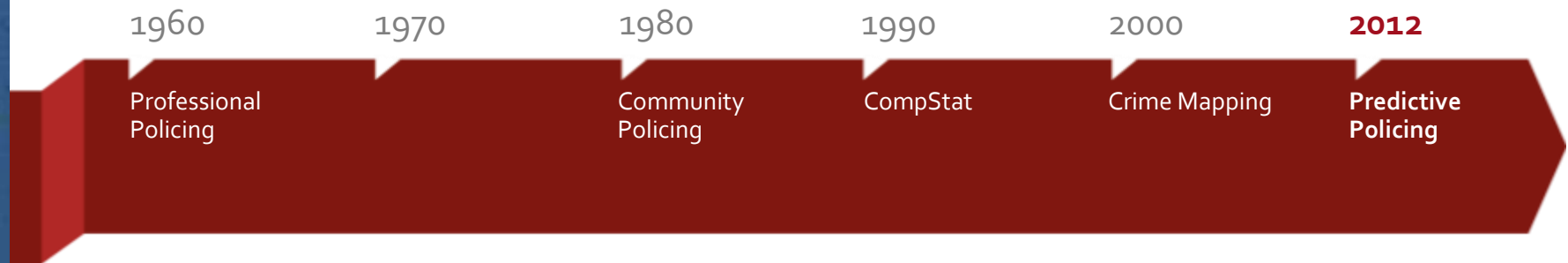




PredPol

Predict Crime in **Real Time**™

Evolution From CompStat to Crime Mapping to Predictive Policing



This is the next era of policing. . .

Very soon, we will be using a predictive policing model where, by studying real-time crime patterns, we can anticipate where a crime is likely to occur.

—William Bratton, Commissioner of NYPD and Former Chief of LAPD & Boston PD

LAPD's toolkit now relies heavily on predictive policing.

— Former Mayor Antonio Villaraigosa , Los Angeles California

Predictive Policing Is:

- Cloud software technology created by police in Los Angeles & Santa Cruz, CA
- Provider of the highest risk places for future crime for each shift (not for the whole week or month)
- High level mathematics combined with analysts and veteran officers

PredPol Has:

- Tested results and many deployments
- Tools to measure your success every day, so that you know whether and how it's impacting crime for you
- Automated mapmaking, direct delivery to patrol officers, many crime types, GPS & mobile tools

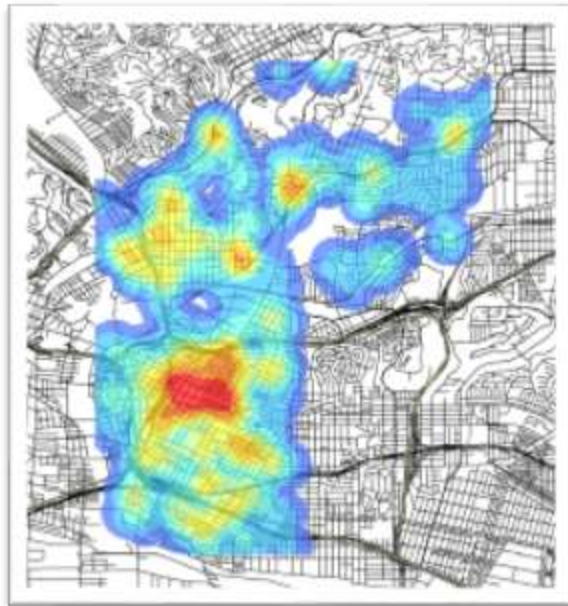
Outline

Making predictive policing practical

The science behind predictive policing

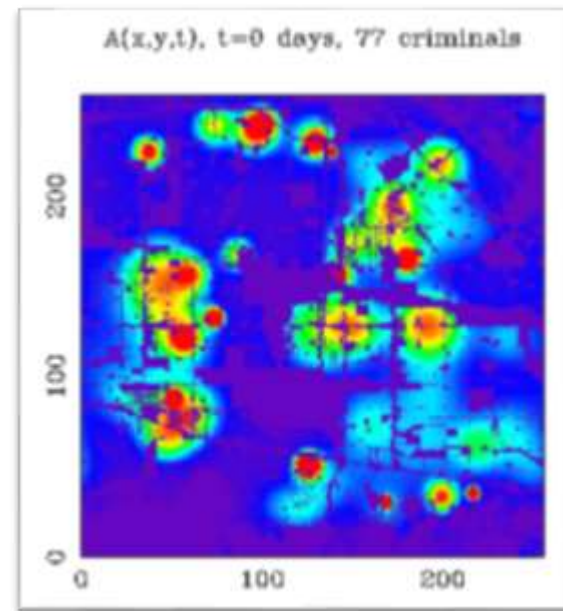
Testing predictive policing in the field

Policing Crime Patterns Is A Challenge



Long-term Resource Allocation

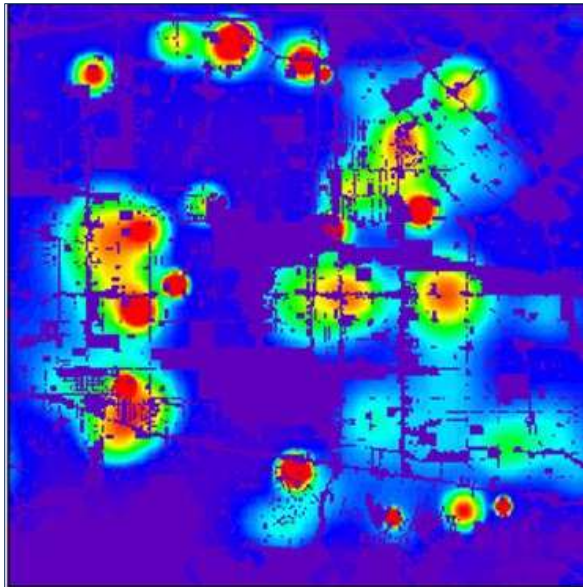
Traditional heat map showing activity over for a full year



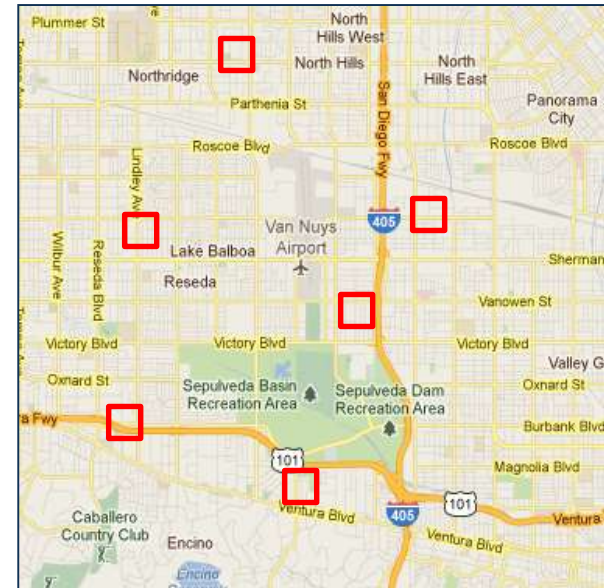
Chase Overnight Crime

There are many hotspots & they move day to day

Making Predictions Practical & More Accurate



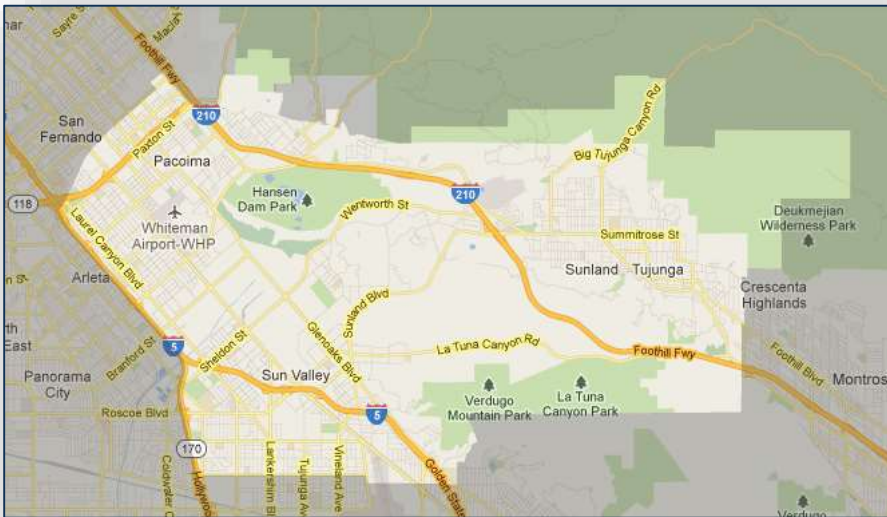
TACTICAL AMBIGUITY
rear-view mirror heat map



