



Insurance Institute for Highway Safety
Highway Loss Data Institute

Bumps in the Road to Zero Traffic Fatalities

DRIVE SMART Virginia
5th Annual Distracted Driving Summit

Norfolk, VA

September 28, 2017

David S. Zuby

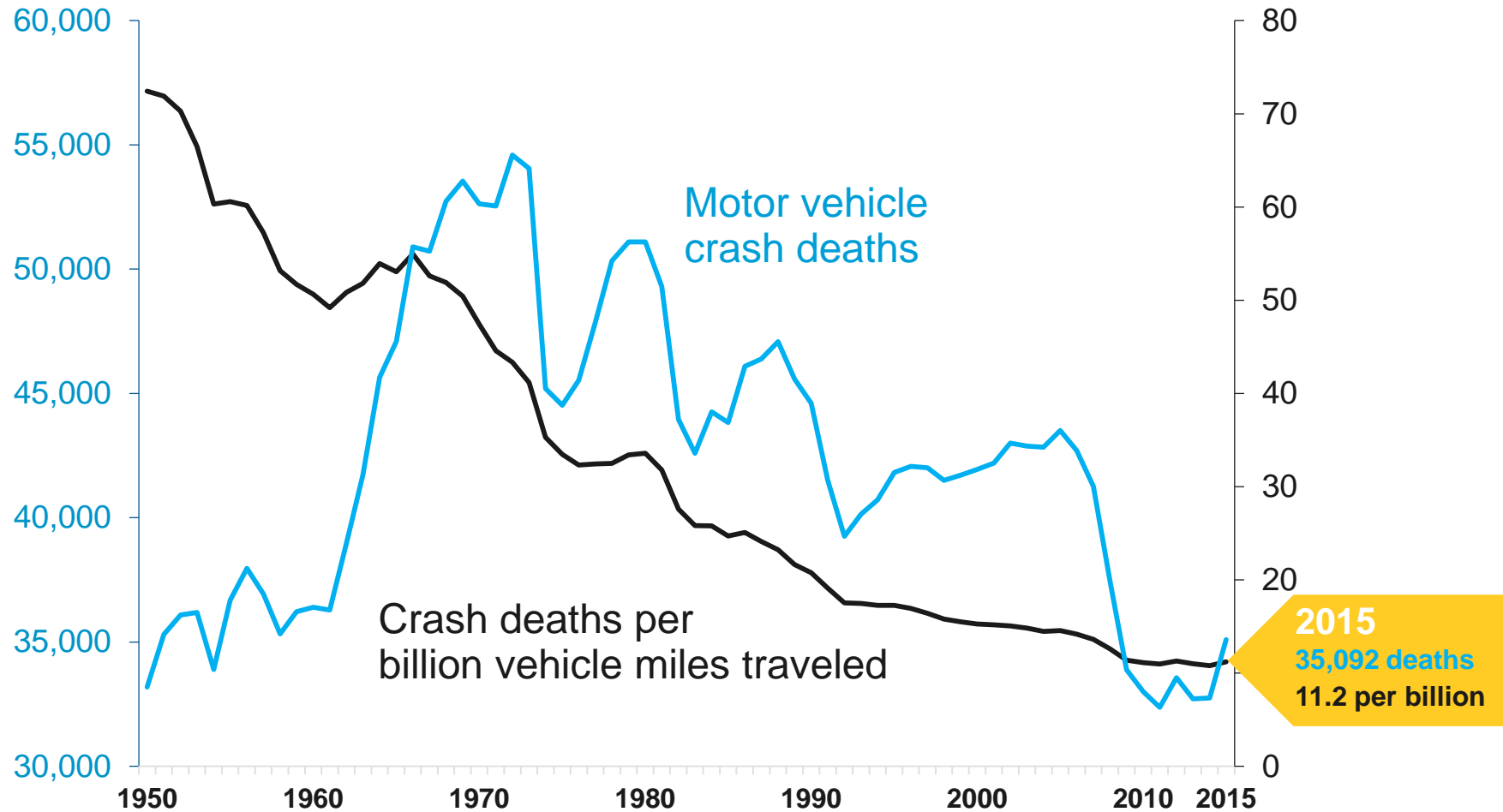
EVP and Chief Research Officer

iihs.org


Motor vehicle crash deaths have **declined significantly** in the U.S. during the past 50+ years.


U.S. motor vehicle crash deaths and deaths per billion vehicle miles traveled


1950-2015





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Wednesday, February 15, 2017

Motor Vehicle Deaths in 2016 Estimated to be Highest in Nine Years

NSC offers insight into what drivers are doing and calls for immediate implementation of proven, life-saving measures.

Itasca, IL – For the first time in nearly a decade, preliminary 2016 data from the National Safety Council estimates that **as many as 40,000 people died in motor vehicle crashes last year.** That marks a 6% increase over 2015, and a 14% increase over 2014 – the most dramatic two-year escalation since 1964 – 53 years. The preliminary estimate means 2016 may have been the deadliest year on the nation's roads since 2007. An estimated 4.6 million roadway users were injured seriously enough to require medical attention in 2016, and estimated cost to society was \$432 billion.

ETSC news release – 3/31/2016



Press release

Urgent action needed on road safety as new figures show increase in deaths

31 March 2016

The European Transport Safety Council (ETSC) says the European Commission must stop delaying new road safety policy measures if it is to help reverse an [increase in deaths](#) on EU roads.

Within the last year, the European Commission was expected to come forward with revisions to vehicle safety, pedestrian protection and infrastructure safety rules as well as a new target and measures to reduce serious road injuries. Proposals on all four have been delayed, and it is not clear when they will see the light of day.

Antonio Avenoso, Executive Director of ETSC said:

“Last year, the European Commission described the poor progress on road safety as a ‘wake-up call’. But twelve months later, four critical policy measures have been delayed. We hope that the announcement of today’s even more worrying figures will finally lead to some more concerted action.

“This Commission has repeatedly emphasised its ‘better regulation’ agenda. But road safety requires constant vigilance as well as new measures with legal backing. A failure to regulate, in the case of road safety, could lead to more deaths and serious injuries.”

ETSC says EU member states also need to take action to help improve road safety. Declines in levels of police enforcement, a failure to invest in safer infrastructure and a lack of action on tackling speed and drink driving have also played a role in recent poor progress in some member states. ETSC’s in-depth analysis of the latest national road safety data will be launched on 20 June at the ETSC Road Safety Performance Index conference in Brussels.

The European Commission has, for the first time, published a figure for the number of people seriously injured on Europe’s roads : 135,000 in 2014. This move required the adoption, by all EU member states, of a standardised definition of what constitutes a serious road injury, as well as a standardised way of collecting the data. ETSC welcomes this long overdue and positive step in the right direction. But a long term target and measures to reduce the numbers seriously injured are now needed. They were promised last year but not delivered. ETSC says that now the data are available, there is no reason to delay further.

Notes to editors:

1. In a report published last week, ETSC called for an overhaul of Europe’s vehicle safety framework. <http://etsc.eu/europes-car-safety-framework-needs-overhaul/>

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NATIONAL

Downward trend in Japan's traffic deaths suffered minor reverse in 2015

JIJI

The number of deaths caused by traffic accidents in 2015 rose by four from the previous year to 4,117, up for the first time in 15 years, the National Police Agency said Monday.

The number of fatalities among people aged 65 or older increased by 54 to 2,247, according to the NPA's preliminary data. They accounted for 54.6 percent of all such deaths, the highest level since officials began compiling comparable statistics in 1967.

An NPA official attributed the rise to the growing population of elderly people, who have a higher mortality rate in the event of an accident.

The data mean that the government failed to achieve its target of reducing the annual traffic death toll to 3,000 or less by 2015, which was set under the basic plan for traffic safety covering fiscal 2011 to 2015.

"We need to make a drastic review of our measures, as the annual total (of traffic deaths) surpassed the target by more than 1,000 people," Taro Kono, chairman of the National Public Safety Commission, told a news conference.

Despite the increase, the traffic deaths in 2015 were the fourth fewest since the survey was launched in its current format in 1948.

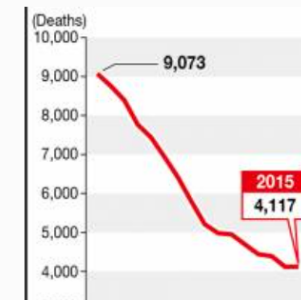
JAN 4, 2016

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KEYWORDS

[DEATHS, ELDERLY, NATIONAL](#)

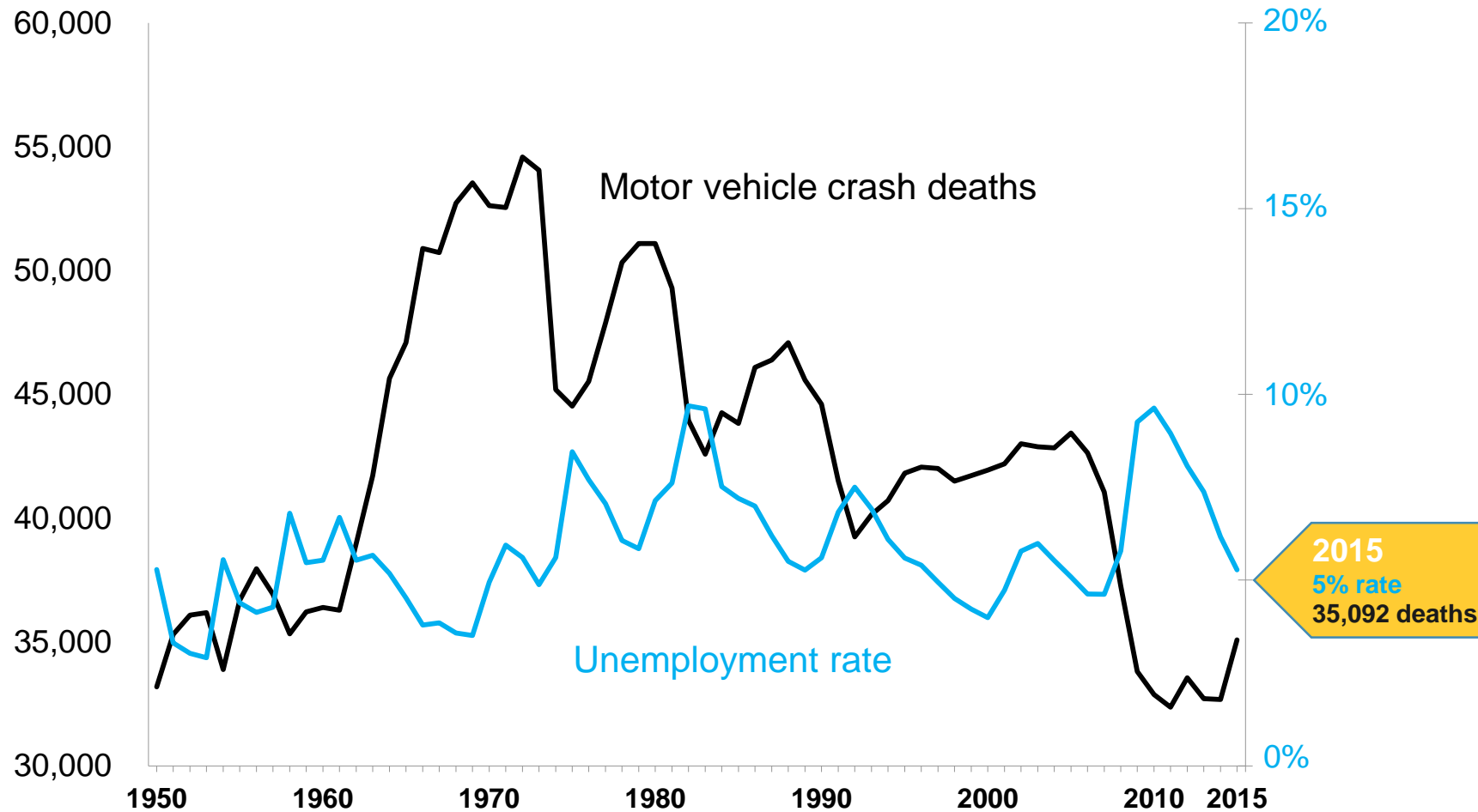
[POLICE AGENCY, TRAFFIC](#)

[ACCIDENTS](#)

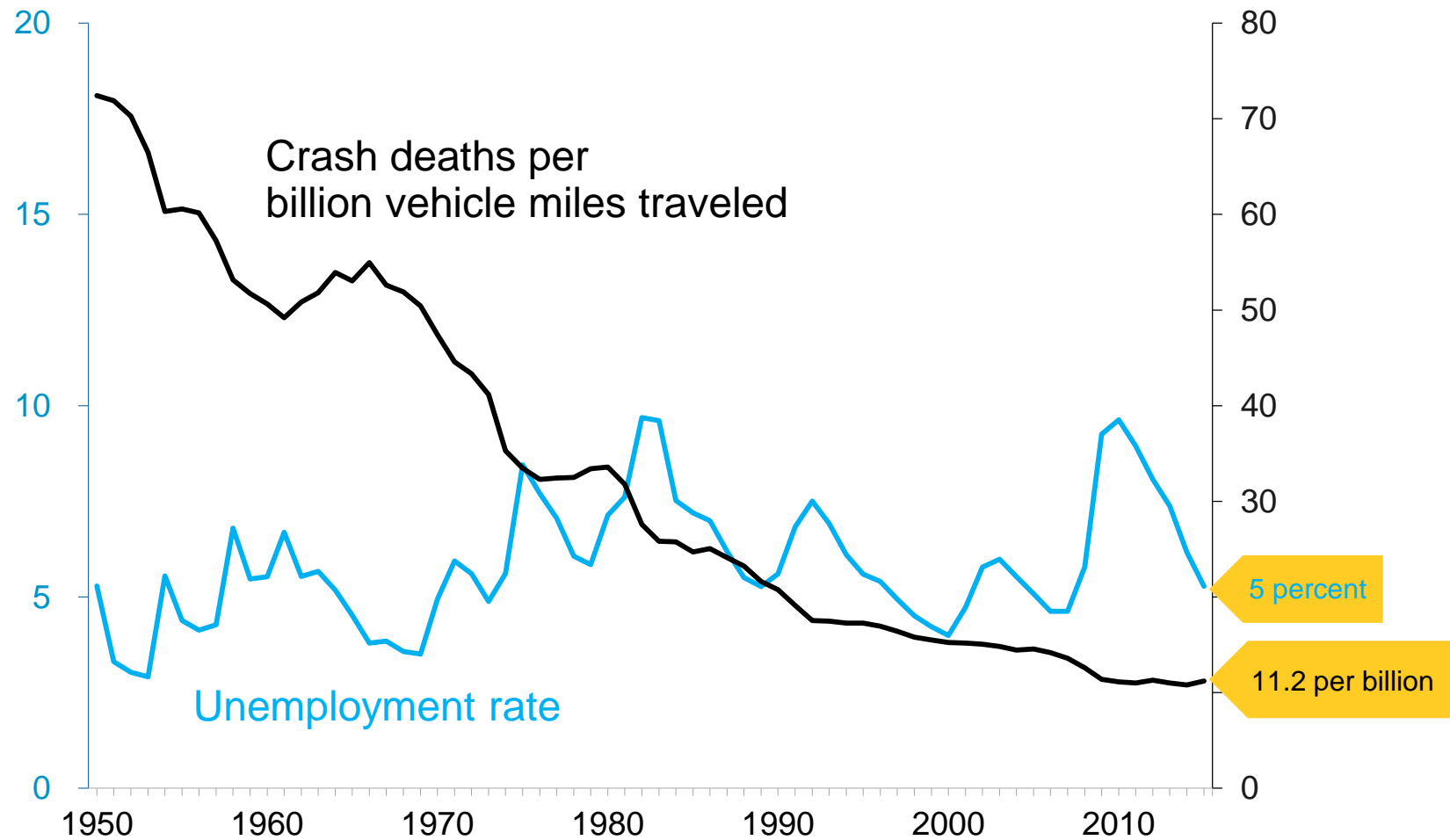
**Crash deaths and their rate
are highly correlated with
economic conditions.**

