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THE BENEFITS OF ELIMINATING COLORADO'S SEXUAL ASSAULT KIT BACKLOG

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ABOUT THE AUTHORS



Mitch Morrissey is a CSI Owens-Early Criminal Justice Fellow. Morrissey was the elected District Attorney for the 2nd Judicial District (JD), from 2005 to 2017. Prior to 2005, Mitch was a trial lawyer in the Denver District Attorney's office beginning in 1983. Mitch is internationally recognized for his expertise in DNA technology, applying that technology in criminal prosecutions, and working to ensure that DNA science is admissible in court. He has trained law enforcement officers and prosecutors throughout the United States, in the Middle East, in Central America, and Canada. A veteran prosecutor, Mitch introduced the first DNA evidence used in a criminal trial in Denver. The DNA Resource Section at the Denver DA's website became a resource for people interested in forensic DNA throughout the world.

Mitch spearheaded the Denver Cold Case Project, which reviewed over 4,200 unsolved sexual assaults and murders using DNA technologies to solve old cases. In addition, Mitch and the Denver Police Crime Lab introduced the use of DNA to solve burglary cases and other property crimes. During his tenure as Denver District Attorney, Mitch became the leading proponent in the United States of using Familial DNA Database Searches to solve violent crime.

After leaving the Denver D.A.'s office in 2017, Mitch co-founded United Data Connect, which has become a leader in solving cold case murders and rapes using investigative genetic genealogy. Through a unique partnership with law enforcement agencies across the county, United Data Connect has solved cold case murders and rapes, and has identified the remains of unidentified individuals. United Data Connect has also become a leader in training genealogists to conduct investigative genetic genealogy efficiently and effectively.



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ABOUT COMMON SENSE INSTITUTE

Common Sense Institute is a non-partisan research organization dedicated to the protection and promotion of Colorado's economy. CSI is at the forefront of important discussions concerning the future of free enterprise and aims to have an impact on the issues that matter most to Coloradans. CSI's mission is to examine the fiscal impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed on issues impacting their lives. CSI employs rigorous research techniques and dynamic modeling to evaluate the potential impact of these measures on the economy and individual opportunity.

TEAMS & FELLOWS STATEMENT

CSI is committed to independent, in-depth research that examines the impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed on issues impacting their lives. CSI's commitment to institutional independence is rooted in the individual independence of our researchers, economists, and fellows. At the core of CSI's mission is a belief in the power of the free enterprise system. Our work explores ideas that protect and promote jobs and the economy, and the CSI team and fellows take part in this pursuit with academic freedom. Our team's work is informed by data-driven research and evidence. The views and opinions of fellows do not reflect the institutional views of CSI. CSI operates independently of any political party and does not take positions.

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INTRODUCTION

DNA evidence, where it's available, is crucial to solving sexual assault cases—according to one study, it raises the likelihood of a guilty verdict from less than a third to nearly 75%.ⁱ The trouble and expense of processing it, however, can create backlogs that put cases on hold for years. Dozens of state and local law-enforcement agencies have faced this problem over the decades since DNA technology emerged.ⁱⁱ

This year, due in part to years of alleged misconduct by one of its forensic scientists, the Colorado Bureau of Investigation (CBI) found itself with a queue of more than 1,400 untested sexual assault kits and without the means to process new ones promptly.ⁱⁱⁱ The unsolved cases stuck in this backlog represent substantial further crime risks from repeat offenders, delayed justice for victims, and tangible costs to Colorado's economy.

KEY FINDINGS

- By processing all of the 1,369 DNA kits in the state's backlog, Colorado could prosecute up to 200 rape cases.
 - This would also prevent up to 1,030 sexual assaults, 108 other violent crimes, 230 property offenses, and 113 drug/alcohol, public disorder, and other crimes.
- At a testing cost of \$2,000 per kit and adjudication, public-services, and work-loss costs totaling \$82,000 per case, clearing the backlog and prosecuting cases associated with it will cost the state \$21 million. In return, Colorado's economy will eventually save \$234.7 million due to prevention of future crimes.
 - The longer authorities take to clear the backlog, the larger the costs and smaller the savings will become.
- CSI estimates that, by training 15 more DNA scientists over the next year, CBI will clear its DNA backlog of excess kits by July 2027. Delayed processing of kits currently in the backlog, which are expected to be tested by September 2026, will have allowed \$51.8 million worth of additional criminal activity.
- Even kits that don't lead to convictions are worth testing for the qualitative benefits they offer, like identifying deceased and incarcerated perpetrators, adding to the national DNA database, and providing closure to victims.