TACTICAL CLARITY
forward-looking PredPol boxes

Deployment To Officers In The Field

Lists or maps of predictions in 500' x 500' boxes
distributed at start of shift or on-demand
'get in the box' to disrupt crime during patrols



LAPD Deployment



Santa Cruz PD Deployment

Deployments Include

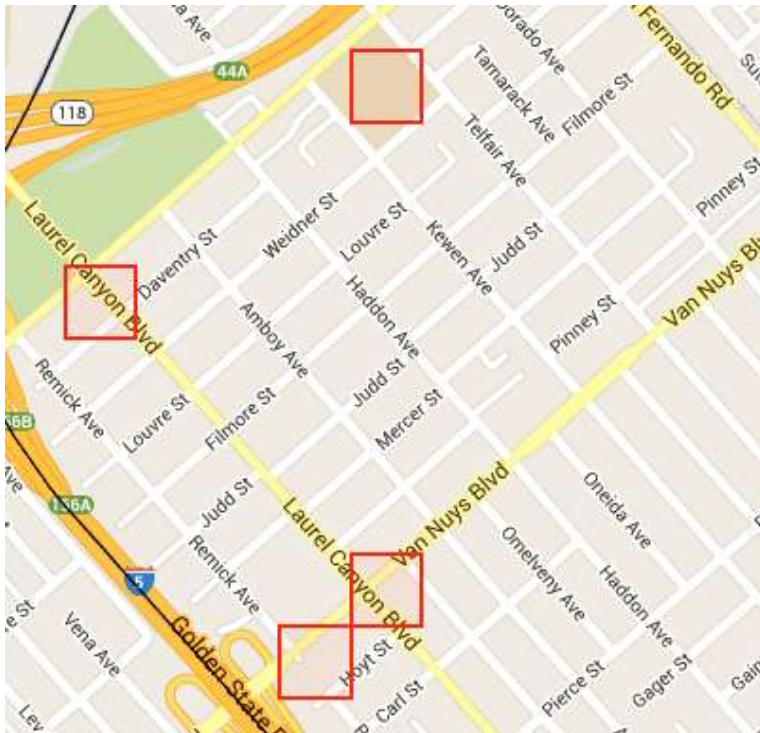
Seattle, WA
Atlanta, GA
Los Angeles, CA
Orange County, FL
Franklin Twp., NJ
Reading, PA

Miami Gardens, FL
Elgin, IL
Little Rock, AR
Kent, England
Montevideo, Uruguay



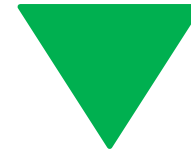
Track Record

Initial Deployment In L.A. Saw Quick Impact



Source: LAPD

-12%

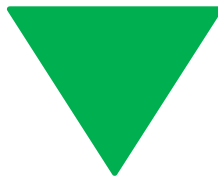


**L.A. Foothill Division
Property Crime
Nov '11 to May '12**

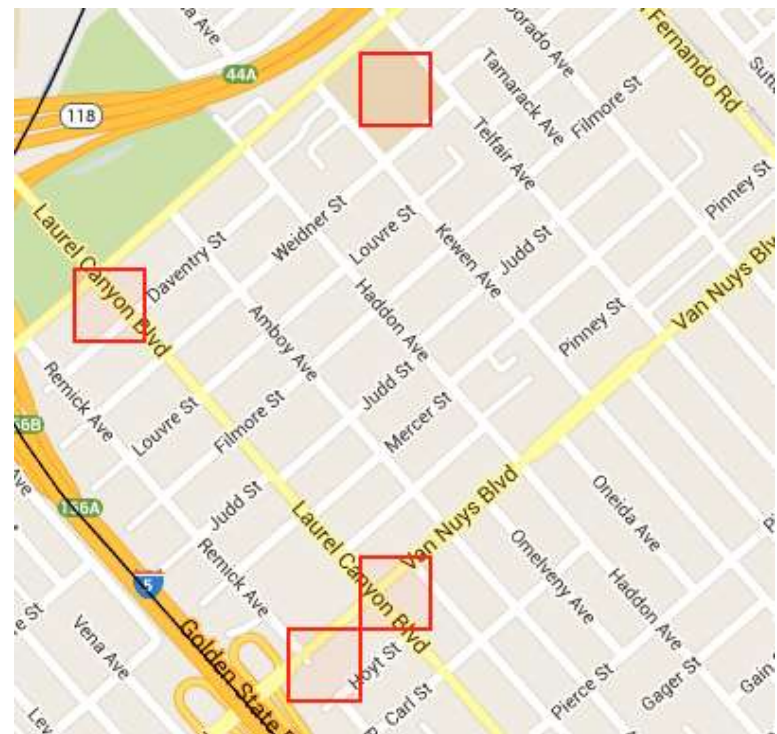
Track Record

Third Year In L.A. Still Having An Effect

-20%



Foothill Division Property Crime
Jan'14-June'14
(year over year)



Source: LAPD's Capt. Sean Malinowski, July 2014

Track Record

After Deployment In Santa Cruz (pop. 61,000)

First Full Year

Burglaries 11%

Robberies 8%

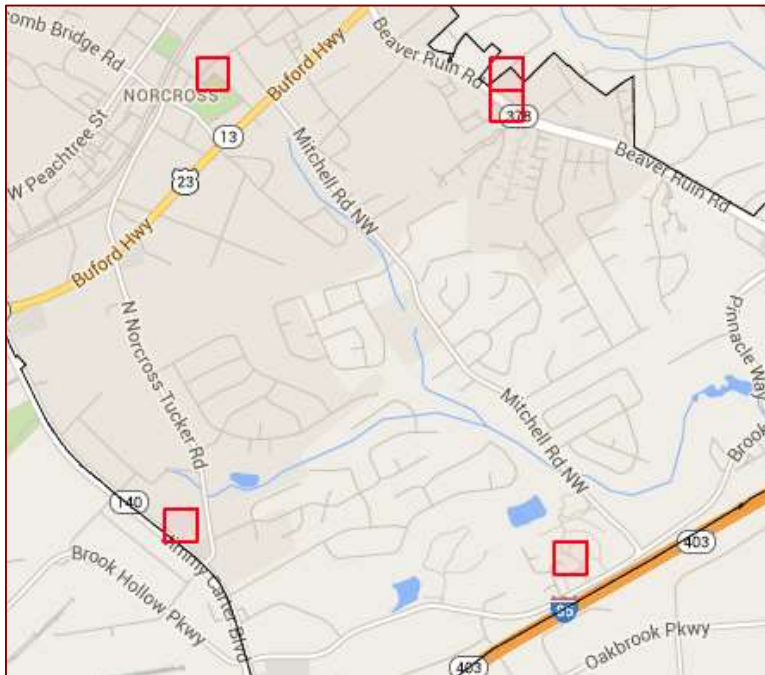
Assaults 7%



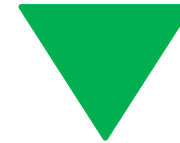
Source: Santa Cruz Deputy Chief Steve Clark, April 2014

Track Record

After Deployment In Norcross, GA (pop. 10,000)



-22.7%



**“We’re down 22.7% when comparing
10 months using PredPol to the same
10 months before using PredPol.”**

Capt. Bill Grogan

August 2013 – Spring 2014

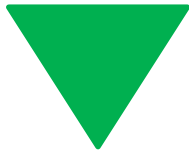
Source: Norcross Capt. Bill Grogan, June'14

Track Record

After Deployment In Alhambra, CA (pop.

