

Predicting crime and criminality

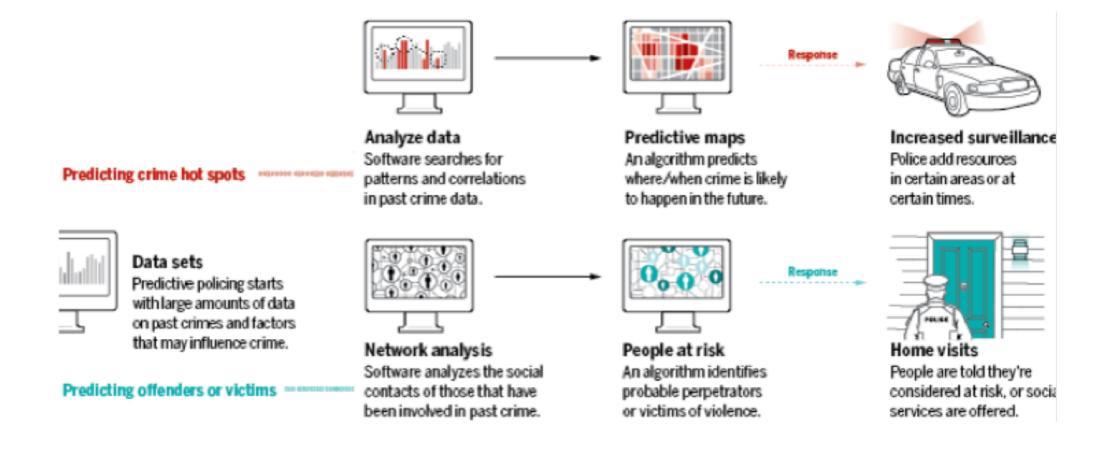
Can "predictive policing" prevent crime before it happens?

Definition

Predictive Policing is the application of analytics and artificial intelligence for prediction, identification and precaution of any criminal activity



Common Approaches



Source: sciencemag.org

A Case Study 1: Predicting crimes in LA and Denver

Predicting Model Data Outcome **Apriori algorithm Spatial and temporal** Type of crime Potential crime type in criminal hotspots a specific location Occurrence time within a particular time in the future **Crime location Naive Bayesian Crime type prediction**

Article "CRIME PREDICTION BASED ON CRIME TYPES AND USING SPATIAL AND TEMPORAL CRIMINAL HOTSPOTS". Almanie, Tahani, Rsha Mirza, and Elizabeth Lor (2015)

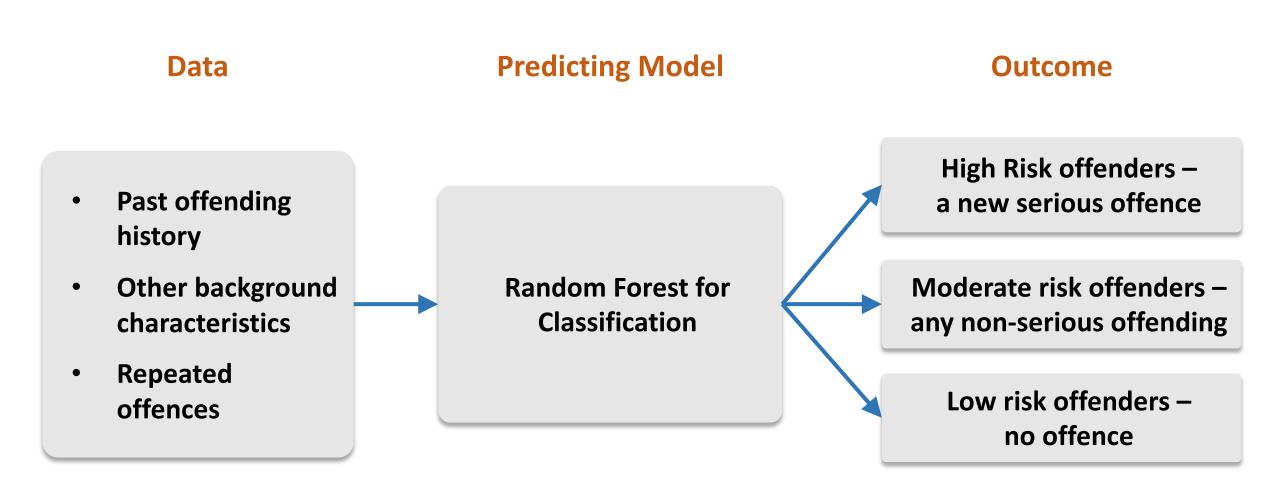
A Case Study 2:

Predicting crimes using deep learning

Predicting Model Outcome **Data Deep Neural Network Spatial feature group Crime statistics Probability of crime Demographics Temporal feature** and non-crime group Weather occurrences per region **Environmental feature Economics** group

A Case Study 3: Harm Assessment Risk Tool (HART)

Predicts the risk of convicts reoffending (to be implemented in Durham, UK)



A Case Study 4: Predictive Policing Software (PredPol)

Research project between the Los Angeles Police Department and UCLA

Assumptions

- Weather affects crime
- Offenders search locally their targets
- Repeat victimization (broken window theory)
- Near-repeat victimization (effects on neighbors)
- Field tests across 3 LAPD Divisions (21 months period)
 - Reduction of 7.4% in crimes
- The research lead to the creation of PredPol, The Predictive Policing Company.
- PredPol is deployed in over 50 police departments

Conclusions

• Pros:

- Optimal allocation of police patrols
- Prevent organized crime
- Tool for Public Policy

• Cons:

- Crime displacement
- Risk of false positive/negative
- Risk of bias