BACKGROUND

Late last year, the CBI discovered that one of its scientists had, during her tenure, mishandled dozens of DNA cases dating back as far as 2014.^{iv} There was already a substantial backlog before this, but CBI's internal investigation, the scientist's eventual resignation, and the legal charges proceeding from the matter diminished even further the Bureau's ability to process new sexual assault kits, which have since accumulated into a backlog larger than any the state had amassed before. The backlog peaked in February, at 1,462, and now sits at 1,369—15 times more than the state is currently able to process each month. This has become a matter of urgency for the state government, as indicated by the passage of SB25-304, which aims to make the CBI accountable for new reporting requirements, and SB25-170, which guarantees funding for reducing the backlog.^{vvi}

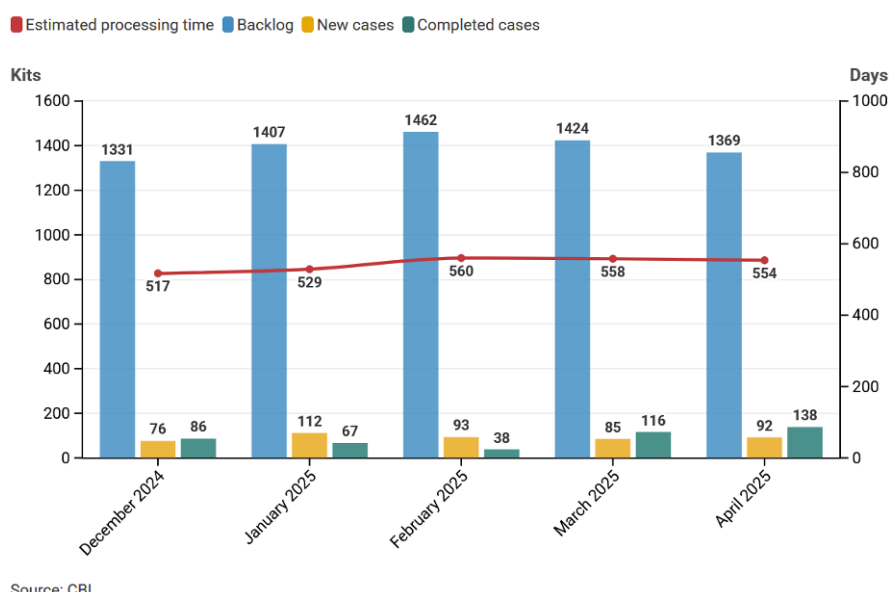
The CBI estimates that, as of April, completing new DNA cases submitted to the state will take the agency and its laboratories 554 days due to the current backlog and disruptions from the criminal investigation; under normal circumstances, the Bureau prefers to process kits in just 180 days, at most. Because of this, clearing the excess backlog isn't just a matter of analyzing 1,369 samples at once—it will require the CBI to increase its testing capacity substantially and bring the average completion time back down.

To address the issue, the CBI, which has been specially tracking data about the backlog since it appeared, plans to outsource 1,000 of its kits to private laboratories and double its workforce of DNA scientists by the middle of next year. Once

the new scientists are hired and their training complete, says the CBI, the agency will have the problem well in hand: all kits currently in the backlog will be tested by the end of 2025 and the average processing time will be reduced to merely 90 days by the spring of 2027. If the Bureau follows through on its plan, and the state dedicates enough funding to sustain it, it will solve a problem that otherwise would have caused the state a large economic and moral burden.