84,000)

-15%



Alhambra Property Crimes

1st half 2012

vs.

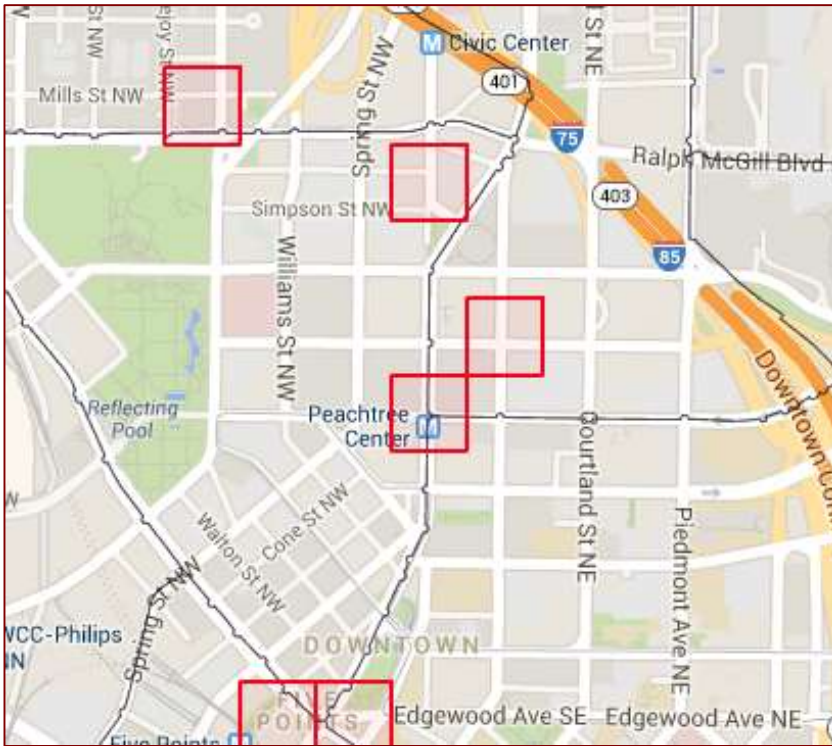
1st half 2013



Source: Alhambra Chief Mark Yokoyama

Track Record

After Deployment In Atlanta (pop. 440.000)



July 2013–April 2014

“We pride ourselves on being a Department that is not satisfied with the status quo.”

Chief George Turner

Crime Reductions Free Up Money That You Can Re-direct to More Analysts & Officers

Cost Per Crime



L.A. Savings With
Only 4.3 Crimes
Per Week Prevented

	Weekly Savings Per Division	Annual Savings Per Division	Projected Annual Savings LAPD
GTA	\$14,291	\$743,148	\$15,606,118
Burglary	\$5,288	\$274,957	\$5,774,088
Theft	\$8,592	\$446,801	\$9,382,829
Total	\$28,171	\$1,464,906	\$30,763,036

