



Evaluation of U.S. DOT special enforcement campaigns for hand-held cellphone and texting bans

New York and Connecticut are among the states that have laws banning the use of hand-held cellphones and texting by drivers. The federal government initiated high-visibility enforcement programs in Syracuse, New York, and Hartford, Connecticut, to see whether such campaigns were effective in changing drivers' behavior. Four waves of intensified enforcement, accompanied by publicity campaigns, were conducted from April 2010 to April 2011. The Highway Loss Data Institute used its database of insurance claims information to determine whether crash risk went down as a result of the enforcement campaigns. The analysis, which compared collision claims in the counties containing Syracuse and Hartford with control counties and the rest of New York and Connecticut, did not find any reduction in claims from the programs.

► Introduction

With the proliferation of cellphones in recent years, most states have taken steps to restrict their use by drivers. In 35 states and the District of Columbia, texting is prohibited for all drivers. Talking on a hand-held cellphone is banned in 10 states and D.C. Previous research from the Highway Loss Data Institute has found that cellphone and texting bans have no beneficial effect on crashes (HLDI, 2009 and 2010). Recent enforcement programs conducted in two states with texting and hand-held phone bans with the support of the National Highway Traffic Safety Administration (NHTSA) provide an opportunity to study what effect, if any, such laws have when coupled with high-visibility enforcement campaigns.

NHTSA initiated demonstration programs in Syracuse, New York, and Hartford, Connecticut. Talking on a hand-held cellphone while driving has been banned in New York since November 2001, while texting while driving has been banned there since November 2009. Bans on both activities have been in effect in Connecticut since October 2005. The demonstration programs involved targeted enforcement of the laws and publicity campaigns, including paid advertising.

As part of its evaluation of the programs, NHTSA observed drivers in the enforcement cities and in control cities for cellphone use and texting both before and after the campaigns (NHTSA, 2011). Albany, New York, was selected as the control for Syracuse. In Connecticut, Bridgeport and Stamford served as controls for Hartford. Four waves of enforcement were conducted in April, July, and October of 2010 and in April of 2011. **Figures 1 and 2** show hand-held cellphone use and texting rates observed in the Connecticut and New York special enforcement programs, respectively. **Table 1** summarizes the observed changes between the first and final waves of enforcement, as well as the relative change in the enforcement communities and their controls. The latter statistics indicate that in Hartford, after one year of enforcement, use and texting were substantially below the levels that would have been expected based on patterns of use in Bridgeport and Stamford. Texting rates after a year in Syracuse also were down but by a smaller amount, and hand-held cellphone use was actually slightly higher than would have been expected based on experience in Albany.

Figure 1: Observed cellphone use in Connecticut - percent of drivers using phones before and during special enforcement campaigns in Hartford

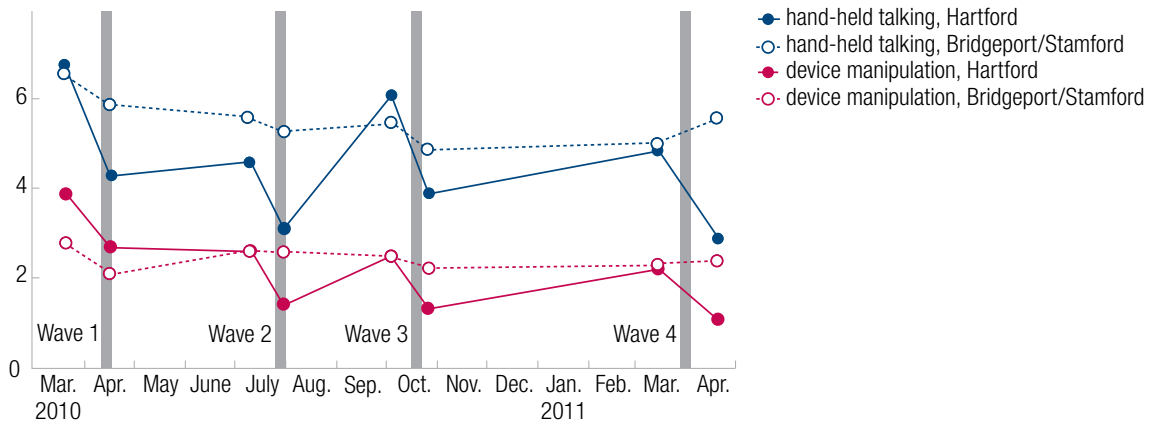


Figure 2: Observed cellphone use in New York - percent of drivers using phones before and during special enforcement campaigns in Syracuse

