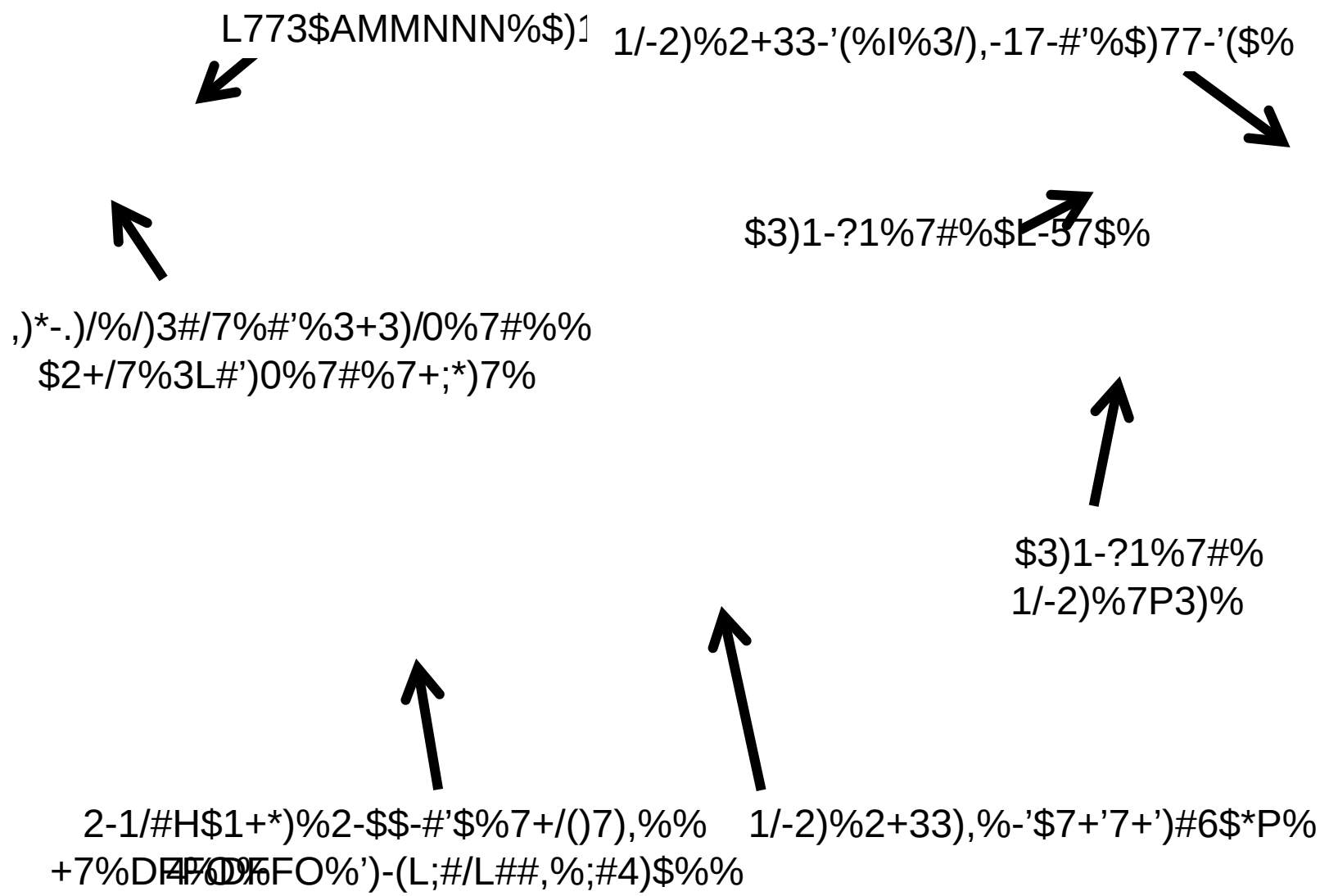
What Officers Get:
Intuitive + Tactical Precision



Don't Just Map Crime. Predict It.

PredPol provides targeted, real time crime prediction designed for and successfully tested by officers in the field.

