

ANNUAL REPORT 2016



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MESSAGE FROM THE DIRECTOR: NEW HORIZONS

This annual report outlines the successes and challenges faced by the Wisconsin State Crime Laboratory Bureau (WSCLB) during 2016. It also emphasizes our commitment to our mission: to promote excellence in analysis, training and service to the community and our organization with integrity and uncompromising quality.

Whether it is analyzing cases, logging in evidence, taking a phone call, testifying in court or working on a scene, the professionalism and dedication of the WSCLB staff is demonstrated every day. I am thankful to all of you who make this happen. To be a part of this Bureau is humbling and I am truly proud of the work we do here.

As we seem to live with change, 2016 was no different. I was grateful to be able to appoint a Deputy Director. Nikki Roehm has been a great asset in handling some of the day to day duties which has allowed me to focus on areas that are more over arching and hopefully will keep the Bureau at the forefront of the forensic community nationally.

Another appointment is Lab Manager Nita Bolz. Nita brings great experience with her and she is a welcomed addition to the Wausau Lab.

With the release of the PCAST report and as we look forward to new horizons, there has been and will continue to be national pressure on crime laboratories to act independent of law enforcement. It is my desire to work towards making the WSCLB its own Forensic Science Services Division. This would allow for the continued growth and scientific improvement of the laboratories as well as solidify our commitment to the public and the criminal justice system as an unbiased scientific entity with the Department of Justice.

I hope you find this report helpful and informative.
Jana Champion, Director of WSCLB

LABORATORY HISTORY AND ACCREDITATION

The Wisconsin State Crime Laboratory Bureau (WSCLB) was established on August 8, 1947 when Chapter 165 of the Wisconsin Statutes was approved and published. The first Laboratory Superintendent, Charles M. Wilson, was hired to establish a laboratory in the Capitol Building in Madison. Shortly thereafter, the Madison Laboratory was relocated. A second full-service laboratory was opened in 1974 in New Berlin to serve the eight county Milwaukee metropolitan areas. And finally, in 1991, the Madison service area was reorganized further with the development of the limited services laboratory in Wausau to provide service to the forty northern counties of Wisconsin.

The Wisconsin State Crime Laboratories are accredited by the American Society of Crime Laboratory Directors / Laboratory Accreditation Board (ASCLD/LAB) International Program, ISO/IEC 17025:2005, a subsidiary of ANSI-ASQ National Accreditation Board (ANAB). Accreditation is a voluntary program which ensures that the laboratory provides effective and quality service. Further, this means that we are operating under accepted guidelines that are practiced internationally and routinely and vigorously reviewed.

In February 2017, the WSCLB underwent an assessment by ANAB; every aspect of operation was carefully reviewed to ensure that all requirements are consistently met with a high level of quality. The team found a 99% compliance rate to almost 500 requirements. The areas of concern are being addressed and will make our operations stronger. When the process is complete we will be reaccredited as an internationally recognized testing laboratory for another four years, with an additional scope of discipline Automated Fingerprint Identification, bolstering the services we provide the state of Wisconsin.



EVIDENCE AND ADMINISTRATIVE SUPPORT

To service the State, the Wisconsin State Crime Laboratory Bureau has approximately 150 management, forensic scientists, and technicians located at three separate service areas: Madison, Milwaukee, and Wausau. Both the Milwaukee and Madison laboratories provide DNA Analysis while the Wausau laboratory offers limited services at this time. In total, there are ten disciplines practiced at varying levels throughout the state (below). Neither Questioned Documents nor Tire Track analysis are provided in Wisconsin.