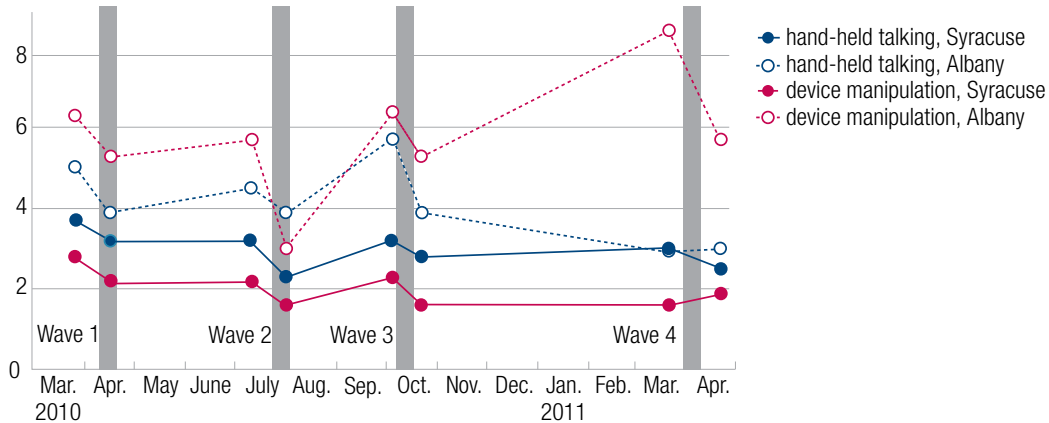


Table 1 : Net change in hand-held cellphone use and texting through April 2011

City	Type of use	Use in April 2010	Use in April 2011	Percent change	Relative percent change
Hartford, CT	hand-held phone	6.8%	2.9%	-57%	-50%
	texting	3.9%	1.1%	-72%	-68%
Bridgeport/Stamford, CT	hand-held phone	6.6%	5.6%	-15%	
	texting	2.8%	2.4%	-14%	
Syracuse, NY	hand-held phone	3.7%	2.5%	-32%	+14%
	texting	2.8%	1.9%	-32%	-24%
Albany, NY	hand-held phone	5.0%	3.0%	-40%	
	texting	6.3%	5.7%	-10%	

This bulletin describes analyses that HLDI conducted to determine whether the enforcement waves in Syracuse and Hartford and the documented changes in hand-held cellphone use and texting reduced collision claims. The very large volume of collision data reported to HLDI by its member companies – which account for 80 percent of the private passenger insurance market – give it the ability to gain early, statistically reliable estimates of even small changes in crash frequency. This information can provide useful insight into the effect of highway safety policies such as, in this case, strong enforcement of cellphone and texting bans.

The current bulletin uses an analytical procedure analogous to that reported in a previous bulletin (HLDI, 2010) that examined insurance claims experience following the enactment of driver texting bans. In brief, the collision claims frequency experience of the counties in which Syracuse and Hartford are located was compared with that of the counties in which the control cities of Albany and Bridgeport/Stamford are located. Claim frequency before and after the enforcement campaigns for the program counties also was compared against the claim frequency for the rest of their respective states. In New York, a final analysis was performed that excluded Long Island and New York City.

► **Methods**

Study locations

The enforcement campaigns were conducted in Syracuse, New York, which is located in Onondaga County and in Hartford, Connecticut, which is located in Hartford County. NHTSA selected the city of Albany, New York, located in Albany County, as the control city for Syracuse. Bridgeport and Stamford, Connecticut, both in Fairfield County, were the control cities for the enforcement campaign in Hartford. HLDI compared data on the county, rather than the city level, because data on some key variables is not available below the county level.