The Problem: Police departments nationwide are facing budget freezes and deep cuts, requiring them to manage their resources more effectively while still responding to public demand for crime prevention and reduction.

The Solution: Like forecasting the weather, PredPol's patent-pending technology generates predictions about which areas and windows of time are at highest risk for future crimes. In contrast to analysis that simply maps past crime data, this technology applies advanced mathematics and computer learning that has resulted in predictions twice as accurate as those made by experienced crime analysts and veteran police using their own knowledge and experience.

> *I'm not going to get more money. I'm not going to get more cops. I have to be better at using what I have, and that's what predictive policing is about … If this old street cop can change the way that he thinks about this stuff, then I know that my [officers] can do the same.*
> - Los Angeles Police Chief Charlie Beck

Background

- PredPol's technology has been developed over six years by internationally recognized PhDs in mathematics and criminology.
- The program puts officers on the scene before crimes occur, targeting neighborhood "boxes" as small as 500 feet by 500 feet at each shift.
- Successful rollouts in Los Angeles and Santa Cruz, California have seen reductions in crime of 12% and 27% respectively.

Key Benefits

- Ready-to-use, frequently updated intel in officers' hands 24/7
- Allows for targeted allocation of limited public safety resources
- Easily implemented, accessible and cost effective

Applications

- Neighborhood policing
- Military intelligence and policing
- Possible emergency management and public health applications

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LAPD & Santa Cruz Programs:
Forecasting Crime Like Forecasting The Weather

In a 2011-2012 rollout in Los Angeles' Foothill Division, **crime declined by 12% compared to a 0.4% average increase across the rest of the city**. In Santa Cruz, California, burglaries were down 27% in July 2011 compared with July 2010. While these declines are not entirely attributable to PredPol's formula, the technology **definitively increases the odds of preventing crimes and doubled the predictions made by cops on the beat using best practices**.

The Santa Cruz deployment shows how it works. Eight years of crime data were fed into the computer program, which **divided the city into squares of approximately 500 feet by 500 feet**. New data was added each day as officers were given a list at roll call of the 10 highest-probability "hot spots" for that day. They checked those areas during times that they were not out on service calls. Before the program, they made such "pass through" checks based only on hunches or experience of where crimes were likely to occur. **Newer police have come up to speed faster while veterans have added to their institutional knowledge.**

> *We're facing a situation where we have 30 percent more calls for service but 20 percent less staff than in the year 2000, and that is going to continue to be our reality. So we have to deploy our resources in a more effective way. This model does that.*
> - Santa Cruz Chief Crime Analyst Zach Friend

To be clear, PredPol is not offering the kind of crime tracking system that many cities currently use. It is **not "rear view mirror" policing**. As LAPD's Captain Sean Malinowski has said of current practices, "We look at these maps and they're as accurate as we can get them. But I'm looking at a map from last week and the whole assumption is that next week is like last week. The computer eliminates the bias that people have." **Traditional mapping tools now in use throughout the U.S. are calibrated less frequently, rely more on humans to recognize patterns, and allocate resources based on past crimes rather than predicted future offenses.**

Captain Malinowski envisions a time when the police will issue crime forecasts the same way the Weather Service issues storm alerts. So do we.

Recent Press Coverage

CBS News (featuring LAPD's Chief of Police)
http://www.cbsnews.com/video/watch/?id=7404996n

