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Doleac: DNA Databases Deter Crime

This spring, Oklahoma became the latest state to require DNA samples from at least some arrestees. All states require DNA profiling of convicted offenders, and over 30 states now have arrestee DNA laws on the books. The DNA profiles are added to computer databases, where they are compared with DNA evidence from crime scenes. One of the main arguments in favor of adding more individuals to DNA databases is deterrence: DNA profiling increases the probability that you will get caught if you commit a new crime. But there are many reasons that someone might break the law - is this one change enough to turn would-be criminals into law-abiding citizens? For many profiled offenders, the answer is yes.

In a study recently accepted by the *American Economic Journal: Applied Economics*, I consider the effects of DNA databases on criminal behavior and crime rates in the United States. In the U.S., DNA databases are controlled by the individual states, but the FBI links them to form a nationally-searchable network called CODIS. (You might know CODIS from its frequent mentions on TV crime dramas.) As I mentioned before, all states now record

DNA from convicted offenders - but the rollout was gradual. For instance, most started with serious violent offenders, then added less serious offenders such as robbers, burglars, and other property offenders. These incremental expansions created opportunities to test the effect of DNA profiling on criminal behavior.

Consider a state that expands its database to add convicted car thieves (including new convicts and those currently incarcerated). Car thieves released from prison just after the expansion went into effect are added to the database (they'll be the treatment group), but those released just before the expansion are not (they'll be the control group). Those groups of offenders are very similar in all other ways, and so any subsequent differences in behavior can be attributed to the DNA requirement.

I find that DNA profiling reduces the probability of future convictions by 17% for serious violent offenders and by 6% for serious property offenders. These lower rates of new convictions are particularly striking given that DNA profiling should increase the probability that reoffenders get caught for any crimes they do commit. So, these are likely underestimates of the true deterrent effects of DNA profiling.

You might worry that if these car thieves are staying home because the police have their DNA, others will take advantage of the car theft opportunities, leaving the overall

number of car thefts unchanged. Or you might think that DNA-profiled car thieves will just be more careful about leaving DNA evidence, and continue stealing cars at the same rate as before, only more undetectably than ever. But not so - DNA databases led to big reductions in overall crime: In my paper, I show that as databases in the U.S. grew between 2000 and 2010, violent and property crime rates fell as a result. Criminality wasn't redistributed or retooled, it was reduced - partly by deterring potential reoffenders, but surely also by catching serial offenders more quickly using DNA database matches.

While I was only able to consider the addition of felony convicts, I find no evidence that DNA profiling had what economists call "diminishing marginal returns". That is, adding less-serious offenders such as thieves and burglars reduced crime just as much as adding the most serious violent offenders. The latter may be spending most of their lives in prison, where they aren't a threat, while the former return to the streets relatively quickly and so are more able to reoffend. (Of course, we would expect the effects of DNA profiling to decrease if we begin adding groups with lower probabilities of committing new crimes, but we don't seem to be at that point yet.)

These results are important because they speak to the power of technology to reduce criminal behavior at extremely low financial cost and without relying on incarceration. Some worry that DNA profiling is an

invasion of privacy - but a DNA profile is simply an identifying string of numbers, similar to a Social Security Number; it does not contain any sensitive information about a person's genetic code. Relative to other high-tech tools such as surveillance cameras and GPS monitoring, the privacy costs of DNA profiling are very small.

My research suggests that expanding DNA databases to include felony arrestees, misdemeanor convicts, and similar groups, would likely have large public safety benefits. In a new project, Rasmus Landersø, Anne Sofie Tegner Anker, and I look at the effects of DNA databases in Denmark, where administrative data contain rich information on all aspects of offenders' lives. In that country everyone charged with a crime eligible for at least 18 months in prison (similar to a felony in the U.S.) is added to the national database. Results are preliminary, but so far we're finding that DNA profiling there has similar deterrent effects on crime as in the U.S. It's exciting to think what these changes in criminal behavior -and the reduction in prison time - could mean for society, there and here. Will individuals who are deterred due to DNA profiling have better education and employment outcomes? Will their kids be better off? These are questions we hope the Denmark data will answer. In the meantime, we know that one big benefit of this technology is less crime, without putting more people in prison.