



DIVISION OF FORENSIC SCIENCES ANNUAL REPORT 2019

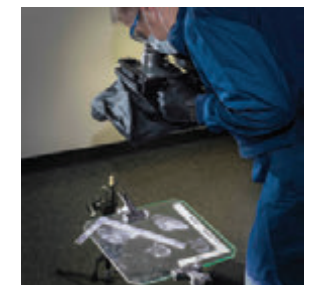
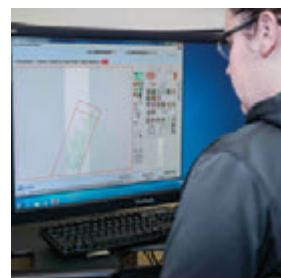


Mission Statement

To promote excellence in analysis, training and service to the community and our organization with integrity and uncompromising quality.

Vision Statement

To search for the truth through science and to lead and shape the advancement of forensic science.



DIVISION OF FORENSIC SCIENCES DISCIPLINE OVERVIEW

The Division of Forensic Sciences (DFS) has approximately 190 management, forensic scientists, and technicians at three laboratories: Madison, Milwaukee, and Wausau. There are ten disciplines practiced between the three laboratories.

<u>Services</u>	<u>Madison</u>	<u>Milwaukee</u>	<u>Wausau</u>
AFIS	✓		
Controlled Substances	✓	✓	✓
Crime Scene Response	✓	✓	✓
DNA Analysis	✓	✓	
DNA Databank	✓		
Firearms and Toolmarks		✓	
Forensic Imaging	✓	✓	✓
Latent Prints and Footwear	✓	✓	✓
Toxicology	✓	✓	✓ (BAC only)
Trace Evidence		✓	

DIVISION OF FORENSIC SCIENCES METRICS

2019	Chemistry Section			Criminalistics Section					DNA Section	
	Controlled Substances	Toxicology	Trace Evidence	AFIS	Crime Scene Response	Firearms and Toolmarks	Forensic Imaging	Latent Prints	DNA Analysis	DNA Databank
TAT*	33	46	54	11	36	268	69	124	97	29
Queue	164	185	27	1688	5	170	19	108	647	0

*Average turnaround time (days)

Queue is defined as any case, sample, or record in possession of the DFS greater than 30 days.

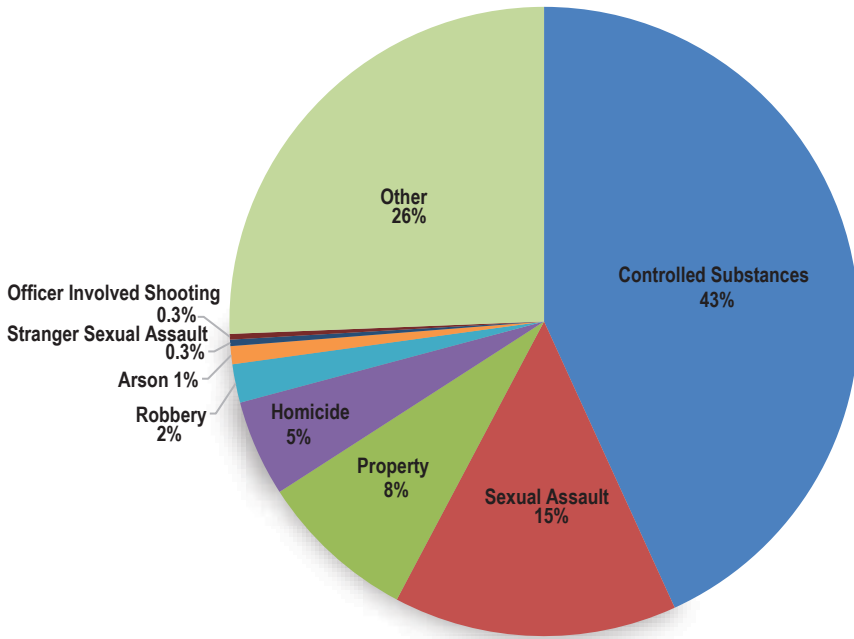
EVIDENCE AND ADMINISTRATIVE SUPPORT CASE RECEIPT

The evidence and administrative support staff function as the DFS emissary with law enforcement and communicate the integrity of evidence outlined in the submission guidelines. In addition, the DFS has a Case Manager dedicated to interfacing with law enforcement and enforcing these submission guidelines.

