

“Increasingly sophisticated intelligent technologies can provide increasingly better solutions to any real-world problem.” Where and why is this statement both accurate and inaccurate? Who is affected by such claims?

The Promise and Perils of AI in Crime Detection

In the book “The Meaning of It All”^[1], Richard Feynman reflects on his contribution to the Manhattan Project and the ethical responsibility that scientists carry, stating “To every man is given the key to the gates of heaven; the same key opens the gates of hell.” Whilst true of any novel technology, nowhere does this apply more strongly than in the field of AI, where intelligent technologies are being applied in every aspect of our lives, not necessarily for better. This double-edged view of AI can be easily demonstrated through its attempted application in law enforcement, specifically predictive policing (a data-driven approach to forecasting criminal activity), which will serve as the focal point of this analysis.

From a purely theoretical perspective, early studies of predictive policing show that some improvement in crime detection can be observed, so such automated systems are successful in accomplishing their mission. However, as can be expected from an intelligence with no understanding of human values, such systems are already posing a serious threat to privacy as well as further perpetuating existing socioeconomical biases, even at this earliest stage. Furthermore, all of this follows the assumption that the system works as intended and is not intentionally misused. This analysis will discuss the current state of predictive policing, its effectiveness, and how society would have to change to accommodate such systems, ultimately concluding that while AI may have a future in law enforcement, its drawbacks far outweigh its benefits to be considered an improvement in the present.

An Introduction to Data-Driven Crime Detection

In its broadest definition, predictive policing is a law enforcement strategy that employs statistical analysis, machine learning algorithms, and large quantities of data to anticipate where crimes are likely to occur, or identify individuals at higher risk of criminal involvement. The main incentives are to optimize police resource allocation (efficiency) to discourage criminals (deterrence) and address offences swiftly (responsiveness). However, the consequences of said policing vastly differ based on what data is being processed. So-called “hot spot policing”^[2] uses historical crime data to identify high-crime areas for targeting, whereas more sophisticated models such as CompStat^[3], also process public health information, and socio-economic factors. In the most extreme and controversial cases, such as with Palantir^[4], social media and surveillance data may also be used. Another factor is how the results of the analysis are used; it is one thing to identify crime hotspots and another to actively arrest high-risk individuals (predictive profiling) because the system predicts that they might commit a crime. At what point is it worth sacrificing our freedoms for safety? The next few sections discuss what life would be like if predictive policing became commonplace, and hence, if we could truly call that a “better solution” to the question of public safety.

Section 1: The Ambiguity of Predictive Policing’s Effectiveness

Naturally, a variety of studies have been conducted to assess the tangible impact of predictive policing on law enforcement. Nevertheless, despite over a decade of research, it is clear that the science community still cannot agree on how effective predictive policing truly is. Aside from testing different systems in different locations, the main problem is that of causation: it is impossible to show that a change in crime rates is a result of predictive policing (it is especially hard to assess crime prevention; one cannot measure something that has not happened). As consequence, research into the effectiveness of predictive policing is frustratingly contradictory and shows all sorts of results.

Focussing on NYPD’s Domain Awareness System (DAS) model, (Levine, E.S. *et al.*, 2017)^[8] found a significant improvement in crime reduction in the New York area, claiming that the overall crime index has fallen by 6% since the deployment of DAS. Though impressive, it is impossible to tell if this is a direct consequence of the model and not simply the result of increased police presence. (Gorr, W. *et al.*, 2019)^[9] also tested an autoregressive model in New York and Chicago, also showing that crime could be predicted to a high accuracy, however it remains to be seen if the implementation of this model would actually lead to lower crime rates.

These results are promising, however we need to show that using these models results in actual crime reduction. (Hunt, P., Saunders, J. and Hollywood, J.S., 2014)^[5] evaluated the experimental results of the PILOT project in Shreveport Police Department, the result of which showed no significant improvement in crime reduction. A later study (Saunders, J., Hunt, P. and Hollywood, J.S., 2016)^[6], this time on the CompStat^[3], system also concluded with no evidence to suggest crime rates had improved.

More recently, (Lee, Y., Bradford, B. and Posch, K., 2024)^[7] conducted a comprehensive review on the state of predictive policing. The review revealed greatly mixed results, however the authors remarked that out of their 161 identified studies, 155 were retrospective studies (tested on past, rather than real-time data), demonstrating the lack of proper evidence for predictive policing actually improving crime rates.

It should be noted that generally, new studies are showing better results, nevertheless, when evaluated as a totality, the benefits of current systems appear modest at best. This could be the result of the statistical analysis being too shallow to measure a correlation, yet still it does seem like the application of these systems is not the game-changer that many were expecting.

Section 2: Bias, Discrimination and the Legal Backlash Against Predictive Policing

A result that is less ambiguous however, is that the use of predictive policing is directly reinforcing existing racial and socioeconomic biases. (Saunders, J., Hunt, P. and Hollywood, J.S., 2016)^[6] concludes by stating that “one potential reason why being placed on the list resulted in an increased chance of being arrested for a shooting is that some officers may have used the list as leads to closing shooting cases”. (Siklossy, G., 2019)^[10] and (Williams, P. and Kind, E., 2019)^[11] both claimed that “predictive policing resulted in an increase in levels of arrest for racialised communities by 30%”. (Garvie, C., Bedoya, A. and Frankle, J., 2016)^[12] also points out that known biases in facial recognition unfairly disadvantage people of colours in cases where surveillance data is actively being used as part of predictive policing systems.

