Arkansas State Crime Laboratory Annual Report - 2020

The Arkansas State Crime Laboratory, Department of Public Safety, is pleased to submit this Annual Report. Fiscal information is based on FY2019-2020. Data on evidence submission, case completions, and other workload measures are for calendar year 2020. This report also provides updates on significant achievements and internal improvements that focus on quality, efficiency and transparency of analysis.

Kermit B. Channell, II
Director

Cindy Moran
Assistant Director

Executive Summary

The Arkansas State Crime Laboratory was created in 1977 by Act 517. The laboratory was placed in the Department of Public Safety by Act 864 of 1979. This action was reversed by Act 45 of 1981, which made the laboratory an independent agency. In April 1981, the laboratory began moving into its current location at #3 Natural Resources Drive in Little Rock. At that time, the agency shared the building with the Arkansas State Police, occupying approximately 26,000 square feet on the third floor and the basement. In April 1997, State Police moved to their new facility, and the Crime Laboratory began remodeling the building at #3 Natural Resources Drive allowing itself to occupy 80,000 square feet. In 2019, the Arkansas State Crime Laboratory was placed under the Department of Public Safety by the Transformation and Efficiencies Act (Act 910 of 2019).

The Arkansas State Crime Laboratory is led by a Director who is appointed by the Governor of Arkansas and reports to the Secretary of the Department of Public Safety. The Governor appoints the Crime Laboratory Board which consists of the following individuals who serve for a term of (7) seven years.

- One member of the active judiciary;
- One practicing member of the legal profession;
- One active county sheriff;
- One active chief of police;
- One active prosecuting attorney;
- Two physicians engaged in the active practice of private or academic medicine; and
- One member at large from the state.

The laboratory does not charge any law enforcement agency for analysis of evidence submitted or for testimony in criminal court. The agency can charge specific fees for testimony of its analyst in civil courts. The Crime Laboratory only accepts evidence from those agencies having law enforcement responsibilities.

Little Rock Laboratory- The Little Rock laboratory is currently the only fully-functional forensic laboratory in the state. Services include Physical Evidence, DNA and DNA Databasing (CODIS), Firearms/Toolmarks, Forensic Chemistry, Latent Prints, Toxicology, and Forensic Pathology. Digital Evidence analysis is conducted at the Arkansas State Police Headquarters in Southwest Little Rock, Troop A. The laboratory accepts evidence from investigations originating anywhere in Arkansas, both state and federal.

Hope Regional Laboratory- Arkansas opened its first regional crime laboratory on April 12th, 2004 in Hope. The laboratory currently offers testing for cases involving suspected controlled substance violations. The facility, located on the campus of the University of Arkansas Hope-Texarkana, consists of approximately 2,200 square feet of administrative, evidence storage, and laboratory areas.

Lowell Regional Laboratory- The Lowell Regional Laboratory is located at the Arkansas State Police Troop L Headquarters. This laboratory currently offers testing for cases involving suspected controlled substance violations as well as Toxicology services. This laboratory, consisting of approximately 10,000 square feet, was officially opened for case submissions October 1, 2019.

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Mission, Vision and Core Values

CORE VALUES

Quality	Excellence, getting it right the first time, consistent performance, continuous improvement, taking pride in one's work
Teamwork	Having a common vision, ensuring cohesiveness, assisting one another, supporting other sections, putting others interests first and making decisions based on what is best for the laboratory
Safety	Providing a safe work environment and educating employees on safety practices
Clear Communication:	Communicate often, promptly, professionally and in person when appropriate
Accountability:	Holding oneself and others responsible for productive and ethical behavior
Professional Development:	Growing and engaging employees through training, mentoring, and providing leadership opportunities

Quality (Accreditation and Certification)

To "accredit" means to recognize an agency or institution as conforming to a body of standards related to a specific discipline. Accreditation is a way for an institution to objectively demonstrate, by the evaluation of an external accrediting body, that it meets (or exceeds) these standards.

ANAB (ANSI National Accreditation Board) is a non-governmental organization that provides accreditation services to public and private sector organizations. ANAB provides accreditation for ISO/IEC 17025 testing, calibration, and forensics laboratories.

On December 13, 2004, the ASCL became an accredited laboratory through the American Society of Crime Laboratory Directors/Lab Accreditation Board (ASCLD/LAB) Legacy Program.

On July 10, 2014, the ASCL received accreditation through the ASCLD/LAB-International program. This program is based on the ISO/IEC 17025 standards for the competence of testing laboratories, with supplemental requirements based on the needs of the forensic science discipline.

In April 2016, ASCLD/LAB merged into ANAB, which is now the accrediting body for the ASCL.

In order to maintain its accreditation, the laboratory undergoes a full on-site assessment by a team of assessors every four years, with annual assessment activities to evaluate and confirm ongoing conformance. The most recent full on-site assessment occurred in 2018.

Accreditation is just one component of the ASCL's quality assurance program. Our program also includes proficiency testing, continuing education, and other programs to help the laboratory provide better service to the criminal justice system and demonstrate that our laboratory meets the highest standards of the forensic science discipline.

The Medical Examiner's Section was first accredited by the National Association of Medical Examiners (NAME) in 1976; the most recent period of accreditation began August 15, 2015, and the ASCL continues to maintain this accreditation. NAME is the premier professional organization for medical examiners, forensic pathologists, and medicolegal affiliates and administrators.

Fiscal Resources

The ASCL is funded through general revenue, federal funding and other special revenue as specified in Table 1. Federal funding is received directly through the Department of Justice and in directly as a sub-grantee through Arkansas State Police and the Arkansas Department of Health (Table 3). Salaries and benefits account for 82% of the general revenue budget. The ASCL pays approximately $900,000 for rent of the current facility in Little Rock.