Day To Day User Experience

Access & log-in

Set prediction options

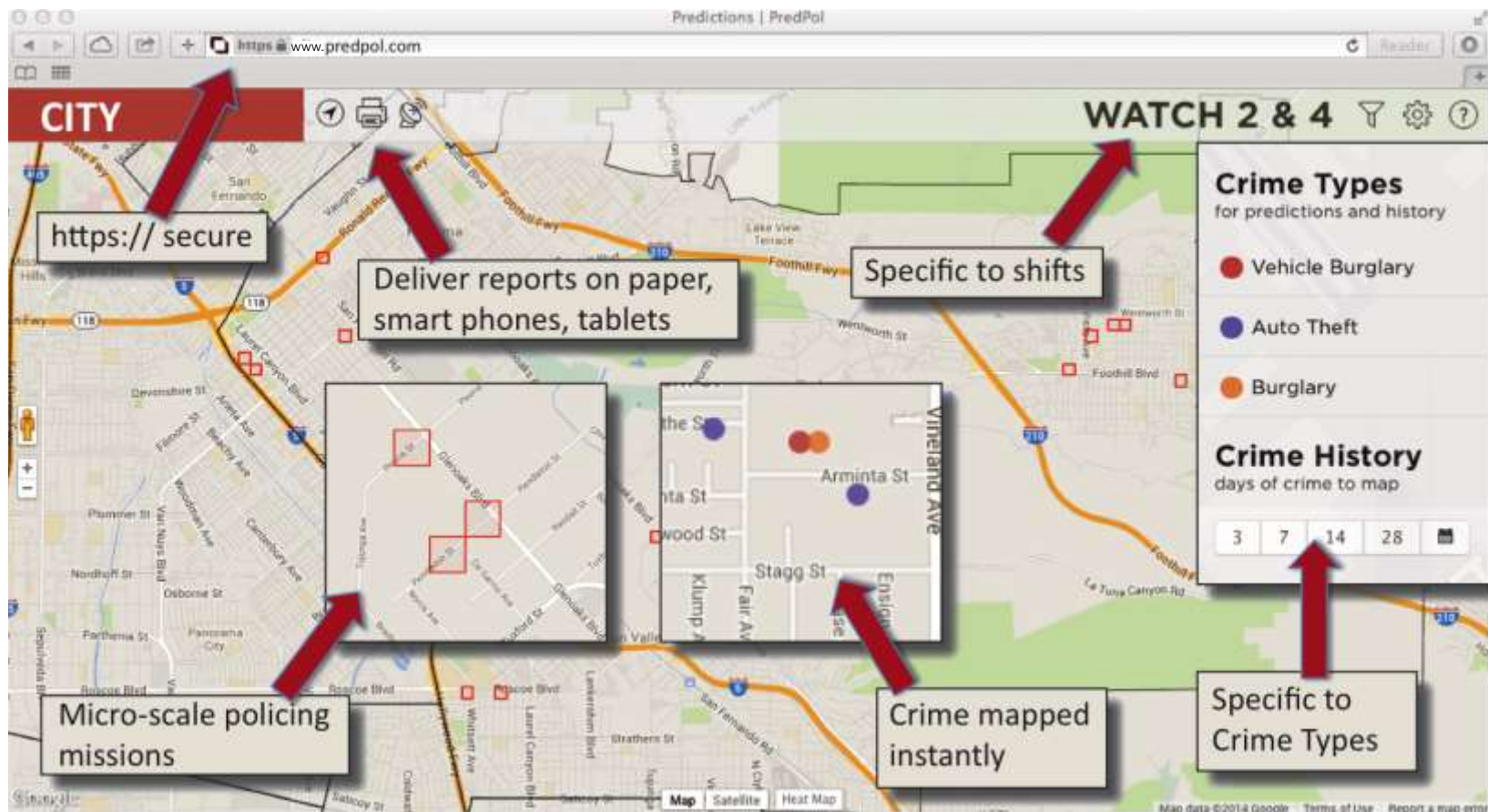
Set crime mapping options

Generate prediction and crime mapping reports

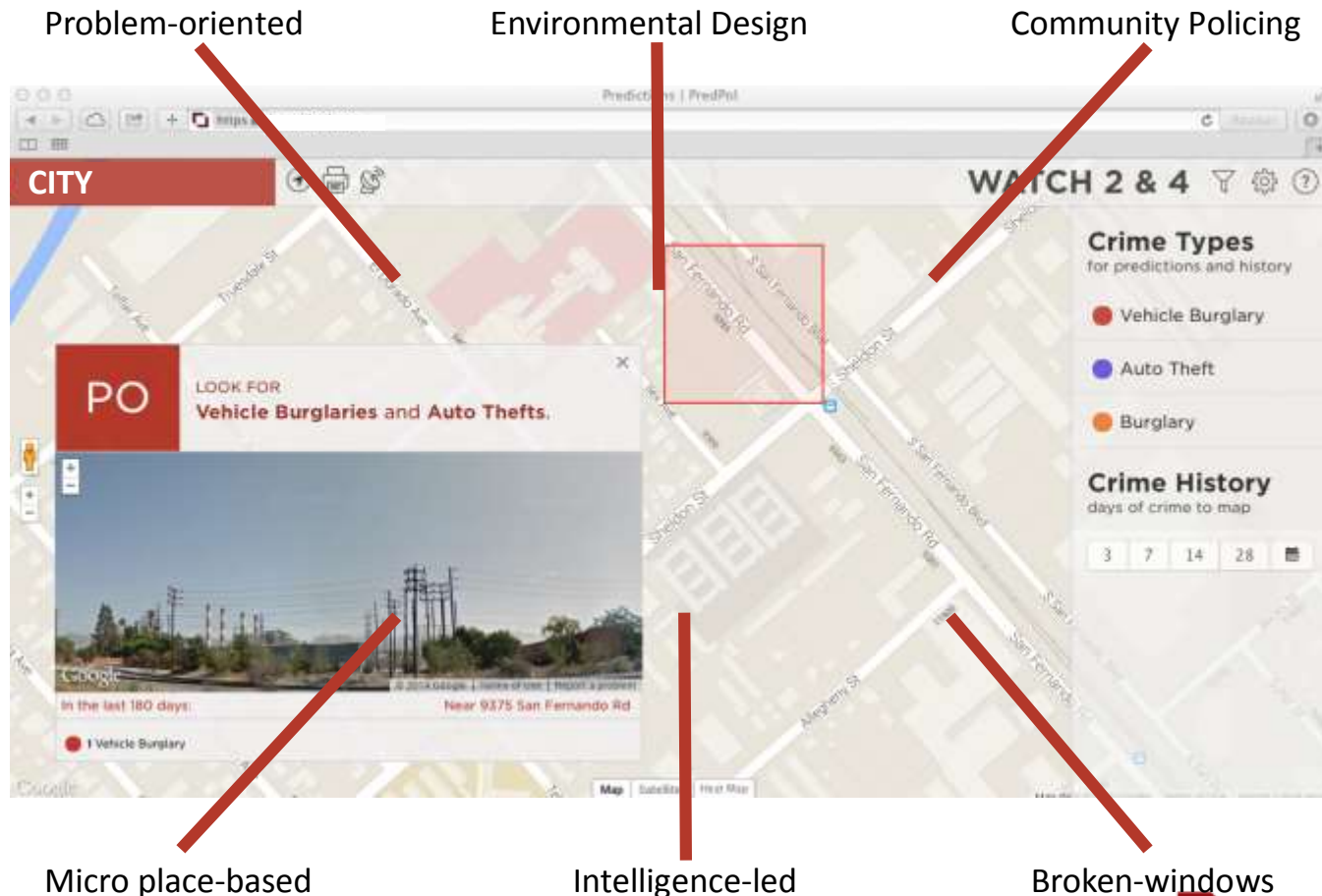
Brief patrol at morning roll-call

Get-in-the-box

Day to Day Use



PredPol Offers Time & Place While Officers Determine Tactics



What's Behind This Technology?

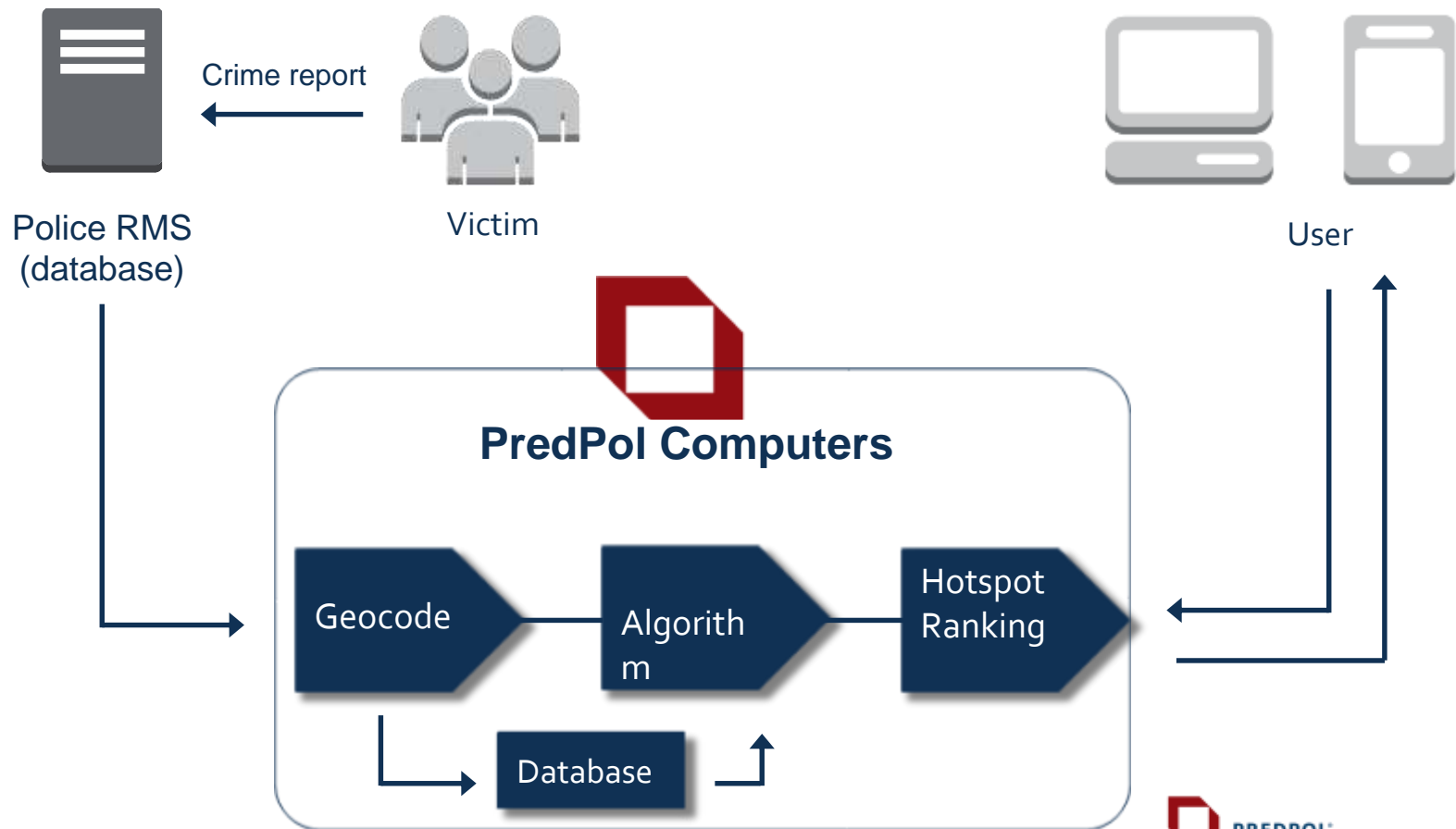


“I’m not going to get more money. I’m not going to get more cops. I have to be better at using what I have, and that’s what predictive policing is about”