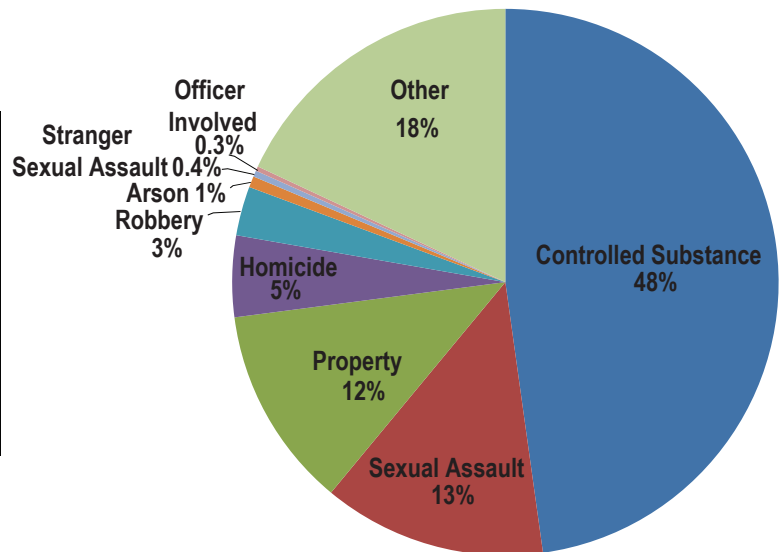
Services	Madison	Milwaukee	Wausau
AFIS Specialists	✓		
Controlled Substances	✓	✓	✓
Crime Scene Response	✓	✓	✓
Databank	✓		
DNA Analysis	✓	✓	
Firearms and Toolmarks		✓	
Forensic Imaging	✓	✓	✓
Identification	✓	✓	✓
Toxicology	✓	✓	✓ (BAC only)
Trace		✓	

To support the staff and the Bureau, the evidence and administrative support staff function as the Wisconsin State Crime Laboratory's emissary with law enforcement and fully communicate the specific details and limitations regarding the submission guidelines outlined in the Physical Evidence Handbook.

EVIDENCE AND ADMINISTRATIVE SUPPORT CASELOAD

The data in the graph and chart below and throughout the report is developed using the offense code assigned to each case in our Laboratory Information Management System (BEAST). The Wisconsin State Crime Laboratory Bureau receipted over 13,000 cases in 2016, a 4% increase from 2015. The types of offenses submitted vary across the three laboratories, for example, a majority of the cases submitted to Wausau are for possession of a controlled substance.

	2014	2015	2016
Madison	3532	4297	4124
Milwaukee	4228	4589	5143
Wausau	3542	3678	3762
Total	11302	12564	13029



Note: For the remainder of this report, the term case will refer to an assignment created to perform the work. This is the easiest metric to use to effectively evaluate the productivity of the analysts in each unit. Of note, a case may have multiple assignments created if it is being worked in multiple units, by multiple analysts, or additional evidence is submitted.

CHEMISTRY SECTION

The primary function of the Chemistry Section is to analyze items of evidence in order to determine the presence or absence of a controlled substance. At the Wisconsin State Crime Laboratory Bureau the Chemistry Section consists of three units: Toxicology, Controlled Substance, and Trace (Milwaukee).

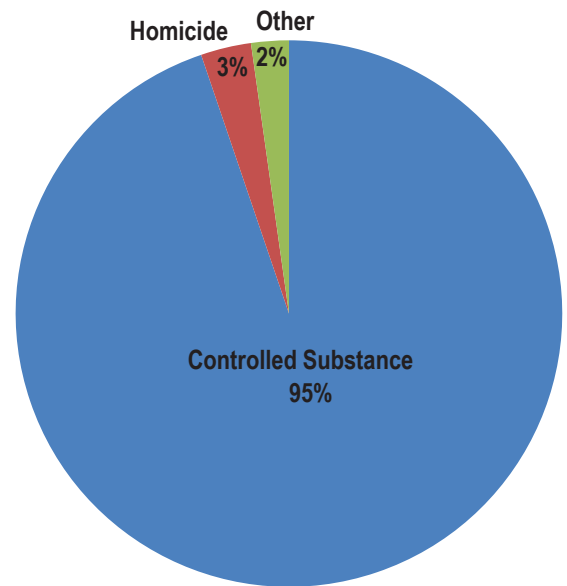
Controlled Substance	Analyze evidence for the presence (or absence) of controlled substances as defined in the Unit Controlled Substance Act, Chapter 961.
Forensic Toxicology	Analyze bodily fluids or tissue for alcohol, controlled substances, and occasionally poisons.
Trace Evidence	Analyze broad spectrum of physical evidence and/or substances for identification or comparison purposes.