Table 1 Appropriation Summary FY2019-2020

Source	Authorized Appropriation	Funding
498 General Revenue	$12,790,333	$12,023,356
1ED Federal Funding	$2,265,127	$1,411,773
788 DNA Special	$1,252,270	$1,252,270
1VM Asset Forfeiture	$1,000,000	$453,147

Table 2 General Revenue Appropriation Itemization

Source	Authorized
Regular Salaries	$8,022,791
Personal Service Matching	$2,564,518
# Positions	146
Operating Expenses	$2,079,759
Conference & Travel	$56,750
Professional Fees	$66,515
Total	$12,790,333

Table 3 Federal Funding Itemization

Source	Program	Funding
Department of Justice	DNA Capacity Enhancement Backlog Reduction (CEBR)	$919,263.00^
Department of Justice	Paul Coverdell Forensic Science Improvement Grants Program	$272,275.00^
Arkansas State Police	Fatality Analysis Reporting System (FARS)	$692,000.00^^
Arkansas Department of Health	CDC Overdose Data to Action Program	$204,744.00^^

^Calendar year

^^Federal fiscal year (Oct 1 – Sept 30)

1 ED Federal Funding

This appropriation is funded by grants from the United States Department of Justice. These are utilized to purchase scientific equipment, supplies, training and allows for funding to contract out forensic casework if necessary. It is also noted that this federal funding supports the salary for 7 forensic scientists.

788 DNA Special

This appropriation provides for operating expenses to support the DNA database, as authorized by Act 1470 of 2003, the 'State Convicted Offender Database Act', which is codified at A.C.A. §12-12-1101 et seq. Funding for this appropriation is Special Revenue generated by a mandatory fine of no less than $250 for persons required to submit to a DNA sample under the provision of this legislation.

1VM Asset Forfeiture

This appropriation is funded by Special Revenue generated from forfeitures of funds and property derived through court proceedings in cases involving the illegal manufacture and/or distribution of narcotics. The ASCL receives 20% of all forfeitures over the first $20,000 of forfeitures per county, per year. This appropriation is utilized to purchase equipment and is used to supplement the rent of the ASCL facility.

Case Submissions

In calendar year 2020, the ASCL received 28,139 cases, which comprised 33,923 requests. This is consistent with cases and requests received in 2019 (Figure 1).

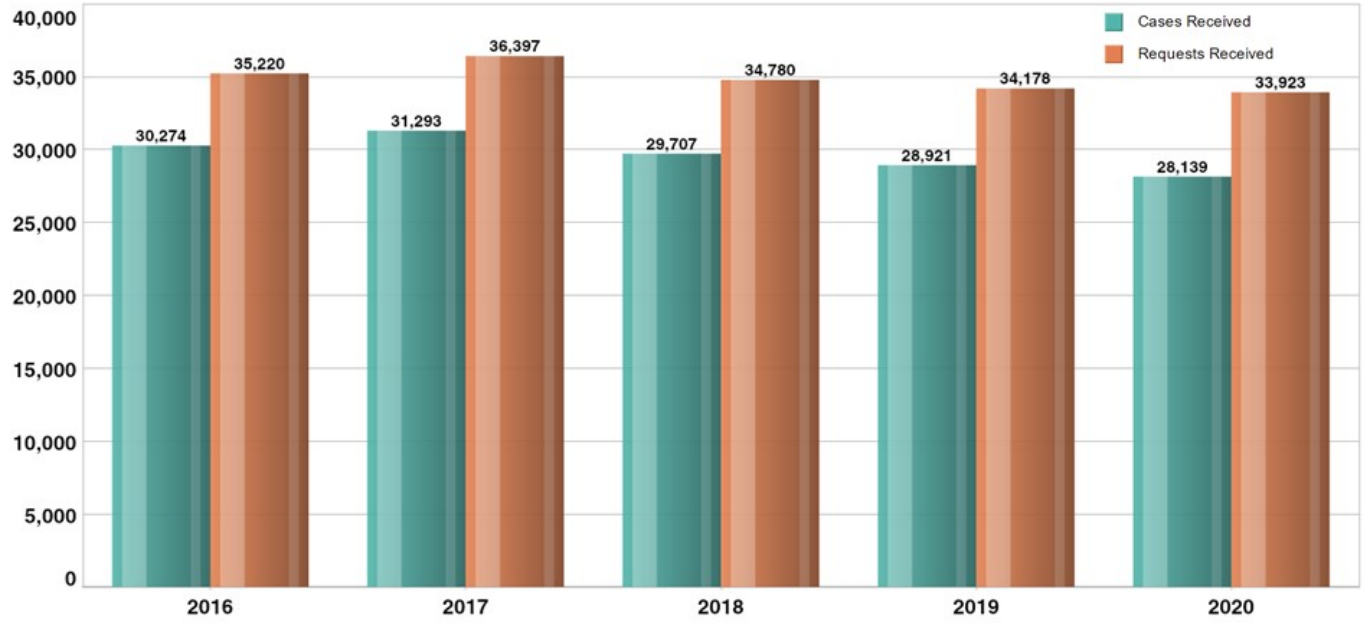

Figure 1 Cases/Requests received for analysis, 2016-2020

Note: A case can have several requests (e.g. homicide case can have a Firearms, DNA, Physical Evidence, Latent Print, requests).

Submissions by Forensic Disciplines and Lab Location

In 2020 the ASCL received the following requests which are broken down by forensic discipline and laboratory location. In its first full year of being open, the Lowell Regional Laboratory received 18% of all cases received. As shown in Figure 2, 61% of requests received system wide is for seized drug analysis.

