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It's No Accident: Evaluating the Effectiveness of Vehicle Safety Inspections

Alex Hoagland

Brigham Young University - Provo, alexhoagland16@gmail.com

Trevor Woolley

Brigham Young University - Provo

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It's No Accident: Evaluating the Effectiveness of Vehicle Safety Inspections

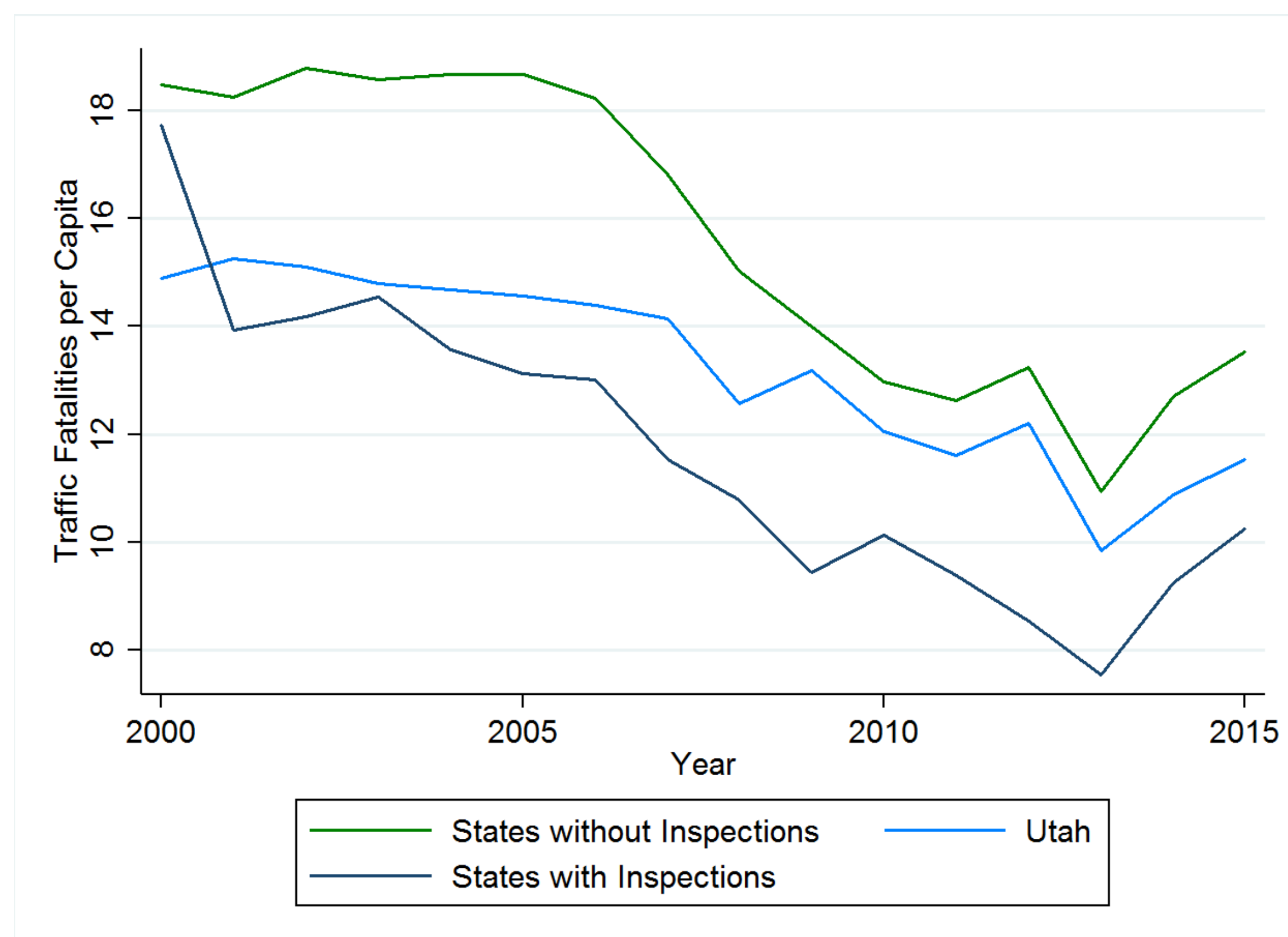
Alex Hoagland & Trevor Woolley, Mentored by Dr. Lars Lefgren

