

Research Evidence on Automated Enforcement

September 28, 2016
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PA
SAFETY
SYMPOSIUM
toward zero deaths

Why red light camera enforcement?



On U.S. roads
in 2014, about
171,000
red light running
crashes caused about
126,000 injuries and
709 deaths.

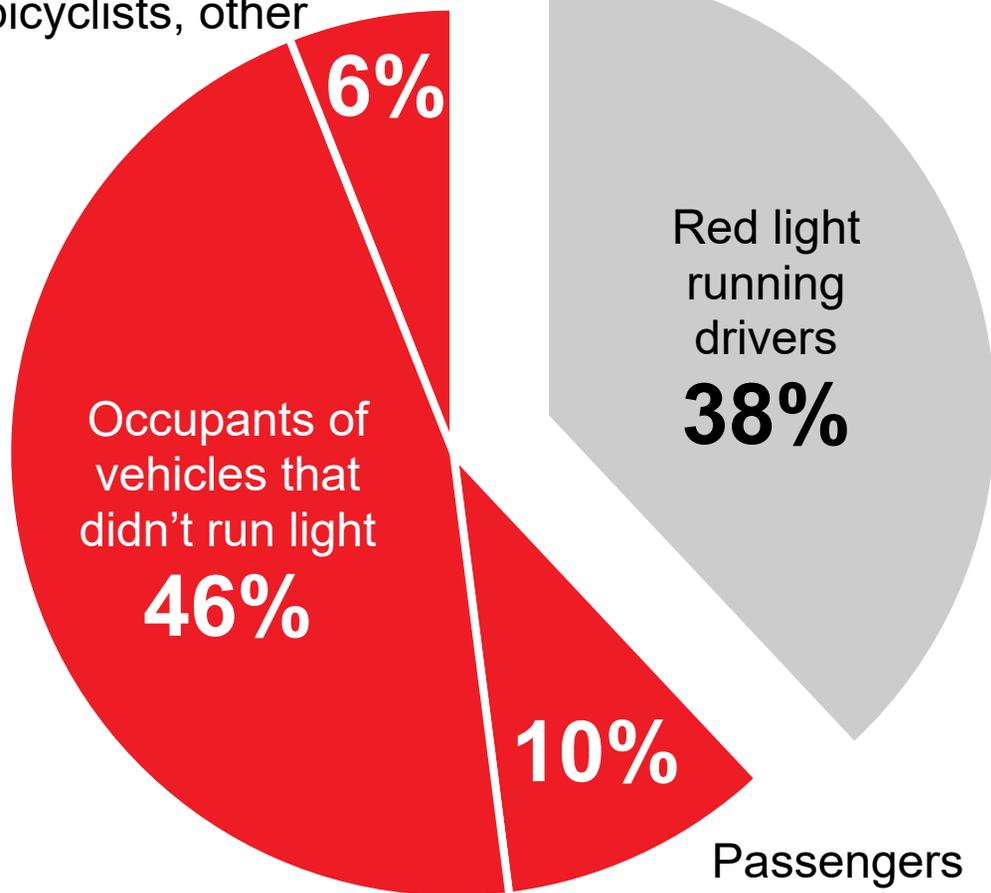


Tucson, Ariz.,
camera photos courtesy
of American Traffic Solutions



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Pedestrians,
bicyclists, other