Los Angeles Police Chief Charlie Beck, CBS Evening News

Data Flow

Police Reports -> Predictions -> Users

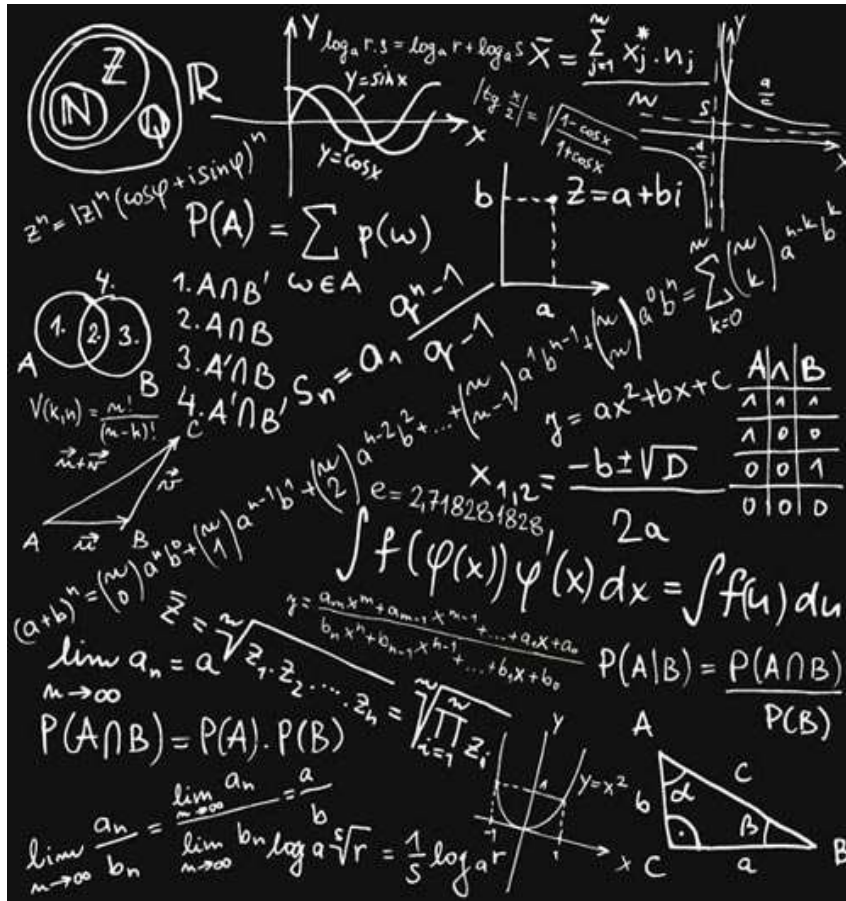


Cloud-based Service Set-up

- Custom Java software running continuously on a machine within your network (analogous to public mapping software) to upload crime report info to PredPol server
 - Information is encrypted and transmitted securely to PredPol for analysis
- For each crime report: address, date, time, crime type (no personal information required)

Other Required Information

- Shift schedules
- Latitude/longitude boundaries of each SFPD division
- Crime type codes used in RMS



Data

+

Criminal behaviors

+

Advanced

mathematics

=

Highest probabilities

of crime

“Mathematizing” Criminal Behavior

Repeat Victimization



$$\frac{\partial A}{\partial t} = B + \frac{hD}{4} \nabla^2 A - wA + qwa$$

Near-repeats Environment

Crime Patterns

Mathematical Model

Only Type Of Crime, Place Of Crime, And Time Of Crime Are Used

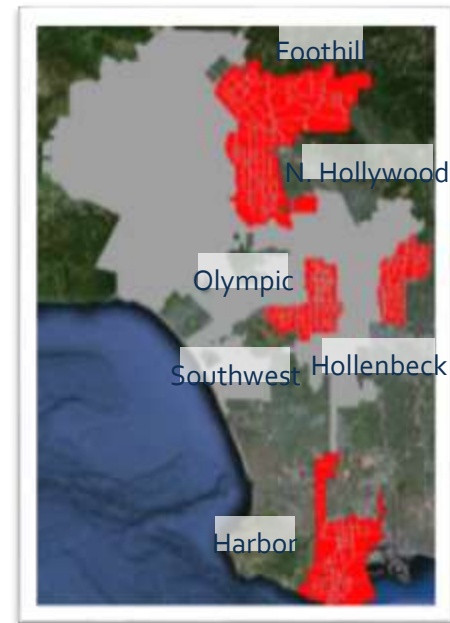


More recent crimes given heavier weight.

“Impersonal” data avoids profiling & privacy issues.

How Do We Know It Works?

Accuracy & Efficacy

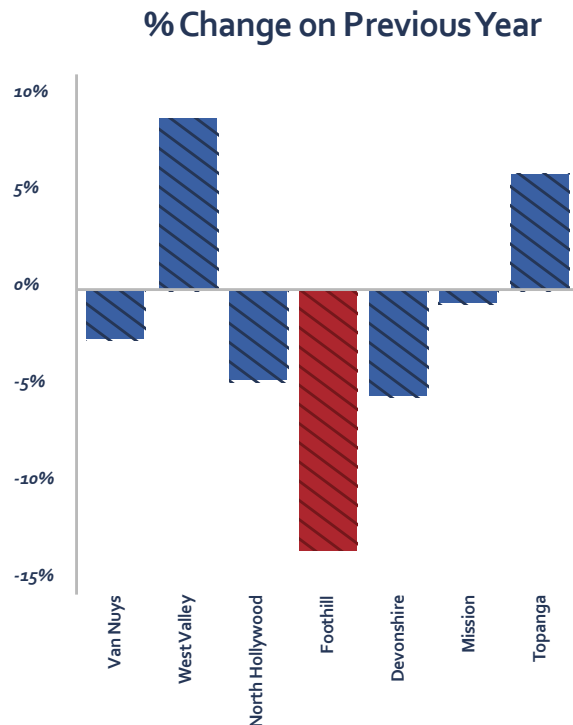


Foothill Division of 250,000 people was first

Years of Testing, Proven in the Field

Los Angeles Crime Reductions Starting in 2011

How do we know predictions worked in Los Angeles? Foothill Division was first to deploy & significantly outperformed other divisions ...



