Matthew J. Gamette, MS, CPM

Laboratory System Director

Idaho State Police Forensic Services

July 18, 2018

Promoting Justice for Victims of Crime: Examining the Federal Investment in DNA Analysis

U.S. Senate

Judiciary Committee

10:00 am

Mr. Chairman and members of the Committee, my name is Matthew Gamette and I am the Laboratory System Director for the Idaho State Police Forensics Services Laboratories with three multi-discipline forensic laboratories and approximately 50 employees. I am also the President of the American Society of Crime Laboratory Directors (ASCLD) with a membership of over 600 lab directors and leaders from all over the country. Finally, I am the Chair of the Consortium of Forensic Science Organizations (CFSO) that represents six major forensic organizations and over 21,000 practitioners. I appreciate the opportunity to speak to this Committee today.

Approximately 95% of the forensic work in the country is done by state and local forensic science service providers (FSSPs) like my laboratories. Requests for service and analysis are exponentially increasing, and the funding is steadily decreasing for most forensic disciplines. In the last year alone at my lab, DNA submissions were up over the previous year by 107%. We are struggling, like most states, to process sexual assault kits discovered during state legislature mandated audits or otherwise performed state-wide evidence audits. Idaho is still working to process 527 more previously unsubmitted kits identified during our kit audit, each representing a victim of a horrific crime. We are engaged with many of the partners here today to make our communities a safe place where crimes are investigated thoroughly. States like Idaho, Colorado, and Utah have provided data showing that with more awareness and attention to the issue of sexual assault, more survivors of this crime are reporting to law enforcement and having kits collected. This is an encouraging trend because this reporting will help solve these crimes and potentially other crimes through the use of forensic databases. The advent of kit tracking systems, better evidence collection protocols, and training being offered to nurses, law enforcement, and prosecutors gives victims more confidence in the criminal justice system. In Utah, the number of kits collected has doubled when comparing 2010 collections to this year. In addition to more sexual assault kits being collected, states are implementing “test all” laws where all collected kits are being sent to a biology/DNA forensic laboratory, when law enforcement previously only send a fraction of kits

collected for analysis. In Utah, the state lab was processing 31% of the 429 collected kits in 2010 (129), and in 2018 the lab is projected to test 97% of the 825 kits (800) collected in the state. Therefore, in addition to the 92% increase in the number of kits being collected in the state, the lab has seen an increase of 520% in number of kits submitted. A much higher percentage of the kits collected across the country are being submitted to a forensic science lab. In Colorado, since mandatory submission of sexual assault kits went into place in 2012, the lab has seen a 190% increase in sexual assault case submissions. Increased kit submissions have altered how labs operate. Several labs, such as the Oregon state lab, have stopped offering DNA services on property crimes and other case types until they can handle all the incoming new and previously unsubmitted sexual assault cases. The Houston lab just announced that they were going to be outsourcing most of their cases until they could get staff trained and build the infrastructure needed to address the influx of cases in a quality manner.

Most laboratories in the country are overwhelmed with incoming DNA case submissions not only from sexual assault cases, but assaults, homicides, and other crimes. Detectives have learned the value of this investigative, confirmatory, and exoneration tool, and are pushing the labs to do more (and more difficult) samples to resolve cases. Project Foresight data from West Virginia University demonstrates the elasticity of demand for forensic science labs. The published data demonstrates that for every 1% reduction in turnaround time at the lab, there is a 1.29% increase in cases submitted to the lab and a 3.9% increase in the number of items submitted to the lab. Even as labs increase productivity and capacity, the demand grows for services. One of the biggest newer requests from customers is so called "touch DNA" on items that may have been minimally handled by a suspect. Requests for analysis on guns, steering wheels, and door handles (for example) have recently exploded. Labs have also added techniques such as familial DNA searching and male specific DNA testing to provide investigators with more investigative leads. These new techniques can be very expensive to validate and utilize in casework. Labs realize that the demand is drowning capacity, and are growing as quickly as possible to