Table 4 Cases Received by Discipline, 2020

Disciplines	Little Rock	Hope	Lowell	Totals
Forensic Chemistry	12,736	1,372	4,068	19,804
Toxicology	3,980	N/A	936	4,916
Physical Evidence	2,151			
DNA	1,818			
Firearms/Toolmarks	1,112			
Latent Prints	1,018			
Digital Evidence	195			
Database Samples				
CODIS	11,535			
Firearms - NIBIN	1,734			

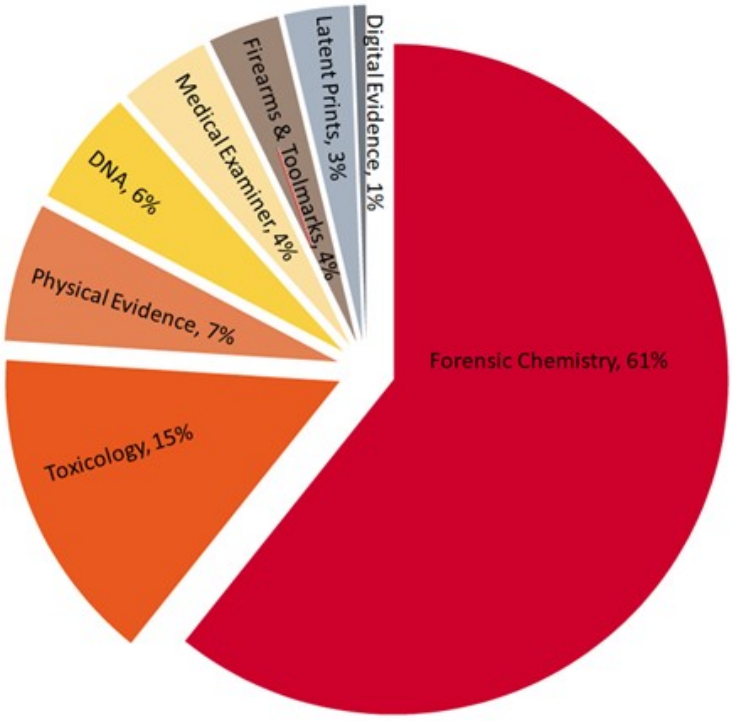

Figure 2 Requests for Analysis by Discipline, 2020

Medical Examiner Caseload

The ASCL Medical Examiner's Office conducts forensic examinations for all 75 counties, as deemed necessary, and may be requested by the county Coroner, elected Prosecuting Attorney and law enforcement (AR 12-12-318). The number of forensic examinations has remained relatively consistent over the last 5 years, but drug overdose deaths and homicides are on the rise (Table 5). It should be noted that case submissions to the ASCL for autopsy are at the discretion of the county Coroner. Statewide drug overdose statistics from 2018-19 indicate that the ASCL receives approximately 75% of all drug overdose death cases.

Table 5 Medical Examiner Examinations, 2020

Year	Cause: Drug Overdose	Manner: Homicide	Total
2016	207	270	1,445
2017	285	300	1,562
2018	322	285	1,504
2019	263	288	1,448
2020	235* (313)	287* (383)	1,427

*Information through 9/30/20; Projected (383) based on 1/1-9/30/20 data.

Table 6 summarizes the cause and manner of death for the forensic examinations conducted in 2020. NAME accreditation standards require that 90% of autopsy reports are completed within 90 days. The ASCL completes 93% of autopsy reports within 90 days and 57% within 60 days.

Table 6 Medical Examiner Examination Summary, by Cause and Manner, 2020

	Manner						
Cause	**Accident**	**Homicide**	**Natural**	**Pending**	**Suicide**	**Undetermined**	**Total by Cause**
Gunshot Wound(s)	1	281	0	4	52	9	347
Disease	59	9	228	1	2	13	312
Drug Overdose	229	0	0	0	16	15	260
Blunt Force	63	36	0	4	2	8	113
Stabbing	0	43	0	0	2	0	45
Undetermined	0	0	0	0	0	44	44
Carbon Monoxide	30	0	0	3	3	6	42
SIDs	0	0	0	0	0	30	30
Hanging	1	0	0	0	22	0	23
Alcohol	7	0	9	0	0	2	18
Shotgun Wound(s)	0	8	0	0	3	0	11
Asphyxia	8	1	0	0	0	0	9
Other	29	5	0	0	4	8	46
Pending	0	0	0	127	0	0	127
Total by Manner	427	383	237	139	106	135	1427

Case Submissions by County

Figure 3 represents areas in which cases submitted to the laboratory are most prevalent. Central and northwest regions of the state submit a higher caseload. Benton and Washington counties are in the High Intensity Drug Trafficking Area (HIDTA) and reflect the necessity for the new Lowell Regional Laboratory.