U.S. motor vehicle crash deaths and unemployment rate

1950-2015

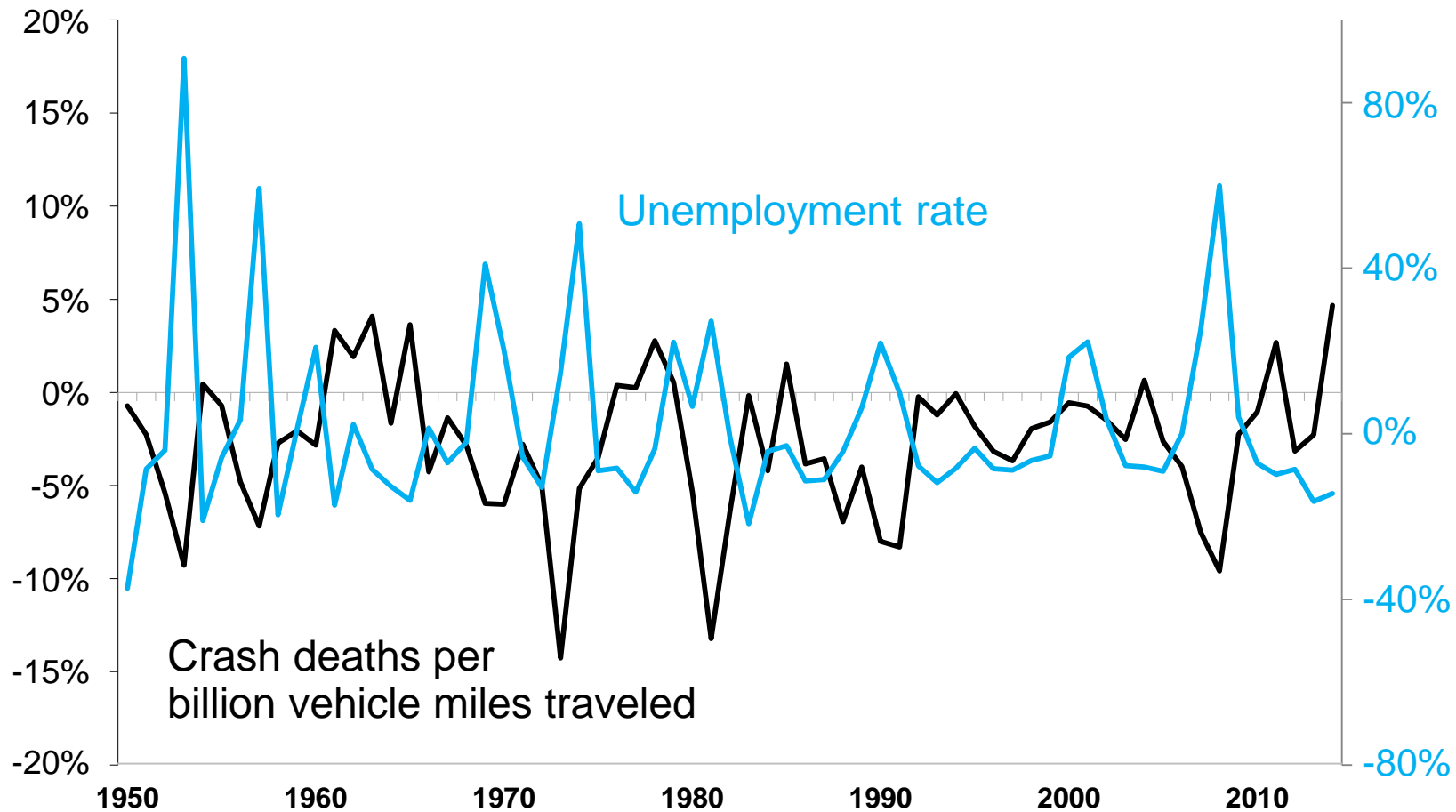


U.S. motor vehicle crash deaths per billion vehicle miles traveled and unemployment rate 1950-2015



Change in U.S. motor vehicle crash deaths per billion miles traveled and unemployment rate

1950-2015



Effects of economy on miles traveled and crash deaths

▶ Miles traveled

- Increase by 1.5% each year, on average
- Increase by another 1.8% for each 1 percentage point decline in unemployment

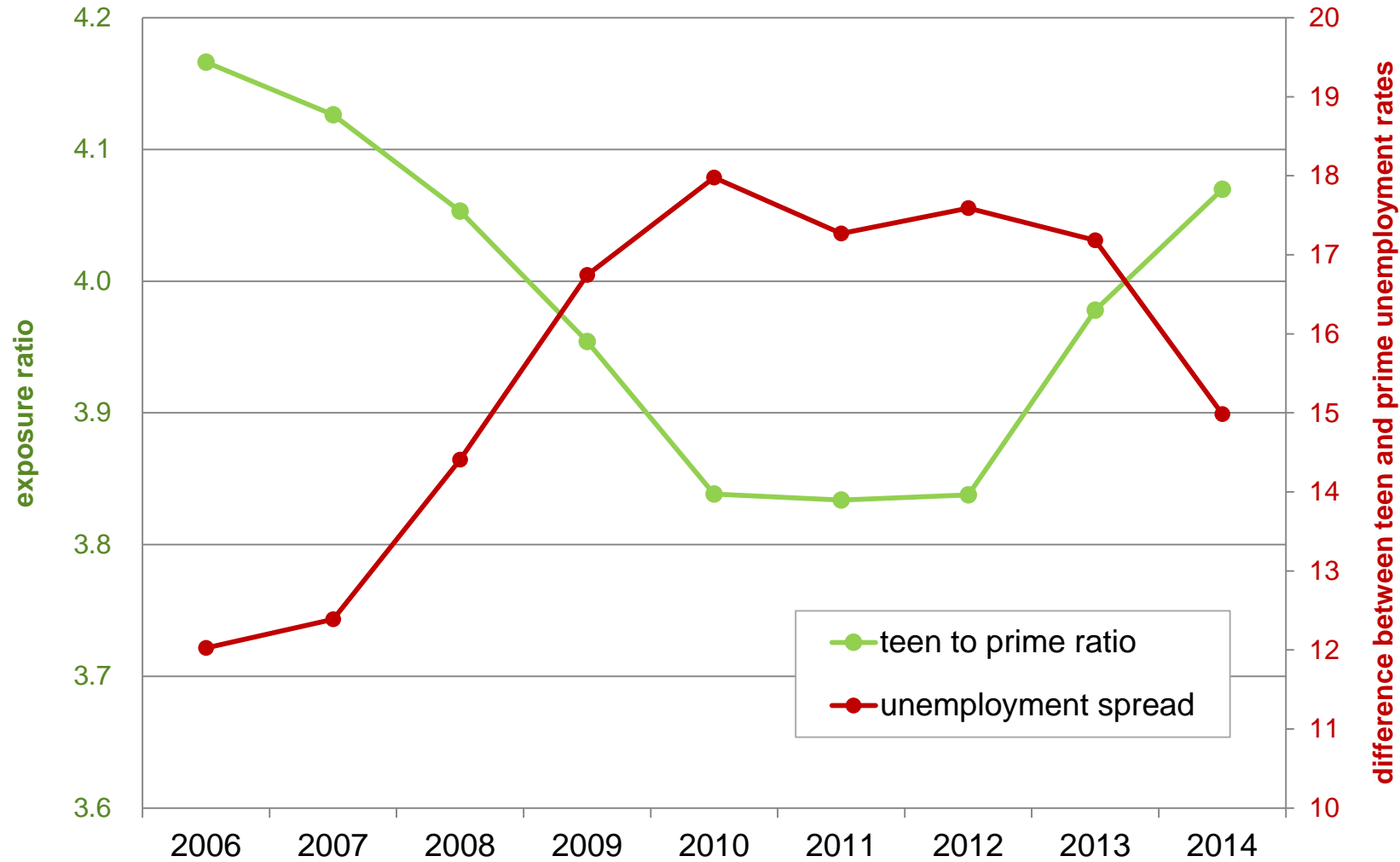
▶ Crash deaths

- Decrease by 2% each year, on average
 - Increase by 1% for each 1% rise in miles
 - Increase by another 2% for each 1 percentage point decline in unemployment
- ▶ Combined with the effect on miles traveled, each 1 percentage point decline in unemployment is associated with about a 4% increase in crash deaths

Examples of economic effect on risky driving

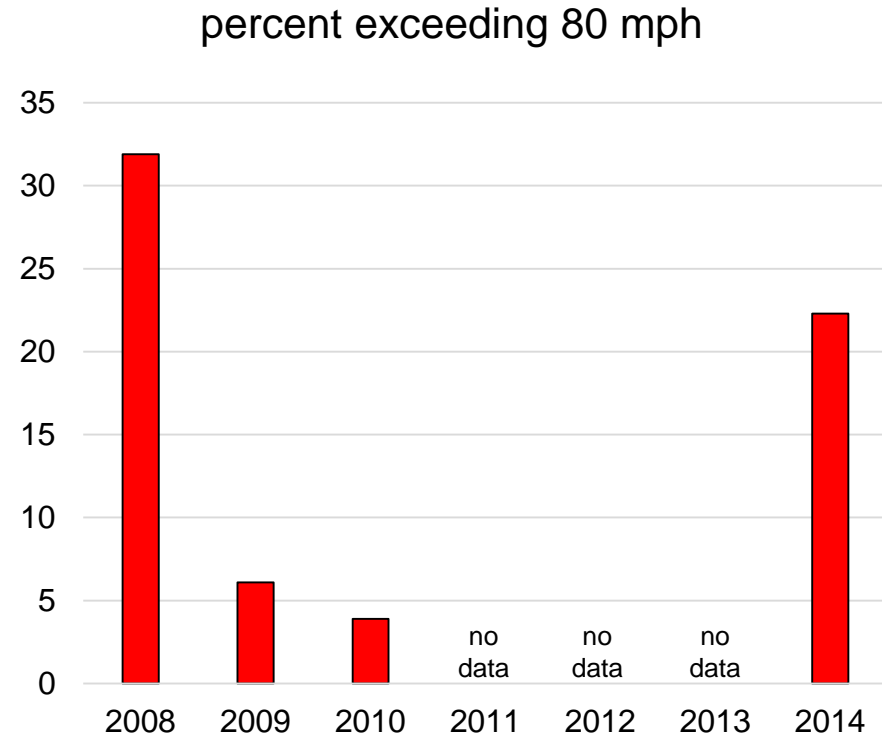
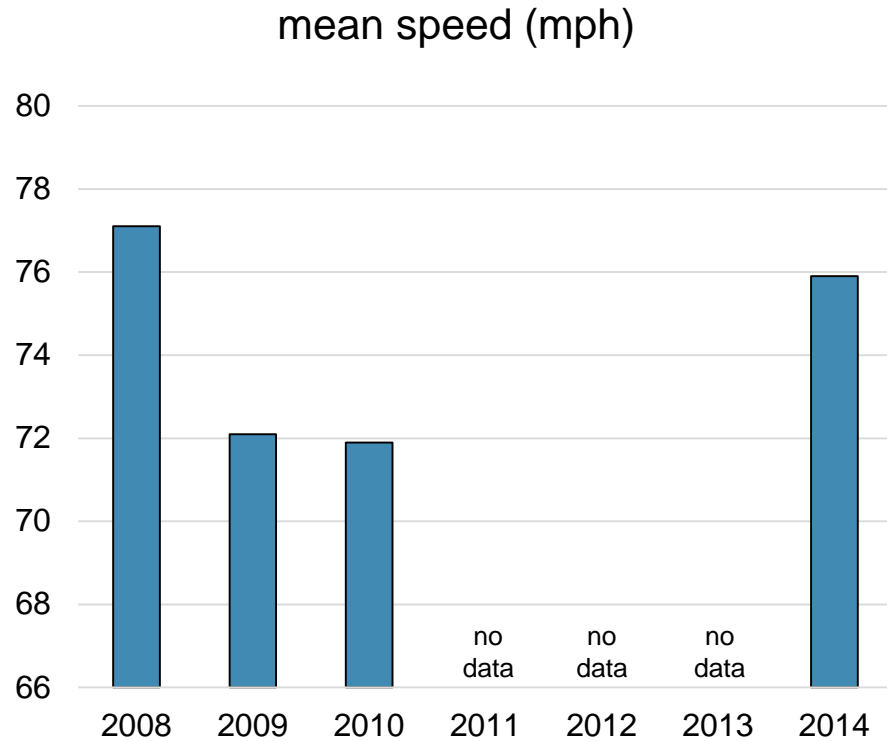
Youth are returning to cars

2006-14, indexed to 2006



Economic conditions affect speeds

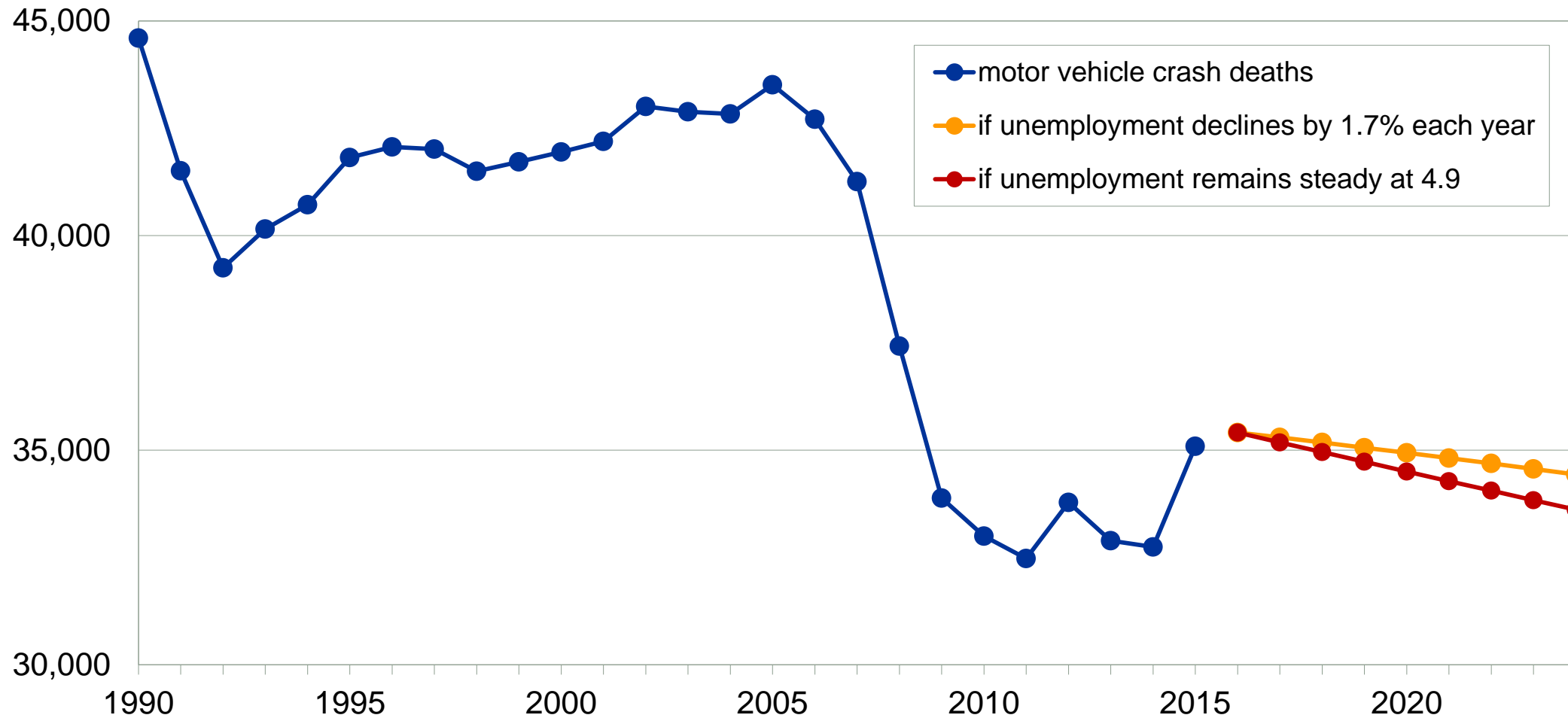
Observed speeds on I-15 with 75 mph limit in Nevada