CONTROLLED SUBSTANCE CASELOAD

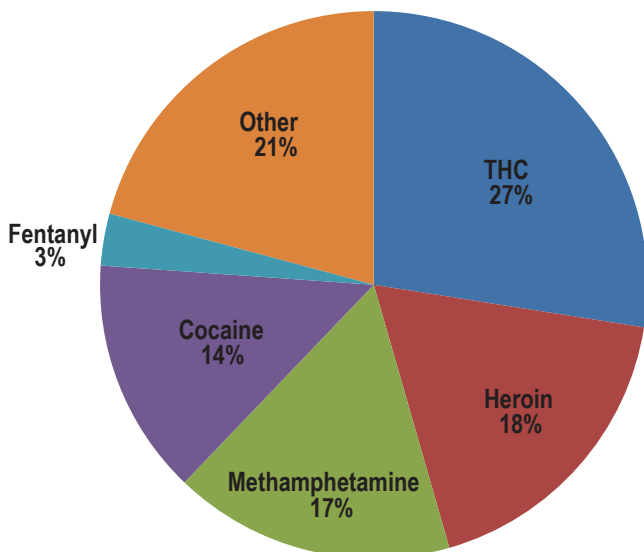
	2014	2015	2016
Case Intake	5834	5789	6473
Case Output	6159	5710	5887
Avg. Turnaround	54 days	42 days	62 days

In 2016 the Controlled Substance Unit saw an 11% increase in cases submitted for analysis. Training of new analysts and this rise in case submissions affected the overall turnaround time.

As demonstrated in the graph to the right, 95% of the caseload in the Unit are possession of a controlled substance. Additionally, in 2016 homicide cases contributed to 3% of the Unit's caseload.



CONTROLLED SUBSTANCE DRUG FREQUENCY



To the left is a summary of the drugs that were encountered most frequently in 2016. The data was extracted from the reports to the National Forensic Laboratory Information System operated by the Drug Enforcement Administration. A case may include multiple drugs. Since 2011 (below) there has been a significant increase in the frequency of methamphetamine, heroin, and fentanyl and a corresponding decrease in THC and cocaine.

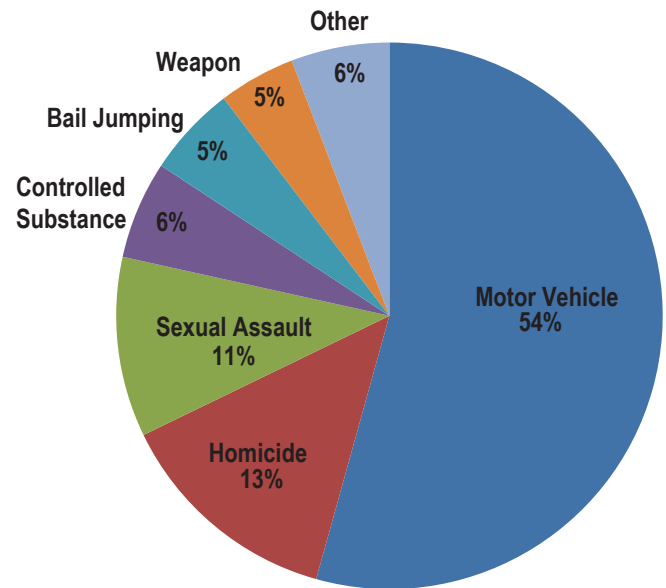
	2011	2016
THC	38%	28%
Heroin	12%	18%
Methamphetamine	5%	17%
Cocaine	18%	14%
Fentanyl	0.4%	3%
Other	27%	20%

FORENSIC TOXICOLOGY CASES

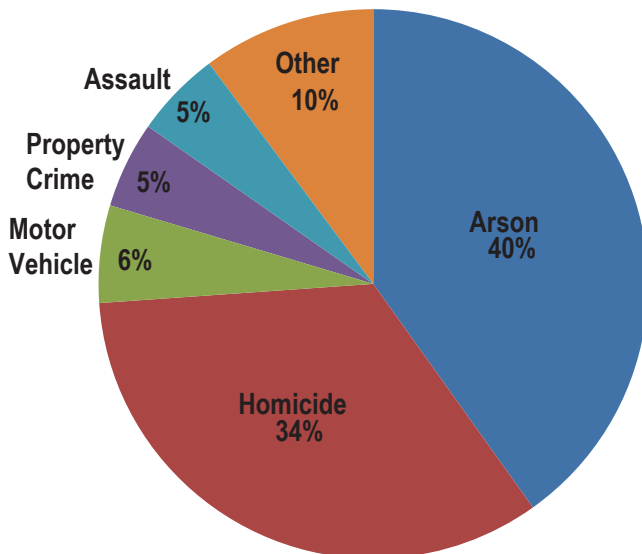
	2014	2015	2016
Case Intake	4141	4452	3831
Case Output	4034	4287	4076
Avg. Turnaround	32 days	57 days	52 days

In 2016 the Forensic Toxicology Unit saw a 14% decrease in cases submitted for analysis as well as a decrease in turnaround time by five days. The positive impact on the case backlog as well as the turnaround time can be attributed to new staff completing training.

