Big Data to Fight Crime

[RTM Dx](http://www.rutgerscps.org/rtm/), a crime prevention application developed by researchers at Rutgers University, is one such app that does so and is already being used by police departments in Colorado, Texas, Missouri, New Jersey, Arizona, and Illinois. RTM Dx is an app that uses geolocation and crime data to measure the spatial correlation between where the crimes have occurred in relation to different features of the environment such as nightclubs or bars. With that, officers can measure correlations between various sites and crime rates and then decide which of these correlations are worth monitoring and pursuing.

Crime-prevention software

The most well-known predictive policing software [PredPol](http://www.predpol.com/" \o "The Predictive Policing Company" \t "_blank) has been developed and first used by Los Angeles and Santa Cruz police departments. The software can predict where crimes are likely to occur with 500 square feet precision. Data-powered officers can already boast some solid [results](http://www.predpol.com/results/) – in LA, there’s been a 33% reduction in burglaries and 21% reduction in violent crimes in areas where the software was implemented. No wonder that other cities’ authorities have quickly became interested in the path-breaking new software. After PredPol has been applied by Atlanta Police Department, the city has seen an overall crime drop 19% and examples of other effective deployment proliferate. PredPol software is currently being trialed in over 150 cities across the US and it is likely to be rolled out in more cities.

Obviously, other major analytic tool developers such as IBM don’t fall behind. IBM is famous for being a major player in acquiring analytic start-ups and spending billions of dollars on predictive software. Few years ago they launched [Coplink](http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=AN&subtype=CA&htmlfid=897/ENUS212-112" \o "IBM Coplink Software" \t "_blank) software that allows police departments across the US to mine one another’s databases to track down wanted persons. Even if somebody was booked for jaywalking in Arizona, policemen would be able to compare his personal data and identify him on the spot as the suspected murderer from North Dakota hundreds of miles away.

<http://www.predpol.com/how-predpol-works/>

# HOW PREDPOL WORKS

## How PredPol Works: We Provide Guidance on Where and When to Patrol

Using only three data points – crime type, crime location and crime date/time – PredPol’s powerful software provides each law enforcement agency with customized crime predictions for the places and times that crimes are most likely to occur. PredPol pinpoints small areas, depicted in 500 feet by 500 feet boxes on maps – that are automatically generated for each shift of each day.

The algorithms used by PredPol have been published and discussed publicly in peer-reviewed papers. They are based on the observation that certain crime types tend to cluster in time and space. PredPol uses self-exciting point process models to replicate this behavior (Click [Self-Exciting Point Process Modeling of Crime](http://math.scu.edu/~gmohler/crime3.pdf)).

PredPol takes a feed from each department’s Records Management System (RMS) to collect crime type, location and date/time. This data is collected at least daily and feeds our prediction engine, which is run once a day to create predictions for each beat, shift and mission type.

We initially process several years of data to lay down a “background” level of crime patterns and to understand how crimes propagate throughout the city. This is done using an Epidemic Type Aftershock Sequence (ETAS) Model, which is a self-learning algorithm.

As new crimes come in, they are mapped against existing patterns and events in the city. Based on the propagation patterns uncovered by the initial analysis of the data, we predict when and where similar crimes related to these crimes are most likely to occur.

Every 6 months, we force a “re-learning” of the patterns using all historical and recent crime data. This ensures that new patterns of behavior are picked up by the system as well.