In 2019, the DFS received more than 10,000 cases, a decrease from previous years. The decrease in received cases is likely caused by the completion of the Wisconsin Sexual Assault Kit Initiative and the implementation of submission guidelines for many of the disciplines.

Received Cases	2015	2016	2017	2018	2019
Madison	4297	4124	5978	4601	3662
Milwaukee	4589	5143	6498	5548	4480
Wausau	3678	3762	3319	2531	2471
Total	12564	13029	15795	12680	10613

DIVISION OF FORENSIC SCIENCES CASE OVERVIEW



Received cases can largely be defined by five main types: Possession of a Controlled Substance, Sexual Assault, Property Crime, Homicide, and Robbery. Each submitted case has the potential to be worked by multiple Units and certain Units are more heavily impacted by specific case types. For instance, sexual assault cases may require both a DNA Analysis and a Toxicology assignment.

CHEMISTRY SECTION

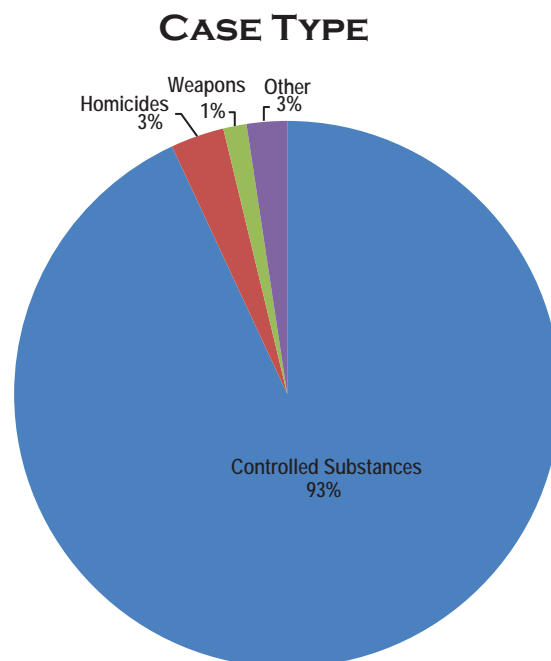
The primary function of the Chemistry Section is to analyze items of evidence in order to determine the presence or absence of a substance. The Chemistry Section consists of three units:

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

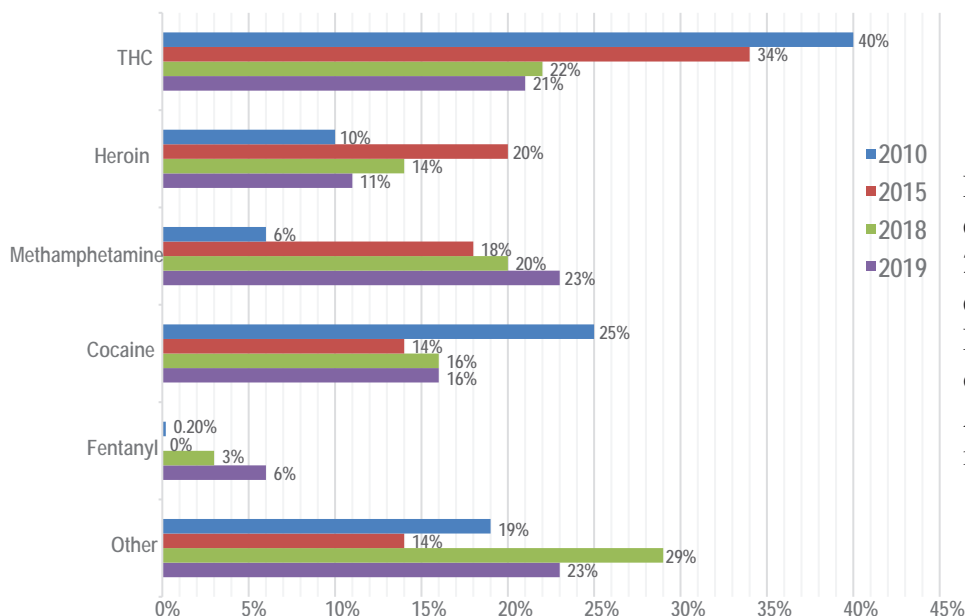
CONTROLLED SUBSTANCES

	2017	2018	2019
Case Intake	6447	5283	4861
Case Output	7135	5422	4725
Avg. Turnaround	80 days	43 days	33 days

The Controlled Substances Unit maintained a similar queue throughout 2019 but continued to reduce the overall turnaround times due to diligent case management. The unit continued to be plagued by the ever-changing drug market and the emergence of new designer or psychoactive substances. The unit observed an increase in heroin case complexity with fentanyl or fentanyl analogs detected more frequently.



DRUG FREQUENCY



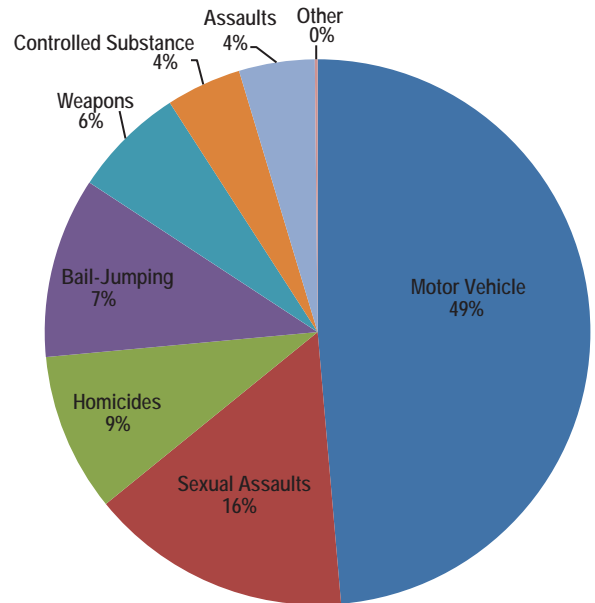
Left: A summary of the drugs encountered most frequently in 2010, 2015, 2018 and 2019. The data was extracted from the reports to the National Forensic Laboratory Information System operated by the Drug Enforcement Administration. A case may include multiple drugs.

TOXICOLOGY

	2017	2018	2019
Case Intake	3899	3897	3609
Case Output	3856	4051	3622
Avg. Turnaround	34 days	51 days	46 days

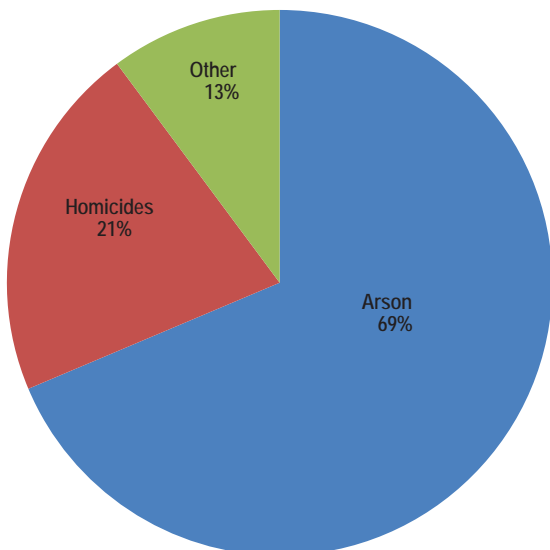
The Toxicology Unit maintained a similar queue throughout 2019 but continued to reduce the overall turnaround times due to the completion of training of new analysts and case management. The Toxicology Unit has continued to be exposed to an ever-changing drug market. This requires the unit to continuously evaluate new panels and workflows to expand and improve their available analysis.