meet the needs. Public and private DNA labs in the United States are saturated with DNA cases, and most are dealing with staggering backlogs for all case types. Labs across the country dealing with the influx by building in-house capacity and outsourcing to equally overwhelmed private labs. Resources are constantly needed to address this crisis. Labs use federal granting programs authorized through the Debbie Smith legislation to address these needs. Labs use these grant funds to purchase very expensive instruments, optimize methods to gain capacity, and train scientists. Only so much can be done to build capacity with instrumentation, methods, lean six sigma projects, and other initiatives. Ultimately what is needed to increase capacity in our nation's crimes labs is personnel. It is extremely difficult, and it is a long process for labs to convince local and state funding entities of the need for new analysts. Many times labs increase capacity by using federal grants to hire and train new scientists while they navigate the process to secure state or local positions for these federal grant funded employees. Because DNA scientists take a year or more to train, the federal grant money is essential in growing the number of forensic DNA scientists in the workforce. More can be done to encourage states and locals to assimilate employees initially funded by federal grants. When they finally get trained, the technology changes, and continuing education is needed. Most labs in the country rely heavily on Debbie Smith authorized and appropriated Combined Efficiency and Backlog Reduction (CEBR) grants to fund this continuing training. Our judiciary requires analysts that are at the well-educated on current and emerging science and methods.

Most labs are in the process right now of updating their DNA methods and instrumentation to be more efficient and increase capacity. Demand is overwhelming, while the scrutiny on the testing and statistical methodologies has never been greater. Labs are developing new statistical methods and searching techniques, increasing the DNA core loci to meet FBI requirements, validating new types of kits, implementing new software tools, and reviewing old case reports and testimony for accuracy. Labs have to obtain instrumentation and software, validate the methods, and train their employees. New

and better instrumentation and methods often increase the workload. For example, adding kits with more markers and genetic information also slows the data analysis. Adding more sensitive screening instrumentation yields more positive initial results that must go forward for DNA analysis.

Laboratory backlogs are frustrating to stakeholders, allow perpetrators to potentially commit more crimes, are stressful to the lab employees and management team, and perhaps most importantly delay the judicial system that brings accountability and closure. The Consortium of Forensic Science Organizations that I Chair is currently working with the National Institute of Justice on an operational needs assessment. Laboratory directors from all over the country have been involved in educating DOJ on the operational needs of crime laboratories. This report, conceived in partnership with members of this Committee, and authorized in the Justice for All Reauthorization Act of 2016 will be issued to this body in October of this year. We encourage Congress to study the operational resource needs outlined in this report when it is complete. CFSO members have also participated on NIJ listening panels to improve grant solicitations, applications, and reporting. CFSO members will participate on the best practices working group for DNA laboratory capacity enhancement being formed at NIJ. We have engaged with GAO regarding solutions to grant issues and better metrics for reporting. CFSO is also engaging with DOJ by providing state and local lab directors and forensic researchers to consult with DOJ on the Forensic Laboratory Needs-Technology Working Group (FLN-TWG). This newly founded group will help DOJ understand the operational, research, and technology implementation needs of forensic science labs. Legislation introduced by members of this committee last year would establish an Office of Forensic Science at DOJ. The purpose of the office would be to regularly evaluate the needs of forensic science service providers in the United States. We do believe that the Office of Investigative and Forensic Sciences at NIJ being realigned to an Office of Forensic Science, including the new FLN-TWG, would allow for a more focused approach to address the constantly changing needs.

CFSO members have partnered with West Virginia University Business and Economics professors on "Project Foresight" to try and predict the current and future operational needs of laboratories to address these critical issues. Project Foresight researchers conclude that the average return on investment by testing a sexual assault kit is 7,119%, and at a perfect economy of scale it is 13,479%. For DNA database samples the return on investment ranges from 704% for the lowest annual database contributor entities to 33,929% for the largest jurisdictions collecting arrestee and offender samples. Several years ago the biggest DNA issue was backlogged DNA database samples. That issue has been mostly addressed with an infusion of federal resources and initiatives. I am happy to report that I am not aware of any significant DNA database backlogs in the country at this time. The big issue now is unprocessed sexual assault kits. We are working on that issue, and eventually will have the capacity to process all sexual assault kits in a timely manner. Labs are increasing their capacity. In Idaho the capacity in biology and DNA has grown in the last few years by 168%. This is in large part to the addition of staff, strategic instrument and software purchases, and implementing more efficient methods. Forensic science leaders are working to identify the next crisis issues that will impact labs. Dr. Paul Speaker wrote, "as more resources are allocated to laboratories in an effort to achieve these societal returns, there will be a reaction in the demand for the laboratory services. More resources are expected to speed up laboratory processing. As the present gap between services desired and budgets are reduced, ***reductions in turnaround time will be met with increased requests for services that initially will outpace the ability of laboratories to keep up with the increased demand***. Long-term planning will have to take these queuing elasticities into account and the allocation of resources will have to consider the dynamic trends for planning to succeed." It is important to build in advance the resources needed to address emerging issues proactively. Finally, and potentially not what you want to hear, more federal funds are needed to help