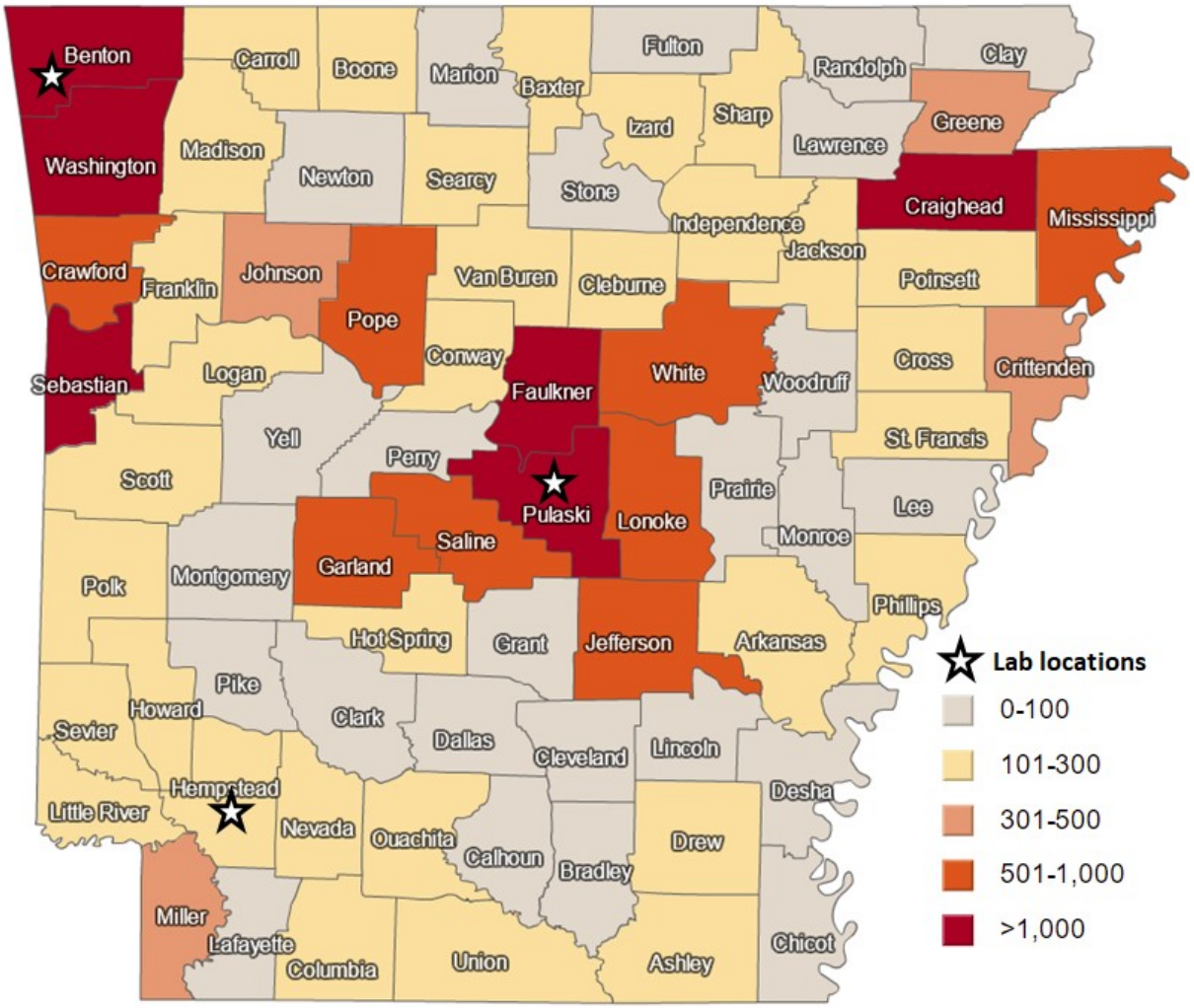

Figure 3 Requests for analysis by county, 2020

Case Completions and Turn-Around Times

Table 7 Case Completions by Discipline and Location, 2020

Disciplines	Little Rock	Hope	Lowell	Totals
Forensic Chemistry	16,545	1,206	3,127	20,878
Toxicology	3,683	N/A	860	45,099
Physical Evidence	1,972			
DNA	1,181			
Firearms/Toolmarks	522			
Latent Prints	958			
Digital Evidence	111			

Table 8 Turn-Around Times by Discipline and Location, 2020

Disciplines	December 2019	December 2020
Forensic Chemistry – Little Rock	5 months	60 days
Forensic Chemistry - Hope	4 months	4 months
Forensic Chemistry - Lowell	N/A*	4 months
Toxicology – Little Rock	30 days	50 days
Toxicology – Lowell	N/A*	54 days
Physical Evidence – Sexual Assault	40 days	49 days
Physical Evidence – Homicide	30 days	37 days
Physical Evidence – Property/other	12 months	20 months
DNA – Sexual Assault	30 days	5 months
DNA - Homicide	5 months	5 months
DNA – Property/Other	45 months	45 months
Firearms/Toolmarks - Homicide	11 months	11 months
Firearms/Toolmarks – Other	45 months	45 months
Latent Prints	30 days	30 days
Digital Evidence	45 days	7 months

*The Lowell Regional Laboratory began accepting evidence October 1, 2019.

Outsourcing of Property Crimes

According to a study funded by the National Institute of Justice[1], when DNA is collected and analyzed for property crime investigations, the following observations were made:

- More than twice as many suspects were identified
- Twice as many suspects were arrested
- More than twice as many cases were accepted for prosecution

This study also found that suspects were five times more likely to be identified through DNA evidence than through fingerprints.

Understanding the importance of utilizing DNA analysis in property crimes investigations while still keeping focus on homicide and sexual assault cases, the ASCL has utilized federal funding through the DNA Capacity Enhancement for Backlog Reduction (CEBR) Program to contract property casework to private vendor laboratories.

857 property crime cases were outsourced (2019: 333; 2020: 524). From the results of this testing, 468 developed a usable DNA profile for entry into the CODIS DNA database. From those entries, there were 315 CODIS hits.

Success of Outsourcing Property Crime Cases

- 55% of cases outsourced produced a useable profile to enter into CODIS.
- Of these profiles, 67% resulted in a CODIS hit.
- 37% of these property cases (where there was no suspect identified by law enforcement) resulted in a CODIS hit identifying a suspect.