LAPD's Foothill Division
First Six Months

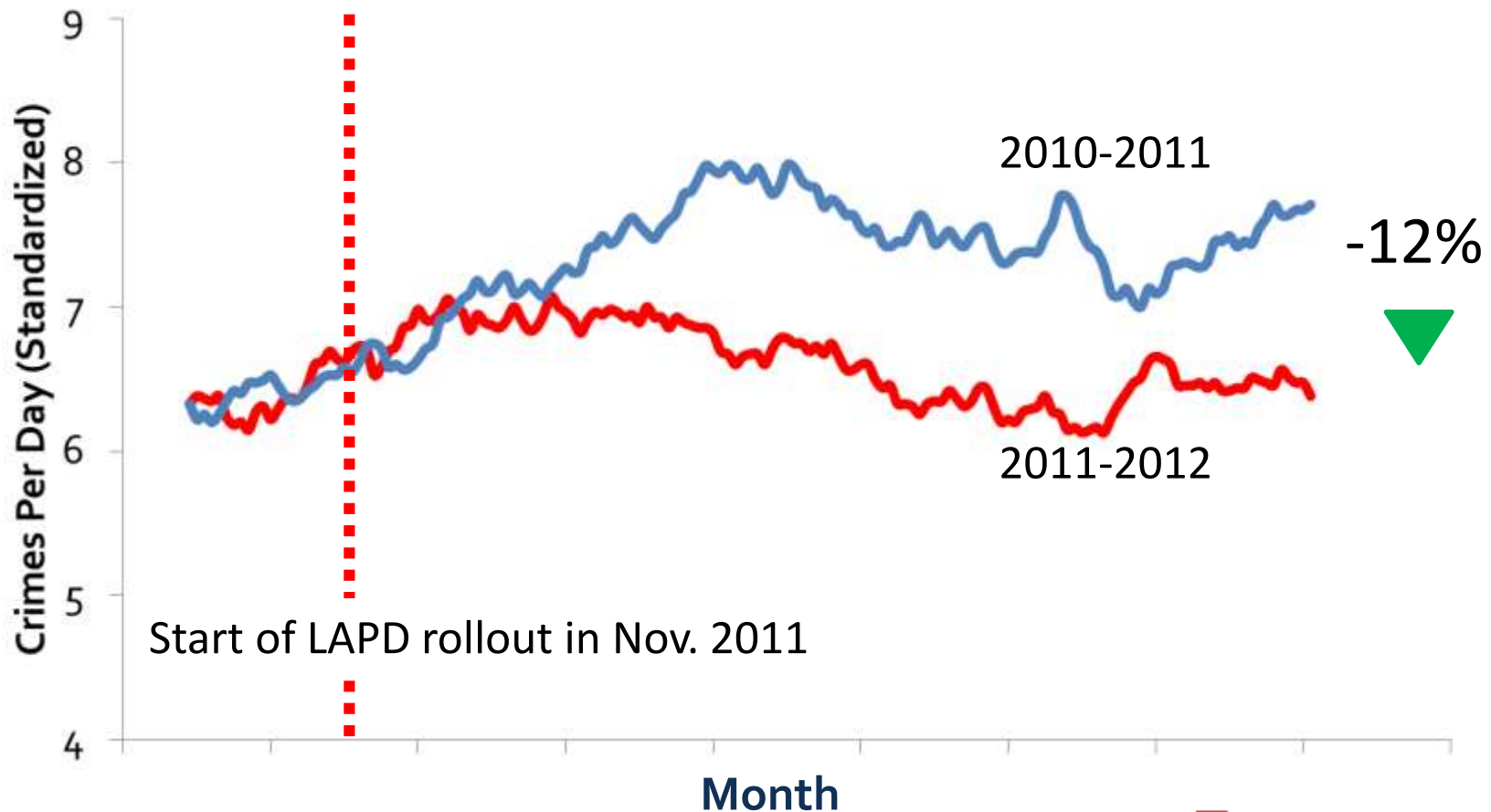
▼ 12%

Rest of L.A. During
Same Period

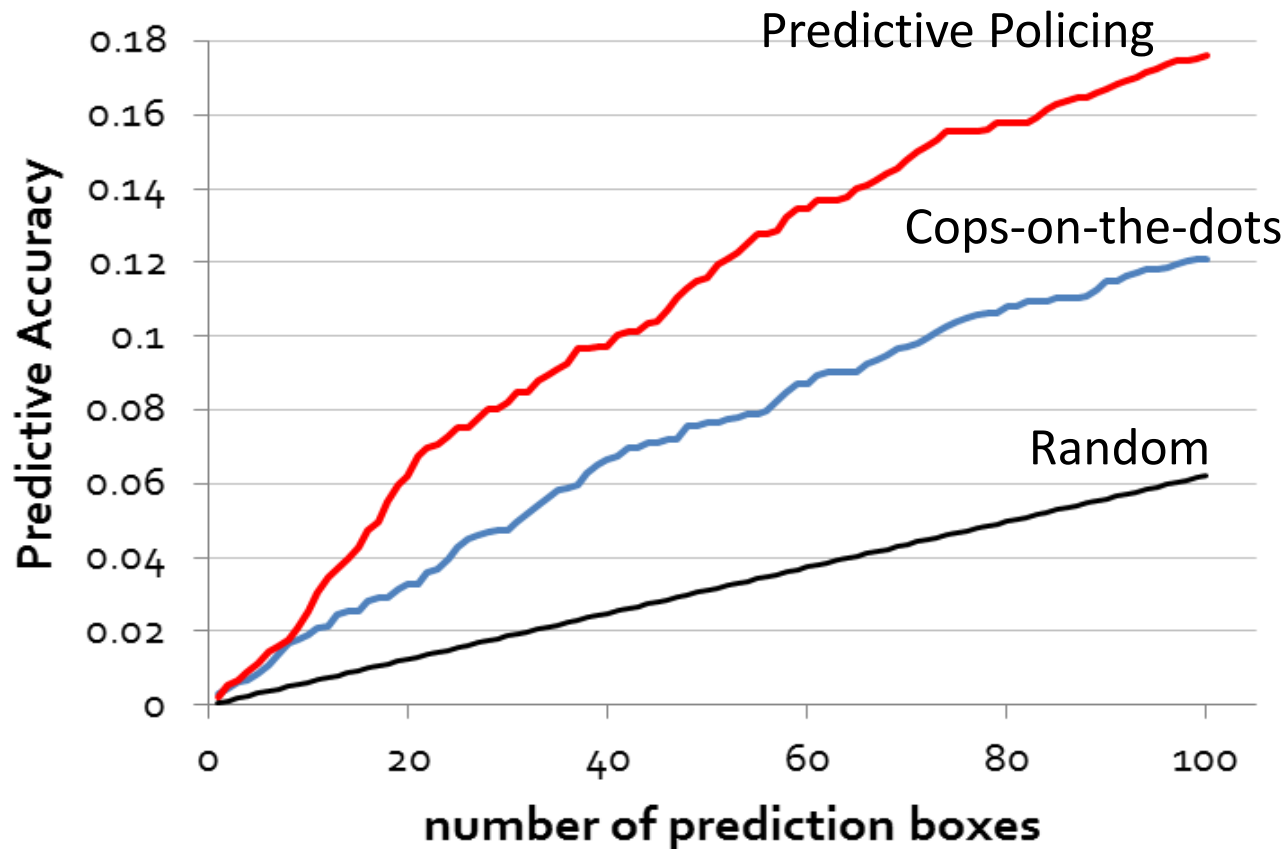
▲ 0.4%

How Do We Know It Works?