CASE TYPE



TRACE EVIDENCE

CASE TYPE



The Trace Evidence Unit has two analysts that work at the Milwaukee lab and service the entire state. Despite the Unit continuing to be impacted by training of new staff, the average turnaround time this year has decreased, and the unit has completed almost as many cases as received. With a large and varied list of services, evidence type, and case complexity, this unit's workload and turnaround time varies greatly.

	2017	2018	2019
Case Intake	157	126	118
Case Output	133	134	115
Avg. Turnaround	56 days	70 days	54 days

CRIMINALISTICS SECTION

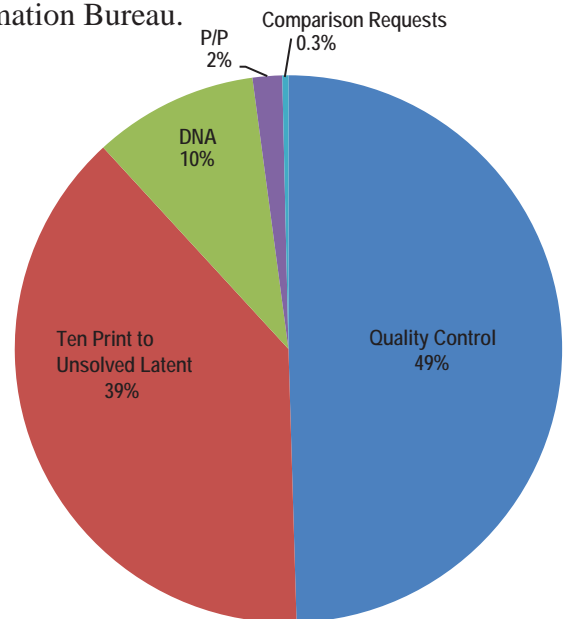
The Criminalistics Section is the most multifaceted section in the laboratory. The Criminalistics Section utilizes scientific principles to complete pattern recognition and interpretation, as well as imaging analysis. The Criminalistics Section consists of five units:

Automated Fingerprint Identification System	Perform comparative analysis of submitted fingerprints to evidence and known standards and maintain the Automated Fingerprint Identification System. In addition, conduct database searches and provide technical and analytical support to state and federal agencies.
Crime Scene Response	Respond to calls from law enforcement agencies for assistance at major crime scenes and autopsies. Locate, document, and collect 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	Perform forensic video, image analysis and enhancement, from various forms of media or image capture devices. Use specialized techniques, high resolution imaging equipment and forensic applications to record and recover information. Provide photographic and video imaging services to all disciplines within the DFS, DOJ, law enforcement agencies and district attorneys throughout the state.
Latent Prints and Footwear	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

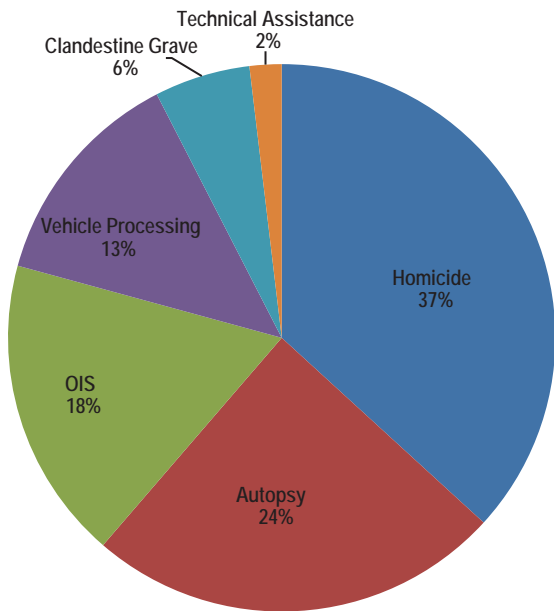
The Automated Fingerprint Identification System (AFIS) is the central repository for fingerprint records in Wisconsin. The AFIS Unit works closely with multiple disciplines and performs friction ridge analysis on hundreds of prints per day. Comparisons are performed on a variety of media, including paper sources, inked ten-print cards, and digital images. The unit supports the Latent Prints and Footwear Unit by performing the preliminary analyses on all Ten-Print to Unsolved Latent images, as well as, the DNA Databank Unit by performing all fingerprint comparisons on DNA submission forms. The unit also verifies fingerprints for external agencies including the Department of Corrections and Crime Information Bureau.

