

DNA databases as crime deterrent: As more 'cold cases' are solved, are would-be criminals growing wary?

On October 31, 2016, a 21-year-old man from Indiana named Damoine Wilcoxson was arrested after a three-hour standoff with police and charged with two crimes: the murder of John Clements, an 82-year-old man gunned down while getting the mail outside his home in Zionsville, a suburb 15 miles northwest of Indianapolis; and two shootings at local police stations.

The violent crimes, which took place from late September to mid-October 2016, were not initially believed to be connected. But investigators determined that multiple shell casings from the bullets fired at all three crime scenes matched up.

With no obvious connection between Clements' murder and the police shootings, detectives sent the shell casings, along with other crime scene evidence, to the forensics lab, where they were able to identify a clear genetic profile left behind on some items. These genetic samples were then scanned against the Combined DNA Index System (CODIS), a national forensic DNA database used by law enforcement across the country, which led to a direct match with Wilcoxson, whose genetic material was already stored in the police index. On the basis of this evidence, Wilcoxson was charged, tried, and [found guilty of both crimes](#), eventually receiving two consecutive prison sentences totaling 102 years.

Cases like Wilcoxson's are known in law enforcement as "cold hits," where detectives pluck perpetrators out of a genetic index to solve a crime with few leads and no suspects. Since this capability was first introduced in the late 1990s, the prevalence of cold hit cases has steadily risen. Today, with far larger databases and more efficient DNA processing, this tool is seen by some people as a kind of silver bullet for catching offenders, not only within the criminal justice system but also by anyone who has ever watched cable crime shows.

But what if instead of just bringing more perpetrators to justice, the widespread perception of law enforcement's genetic omniscience was also preventing crimes from happening in the first place? Or to put it slightly differently, what if the fear of being done in by DNA is actually holding potential offenders back from criminal behavior? This would seem like an extremely difficult effect to measure, but some researchers are using sophisticated analysis of crime data to argue that it is real, and that it results in lower recidivism rates.



Damoine Wilcoxson. Image: WTHR 13

Just how strong the deterrent effect is, or whether it's any better at discouraging would-be criminals than, say, incarceration — which studies suggest is at best [a weak deterrent](#) — remain open questions. And even if it is more effective, some civil liberties advocates argue that this sort of biosurveillance is likely to weigh more heavily on some segments of the population than others, raising genuine civil rights concerns.

After his arrest in October 2016, Wilcoxson's case prompted a debate in Indiana's Senate about who could and couldn't be added to the forensic DNA database. As it stood, police in Indiana were only allowed to take DNA samples from convicted felons. Wilcoxson's sample, however, had been added to CODIS after he was arrested for, but not convicted of, robbery in Ohio in 2015. Proponents of more expansive DNA collection laws in Indiana were quick to point out that if it weren't for Ohio's more lenient legislation, Wilcoxson might have got away with his crimes. So it was only natural that Indiana soon joined Ohio, as one of more than 30 states that now have "all crimes" DNA collection.

This increase in police authority was part of a broader and ongoing trend in the U.S., where DNA databases have expanded to include incrementally less severe crimes at different rates across state jurisdictions. When Jennifer Doleac, a professor of economics at Texas A&M University, read a New York Times article about this steady expansion across the country, she realized that it offered an excellent opportunity for doing what economists call a [natural experiment](#). By comparing offenders before and after new sampling laws came into place, she would be able to measure the individual effect being swabbed had on future criminal behavior.

For example, she could compare future outcomes for people who served time in prison for burglary and then had their DNA added to a database, versus others who served time in prison for the same crime, but were *not* added to a database. In aggregate, one could surmise the effect of the database itself on recidivism rates.

In her first study, which used criminal history data from seven U.S. states between 1994 and 2005, Doleac [found](#)

that violent offenders who gave a DNA sample were 17 percent less likely to reoffend within the first five years of release than those who did not; serious property offenders were 6 percent less likely to reoffend. In a follow-up study that considered crime rates in Denmark, she again [found](#) that DNA registration reduced recidivism: Those sampled were up to 43 percent less likely to reoffend in the first year. They were also more likely to find employment, enroll in educational programs, and enjoy a stable family life.