Insurance data

Automobile insurance covers damages to vehicles and property as well as injuries to people involved in crashes. Different insurance coverages pay for vehicle damage versus injuries, and different coverages may apply depending on who is at fault. This study is based on collision coverage data. This coverage insures against physical damage to a driver's vehicle sustained in a crash with an object or other vehicle, generally when the driver is at fault. Such claims are the most frequent for insurers; hence, they provide the greatest power in looking at changes in crash frequency. In addition, because they represent the crashes of culpable drivers, they should be sensitive to changes in driver attention.

HLDI has data on the vehicles insured by its member companies, as well as the claims that the insureds file for losses in automobile crashes under various insurance coverages. As a result, HLDI can calculate the frequency of insurance claims while controlling for the amount of exposure. This study examined loss data under collision coverage for the time period of January 1, 2009 through October 31, 2011. Results are based on 15,045,931 insured vehicle years and 1,097,322 collision claims.

Rated drivers

HLDI's database includes information about rated driver age, gender, and marital status. The rated driver is the one considered to represent the greatest loss potential for an insured vehicle. In a household with multiple vehicles and/or drivers, the assignment of drivers to vehicles can vary by insurance company and by state, but typically it reflects the driver most likely to operate the vehicle. Information on the actual driver at the time of a loss is not available in the HLDI database. In the present study, the data were stratified by rated driver age group (<25, 25-65, 66+, or unknown), gender (male, female, or unknown), and marital status (married, single, or unknown).

Vehicles

The vehicles in this study were 2002-2011 models. Data from calendar year 2009 included 2002-2010 models, data from calendar year 2010 included 2003-2011 models and data from calendar year 2011 included 2004-2011 models, as 2012 model data was limited. While collision coverage is not mandatory, most new vehicles carry the coverage, in part because it is required by lenders. As vehicles age people tend to drop collision coverage.

Analysis methods

Regression analysis was used to quantify the effect of enforcement campaigns on collision claims frequency while controlling for other factors. The data set was stratified by vehicle model year, rated driver age group, gender, marital status, calendar year and month. For example, one unit of observation was June 2009 collision exposure and claim count for 2008 model vehicles with young married males as rated drivers. Frequency (claims per year of exposure) was modeled using Poisson regression with a logarithmic link function. Collision claim frequency was defined as the number of collision claims divided by the number of insured vehicle years.

The main independent variables were:

- Month index: continuous, sequential variable to identify each month in the time series
- Program county: categorical variable used to identify a county as a study county or a control county (or control group on counties)
- Campaign status: categorical variable also used to identify the status of the campaign for each month; one value was used to identify months during the period before the campaign, and another was used to identify months during the period after the campaign

Independent variables corresponding to vehicle model year, driver age group, gender, and marital status were included in the model to control for any frequency fluctuations affected by changes in the demographic composition over time. To control for other factors not covered by these variables and unrelated to the enforcement campaigns (e.g., economic downturn, change in miles driven, climate), collision loss data from counties with similar characteristics, yet distant enough that they would not have been affected by the enforcement and advertising campaigns and media coverage, were used as controls.

Two interactions were used in the model. The first, month index and program county, estimated trend lines for both the study county and the control county. The estimate for the month index variable represents the trend for the control county, while the estimate for the month index and program county interaction is the difference between trends for a study county and control county. The second, more critical interaction, program county and campaign status, similarly quantified the difference in claim frequency in the enforcement county before and after the enforcement campaign. A p-value less than 0.05 for this interaction indicates the enforcement campaign had a statistically meaningful effect on collision claim frequency.

► Results

Figures 3-6 show the monthly collision claim frequencies for each of the counties with the special enforcement, compared with the frequency for the control areas. All indicate largely similar patterns of variation between the enforcement and control areas. For example, Figure 3 shows collision claim frequencies for the study county of Hartford, Connecticut, during the months before and after the four enforcement waves. Claim frequencies for the control county of Fairfield, Connecticut, are also shown. The two lines are mostly parallel. Monthly fluctuations in claim frequencies in Hartford are similar to those in Fairfield.

Figures 4-6 similarly show collision claim frequencies for Hartford County compared with the rest of Connecticut, and Onondaga County (Syracuse) compared with Albany County and the rest of New York.

