

North Carolina Department of Justice

# ANNUAL REPORT

FISCAL YEAR 2020-2021

North Carolina State Crime Laboratory



Director Vanessa Martinucci

January 3, 2022

Senator Warren Daniel  
Senator Danny Britt  
Representative James L. Boles, Jr.  
Representative Ted Davis, Jr.  
Co-Chairs, Joint Legislative Oversight Committee on Justice and Public Safety  
North Carolina General Assembly  
Raleigh, NC 27601-2808

RE: Report on work of the NC State Crime Laboratory during FY 2020-2021

Dear Members:

Pursuant to Session Law 2013-360, Section 17.2, the Department of Justice is pleased to submit the Fiscal Year 2020-2021 Annual Report for the NC State Crime Laboratory to the Joint Legislative Oversight Committee on Justice and Public Safety. In addition to the data on evidence submissions, case completions, and other workload measures, the report provides updates on significant achievements and internal improvements that focus on quality, efficiency, and transparency.

Thank you for the opportunity to provide this information. We would be happy to respond to any questions you may have regarding this report.

Sincerely,

A handwritten signature in black ink, appearing to read 'Seth Dearmin', followed by a horizontal line.

Seth Dearmin  
Chief of Staff

SD/vjm

Cc: William Childs, Fiscal Research Division

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## **Executive Summary**

The State Crime Laboratory (SCL) continues to provide forensic services that meet the highest quality standards possible. The SCL has successfully maintained ISO/IEC 17025 (2017) accreditation and compliance with DNA Quality Assurance Standards (QAS). In 2021, the SCL celebrated 33 years of consecutive accreditation.

The SCL has worked diligently since 2013 to apply continuous process improvement principles using Lean Six Sigma methodology. The Laboratory has implemented advanced computerized systems, increased robotic instruments, streamlined evidence management processes, strategically redistributed casework and staff, and improved coordination with the courts and other partners in the criminal justice system.

**Case submissions have increased by 69% in the last six years.** This is a strong indicator of the confidence that law enforcement agencies have with the quality of work produced by the SCL. However, under our current scientist staffing level, the SCL is unable to meet this demand year over year. **Since 2017, the lead time has increased from an average of 115 days to an average of 290 days and the pending case records in the laboratory have increased from approximately 9,000 to approximately 23,000.** Drugs and Toxicology make up 80% of all Laboratory submissions and those submissions include complex opioids such as fentanyl and fentanyl-based analogs. These types of drugs require extensive testing, lengthening the turnaround time and resulting in a decrease in the number of cases completed. In addition, the Survivor Act's new requirements that all reported sexual assault cases be submitted to the laboratory means that SAECK submissions continue to remain high. Increased SAECK submissions have led to increased analysis requests in Trace Evidence and Latent Evidence sections as well.

**Due to the passage of the Survivor Act in September 2019 and the increasing demands of the opioid crisis, the Laboratory remains in critical need of additional resources. We are extremely grateful for the 8 scientists included in the biennium budget.** However, given this competitive market, we need the ability to retain those positions and recruit more scientists. In order to do this, we will be working with the General Assembly to create a retention and recruitment fund. This fund will allow us to fill current vacancies quicker and retain our forensic scientists so that we can meet the state's public safety needs.

**As case submissions continue to increase, so does the need for additional scientists. As such, we will also be respectfully requesting additional scientist and chemistry technician positions in the upcoming legislative budget session. These additional resources are needed to meet law enforcement demands and keep turnaround times from ballooning.**

Another challenge we would like to highlight is the need for a recurring funding source for the purchase of scientific equipment and supplies. A \$1.5M recurring appropriation would allow for a ten-year replacement schedule for equipment, which would be consistent with industry standards. A special revenue reserve fund would provide contingency funding to offset periodic reductions in crime laboratory court fees authorized pursuant to NCGS 7A-304(a)(7).

With continued support, the SCL will continue to provide quality and timely forensic analysis and impartial expert testimony for the benefit of our criminal justice system.

# NORTH CAROLINA STATE CRIME LABORATORY REPORT

## FISCAL YEAR 2020-2021<sup>1</sup>

This report is presented to the Chairs of the North Carolina General Assembly Joint Legislative Oversight Committee on Justice and Public Safety and to the North Carolina General Assembly Fiscal Research Division as directed by Section 17.2 of S.L. 2013-360, the Appropriations Act of 2013.

### I. Preface

State Crime Laboratory Director Vanessa Martinucci continued her work to ensure all laboratory operations are focused on achieving the mission to conduct the highest quality, technically proficient forensic analysis in a timely manner and provide impartial expert witness testimony.

### II. Quality (Accreditation and Certification)

The SCL's forensic services continue to meet the highest quality standards possible. The SCL maintains accreditation under strict ISO/IEC 17025 requirements and is accredited by the ANSI National Accreditation Board (ANAB). ANAB is a signatory to the International Laboratory Accreditation Cooperation (ILAC) as required by Session Law 2011-19 on accreditation for the SCL. During FY 2020- 2021, the Laboratory received its surveillance document review by ANAB. The SCL also had two annual DNA Quality Assurance Standards (QAS) audits, one in 2020 and one in 2021. There were no outstanding issues identified by ANAB or the QAS assessment team.

### III. Case Submissions and Completions<sup>2</sup>

#### 1. Case Submissions

In FY 2020-2021, **42,678** examination submissions, including over **62,336** items of evidence, were accepted at the SCL's three locations. (See Appendix A) This is a **1.46% increase in case examination submissions** compared to FY 2019-2020. Submissions have been increasing each year since FY 2014-2015 with a **69% increase over the last six years**. Including DNA Database submissions, the SCL received 57,836 submissions in FY 2020-2021.

Case submissions are broken down as follows:

- The **main SCL in Raleigh** received 22,212 case record submissions and 15,158 DNA Database submissions for a total of 57,836 submissions.
- The **Triad Regional Crime Laboratory** received 10,566 case record submissions.
- The **Western Regional Crime Laboratory** received 11,900 case record submissions.

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<sup>1</sup>This Report addresses the statutorily mandated "previous fiscal year" (July 1, 2020 - June 30, 2021), and thus only briefly mentions, when required by context, important Crime Lab developments occurring on or after July 1, 2021.

<sup>2</sup> This information is provided in compliance with S.L. 2013-360 (1) and (2) which requires that the Annual Crime Laboratory Report contain "(1) Information about the workload of the Laboratory during the previous fiscal year, including the number of submissions, identified by the forensic discipline, received at each location of the Laboratory. (2) Information about the number of cases completed in the previous fiscal year, identified by forensic discipline, at each location of the Laboratory."