Department of Economics

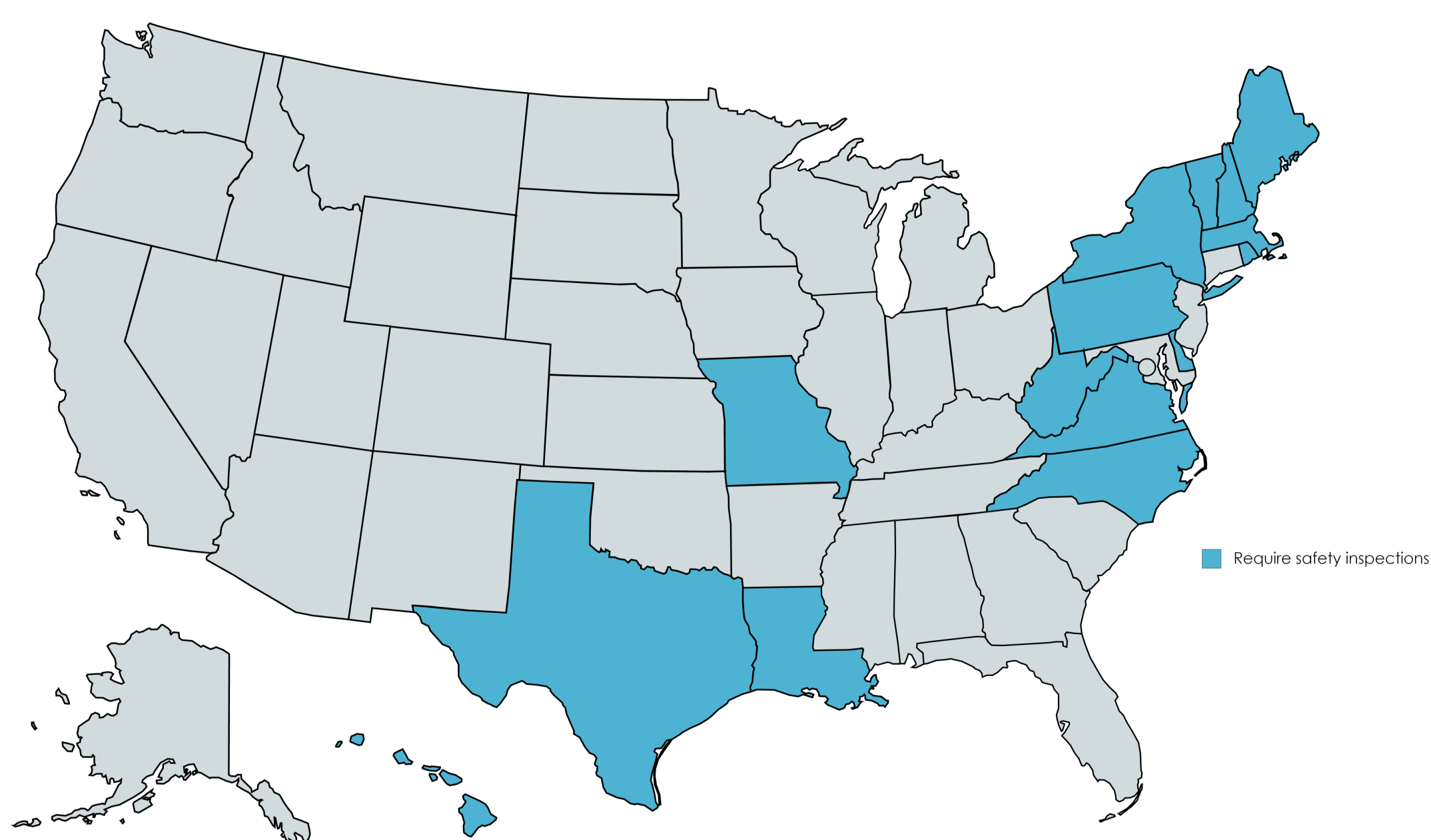


Background

- Traffic fatalities have fallen steadily over the past two decades, particularly those due to car failure. Many have attributed this fall to safer vehicle technology.



