

The association between broadened cellphone bans and police-reported rear-end crash rates in California, Oregon, and Washington

Commercial Vehicle Safety Summit

November 29, 2022



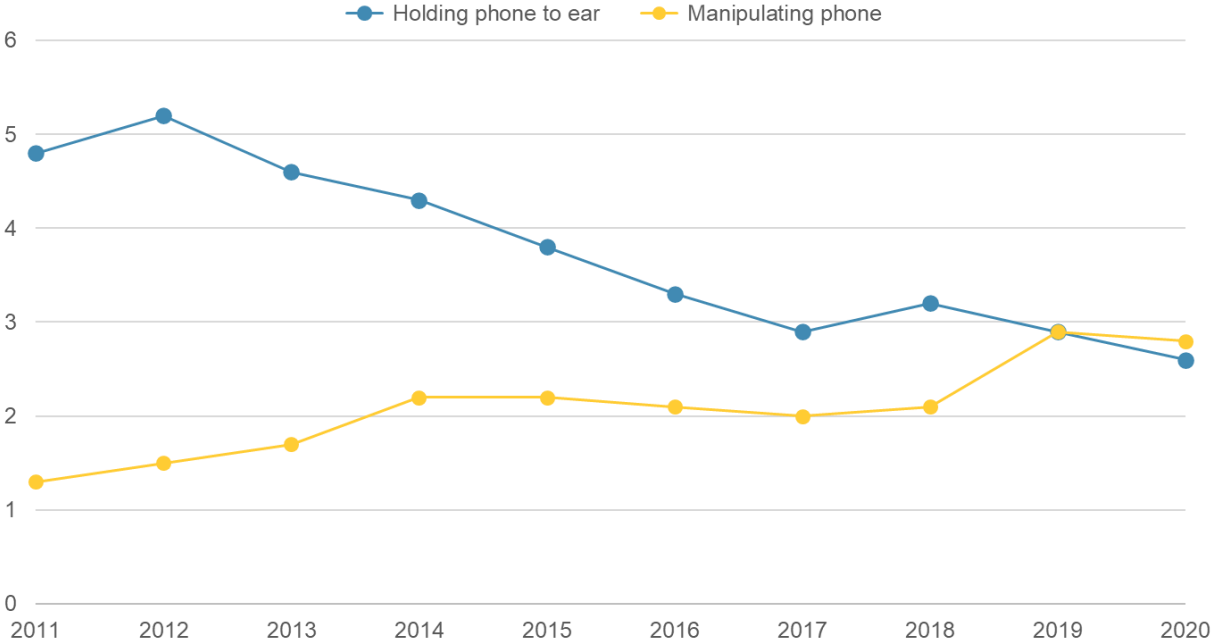
Ian Reagan
Senior research scientist



Dramatic increase in functionality has changed how drivers use cellphones



Partial list of software applications that support video calls: Facetime, Meet, Snapchat, Facebook Messenger, What's App, Zoom



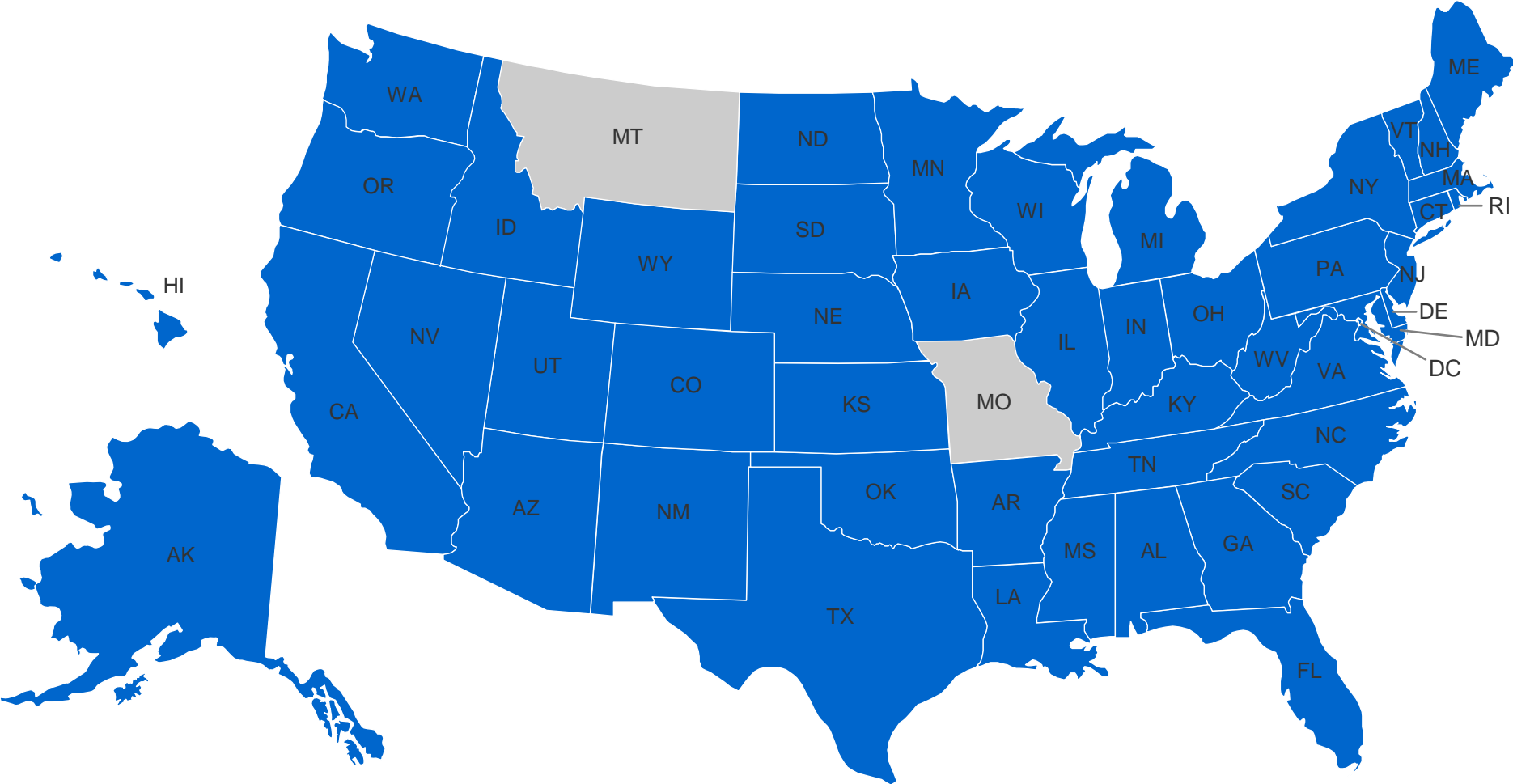
Percentage of drivers stopped at controlled intersections throughout the United States observed using cellphones during a given daylight moment, 2011-20