As demonstrated by the graph to the right, and similar to 2015, a majority of the cases worked in the Unit are motor vehicle related. Additionally, homicide cases contributed to 34% of the Unit's caseload, a 7% increase from 2015.



TRACE EVIDENCE CASES



In 2016 the Trace Evidence Unit saw a 10% decrease in cases submitted for analysis as well as decrease in turnaround time by fourteen days. The decrease in turnaround time was observed in both arson (27 to 22 days) and other investigations (59 to 48 days).

As demonstrated by the graph to the left a majority of cases worked in the Unit are arson and homicide related. The remainder of the caseload included a broad assortment of investigations.

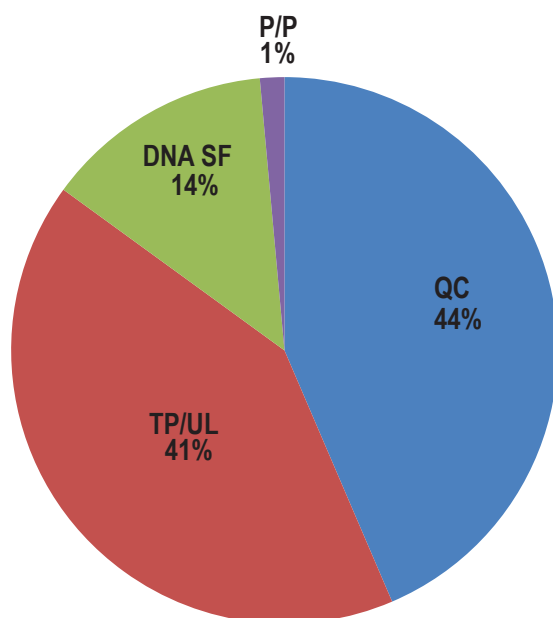
	2014	2015	2016
Case Intake	155	175	157
Case Output	142	198	151
Avg. Turnaround	53 days	48 days	34 days

CRIMINALISTICS SECTION

The Criminalistics Section is the most multifaceted section in the Bureau. In general, the Criminalistics Section utilizes scientific principles to complete pattern recognition and interpretation, as well as, imaging analysis. At the Wisconsin State Crime Laboratory Bureau the Criminalistics Section consists of five units: Automated Fingerprint Identification System (Madison), Crime Scene Response, Firearms and Toolmarks (Milwaukee), Forensic Imaging, and Identification.

AFIS	Perform print comparisons and maintain a repository of fingerprint identification records in the State's Automated Fingerprint Identification System (AFIS). In addition, conduct database searches and provide technical support to State and Federal agencies.
Crime Scene Response	Respond to calls from law enforcement agencies for assistance at major crime scenes and autopsies. Document and interpret bloodstain patterns and evidentiary items.
Firearms/Toolmarks	Analyze firearms for operability, perform comparative analysis on fired bullets and cartridge casings, and maintain the National Integrated Ballistic Information Network. In addition, conduct serial number restorations, distance determinations, and tool mark comparisons.
Forensic Imaging	Conduct video and image analysis, photographic and digital imaging examinations, and provide technical support to analytical units.
Identification	Develop and recover friction ridge ("finger") prints and footwear impressions from items of evidence. Compare prints/impressions with known exemplars to establish identity/exclusion/association and conduct database searches.