Motor vehicle crash deaths – Forecast

Motor vehicle crash deaths, 1990-2015

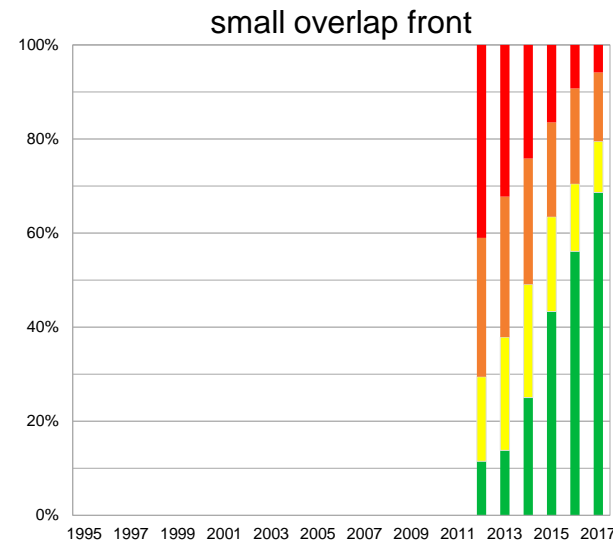
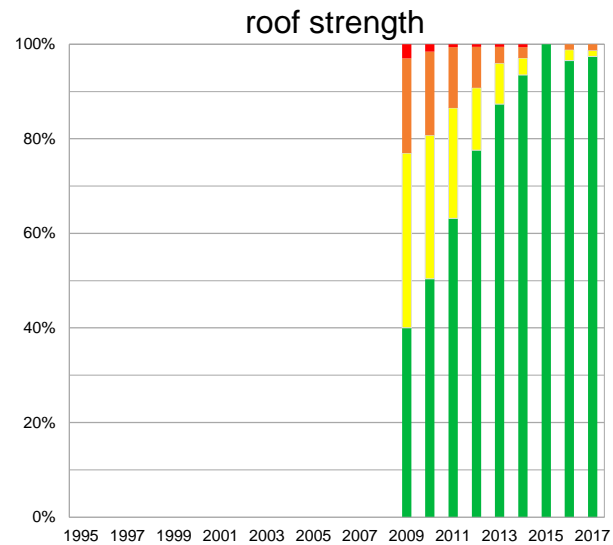
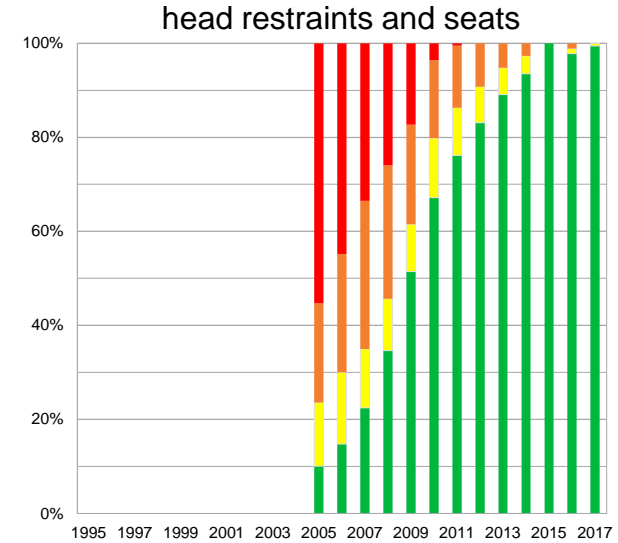
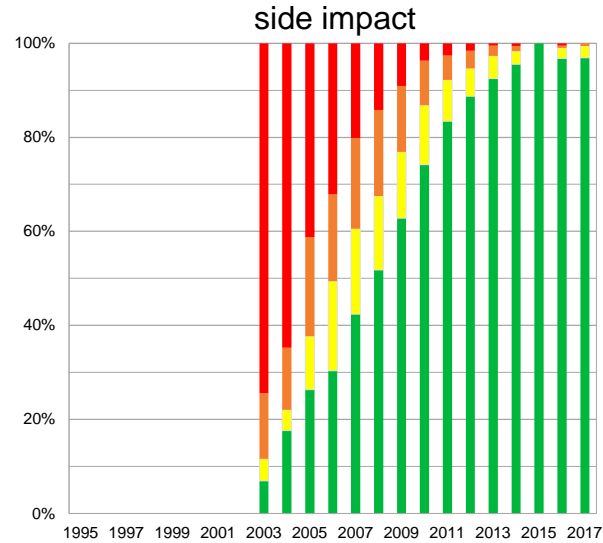
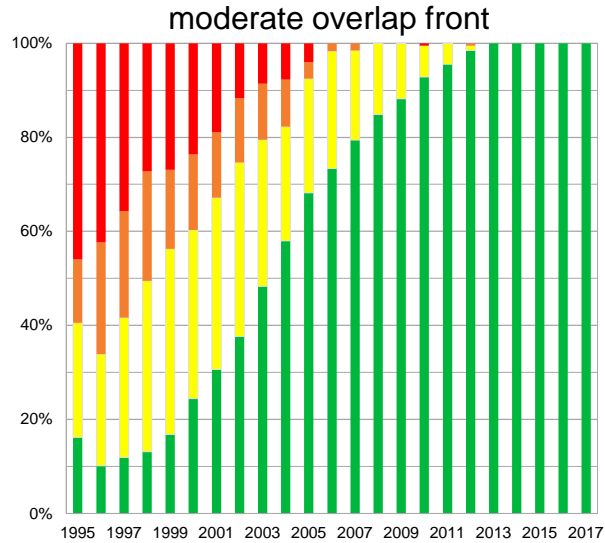
With projections for 2016-24



The downward trend continues because vehicles with improved crashworthiness are still working their way into the vehicle fleet.

Crash protection ratings by model year

Improvements beginning in 1995





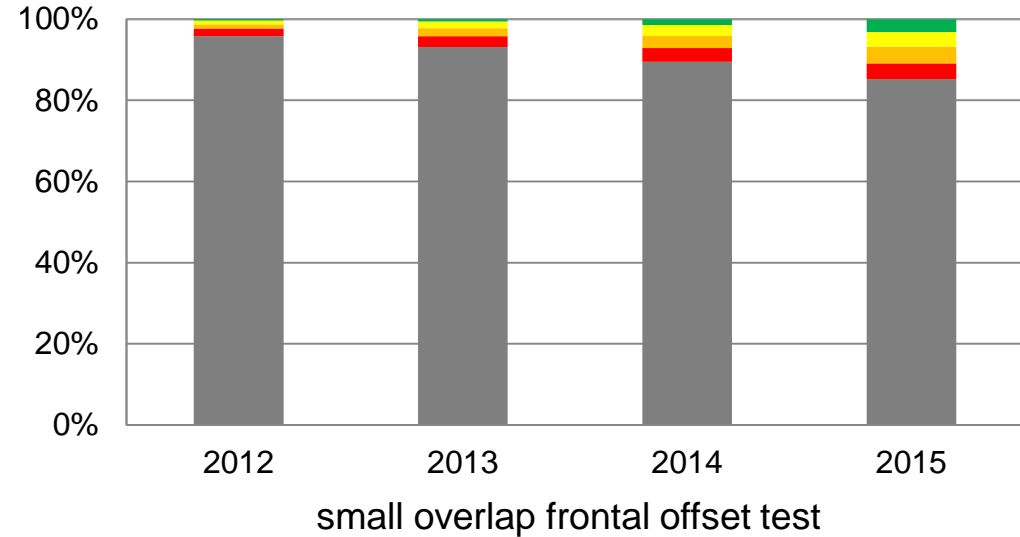
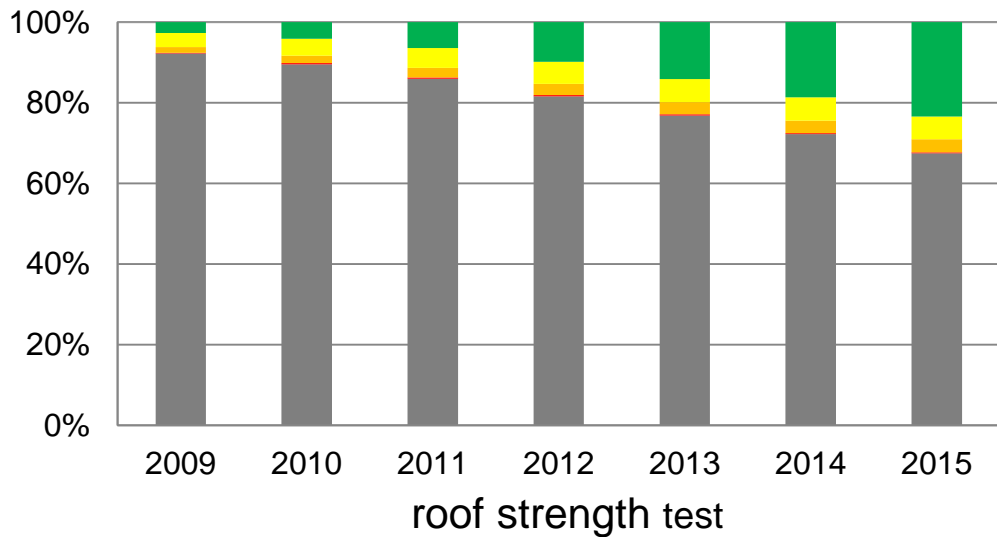
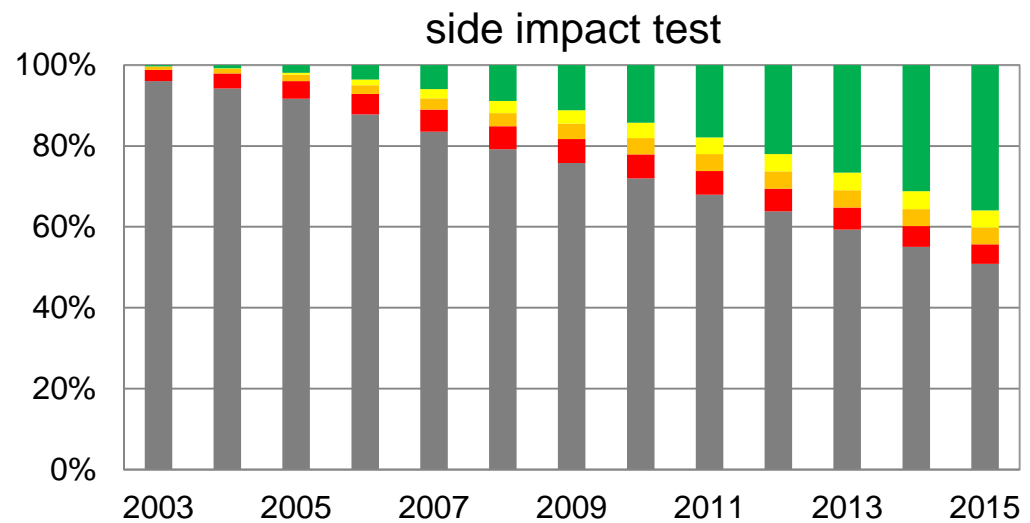
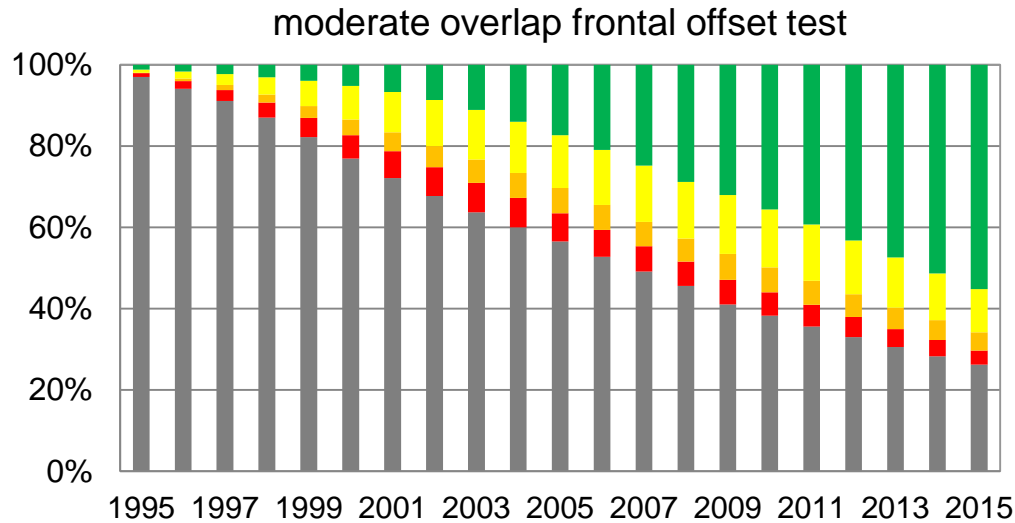
Death and injury reductions

Good versus poor in IIHS tests

- ▶ Front offset with moderate overlap test
 - Fatality risk in head-on crashes is 46 percent lower
- ▶ Side impact crash test
 - Fatality risk in side impact crashes 70 percent lower
 - In addition to the benefit of adding side airbag protection for the head
- ▶ Rear impact test (seat only)
 - Neck injury risk in rear crashes is 15 percent lower
 - Risk of neck injury requiring 3+ months treatment is 35 percent lower