FIGURE 1

Sexual Assault Kit Backlog and Turnaround Times



Source: CBI

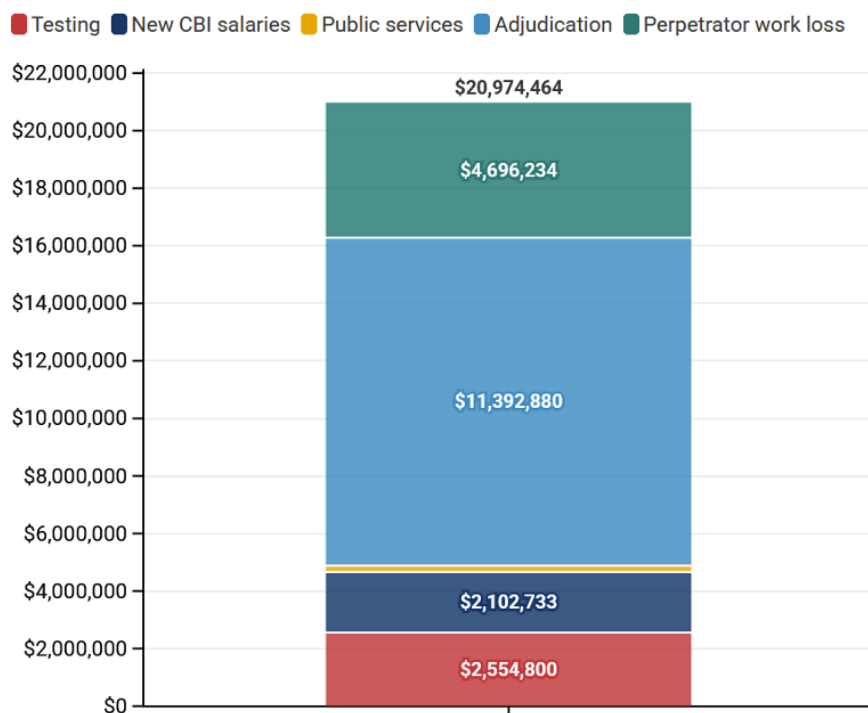
COSTS AND BENEFITS OF REDUCING THE BACKLOG

Testing almost 1,400 kits and hiring 15 scientists will cost the state government millions of dollars but benefit Colorado's economy in the short term and the long term. At an estimated cost of \$2,000 per kit, based on proposed state reimbursements for private labs and an average salary of \$90,929 for DNA scientists, the state can expect to spend an extra \$4.7 million on testing and staff between now and 2027.^{vii viii} When a test identifies a perpetrator, economic output will also shrink by \$23,500 due to perpetrator work loss and state and local governments will incur adjudication and public-services costs worth around \$58,100, according to inflation-adjusted figures from a cost-of-crime model that CSI received from Ted R. Miller of the Pacific Institute for Research and Evaluation.

CSI estimates that, of the 1,369 kits in the backlog as of April, up to 200 will lead to convictions. This expectation is based on cities and municipalities across the country that have dealt with backlogs of their own—their conviction probabilities have ranged from low single-digit percentages, in New York and Detroit, to 14.6% in Cuyahoga County, OH.^{ix} This study assumes that Colorado will achieve the same conviction rate as Cuyahoga County because of past successes in Denver, where one study found that DNA matches in cold cases lead to convictions more than half of the time, and because the state's

FIGURE 2

Direct Costs of Testing 1,369 Sexual Assault Kits



Sources: CBI, JBC, Ziprecruiter, Ted R. Miller, BLS, DOJ, Cuyahoga County Prosecutor's Office

current backlog is very young.^x 200 convictions would cost the state \$16.3 million in public services and work loss and round out the total cost of clearing the backlog to \$21 million.

Despite the moderate cost, however, Colorado's economy will benefit from the state's effort to clear the backlog. **At time of arrest, an average rapist has 3.69 years left during his/her criminal career, throughout which s/he commits 7.1 sexual assaults per year; this means that each conviction prevents an average of 26.2 additional assaults.^{xi} Convicted rapists are also, on average, more likely than the general population to commit other types of crime—three years after release, 13.7% are arrested for non-sexual violent crimes, 14.7% for property crimes, and 20.4% for public-order offenses.^{xii xiii}**

These crimes all create substantial fiscal, economic, and quality-of-life costs that can be averted by DNA analyses that lead to convictions.

TABLE 1

Costs of Selected Crimes According to the Miller Cost of Crime Model (2025 Dollars)						
	Public Services	Adjudication & Sanctioning	Perpetrator Work Loss	Other Tangible ¹	Quality of Life	Total
Murder	\$148,832	\$478,072	\$177,869	\$1,853,546	\$5,150,836	\$7,809,155
Rape (police-reported)	\$901	\$44,660	\$18,409	\$17,191	\$319,632	\$400,793
Rape (unreported)	\$25	\$852	\$351	\$10,694	\$214,518	\$226,441
Robbery (police-reported)	\$51	\$328	\$135	\$8,079	\$82,507	\$87,134
Robbery (unreported)	\$51	\$328	\$135	\$6,272	\$82,507	\$87,134
Assault (police-reported)	\$1,321	\$13,784	\$5,928	\$4,864	\$14,656	\$43,768
Assault (unreported)	\$647	\$6,754	\$2,905	\$3,147	\$11,145	\$27,723

Based on these parameters, generating 200 convictions by clearing the existing backlog immediately would prevent 1,257 future sexual assaults, 132 other violent crimes, and 419 non-violent crimes, saving Colorado \$286.5 million in costs of crime. Because of the processing delay caused by the accumulation of untested kits, however, the true numbers will be somewhat smaller. CSI estimates that, if the CBI follows through on its plan to outsource testing and train more DNA scientists, every case currently in the backlog will be completed by next September; this processing speed will instead prevent 1,030 sexual, 108 other violent, and 343 non-violent crimes for a total savings of \$234.7 million—still far more than the \$21 million cost.