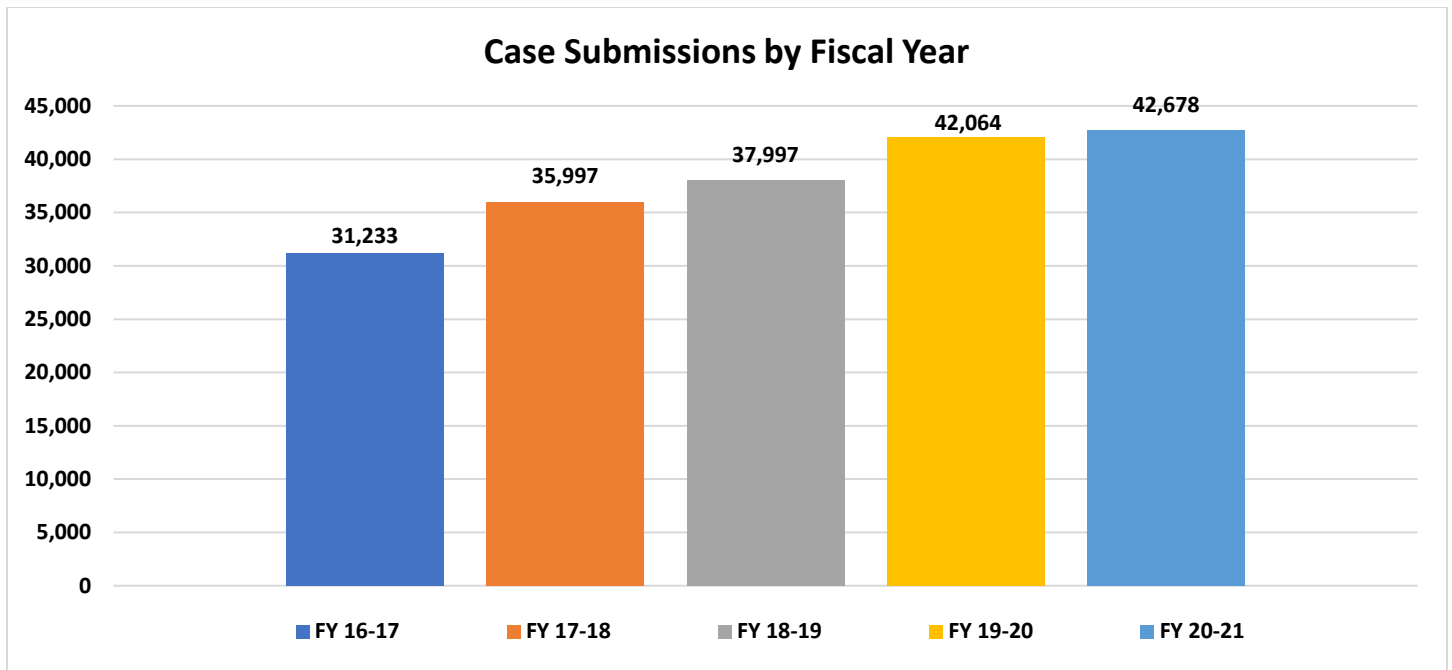


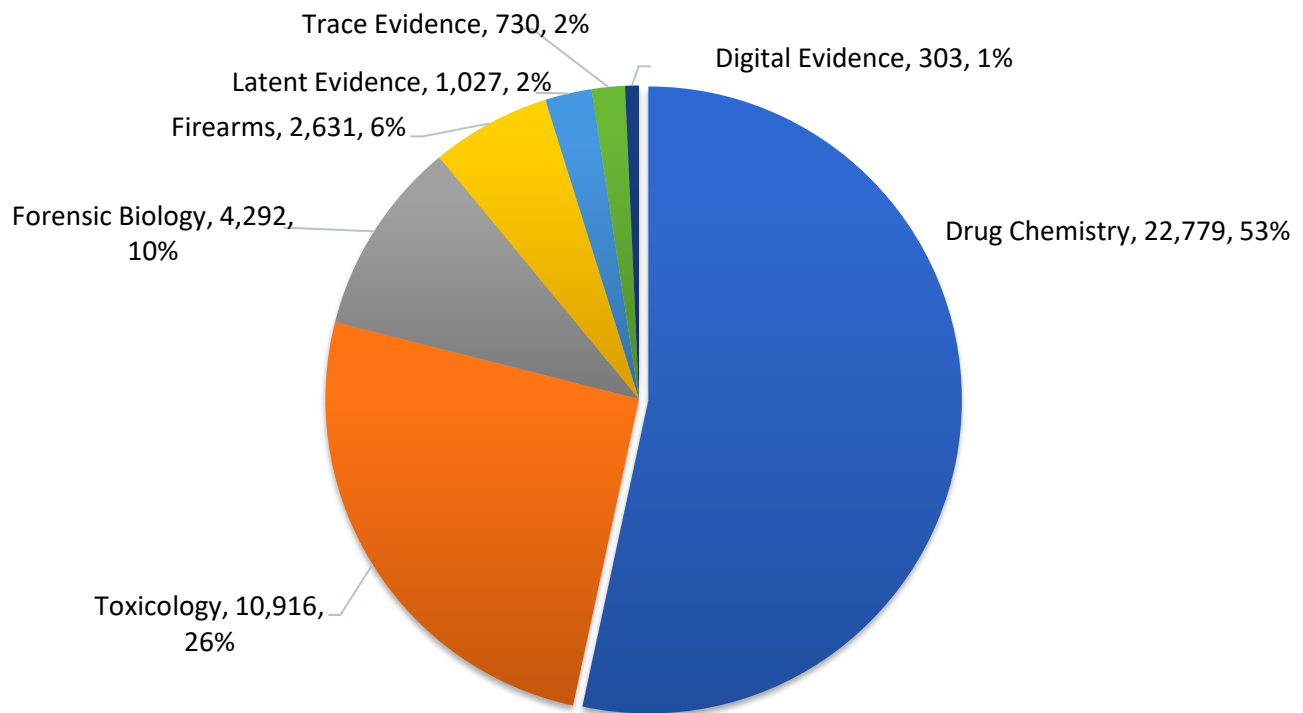
Figure 1 Annual Case Submissions

a. Case Submissions by Forensic Discipline and Laboratory Location

In FY 2020-2021, the SCL received the following cases, broken down by forensic discipline and laboratory location:

	<u>Raleigh</u>	<u>Triad</u>	<u>Western</u>	<u>TOTALS</u>
Drug Chemistry	9,740	5,267	7,772	22,779
Toxicology	4,739	3,660	2,517	10,916
Forensic Biology	2,640	875	777	4,292
Firearms	1,744	340	547	2,631
Latent Evidence	614	240	173	1,027
Trace Evidence	490	147	93	730
Digital Evidence	245	37	21	303
<b>TOTALS</b>	<b>20,212</b>	<b>10,566</b>	<b>11,900</b>	<b>42,678</b>

## Submissions by Discipline for FY 2020-2021



**In FY 2020-2021 approximately 2,957 of the 17,638 DNA database samples received were duplicates.** The number of duplicates (an additional sample from the same individual) has decreased by almost 50% since FY 2017-2018. However, duplicate submission and improper use of kits during collection continues to impact the DNA Database Section. The Laboratory pays approximately \$6.00 per kit (includes postage cost), which are provided to law enforcement agencies at no cost. **The duplicates submitted in FY 2020-2021 cost approximately \$20,000. There have been ongoing efforts** to better educate the members of law enforcement on duplicate submissions, including sending letters to agencies with a high duplicate submission rate and providing training to the Department of Public Safety (DPS) prison staff. The DNA Database Section also partnered with Department of Justice (DOJ) IT and the Government Data Analysis Center (GDAC) to integrate the DNA Database SpecMan specimen manager system with Criminal Justice Law Enforcement Automated Data Systems (CJLEADS). This partnership resulted in another method of collecting officers can use to verify the need for a new DNA sample. It also enables the Laboratory to identify instances where a sample was not collected. To maximize taxpayer resources, the Laboratory encourages ongoing training in efficient collection procedures for submitting law enforcement agencies. Training to reduce duplicate sample submissions is available on the North Carolina Justice Academy website.