	2017	2018	2019
Quality Control	114014	131412	137344
Ten Print to Unsolved Latent	105703	117987	107146
DNA Submission Forms	33408	30843	26973
Print to Print Verification (P/P)	3730	3913	4837
Comparison Requests	756	1127	1003



CRIME SCENE RESPONSE

RESPONSE TYPE



The Crime Scene Response (CSR) Unit provides technical assistance statewide to law enforcement agencies processing scenes of major crimes. The CSR Unit also provides law enforcement educational opportunities through on going training across the state. Members of the CSR team are trained to detect, document, collect and properly package items of evidentiary value for analysis. In 2019, the CSR team responded to 106 crime scenes including homicides, attempted homicides, abductions, officer-involved critical incidents, the recovery of human remains, and cold cases.

	2017	2018	2019
Responses	91	122	106
Avg.Turnaround	29 days	30 days	36 days

Refer to Appendix A for the location of crime scenes processed by the CSR Unit from 2017-2019.

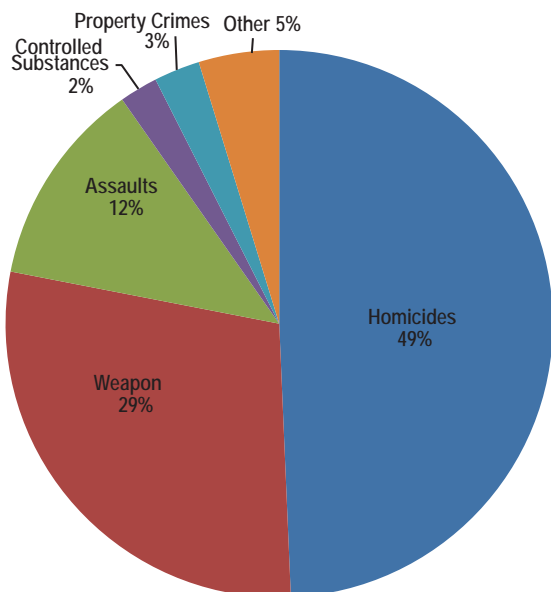
FIREARMS AND TOOLMARKS

Forensic Firearm examination is the process of examining the characteristics of firearms as well as any cartridges or bullets left behind at a crime scene. This analysis is founded on the unique characteristics each firearm transfers to cartridge cases and bullets whenever the weapon is fired. In 2019, the completion of training of three firearms examiners led to a significant decrease in the backlog, however, due to the throughput of older cases the turnaround time has increased.

Firearms	2017	2018	2019
Case Intake	708	446	428
Case Output	784	419	577
Avg.Turnaround	171 days	210 days	268 days

Toolmarks	2017	2018	2019
Case Intake	18	25	14
Case Output	17	0	48
Avg.Turnaround	511 days	--	241 days

CASE TYPE



Note: Property crimes remain the most prominent Toolmark offense.