These findings were surprising for Doleac. “Going into this, I thought DNA databases didn’t work as a deterrence measure,” she told me. “I really was very skeptical, but the effect sizes on recidivism ... are huge.”

For Doleac, the power of DNA databases as a preventative crime tool is best understood through the lens of behavioral economics, which considers criminal behavior as a rational response to competing incentives, a calculus of “should I, shouldn’t I” based on potential benefits and costs to the would-be offender.

This paradigm was first laid out by Nobel Prize-winning economist Gary Becker, who proposed in his 1968 essay “Crime and Punishment: An Economic Approach,” that fewer people will choose to commit crime when the expected punishment increases. But Doleac’s research suggested that increasing the likelihood of *getting caught* for a crime actually has a bigger impact on future behavior than changing the severity of the sentence.

“This is how DNA databases work as crime deterrents,” she explained. “Once an offender knows that these databases exist, they are wary of getting caught and so they are less likely to commit another crime.”

In 2003, a 22-year-old woman named Katie Sepich was raped and murdered outside of her New Mexico home. Traces of the attacker’s DNA were found under Sepich’s fingernails, which were scanned by New Mexico police on CODIS, leading to a direct match with Gabriel Adrian Avila, who subsequently confessed. Deeply appreciative of seeing their daughter’s killer brought to justice, Sepich’s parents became vocal advocates for expanding forensic databases.

Image not found or type unknown

Image: Flickr user Abode of Chaos

Following passage of a state law a few years earlier, the [Katie Sepich Enhanced DNA Collection Act](#), also known as Katie's Law, was first introduced in Congress in 2010 to provide federal funding for state police forces to do just that. On an episode of the television program "America's Most Wanted" aired that same year, President Barack Obama offered his support for the legislation, proposing that larger databases would help law enforcement "continue to tighten the grip around folks who have perpetrated these crimes." The federal bill was signed into law in 2013.

The history of the U.K.'s genetic index, however, suggests a more complex story. The Brits were trailblazers in genetic policing, establishing their National DNA Database (NDNAD) in 1995. The database quickly became the largest in the world, and by 2006, contained 2.7 million people, more than 5.2 percent of the population.

The database had some early success in matching offenders to crimes, particular property crimes, but as it expanded, statistics show that it actually became less effective. In fact, wrote Carole McCartney, a professor of law at Northumbria University, in a paper earlier this year: "During the time of rapid expansion of the database, the number of crimes detected using the NDNAD fell in 2004/05 and did not significantly increase in the following three years."

Similar effects hold across Europe and the U.S., where larger databases do not correlate to a more efficient crime fighting tool, and can even [lead](#) to increased margins of error. Some have suggested that this reduction in efficiency occurs in part because forensic labs become overburdened with new samples,

creating a backlog of unanalyzed genetic data, rendering the bigger database less efficient in finding matches. Moreover, as databases grow and labs become overburdened, so do the chances of inaccuracies and false positive matches.

But for McCartney, this reduced efficiency is intimately connected with the database's capacity to work as a crime deterrence tool. "There's a risk that people will just say, oh well if we now have 9 million [people] on the DNA database, how come we haven't solved crime yet? This will reduce public confidence in the DNA database as this silver bullet in finding a criminal," McCartney said. "You lose public confidence, which in turn will reduce its so-called effectiveness as a deterrence measure."

Doleac concedes that the current deterrence effect identified in her research is at least partially caused by the "CSI-effect," a term criminologists use to refer to an inflated belief in a forensic tool's capacity to solve a case as a result of its media representation. But Doleac added that this effect — which functions subjectively in the mind of an offender when they are interacting with law enforcement — might be more powerful and persistent than some imagine.

"I think that when the police give someone a [saliva] swab and tell them they're being added to the DNA database, the image pops into their head of these crime dramas on TV," she said. "They think that as soon as they commit any new crime, their photo will appear on police station walls and they'll get caught. This is an overestimation of the tool's power, for sure, but I doubt that the majority of people who get arrested will ever go looking in science journals or crime statistics to correct this."

In 2013, President Obama signed into law a bill to provide federal funding for states to implement DNA collection programs for people arrested for serious crimes.

Beyond the question of effectiveness, as forensic DNA databases have expanded across the U.S., there has been an ongoing legal debate about whether such surveillance techniques violate a constitutional right to privacy.