IHS crash test ratings for registered vehicles by calendar year

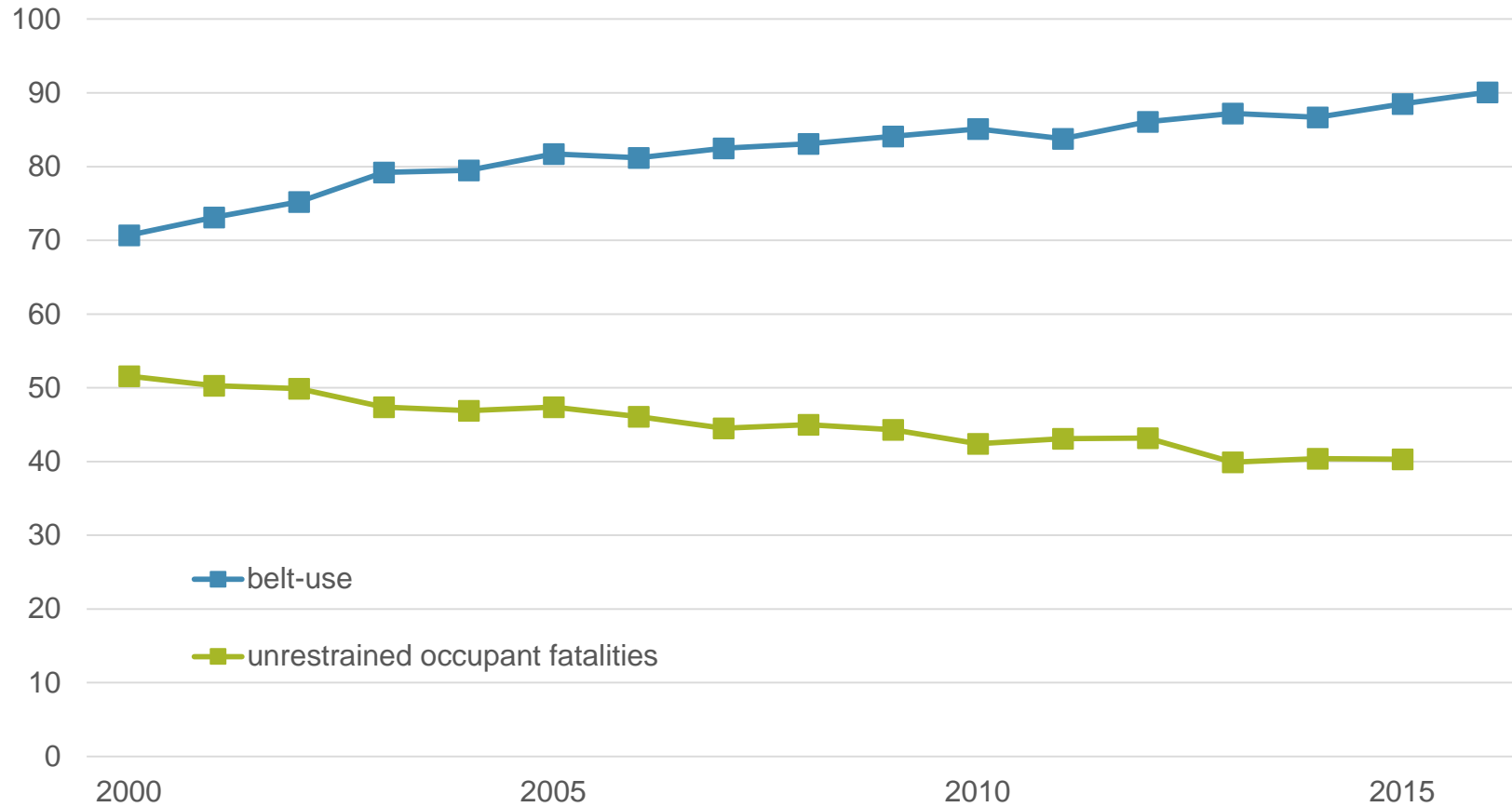
All registered vehicles



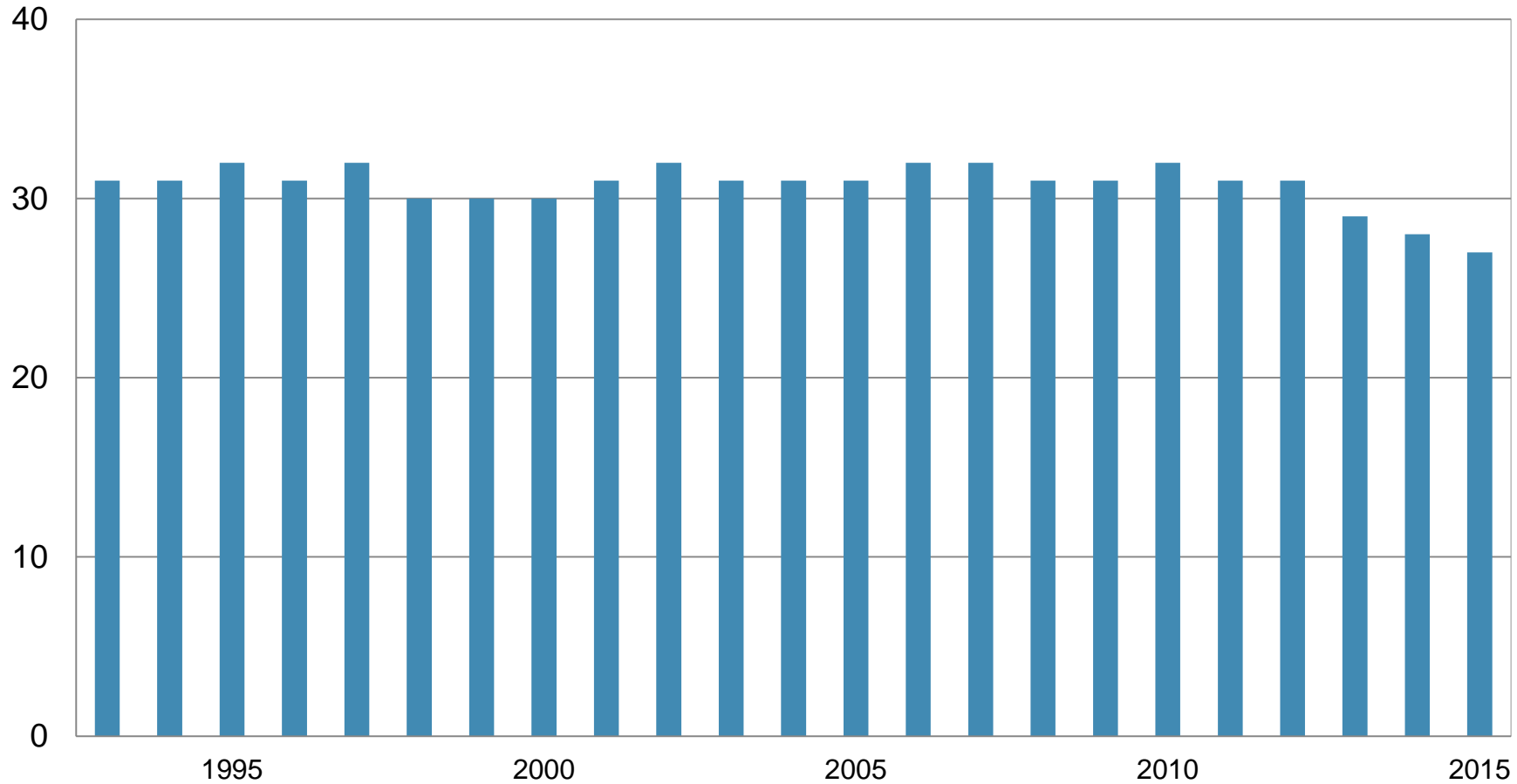
Persistent problems

Belt-use rate and unrestrained proportion of occupant deaths

Daytime, 2000-16



Percent of vehicle crash deaths where speeding was a contributing factor, 1993-2015

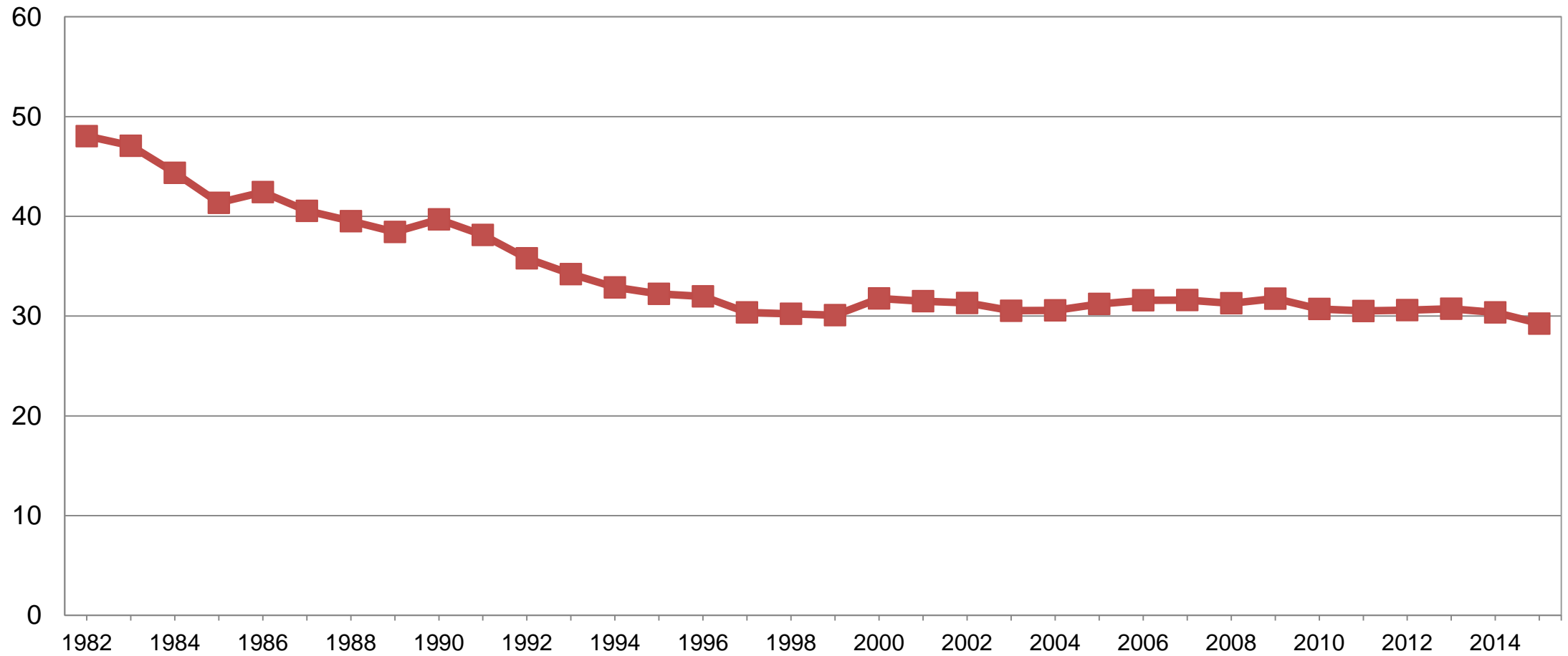




On U.S. roads
in 2015, about
181,000
red light running
crashes caused about
137,000 injuries and
771 deaths.

Tucson, Arizona,
camera photos courtesy
of American Traffic Solutions

Percent of U.S. crash deaths involving at least one driver with BAC \geq 0.08 percent, 1982-2015

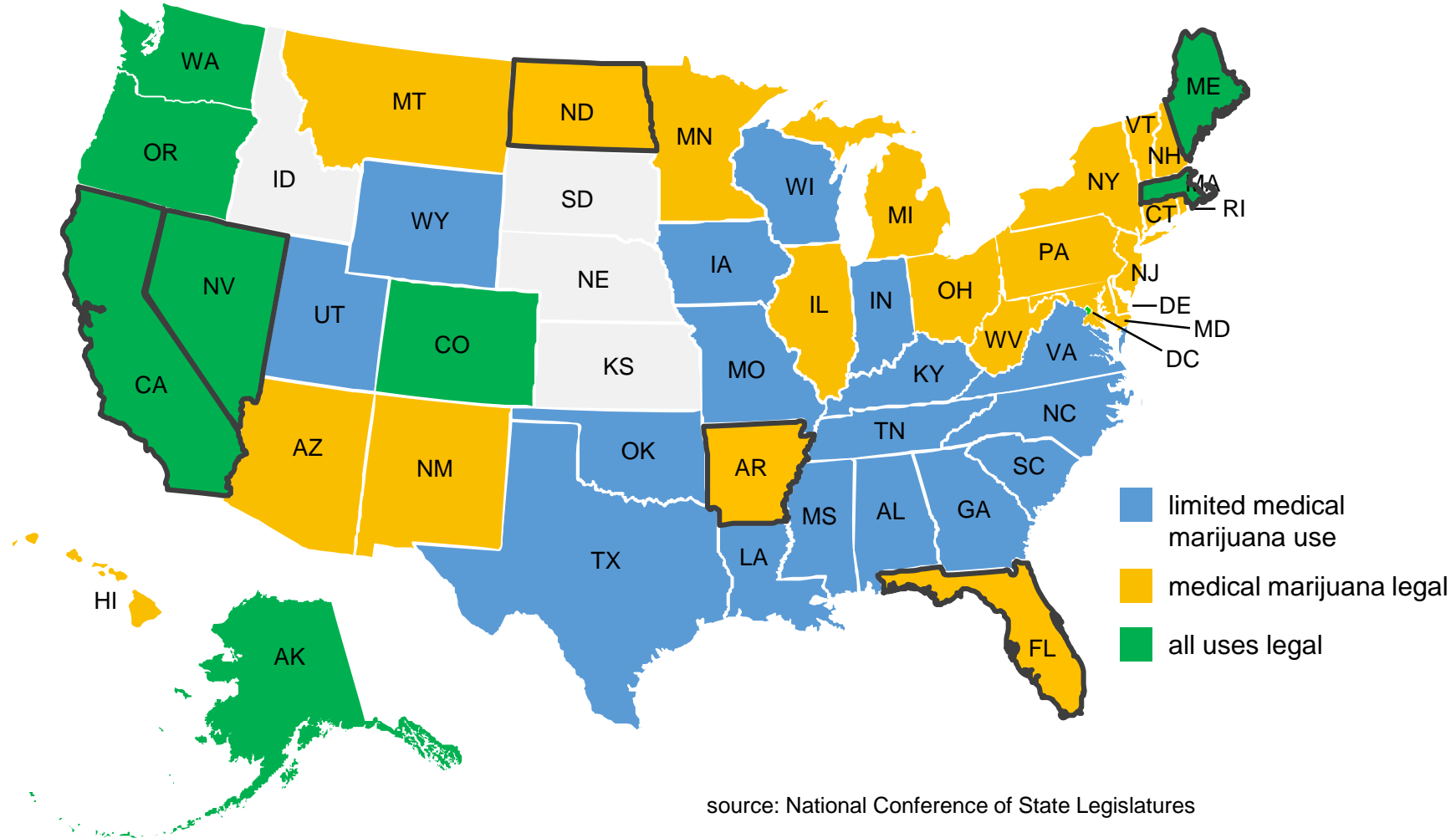


Is legalization of marijuana use a new problem?