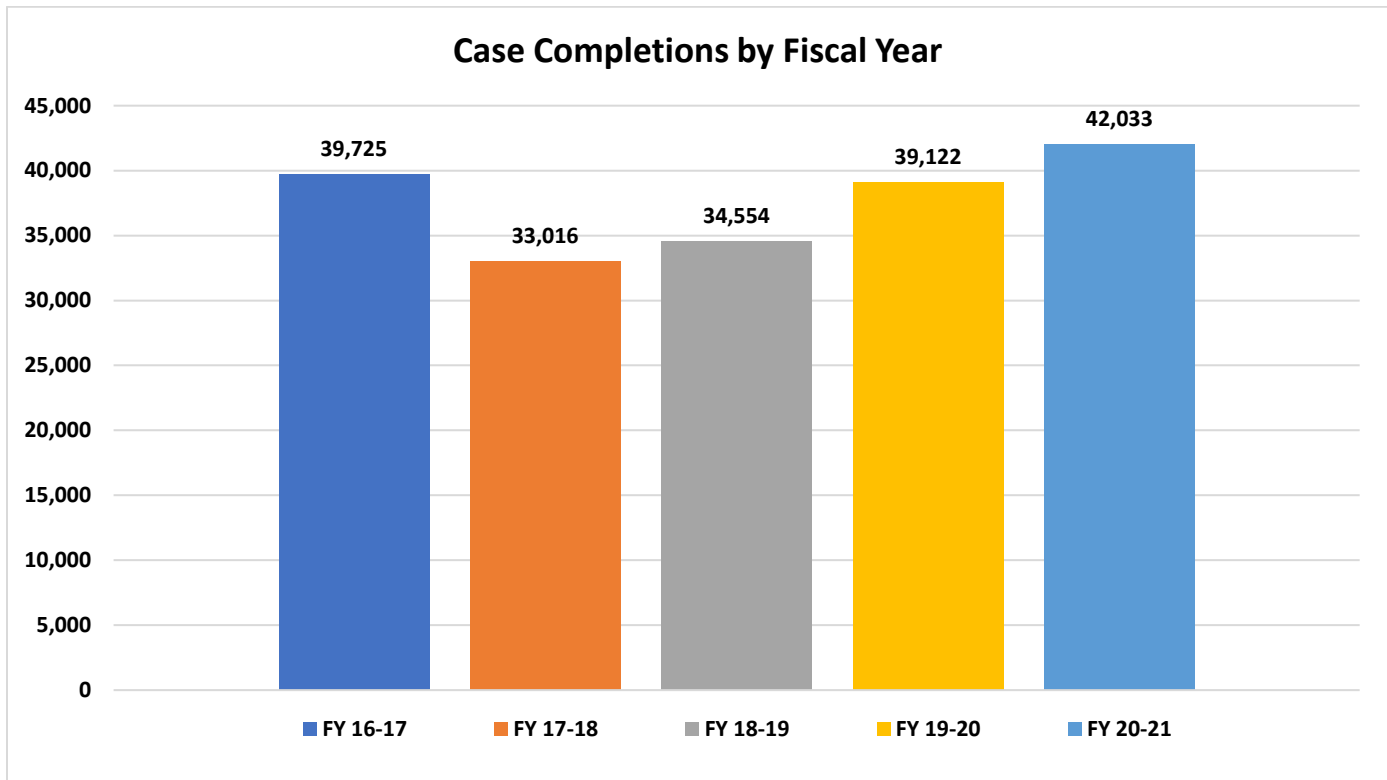
**b. Case Submissions by County<sup>3</sup>**

Case work and evidence item submissions over the past five fiscal years per North Carolina County may be found in Appendix A.

**2. Case Completions**

For FY 2020-2021, scientists in the SCL system worked 42,033 case records, broken down as follows:

- The full service **Crime Laboratory in Raleigh** worked 18,717 case records.
- The **Triad Regional Crime Laboratory** worked 7,140 case records.
- The **Western Regional Crime Laboratory** worked 16,176 case records.



*Note: The completed cases reported above include completed examinations and partially worked cases terminated by the customer.*

**Figure 2 Annual Case Record Completions**

<sup>3</sup>This information is provided in compliance with S.L. 2013-360 (3) which requires that the Annual Crime Lab Report contain "A breakdown by county of the number of submissions received by the Laboratory in the previous fiscal year." The numbers in these tables do not include Convicted Offender or DNA upon Arrest submissions.



#### Case Record Completions by Forensic Discipline and Laboratory Location

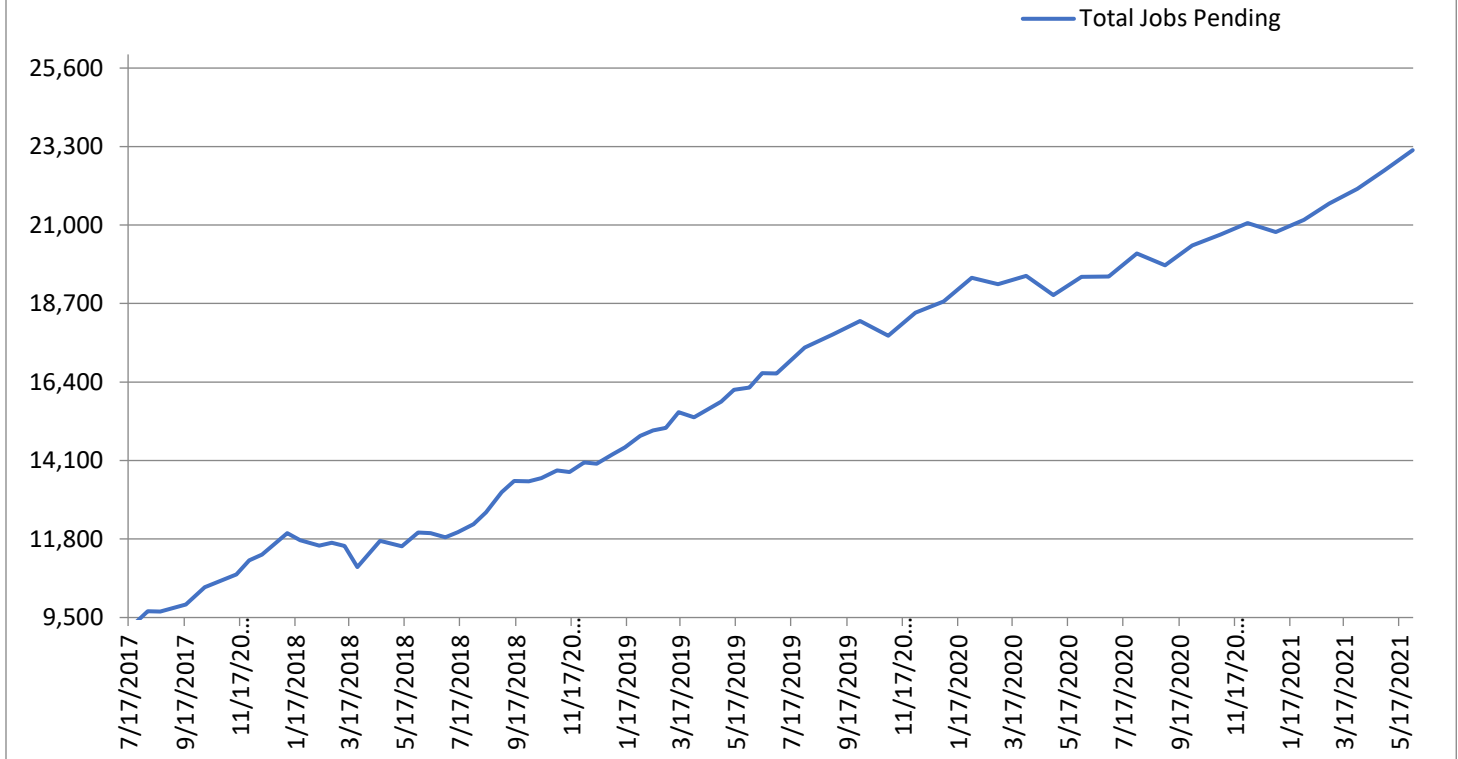
In FY 2020-2021, the SCL completed the following cases, broken down by discipline and laboratory location:

	<u>Raleigh</u>	<u>Triad</u>	<u>Western</u>	<u>TOTALS</u>
Drug Chemistry	8,137	3,876	12,056	24,069
Toxicology	3,187	2,974	2,148	8,309
Forensic Biology	3,945	8	862	4,815
Firearms	1,810	2	764	2,576
Latent Evidence	698	276	337	1,311
Trace Evidence	783	4	8	795
Digital Evidence	157	0	1	158
<b>TOTALS</b>	<b>18,717</b>	<b>7,140</b>	<b>16,176</b>	<b>42,033</b>

The continued superior court and district court closures allowed scientists to dedicate their time to casework, therefore increasing the number of completed cases. **It is important to note that one submission often equals more than one case record.** This has led to an increase in the pending case records in the laboratory, which has gone from **approximately 9,000 to approximately 23,000 since 2017.**

## Total Jobs Pending 7/2017-7/2021

### 9,158 - 23,350



**DNA Database CODIS samples processed:** Notable successes of the DNA Database Section include a **record 1,029 hits to the DNA database in FY 2020-2021**, which now contains more than **390,000 DNA profiles**. Of the 1,029 hits, 538 or approximately **52% of them are from sexual offenses**. The increases noted in SAK submissions and the CODIS hits is directly related to the increased focus that has been placed on the testing of sexual assault kits. New technology now allows faster input of DNA samples into the database where it can be used to identify suspects in unsolved cases.<sup>4</sup>