Crash risk associated with cellphone use

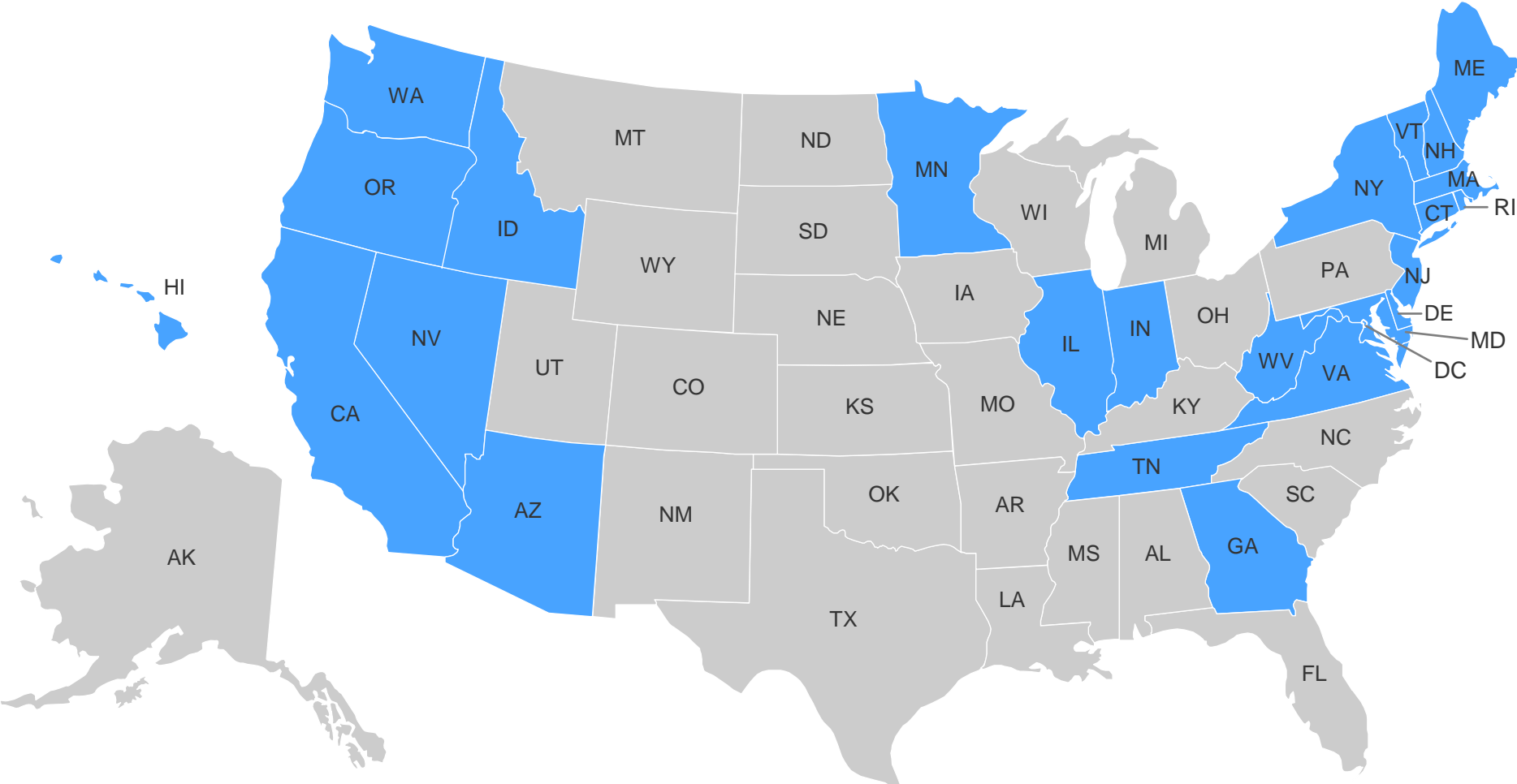
Naturalistic driving research provides best available insight on real world crash risk