Laws legalizing some uses of marijuana

September 2017

Please remove outlines from CA, NV, ND, AR, FL, RI, ME



Changes in damage claims and crash deaths after legalization of recreational marijuana use

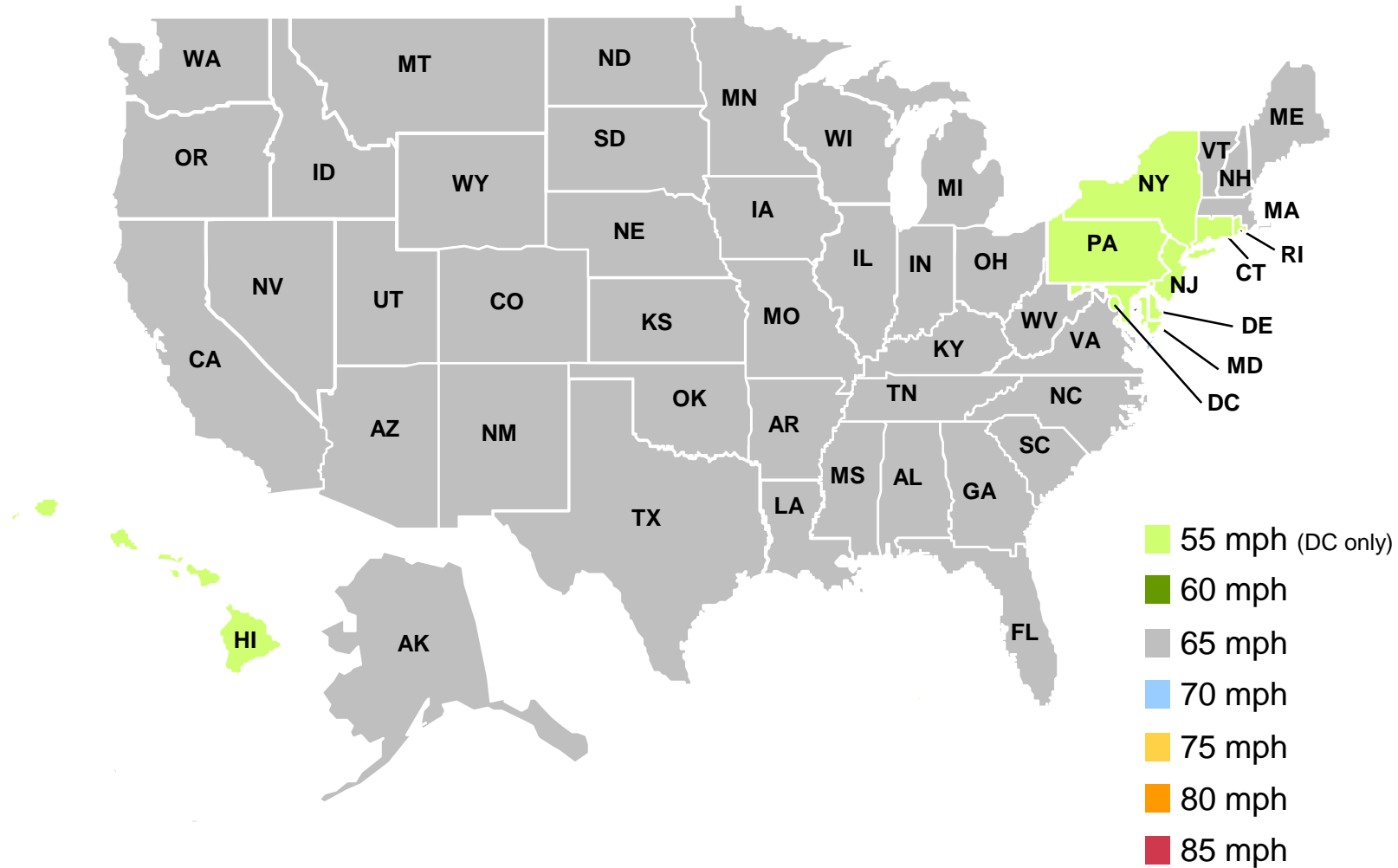
	Aydelotte et al. 2017, AJPH	Highway Loss Data Institute 2017
study states	Colorado and Washington	Colorado, Washington, Oregon
control states	Alabama, Indiana, Kentucky, Missouri, South Carolina, Tennessee, Texas, Wisconsin	Idaho, Montana, Nevada, Utah, Wyoming
calendar years	January 2009-December 2015	January 2012-October 2016
outcome measure	change in annual motor vehicle crash fatality rate per billion miles traveled	change in collision claim rate per 100 insured vehicle years
result	2.7% increase in fatalities (not statistically significant)	2.7% (significant increase)



Rising speed limits aren't helping

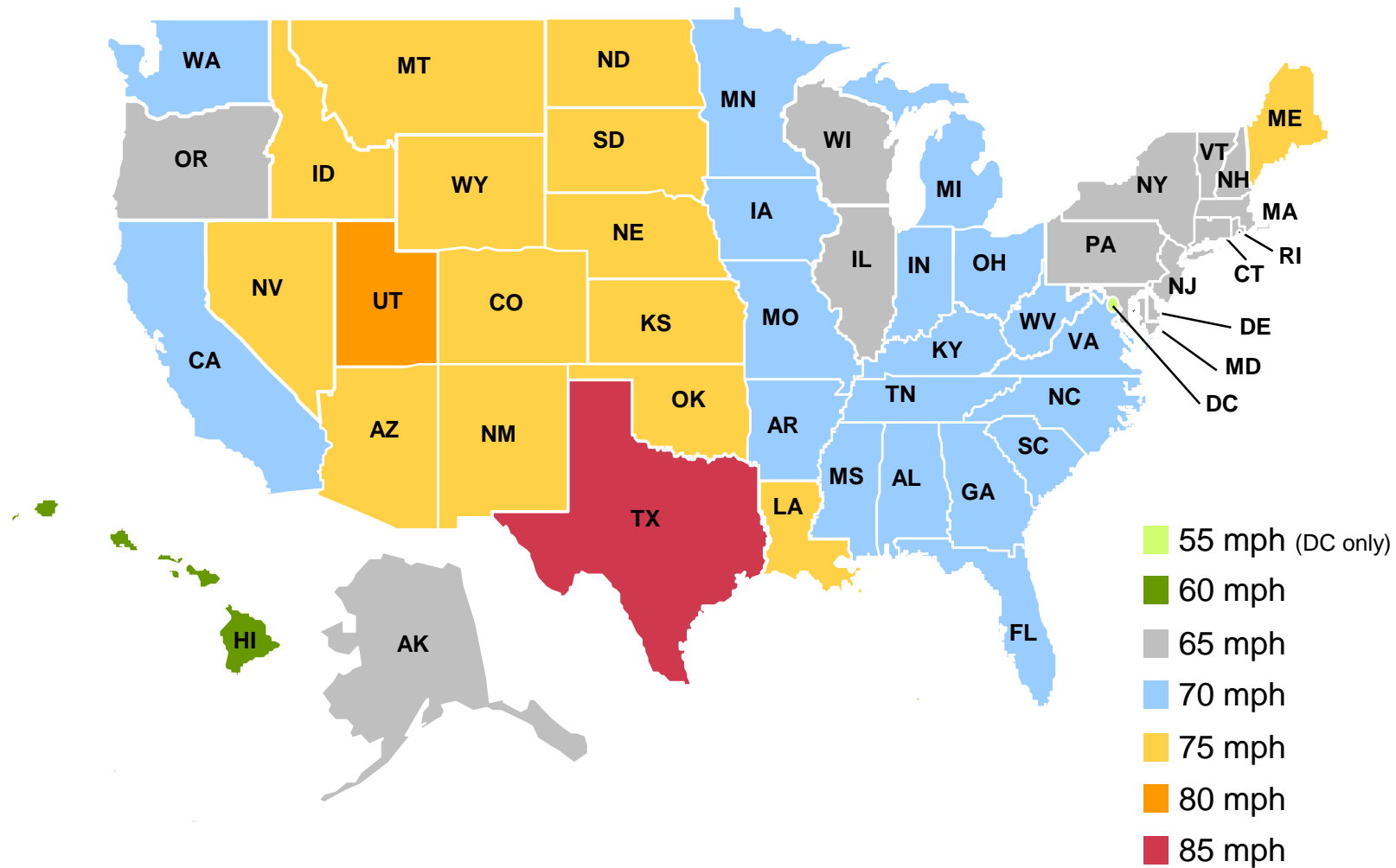
Maximum speed limits

January 1993



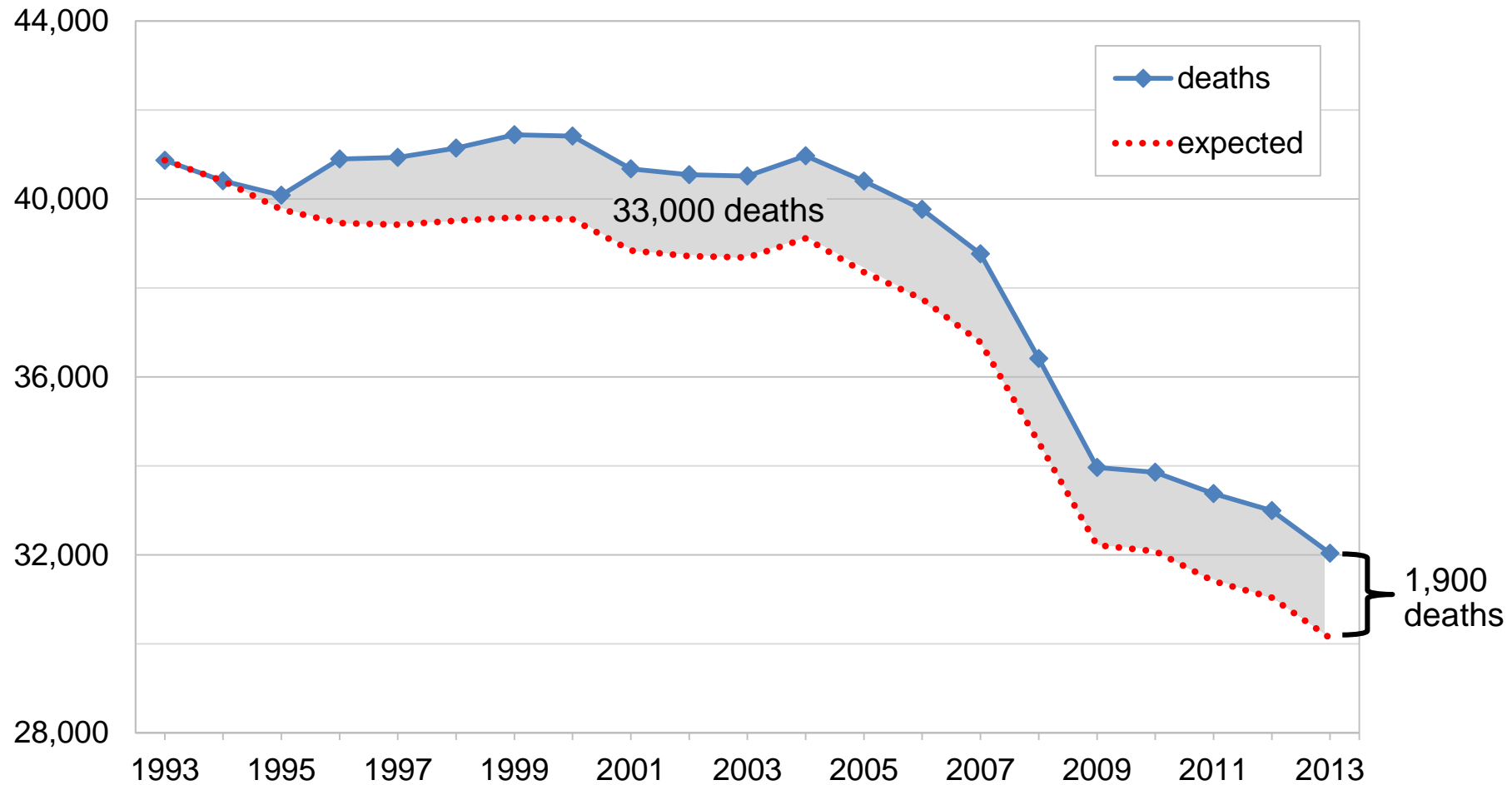
Maximum speed limits

January 2013



Deaths and expected deaths if maximum speed limits had not increased

1993-2013

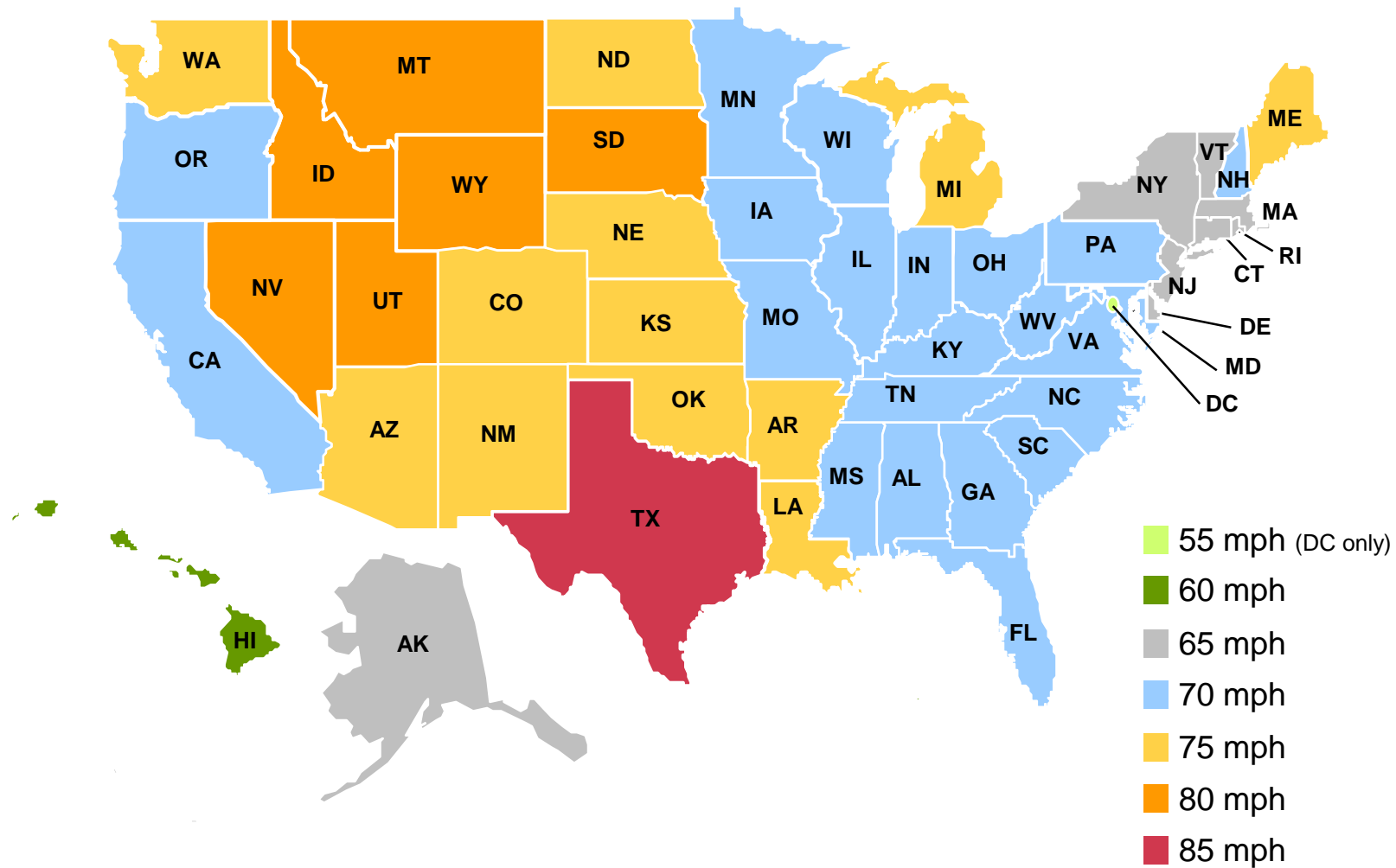


Summary

- ▶ Speed limits continue to go up
- ▶ 8 percent increase in traffic fatality rate on interstates and freeways for every 5 mph increase in maximum speed limits
 - 500 additional deaths in 2013
- ▶ 4 percent increase on other types of roads
 - 1,400 additional deaths in 2013
- ▶ Approximately 33,000 lives lost due to post-NMSL speed limit increases
 - Three quarters of the 43,000 lives saved by frontal airbags