In 2009, Alonzo King was arrested on assault charges in Wicomico County, Maryland, and had his DNA sample taken, entered into the forensic database, and then matched to crime scene evidence from a 2003 rape case, for which he was then convicted. King filed a motion to suppress the DNA evidence, arguing that it infringed on his Fourth Amendment rights. The motion was initially denied in the trial court, but later granted in the Maryland Court of Appeals. The State of Maryland then appealed the ruling to the U.S. Supreme Court, where the case was heard in 2013.

A 5-4 majority held in favor of Maryland, ruling that taking DNA samples was "like fingerprinting and photographing, a legitimate police booking procedure that is reasonable under the Fourth Amendment." But the dissenting judges, led by Antonin Scalia, argued that using DNA in "cold hit" searches was an unconstitutional invasion of privacy that eroded the presumption of innocence.

"Perhaps the construction of such a genetic panopticon is wise," Scalia wrote in his judgment, referring to Jeremy Bentham's design for a prison in which one warden sits in the middle of a circular building, giving the prisoners the impression of being surveilled at all times. "But I doubt that the proud men who wrote the

charter of our liberties would have been so eager to open their mouths for royal inspection.”

But Doleac says there is a widespread misunderstanding about precisely how invasive [DNA](#) databases are. “People tend to think that this DNA is being used by the government to decode sensitive information about them but it’s not,” she said. “In my view, the privacy costs of [DNA databases] are pretty low relative to things like having CCTV cameras everywhere,” which most people, she said, have “become used to at this point.”

In a [2017 study](#), Doleac also looked at how much these databases may save us in purely economic terms: Each convicted felon profile added to a DNA database between 2000 and 2010, she estimated, generated a cost savings of between \$1,566 and \$19,945. From an economic perspective, this offers a powerful argument against historical policy decisions in the U.S. that have aimed to deter criminals by increasing prison time, which [experts say](#) has led to the current mass incarceration crisis.

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But Terri Rosenblatt, supervising attorney of the [DNA](#) Unit at New York’s Legal Aid Society, argues that the “modern technology has made DNA databases more invasive than before.” As they’ve been expanded to include misdemeanor offenses, she explained, they have become racially biased, with an over representation of African American and Latino men, who are disproportionately apprehended by police for minor offenses. (The same is true in the U.K. In 2008, approximately 27 percent of the black population had profiles on the NDNAD compared with just 6 percent of the white population. Young black men were most overrepresented, with 77 percent of the population sampled.) “Over-representation of people of color is even worse where local governments, like NYC, maintain unregulated DNA indexes that include people who have never been convicted, and might not have even been arrested, for a crime,” Rosenblatt added in an email.

According to Marc Washington, project coordinator of Arches Transformative Mentoring Program in New York — which serves teenagers and young adults from ages 16 to 24 who are on probation — this takes a toll on communities that bear the burden of surveillance anxiety. “These techniques, they are used, they create an atmosphere of fear in certain neighborhoods,” he told me. “They are agents of control against black and brown men and they are not being used equally across the board.”

Doleac concedes that the databases reflect the racial biases that already exist in law enforcement, but suggested that it’s possible they could benefit these communities in the long run. “We don’t know for sure yet what the effects are by race or other demographic groups,” she said.

For the moment, however, this surveillance tool is fostering further mistrust between already marginalized communities and law enforcement. An apt comparison, Washington proposed, is stop and frisk, a policing method that was supposed to reduce crime but was used to target and intimidate African American and Latino men in New York and was ultimately found to be unconstitutional.

For Washington, at the root of this type of law enforcement strategy is the belief that empowering police with new techniques will fix crime, when in his experience, the most profound deterrence happens by empowering people within these communities. Indeed, the program that he directs at Rikers Island, which offers mentoring to young offenders from people of a similar background, has a significantly more powerful deterrence effect than DNA databases, [reducing](#) one-year felony reconviction by up to 69 percent.

“We try to prevent people from getting in trouble by getting to know them and getting them to trust us, and letting them know that they have someone,” he said. “It is about looking out for the people, not watching over the people, which is like the opposite of a mouth swab and putting someone in the system.”

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