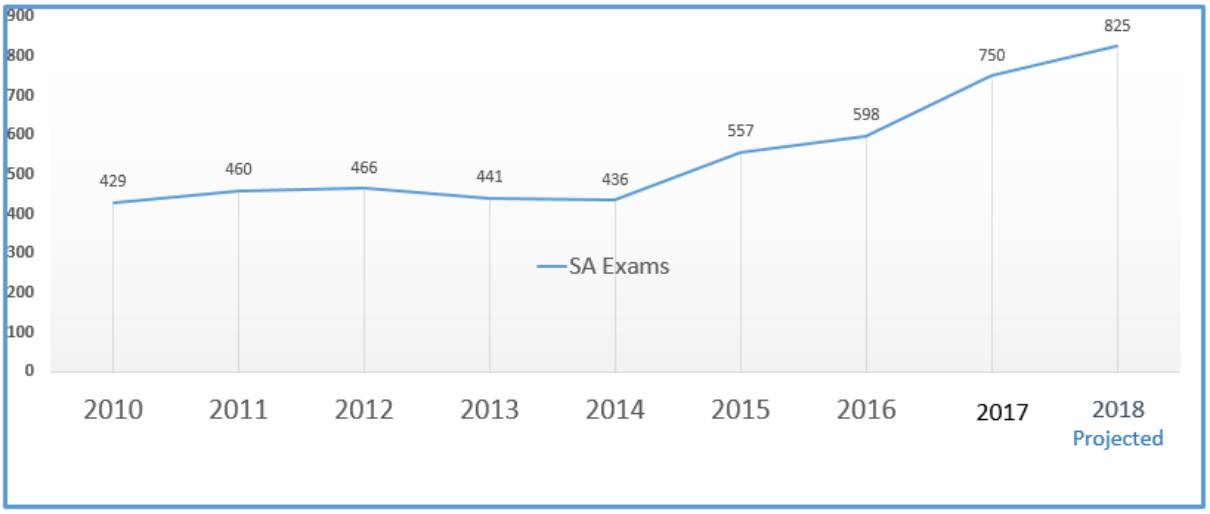
state and local labs address personnel, infrastructure, instrumentation, training, and technology implementation. It should be mentioned in closing that today I am outlining our backlogs in DNA only. We have been hit very hard by, and are struggling to deal with, the opioid crisis and several other critical forensic science related issues. Resources are needed in a number of vital areas.

The victims, suspects, investigators, and courts in all jurisdictions of the United States deserve comprehensive, quality, and timely forensic science services. The forensic science service providers in the United States deserve to have the resources to provide comprehensive, quality, and timely forensic science services. I encourage you to reauthorize the Debbie Smith Act to continue to provide this essential DNA resource assistance to state and local crime labs.