The Impact on Property Crime

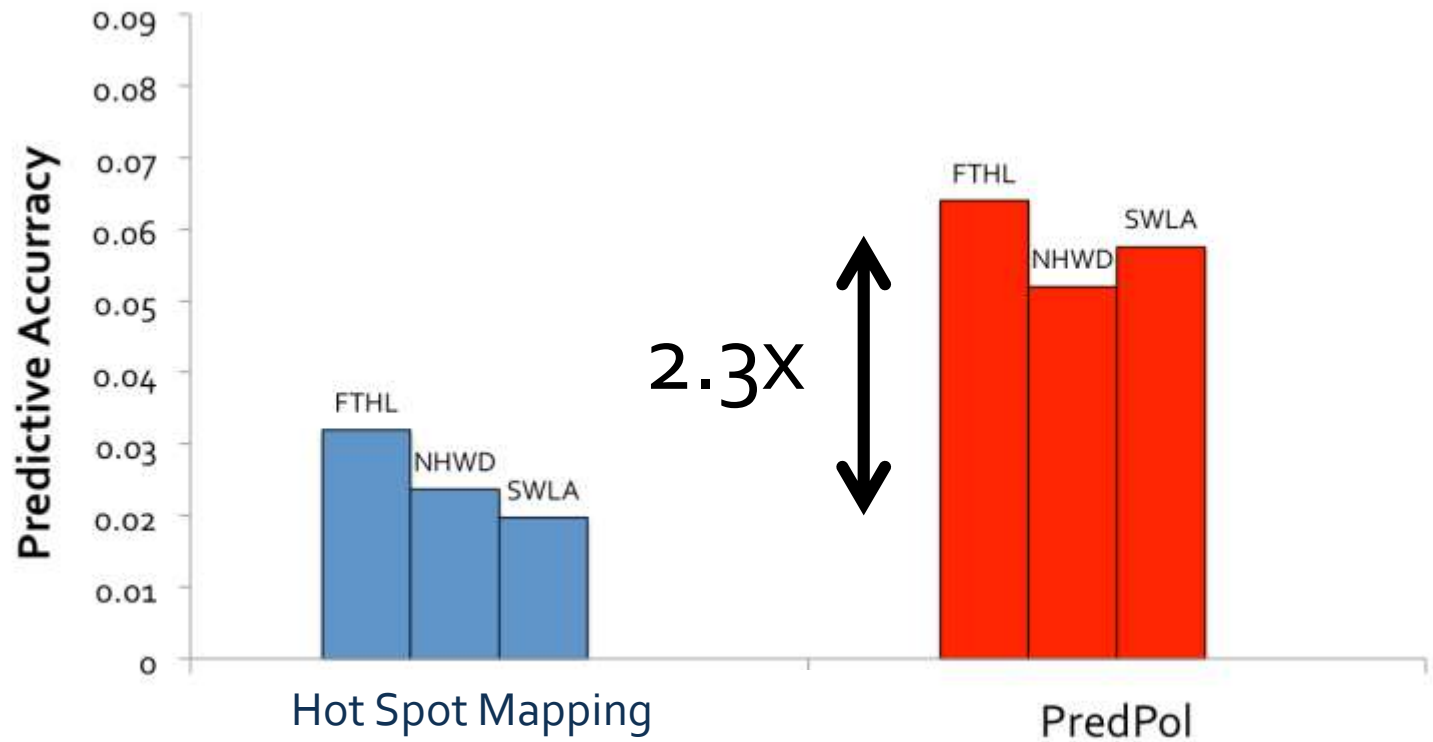


Twice As Accurate As Rear View Mirror Crime Mapping



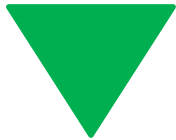
Los Angeles Predictive Accuracy

3 Divisions, Single Blind Controlled Study

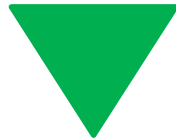


Atlanta Phased Deployment (444,000 Pop.)

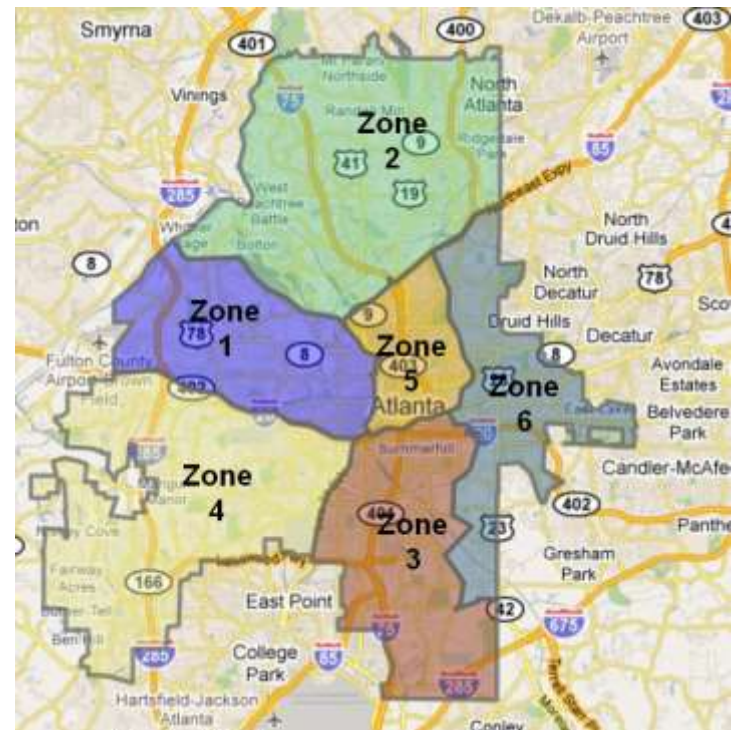
-8%



-9%



Aggregate crime declined by 8 % and 9% in the two zones that first deployed predictive policing, with burglary and car thefts falling 10-28%.



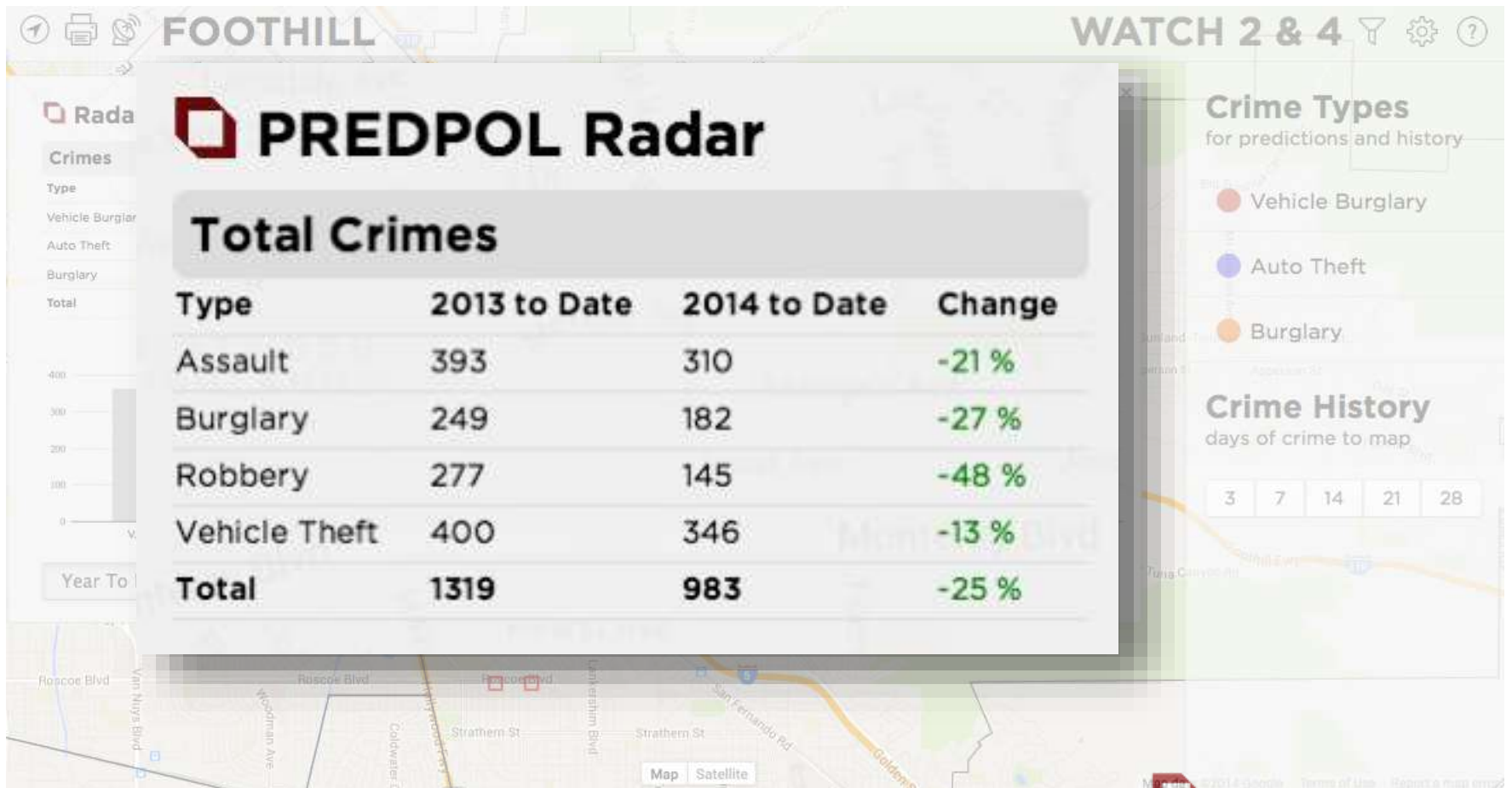
How Will You Know It's Working For You?