- ▶ Cars with video cameras driven on open roads by research volunteers
- ▶ Crash risk calculated from video of drives with and without crashes
- ▶ Greater odds of **handheld** cellphone use in crash than non-crash videos
- ▶ **Handheld** cellphone use is more common than other distractions with high crash risk
- ▶ Eye glance analysis provides strong evidence that visual distraction is the main risk

48 states and DC prohibit text messaging for all drivers



24 states and DC have broader prohibitions on handheld cellphone behaviors for all drivers



Unclear relationship between implementing cellphone laws and crash reductions

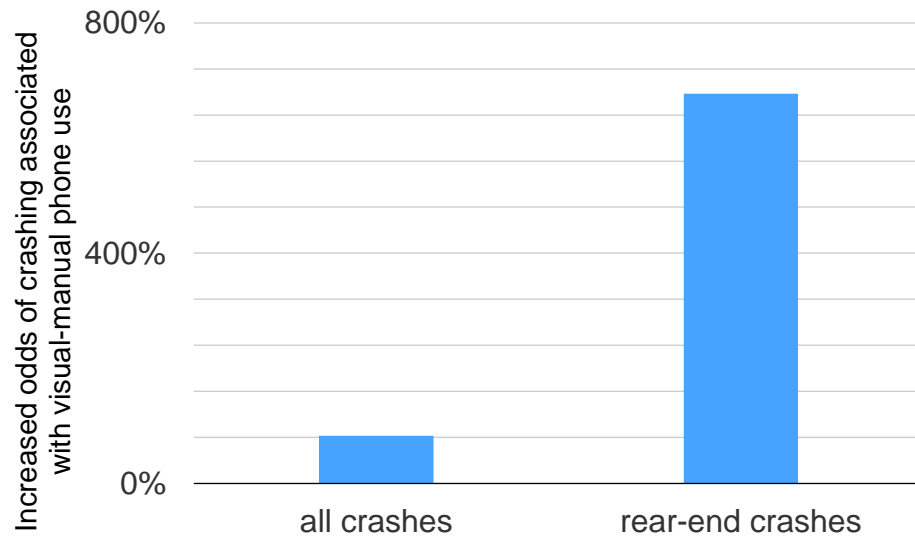
Research evaluations of laws have reported decreases, increases, and no change in crash outcomes in association with implementing cellphone bans

Not all drivers comply with the law

Poor signal to noise ratio

- ▶ Police-reported distracted driving crashes are unreliable, underreported
- ▶ Not all crashes are due to distraction
- ▶ Distraction-related crashes unrelated to cellphone used

Two factors led to the present study



Naturalistic research suggests rear-end crashes may improve signal to noise problem.

- ▶ Mounting evidence suggests factors such as wording and enforceability of cellphone laws influence the association between bans and crash reductions

California, Oregon, and Washington introduced broadened bans in 2017

Each state had existing prohibitions that focused on “texting” and “conversations”
- ▶ Are there relationships between rear-end crashes and the new laws in CA, OR, and WA?

Method

Pre-post study with control group

- ▶ California, Oregon, and Washington were “study” states; each state evaluated separately
- ▶ Colorado and Idaho were “control” states (texting bans only, no new laws since 2012)