Appendix A

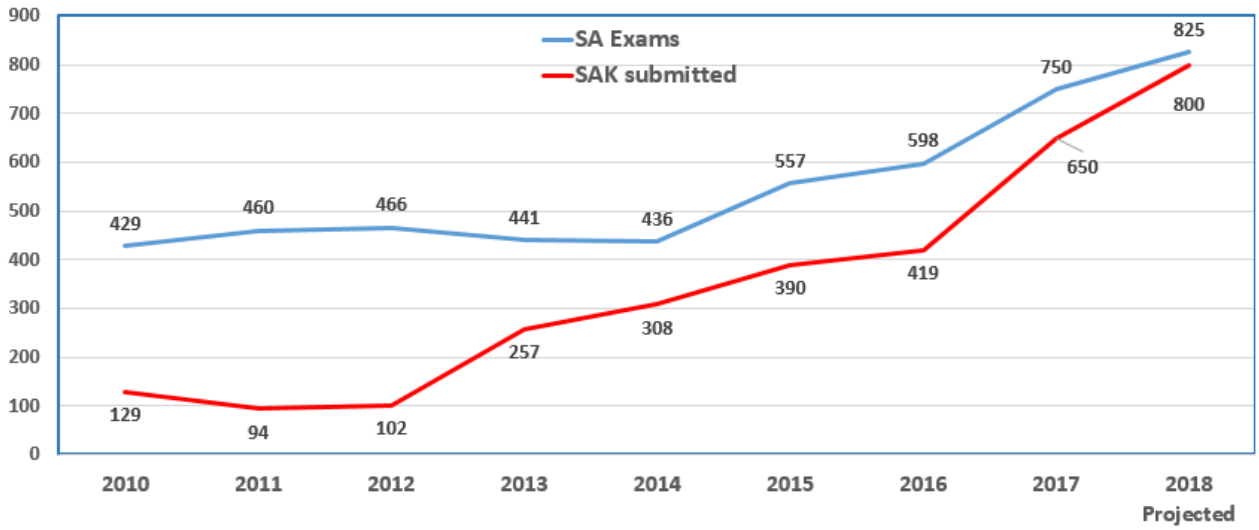
UTAH STATISTICS

Sexual Assault Forensic Examinations (Wasatch Forensic Nurses)
Salt Lake and Utah Counties 2010-2018



Valentine, J.L., Miles, L., Miles, S. & Mabey, L. (2018). Collaborative study on sexual assault kit DNA analysis (pending publication).

Sexual Assault Forensic Examinations (Wasatch Forensic Nurses)
Salt Lake and Utah Counties 2010-2018



Valentine, J.L., Miles, L., Miles, S. & Mabey, L. (2018). Collaborative study on sexual assault kit DNA analysis (pending publication).

SAKs submitted (Salt Lake and Utah Counties, 2010-2016)

2010

<1 year of assault = 105/429 (25%)

>1 year of assault = 24/429 (6%)

TOTAL: 129/429 = 31%

2011

<1year of assault = 74/460 (16%)

>1 year of assault = 20/460 (4%)

TOTAL: 94/460 = 20%

2012

<1 year of assault = 71/466 (15%)

>1 year of assault = 31/466 (7%)

TOTAL: 102/466 = 22%

2013

<1 year of assault = 110/441 (25%)

>1 year of assault = 147/441 (33%)

TOTAL: 257/441 = 58%

2014

<1 year of assault = 251/436 (58%)

>1 year of assault = 57/436 (13%)

TOTAL: 308/436 = 71%

2015

<1 year of assault = 383/557 (69%)

>1 year of assault = 7/557 (1%)

TOTAL: 390/557 = 70%

2016

<1 year of assault = 414/598 (69%)

>1 year of assault = 5/598 (1%)

TOTAL: 419/598 = 70%

2017

Projected 650/750 = 87%

2018

Projected 800/825 = 97%

Principal Investigator contact info on research:

Julie Valentine PhD, RN, CNE, SANE-A

Assistant Professor

Brigham Young University

Julie-valentine@byu.edu

801-573-0640

*Data Courtesy of Utah Bureau of Forensic Services, Director Jay Henry

*Data Courtesy of Brigham Young University Assistant Professor Julie Valentine

Appendix B

IOWA STATISTICS

Iowa Statistics

DNA Stats (for the 1 year period July 1, 2017 through June 30, 2018)

- 1,509 DNA case assignments submitted (530 of those were coded as sexual offenses)
- 1,605 DNA case assignments completed (479 coded as sexual offenses)

- Total DNA backlog on 6/30/2018 = 827 case assignments (684 of those are > 30 days)
- Total backlog coded as sexual offenses on 6/30/2018 = 431 case assignments (345 > 30 days)

- Average TAT on DNA case assignments closed (7/1/17 – 6/30/18) = 227 days
- Average TAT on case assignments coded as sexual offenses (7/1/17 - 6/30/18) = 182 days

Like most state forensic labs, the Iowa lab has no long term storage of untested sexual assault kits. They have them in their laboratory backlog, but they are all being worked along with all the other DNA evidence. The Iowa Attorney General's Office Crime Victims Assistance Division (CVAD) conducted a survey of all Iowa law enforcement agencies to determine how many sexual assault kits law enforcement has that have never been submitted for testing. The total was 4,265 kits. Analysis and tech review of these kits are being outsourced to private labs, paid for with federal grant funding secured by CVAD. After tech review, results are provided to the Iowa lab for CODIS entry. The lab then distributes any COIDS "hit" information, and conducts any subsequent analyses generated as a result of those hits. Additionally, they know going forward agencies will not hold off on submitting sexual assault kits as they have in the past. Sexual assault submission rates to the lab will increase as a result.