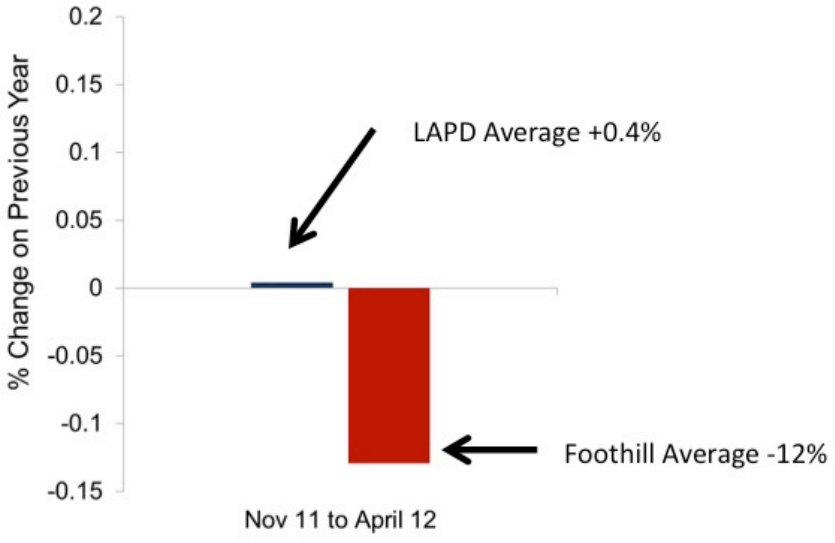
NYTimes (Los Angeles & Santa Cruz pilot)
http://www.nytimes.com/2011/08/16/us/16police.html?_r=1

NBC Nightly News (referencing Tom Cruise & "Minority Report" plus L.A. & Santa Cruz)
http://www.crimeanalystblog.net/2011/08/nbc-profiles-santa-cruz-pds-predictive.html

ABC Nightly News ("power to predict … ... the next wave in crime fighting")
http://abcnews.go.com/Technology/US/santa-cruz-police-math-predict-prevent-crime/story?id=14335517#.TzGxvcjPwo1

Time ("The Invention Issue")
http://www.time.com/time/magazine/article/0,9171,2099708-13,00.html

L.A.'s Foothill Division Leads in Crime Reduction After Deploying Tool



BURG, GTA & BTFV – LAPD Average excludes Foothill

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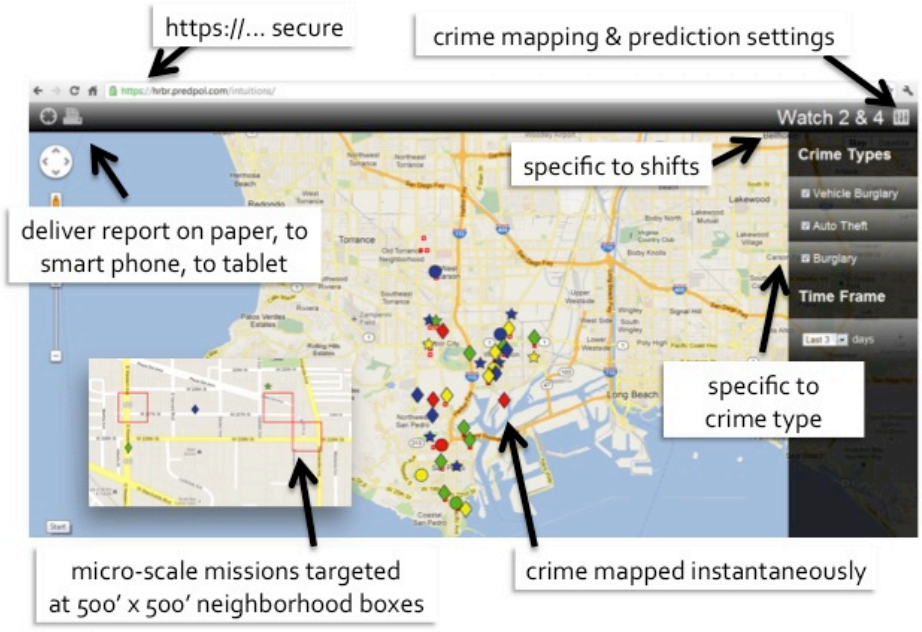

The New York Times

August 15, 2011

Sending the Police Before There's a Crime

By ERICA GOODE

The arrests were routine. Two women were taken into custody after they were discovered peering into cars in a downtown parking garage in Santa Cruz, Calif. One woman was found to have outstanding warrants; the other was carrying illegal drugs.

But the presence of the police officers in the garage that Friday afternoon in July was anything but ordinary: They were directed to the parking structure by a computer program that had predicted that car burglaries were especially likely there that day.

The program is part of an unusual experiment by the Santa Cruz Police Department in predictive policing — deploying officers in places where crimes are likely to occur in the future.