- **There are two offenses currently not in the Arrestee DNA Database law that if added could be impactful and not significantly increase the volume or cost of DNA database sample submissions. These are Misdemeanor assault on a female and child (14-33 (c)2 and 14-33 (c)3, respectively) and Violation of a valid protection order (50B-4.1(a))** Adding these crimes could make a real difference in preventing crimes, as there is direct link between perpetrators of domestic violence and serial rape. For instance, Fayetteville has solved 51 cold case rapes. Of those 51, there were 28 suspects – and nearly half (13) had prior domestic violence arrests. Of 28 suspects, one suspect was charged with 6 rapes and another 11 rapes. However, both had Domestic Violence charges after their 2<sup>nd</sup> rape. If their DNA had been collected after their Domestic Violence charges, it would have possibly prevented 13 other rapes. The House passed H674, Require DNA for Various Charges, which added these crimes to G.S. 15A-266.3A. The bill is now in Senate Rules and is eligible for consideration in the upcoming legislative session.

<sup>4</sup> At the writing of this report, the average time to receive convicted offender (CO) or arrestee (AR) samples and input into the database is approximately 23 days.

a. **Lead Times<sup>5</sup>**

Lead times at the SCL continue to improve as additional scientists complete their required training and begin to work on active cases. **Average lead time for the SCL (the time the customer feels) is 290 days.** Lead times for individual cases vary depending on the amount of evidence submitted and the type or types of analysis requested.

b. **Rush Case Program**

The SCL continues to operate a successful rush case program to give Law Enforcement Agency Heads or District Attorneys the option to expedite cases when appropriate. Upon the request of a Law Enforcement Agency Head or District Attorney, **the SCL can rush or expedite a case for public safety or court purposes.** Depending on the evidence submitted and the type(s) of analysis requested, rush cases can be worked in a matter of days. Laboratory management welcomes inquiries from Law Enforcement Agency Heads or District Attorneys about cases when a rush request may be needed.

c. **Court Testimony and Judicial Efficiencies**

In FY 2020-2021, Laboratory scientists spent a total of **1,921 hours traveling to court**, waiting to testify or testifying. Of those hours, SCL scientists spent **1,105 hours traveling to court**, **942 hours waiting to testify**, and **175 hours testifying** (See Figure 3). Due to the COVID-19 pandemic, the court system utilized Laboratory scientists less frequently than normal in 20-21; however, the percentage of time spent traveling and waiting remained consistent (89%). **Assistance is still needed from our criminal justice stakeholders** to minimize the time forensic scientists spend in court and away from the laboratory. **Only 11% (175 hours of the 1,921 hours) of the time an analyst spent outside the laboratory for court purposes was spent testifying.** More time spent by scientists waiting in court or traveling to court means less time in the laboratory working on cases. The seventeen recommendations from the *UNC School of Government's Report of the Crime Laboratory Working Group: Administrative Solutions to Alleviate Lab Backlog* specifically outlines recommendations to minimize wait time for our analysts.

**The SCL acknowledges the positive attention given to this important matter and continues to request assistance from our criminal justice stakeholders to minimize time forensic scientists spend in court and away from the laboratory.** The SCL appreciates the updates to the General Statutes in the biennium budget making district court remote testimony more easily available to our scientists. This change will help to reduce the time that the scientist is unable to be working cases.

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<sup>5</sup> **Lead Time** is defined as the time from when the evidence is submitted to the SCL to when the report is published. This includes time the evidence sits in the Laboratory evidence vault waiting to be assigned to an analyst. **Turnaround time** is defined as the time from when the analyst receives the evidence until the time they publish a report at the completion of their analysis.

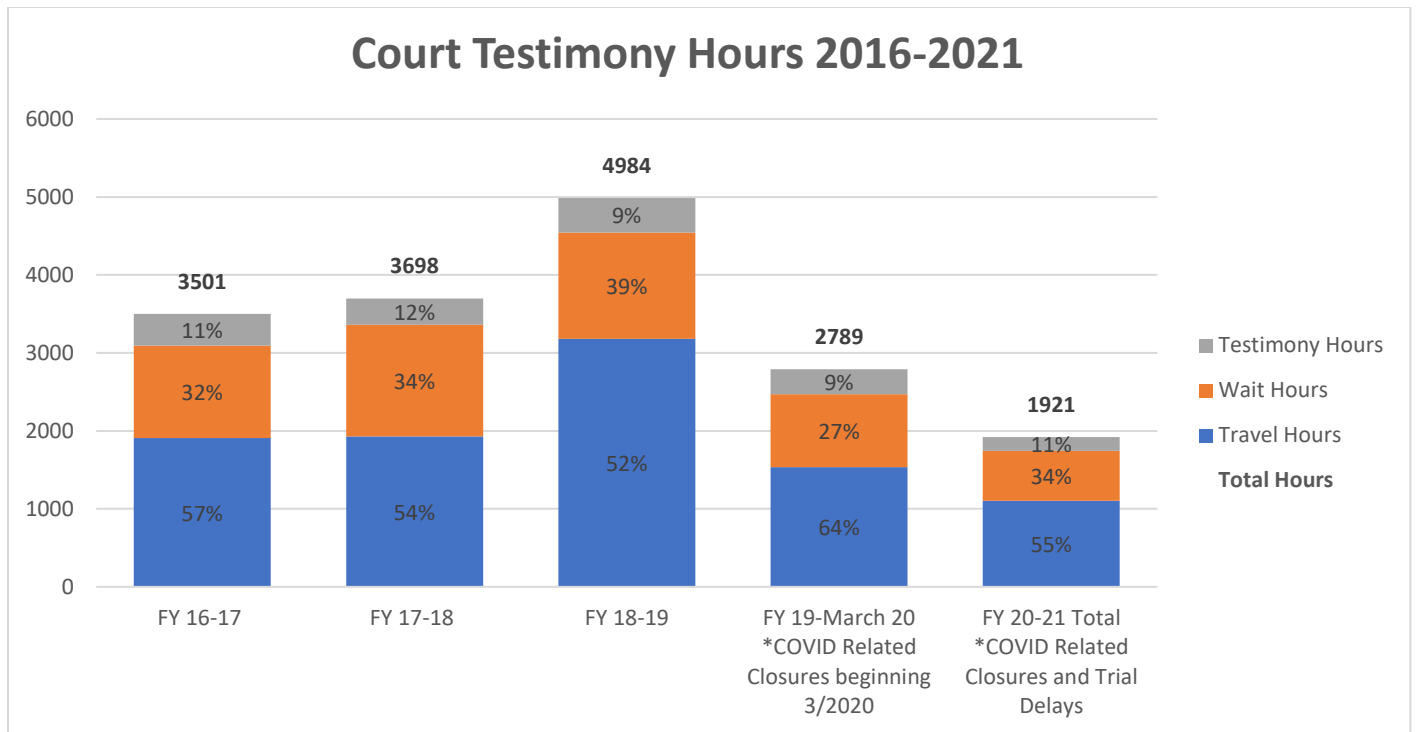


Figure 3 Court Testimony Hours 2016-2021

#### d. Outsourcing and Untested Sexual Assault Evidence Collection Kits (SAECK)

In June 2017, the legislature, in consultation with DOJ, enacted Section 17.7 of Session Law 2017-57 to require every law enforcement agency to conduct an inventory of untested Sexual Assault Evidence Collection Kits (SAECKs) located throughout the state and report their findings to DOJ no later than January 1, 2018. On March 1, 2018, DOJ reported that there were 15,160 untested SAECKs in NC. A more recent follow up certified inventory found the total number of untested SAECKs in local law enforcement custody was 16,185.

In 2018, the DOJ requested the General Assembly provide funding to get a jump start on testing, authorize the creation of a tracking system for SAECKs, and authorize a multidisciplinary working group made up of representatives from law enforcement, district attorneys, community advocates, and lab scientists to develop a strategic plan to address the statewide backlog. While the legislature did not provide any funding in 2018, it did approve the creation of a tracking system and the multidisciplinary working group.

