

# THE PHILADELPHIA PREDICTIVE POLICING EXPERIMENT

## IMPACTS OF POLICE CARS ASSIGNED TO HIGH CRIME GRIDS

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### Project background

The Philadelphia Predictive Policing Experiment was a two-year collaboration between Temple University's Center for Security and Crime Science, housed in the Department of Criminal Justice, and the Philadelphia Police Department. This NIJ-funded research project was the first place-based, randomized experiment to study the impact of different patrol strategies on violent and property crime in predicted criminal activity areas. The experiment aimed to learn whether different but operationally-realistic police responses to crime forecasts, estimated by a predictive policing software program, can reduce crime.

### The experimental design

The experiment was designed to test two theoretically-relevant operational questions about police patrol. If police are able to dedicate a car to predicted crime areas, would it be better to use a marked car or an unmarked car? The visible police car would emphasize deterrence and prevention. The plain-clothes car would allow officers to conduct surveillance and approach crime undetected in more of an intelligence-led or apprehension mode. The experiment also examined if it was sufficient to just tell officers on roll call where the predicted grids were for the day without having a car dedicated to the task. These three interventions were compared to control areas which did policing as usual.



A property crime phase ran for 90 days from June 1, 2015 through August 25, 2015. A break was scheduled and then the violent crime phase ran for 92 days from November, 1, 2015 through January 31, 2016. Designed to target the time of the day with most crime problems, in each district three property crime grid predictions (500 feet by 500 feet) were active from 8am to 4pm, and three violent crime predictions were active in

each district for an eight hour period from 6pm to 2am. After removing the airport and the lowest crime district, the remaining 20 districts were randomly assigned to one of four experimental conditions:

**Awareness** districts informed officers of the predicted target areas for that shift. Officers were asked to focus on those areas when they were able, but no cars were dedicated to the grids.

**Marked** car districts built upon the awareness model by dedicating a single marked vehicle to patrol of the predicted crime areas for the entirety of the shift.

**Unmarked** car districts were similar to the implementation for the marked districts except for the use of plain-clothes officers and unmarked police vehicles instead of uniformed resources.

**Control** districts were districts where police personnel did not have access to the crime prediction software, so they maintained a standard patrol strategy.

In the car districts, officers were instructed to remain in the grids as much as possible, but were not instructed how long, at what frequency, or in what order they should be patrolled.

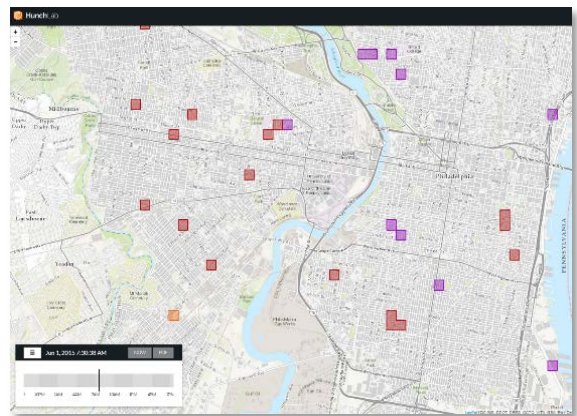
## Results

When examining both predicted high-crime grid cells and the grids cells immediately surrounding them, the marked car patrols resulted in a 31% reduction in property crime counts, or a 36% reduction in the number of cells experiencing at least one crime. While this sounds substantial, the specific numbers are small. This translates to a reduction in three crimes over 3 months for an average city district patrolling around three grids. To extrapolate, if each of the 21 geographic districts dedicated a marked car to three grids for an 8 hour shift each day, we estimate a reduction in 256 Part I property crimes per year.

There were signs of a temporal diffusion of benefits. In the eight hours following the property crime patrols, the marked car districts were associated with a reduction in crime compared to the control areas, with property crime counts that were 41% lower and expected crime occurrences that were 48% lower (but again, actual numbers were low). Unfortunately, the relative rarity of property crime on an hour-by-hour basis in such limited geographic areas hindered the ability to make confident inferences about any crime reductions regarding the experimental conditions. In other words, while the percentages were substantial, the results were not statistically significant due to floor effects.

There were no crime reduction benefits associated with the violent phase of the experiment, nor were there any benefits with the property crime awareness or unmarked car interventions.

The experiment used Azavea's HunchLab predictive policing software. The software predicted twice as much crime as would be expected if crime were uniformly distributed, even though the software was constrained from making its best predictions by the experimental design. The experiment did reveal the technical challenges in predicting crime in a limited number of small 500' x 500' grids. See additional report.



## Further information

For additional and current information, visit the project website at [bit.ly/CSCS\\_3PE](http://bit.ly/CSCS_3PE)

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