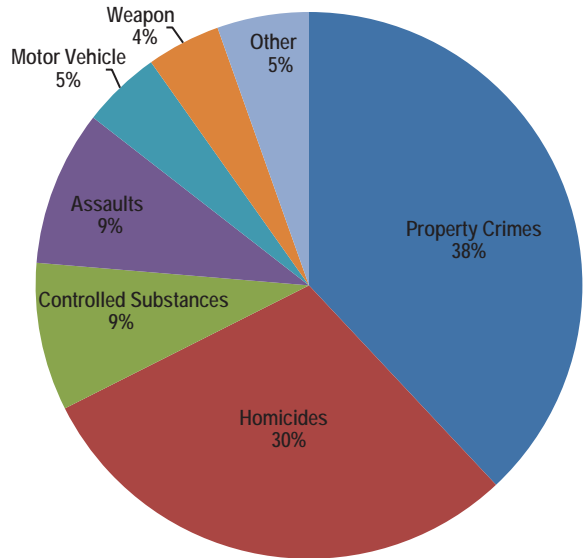
FORENSIC IMAGING

The Forensic Imaging Unit (FIU) provides photo and video imaging and analysis services for law enforcement agencies, attorneys, and all disciplines within the DFS. The FIU utilizes specialized equipment to digitally capture and recover information while maintaining a true and accurate record of physical evidence. The FIU provides a wide range of forensic photography services including high resolution and full spectrum imaging, 1:1 reproduction, video analysis, analogue to digital conversion, and court exhibits. While fluctuations in staffing and training have impacted the average turnaround time in 2019, the FIU has maintained case output.

Imaging	2017	2018	2019
Case Intake	28	62	52
Case Output	30	59	52
Avg. Turnaround	94 days	62 days	69 days

Work Orders	2017	2018	2019
Case Intake	683	698	611
Case Output	663	671	630
Avg. Turnaround	30 days	32 days	42 days

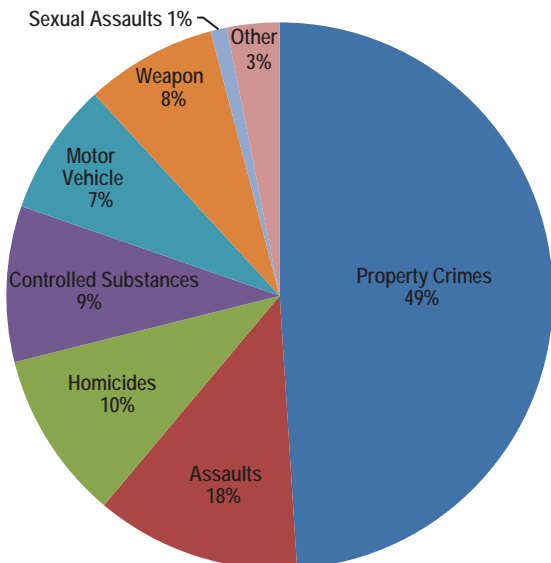
CASE TYPE



LATENT PRINTS AND FOOTWEAR

The Latent Prints and Footwear Unit develops and recovers friction ridge and footwear impression evidence using a variety of physical and chemical processing methods. When suitable fingerprints or impressions are developed, they are examined and compared with known standards to establish an identification or exclusion. In 2019, the unit has continued to make tremendous strides decreasing the average turnaround time by 100 days and cutting the queue by 250 cases.

CASE TYPE



Latent Print	2017	2018	2019
Case Intake	1894	1304	1003
Case Output	1836	1706	1274
Avg. Turnaround	168 days	224 days	124 days

Footwear	2017	2018	2019
Case Intake	39	19	28
Case Output	66	26	32
Avg. Turnaround	269 days	256 days	195 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. The DNA Section consists of two units:

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).