State crash data from 2015-2019

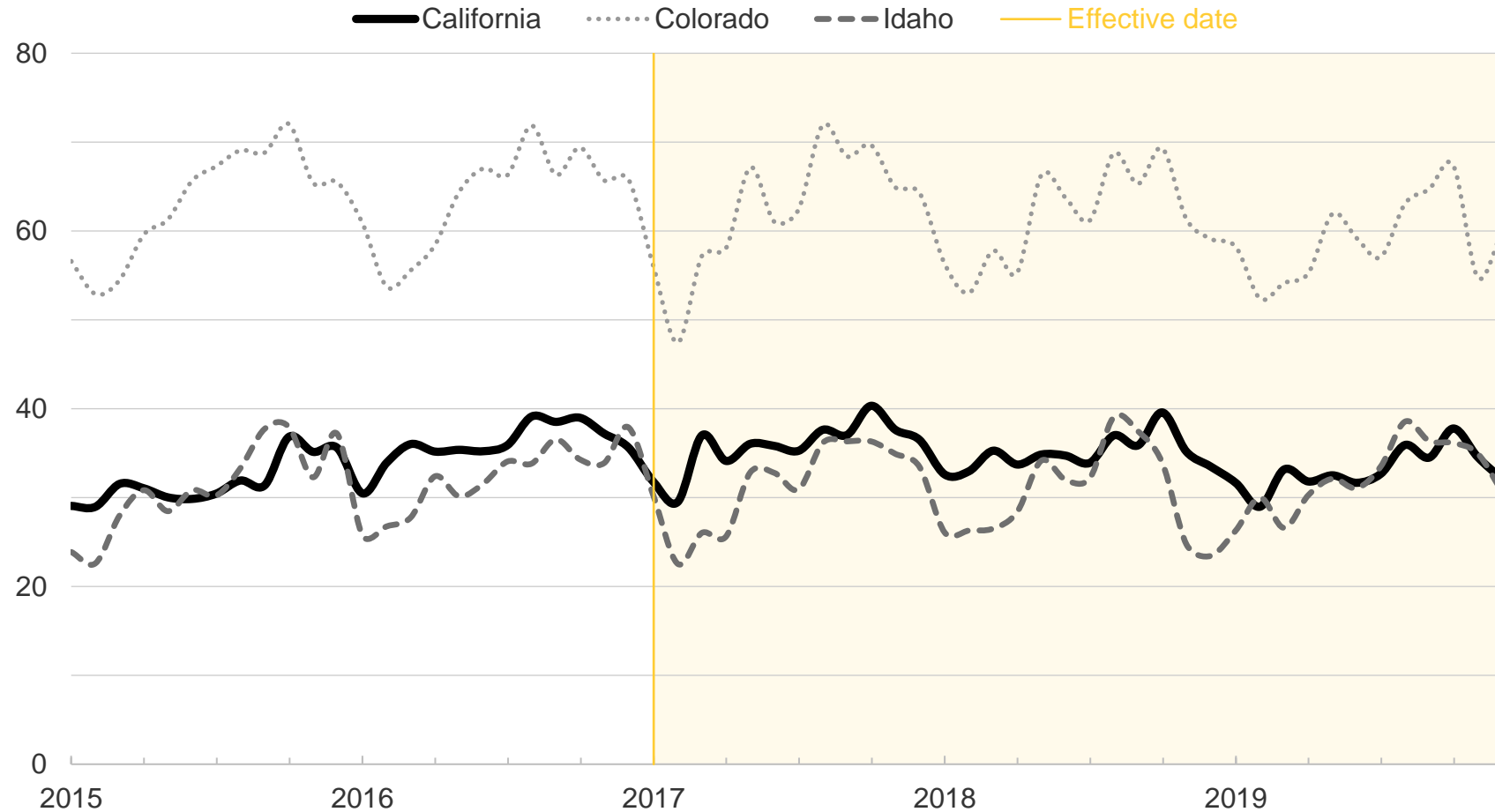
- ▶ Pre-periods: January 1, 2015 to law effective date in 2017
- ▶ Post-periods: from law effective date to December 31, 2019
- ▶ Monthly rate of police-reported rear-end crashes per 100K population
- ▶ All rear-end crashes and rear-end crashes with injury

Analysis estimated the percent change in rear-end crash rates from pre-to-post in the study states relative to the crash rates in Colorado and Idaho over the same period

- ▶ Adjusted for vehicle miles traveled, unemployment rate, legal recreational cannabis, study month, state

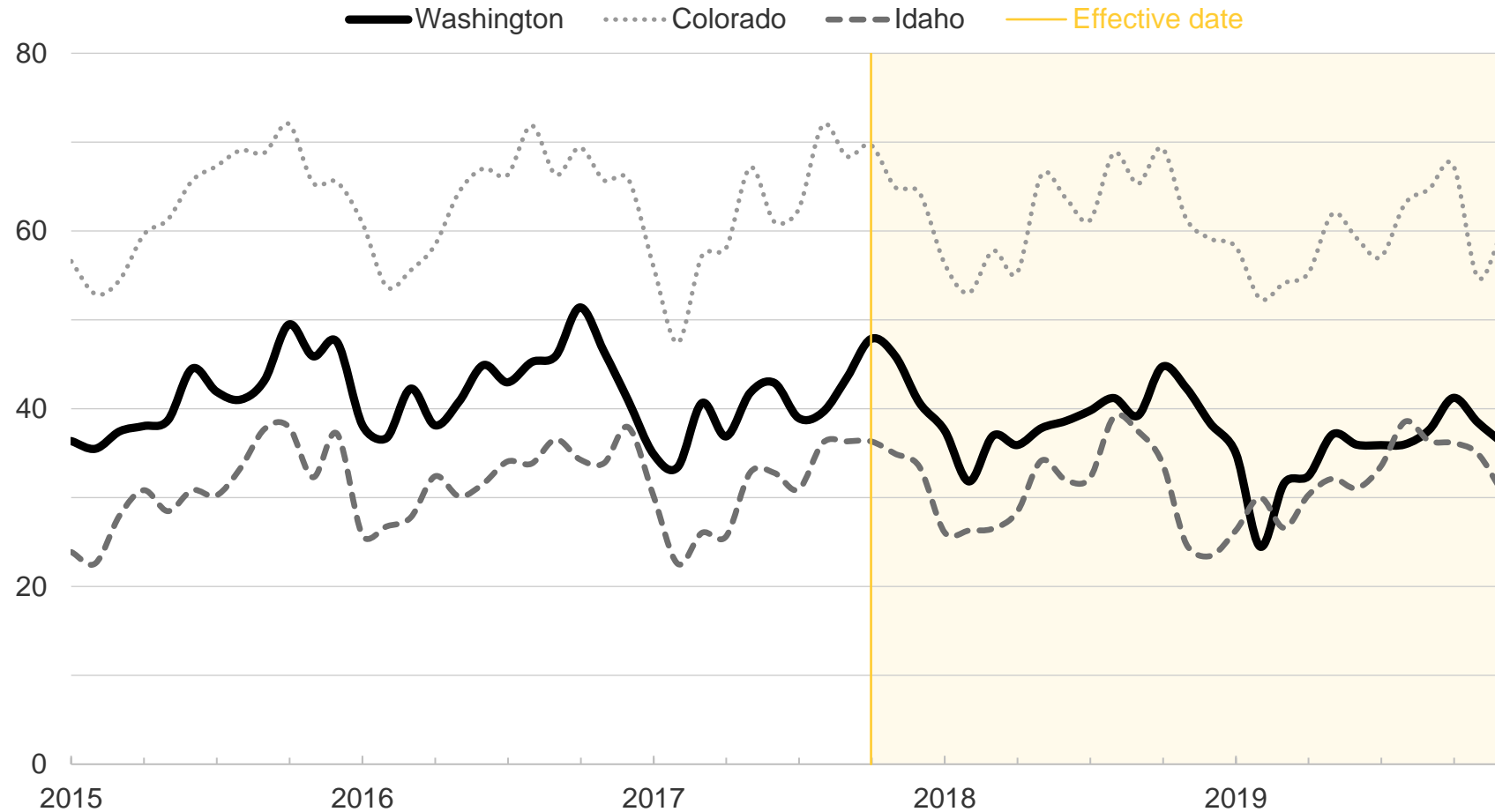
Monthly rear-end crash rates per 100,000 population in California and control states