[1] DNA Solves Property Crimes (But Are We Ready for That?) | National Institute of Justice (ojp.gov)

Human Capital

Human capital is an intangible asset that the ASCL strives to protect. Our employees are the laboratory's greatest asset and what makes the laboratory successful. In 2013, the ASCL became a Lean Six Sigma laboratory that strives for continuous improvement. Part of this culture is to 'manage' from the bottom. ASCL employees who perform the work are the experts that Administration engages to make significant improvements to the laboratory's processes. The ASCL currently has appropriation for 153 positions, 7 of which are paid from federal grant funds.

One of the goals of the laboratory is to have an 'employee centered' culture where employees are passionate and engaged in their career. To help gage the success or make improvements to the laboratory's culture, it is important to review and understand why scientists leave. Maintaining a low turn-over rate is essential to the success of a forensic laboratory because the training period for a new analyst can be up to 1.5 years. Table 1 demonstrates the number of analyst vacancies over the last 4 years, as well as the reason. In the situations in which an analyst left for other employment, 88% were receiving a higher salary at their new employment.

Table 9 Employee Retention/Attrition, 2020

Reason for Leaving	2017	2018	2019	2020	TOTAL	%
Other non-forensic employment	4	0	1	3	8	**22%**
Other forensic employment - Public	1	3	1	3	8	**22%**
In-Voluntary Dismissal	3	2	1	1	7	**19%**
Higher Education	2	3	0	1	6	**16%**
Personal- Family	4	1	0	0	5	**13%**
Other forensic employment - Private	0	0	0	2	2	**5%**
Unknown	1	0	0	0	1	**3%**
TOTAL VACANCIES	**15**	**9**	**3**	**10**	**37**	
Retention Rate (80 FTE's)	**81%**	**89%**	**96%**	**86%**		

Laboratory Facility

Renovation

The ASCL Little Rock facility is comprised of approximately 80,000 square feet of laboratory and office space. During the Lean Six Sigma process, the existing space was examined for efficiency and effectiveness for teamwork. Due to the limited space, individuals within the DNA section of the laboratory had reporting stations in three different areas and their analytical laboratory was on a different floor. This was not effective for teamwork or efficiency. To improve the existing workspace, federal grants were utilized to renovate the area, placing all members of the DNA staff within the same work area adjacent to the analytical laboratory. This also allowed for expansion in the Toxicology section. Figures 4 and 5 are diagrams and photos that demonstrate this improvement.

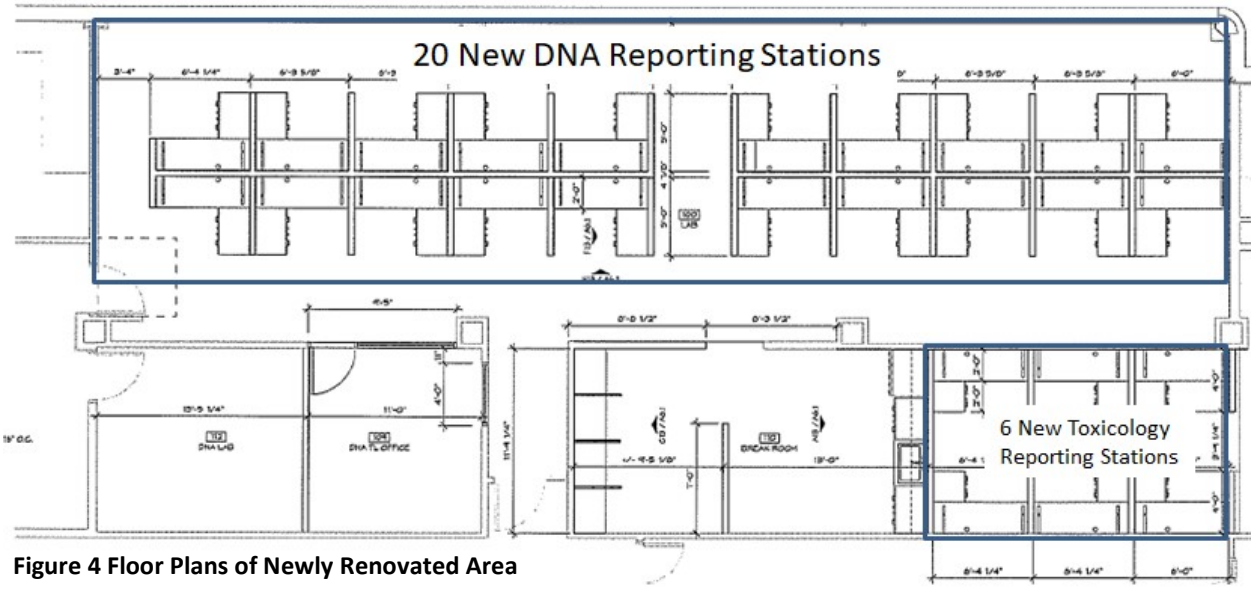

Figure 4 Floor Plans of Newly Renovated Area

DNA Reporting Stations

Toxicology Reporting Stations

Figure 5 Photos of Newly Renovated Area

Needs Assessment

The *Justice for All Reauthorization Act* of 2016 (JFARA) mandated a needs assessment of forensic laboratories, which included an examination of workload, backlog, personnel, and equipment needs for both public crime laboratories and Medical Examiner and Coroner (ME/C) offices.

As indicated in the *Report to Congress - Needs Assessment of Forensic Laboratories and Medical Examiner/Coroner Offices*[2], one of the challenges for laboratories is the physical capacity and infrastructure of their existing facilities. These facilities are maximized and most are outdated.