709 deaths in red light running crashes in 2014

Passengers
in red light running vehicles

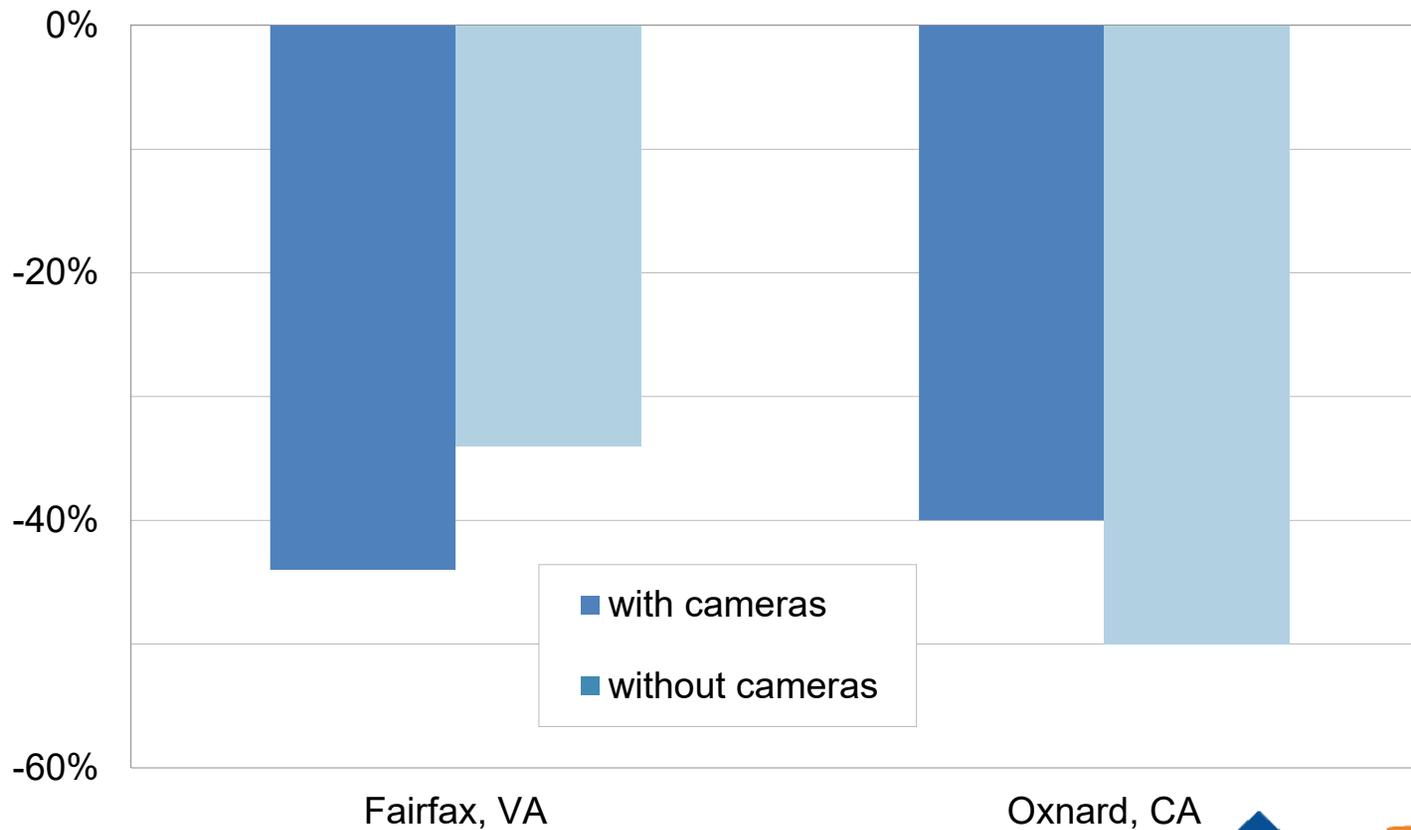


IHS
HLDI



Reductions in red light violations at intersections with signal lights

With and without cameras, per 10,000 vehicles



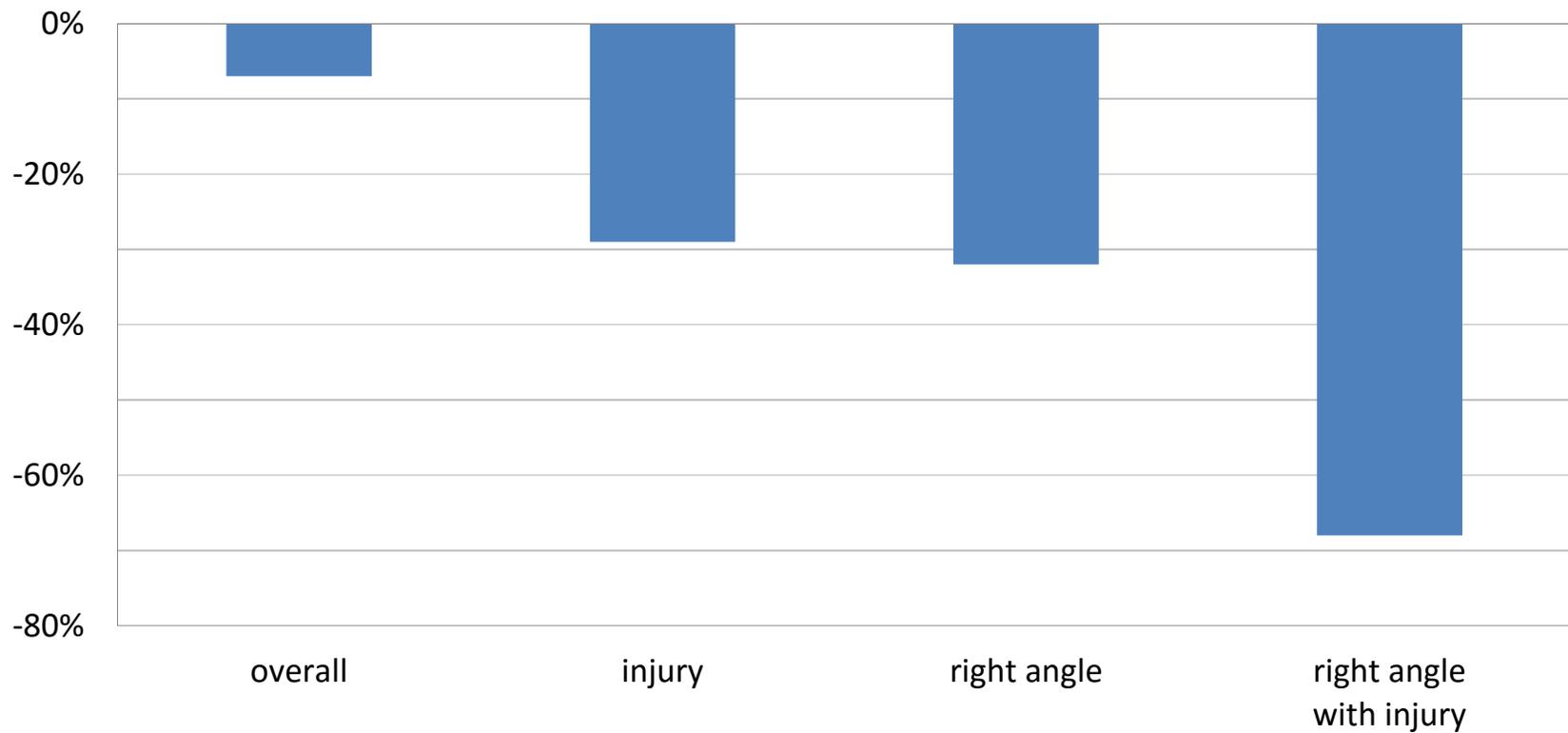
Reduction in likelihood of red light violations at intersections with cameras vs. expected likelihood without cameras

Arlington, VA

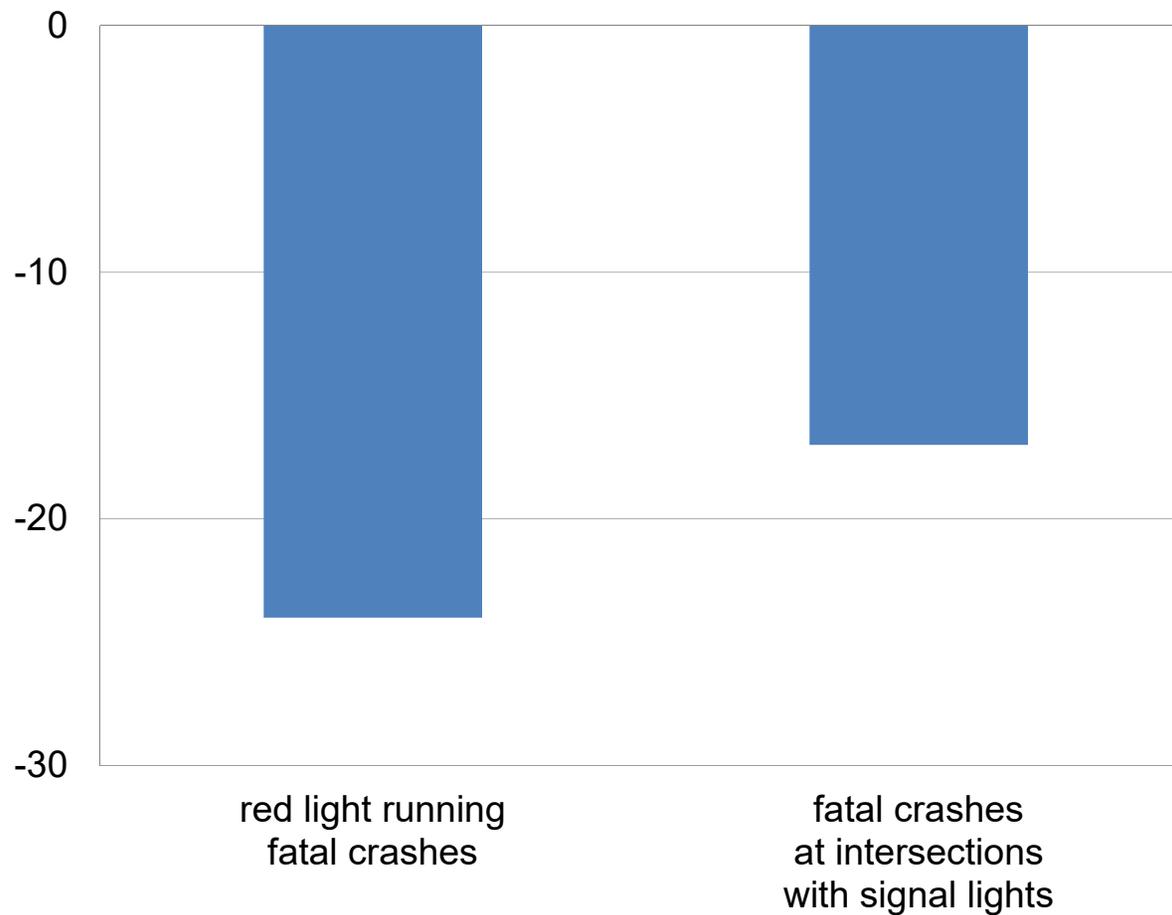


Citywide crash reductions at intersections with signal lights after camera enforcement