All police-reported rear-end crashes, January 2015 to December 2019



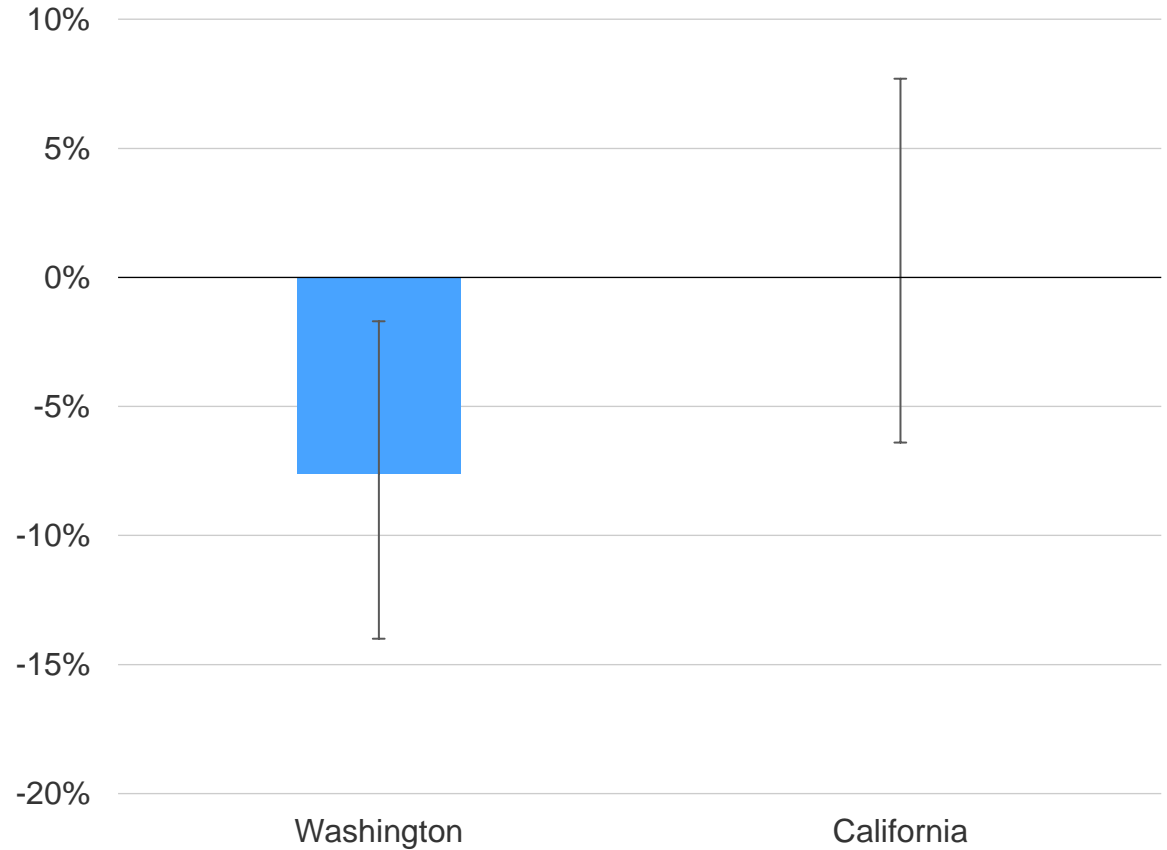
Monthly rear-end crash rates per 100,000 population in Washington and controls