- This trend has led many states to reevaluate mandatory vehicle safety inspection programs. In 2009 and 2010, New Jersey and Washington, D.C. ended their programs, opening a perfect window for analysis.
- At the time our project began, 16 states still required periodic inspections.



Does the elimination of vehicle safety inspections have an effect on traffic fatalities?

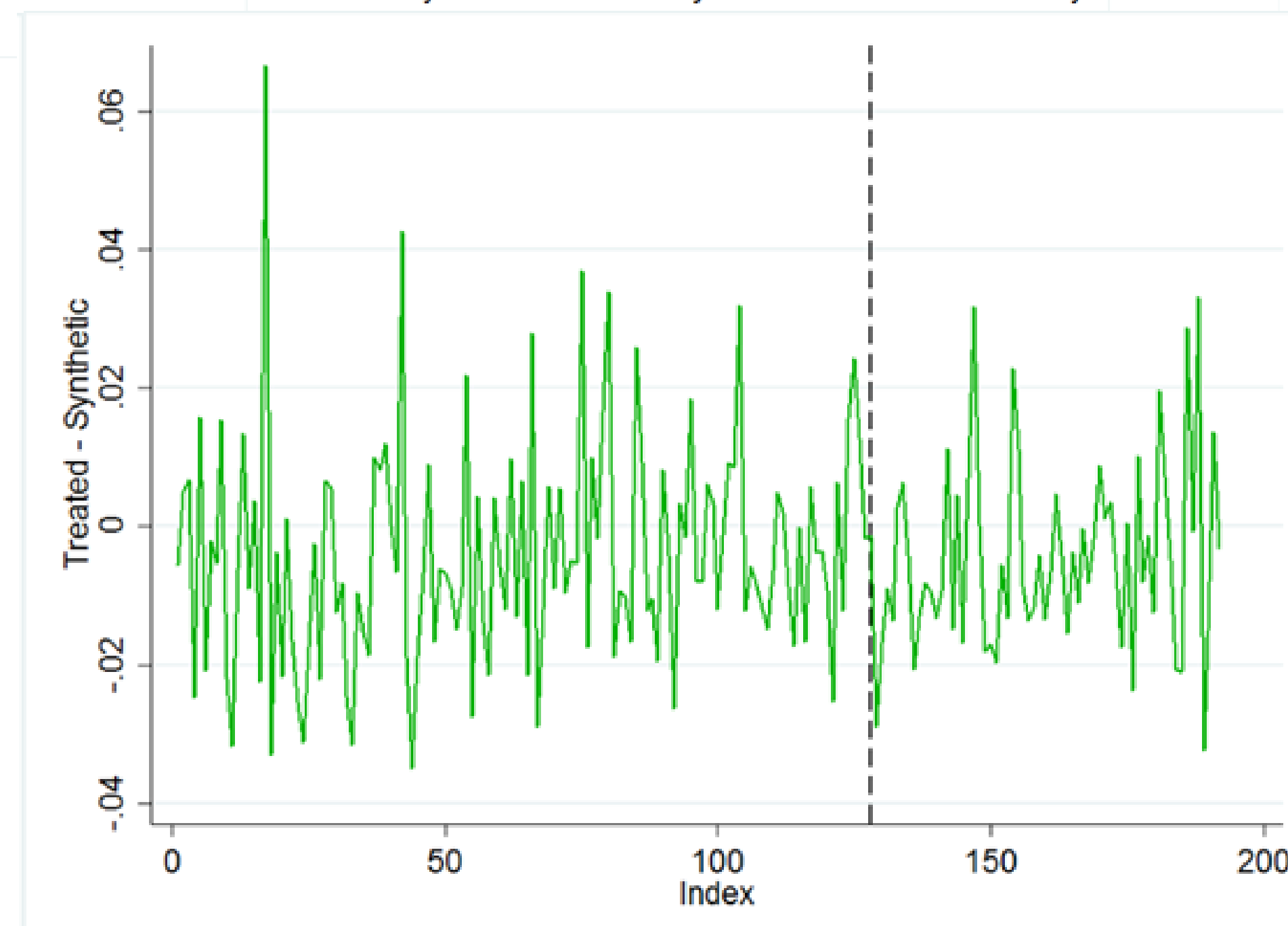
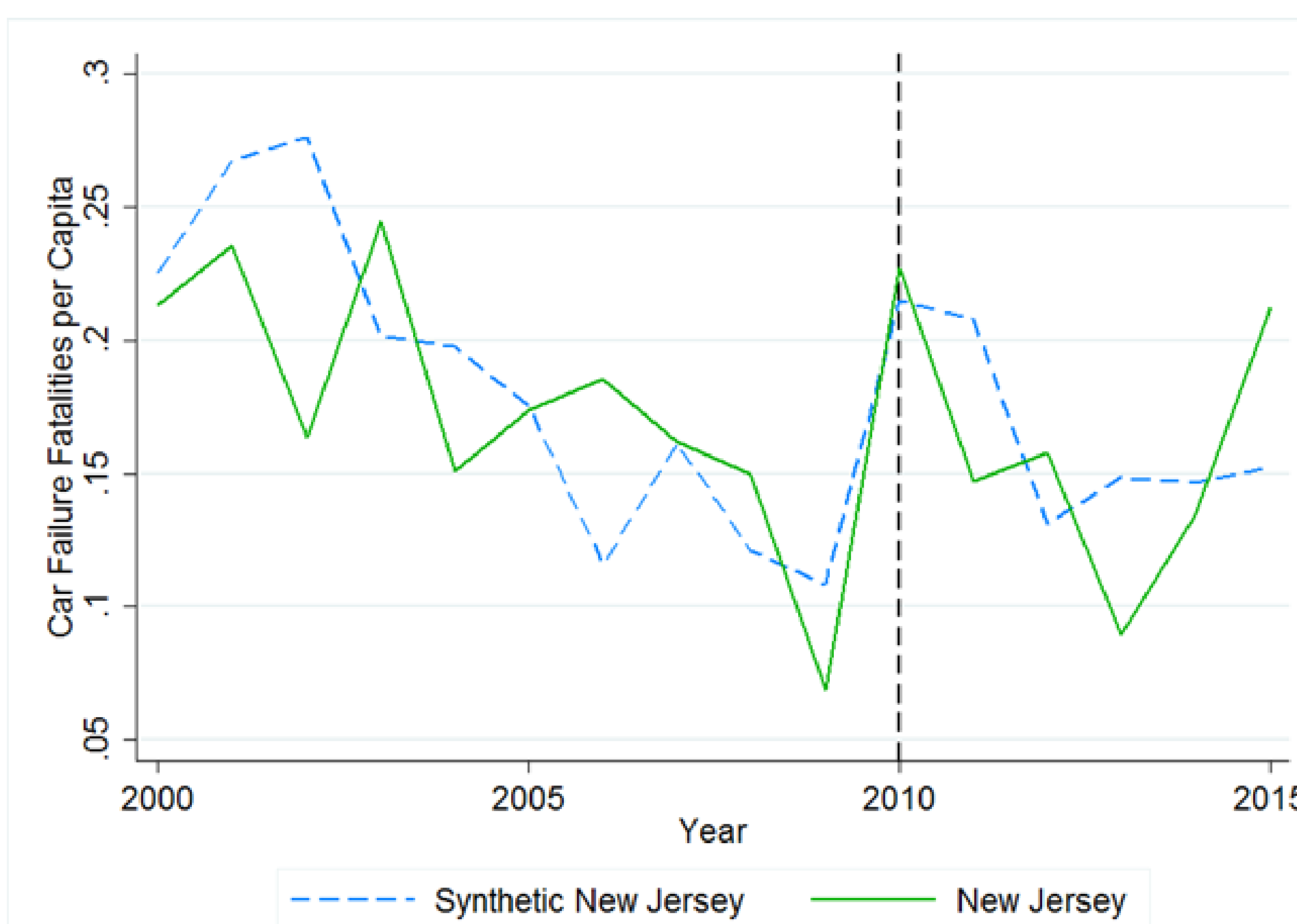
Methodology