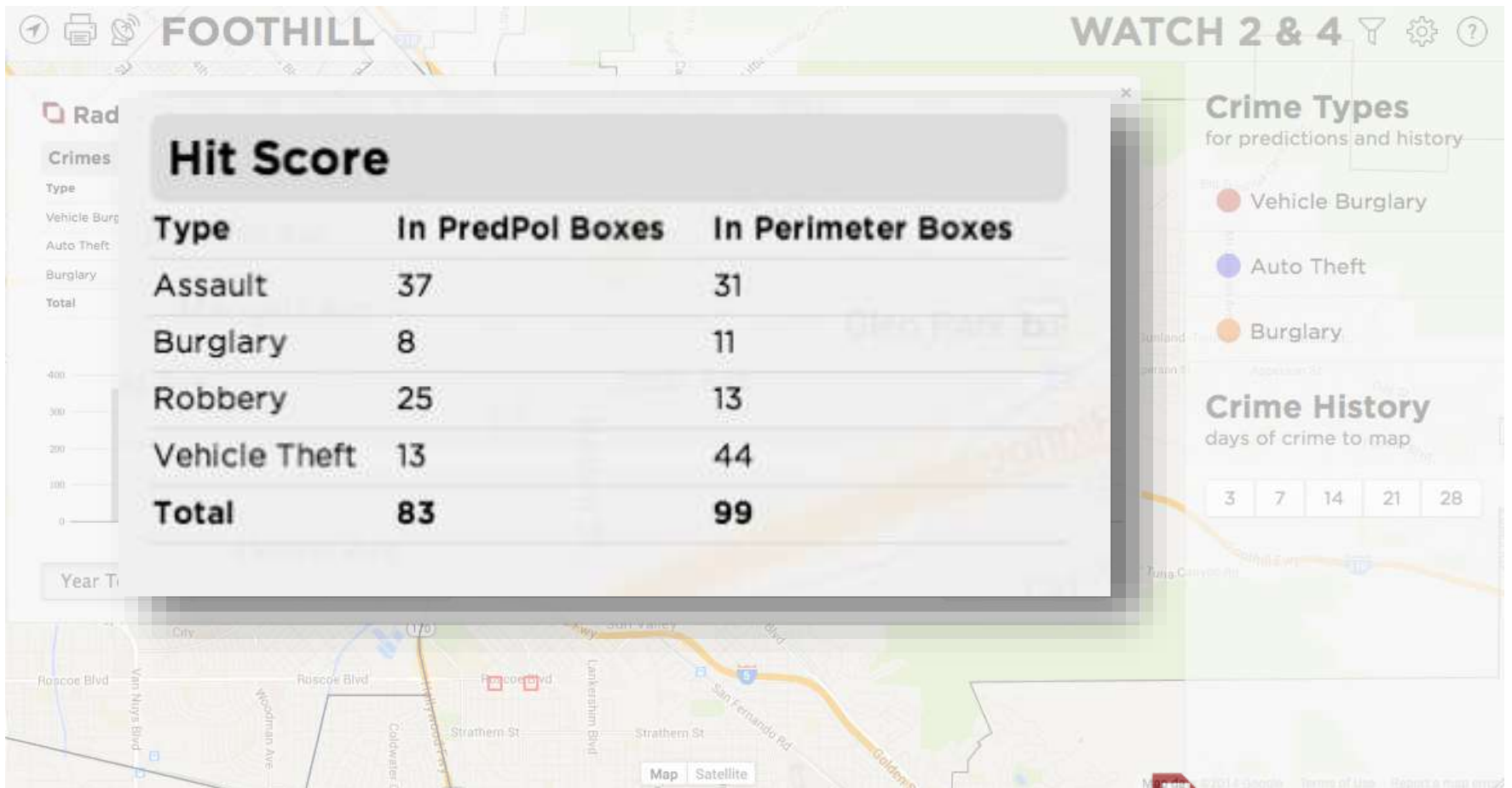
‘Radar’ Gives You Day To Day Tracking Of The Impact Of The Predictive Boxes

- Allows you to track effectiveness of predictions in your jurisdiction
- Identifies missed patrolling opportunities & maintains officer buy-in
- Helps identify leading indicator crimes to improve predictions of your target crimes

Radar Tells You Whether Crime Is Up Or Down...



... And Radar Tracks Number of Crimes Occurring in Box and Perimeter Boxes.



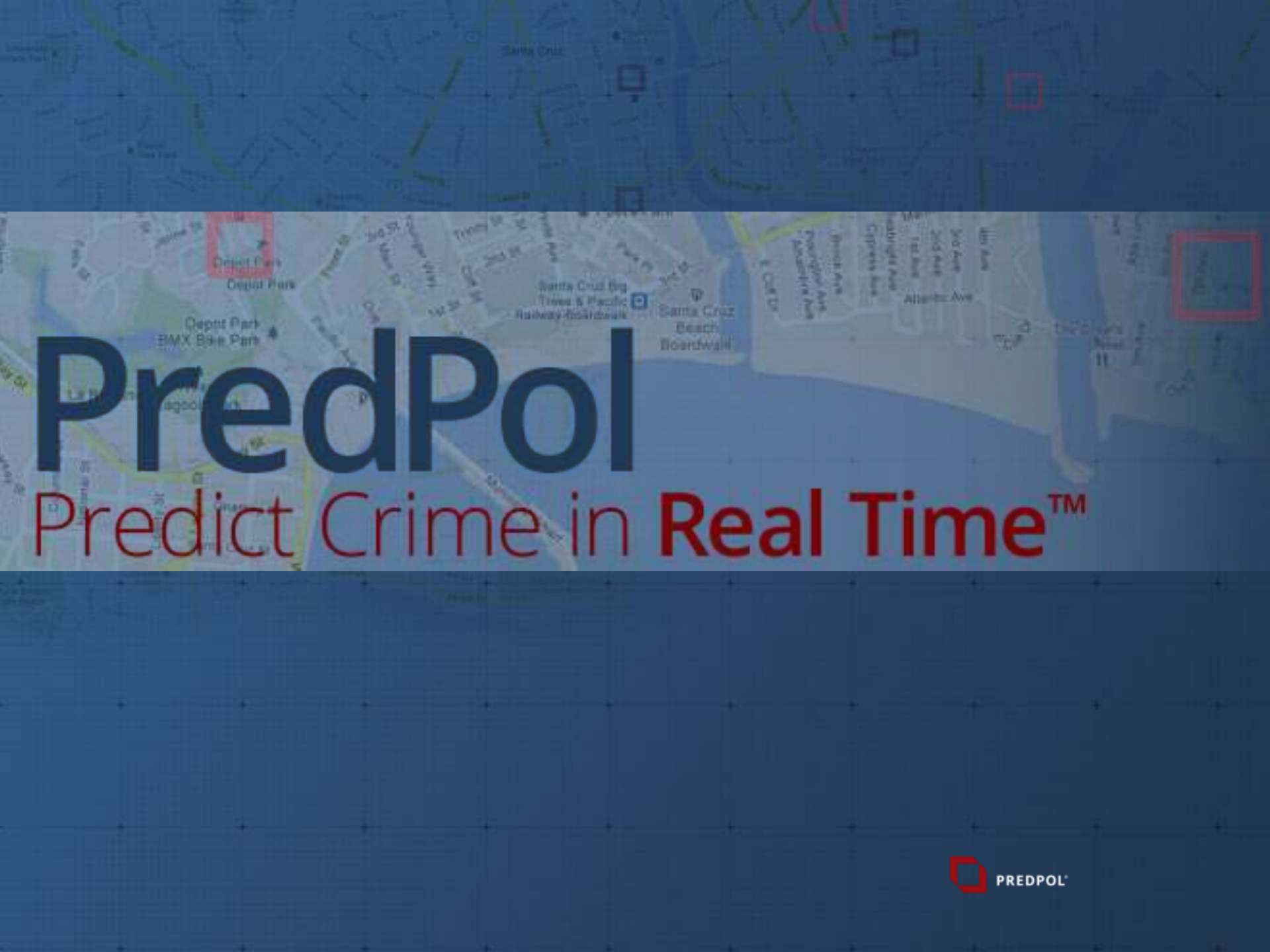
PredPol Has:

Track record of success
(so you're no one's predictive policing pilot)

Easy installation and requires no new hires & no new hardware,
with no limit on users

A significant economic return that will
free up money for additional needs & personnel

Tools to measure effectiveness every day
(so you don't have to rely only on successes elsewhere)



PredPol

Predict Crime in **Real Time**TM



PREDPOLTM



Thank You!