All police-reported rear-end crashes, January 2015 to December 2019



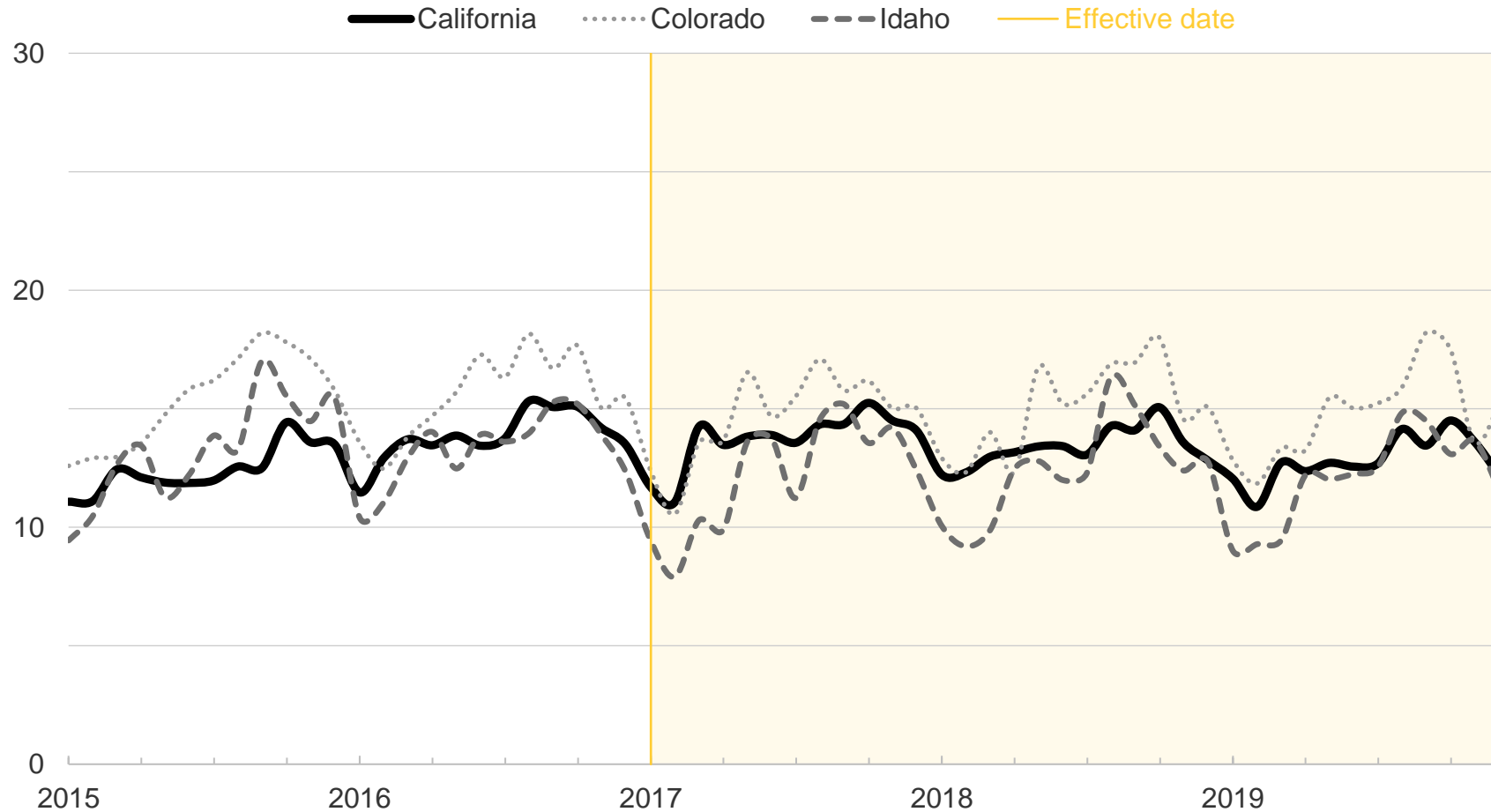
Estimated percentage change in monthly rate of rear-end crashes in the months after enacting broadened cellphone prohibitions

Controlling for VMT, unemployment, legal recreational cannabis, monthly variability, and state