- Data are from the NHTSA Fatality Analysis Reporting System (FARS), from 2000 to 2015. These data allow us to isolate fatality rates due specifically to car failure across the country, and to look at the state registration of vehicles involved in a crash.
- We use synthetic controls to construct a viable counterfactual explaining how traffic fatalities due to car failure in New Jersey and Washington D.C. might have unfolded without the change in policy.
- The counterfactual is constructed using a convex combination of states with inspections, assigning weights in order to match the control and treatment groups on pre-intervention trends. We matched our control to our treatment groups on the conditions of driver, vehicle, and accident demographics, as well as weather/light conditions and accidents related to drugs, alcohol, speeding, and distracted driving.

Weight given to:	Synthetic New Jersey
Georgia	0.091
Maryland	0.185
New York	0.573
South Carolina	0.005
Texas	0.040
Virginia	0.106

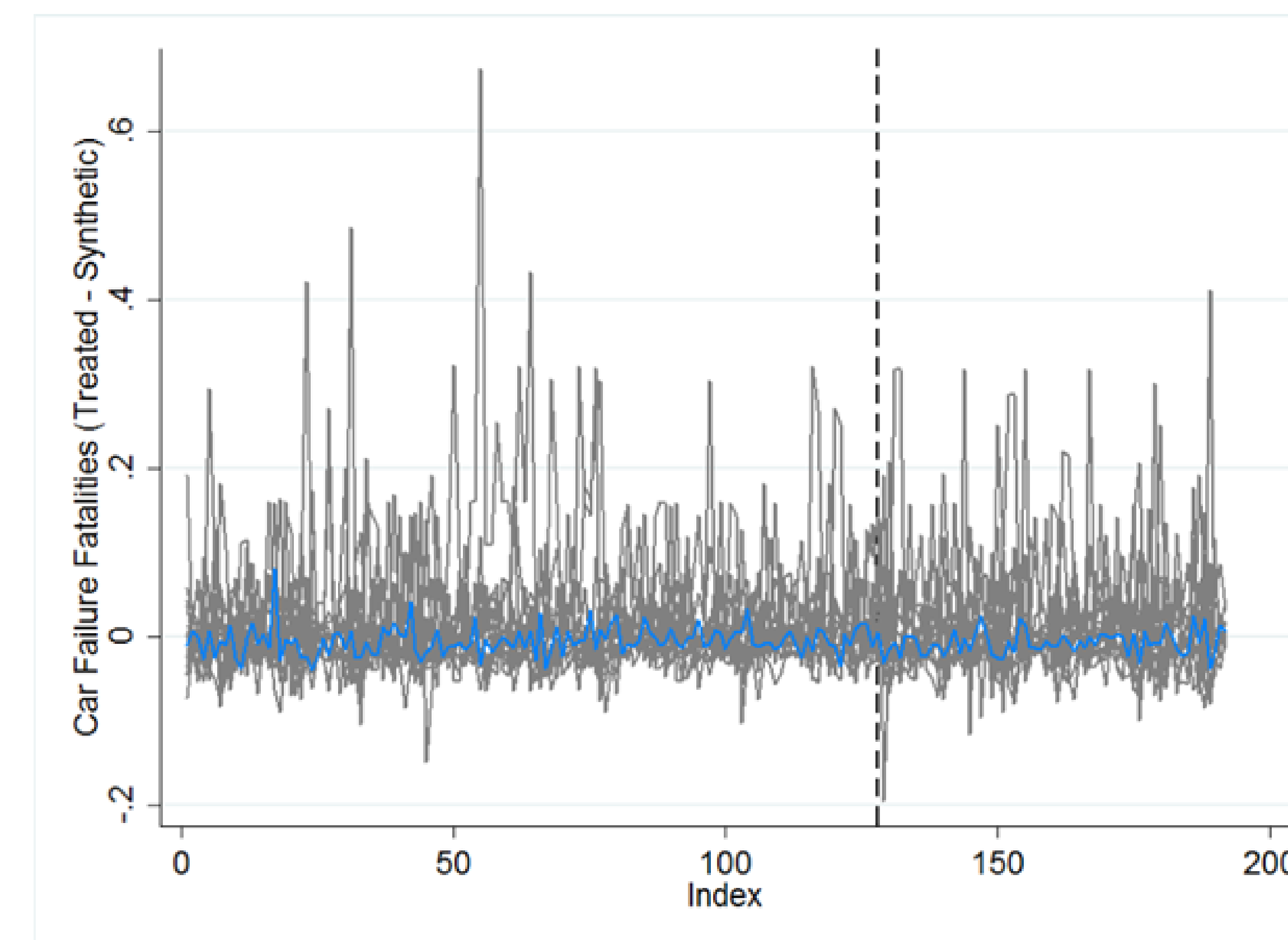
Findings

- Differences between the synthetic control group and treatment group are small, and do not differ across the intervention period.



Verification

- To verify the significance of these results, we run placebo tests, in which we randomly assign 1 of 16 states requiring vehicle inspections to undergo a “fake repeal” in 2009. By comparing the differences between our synthetic control groups and placebo treatment groups, we identify that the differences seen in our actual treatment groups (New Jersey and Washington, D.C.) are small and insignificant.