Oxnard, California



Percent difference in actual fatal crash rates during 2004-08 in cities with red light cameras vs. expected rates without cameras



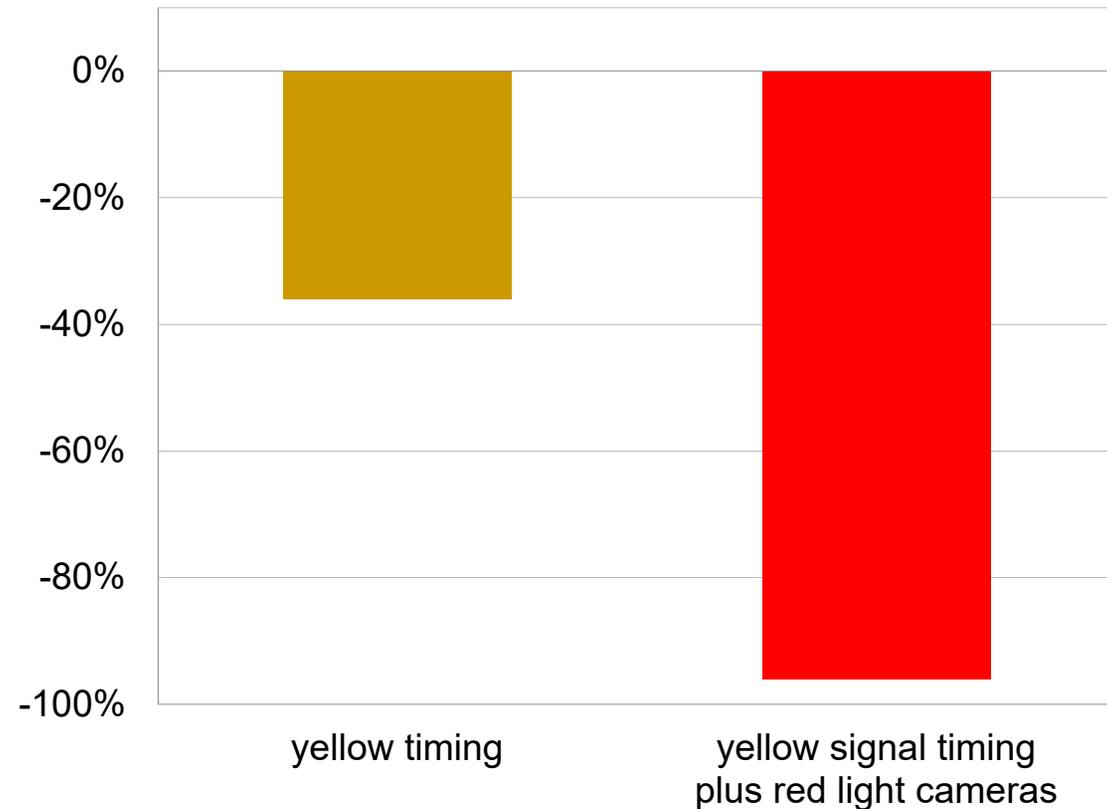
Review of 10 international research shows that red light camera enforcement reduces injury and fatal crashes

Aeron-Thomas and Hess, 2005

- ▶ 13-29% reduction in all types of injury and fatal crashes
- ▶ 24% reduction in right-angle injury and fatal crashes
- ▶ No statistically significant change in rear-end injury and fatal crashes

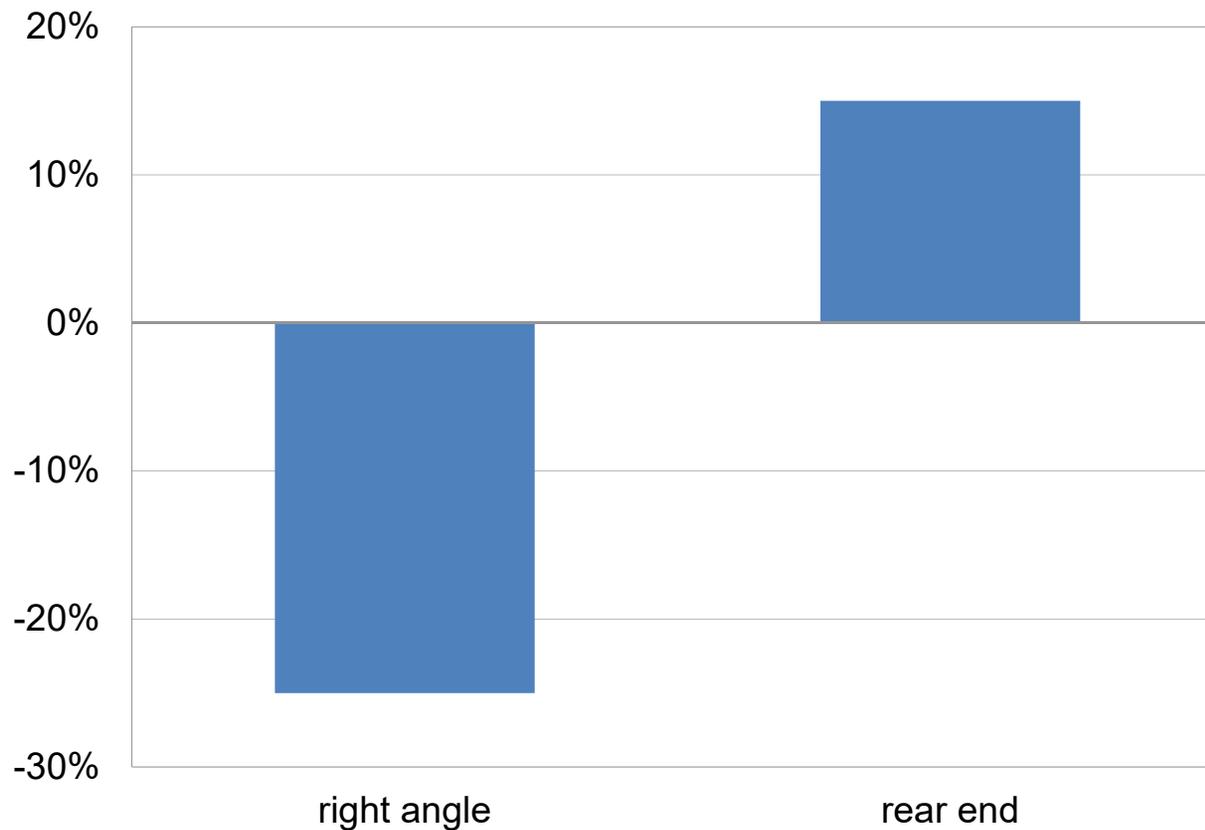
Reductions in red light violations per 10,000 vehicles from longer yellow signal timing and red light cameras

In Philadelphia, longer yellow signal timing reduced red light violations by 36%, but the addition of red light cameras further reduced violations by 96% beyond levels achieved by the yellow signal timing.



