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We use big data to sentence criminals. But can the algorithms really tell us what we need to know?

By Melissa Hamilton   Jun 06, 2017

This article first appeared on The Conversation.

In 2013, a man named Eric L. Loomis was sentenced for eluding police and driving a car without the owner's consent.

When the judge weighed Loomis' sentence, he considered an array of evidence, including the results of an automated risk assessment tool called COMPAS. Loomis' COMPAS score indicated he was at a "high risk" of committing new crimes. Considering this prediction, the judge sentenced him to seven years.

Loomis challenged his sentence, arguing it was unfair to use the data-driven score against him. The U.S. Supreme Court now must consider whether to hear his case -- and perhaps settle a nationwide debate over whether it's appropriate for any court to use these tools when sentencing criminals.

Today, judges across the U.S. use risk assessment tools like COMPAS in sentencing decisions. In at least 10 states, these tools are a formal part of the sentencing process. Elsewhere, judges informally refer to them for guidance.

I have studied the legal and scientific bases for risk assessments. The more I investigate the tools, the more my caution about them grows.

The scientific reality is that these risk assessment tools cannot do what advocates claim. The algorithms cannot actually make predictions about future risk for the individual defendants being sentenced.

The basics of risk assessment

Judging an individual defendant's future risk has long been a fundamental part of the sentencing process. Most often, these judgments are made on the basis of some gut instinct.

Automated risk assessment is seen as a way to standardize the process. Proponents of these tools, such as the nonprofit National Center for State Courts, believe that they offer a uniform and logical way to determine risk. Others laud the tools for using

big data.

The basic idea is that these tools can help incapacitate defendants most likely to commit more crimes. At the same time, it may be more cost-effective to release lower-risk offenders.

All states use risk assessments at one or more stages of the criminal justice process -- from arrest to post-prison supervision. There are now dozens of tools available. Each uses its own more or less complicated algorithm to predict whether someone will reoffend.

Developers of risk assessment tools usually follow a common scientific method. They analyze historical data on the recidivism rates of samples of known criminals. This helps determine which factors are statistically related to recidivism. Characteristics commonly associated with reoffending include a person's age at first offense, whether the person has a violent past and the stability of the person's family.

The most important predictors are incorporated into a mathematical model. Then, developers create a statistical algorithm that weighs stronger predictors more heavily than weaker ones.

Criminal history, for instance, is consistently one of the strongest predictors of future crime. Thus, criminal history tends to be heavily weighted.

The tool typically divides results into different categories, such as low, moderate or high risk. To a decision-maker, these risk bins offer an appealing way to differentiate offenders. In sentencing, this can mean a more severe punishment for those who seem to pose a higher risk of reoffending. But things are not as rosy as they may appear.

Individualizing punishment

In the Loomis case, the state of Wisconsin claims that its data-driven result is individualized to Loomis. But it is not.

Algorithms such as COMPAS cannot make predictions about individual defendants, because data-driven risk tools are based on group statistics. This creates an issue that academics sometimes call the "group-to-individual" or G2i problem.

Scientists study groups. But the law sentences the individual. Consider the disconnect between science and the law here.

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READER COMMENTS

Thu, Jun 8, 2017　　│　　**Rick Meggison** Philadelphia

> While these "anti-predictive model" claims assert that there are less than perfect reliability, that is true of any tool used for assessment of residivisim. Our tool assessment should focus on the measure of efficasy "above random chance". Once determined, any improvement over random chance makes the tool certified as being a useful component in the decision making process.

Wed, Jun 7, 2017 | **Preston** GA

> I have not studied the algorithms involved with these criminal statistical tools, however, I would like to point out that big data combined with artificial intelligence IS coming to us in a huge way and I don't see how this problem will be ignored by AI. If either Google or IBM decide to market to this sector, you can bet they will have "done their homework" with respect to the G2I issues and incorporated every conceivable variable into their respective algorithms. A negative ruling from the courts may delay big data decision making in sentencing cases, but the tide has turned and this technology WILL be coming to a court near you. Why? Because precrime analysis works, when done properly. https://deepmind.com/ http://www.predpol.com/how-predpol-works/
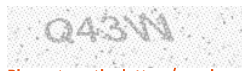
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