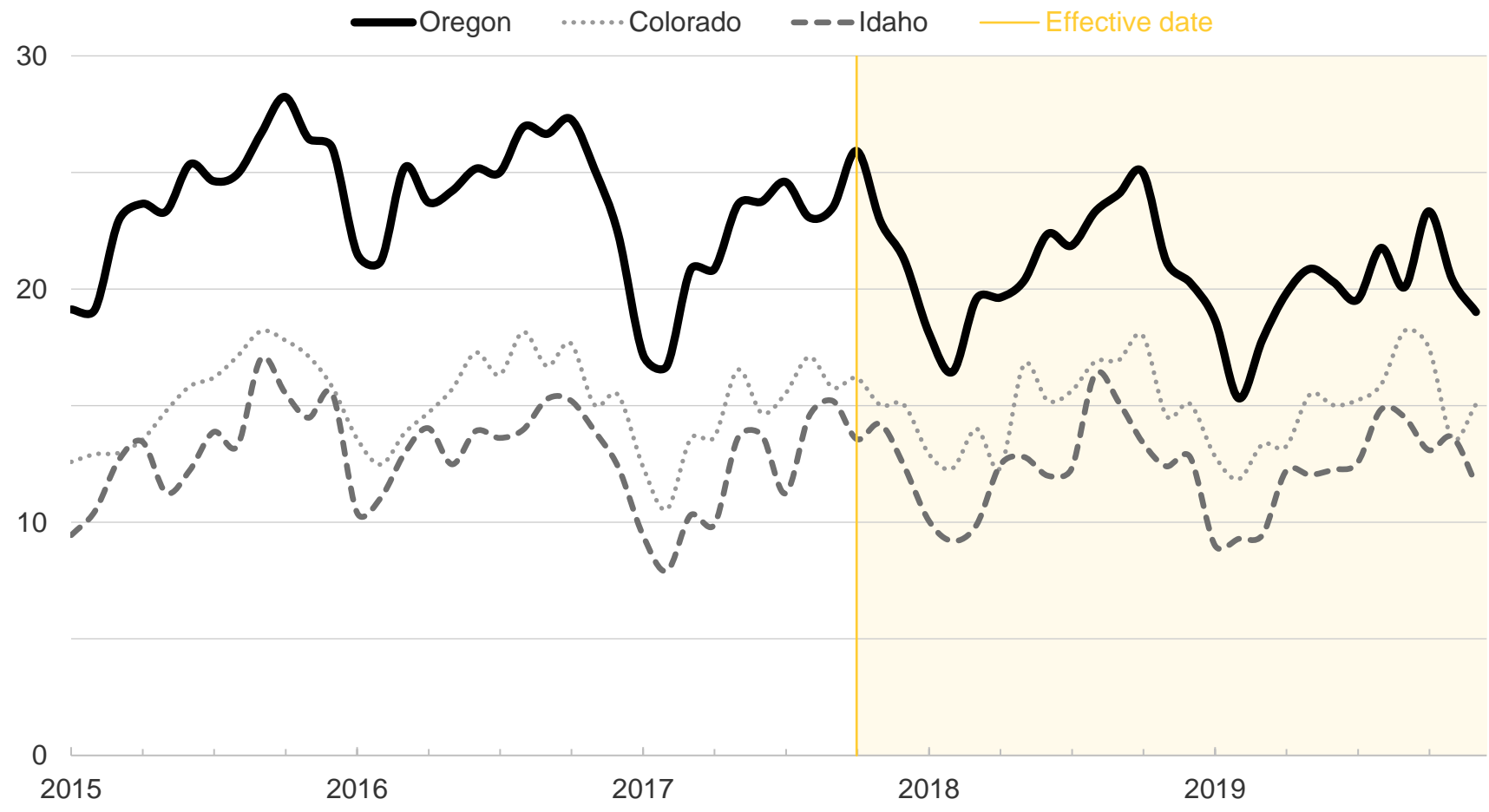
Monthly rate of rear-end crashes with injury in California and control states

Rear-end crashes with injury, January 2015 to December 2019



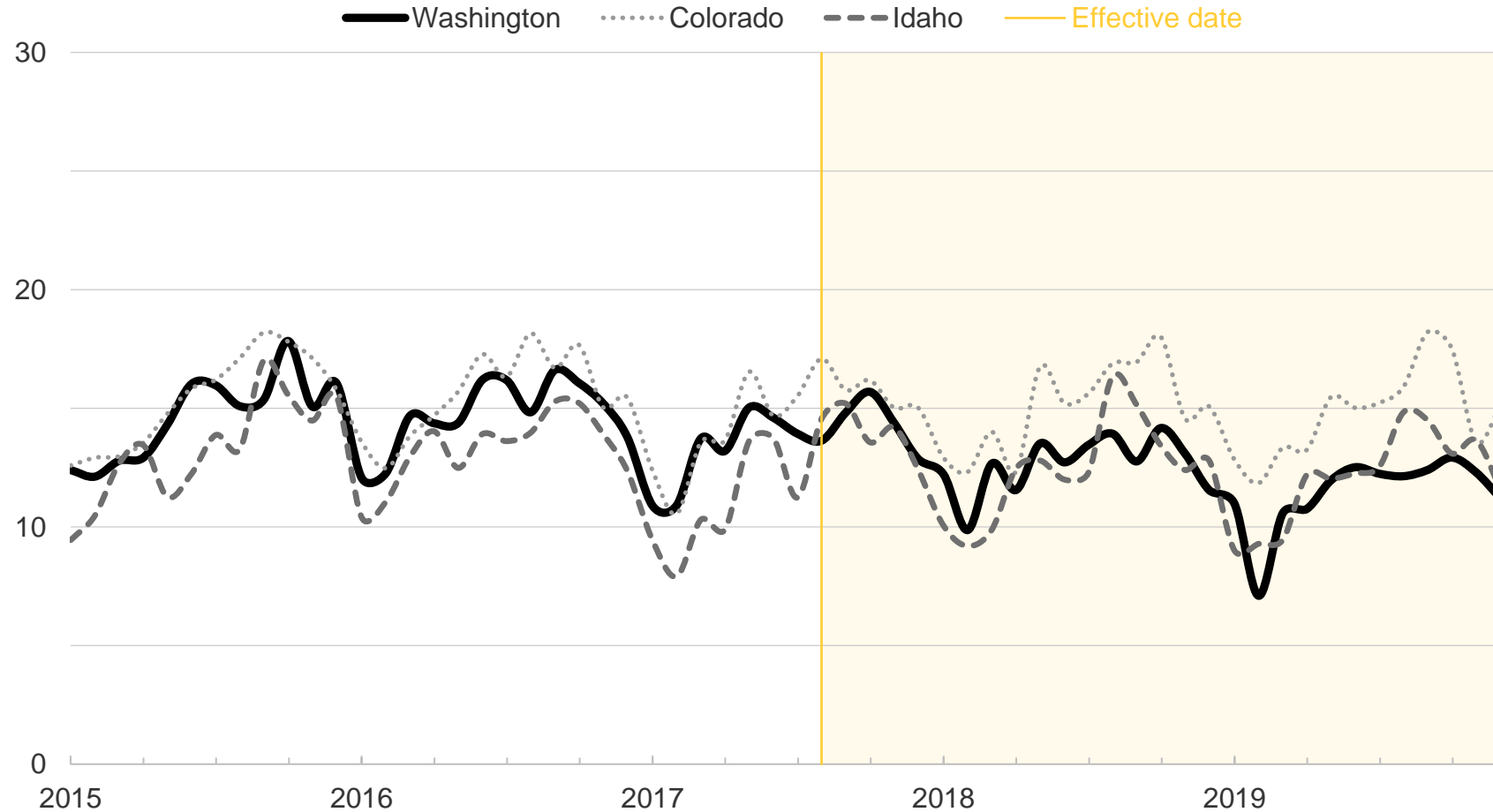
Monthly rate of rear-end crashes with injury in Oregon and control states