Changes in crashes attributed to red light cameras

7 city study (Federal Highway Administration, 2005)





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 fraud

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

Aventura cites safety in defending red light camera program

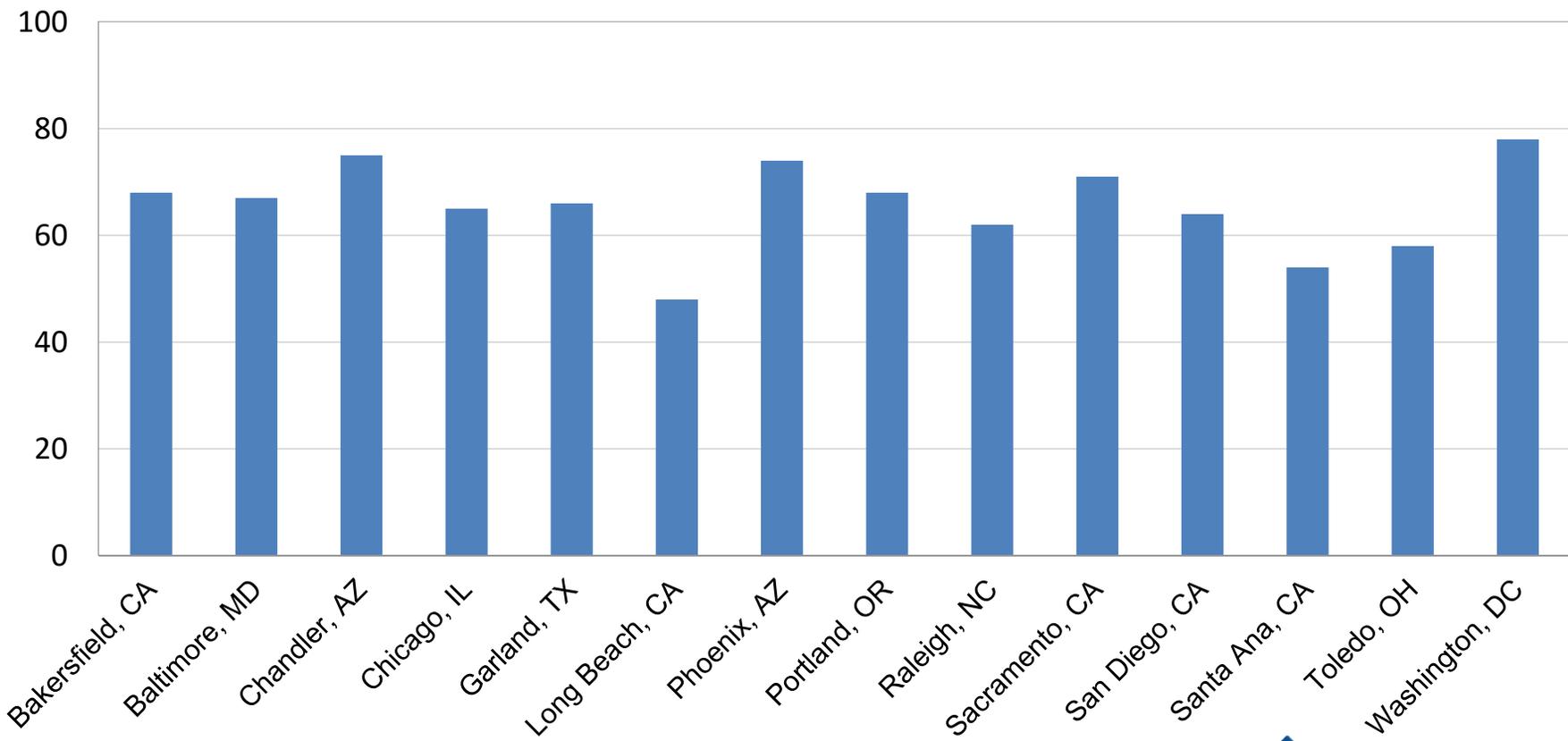
Royal Palm Beach kills red-light camera program

Opposition weighs warnings for some red light offenses

Shine off red light cameras? *Red-Light Cameras Intrusive*

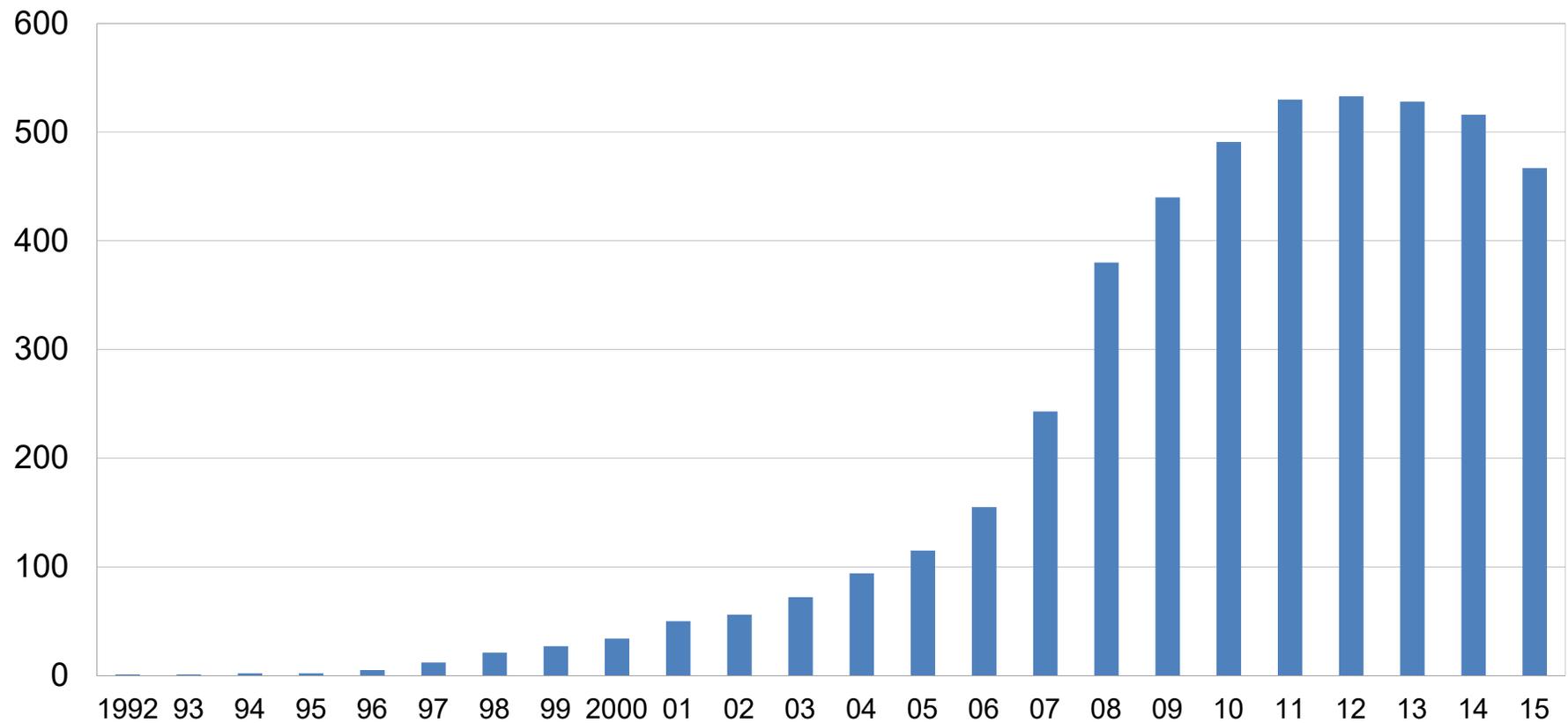
Percent who favor using red light cameras