*Data Courtesy of Iowa Division of Criminal Investigation, Bruce Reeve Laboratory Administrator

Appendix C

IDAHO STATISTICS

Data requested by NIJ and submitted by Idaho in the 2018 NIJ CEBR application

Baseline Backlog Data

Casework Laboratories	
Number of untested/not completed forensic biology/DNA cases on hand on January 1, 2017.	181
Number of untested/not completed forensic biology/DNA cases more than 30 days old **(backlogged)** on January 1, 2017.	123
Please estimate percentage of the backlogged cases that were from property crimes.	5%
Number of new **cases** for forensic biology/DNA received in 2017.	971
Please estimate percentage of these **cases** that were from property crimes.	5%
Total number of forensic biology/DNA **cases** completed in 2017.	684
Please estimate percentage of these **cases** that were property crimes.	5%
Forensic biology/DNA cases closed by administrative means in 2017.	130
Number of untested/not completed forensic biology/DNA cases on hand on December 31, 2017.	349
Number of untested/not completed forensic biology/DNA cases more than 30 days old **(backlogged)** on December 31, 2017.	269
The average number of days needed to complete (including peer review and report) non-priority forensic DNA cases for calendar year 2017. Please indicate violent crime time with a **"V"** and the nonviolent crime time with **"NV."** If the applicant cannot separate violent and nonviolent cases, give the number with no other markings.	219

Database Laboratories	
Convicted Offender Samples	
The number of untested/not completed convicted offender samples on hand on January 1, 2017.	364
The number of untested/not completed convicted offender samples more than 30 days old **(backlogged)** as of January 1, 2017.	1
The number of new convicted offender samples received in 2017.	5097
The total number of convicted offender samples completed in 2017.	5332
Samples closed by administrative means (duplicates, non-authorized samples, etc.) in 2017.	N/A
Number of untested/not completed convicted offender samples on December 31, 2017.	327
Number of untested/not completed convicted offender samples more than 30 days old **(backlogged)** on December 31, 2017.	1
Average number of days to complete the processing of a convicted offender sample (including upload to CODIS) for calendar year 2017.	196
Arrestee Samples	
The number of untested/not completed arrestee samples on hand as of January 1, 2017.	N/A
The number of untested/not completed arrestee samples more than 30 days old **(backlogged)** on January 1, 2017.	N/A
The number of new arrestee samples received in 2017.	N/A
The total number of arrestee samples completed in 2017.	N/A
Samples closed by administrative means (duplicates, non-authorized samples, etc.) in 2017.	N/A
Number of untested/not completed arrestee samples on December 31, 2017.	N/A
Number of untested/not completed arrestee samples more than 30 days old **(backlogged)** on December 31, 2017.	N/A
Average number of days to complete the processing of an arrestee sample (including upload to CODIS) for calendar year 2017.	N/A

The two year increase in DNA and Biology cases combined is 390 to 725 for an increase of 86%

The spreadsheet below is for the one year and two year increases.

CASES·SUBMITTED·TO·THE·MERIDIAN·LABORATORY·FOR·ANALYSIS¶

¤	¤	Cases·Submitted¤ FY·2017¤	Cases·Submitted¤ FY·2016¤	Cases·Submitted¤ FY2015¤	Cases·Submitted·%·Change¤ FY15·to·FY17¤	Cases·Submitted·%·Change¤ FY16·to·FY17¤
Biology¤	¤	470¤	250¤	249¤	88.76%¤	88.00%¤
DNA¤	¤	255¤	123¤	141¤	80.85%¤	107.32%¤

Capacity has also dramatically increased over the same interval (168% for biology and DNA Combined)

Discipline	FY 2016		FY 2017		FY 2018	
	Cases Completed	Number of Items	Cases Completed	Number of Items	Cases Completed	Number of Items
Blood Alcohol	1,289	1,302	1,243	1,273	1,245	1,260
Biology	208	1,638	401	3,002	546	4,073
Controlled Substances	7,740	11,720	8,437	12,925	9,524	14,238
DNA	116	497	144	712	321	1,537
Firearms/Toolmarks	55	277	39	179	52	303
Fire Debris	19	68	20	56	16	78
Latent Prints/Fingerprints	1,152	1,680	1,309	1,731	932	1,370
Blood Toxicology	566	580	1,089	1,137	948	997
Urine Toxicology	479	493	417	463	377	397