AUTOMATED FINGERPRINT IDENTIFICATION SYSTEM UNIT

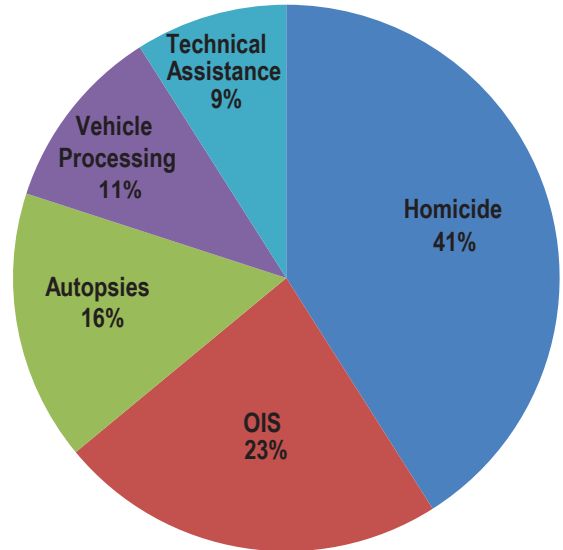


In 2016, the Wisconsin fingerprint database received 172,158 ten-print card submissions. The AFIS Specialists performed quality control (QC) on 116,292 of those records, and compared 3,858 in print to print verification (P/P). The P/P verification process is used to determine whether or not a criminal history record already exists for an individual in the system. In addition to maintaining the database, the AFIS Specialists also performed print comparisons on 36,184 DNA sample submission forms and made preliminary determinations on 110,661 ten-print to unsolved latent prints (TP/UL) stored in the AFIS.

CRIME SCENE RESPONSE CASELOAD

Twenty two individuals, from multiple disciplines and all three Bureau locations, volunteer for the Crime Scene Response Team. Through 2017, the team will continue to prepare for accreditation by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board.

In 2016, the Wisconsin State Crime Laboratory responded to eighty-eight requests from law enforcement. As demonstrated in the graph to the right, the Crime Scene Response Unit primarily responds to three types of scenes: homicides, officer involved shootings, and autopsies.



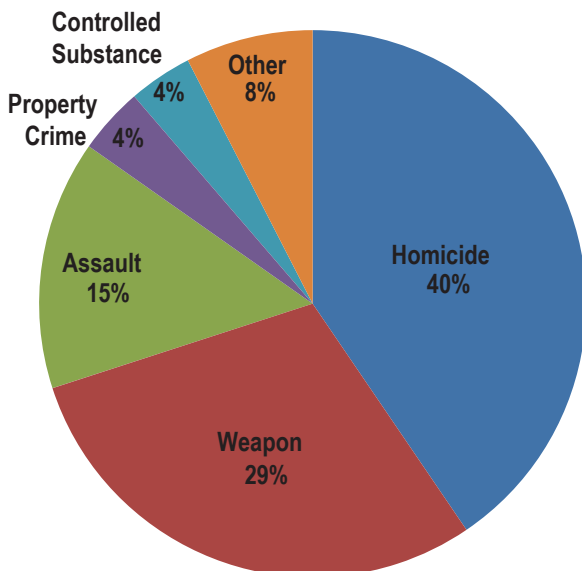
	2014	2015	2016
Responses	38	80	88
Assignments	59	83	113
Avg. Turnaround	32	26	23

FIREARMS AND TOOLMARKS CASELOAD

In 2016 the Firearms and Toolmarks Unit saw a 20% decrease in cases submitted for analysis. While Firearms turnaround time has remained relatively constant over the last three years, loss of trained analysts as well as training of new analysts affected the overall Toolmarks turnaround time.

As demonstrated by the graph below, a majority of the cases worked were related to homicides, weapons, and assaults. Property Crimes remain the most prominent Toolmark offense type.

Firearms	2014	2015	2016
Case Intake	453	728	596
Case Output	452	571	415
Avg. Turnaround	115 days	113 days	119 days



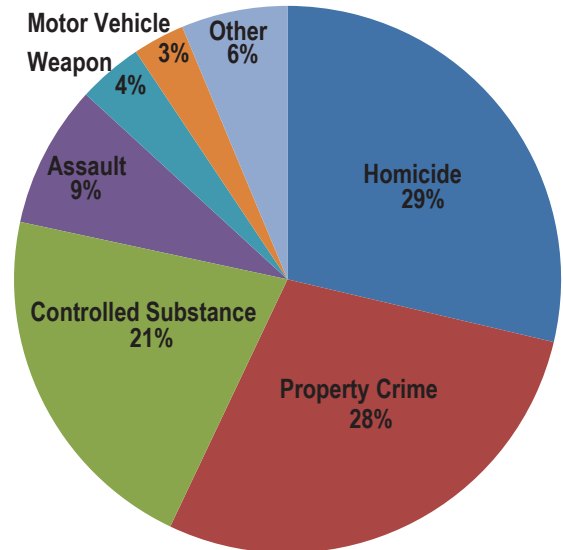
Toolmarks	2014	2015	2016
Case Intake	54	34	14
Case Output	46	15	12
Avg. Turnaround	145 days	277 days	460 days

FORENSIC IMAGING CASELOAD

Imaging	2014	2015	2016
Case Intake	47	65	31
Case Output	45	61	41
Avg.Turnaround	73 days	92 days	133 days