¹ Medical and mental health, productivity, and property loss

TABLE 2

Crime Impacts of and Savings from Clearing the Current Backlog		
	Incidents	Savings
Sexual assaults	1030	\$225,006,717
Other violent crimes	108	\$7,185,562
Property crimes	230	\$713,295
Drug and alcohol crimes	57	\$1,678,030
Public-order offenses	45	\$105,897
Other	11	\$8,237
Total:	1,481	\$234,697,738

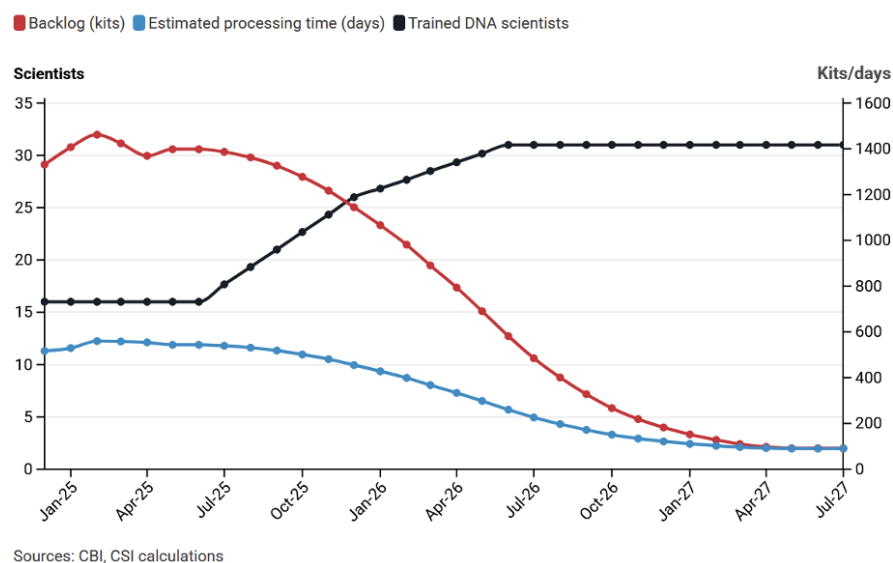
If the Bureau achieves its goal of reducing the average processing time to 90 days in May of 2027, its backlog will stabilize that July at a value equal to the average number of new cases per month (91.6 between last December and April). CSI hypothesizes that both the backlog and the average completion time will fall in proportion to the additional productivity that the CBI will receive from its new DNA scientists as they're hired and trained under the assumption that a trained scientist reaches full productivity after

12 months of job experience.² Fully training 10 new scientists by the end of 2025 and 15 by the middle of 2026, as the state intends, will produce the results shown in the graph to the right.

In the long run, an improvement in efficiency to this degree can prevent innumerable crimes and save Colorado vast amounts of money and grief.

FIGURE 3

Backlog, Processing Time, and CBI Employment Projections through July 2027



² This assumption is based on the CBI's expectation to meet its processing-time goal around 12 months after the last new scientist (of the 15 in training) is added to its force.

CONCLUSION

This analysis and several other studies attest that the economic benefit of testing sexual assault kits vastly outweighs the cost. The social benefits, which are largely impossible to quantify, may be even greater. The value of clearing Colorado's backlog isn't limited to its potential to catch criminals: tests that don't lead to convictions can identify perpetrators who are deceased or incarcerated, lead to fairer trial outcomes, and offer victims feelings of closure and security. Even a test that doesn't find a match adds value by growing the national DNA database and, if returned promptly, improving public trust in government. By clearing the CBI's backlog, the state will do a great service for victims of sexual assault, who've also endured a highly invasive means of collecting evidence, by bringing perpetrators to justice and ensuring that future cases are handled swiftly.

Still, the state could do more to ensure that another backlog doesn't form in the future. Funding from SB25-170 and contracts with private laboratories might be enough to solve the current problem, but many individual law-enforcement labs in Colorado lack adequate funding—those labs, under preexisting rules, were forced to send many of their kits to CBI, adding to the original backlog. If the state can dedicate more funding for these labs, it would make the whole system more resilient against sudden increases in crime and shocks like the Woods investigation.

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