In order to sufficiently address the increase in demand for and complexity of forensic services and the lack of physical space at the ASCL, a needs assessment will be conducted in 2021. In order to project the future needs of the laboratory and ensure that the state of Arkansas will be able to meet the needs and the increasing demands for forensic services, the lab has submitted a Request for Proposal (RFP) to obtain a Facility Assessment and Needs Analysis.

The Scope of Work for this project will consist of the following:

- Assessment of existing facility including physical architectural and engineering observations as well as a review of existing workflow challenges and opportunities.
- Needs analysis that includes staff size and square footage projections on both a section by section and overall facility basis with rational for recommendations.
- Provide a cost opinion for both construction and total project costs for new facility that will have a lifecycle of 30 years.

The information provided in this assessment will help guide the future needs of the laboratory.

[2] https://www.justice.gov/olp/page/file/1228306/download

Project FORESIGHT

The ASCL participates in a program called Foresight, which is a business quantitative process tailored to forensic laboratories. The program, hosted at West Virginia University, allows the ASCL to evaluate its performance against other forensic laboratories (185 participants) across the globe. For the past two years (2018 and 2019), the ASCL was recognized as one of fourteen forensic laboratories in the world as a top performing laboratory based on the Foresight business metric. This Foresight Maximus award was presented to the ASCL for operating at 90% or better of peak efficiency. The tables below demonstrate how the ASCL performs relevant to other laboratories across the globe.

Demand for Services

Table 10 demonstrates that the ASCL receives more cases per capita when compared to the median in the areas of DNA Database (CODIS), Drugs, Fire Analysis (Arson), Toxicology ante-mortem and post-mortem, 169%, 128%, 92% and 12% and 34%, respectively. In fact, both DNA Database and Drugs receive more cases than the highest 25% receiving laboratories.

Table 10 Cases Received per 100,000 population

Cases per 100,000 population	Arkansas	25th Percentile	Median	75th Percentile
Digital Evidence	5.37	2.30	5.37	46.03
DNA Casework	82.47	49.61	82.47	103.96
DNA Database	512.19	98.28	190.73	314.00
Drugs	707.29	157.98	310.65	462.72
Fingerprints	47.12	28.04	51.45	165.84
Fire analysis	5.77	2.21	3.00	6.07
Firearms and Ballistics	28.83	13.90	26.18	70.56
Serology/Biology	67.40	18.61	71.42	105.69
Toxicology ante mortem	81.88	42.70	72.83	126.52
Toxicology post mortem	68.75	33.05	51.19	106.85
Trace Evidence	3.18	0.93	2.30	3.51

Laboratory Productivity

Table 11 represents the requests completed and laboratory reports generated per capita. In the areas of Drugs, Fingerprints, Fire Analysis, Toxicology (ante and post-mortem) and Trace Evidence, the ASCL completes more reports than the median.

Table 11 ASCL Laboratory Reports Issued per 100,000 population

Reports Issued per 100,000 population	Arkansas	25th Percentile	Median	75th Percentile
Digital Evidence	5.86	3.28	5.86	28.18
DNA Casework	74.06	48.25	76.02	103.70
Drugs	773.06	146.53	284.12	422.49
Fingerprints	51.09	25.62	47.25	177.41
Fire analysis	5.63	2.06	2.91	5.78
Firearms and Ballistics	23.16	13.18	24.53	43.10
Serology / Biology	57.65	35.66	57.83	96.36
Toxicology ante mortem	78.99	29.31	57.91	81.94
Toxicology post mortem	67.43	32.90	52.27	108.04
Trace Evidence	4.21	1.00	2.10	4.21

Laboratory Efficiency

Table 12 represents the time it takes to complete a report from the submission of evidence (turn-around time). In the areas of Digital Evidence, Fingerprints, Serology, Toxicology (ante and post-mortem) and Trace Evidence, the ASCL is analyzing and completing reports more timely than the median.

Table 12 Turn-around Time per Investigative Area

Area of Investigation	Arkansas	25th Percentile	Median	75th Percentile
Digital Evidence	26	83	117	179
DNA Casework	153	84	107	143
Drugs	176	44	61	85
Fingerprints	24	42	61	85
Firearms and Ballistics	91	43	66	100
Serology/Biology	50	43	58	80
Forensic Pathology	56	42	49	54
Toxicology ante mortem	22	44	57	70
Toxicology post mortem	33	45	60	69
Trace Evidence	76	98	177	314

Table 13 represents the number of cases completed for each full-time equivalent (FTE) employee (the work input of a full-time employee working for one full year) retained by the laboratory. This information indicates the level of productivity within the average laboratory by investigative area. It demonstrates that the ASCL completes more cases per FTE when compared to the median in all sections with the exception of DNA Casework. In the areas of Fingerprints, Toxicology (ante and post-mortem) and Trace Evidence more cases are completed per FTE than the highest 25% laboratories. In summary, this demonstrates that the ASCL is extremely efficient in case processing.

Table 13 Cases Completed per Full Time Examiner (FTE)

Area of Investigation	Arkansas	25th Percentile	Median	75th Percentile
Digital Evidence	36	24	30	45
DNA Casework	97	77	108	136
DNA Database	3,399	1,962	2,639	3,568
Drugs	469	342	402	529
Fingerprints	188	107	149	188
Firearms and Ballistics	82	50	71	118
Serology/Biology	134	87	117	145
Toxicology ante mortem	326	148	174	212
Toxicology post mortem	196	113	141	160
Trace Evidence	63	19	23	39

Financial

Table 14 represents the average compensation by investigative area. The ASCL compensation is significantly lower in all areas of investigation when compared to the median and lowest 25% compensated laboratories.