During the interim, before the 2019 session of the General Assembly, DOJ spearheaded an initiative to get a jump-start on testing previously untested SAECKs located throughout the state. To obtain the necessary resources for testing, DOJ/SCL secured \$2M in funding from the Bureau of Justice Assistance Sexual Assault Kit Initiative (SAKI) and \$2M from the Victims of Crime Act funding (VOCA) to help cover the costs associated with the identification and testing of SAECKs. After securing these funds, the SCL began working with local law enforcement to outsource their inventoried untested SAECKs.

In December 2018, the multidisciplinary working group completed their work and provided the Attorney General a report recommending a best practice process to test all testable SAECKs. This report served as the basis for the Standing Up For Rape Victims Act Of 2019, or Survivor Act, (House Bill 29 and Senate Bill 46), which the General

Assembly passed and became law in September of 2019.

The Survivor Act appropriated \$6M of general funds to aid in the testing of remaining SAECKs and a statutory process for testing all SAECKs. This new law ensures that a backlog will not develop in North Carolina again, but it has resulted in a drastic increase in submissions of SAECKs from law enforcement to the SCL.

The increased submissions of SAECKs falls squarely on the shoulders of our Forensic Biology Section. They are tasked with: receiving the requests from agencies for SAECK testing; reviewing the outsourcing request form to ensure that the case will be CODIS eligible and meets the requirements of the Survivor Act for testing; approving the case for shipping to a vendor laboratory; and coordination with the vendor laboratory on shipping/receiving of kits from all law enforcement agencies. The vendor laboratory processes the cases and reports the results directly to the law enforcement agencies as well as the SCL. The SCL also reviews qualifying data from the vendor laboratories for upload into CODIS.

Unfortunately, several months after receiving the additional general fund money, the federal government declared that the VOCA funds that DOJ received prior to the Survivor Act passing could not be used for the testing of sexual assault kits. Additionally, only \$1 million of the \$2 million SAKI grant can be used for testing of sexual assault kits.

Additionally, the SCL had an outsourcing contract with a vendor laboratory that ended on June 30, 2020. Due to the nationwide demand for SAECK testing as well as the inclusion of courtroom testimony fees, the cost per kit in the new contract increased from \$695 per kit to \$1,245 per kit, a 79% increase.

With the increased cost per kit and the return of the VOCA grant funds, an additional \$9M will be needed to test the backlog of previously untested SAECKs located throughout the state. The SCL is very appreciative of the appropriation of those funds in the biennium budget.

Testing these old kits is solving crimes. As of the writing of this report, 6,911 kits are in the process of being tested or have been tested. Testing has been completed on approximately 2,100 kits, while the others are currently with the vendor lab for testing or are in review and approval for shipping. These completed tests have led to numerous arrests in longstanding cold cases – as forty percent of those tested kits with an eligible CODIS profile have a CODIS hit to a known offender or another case, allowing law enforcement to move forward. For example, in Winston-Salem a suspect was charged with first-degree rape and first-degree kidnapping due to testing a SAECK collected in 1993. In Fayetteville, a suspect was charged after DNA testing linked him to nine sexual assaults that occurred in 2009 and 2010. In Asheville, a CODIS hit match on a SAECK from 2008 led to second-degree forcible rape charges. Most recently, Durham's Police Department announced eleven arrests in connection with 15 cold sexual assault cases.

In Wilmington, a suspect was charged with a rape that occurred 25 years ago during the robbery of a convenience store. Asheville police department arrested a man for first-degree forcible rape and first-degree kidnapping for an sexual assault in 1992. In Hoke County, a man was arrested and charged with three counts of forcible rape, as well as kidnapping, robbery, and possession of stolen property due to testing a kit collected in 2001.- A suspect was arrested after testing a kit from a sexual assault on a juvenile that occurred in 1989 in Spring Lake.

Based on projections of testing capacity by the vendor laboratories, the Survivor Act funding of \$6M should be encumbered around the middle of 2022. With the additional \$9M in funding, and assuming the private labs perform to their contract, we project that all previously untested SAECKs that require testing based upon the Survivor Act could be tested by the end of 2023.

**All information regarding the STIMS project has been reported in the legislatively mandated STIMS report require by NCGS § 114-65.**

#### IV. Process Improvements

The SCL continues its concerted effort to identify cases that have been disposed of in court (“stop-work cases”) and no longer need forensic analysis. The **SCL routinely provides prosecutors with lists of cases** that appear to have cleared the court system but for which the Laboratory has not received a disposition notice, requesting confirmation that the case is completed and that no further Laboratory work is required. The NC Conference of District Attorneys has facilitated prosecutorial review of these notices and nearly **all forty-three District Attorneys are participating**. As a result, the SCL is able to focus on the cases where forensic analysis is still needed.

The SCL continues to partner with the NCDIJ’s Information Technology Division, NC Government Data Analytics Center (GDAC), NC Conference of District Attorneys, NC Administrative Office of the Courts (AOC), and the Statistical Analysis System (SAS) Institute, Inc. to develop a software solution to **automate the stop-work process within the laboratory information management system. District Attorneys will be able to access and update case dispositions through the State Crime Laboratory’s web-based laboratory information management system without the Laboratory providing lists.**

The SCL worked with GDAC to enhance the automated process to identify cases that meet statutory requirements for disposal. The automated report has helped eliminate the number of adjudicated DWI blood tubes in Laboratory custody and ease the burden for investigating agencies to refrigerate cases after analysis. The State Crime Laboratory has successfully been able to dispose of 20,120 cases in storage since the automated system was implemented in February 2019. The passage of G.S. 20-139.1(h) has positively impacted the Crime Laboratory’s storage capacity by allowing the disposal of the blood tubes in adjudicated cases (which meet statutory requirements).

#### V. Human Capital

In FY 2020-2021, there were 18 hires, 14 resignations, and 7 retirements. The SCL had a vacancy rate of 11.9% at the end of the fiscal year. The process of filling these vacancies and training a new scientist can take from one to two years.

The SCL and DOJ continue to work to find ways to attract and retain highly qualified employees. The past two fiscal years have seen improvement in the ability to fill vacancies. However, more can be done to retain scientists, as salary and lack of opportunity for advancement are consistent reasons cited for scientists leaving employment with the SCL. We will be respectfully requesting a recurring reserve fund appropriated to address recruitment and retention needs for the Forensic Scientist series, including salary increases and promotional opportunities.

#### VI. Fiscal Resources<sup>6</sup>

At the beginning of calendar year 2014, the SCL began participating in **Project Foresight** through the West Virginia University College of Business & Economics. The purpose of the collaboration was to begin building a detailed picture of the fiscal resources required to operate a forensic laboratory to include determining the cost of each test.

The FORESIGHT Project Report indicates that the SCL is comparable to other like-size, publicly funded state forensic laboratories servicing like-size state populations. **Eleven of the thirteen investigative areas noted were less in cost per case compared to the FORESIGHT 75<sup>th</sup> National Percentile. Eight of those eleven areas were below the median**

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<sup>6</sup>S.L. 2013-360 (4) also provides that the Annual Crime Laboratory Report contain “[a]n average estimate of the dollar and time cost to perform each type of procedure and analysis performed by the Laboratory.” The Crime Laboratory initiated participation in “Project Foresight,” operating out of West Virginia University, which compiles such information for forensic laboratories. The data collection deadline for the Project Foresight Annual Report published the next May is Dec.1. The FY 2019-2020 State Crime Laboratory Annual Report is the fourth year in which a full year of data reflecting a comparative breakdown of analysis costs is being addressed.

**cost.** Note that one item may be investigated and counted in several investigation areas. The cost includes allocations for capital, wages & salary, benefits, overtime & temporary hires, chemicals, reagents, consumables, gases, travel, quality assurance and accreditation, service of instruments, non-instrument repairs and maintenance, equipment leasing, utilities, telecommunications, overhead, and other expenses. (See Figure 4.)