Telephone survey in 14 cities with red light cameras, 2011



U.S. communities with red light cameras

1992-2015



Effects of red light cameras on fatal crash rates in large cities

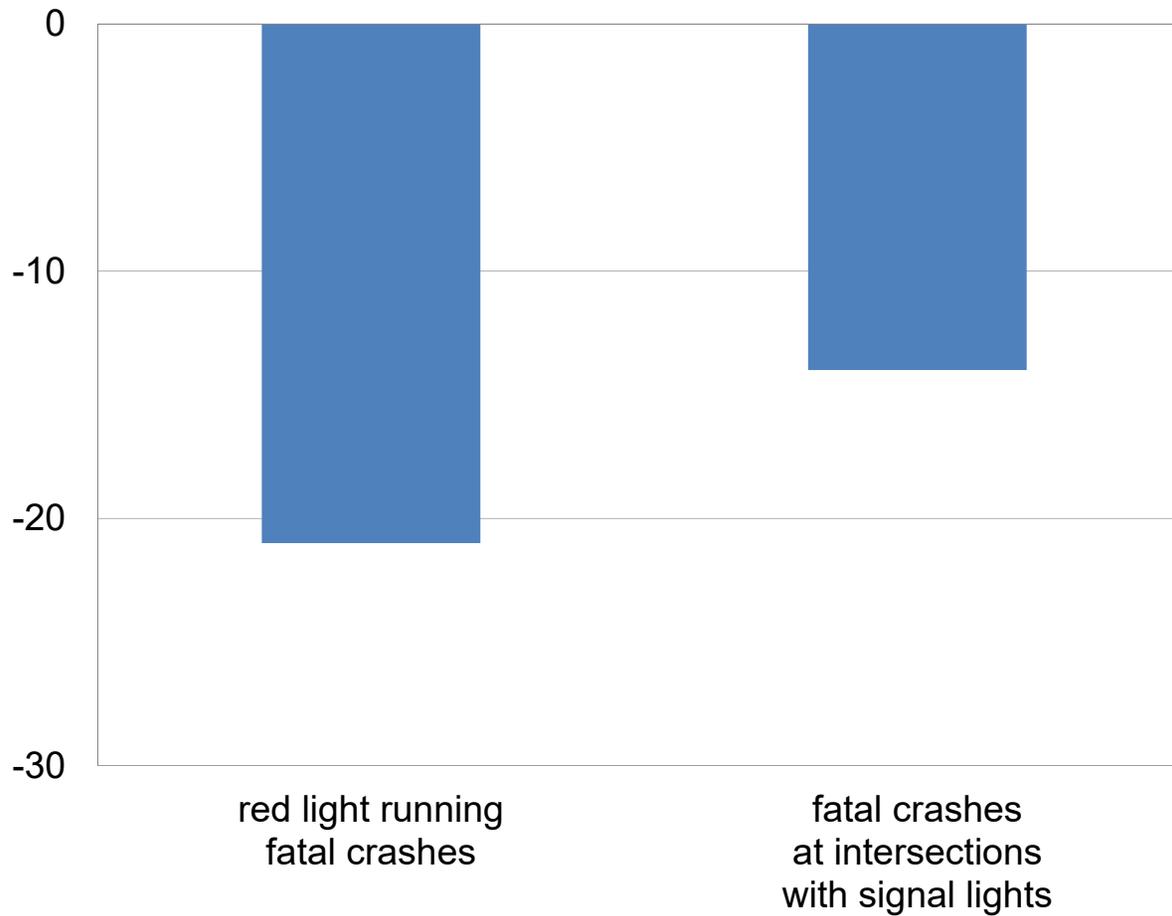
- ▶ Cities with population 200,000+ in 2014
- ▶ Effects of activating red light cameras on citywide fatal crash rates
- ▶ Effects of ending red light camera programs on citywide fatal crash rates
- ▶ Two fatal crash measures
 - Red light running crashes
 - Crashes at intersections with signal lights

Effects of turning on red light cameras on fatal crash rates in large cities

Study period: 1992-2014

- ▶ Study groups
 - 57 cities that began programs
 - 33 cities without cameras
- ▶ Trends in per capita fatal crash rates compared
- ▶ Accounted for effects of population density and unemployment rates

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

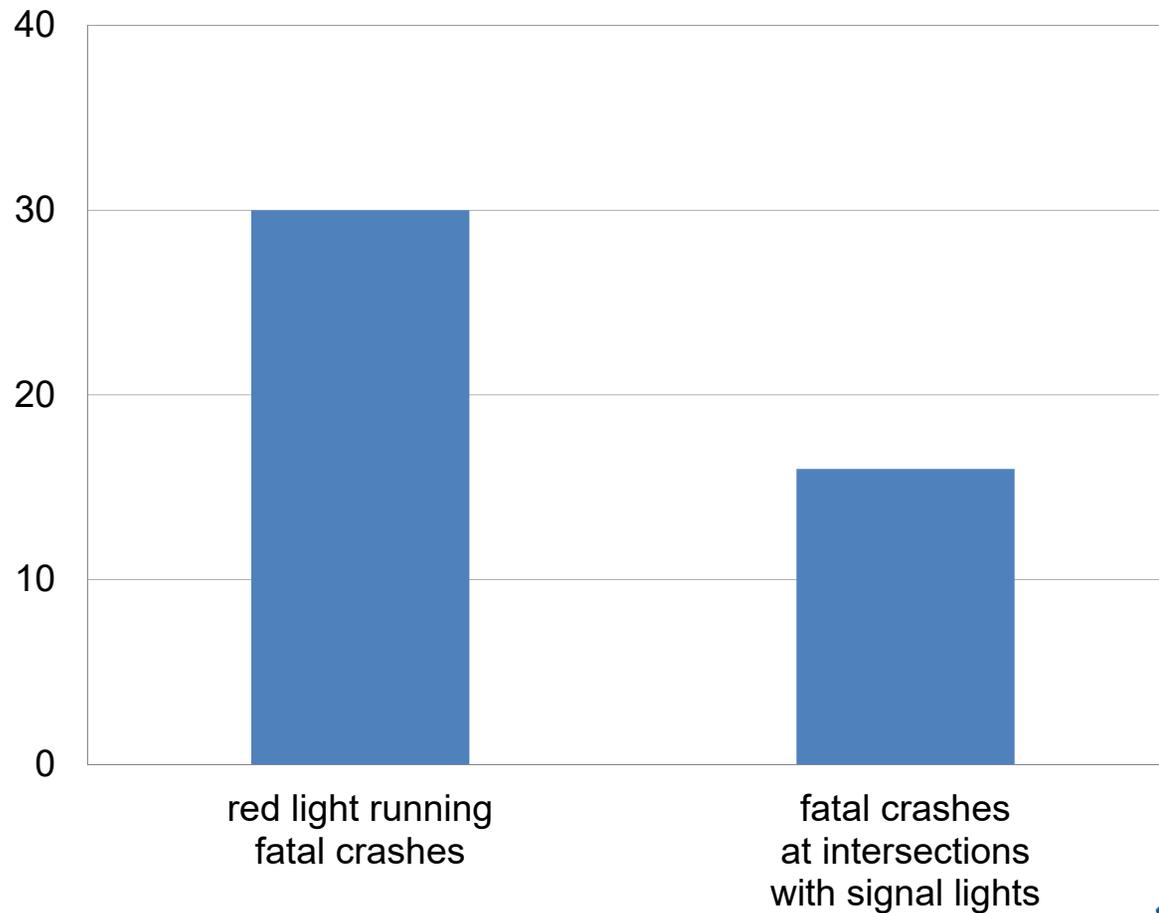


Effects of turning off red light cameras on fatal crash rates in large cities

Study period beginning the year city turned cameras on through end of 2014

- ▶ Study groups
 - 14 cities that terminated programs during 2010-14
 - 29 regionally-matched cities with continuous camera programs
- ▶ Trends in per capita fatal crash rates compared
- ▶ Accounted for effects of population density and unemployment rates