Table 14 Average Compensation by Investigative Area

Average Compensation by Investigative Area	Arkansas	25th Percentile	Median	75th Percentile
Digital Evidence	$56,373	$97,997	$111,109	$117,437
DNA Casework	$54,363	$102,952	$116,618	$132,849
DNA Database	$61,591	$83,514	$93,107	$104,226
Drugs	$48,236	$98,214	$105,314	$109,760
Fingerprints	$53,878	$89,105	$96,061	$104,304
Firearms and Ballistics	$57,137	$99,350	$104,077	$110,095
Serology/Biology	$59,671	$94,773	$100,306	$103,567
Toxicology	$48,376	$95,882	$101,724	$107,079
Trace Evidence	$43,803	$99,615	$103,719	$108,103

Note: Compensation includes personnel expenditures- wages, salary, benefits, operating staff, support staff, and administrative staff. Centrally assigned compensation is apportioned to each investigative area according to the percentage of full-time equivalent employees assigned to a particular investigative area.

Table 15 summarizes the cost to process a case per investigative area. The ASCL cost to process a case is significantly lower in all areas when compared to the median, as well as the 25% lowest cost laboratories. Based on the ASCL budget (Table 2), salaries and match represent 82% of the ASCL general revenue budget. The more efficient that these areas are in completing cases per FTE (Table 13), the lower the overall cost to operate. This is also due in part to the lower compensation of individuals as represented in Table 14.

Table 15 Cost per Case by Investigative Area

Cost Per Case by Investigative Area	Arkansas	25th Percentile	Median	75th Percentile
Digital Evidence	$2,576	$2,474	$4,270	$6,446
DNA Casework	$979	$1,073	$1,364	$2,152
DNA Database	$27	$37	$56	$56
Drugs	$171	$242	$318	$393
Fingerprints	$455	$595	$808	$1,089
Fire analysis	$1,308	$1,612	$2,397	$3,424
Firearms and Ballistics	$1,080	$1,096	$1,682	$2,630
Serology/Biology	$679	$779	$940	$1,350
Toxicology ante mortem	$244	$580	$719	$917
Toxicology post mortem	$435	$755	$911	$1,123
Trace Evidence	$1,185	$3,300	$6,288	$6,701

Note: The cost includes allocations for capital, wages & salary, benefits, overtime & temporary hires, chemicals, reagents, consumables, gases, travel, quality assurance and accreditation, subcontracting, service of instruments, advertisements, non-instrument repairs and maintenance, equipment leasing, utilities, telecommunications, overhead, and other expenses.

Court Testimony and Judicial Efficiencies

All employees are subject to testify in criminal cases in local, state and federal court throughout Arkansas. Table 16 compares the court activity between 2019 and 2020. The COVID-19 pandemic resulted in many courts closing, decreasing overall court time and miles driven. Use of video testimony as an alternate method for court testimony was utilized more in 2020..

Table 16 Court Time, 2019-2020

Year	Confirmed Subpoenas*	Testified	Video Testimony	Testimony Time (hours)	Waiting Time (hours)	Travel Time (hours)	Total Time (hours)	Total Miles
2019	316	188	6	77	738	1134	1,949	24,425
2020	218	144	17	57	300	304	661	12,705

*The individual was confirmed and spent time for court purposes (e.g. driving, waiting, and testifying).

Significant Challenges

COVID-19 Pandemic

The ASCL and its employees are essential personnel during pandemic events and must remain fully operational. In order to minimize the risk of infection, the following measures were initiated:

- All employees entering the laboratory are required to temperature check immediately upon entry.
- Any law enforcement officer submitting evidence is required to wear a mask and temperature check.
- All employees are required to wear a mask when social distancing is not feasible.
- Internal doors are propped open to reduce touching surfaces.
- Commonly handled surfaces are disinfected daily.
- Meetings with outside individuals in the criminal justice system (pre-trials) are conducted virtually
- Educational conferences and trainings are held virtual.
- Trials, if agreed upon by prosecutor and defense, are conducted virtual.
- Tours of the facility are no longer conducted.
- Subpoena coordinator and Medical Examiner transcriptionists may work remotely.
- Protective barriers are placed between law enforcement officers and evidence technicians to add another layer of protection.

In order to practice social distancing and remain functional, the laboratory implemented shiftwork: 1st shift (5:00am to 1:00pm); 2nd shift (1:00pm to 9:00pm). The implementation of shift work enables the employees to continue their normal analysis of casework and conducting autopsies while minimizing the risk of infection.

To assist with the stress caused by COVID, the laboratory established a 'Canteen' offering food at 'cost' to ensure the ASCL employees had access to food during the shiftwork hours. Socially distanced exercise breaks were made available to the employees.

When the COVID-19 pandemic first presented in Arkansas, the Arkansas Department of Health was overwhelmed with COVID-19 testing. The ASCL offered assistance by volunteering four (4) DNA analysts to assist with making this testing process efficient. Although this caused a delay in forensic DNA reporting, it was a sacrifice necessary to help keep Arkansas citizens safe through expedited COVID-19 testing.

The COVID-19 pandemic also had an effect on the number and types of cases received at the laboratory. The number of drug cases received significantly decreased in March – August as depicted in Figure 7. This allowed the Forensic Chemistry section to decrease the backlog by 2,500 cases in this time period.