Rear-end crashes with injury, January 2015 to December 2019



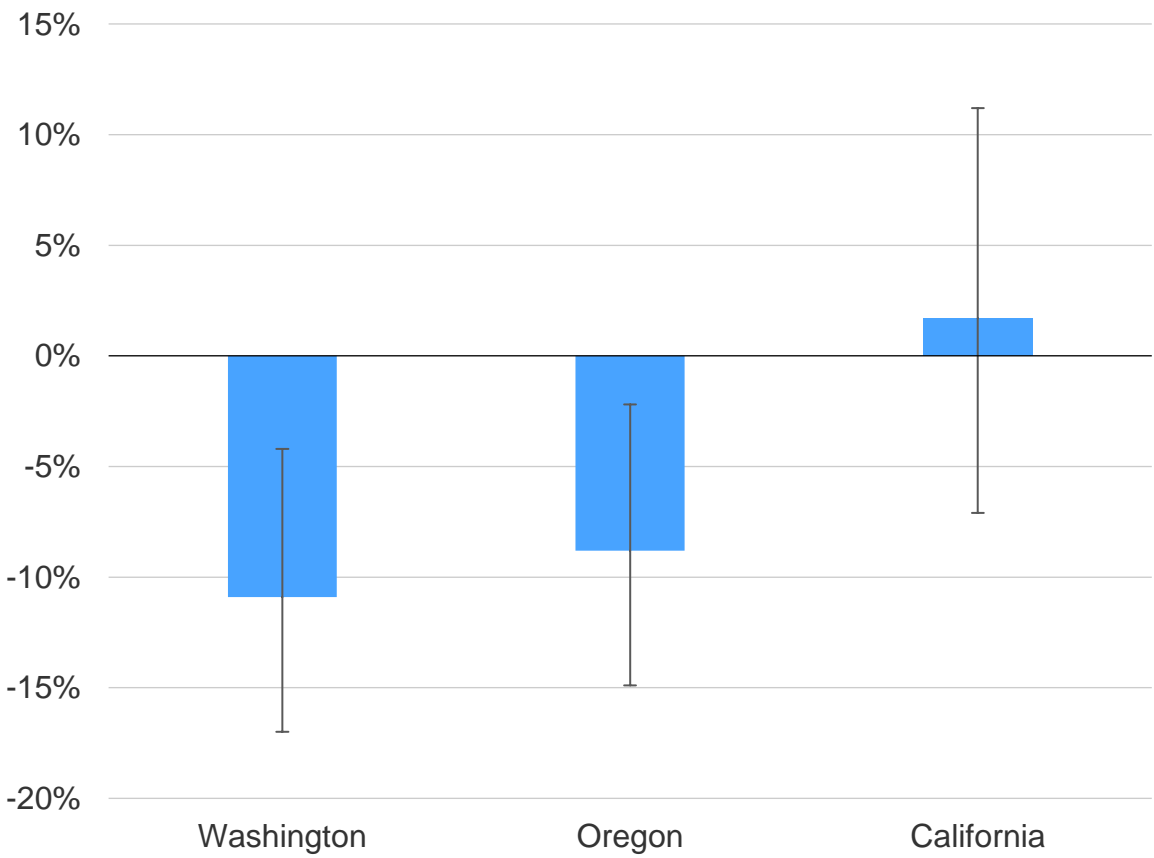
Monthly rate of rear-end crashes with injury in Washington and control states

Rear-end crashes with injury, January 2015 to December 2019



Estimated percentage change in monthly rate of rear-end crashes with injury in the months after enacting broadened cellphone prohibitions

Controlling for VMT, unemployment, legal recreational cannabis, monthly variability, and state



Discussion

- ▶ Significant reduction in rear-end crash rates in OR and WA, no change in rates in CA
- ▶ CA may have experienced crash reductions from its earlier cellphone laws
- ▶ OR and WA may communicate more clearly that is never ok to use a cellphone

Each prohibit holding a cellphone and using when stopped in traffic

CA prohibits holding **and simultaneously** using, no mention of use in stopped traffic

Differentiating between manipulating and holding a cellphone is problematic

Drivers may have higher compliance; police may be more willing to cite

- ▶ Sanctions are stricter in OR and WA

Fines for first and second offenses: CA (\$20, 50), WA (\$88, \$136), and OR (\$265, \$440)

OR has additional penalties for subsequent violations or those leading to a crash

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THANK YOU



Ian Reagan
Senior research scientist
ireagan@iihs.org