<i>Project FORESIGHT Annual Report, 2019-2020 Cost per Case by Investigative Area</i>				
Area of Investigation	NORTH CAROLINA	25th percentile	Median	75th percentile
Digital Evidence	\$5,144	\$2,522	\$3,765	\$7,002
Drug Chemistry - Controlled Substances	\$294	\$266	\$365	\$451
DNA Database	\$234	\$42	\$63	\$124
Forensic Biology: Serology/Biology	\$418	\$776	\$1,035	\$2,077
Forensic Biology: DNA Casework	\$1,077	\$1,102	\$1,411	\$2,185
Firearms and Ballistics	\$2,434	\$1,300	\$1,911	\$3,259
Firearms Database (including NIBIN)	\$141	\$76	\$207	\$336
Latent Evidence: Fingerprints	\$1,276	\$640	\$939	\$1,368
Latent Evidence: Marks and Impressions	\$16,198	\$5,985	\$7,961	\$12,506
Toxicology ante mortem - Blood Alcohol	\$99	\$118	\$154	\$266
Toxicology ante mortem - drug testing (excluding BAC)	\$1,189	\$594	\$817	\$1,062
Trace Evidence: Fire analysis	\$998	\$1,539	\$2,356	\$3,161
Trace Evidence: Gun Shot Residue (GSR)	\$419	\$2,042	\$3,202	\$4,164
Trace Evidence: other (hair, fiber, paint, physical match)	\$3,755	\$3,056	\$4,594	\$6,501

Figure 4 Project FORESIGHT Annual Report, 2019-2020 National Percentile for Cost per Case by Investigative Area (Table 7)

As newly-hired scientists completed their training and began work on active criminal cases and as submissions have increased for the last six years, the SCL's **supply costs have also increased**. During FY 2020-2021, the SCL expended more than \$1.6M on scientific supplies of which 78% was DNA-related. Specifically, \$1,252,003 was expended on DNA, while \$350,362 was expended on non-DNA disciplines. (See Figure 5). Of that amount, **25% or \$398,968 (decreased from 27% or \$471,620 in FY 2018-2019) was from General Fund Appropriations** and the remaining **75% or \$1,203,397 (compared to 73% or \$1,292,704 from FY 2018-2019) was from Grant funding**. (See Figure 6).

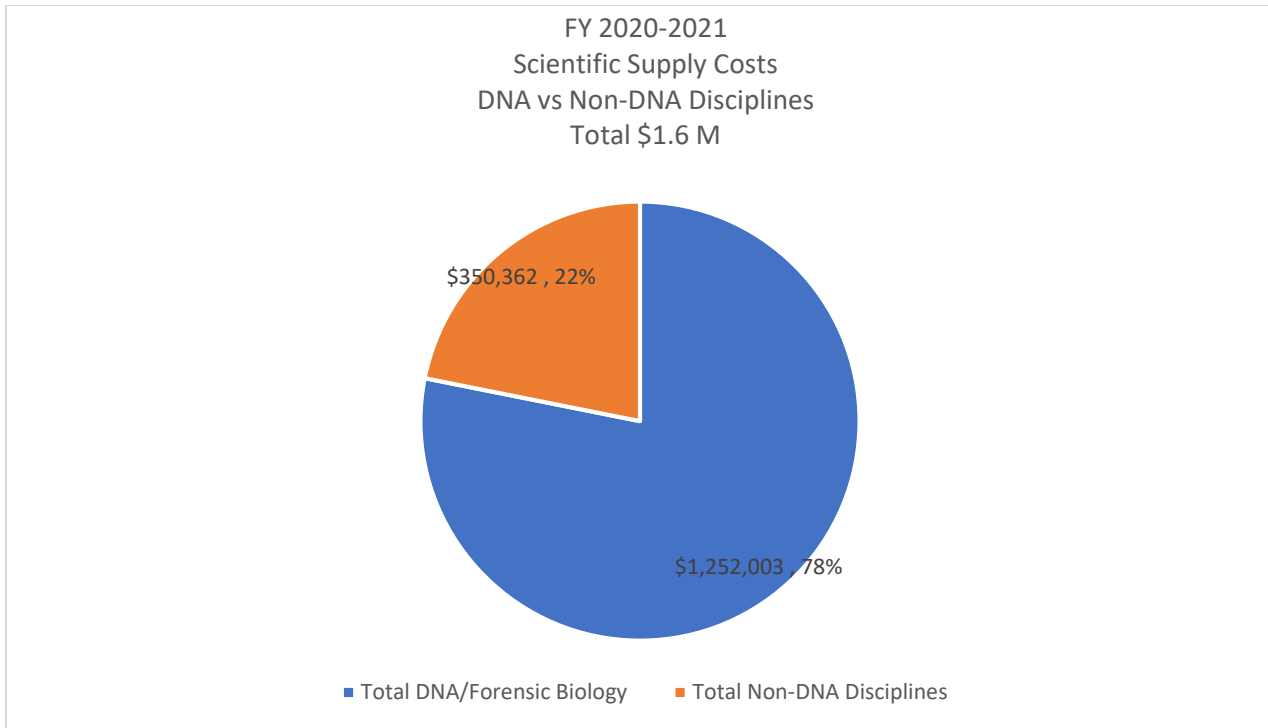


Figure 5 FY 2020-2021 Scientific Supply Costs

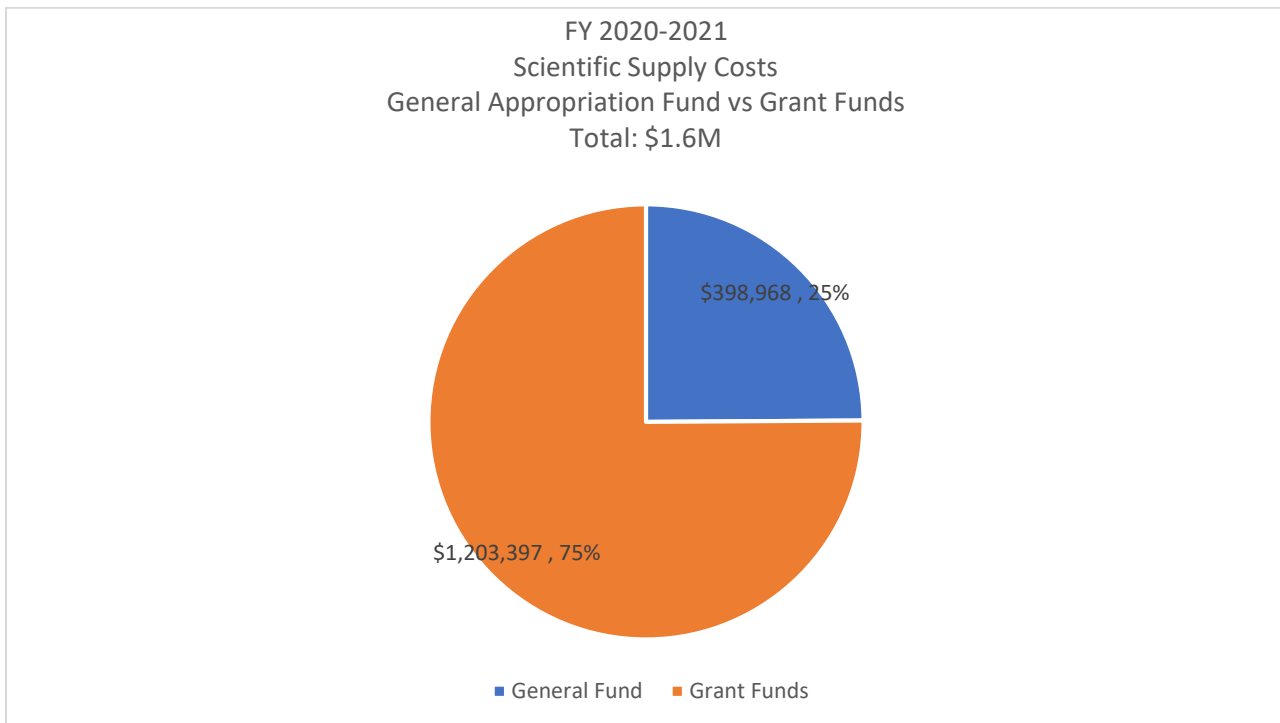


Figure 6 FY 2020-2021 Scientific Supply Funds from General Appropriations vs Grants