Figure 3: Collision claim frequencies for vehicles up to nine years old by month, Hartford and Fairfield counties

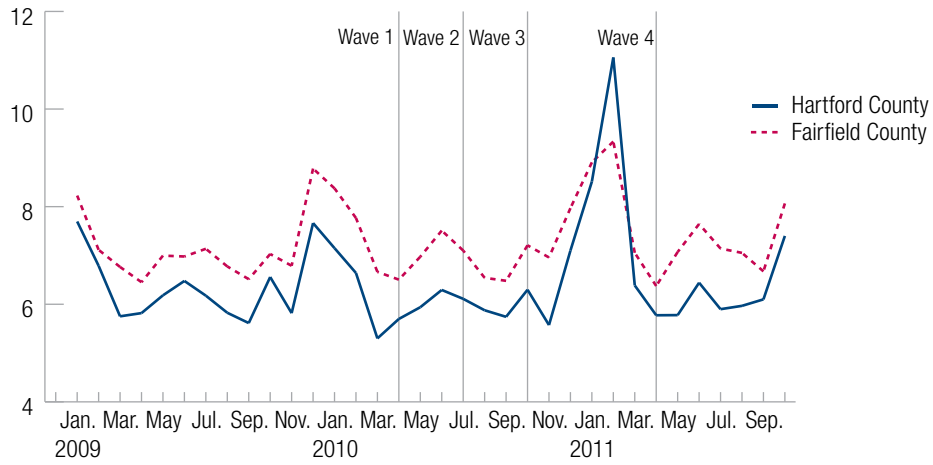


Figure 4: Collision claim frequencies for vehicles up to nine years old by month, Hartford and all other Connecticut counties

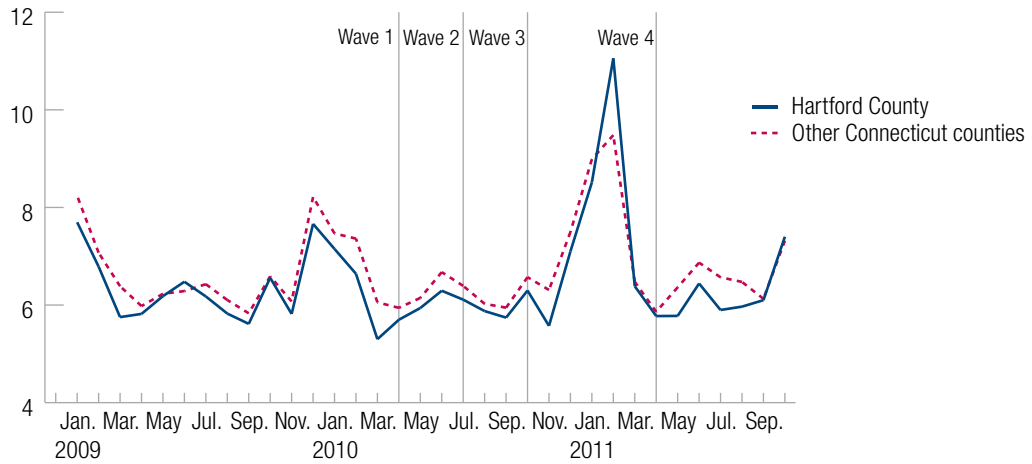


Figure 5: Collision claim frequencies for vehicles up to nine years old by month, Onondaga (Syracuse) and Albany counties