Turnaround times (average and longest case in the lab) as of 6/30/2018

ISPFS Evidence Analysis Turnaround

(Please contact the lab if a specific case needs a quicker turnaround time to meet court requirements)

Alcohol / Volatiles	Breath Alcohol Inst.	Controlled Substances	Biology Screening	Sexual Assault Kits	DNA	DNA Database	Fire Evidence	Firearms / Toolmarks	Footwear & Impressions	Latent Prints	Blood Toxicology	Urine Toxicology
ISPFS Average Turnaround Goals (in days)												
30	30	30	30	90	30	30	30	30	30	30	30	30
Current ISPFS Average Turnaround (in days)												
13	< 30	23	119	171	171	15	31	57	N/A	149	30	35
ISPFS Longest Anticipated Turnaround Time (in days)												
8	42	97	236	436	467	13	16	169	N/A	317	92	14
Number of Cases Currently in Lab Longer than Stategic Turnaround Time (in days)												
0	0	8	137	105	183	0	0	3	N/A	277	0	0

Data As Of 6/30/2018

*Data courtesy of Idaho State Police Forensic Services, Laboratory System Director Matthew Gamette

Appendix D

COLORADO STATISTICS

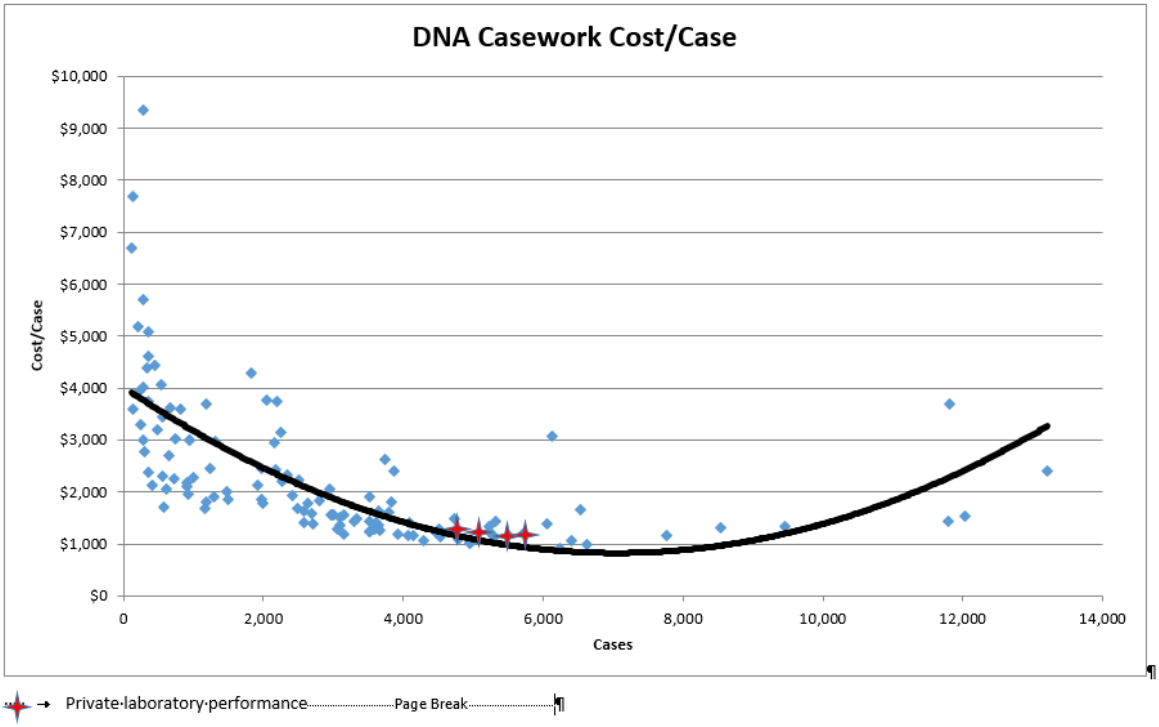
The data below is the sexual assault submission rate for the last six years in Colorado. The data starts in 2012, the year before mandatory sexual assault submission went into place in Colorado. The first set of numbers labeled "New case submissions" is just that, new cases. The second set labeled "Total Lab Records" takes into account the multiple requests for analysis on the same case. The percentage increase in new case submissions from 2012 (438) to 2017 (1268) is 190%.