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





Estimated effects of red light cameras in large cities

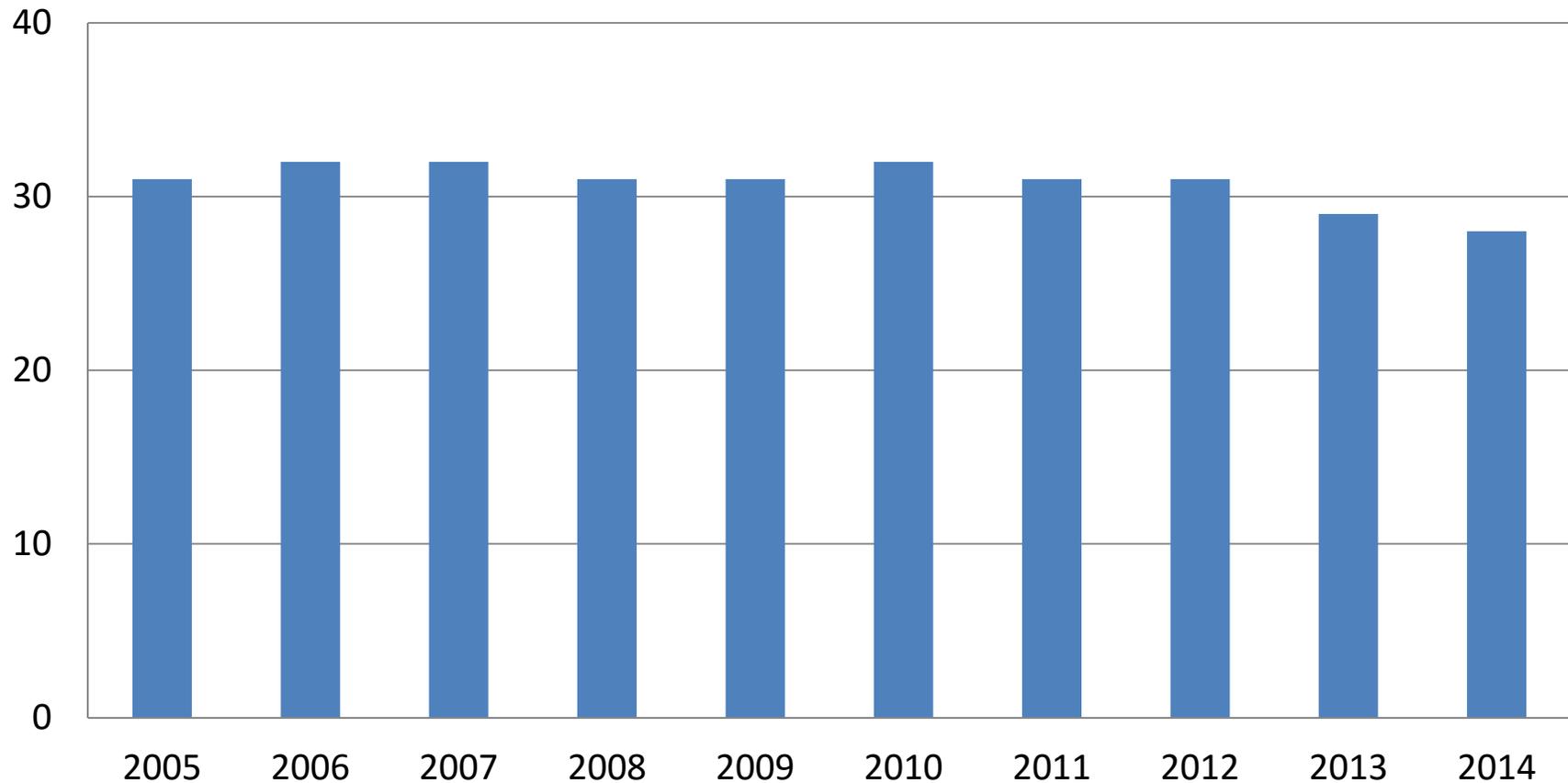
1992-2014

- ▶ In the 79 cities with cameras, **1,296 lives were saved**
- ▶ In 14 cities that ended camera programs in 2010-14, **63 lives were lost as a result**



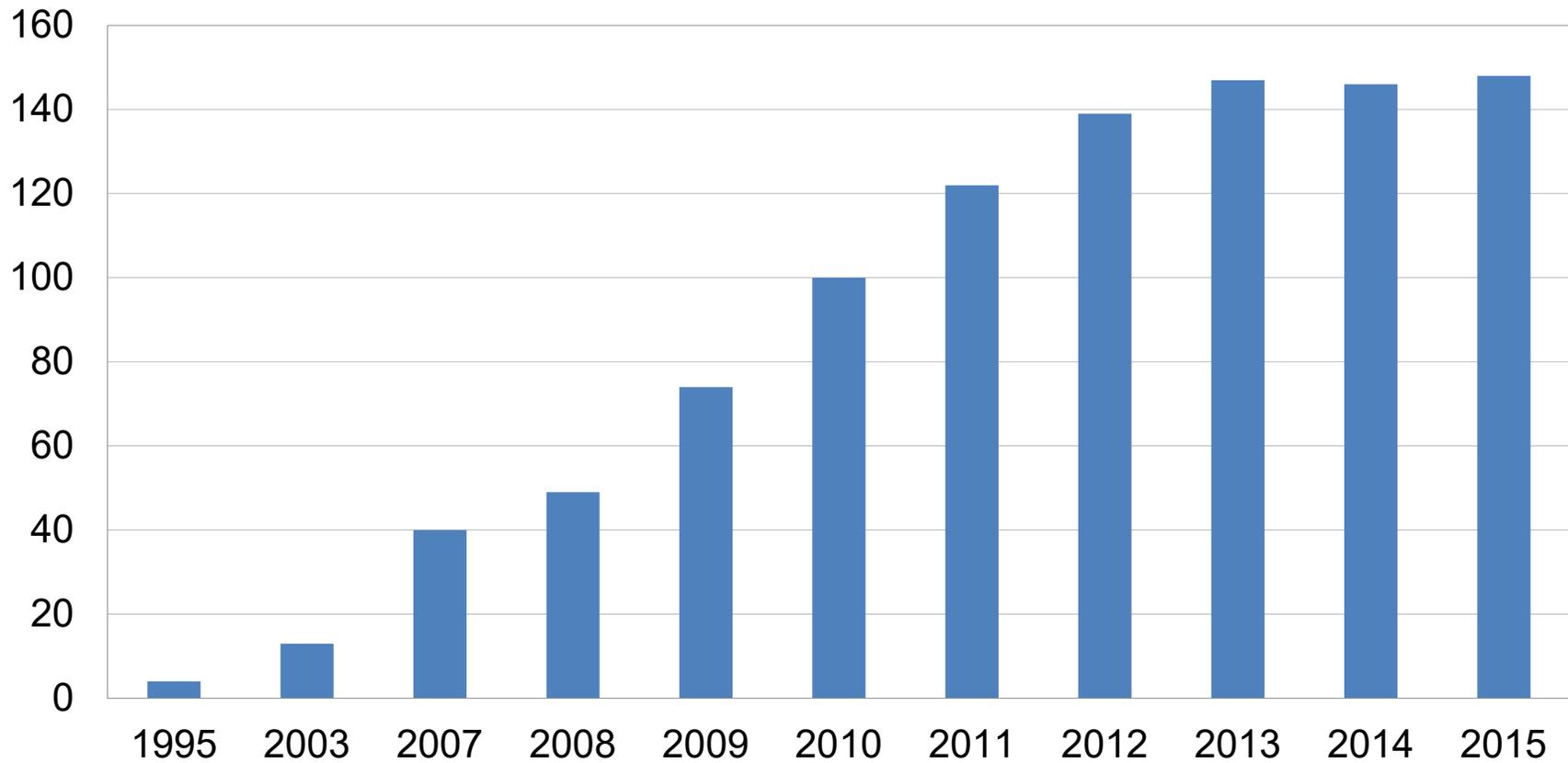
Why speed camera enforcement?