**During FY 2020-2021, the SCL had active funding from various federal grants totaling approximately \$12M. Funding was utilized to replace scientific equipment, purchase supplies, perform education and outreach to criminal justice stakeholders on the sexual assault kit initiative, outsource sexual assault kits, hire temporary personnel to perform site audits for untested sexual assault kits, hire personnel to develop the STIMS and SpecMan systems and to pay for training for SCL staff to meet mandated certification and accreditation requirements.**

The North Carolina Forensic Science Advisory Board, composed of 15 renowned national forensic experts, reported in a letter to the North Carolina General Assembly that the “Laboratory lacks critical resources necessary to serve North Carolina taxpayers and the criminal justice system at the highest operational level...” The **Board unanimously supported and strongly recommended** that the General Assembly establish a **special revenue reserve fund to finance non-recurring expenses** such as scientific equipment and to **increase funding for scientific supplies to offset decreasing federal grants**. To remain a state-of-the-art forensic laboratory, scientific instrumentation and equipment must be replaced and updated based on current industry standards. Realistically, \$1.5M recurring would allow a ten-year replacement schedule and combined with the nearly \$4.5M received over the last seven years, the SCL would be very close to industry standards. A special revenue reserve fund would provide contingency funding to offset periodic reductions in crime laboratory court fees authorized pursuant to NCGS 7A-304 (a) (7).

## **VII. Expansion**

The SCL continued to expand its services, replace outdated equipment, and conduct significant analysis to determine the future needs within each of the disciplines. Some examples are noted below.

The National Integrated Ballistic Information Network (NIBIN) is the only national network that allows for the capture and comparison of ballistic evidence to aid in solving and preventing violent crimes involving firearms. The Bureau of Alcohol, Tobacco, Firearms, and Explosives (BATFE) has put a spotlight on the NIBIN program. The BATFE is encouraging smaller agencies across North Carolina to utilize the NIBIN program to aid their investigations. This is driving an increase in NIBIN case submissions to the Firearms Section. The Firearms Section has seen an increase in the number of leads generated, therefore more requests for NIBIN confirmations are being submitted. Since 1994, the NCSCL has generated nearly 6,000 leads for law enforcement, making the NCSCL first in the Carolinas and ninth in the nation for leads. Due to this success, the NCSCL is now triaging all eligible cases through the NIBIN system prior to microscopic comparison. This process will help expedite the examination and provide information to law enforcement more quickly.

The Drug Chemistry Section continued to see an increase in the complexity of cases submitted. Analysis of these items involves counting and verifying the number of units present, and documentation and analysis of multiple units in order to meet statutory weight thresholds. Often there are more than one controlled substance present in these samples or varying concentrations of these substances, which requires repeat and or additional analysis and takes longer for scientists to work. Additionally, there has been an increase in the number of clandestine pharmaceutical and non-pharmaceutical tablets. A majority of the clandestine opiate/opioid marked pharmaceutical exhibits are found to contain fentanyl. For the FY 20-21, the top five controlled substances and their percentage of total cases completed were as follows: Methamphetamine (42.6%), Cocaine (20.6%), Fentanyl (15.1%), Heroin (13.7%), 4-ANPP (5.9%). This fiscal year saw an increase in designer benzodiazepines such as clonazepam, flualprazolam, and deschloroetizolam. In addition, plant material containing THC and no CBD accounted for 3.8% of total cases. Of the cases containing **suspected Cannabis plant material that were analyzed, 87% contained THC only, 2% contained CBD only, and 11% contained both CBD and THC.**

In FY 2020-2021 the Toxicology sections of the SCL tested 2,252 DWI related blood samples for drugs. There was an average of 2.5 different drugs identified in the positive samples. The most prevalent drugs identified were: Cannabinoids (THC and metabolites; Marijuana) – 49%; Benzodiazepines (e.g. - Xanax, Valium, Klonopin, etc.) – 35%; Methamphetamine and/or Amphetamine – 31%; Opioids (e.g. - morphine, oxycodone, fentanyl, etc.) – 24%; Cocaine (and its metabolites) – 18%. Grant funds were used to purchase and validate methods for Q-TOF instrumentation at all three laboratories. This instrumentation has allowed for the screening of over two hundred different drugs. Toxicology now has the ability to detect compounds previously not seen in casework, as well as have better detection limits for other compounds.

Mobile device submissions increased again for FY20-21 for the Digital Evidence Section. With the addition of the ability to bypass certain security features of iOS mobile devices and Android devices, the section saw a 67% increase in mobile device submissions from FY19-20. As word has spread through the section's customers, there has also been an uptick in powered-on phone submissions. These phones are prioritized for examination since the ability to recover data may be impacted if the phone loses power. As demand for this service has increased, the Digital Evidence Section has increased its capacity for storing actively working devices.

**The SCL is requesting additional scientists during the next legislative session to effectively help the criminal justice system use science to promote justice.**

As stated earlier, case submissions to the SCL have increased **69% over the past six years**. This is a strong indicator of the confidence that law enforcement agencies have with the Laboratory's work. However, under our current scientist staffing level, the SCL is unable to meet this demand year over year. Since 2017, the lead time has increased from an **average of 115 days to an average of 290 days** and the pending case records in the laboratory have increased from **approximately 9,000 to approximately 23,000**. We are grateful for the 8 Forensic Scientist positions appropriated in the biennium budget. Once hired and trained, these scientists will allow the SCL to better meet the needs of law enforcement. However, it will not allow us to fully close the gap between cases submitted and cases completed. Also, there is a dire need for Forensic Scientist Supervisors to manage the additional scientists. In order to meet those needs and provide promotional opportunities that will increase retention, we will be respectfully requesting additional scientist positions in the upcoming legislative budget session. **We will also be requesting chemistry technician positions**. These technicians perform duties, such as quality assurance and maintenance of instruments, opening and inventorying sexual assault kits, that take the scientists away from casework, **decreasing the number of cases that a scientist can work**.

**These additional positions are critical.** Since a majority of **Drug and Toxicology submissions** now include complex opioids such as fentanyl and fentanyl-based analogs, these types of drugs require extensive and complicated testing that lengthen turnaround times. Moreover, due to the passage of the **Survivor Act (S.L. 2019-221)** and the push to make better use of the NIBIN program - both **sexual assault kit evidence and firearms evidence** make up the other major categories of submissions that continue to grow. Increased submissions of SAECKs have led to an increase in CODIS hits, which require **CODIS hit confirmations by the Latent Evidence Section**. The **Trace Evidence Section has seen a 35% increase in hair examination requests** due to the increase in SAECK testing.

## VIII. Conclusion

**The SCL has worked to continuously improve, using Lean Six Sigma efficiency methodology, advanced computerized systems, increased robotic instruments, streamlined evidence management processes, strategic redistribution of casework and staff, and improved coordination with the courts and our partners in the criminal justice system. The SCL has reached a point at which continued progress can only be gained with additional resources.**

To remain a state-of-the-art forensic laboratory, scientific instrumentation and equipment must be replaced and updated based on current industry standards. The SCL has been successful in using grant funds to replace instrumentation over the last several years. Grant funding is not a reliable source for funding and the SCL needs a permanent solution. Realistically, \$1.5M recurring would allow a ten-year replacement schedule and combined with the nearly \$4.5M received over the last seven years, the SCL is very close to industry standards.

**The Survivor Act and the increasing demands of the opioid crisis have significantly increased submissions. Additional positions and funding, as stated above, are critical to maintaining acceptable turnaround times for forensic analysis.**

With continued support, the SCL will continue to provide quality and timely forensic analysis and impartial expert testimony.

Respectfully submitted January 3, 2021.

A handwritten signature in cursive script that reads "Vanessa Martinucci".