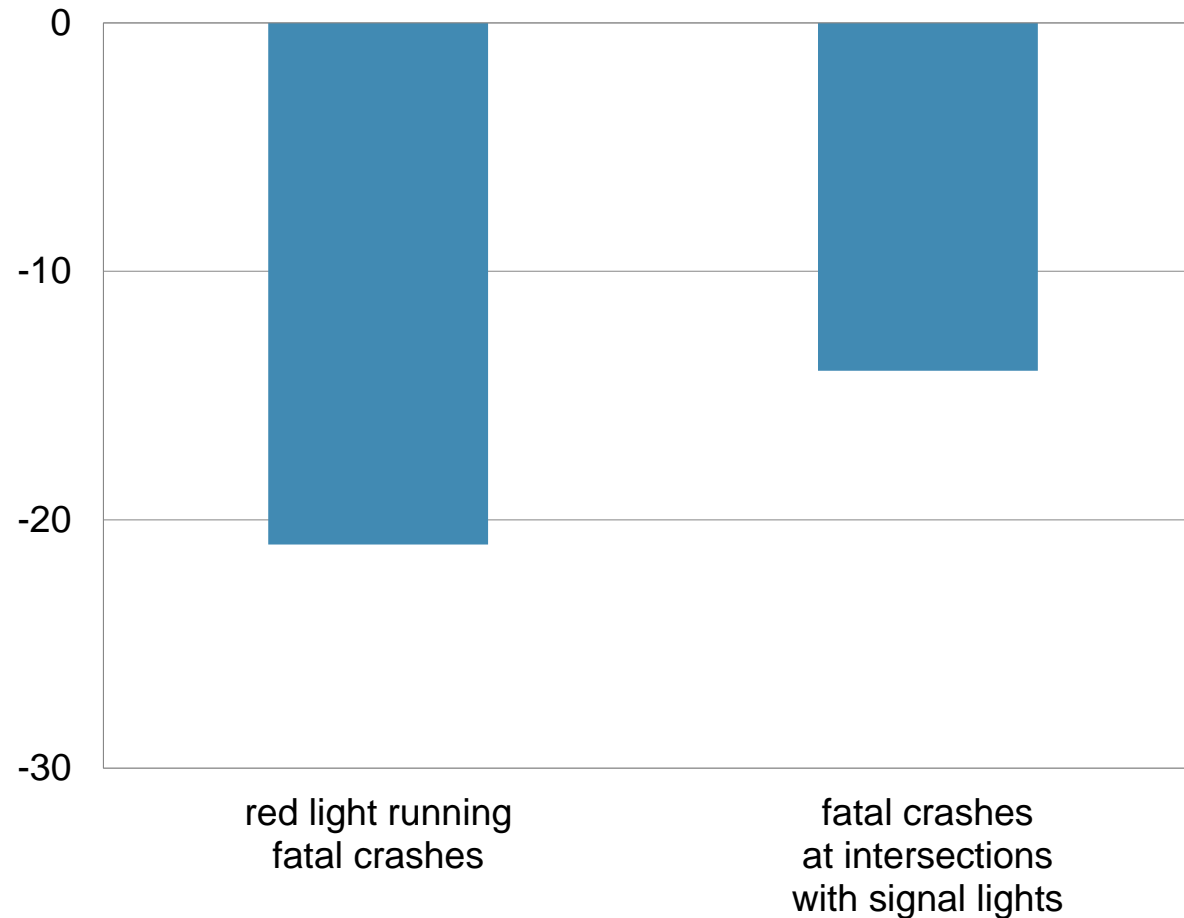
Maximum speed limits

June 2017



Despite effectiveness, the use of automated enforcement programs is losing ground.

Percent difference in actual fatal crash rates during 1992-2014 in cities with red light cameras vs. expected rates without cameras



Push to ban red light cameras not at top of legislative agenda

Stop whining over red light cameras Wheeling police defend red light camera

Tempe man sues, claims photo enforcement is fraudulent

Voters targeting red light cameras at polls

Safety, not money, should be priority for red light camera

It's Official: Red Light Cameras Don't Work

Houston voters decide on red light camera

More questions arise concerning red-light camera

Red light cameras still not approved

More red-light camera questions

Red-light issue screeches to halt

Red Light Camera Blues? There's an App for That

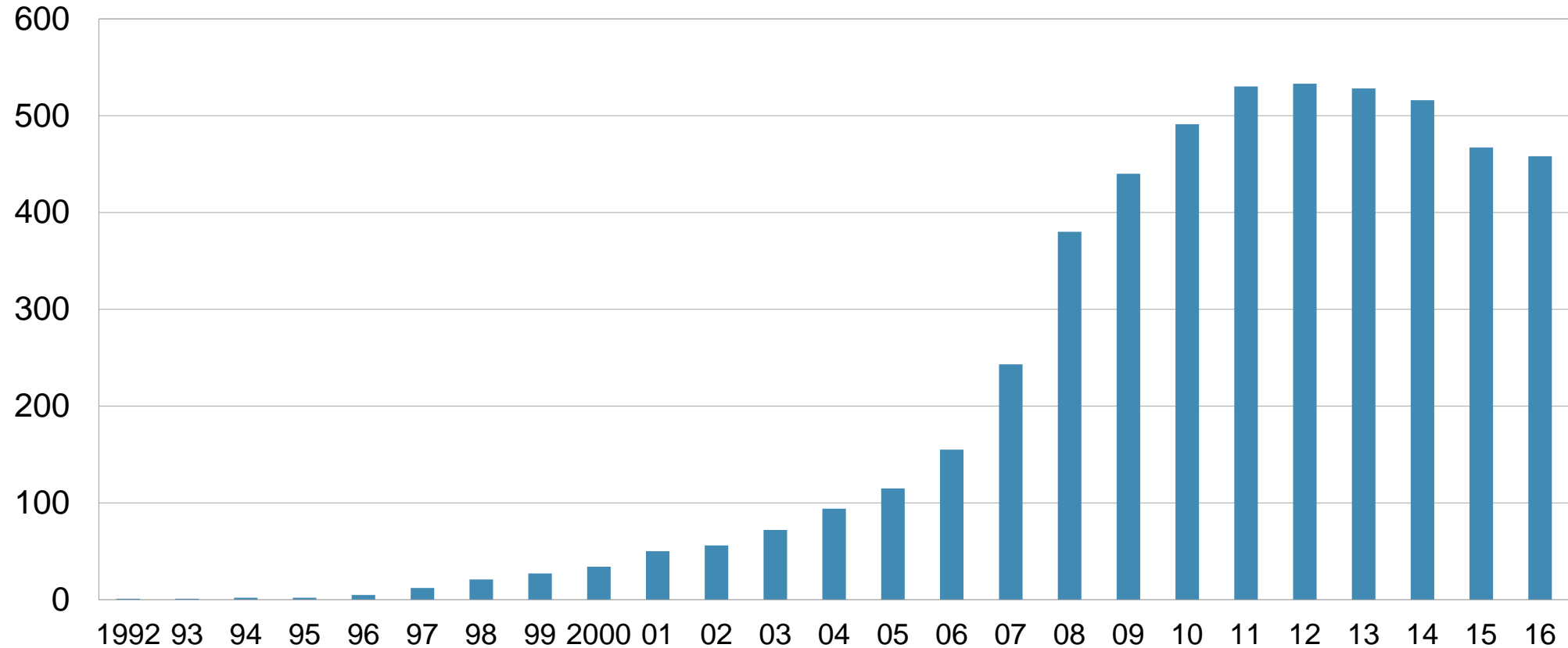
Despite questions over red light cameras, St. Petersburg moves forward

Haines City's Red-Light Cameras: Increase Revenue, Decrease Staff

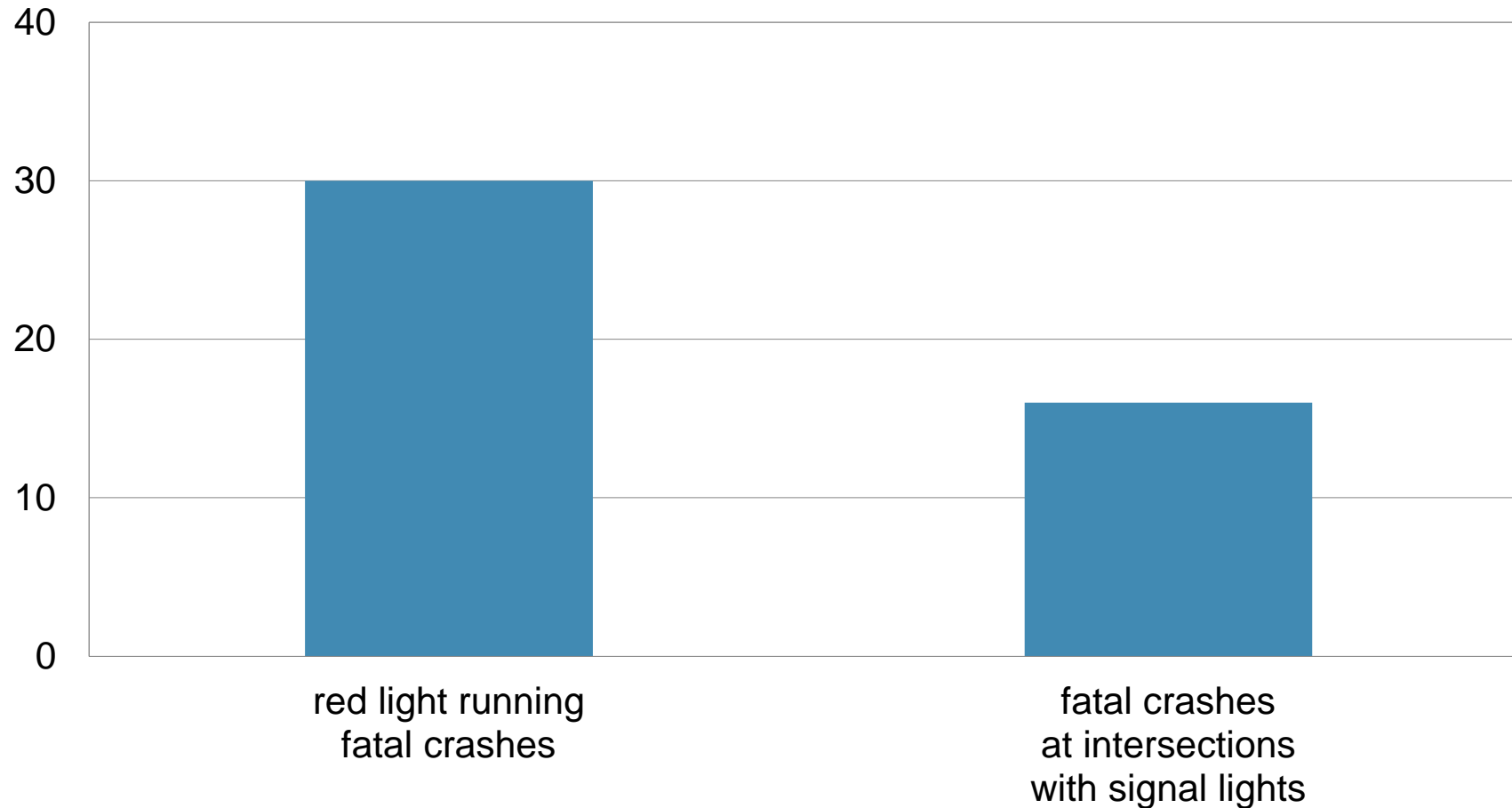


U.S. communities with red light cameras

1992-2015



Percent difference in actual fatal crash rates in cities that turned off cameras during 2010-2014 vs. expected rates with cameras

