Group 3 Extended Abstract   
File: Implicit Biased in Predictive Policing

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# Abstract

# Data science has been proven beneficial in a myriad of ways in the recent decade, however if not careful, data can be used to reinforce prejudice. Predictive policing systems such as Predpol fall victim to such prejudice and have been shown to unearth racial and class-based profiling. We will look at the state of predictive policing, examine algorithms’ purpose, and the benefits of protecting the public. The viewpoints around data sets can vary greatly, to examine the ethics we will take a social construct and a data science view around the controversial algorithms. We will show you how these biases influence human interaction and stoke tragic events. Hopefully with more research, accurate recording, and a more objective approach, law enforcement can use data science in a way to protect the people without ethical complications. This will in turn lead to a greater human element of policing.

# Author Keywords

Predictive policing; data science; biased; BLM; dual discrimination.

# ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; See http://acm.org/about/class/1998 for the full list of ACM classifiers. This section is required.

# Introduction

# Predictive policing methods are used throughout the US to try and predict and stop crime. With the use of predictive algorithms, police can find potential crime "hot spots" and dispatch officers appropriately. The use of such methods however has shown an ingrown biased towards lower income areas and encode racial profiling.

# Black Lives Matter and Predpol

**Poster chart**: The BLM movement and Predpol is a great example of how we let data manipulate our actions causing us to look for bias to fit the data and the harmful and sometimes tragic results.

**Correlation does not imply causation:** In the research paper “Discriminatory Dualism” the effects of overpolicing and underpolicing are studied to show how each feeds our deeply ingrained racial and gender biases to keep harmful stereotypes in place. After tragic events occur from overpolicing, equally harmful underpolicing occurs afterwards in the form of unsolved homicides.

**Silver lining?** In the timeline of BLM shootings as shown in the chart on our poster, we see that this theory of underpolicing could be breaking out of this “dual discrimination” cycle.

# What is Predictive Policing?

Predictive policing is a relatively new concept that has been developed in the US and UK to help predict where crime is most likely to occur through the use of collected past data using an algorithm. Data science is used to extract patterns in the data in order to help police departments dispatch offers to areas that are predicted to have more crime or where crime is potentially going to be committed. There are various programs that have been set up to help in the aid of preventing crime or predicting suspects who are likely to commit crime.

## Predpol

Predpol daily predicts hot spots on a map where crime is likely to occur for that day. This can be a small area such as a 500 by 500 square foot radius. Police departments then use such reports to deploy officers out to that area to help prevent crime from occurring before it even begins.

## Strategic Subjects List (SSL)

Another example of predictive policing methods includes the Strategic Subjects List (SSL) which was used in Chicago by their police department in order to help predict suspects who were likely to be at risk for gun violence in attempt to reduce gun violence in the area. Using past crime stats and criminal profiles, they were able to come up with a list of potential suspects. They also used attributes such a social network usage, arrest or shooting record of acquaintances, or by geographical acquaintances.

A close up of a logo

Description automatically generated

**Figure 1**: This is an example of the predictive policing process. There are four cyclical steps: Data collection, analysis, police operations, and criminal response (Walter, McInnis, 2013).

# Issues with Current Predictive Policing Methods

The use of such predictive policing methods has proven to inflict a social and racial biased. The more prejudice a society or area had, the more likely that prejudice will be baked into the predictive policing algorithms. There are many factors that contribute to a biased system:

* Past data using crime history that is already biased is likely to predict more biased feedback.
* Systems tend to predict crime in more disadvantaged areas, which eventually leads to more levels of reported crime in those areas. This leads to a self-fulfilling prophecy.
* Sending more police to certain areas causes a distrust between the police force and the community being over-policed.
* Using acquaintances or other attributes such as where a person lives or how close they live to people with a criminal background are not a fair judgement of a person being likely to commit a crime themselves. This leads to false predictions.
* Using predictive policing methods tends to target mostly young men of color.
* Individuals are treated differently not because of what they have done but because of what they might be predicted to do.

Racial and social biased become ingrained in these predictive methods and without change they will continue to work in such a way (Keheller, 2018, p. 195).

# Predictive Policing Myths and Mistakes

Although predictive policing has shown a lot of potential and gotten attention throughout the years, there are a few common myths that people have, most of which derive from people having unrealistic or to high expectations. There are four common myths regarding predictive policing:

* The computer can predict the future.
* The computer will do all the work for you.
* This type of predictive technology is expensive.
* Predictions will automatically lead to a reduction in crime.

Predictive policing methods don’t predict the future, they can only attempt to predict the risk of potential future event, not actual events. Secondly, there still takes a lot of human critical thinking and analysis when reading the result given from these algorithms. Thirdly, most police agencies don’t need the most sophisticated software, and the ones they would need are actually not too expensive. Lastly, predictions don’t necessarily cause a reduction in crime, they are only predictions. It is what we do with the information that matters.

Common mistakes are made when using predictive policing methods. This can often lead to incorrect information or inlaid biased. The following are common pitfalls that law enforcement agencies tend to fall accustomed to:

* Focusing on accuracy rather than utility.
* Relying on poor-quality data.
* Misunderstanding the factors behind the prediction.
* Underemphasizing assessment and evaluation.
* Overlooking civil and privacy rights.