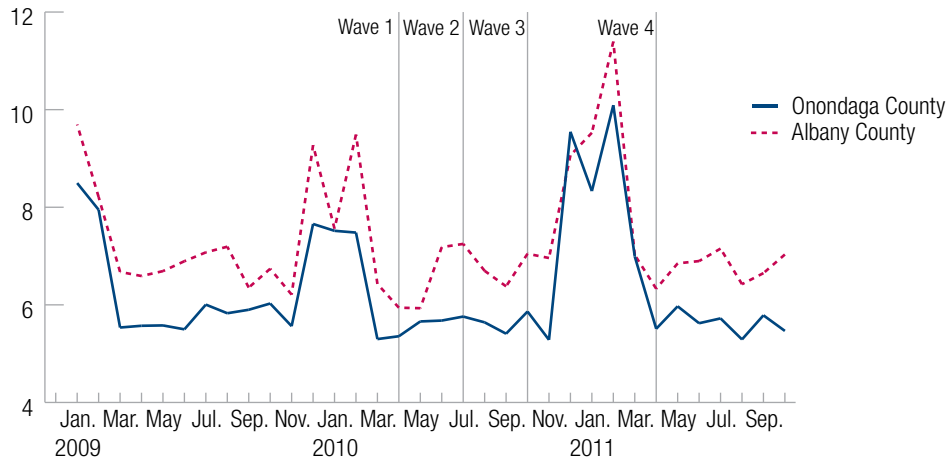
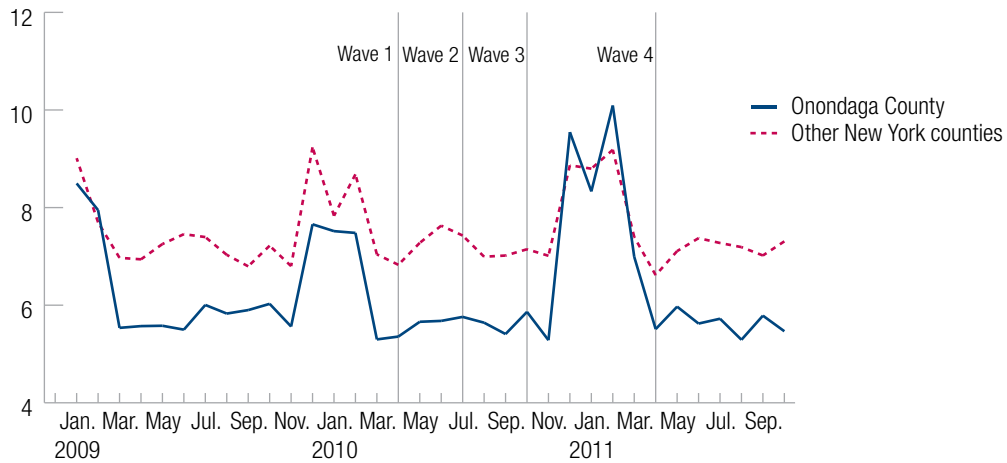


Figure 6: Collision claim frequencies for vehicles up to nine years old by month, Onondaga (Syracuse) and all other New York counties



The regression analyses provide estimates of the correlation between the enforcement waves and collision claim frequency after controlling for these other variables in both the study and control areas. **Table 2** shows the regression results for Hartford County when compared to Fairfield County. Most effect estimates corresponding to the demographic control variables agree with previous collision claim frequency analysis: Older vehicles generally produce fewer claims, while a rated driver’s youth and single marital status are associated with higher collision claim frequencies.

The estimate for month index (0.0021) indicates a slight increasing trend for the control County of Fairfield, whereas the estimate for the interaction of month index and program county (-0.0013) indicates an even slighter increasing trend for Hartford County during the study period. The program county estimate (-0.1384) indicates that without regard for the enforcement waves, collision claim frequencies were lower in Hartford County than in the control county of Fairfield. The estimate for the interaction of program county and campaign status (0.0320) indicates a slight increase in collision frequencies, but that change is not statistically significant (0.2122), indicating the special enforcement waves had no effect on collision claim frequencies in Hartford County.

Table 2 : Results of time-based regression model for Hartford County vs. Fairfield County, Connecticut

