

IMPACTS OF PREDICTIVE TECHNOLOGIES

COMPONENTS OF PREDICTIVE TECHNOLOGIES

- What is the tool predicting?
- What types of data are being used for prediction?
- What is the selection of data being used?
- What boundaries in space are being used to aggregate data?
 - What are the spatial impacts of the prediction?

How does space shape predictive technologies and how do the predictions impact communities in space?

Toolkit designed by:

Shubhangi Gupta

PhD Student, Georgia Tech

Yanni Loukissas

Associate Professor, Georgia Tech

PREDICTION GOAL

What is the tool trying to predict? How does the prediction impact neighborhoods?

Why do we want to predict crime in space? Does it align with the public safety needs of various neighborhoods? How can predicting crime help neighborhoods? How can it harm neighborhoods? How does the act of labeling a space as a crime hotspot change the space? Is crime a feature of space? Why? What else is a feature of space that needs to be considered?

DATA TYPE

What type of data is the tool using to make a prediction? How do historical and current discriminatory practices impact this type of data?

Does this data show spatial and temporal patterns that can help predict crime in space? Are these patterns a result of discriminatory practices? What other patterns exist in this type of data? What are the systems in place that lead to the collection of this data? How are these systems just or unjust?

DATA SELECTION

What is the selection of data being used by the tool? How does the selection of data impact people and neighborhoods?

What data are included and what are not? Why? What are the data sources? What are the limits of the data sources? What information is difficult to quantify cannot be part of a data entry? How far back in time is the data from? How do spatial changes over time impact the crime predictions? Which spaces are impacted most by data selection processes?

DATA AGGREGATION

What boundaries in space are being used to aggregate data?

How does the choice of spatial segregation impact neighborhoods? Is the crime predicted for a block, a street, a neighborhood? How is the data aggregated spatially? Do the spatial boundaries reinforce existing boundaries of segregation such as redlining, public transportation routes, etc? What new boundaries along crime do the aggregations form and who would these boundaries impact?

PREDICTION IMPACTS

What are the real-world impacts of the tool? How are these impacts disproportionately distributed in space?

What makes the use of this tool successful? How is the success being evaluated? How does the knowledge of crime predictions impact the people who act on the predictions of the tool and their perspective of various spaces? How does it impact the spaces that are being evaluated by the tool? Which spaces suffer when the crime prediction is incorrect and how?

Predictive technologies for public safety

Place-based Predictive Policing

These tools attempt to predict the location and time of future crimes. These predictions are often used to deploy police forces with the hopes of improving efficiency and objectivity in policing.

Use in ATL: A tool named Predpol (now Geolitica) was used by APD from 2013-2016.

Inequitable effect example: The success rate of Predpol in Plainfield, New Jersey was less than half a percent¹. Predpol predicted 1940 crimes and 11 crimes in two neighborhoods in Plainfield that are less than a mile apart. These neighborhoods had 0% and 63% white residents respectively².

Gunshot detectors

These tools attempt to identify the sound of gunshots. The detection is then used to dispatch police officers rapidly and with more accuracy than traditional 911 calls.

Use in ATL: A tool named Shotspotter was used in Atlanta once in 2018 for a year and another time in 2022 for 3 months.

Inequitable effect example: Michael Williams was wrongfully arrested and he spent a year in jail because a Shotspotter analyst changed the classification of a sound from firecracker to gunshot. This classification was the only piece of evidence presented against Michael Williams³.

Video Surveillance and Facial Recognition

Surveillance cameras are placed around a city to record and detect people that match specific criteria. They are supported by facial recognition tools that can identify individuals by searching a database of 30+ billion images.

Use in ATL: In 2019, Atlanta bought three 1-year licenses of facial recognition tool called Clearview AI. Atlanta has an active initiative called 'Connect ATL' through which it has access to over 18,000 surveillance cameras.

Inequitable effect example: Randal Reid was wrongfully identified by a facial recognition system and spent nearly a week in jail because he bore resemblance to a suspect who had been recorded by a surveillance camera⁴.

License Plate Readers

These tools consist of computer-controlled camera systems, that read the tags on a car, and checks if there are any previous issues associated with it.

Use in ATL: The Atlanta Police Department scanned 405,815,610 license plates using automated license plate readers in 2019. The number of readers continue to grow.

Inequitable effect example: Brian Hofer's rental car that was previously stolen and recovered was identified by a license plate reader and led to a guns-drawn confrontation with the police⁵.

1. <https://www.wired.com/story/plainfield-geolitica-crime-predictions/>
2. <https://themarkup.org/prediction-bias/2021/12/02/crime-prediction-software-promised-to-be-free-of-biases-new-data-shows-it-perpetuates-them>

3. <https://apnews.com/article/artificial-intelligence-algorithm-technology-police-crime-7e3345485aa668c97606d4b54f9b6220>
4. <https://www.nytimes.com/2023/03/31/technology/facial-recognition-false-arrests.html>
5. <https://www.nytimes.com/2019/04/23/opinion/when-license-plate-surveillance-goes-horribly-wrong.html>