Speeding as factor in vehicle crash deaths in 2005-14, by percent



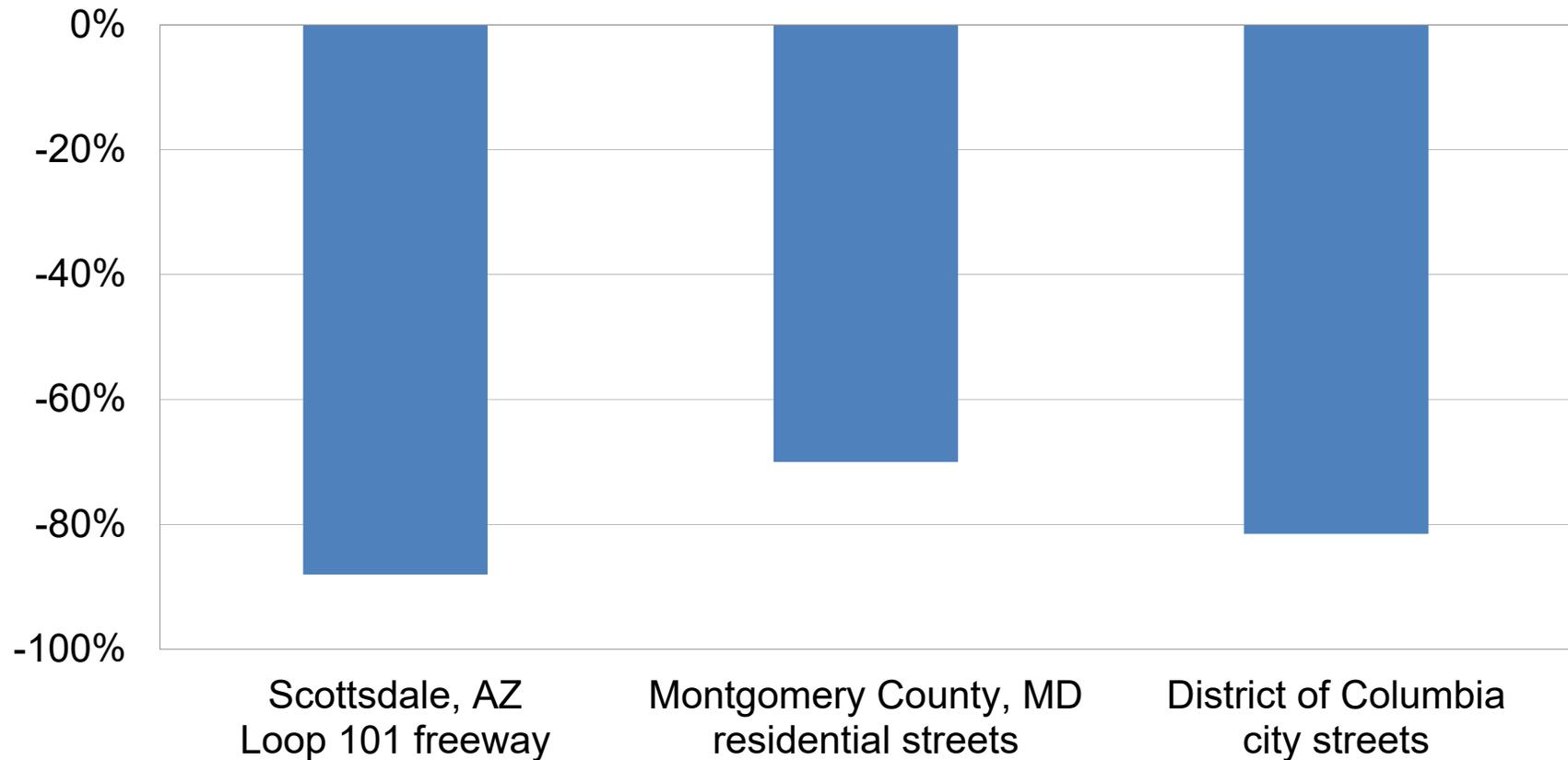
U.S. communities with speed cameras

1995-2015



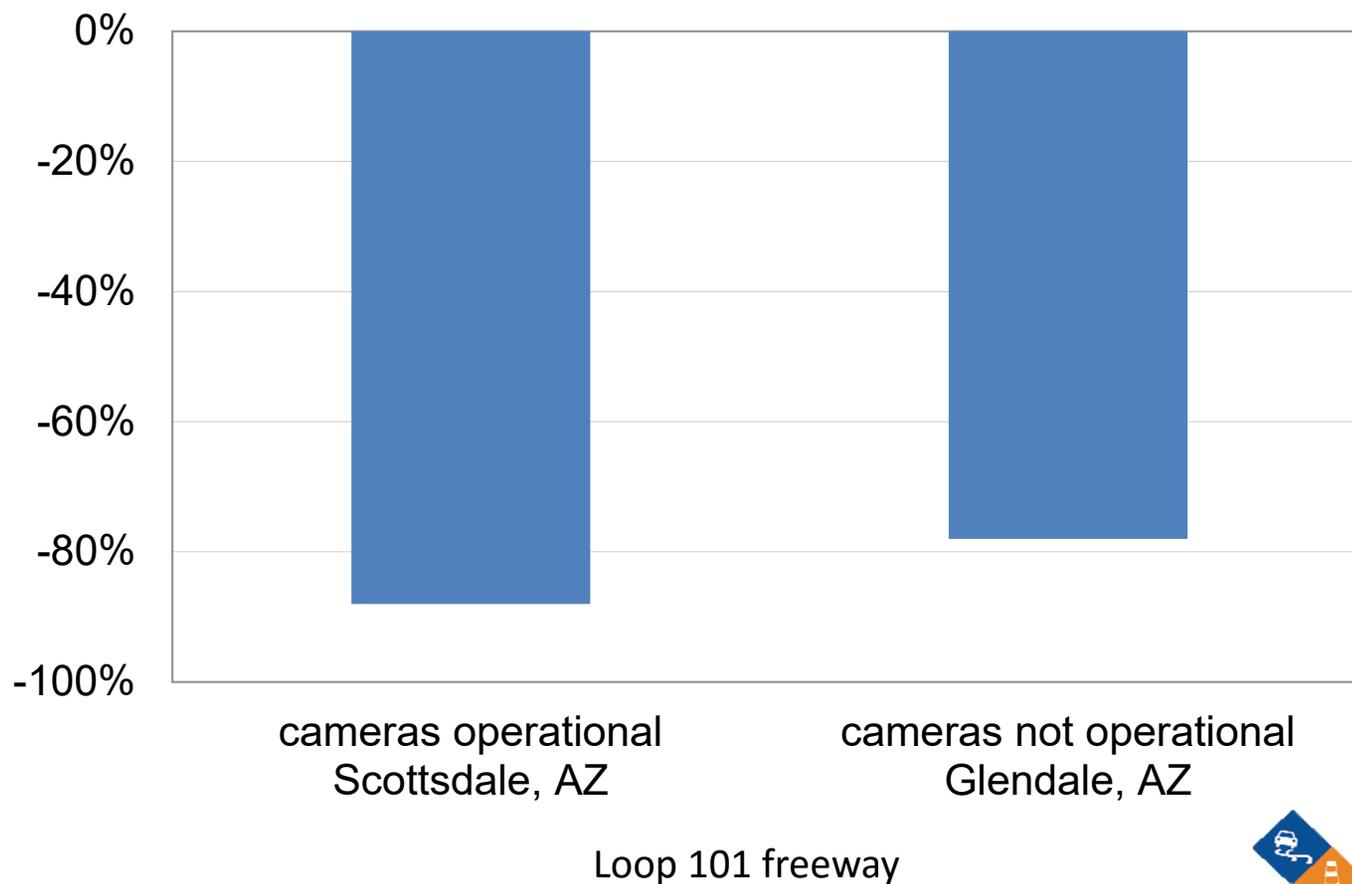
Reductions in proportion of vehicles exceeding speed limit by more than 10 mph

6 to 8 months after camera enforcement



Spillover effects from speed camera enforcement

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



Montgomery County speed camera program

- ▶ 1st Maryland community to use speed cameras beginning May 2007
- ▶ Cameras limited to school zones and residential streets with 35 mph or less speed limits
- ▶ Citations initially issued for traveling at least 11 mph above speed limit
- ▶ \$40 civil citation but no driver license penalty points

Typical camera site on residential street

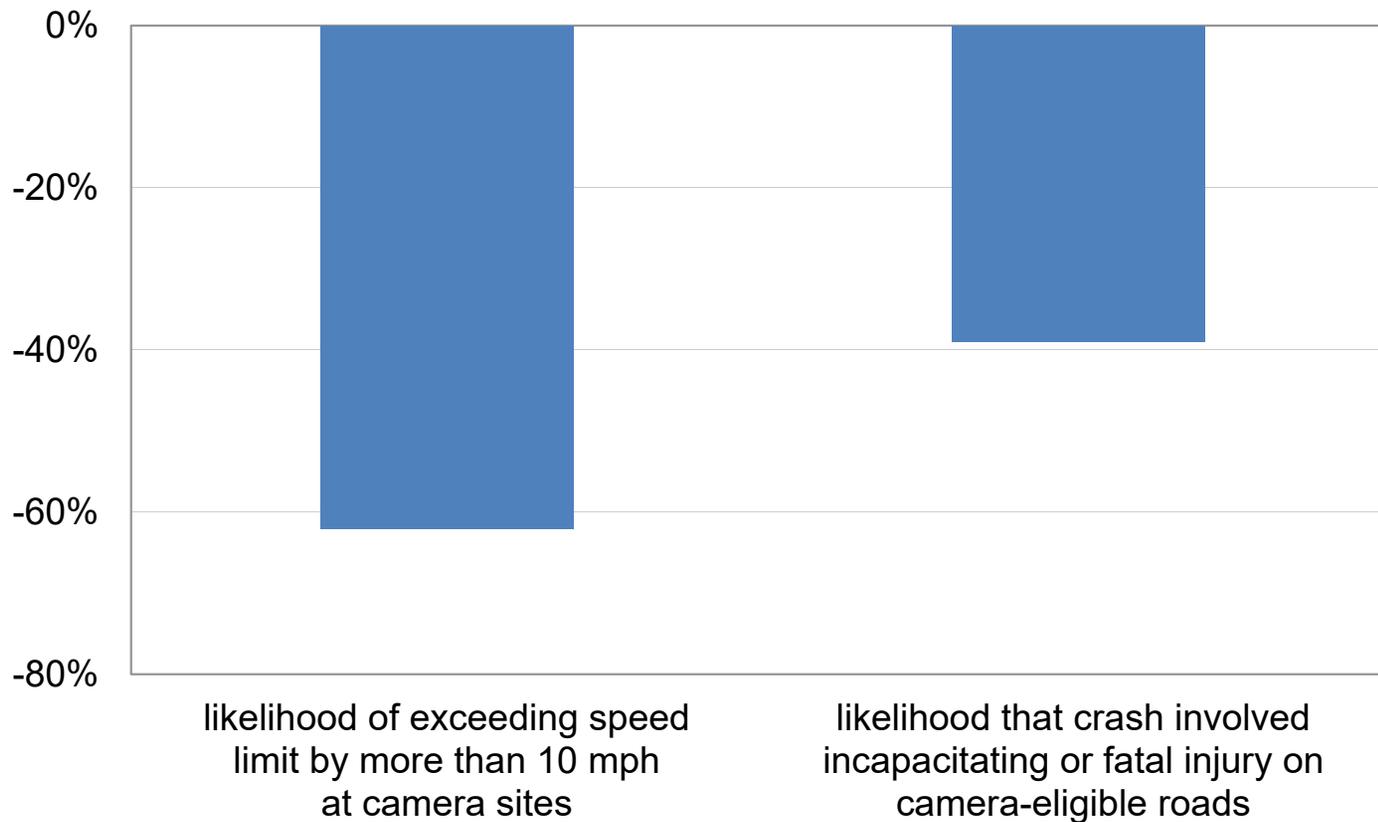


Evolution of Montgomery County speed camera program

- ▶ State speed camera law amended Oct. 1, 2009
 - Citations issued to vehicles traveling at least 12 mph (up from 11 mph) above speed limit
 - School zone use restricted to weekdays 6 a.m. to 8 p.m.
- ▶ Corridor enforcement program implemented May 2012
- ▶ Program has grown from 18 mobile cameras to 38 fixed cameras, 34 mobile cameras and 5 mobile vans

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

Opinions of residents during speed camera enforcement programs

	Montgomery County (MD)		Scottsdale (AZ)
	6 months after	7-1/2 years after	8 months after
think speeding is a problem on targeted roads	74%	56%	79%
aware of speed cameras	61%	95%	90%
favor speed camera use on targeted roads	60%	62%	77%

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