Parameter		Degrees of freedom	Estimate	Standard error	Wald 95% confidence limits		Chi-square	P-value
Intercept		1	-8.7751	0.0322	-8.8382	-8.7121	74340.20	<0.0001
Model year	2002	1	-0.2281	0.0268	-0.2805	-0.1756	72.54	<0.0001
	2003	1	-0.1702	0.0235	-0.2163	-0.1241	52.32	<0.0001
	2004	1	-0.1285	0.0221	-0.1719	-0.0851	33.67	<0.0001
	2005	1	-0.0841	0.0221	-0.1274	-0.0408	14.48	0.0001
	2006	1	-0.0349	0.0221	-0.0781	0.0083	2.50	0.1137
	2007	1	0.0172	0.0219	-0.0257	0.0601	0.62	0.4326
	2008	1	0.0273	0.0219	-0.0157	0.0703	1.54	0.2139
	2009	1	0.0306	0.0228	-0.0141	0.0753	1.80	0.1800
	2010	1	0.0418	0.0235	-0.0044	0.0879	3.15	0.0760
	2011	0	0	0	0	0		
	Rated driver age group	<25	1	0.4989	0.0276	0.4448	0.5530	326.52
25-65		1	0.2764	0.0253	0.2268	0.3261	118.97	<0.0001
66+		1	0.2365	0.0268	0.1839	0.2891	77.75	<0.0001
Unknown		0	0	0	0	0		
Rated driver gender	Female	1	-0.0655	0.0238	-0.1120	-0.0189	7.59	0.0059
	Male	1	-0.1098	0.0239	-0.1566	-0.0630	21.15	<0.0001
	Unknown	0	0	0	0	0		
Rated driver marital status	Married	1	0.0165	0.0226	-0.0278	0.0609	0.53	0.4652
	Single	1	0.3165	0.0228	0.2719	0.3612	193.32	<0.0001
	Unknown	0	0	0	0	0		
Month index		1	0.0021	0.0009	0.0004	0.0038	6.03	0.0141
Month index * program county		1	-0.0013	0.0013	-0.0039	0.0012	1.00	0.3164
Program county		1	-0.1384	0.0142	-0.1662	-0.1106	95.19	<0.0001
Campaign status		1	-0.0663	0.0169	-0.0995	-0.0332	15.39	<0.0001
Program county * campaign status		1	0.0320	0.0257	-0.0183	0.0823	1.56	0.2122

Similar regression analyses were conducted for the comparison of Hartford County with the rest of Connecticut as well as New York comparisons. **Tables 3 and 4** summarize the estimates for the interaction of program county and campaign status for Connecticut and New York counties compared with their controls. Positive estimates indicate that the enforcement campaign is associated with higher collision claim frequency. In Connecticut, the enforcement campaign was associated with a non-significant small increases in collision claims. In New York, the effects were also not significant. When compared with Albany County, Onondaga County (Syracuse) experienced a 3.3 percent increase in claim frequency. When compared to the entire state of New York, claim frequency increased only 0.9 percent and increased by 4.5 percent once New York City and Long Island were excluded.

Table 3 : Effect estimates of Connecticut's special enforcement on collision claim frequency

Comparison	Estimate of program county * campaign status	Ban effect	P-value
Hartford County vs. Fairfield County	0.0320	3.3%	0.2122
Hartford County vs. Connecticut	0.0205	2.1%	0.3531

Table 4 : Effect estimates of New York's special enforcement on collision claim frequency

Comparison	Estimate of program county * campaign status	Ban effect	P-value
Onondaga County vs. Albany County	0.0320	3.3%	0.3803
Onondaga County vs. New York	0.0090	0.9%	0.6997
Onondaga County vs. New York (excluding New York City and Long Island)	0.0439	4.5%	0.0619

► Discussion

The insurance collision loss experience in Hartford County, Connecticut, and Onondaga County, New York, does not indicate a decline in crash risk associated with distracted driving enforcement campaigns. Instead, there appears to have been a small, though nonsignificant, increase in claims in those counties compared with their controls.

A limitation of this analysis is that the available data made it possible to look only at countywide collision losses, while the enforcement campaigns were conducted in specific cities. Although Hartford and Syracuse are the major urban centers of their respective counties, it's not known to what extent drivers from other parts of the counties travel to those cities or were aware of the enforcement campaigns.

NHTSA's own surveys show declines in texting and hand-held cellphone use after the enforcement waves. There are a number of possible reasons this has not translated into fewer crashes. It could be that drivers who abstain from using their phones are simply being distracted by something else. They may be continuing to text but holding their phones lower so as not to be observed. Finally, some drivers may have switched to hands-free calling and may be distracted by their conversations even though their hands remain on the wheel.

HLDI's previous research on cellphone and texting bans showed that the bans themselves do not reduce crash risk. Targeted enforcement campaigns do not appear to change this equation.

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