Currently, the U.S. Supreme court have ruled standards for reasonable suspicion are more relaxed in “high-crime areas” but what the definition of such areas are up for subjective interpretation (Walter, McInnis, 2013).

**Policy and Enforcement**

Predictive policing is a tool that supports law enforcement focus, added with a problem-solving approach to maximize their impact while minimizing collateral effects on the community, has a greater success at reducing crime, specifically violent crimes. This section will focus on a zero-tolerance approach, while later we will describe the problem-solving approach. With a zero-tolerance approach, police use aggressive order maintenance strategies, and the opposite occurs. (Abt, Windship, 2016) More importantly, the collateral damage is greater.

The war on drugs is an example of the zero-tolerance policy, where there is heavy focus on mandatory sentences, aggressive policing, such as Stop and Fisk practices. In 1967 the president’s commission on enforcement and the administration warned about the consequences of the heaving head hand policing strategies. (Swan, 2020) “ Because officers are offered no clear parameters regarding who to stop and frisk and are instead left to rely almost solely on their own judgment, implicit biases, which may be subconscious, have a profound effect on their decision-making.” (Stack, 2016) When analyzing the war on drugs enforcement there is strong evidence of implicit biases, with the high criminal records rates for people of color, compared to whites. Studies from the National Survey on Drug Use and Health: National Findings, show that people of all colors use and sell illegal drugs at remarkably similar rates. The enforcement and prison sentences do not line up with those numbers, three-fourths of all people imprisoned for drug offenses have been Black or Latino. The use of the criminal justice system to disenfranchise a subgroup of the population is often referred to as The New Jim Crow. (Alexander, 2012)

The zero-tolerance policy bias as shown in the incorrect risk prediction of people that might reoffend in the algorithm called COMPAS. COMPAS is used in the sentencing and parole hearings of people convicted of a crime. COMPAS is twice as likely to mistakenly identify white defendants as a low risk for committing future crimes, and twice as likely to tag a black defendant as a high risk incorrectly (Yapo, Weiss, 2018).

There is a similar policy called the broken window theory relating to the quality of life, which focuses enforcement on non-violent crimes, such as panhandling, disorderly behavioral, public drinking, and street prostitution (McKee, 2018). There is no clear evidence there is a decrease in violent crimes by the policy itself, but with a problem-solving approach at a micro level, violent crimes can be reduced with other interventions. (Rowan, 2017)

**Implicit Bias in Decisions**  
Studies have been conducted on implicit bias with White and Black images.

* Found that college students and police officers alike were faster to identify images of weapons as they became de-pixelated when they were preceded by subliminal images of Black faces, as opposed to White faces
* Found that when police participants are presented with images of Black and White men who are holding either guns or non-guns objects and told to “shoot armed targets”. Respond faster or more accurately when the target is consistent with prevailing racial stereotypes.
* Found that police officers were more likely to report that Black (and, among them, more stereotypically Black) faces looked like criminals.
* Found explicit stereotypes of African Americans as dangerous, violent, and hostile (Spencer, Charnonneau, Glser, 2016).

These studies are to show implicit bias of negative stereotypes and subconscious bias in quick decisions. It is important to note that stereotypes can be internal. Social norms or daily work experiences will affect implicit bias reaction times. The studies participants were not all one ethics group, but similar reaction times.

**Reducing Bias with a Problem-Solving Approach**

With a lack of data of police uses of force (Fryer, Jr, 2016), recruitment struggles of police officers, military style training, and aggressive policies are in place (White, Escobar, 2008). Finding other successful means to reduce crime should get more attention by analyzing the mass incarceration, and aggressive policing. With hot spots being referenced as a war zones, and police enforcing law and order. What does the military do after a campaign to restore law and order in a foreign nation? The process is to rebuild and pass on the responsibility, and usually there is no one way to rebuild a nation, military acts as support during the rebuild process, each country has its own way of life and their involvement is important to the success of post military intervention. (Tunk, 2016) Reducing bias outcomes is best done by improving programs by analyzing the human factor of implemented Criminal Justice policies. Police have a burden of more than law and order, and more of the spotlight is on the negative. With more help in the problem solving, police can focus on prevention through relationships with communities.

**Rebuilding successes:**

* Summer jobs for youth, the youth had a 43% lower chance of violent crime arrest over a 16-month period. (Heller, 2014)
* Becoming a Man program reduced violent crime arrest by 45-50% and improve educational outcomes (Heller, Shah, Guryan, Ludwig, Mullainathan, Pollack, 2015).
* HOPE VI program, demolition public housing and relocating with housing vouchers, more than 60% chance of lower violent crimes. (Sackett, 2016)
* Immigration studies show how immigration is strongly associated with lower rate of violent crime (Sackett, 2016).
* Prison as rehabilitation, and not as punishment proven to have a greater reduction on violent crimes and reoffences (Alexander, 2012).

# Conclusion

In using past data to mold these predictive methods, police systems are inherently ingesting biased into an already unjust system. They end up becoming a self-fulfilling prophecy that results in further condemning of minorities and those in poverty-stricken areas. With more transparency to the public, interdisciplinary teams, less biased data, and fair and accurate data analysis, criminal justice systems can begin to have a more tolerant and helpful tool for aiding in the minimalization of crime in the us. By analyzing past data, we can also uncover more failed policing methods that incur racial biases.

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