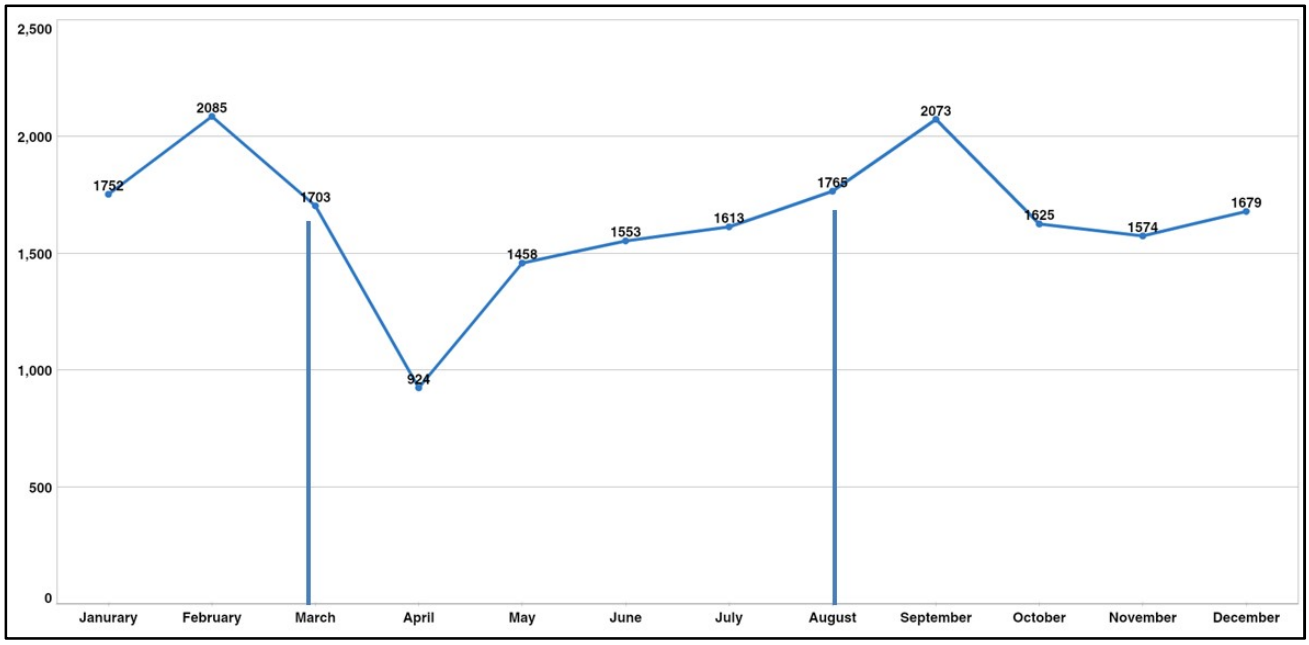

Figure 7 Drug Case Submissions, 2020

Medical Examiner Section

Unfortunately, unlike the reduction in cases received by the Drug Chemistry section, the laboratory experienced a significant increase in the number of homicide cases, as detailed in Table 5. The increase in homicide cases is compounded by the vacant Medical Examiner positions at the laboratory. In Arkansas, like the rest of the nation, there is a need to strengthen the Medical Examiner workforce by addressing the critical shortage of board-certified Forensic Pathologists. There are currently only 400-500 physicians who practice forensic pathology full time, less than half of the total estimated need for 1,100-1,200 forensic pathologists in the United States.

Based on the National Association of Medical Examiner (NAME) guidelines, accreditation requires that no forensic pathologist perform in excess of 250 autopsies per year. The ASCL performs approximately 1,500 autopsies per year. In 2020, the 5 Forensic Pathologists averaged 285 cases each, exceeding the recommended upper limit. Should the number of autopsies increase, coupled with the inability to recruit and retain employees, NAME accreditation will be in jeopardy.

Fortunately, due to the pandemic, Coroners throughout the state have been more receptive for the ASCL to conduct Medical Examiner Consultations (MEC) in those cases in which the victim had a clear medical history and therefore the cause and manner of death could be determined without a forensic examination. This minimized the potential risk for transmittal of COVID-19 to the laboratory staff.

Conclusion

The ASCL has worked diligently since 2013 to ensure that we continue to utilize the tools of Lean Six Sigma to promote an employee centered culture that focuses on continuous improvement, efficiency, quality and teamwork. The Foresight data detailed in this report demonstrates the success that Lean Six Sigma has created in making these improvements.

Arkansas, like many states, is facing continual challenges such as the opioid crisis, the demand for timely services, advancements in forensic science and technology and the necessary infrastructure needed to support them.

Challenges that face all forensic laboratories, as assessed by the National Institute of Justice:

- Collaboration and communication impairment – Better coordination is needed to enhance evidence collection and preservation; facilitate requests for testing; and ensure adequate communications on subpoenas to testify in cases later dismissed or resolved via plea bargains
- Increased workloads – Current data reflect a need to address backlogs in digital and multimedia evidence, drugs and controlled substances, and toxicology and increasing workloads for medico-legal death investigations and forensic autopsies
- Physical and technology infrastructure deficiencies – Resources are needed to bring facilities up to date
- Recruitment, hiring and training needs – These challenges are often in competition with law enforcement personnel needs, and are exacerbated by background investigations and security clearance requirements
- Shortfall of training funding – Training funds typically account for only 0.5% of total laboratory budgets
- Medical examiner and Coroner systems- workload issues compound the difficulty of conducting death investigations across jurisdictions
- Federal funding- is not available for forensic disciplines practiced at forensic laboratories and medical examiner and coroner offices – DNA analysis funding is an exception
- Forensic science research, development, and evaluations- there is a lack of dedicated funding
- Stressful work environments- takes a toll on the forensic workforce, yet few support tools are developed specifically for forensic scientists, in contrast to law enforcement and other public service sectors.

These national concerns are the same concerns Arkansas faces, and we will continue to aggressively address them appropriately.

Respectfully submitted,

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Director