program that reduces crashes and prevents deaths and injuries while maintaining strong public support. Automated enforcement can be integrated into broader efforts to discourage unsafe driving that include optimizing speed limits for safety and improving roadway design.



FIRST STEPS

- ☐ Identify problem intersections and roadways.
 - Assess violation and crash data.
 - Conduct field observations.
 - Collect resident and roadway user input.
- ☐ Consider what role automated enforcement should play as part of a comprehensive traffic safety strategy.
- ☐ Make any engineering or signage changes needed to improve drivers' compliance with the law.
 - Ensure the road geometry conforms with guidelines from the American Association of State Highway and Transportation Officials, National Association of City Transportation Officials guidance or state road design manuals, as appropriate.
 - Remove sightline obstructions of signals and signage.
- For red light cameras:**
 - Ensure that yellow light timing conforms to the Manual on Uniform Traffic Control Devices and Institute of Transportation Engineers guidelines.
- For automated speed enforcement:**
 - Ensure the speed limit is appropriate and accounts for all road users. Follow guidance and use tools from the Federal Highway Administration, Institute of Transportation Engineers, and the National Association of City Transportation Officials.
 - Ensure the speed limit is appropriate for special conditions, such as work zones and school zones.
 - Assess whether engineering changes could be made to promote compliance with the speed limit.
 - Ensure adequate posting of speed limits.
- ☐ Establish an advisory committee comprised of stakeholders.
 - Consider including law enforcement, transportation department employees, victim advocates, equity and civil rights advocates, school officials, community residents, first responders, health officials and the courts.
 - Outline the committee's role. This may include developing guiding principles related to safety, equity, and transparency, as well as other aspects of the program.
 - Ensure committee meetings are open to the public and deliberations are transparent.
- ☐ Meet with the media, including newspaper editorial boards, to build support and educate the public.

IMPLEMENTATION

- ☐ Hold a kickoff event with advisory committee members. Introduce a well-developed and sustained public education campaign focused on improving safety by changing driver attitudes and behavior.
- ☐ Connect the program to overall roadway safety in the community and identify the goal of zero tickets resulting from changes in driver behaviors.
- ☐ Install prominent warning signs.
- ☐ Start with a probationary period during which only warnings are issued.
- ☐ Follow current guidance from the U.S. Department of Transportation for implementation and operation of automated enforcement devices.
- ☐ Allow for due process. Minimize the number of days between the violation and citation issuance.

LONG TERM

- ☐ Publicize changes, including new camera locations. Reinstatement the probationary period before ticketing begins at new locations.
- ☐ Monitor program operation and publicize results. Undertake periodic reviews and ensure racial, economic and other equity issues and public concerns are addressed.
- ☐ Require regular field reviews. Verify monthly camera calibration and synchronization with signals.
- ☐ Require regular evaluations of the traffic safety benefits of the program by collecting crash and infraction data. Before-and-after include control intersections and roadways that are not subject to spillover effects.
- ☐ Regularly meet with the advisory committee and media to review program status and sustain public support.
- ☐ Continue to improve programs based on new and updated guidance and best practices and look for opportunities to expand automated enforcement use.
- ☐ Consider other changes, including roadway design improvements, in order to reduce opportunities for unsafe driving.

AAA - Advocates for Highway Safety | Governors Highway Safety Association
IHSA - Interstate Highway Safety Association
NSC - National Safety Council
May 2021



Real-world benefits of crash avoidance technologies

IIHS and HDI study the effects of crash avoidance features by comparing rates of police-reported crashes and insurance claims for vehicles with and without the technologies. Results below are for passenger vehicles unless otherwise noted.

July 2023



Automatic emergency braking

- ↓ 50% Front-to-rear crashes
- ↓ 56% Front-to-rear crashes with injuries
- ↓ 14% Claim rates for damage to other vehicles
- ↓ 24% Claim rates for injuries to people in other vehicles
- ↓ 41% Large truck front-to-rear crashes



Automatic emergency braking with pedestrian detection

- ↓ 27% Pedestrian crashes
- ↓ 30% Pedestrian injury crashes



Lane departure warning

- ↓ 11% Single-vehicle, sideswipe and head-on crashes
- ↓ 21% Injury crashes of the same types

Blind spot detection

- ↓ 14% Lane-change crashes
- ↓ 23% Lane-change crashes with injuries
- ↓ 7% Claim rates for damage to other vehicles
- ↓ 8% Claim rates for injuries to people in other vehicles



Rear automatic braking

- ↓ 78% Backing crashes (when combined with rearview camera and parking sensors)
- ↓ 9% Claim rates for damage to the insured vehicle
- ↓ 29% Claim rates for damage to other vehicles



Rearview cameras

- ↓ 17% Backing crashes

Rear cross-traffic alert

- ↓ 22% Backing crashes

Added costs

Lower crash rates are a clear benefit of these technologies, but some features can lead to higher repair costs in the crashes that do happen. That's because sensors and other components are often located on the vehicle's exterior. For example, in the case of forward collision warning without autobrake, the average payment per claim for damage to the insured vehicle goes up \$118 for vehicles equipped with the feature.

One-sheet

Summary of actionable research findings on a topic

- ▶ PDF available at www.iihs.org
- ▶ What other topics would be useful?



Comprehensive approach...
to **save lives** today!

30 x 30

We can do this...
together!

Insurance Institute for Highway Safety
Highway Loss Data Institute

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THANK YOU



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