Vanessa Martinucci  
Director, North Carolina State Crime Laboratory

## Appendix A - Submissions by County

	7/1/2016 to 6/30/2017		7/1/2017 to 6/30/2018		7/1/2018 to 6/30/2019		7/1/2019 to 6/30/2020		7/1/2020 to 6/30/2021	
<b>County</b>	<b><u>Submissions</u></b>	<b><u>Items Submitted</u></b>	<b><u>Submissions</u></b>	<b><u>Items Submitted</u></b>	<b><u>Submissions</u></b>	<b><u>Items Submitted</u></b>	<b><u>Submissions</u></b>	<b><u>Items Submitted</u></b>	<b><u>Submissions</u></b>	<b><u>Items Submitted</u></b>
Alamance	359	689	318	546	381	582	458	744	572	955
Alexander	89	259	89	142	91	246	101	140	127	195
Alleghany	13	19	29	62	34	70	52	61	38	57
Anson	55	235	56	99	108	222	85	178	107	467
Ashe	27	61	27	35	101	161	117	142	165	187
Avery	56	99	121	144	80	107	83	139	56	85
Beaufort	446	710	383	487	377	472	346	502	309	442
Bertie	56	137	83	105	57	102	39	60	45	74
Bladen	98	157	54	115	203	281	109	158	88	196
Brunswick	428	683	584	788	559	788	727	1014	643	895
Buncombe	1051	1890	1358	1990	1553	2125	1460	2407	1377	2325
Burke	455	861	466	668	467	677	415	612	548	765
Cabarrus	600	1009	718	960	639	816	786	1023	864	1255
Caldwell	324	542	302	442	390	507	381	526	411	559
Camden	13	13	7	11	5	9	16	32	26	51
Carteret	412	600	426	569	290	433	406	570	309	474
Caswell	78	139	41	64	73	86	99	126	78	106
Catawba	885	1612	1041	1600	836	1084	715	941	920	1274
Chatham	118	219	128	253	205	344	135	189	157	246
Cherokee	102	175	116	144	42	55	140	280	216	345
Chowan	57	80	33	51	38	49	31	46	82	141
Clay	34	56	24	46	25	39	64	139	86	121
Cleveland	543	772	624	806	626	903	564	941	718	1145
Columbus	142	292	109	155	134	214	136	216	241	369

	7/1/2016 to 6/30/2017		7/1/2017 to 6/30/2018		7/1/2018 to 6/30/2019		7/1/2019 to 6/30/2020		7/1/2020 to 6/30/2021	
<b>County</b>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>
Craven	351	599	384	726	437	748	454	788	821	1273
Cumberland	274	1186	431	841	1118	1824	1161	1911	954	1579
Currituck	69	109	103	127	85	118	80	105	86	134
Dare	256	415	236	329	208	290	212	280	260	388
Davidson	435	709	551	718	610	787	510	661	742	929
Davie	88	162	108	153	121	181	125	171	112	173
Duplin	410	677	394	545	439	615	373	560	314	418
Durham	1066	3969	1001	3753	1236	2831	709	993	747	1113
Edgecombe	206	331	280	399	371	559	364	507	379	591
Forsyth	282	799	758	847	752	1243	834	1744	557	1058
Franklin	285	751	352	621	545	784	521	764	399	615
Gaston	1120	1675	1211	1710	1281	1765	1116	1496	1458	2042
Gates	9	21	21	59	4	13	23	33	26	35
Graham	32	60	44	79	42	65	67	102	78	129
Granville	246	490	306	439	240	389	279	710	208	376
Greene	44	87	47	76	45	47	60	124	88	217
Guilford	1375	2635	1413	2168	1742	2318	2002	2998	1768	2813
Halifax	242	454	163	300	212	319	273	439	294	477
Harnett	226	480	261	399	280	488	280	506	428	606
Haywood	357	515	391	619	469	692	528	769	591	937
Henderson	397	612	483	773	608	907	524	770	634	933
Hertford	52	114	125	169	75	139	78	120	132	383
Hoke	203	553	197	361	258	499	305	736	345	761
Hyde	20	28	15	19	5	9	2	2	5	4
Iredell	262	571	306	632	330	450	397	622	493	750
Jackson	188	302	242	437	327	540	337	554	294	536
Johnston	590	952	805	1068	586	801	710	922	655	959
Jones	70	109	45	52	68	90	85	112	42	57
Lee	211	417	257	394	171	341	230	333	154	226

	7/1/2016 to 6/30/2017		7/1/2017 to 6/30/2018		7/1/2018 to 6/30/2019		7/1/2019 to 6/30/2020		7/1/2020 to 6/30/2021	
<u>County</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>
Lenoir	480	1027	393	725	426	640	445	643	363	777
Lincoln	501	651	443	606	541	740	378	530	487	676
Macon	172	288	166	238	202	297	240	315	365	515
Madison	116	222	122	242	140	258	101	155	161	230
Martin	213	454	152	241	110	189	88	123	143	202
McDowell	177	314	201	334	235	357	267	455	250	472
Mecklenburg	375	715	358	515	375	493	416	606	445	674
Mitchell	41	90	29	53	65	103	34	70	81	126
Montgomery	95	205	55	83	79	150	77	133	89	151
Moore	233	469	230	372	293	442	476	619	531	799
Nash	392	653	487	668	512	648	629	808	591	746
New Hanover	829	2153	944	1762	1347	2684	1502	3051	1267	2587
Northampton	41	118	63	178	51	101	61	172	81	200
Onslow	576	959	768	1212	787	1175	926	1556	1060	1632
Orange	462	986	441	647	417	686	382	581	511	790
Pamlico	117	184	231	290	123	193	130	228	99	192
Pasquotank	210	359	205	292	201	344	239	407	211	332
Pender	144	270	80	124	104	115	181	327	203	356
Perquimans	27	46	34	85	56	95	46	63	66	150
Person	173	246	188	231	203	270	128	220	150	247
Pitt	479	883	1032	1348	250	384	408	591	451	796
Polk	117	179	89	103	122	154	121	175	165	223
Randolph	609	935	846	1258	903	1253	834	1118	901	1257
Richmond	378	701	352	591	293	456	308	581	293	597
Robeson	327	672	394	967	560	1744	543	1725	446	1420
Rockingham	247	609	295	465	381	560	450	594	438	664
Rowan	587	1067	720	1159	661	1071	713	1092	857	1310
Rutherford	209	373	207	276	191	253	319	454	360	492
Sampson	175	326	316	509	438	671	452	729	549	1160

	7/1/2016 to 6/30/2017		7/1/2017 to 6/30/2018		7/1/2018 to 6/30/2019		7/1/2019 to 6/30/2020		7/1/2020 to 6/30/2021	
<u>County</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>	<u>Submissions</u>	<u>Items Submitted</u>
Scotland	156	377	154	308	169	305	252	523	229	424
Stanly	261	492	362	447	432	592	461	580	574	774
Stokes	170	328	206	269	138	191	169	233	164	227
Surry	287	590	321	411	430	622	508	680	494	679
Swain	99	186	146	209	131	181	119	159	83	123
Transylvania	114	280	120	213	136	258	108	150	121	193
Tyrrell	4	4	51	57	11	11	15	22	33	38
Union	464	835	578	743	662	869	632	843	746	1008
Vance	244	518	310	539	360	596	339	591	358	587
Wake	589	1631	560	1316	617	1262	494	1117	392	867
Warren	31	57	75	120	82	111	35	64	49	84
Washington	15	26	23	25	19	37	16	36	99	137
Watauga	160	263	169	234	172	264	174	231	176	219
Wayne	601	1132	750	1301	818	1241	864	1323	1060	1929
Wilkes	305	532	332	472	300	469	278	359	303	365
Wilson	516	820	471	694	693	994	746	1066	760	1203
Yadkin	202	378	149	209	228	285	189	234	208	319
Yancey	79	136	70	101	89	127	86	129	93	146
<b>TOTAL</b>	<b>28606</b>	<b>55830</b>	<b>32755</b>	<b>52337</b>	<b>35532</b>	<b>55165</b>	<b>36483</b>	<b>57479</b>	<b>38803</b>	<b>62336</b>