In July, Santa Cruz began testing the prediction method for property crimes like car and home burglaries and car thefts. So far, said Zach Friend, the police department's crime analyst, the program has helped officers pre-empt several crimes and has led to five arrests.

The notion of predictive policing is attracting increasing attention from law enforcement agencies around the country as departments struggle to fight crime at a time when budgets are being slashed.

"We're facing a situation where we have 30 percent more calls for service but 20 percent less staff than in the year 2000, and that is going to continue to be our reality," Mr. Friend said. "So we have to deploy our resources in a more effective way, and we thought this model would help."

Efforts to systematically anticipate when and where crimes will occur are being tried out in several cities. The Chicago Police Department, for example, created a predictive analytics unit last year.

But Santa Cruz's method is more sophisticated than most. Based on models for predicting aftershocks from earthquakes, it generates projections about which areas and windows of time are at highest risk for future crimes by analyzing and detecting patterns in years of past crime data. The projections are recalibrated daily, as new crimes occur and updated data is fed into the program.

On the day the women were arrested, for example, the program identified the approximately one-square-block area where the parking garage is situated as one of the highest-risk locations for car burglaries.

In contrast, CompStat and other crime-tracking systems in use in many cities are calibrated less frequently, rely more on humans to recognize patterns, and allocate resources based on past crimes rather than predicted future offenses.

The program was developed by a group of researchers — including two mathematicians, George Mohler and Martin Short; an anthropologist, Jeff Brantingham; and a criminologist, George Tita — in a project that used data provided by the Los Angeles Police Department, which is hoping to begin using the program later this year.

"We're watching closely what is going on in Santa Cruz," said Capt. Sean Malinowski of the Los Angeles department's Foothill Patrol Division, who worked with the researchers when he was head of the department's crime center under the police chief at the time, William J. Bratton.

Captain Malinowski envisions a time when the police will issue crime forecasts the same way the Weather Service issues storm alerts.

"It would certainly be safer for everyone and more effective," he said, adding that the forecast might say, "You're having a rash of shootings and the computer says it's going to continue in these places and on these days of the week."

He added, "Now, if we have a problem, we throw a lot of cops at it, and unfortunately, with the economy being the way it is, we don't have as many cops available."

The CompStat system, Captain Malinowski said, was a big advance for policing, but the use of computer programs takes prediction to the next level.

With CompStat and other, similar approaches, "we look at these maps and they're as accurate as we can get them," he said. "But I'm looking at a map from last week and the whole assumption is that next week is like last week. The computer eliminates the bias that people have."

For the Santa Cruz trial, eight years of crime data were fed into the computer program, which breaks Santa Cruz into squares of approximately 500 feet by 500 feet. New data is added each day.

Officers are given a list of the 10 highest-probability "hot spots" of the day at roll call. They check those areas during times that they are not out on service calls. Before the program started, they made such "pass through" checks based on hunches or experience of where crimes were likely to occur.

Mr. Friend said that the reaction to the prediction method among officers had been "quite positive."

"The feedback I've received is that there is appreciation that it has validated intuition or provided a new focus area that wasn't known," he said.

How accurate the program really is has yet to be demonstrated; its success will be evaluated after six months.

"The worst-case scenario is that it doesn't work and we're no worse off," said Mr. Friend, who enlisted Dr. Mohler, a professor at Santa Clara University.

Mr. Friend said the early indications were encouraging. Burglaries were down 27 percent in July compared with July 2010, suggesting that the targeted policing may have a deterrent effect, he said.

In Los Angeles, Captain Malinowski said, the police department hopes to expand the program to include some violent crimes, like gang shootings.

Predicting crime with computer programs is in some ways a natural outgrowth of the technology that companies like Wal-Mart now use routinely to predict the buying habits of customers, said Scott Dickson, a crime analyst for the police department in Killeen, Tex., who discussed the Santa Cruz experiment on his blog.

Law enforcement agencies, Mr. Dickson noted, have "great warehouses of data" that can be used to feed predictive programs. And in the end, he said, "it's cheaper to prevent a crime than to solve a crime, and that's where I think the promise lies."