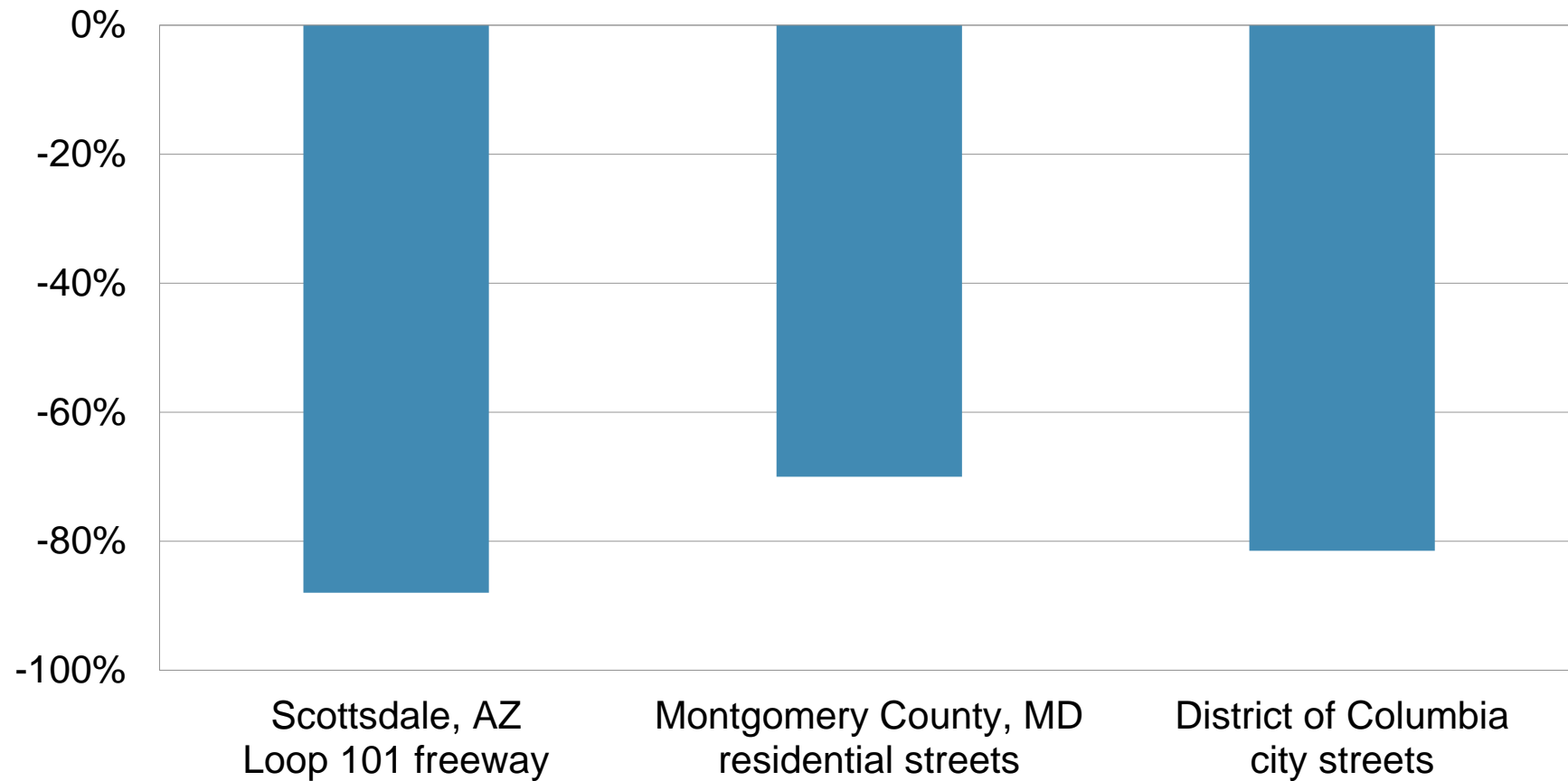


Intersection crash reenactment



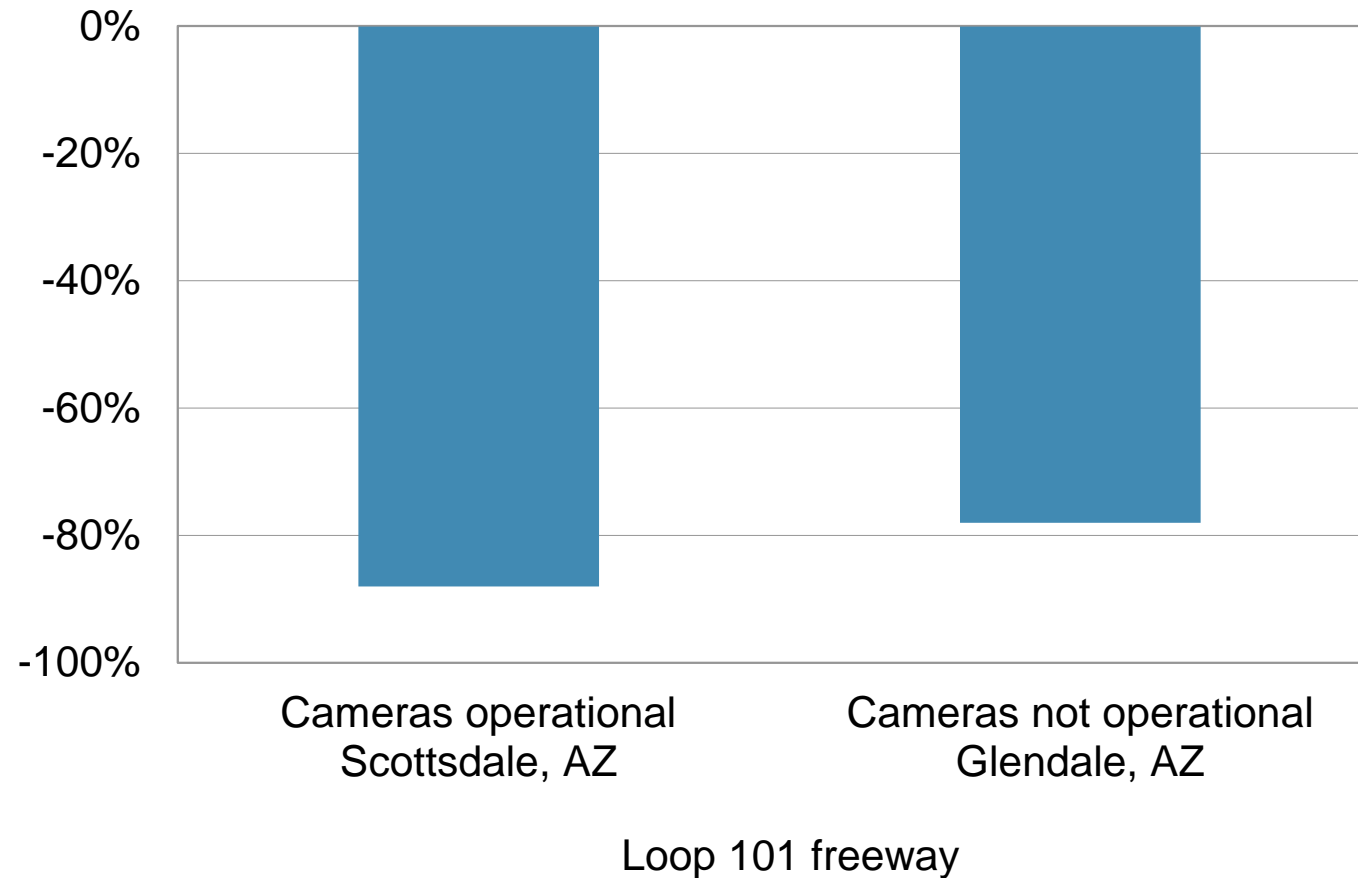
Reductions in proportion of vehicles exceeding speed limit by more than 10 mph

6 to 8 months after camera enforcement



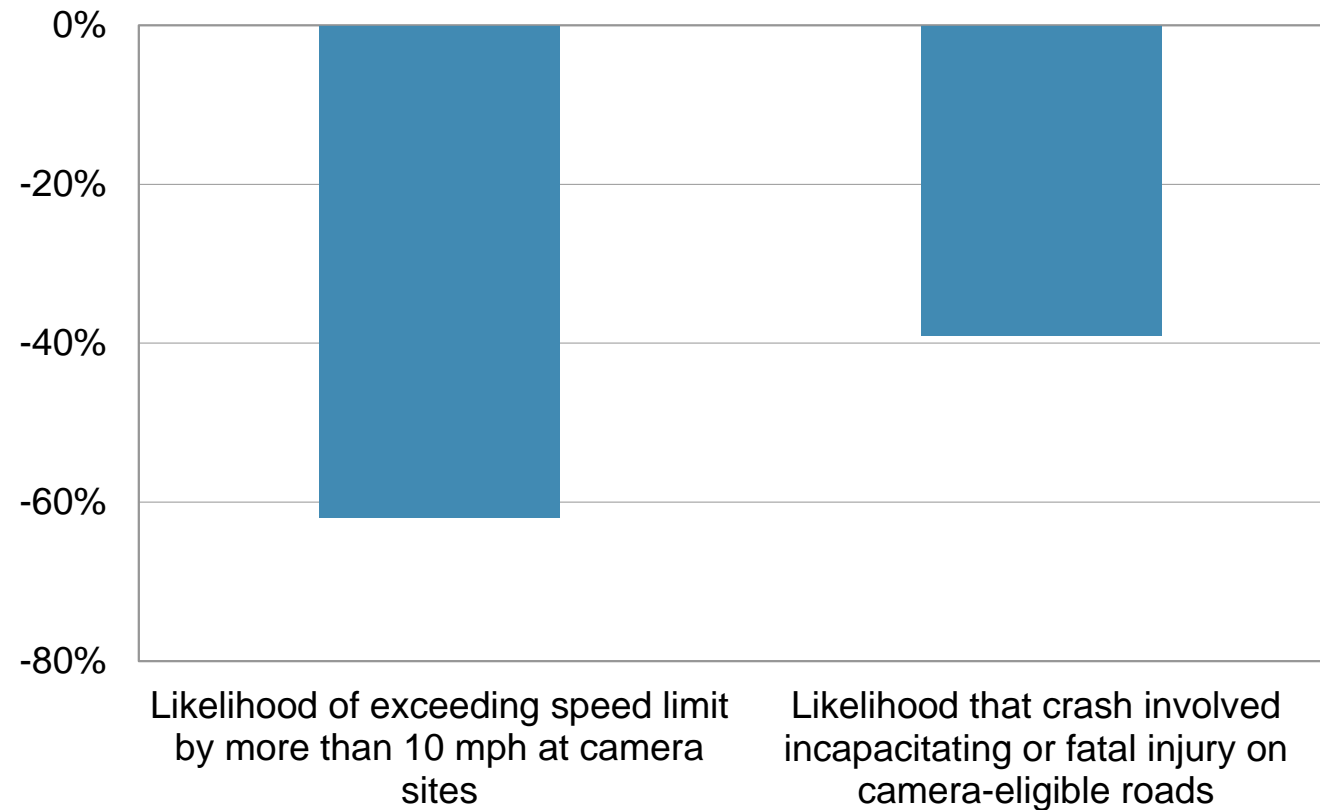
Spillover effects from automated enforcement

Reductions in proportion of vehicles exceeding speed limit by more than 10 mph



Long-term reductions in vehicle speeds and serious crashes associated with speed camera enforcement

Montgomery County, Maryland



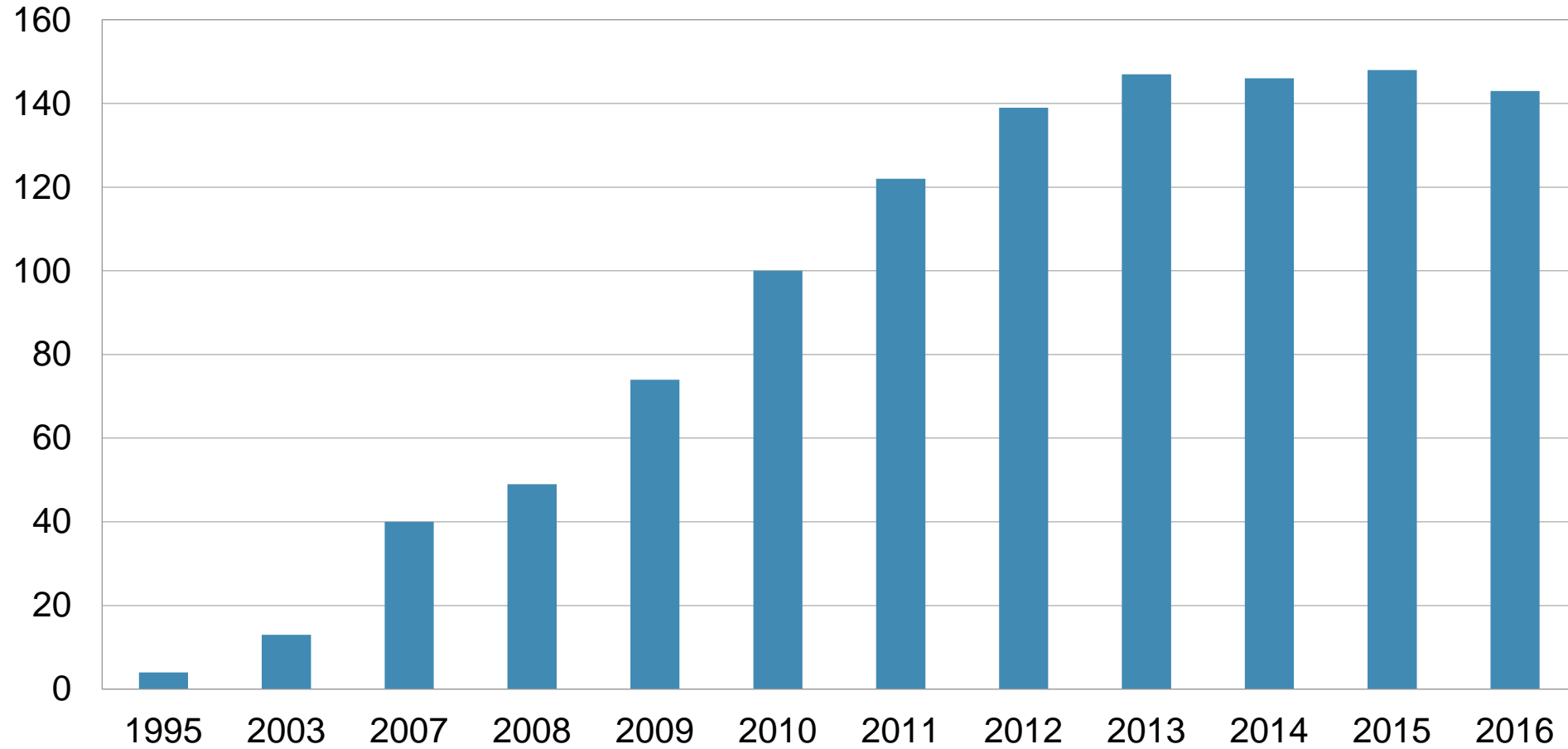
Review of 28 international studies shows that speed camera enforcement reduces injury and fatal crashes

Wilson et al., 2010

- ▶ 8-50% reduction in injury crashes in the vicinity of camera sites
- ▶ 11-44% reduction in fatal or serious injury crashes in the vicinity of camera sites
- ▶ 17-58% reduction in fatal or serious injury crashes over wider areas

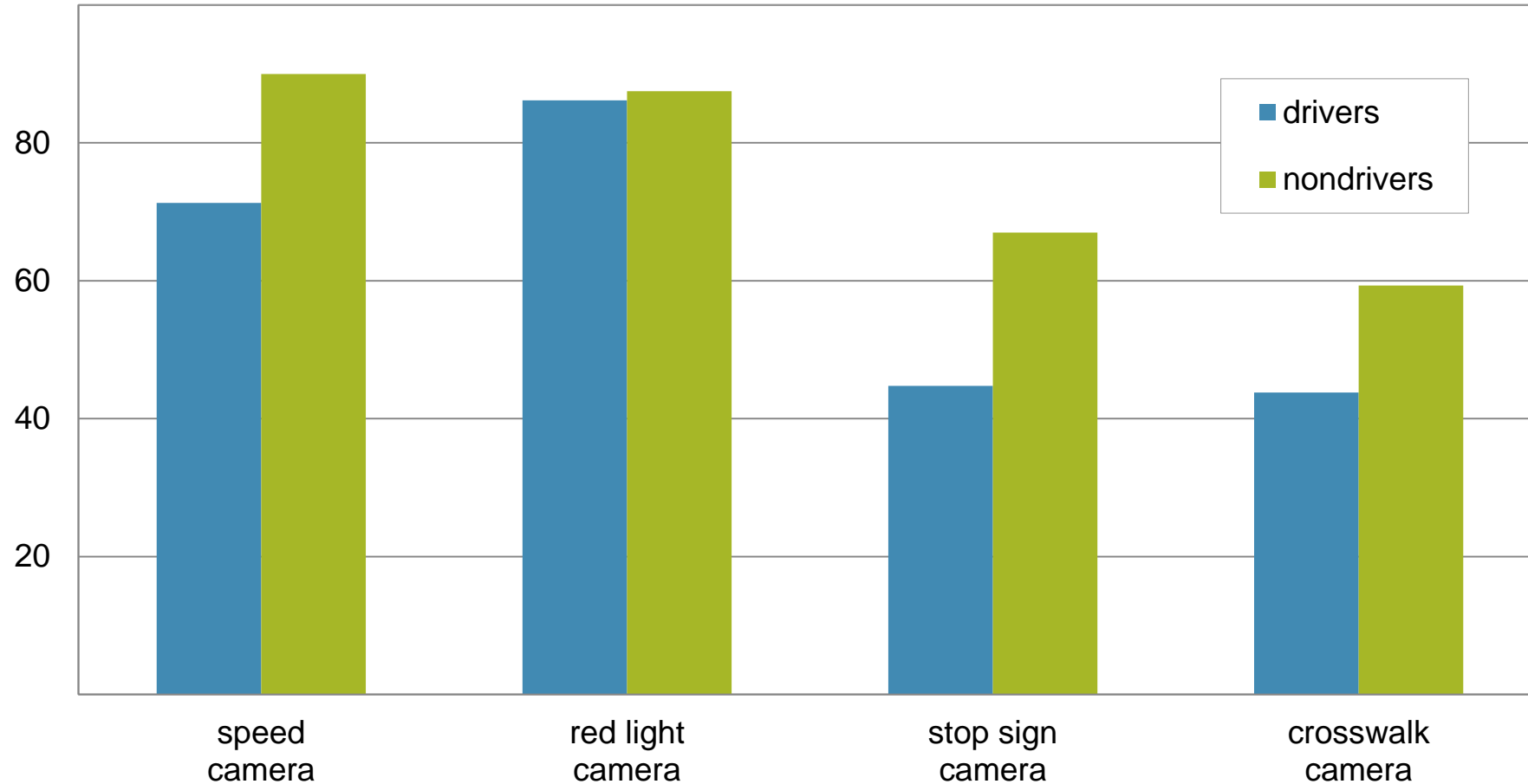
U.S. communities with speed cameras

1995-2016



Percent who favor camera enforcement

Telephone survey in Washington, D.C., 2012



**Driver assistance
technology may help, but
it will take awhile**

Front crash prevention systems are reducing police-reported rear-end strikes

Compared with vehicles without any front crash prevention...

...vehicles with **forward collision warning only** are **27% less likely** to rear-end another vehicle.

...vehicles with **forward collision warning AND autobrake** are **50% less likely** to rear-end another vehicle.