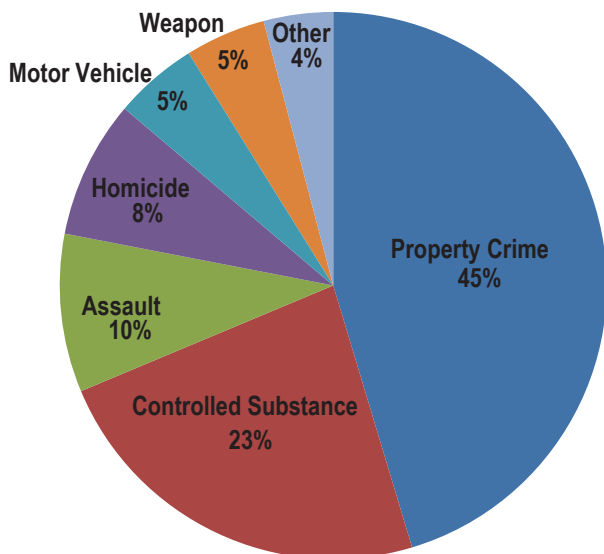
In 2016 the Forensic Imaging Unit saw a 37% decrease in cases submitted for analysis. A work order is an internal request for imaging analysis. Loss of trained analysts as well as training of new analysts affected the overall turnaround time on imaging cases.

As demonstrated by the graph below, a majority of caseload in the Unit are from homicides, property crimes, and possession of a controlled substance.



Work Orders	2014	2015	2016
Case Intake	773	973	621
Case Output	825	858	691
Avg.Turnaround	32 days	36 days	58 days

IDENTIFICATION CASELOAD



In 2016 the case intake for the Identification Unit remained relatively stable. The positive impact on the case backlog as well as the turnaround time can be attributed to process improvements and hard work.

As demonstrated by the graph above, and similar to 2015, a majority of the cases worked in the Unit are from property crimes and possession of a controlled substance.

Footwear	2014	2015	2016
Case Intake	48	104	63
Case Output	55	89	72
Avg.Turnaround	253 days	259 days	259 days

Identification	2014	2015	2016
Case Intake	2201	2154	2182
Case Output	2357	2099	2093
Avg.Turnaround	174 days	185 days	136 days

DEOXYRIBONUCLEIC ACID (DNA) SECTION

The primary function of the DNA Section is to analyze and compare biological material from evidence and/or individuals required by Wisconsin State Law to provide a reference DNA sample. At the Wisconsin State Crime Laboratory the DNA Section consists of two units: DNA Analysis (Madison and Milwaukee) and DNA Databank (Madison).

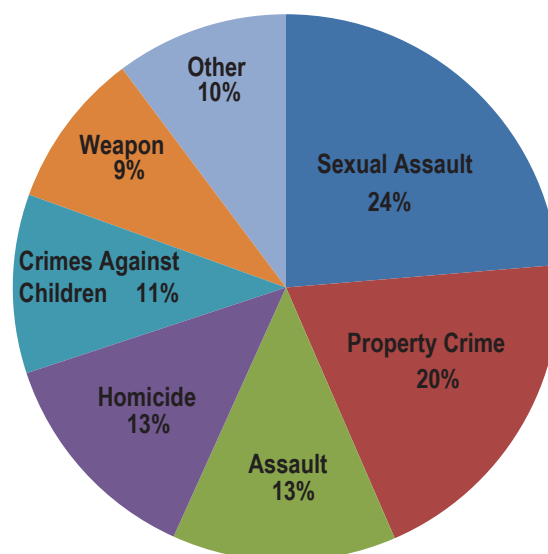
DNA Analysis	Examine evidence for the presence of biological material. Develop, analyze, and interpret DNA profiles utilizing scientific techniques. Compare DNA profiles with known standards to establish identity/exclusion/association and conduct database searches.
DNA Databank	Receive, verify acceptability, develop, analyze and maintain a repository of reference DNA samples in the Combined DNA Index System (CODIS).

DNA ANALYSIS CASELOAD

	2014	2015	2016
Case Intake	3359	4113	4675
Case Output	3209	3968	4199
Avg. Turnaround	40 days	43 days	61 days

In 2016 the DNA Analysis Unit saw an 13% increase in cases submitted for analysis. The increase in complex case submissions as well as the significant validation outlined below affected the overall turnaround time.