A number of studies, such as (Brantingham, P.J., Valasik, M. and Mohler, G.O., 2017)^[13] found no evidence of predictive policing perpetuating existing biases, however there are far less papers with no evidence for proof of bias than proof of efficiency. Fortunately, recent progress in (Almasoud, A.S. and Idowu, J.A., 2024)^[14] has show that it may be possible to account for this bias and make these systems fairer without sacrificing accuracy. However, until this happens, the benefits of slightly improved crime detection (at best) do not seem worth disadvantaging minorities that are already being discriminated against.

These concerns are so serious that drastic legal measures have been taken to restrict such technologies being used. The European Parliament’s AI Act^[15] represents a significant shift in attitude towards predictive policing, completely banning the use of predictive policing systems. MEPs voted to prohibit AI systems used for assessing the likelihood of individuals reoffending, citing risks of discrimination and infringement on rights like the presumption of innocence. This reflects growing concern about biases in predictive policing and its potential to perpetuate systemic inequality across Europe. The legislation also mandates transparency, giving individuals the right to challenge AI-driven decisions in justice contexts, marking a firm legal stance against predictive policing in the EU.

The European GDPR^[16] and LED^[17] intersect when handling data in predictive policing. The GDPR generally applies to private actors, while the LED governs law enforcement data. When private vendors process law enforcement data (e.g., predictive policing algorithms), determining which legislation applies becomes challenging. This complex legislative landscape reveals a potential legal gap for privately developed predictive policing tools, which might sidestep GDPR protections if not adequately regulated under LED.

Section 3: Our Troubling Future Alongside Predictive Policing

It is very likely that, despite all of the potential risks and strict legislation, predictive policing is the inevitable future of law enforcement. Collecting private information about individuals, such as from social media activity or CCTV, is not technically illegal since this information is public knowledge. In this information age, data is proving to be a most valuable commodity; being used by nearly all companies to personalize recommendations and advertisements to drive revenue. There is a huge incentive to collect and sell this data and so bad actors will always look to continue this, legally or otherwise, even if governments themselves do not. We can see this already happening with the

Palantir^[4, 18] controversy, where the company was found collecting, sifting and selling huge quantities of personal data to governments.

Whilst still technically falling within the realm of being legal, such actions are certainly immoral. Most governments and other such bodies regard personal privacy as an inalienable right; after all, privacy is the ability to express one's free will without fear of reprisal or being watched (as this indirectly influences people's actions: the Hawthorne effect^[19]). Ultimately, the goal of law enforcement is to protect the individual's rights and, by extension, their privacy. Therefore, by sacrificing that privacy, through collecting our demographic, socioeconomical and personal data to inform predictive policing models, these intelligent systems are eroding the very qualities that they are designed to protect.

So, if these systems are truly inevitable, what should be done, and how will society change? A point that is echoed across most review papers on the topic is a need for transparency (as a legal obligation), so that the average person is fully aware of what data is being collected, how it is being processed and how law enforcement is allowed to use this data. This again, is all theoretical and idealist; the Palantir case shows that people's personal information will continue to be collected without their consent.

Instead, it is likely that the result will be similar to how people react to CCTV in cities: people who trust law enforcement and the government just accepted that they are being watched for their own good. However, predictive policing is far more invasive than CCTV and likely far fewer people will be willing to just accept it. Even now movements like the Stop LAPD Spying Coalition^[20] are appearing to push back against mass surveillance. It is also possible that, as social media data is used more aggressively, people will turn to more secure and encrypted methods of communication, which ironically renders such systems obsolete. In any case, the wide-spread implementation of predictive policing, whilst carrying some benefits, will make some aspects of modern life, that we currently take for granted, significantly harder.

Conclusion

Based on the evidence discussed, it is clear that the benefits of current predictive policing systems (modestly improving the effectiveness, deterrence, and responsiveness of law enforcement) are not enough to justify the very serious drawbacks of implementing such systems (actively reinforcing harmful biases, discrimination and encouraging the immoral invasion of people's right to privacy by governments and corporations). The EU's harsh stance on such systems reflects this concern, as well as the very slow adoption of such systems in the USA (predictive policing is still only used by a handful of departments despite over 15 years of research).

By undermining the public's right to privacy in order protect said rights, intelligent systems are not solving the problem, but simply replacing the antagonist. Moreover, despite being "predictive", these systems only address the action of crime and not the root causes. While crime rates may decrease, this is a game of cat and mouse, and criminals will ultimately learn how to avoid the algorithm's gaze by avoiding crime hotspots.

Despite all of these criticisms, I do believe AI can play a role in improving public safety, but predictive policing is the wrong way to approach it. If instead of predicting crime hotspots for targeted police presence, we predicted which areas are lacking in infrastructure, education or employment, and used such systems to direct funding and aid instead of punishment, the argument of unjustly penalizing certain areas or individuals is no longer valid. Furthermore, this approach would address the main causes of the majority of criminal activity.

It is up to us as a species to decide our future with AI. Currently, it is being used to violate the public's right to privacy, spreading known biases, and undermine the very values it is designed to uphold. It is for these reasons, that I cannot conclude that "increasingly sophisticated intelligent technologies can provide increasingly better solutions to any real-world problem".

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WORD COUNT

- **Abstract:** 259 words,
- **Introduction:** 210 words,
- **Section 1:** 428 words,
- **Section 2:** 422 words,
- **Section 3:** 464 words,
- **Conclusion:** 317 words,

TOTAL: **2100 words**