If every vehicle on the road had forward collision warning with autobrake in 2014, there would have been an estimated



1,000,000 fewer police-reported crashes

400,000 fewer police-reported injuries

20 automakers have committed to make AEB a standard feature by September 2022



HONDA



HYUNDAI



JAGUAR



PORSCHE



SUBARU

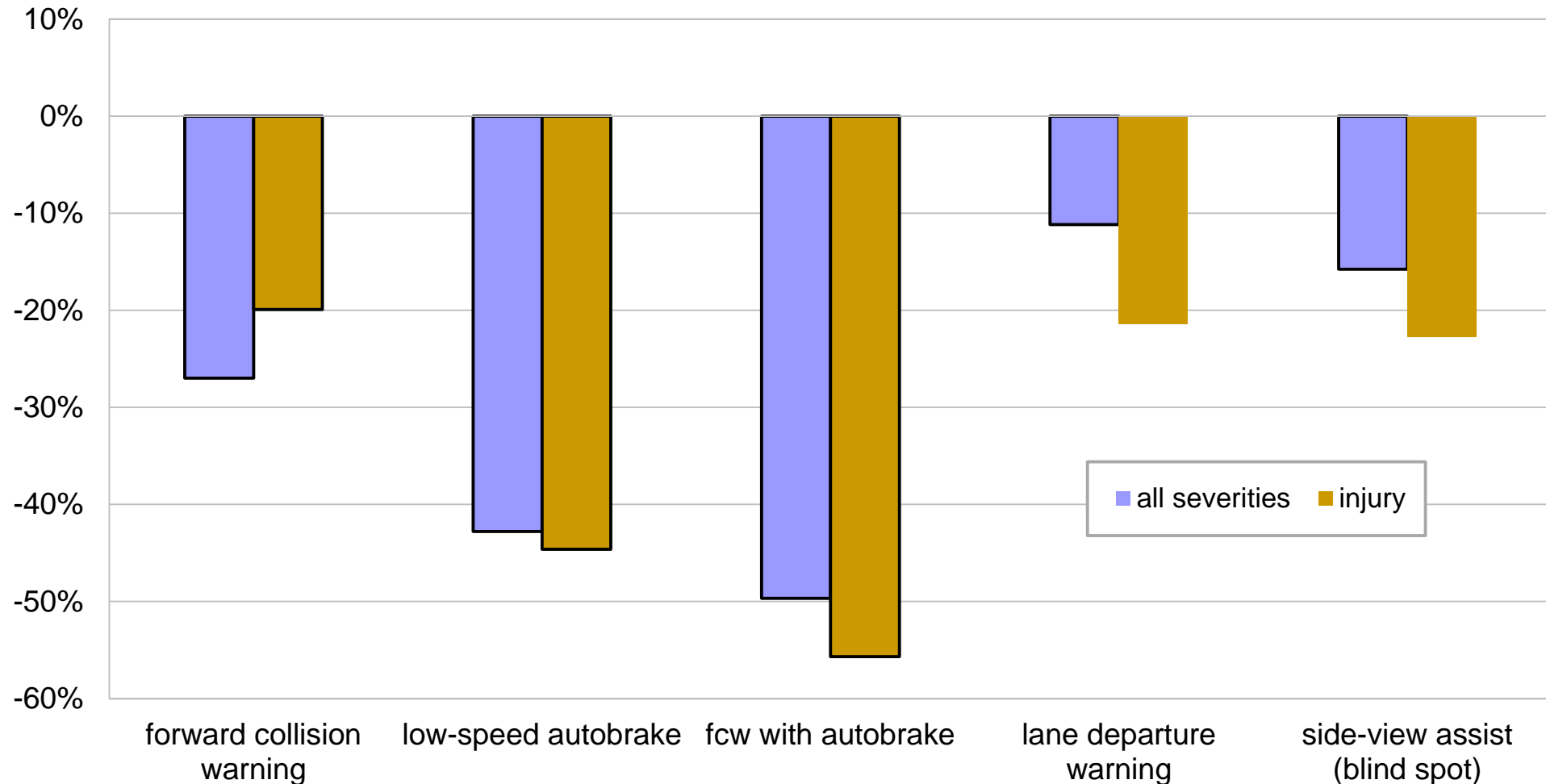


TESLA



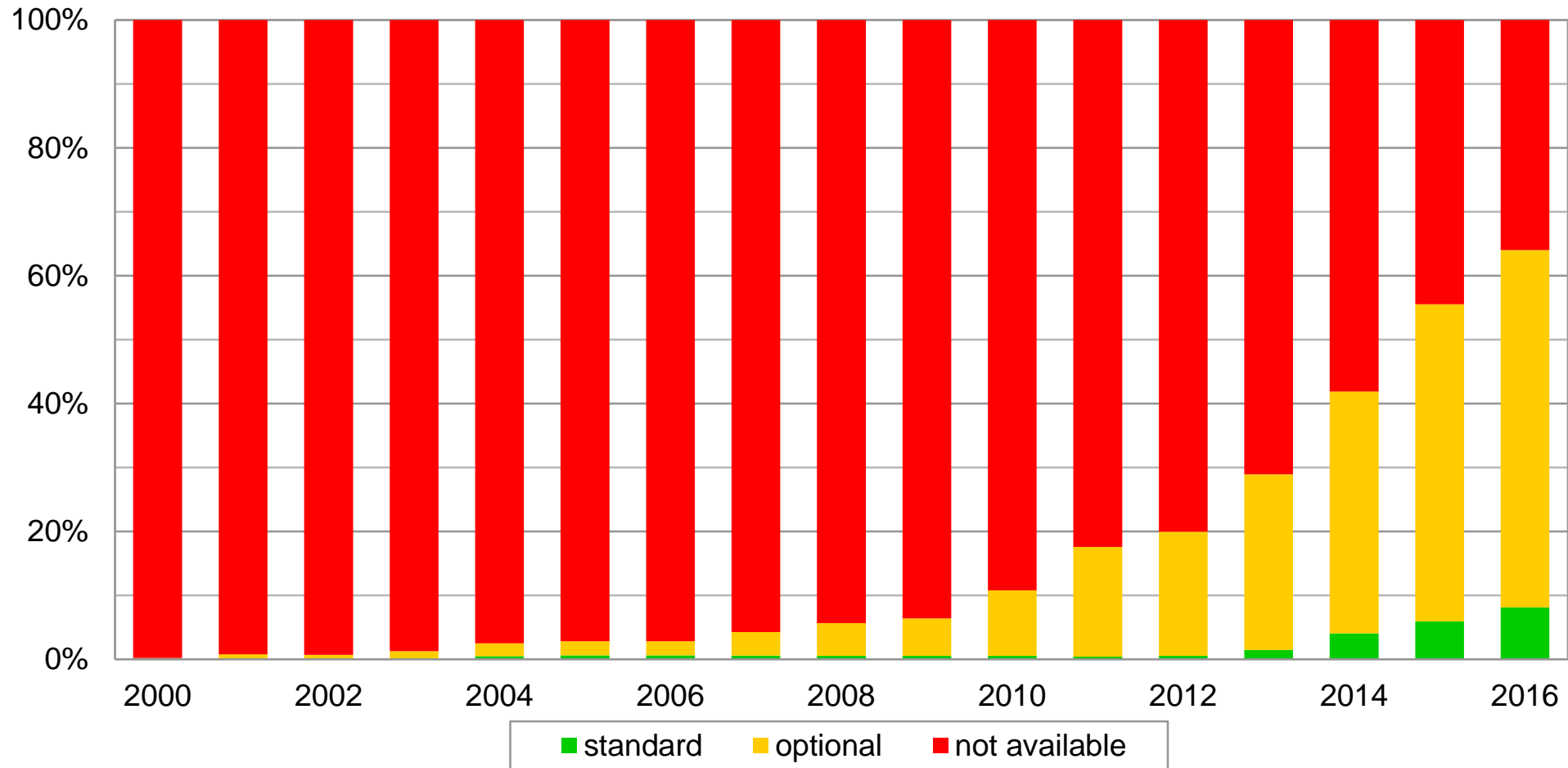
99+% of U.S. market

Summary of technology effects on relevant police-reported crash types



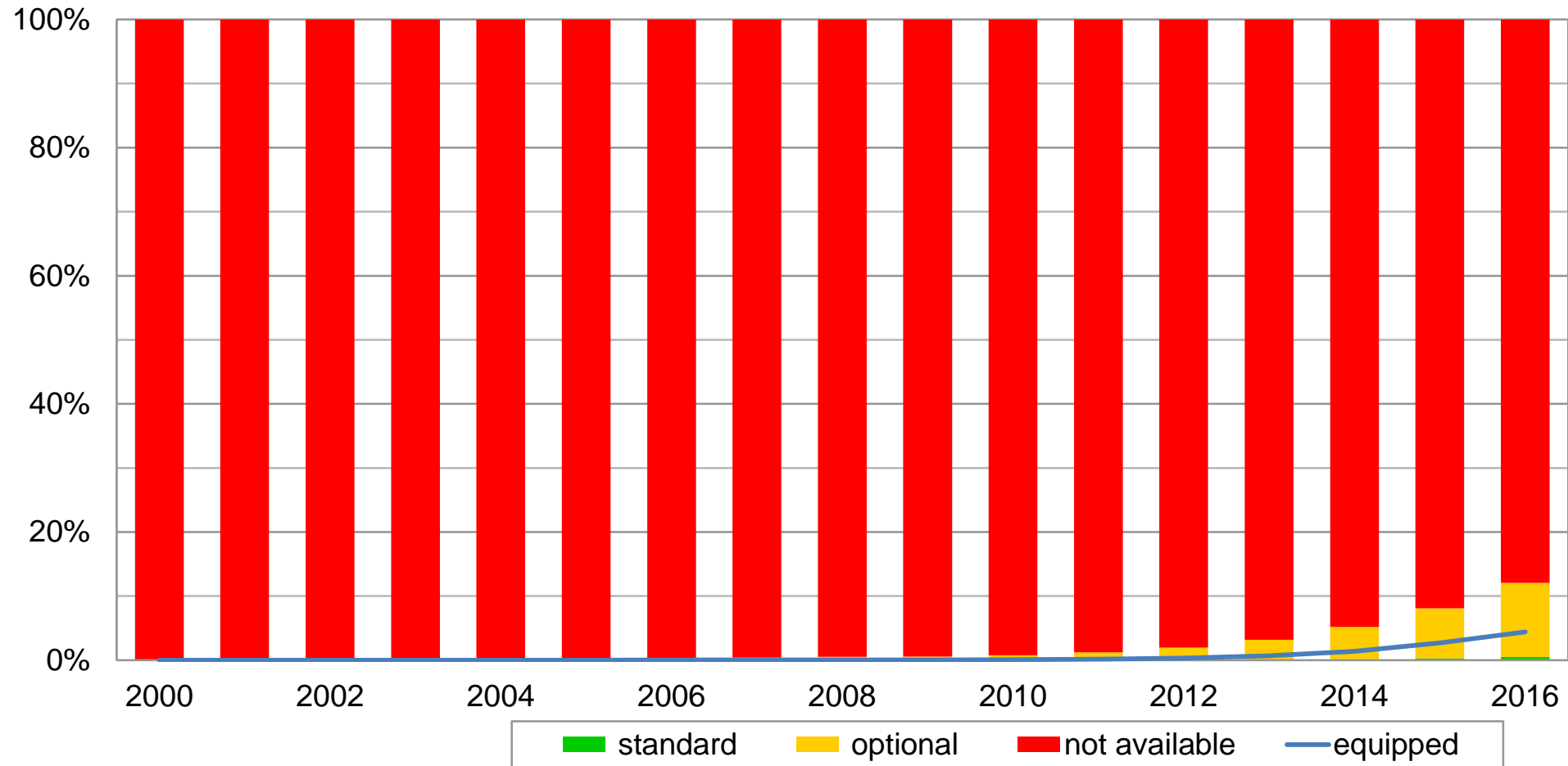
New vehicle series with forward collision warning

By model year



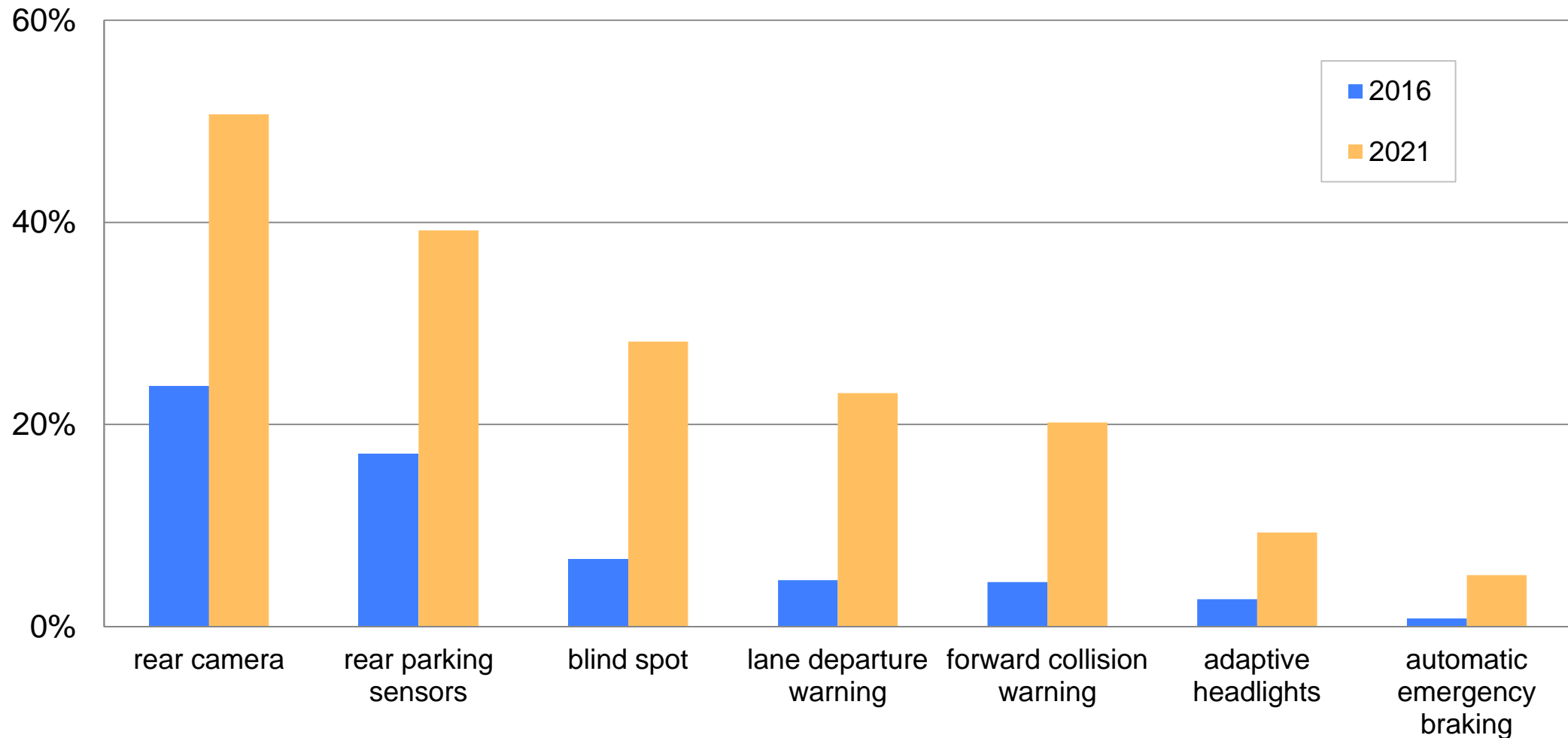
Registered vehicles with forward collision warning

By calendar year



Estimated registered vehicles by feature

Calendar years 2016 and 2021



Conclusions

- ▶ The road to zero has bumps
 - Increasing miles of travel as population increases
 - Growing economy contributes to both miles traveled and risk of those miles
 - Public policies are going in direction of increased risk
 - Higher speed limits
 - Political challenge of effective enforcement
- ▶ On the positive side
 - Vehicle design improvements will continue to roll into the vehicle fleet
 - New technology will be increasingly effective in preventing or mitigating crashes
 - Many adverse policy decisions are reversible given political will
 - There are additional roadway design changes that may be more acceptable
 - Roundabouts
 - Simple improvements in road signing



Insurance Institute for Highway Safety
Highway Loss Data Institute

More information and links to our
YouTube channel and Twitter feed
at [iihs.org](https://www.iihs.org)

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[iihs.org](https://www.iihs.org)

Percent U.S. drivers using cellphones at any given daylight time and motor vehicle crash deaths

2000-15