As demonstrated in the graph to the right, almost 50% of the caseload in the Unit are high priority cases, or those having a public safety concern (sexual assaults, homicides, and crimes against children). Cases with a public safety concern remain the highest priority of the DNA Analysis Unit.



DNA ANALYSIS : THE EXPANSION OF THE CODIS CORE LOCI

In 2012, the FBI proposed to expand the number of Combined DNA Index System (CODIS) core loci from 13 to 20. In 2015, the FBI directed that all CODIS participating crime laboratories must be online with an approved expanded kit by January 1st, 2017. In 2016, the DNA Analysis Unit evaluated multiple kits and decided to move forward with validation of the Fusion 6C kit which incorporates 27 loci. The validation of the kit was extensive and addressed the following areas required by the FBI Quality Assurance Standards: known and non-probative evidence samples or mock evidence samples, reproducibility and precision studies, sensitivity and stochastic studies, mixture studies and contaminations studies. The validation team evaluated over 600 mixture profiles of varying degrees of input DNA. In order to utilize the new kit, major manual revisions were conducted and subsequent staff training and competencies were completed. The total amount of analytical time to complete the validation and training was estimated to be over 5000 hours. With the new kit came DNA profile interpretation challenges with regards to complex mixture profiles. The Unit successfully met the FBI's deadline.

Milestone	Staff	Estimated Hours	Estimated Labor Cost
Validation studies	9	2,750.0	\$78,001.78
Staff Training and Competency	53	2,242.0	\$62,682.91
Manual Revisions	2	249.0	\$7,888.32
Totals	All Staff	5,241.0	\$148,573.01

DNA ANALYSIS : THE SEXUAL ASSAULT RESPONSE TEAM

The Wisconsin Attorney General's Sexual Assault Response Team (AG SART) work continued to progress throughout 2016. In 2015, a new sexual assault kit named the "Medical-Forensic Evidence Collection Kit" was created through the multidisciplinary team effort that is at the core of the AG SART group. At the end of 2016, over 3,000 of the newly designed kits have been distributed to Wisconsin health care agencies at no charge to acquire consistent use of this kit. DNA Supervisor Dan Campbell and Deputy Director Nicole Roehm, through the coordination of DOJ's Training and Standards group, have assisted with several sexual assault nurse examiner (SANE) training events in 2016 on the new kit revision and its use, which further breeds consistency and quality in the collection of sexual assault evidence in our State. At the end of 2015, authorization from Division of Law Enforcement Services Administrator Brian O'Keefe, allowed Wisconsin health care organizations to submit sexual assault kits from adult patients choosing not to report or involve law enforcement at the time of the examination/evidence collection. The Madison Crime Laboratory receipts these non-reporting patient kits submitted and stores them for up to 10 years allowing the patient to change their mind and choose to report. Over 100 non-reporting patient sexual assault kits from health care providers were submitted for secure storage in 2016.

Additionally, WI DOJ's Sexual Assault Kit Initiative (SAKI) efforts aided by the two grants awarded to Wisconsin have continued forward. Specifically the Manhattan District Attorney's Office in New York (DANY) grant, with funding issued predominantly for DNA analysis assistance, has impacted our Crime Laboratory Bureau. In 2016, the request for bid to outsource many of the stored sexual assault kits was awarded to BODE/LabCorp Laboratory in Virginia. With assistance provided by DOJ, most of the 2016 SAKI efforts were associated with completing and certifying law enforcement agencies' inventory of stored kits. Once an agency's inventory is certified, requests for shipment of their stored kits are made by the Crime Lab Bureau. By the end of 2016, over ten Wisconsin counties were certified and contacted to begin submitting their inventory which totaled over 600 sexual assault kits. This certification/submission work by DOJ will continue into 2017, with the first shipment of kits for outsourcing to BODE, for DNA analysis, being accomplished in January 2017. Some of the SAKI-related kits have been analyzed in-house by the Crime Laboratory Bureau.