	New case submissions							Total Lab records						
Months	2018	2017	2016	2015	2014	2013	2012	2018	2017	2016	2015	2014	2013	2012
January	130	104	78	119	90	72	38	210	174	148	218	106	82	100
February	76	114	94	97	72	59	41	159	195	161	186	101	64	61
March	120	101	95	92	98	60	37	186	217	215	184	113	67	55
April	94	92	126	97	83	57	22	153	154	136	211	105	67	41
May	118	127	83	68	113	21	38	193	226	98	182	137	27	58
June		113	95	129	112	35	24		178	121	209	121	42	32
July		101	104	130	116	119	34		144	166	159	150	132	49
August		121	128	98	115	89	34		200	176	127	139	94	42
September		125	78	74	100	109	26		174	139	91	127	115	59
October		87	110	123	111	86	68		150	164	145	134	106	78
November		102	92	83	109	54	46		170	128	114	143	66	53
December		81	100	83	76	67	30		131	172	131	161	82	36
Total	538	1268	1183	1193	1195	828	438	901	2113	1824	1957	1537	944	664

*Data courtesy Colorado Bureau of Investigation, Laboratory System Director Jan Girten

Appendix E

PROJECT FORESIGHT DATA

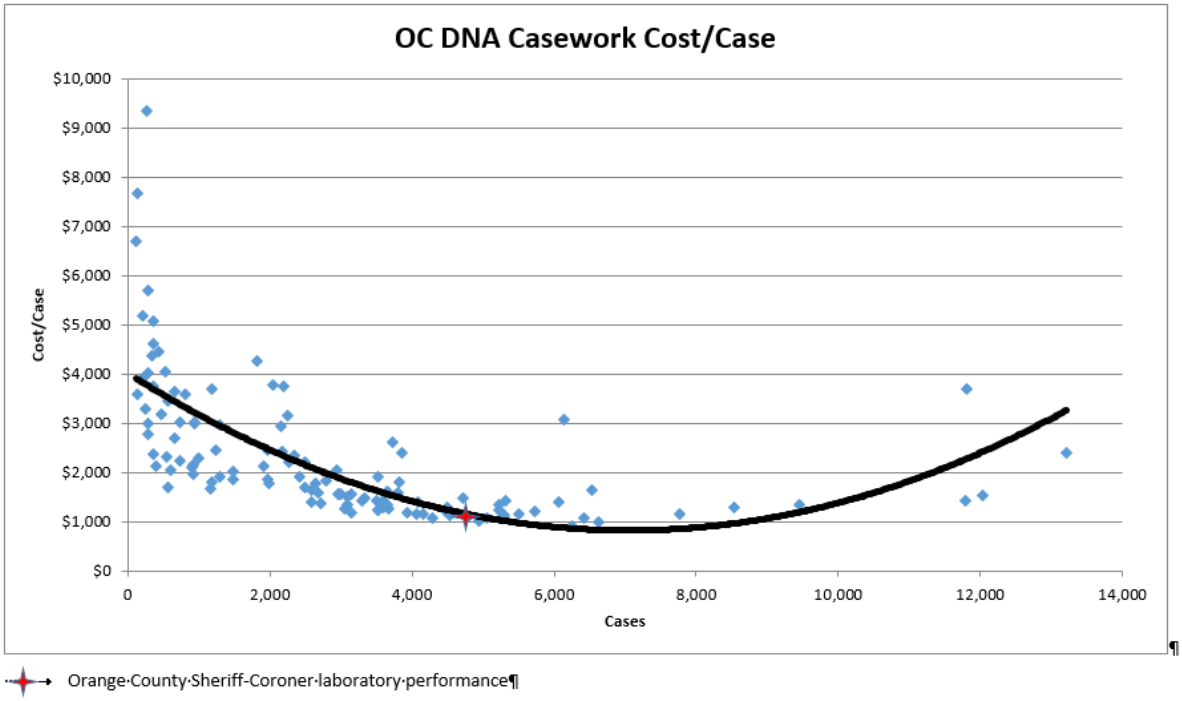


Private laboratory performance

- The trend line is the result of an econometric estimate of the relationship between cost per case and caseload.
- The four private laboratories all operated just above the level of efficiency, but near the perfect economies of scale

These labs face the additional cost from a return to equity holders.