- Terminating the vehicle safety inspection program resulted in no significant change in either the frequency or intensity of fatalities due to car failure.
- As a robustness check, we used difference-in-difference analysis iteratively with different neighboring states as controls. This does not change our findings.: in all iterations, there were no significant effects to eliminating inspection programs.

New Jersey Dependent Variables	Control 1		Control 2		Control 3	
	# of Car Failure Fatalities	% of Fatalities due to Car Failure	# of Car Failure Fatalities	% of Fatalities due to Car Failure	# of Car Failure Fatalities	% of Fatalities due to Car Failure
New Jersey	-0.014*	-0.013*	-0.004*	0.004**	-0.001	0.002
Law Change	(0.008)	(0.007)	(0.003)	(0.002)	(0.001)	(0.001)
NJ * Law Change	-0.003	0.007	0.013***	0.018***	0.003	0.009***
	(0.009)	(0.009)	(0.004)	(0.003)	(0.002)	(0.002)
	0.003	0.001	-0.014***	-0.012***	-0.004	-0.003
	(0.010)	(0.009)	(0.004)	(0.003)	(0.003)	(0.002)
Observations	374	374	748	748	1,122	1,122
R-squared	0.5547	0.6594	0.7336	0.7506	0.7148	0.7227

Implications

- This finding strongly suggests that vehicle safety inspection programs are no longer necessary, and are simply a form of residual government oversight.
- Government attention to other areas (e.g. distracted driving laws, seat belt enforcement, etc.) is more efficient than safety inspections at ensuring road safety.
- In the 2017 legislative session, the Utah State Legislature voted to end Utah's vehicle safety inspection program as a result of this research. Texas and Mississippi are considering similar proposals in their sessions.