DNA DATABANK INTAKE AND INVESTIGATIVE LEADS

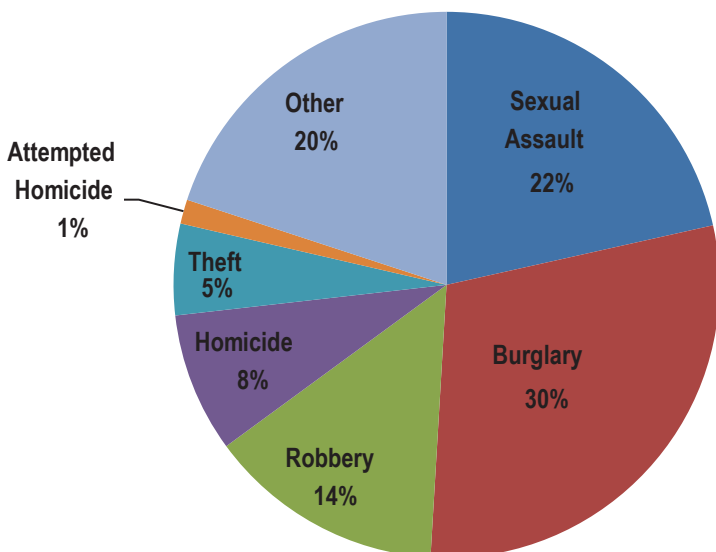
	2014	2015	2016
Sample Intake	11825	24186	36156
CODIS Upload	10666	14015	31730
Leads Reported	563	686	904

In 2016, the Wisconsin DNA Databank received over 36,000 reference DNA samples, greater than 50% of which were misdemeanors. The DNA Databank is still in the exponential growth phase of Wisconsin Act 20; on average 3,000 reference DNA samples are received per month.

The number of profiles uploaded and being searched has steadily increased throughout 2016. Due to the probable cause requirement only a small subset of the arrest samples received in 2015 and 2016 have been processed and uploaded to CODIS. Further, approximately 15% of the arrest samples received in 2015 were destroyed because probable cause was never established.

In 2016, a total of 904 investigative leads were reported by the Wisconsin DNA Databank. This exceeds the highest number of annual investigative leads in the history of the State (692 hits, 2010). Reference DNA samples from misdemeanants accounted for a fifth of the investigative leads provided.

As demonstrated in the graph to the left, approximately 30% of the investigative leads provided to law enforcement were high priority or impacting sexual assaults and homicides. The average turnaround time for a high priority hit is three business days.



CONCLUDING REMARKS: ACHIEVEMENTS

In 2016 the Wisconsin State Crime Laboratory Bureau acquired a Gun Shredder to meet the crime laboratory obligation under Wisconsin Statute 968.20(3), for the destructive disposal of firearms surrendered to the laboratory by Law enforcement agencies.

The DNA Databank reduced the cost of processing a DNA reference sample by fifty percent, as well as significantly reduced the amount of analyst and technician time required to obtain, analyze, and process the samples. This is significant as the Unit is preparing to bring all sample processing in-house by early 2018.

The Bureau NIBIN program located at the Milwaukee laboratory has been reorganized to facilitate timely responses to suspicious shootings submissions from throughout the state.

The Sexual Assault Kit Initiative (SAKI) Project made a lot of progress last year. The inventory process resulted in law enforcement agencies submitting over 600 kits to the Crime Laboratories in Madison and Milwaukee. Multiple training events were held around the state to help educate new sexual assault nurse examiners on the use of the new kits, and the newly implemented submission process for non-reporting victims. A bid to BODE Laboratories was awarded by Wisconsin as part of the Manhattan District Attorney's Office in New York (DANY) grant funds to provide DNA analysis assistance for sex assault kits stored by Wisconsin police agencies. The first shipment of 200 of these kits to BODE occurred in January 2017, as part of the Wisconsin Department of Justice SAKI project.

CONCLUDING REMARKS: CHALLENGES

One of our biggest challenges is maintaining expected case turnaround times with increasing case submissions. Each year an increase in case submissions along with training of new staff have an impact on case turnaround times.

MOVING FORWARD: 2017 GOALS

Acquire Probabilistic Statistics Software to facilitate efficient DNA analyses and interpretation of complex mixtures.

Acquire and implement new technology (laboratory instrumentations) in DNA to improve case turnaround time even as submissions of all case types have increased and require more analytical time for completion.

Expand Liquid Chromatography Tandem-Mass Spectrometry (LC-MS/MS) validated applications and methods across the bureau to facilitate more comprehensive toxicology analyses.

Achieve accreditation in the Automated Fingerprint Identification System (AFIS) discipline.

Complete new employee training in several disciplines (e.g. Toxicology, Forensic Imaging, Identification and Footwear, Crime Scene Response) to improve turnaround times.

Continue to provide exceptional customer service to the laboratory customers and citizens of the State of Wisconsin.