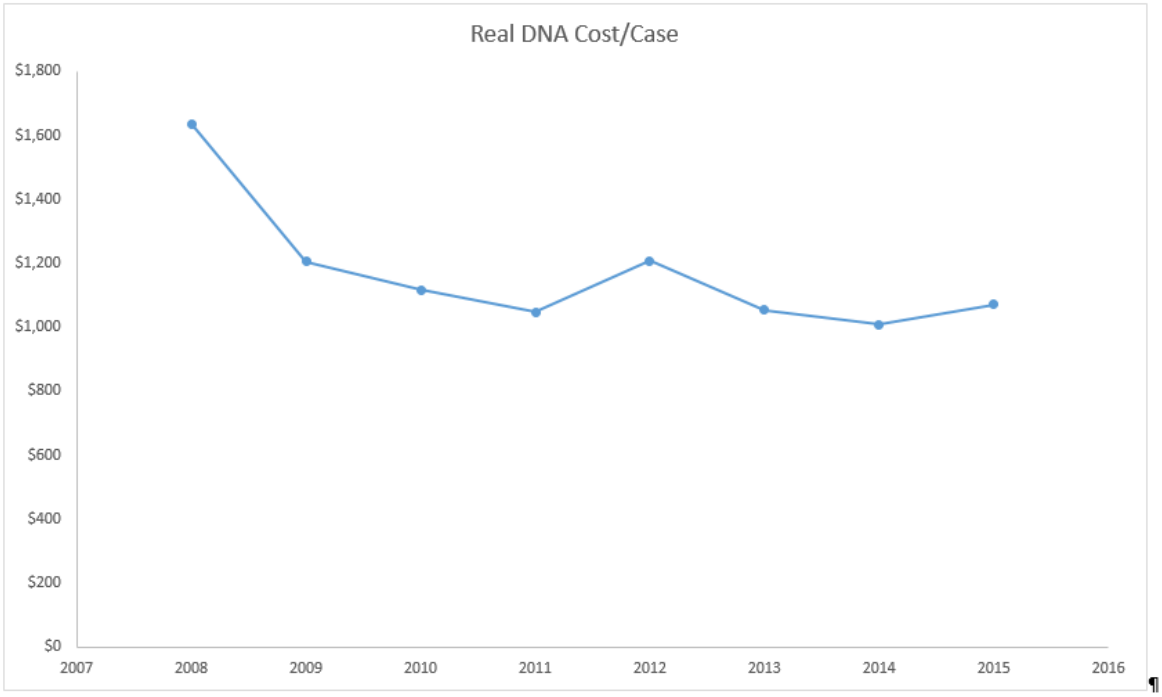
Example·Laboratory:·Orange·County·Sheriff-Coroner·OC·Crime·Lab¶



Orange County Sheriff-Coroner laboratory performance

- The Orange County Sheriff's Office Crime Laboratory also performs near the perfect economy of scale, but is also on the trend line.
- Unlike the four private laboratories, OC does not need to provide a return to equity holders and operates at a lower cost, but near the perfect economies of scale
- Public labs demonstrate high efficiency, but jurisdictions may only have caseloads that do not reach the size of perfect economies of scale. Some regionalization of laboratory processing could overcome the economy of scale limitation and permit sharing of resources at a cost that is roughly 8-10% below the cost of private labs.

Orange·County·Sheriff-Coroner·OC·Crime·Lab·"Real"·DNA·Casework·Cost/Case·FY2008-FY2016¶



¶

2014Q4·=·100¶

Overall takeaways of Foresight data:

- Needs and performance of all labs would be easier to address if all labs submitted FORESIGHT data.
- Consider FORESIGHT submission as a requirement for submitting grant request and requirement of the grant conclusion. This addresses the industry needs and offers a replacement for the Census of Publicly Funded Forensic Crime Laboratories. Annual data from all labs permits consistent time series analysis.
- The review and repository could be maintained via a Center of Excellence or in conjunction with an academic institution.

A publicly available repository would also encourage independent academic research beyond publications from the granting process.

*Foresight data courtesy of Paul Speaker, West Virginia University, and Bruce Houlihan (Orange County)