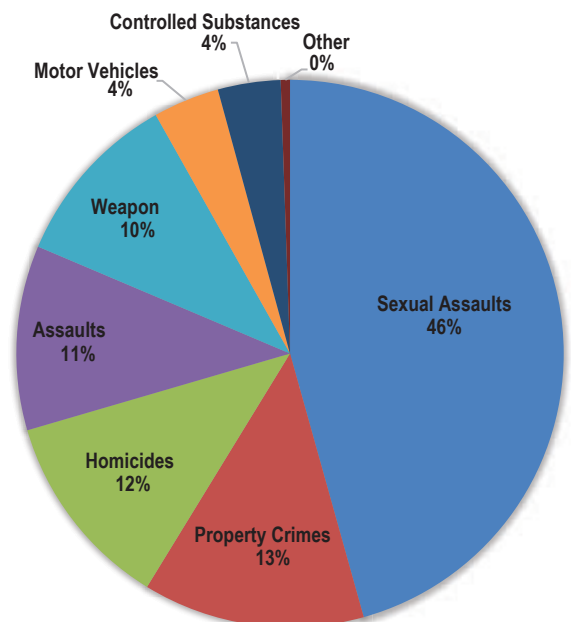
DNA ANALYSIS

Updated submission guidelines, the establishment of a Forensic Case Manager, and the completion of the Wisconsin Sexual Assault Kit Initiative project have decreased the number of assignments created by the DNA Analysis Unit in 2019. However, the unit has continued to experience a significant increase in the number of sexual assault cases submitted to the laboratory.

The DNA Analysis Unit is regularly evaluating and implementing new technologies to further increase the quality and expediency of the analysis it performs. Recent method improvements such as more efficient automated DNA extraction techniques were successfully integrated into the DNA Analysis Unit in 2019. These improvements have led to a significant decrease in the queue, however, due to the throughput of older cases the turnaround time has increased.

	2017	2018	2019
Case Intake	5311*	8626*	4400
Case Output	4782*	5664*	4960
Avg. Turnaround	76 days	80 days	97 days

CASE TYPE



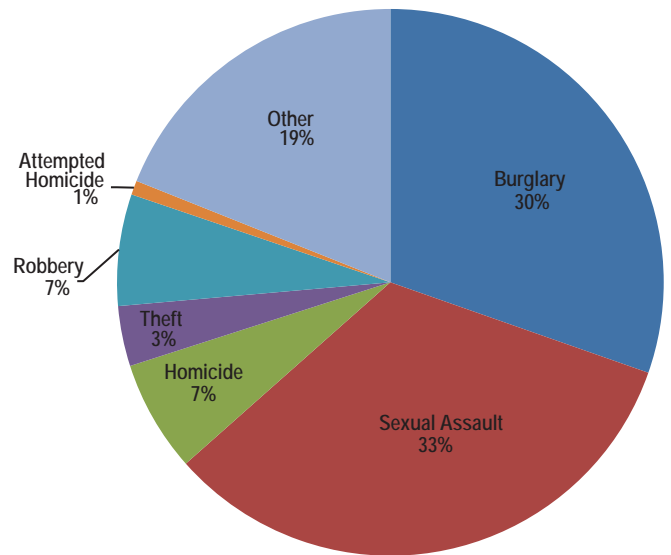
*Intake and output in the DNA Analysis Unit was impacted by Wisconsin Sexual Assault Kit Initiative from 2016-2018.

DNA DATABANK

In 2019, the DNA Databank Unit received almost 27,000 reference DNA samples. The unit processed all eligible samples in house with an average turnaround time of 29 days and a queue of zero. The reference DNA profiles obtained from these samples are then uploaded into the Wisconsin DNA Databank. The Wisconsin DNA Databank contains over 300,000 offender and arrestee DNA profiles. The continued expansion of the Wisconsin Databank has allowed the support of a Familial Search Program as an investigative tool for law enforcement.

To compare DNA profiles electronically, Wisconsin uses a tool called the Combined DNA Index System (CODIS) which allows federal, state, and local forensic laboratories to share DNA profiles, thereby linking crime scenes to each other or to a reference DNA sample collected from a known arrestee or convicted offender. Using this tool, Wisconsin issued 956 investigative leads to law enforcement in 2019. Misdemeanor samples, which account for 62% of the sample receipt, continue to have a positive impact on investigative leads for high priority cases and accounted for almost 30% of the leads reported in 2019. Case types involved in investigative leads (below) are relatively varied; over 40% of the investigative leads provided to law enforcement were linked to high priority crimes (sexual assaults and homicides).

	2017	2018	2019
Sample Intake	32963	29900	26808
CODIS Uploads	31534	27610	24882
Leads Reported	1098	1409	956



INVESTIGATIVE LEAD CASE TYPE

CRIME SCENE LOCATIONS PROCESSED 2017-2019

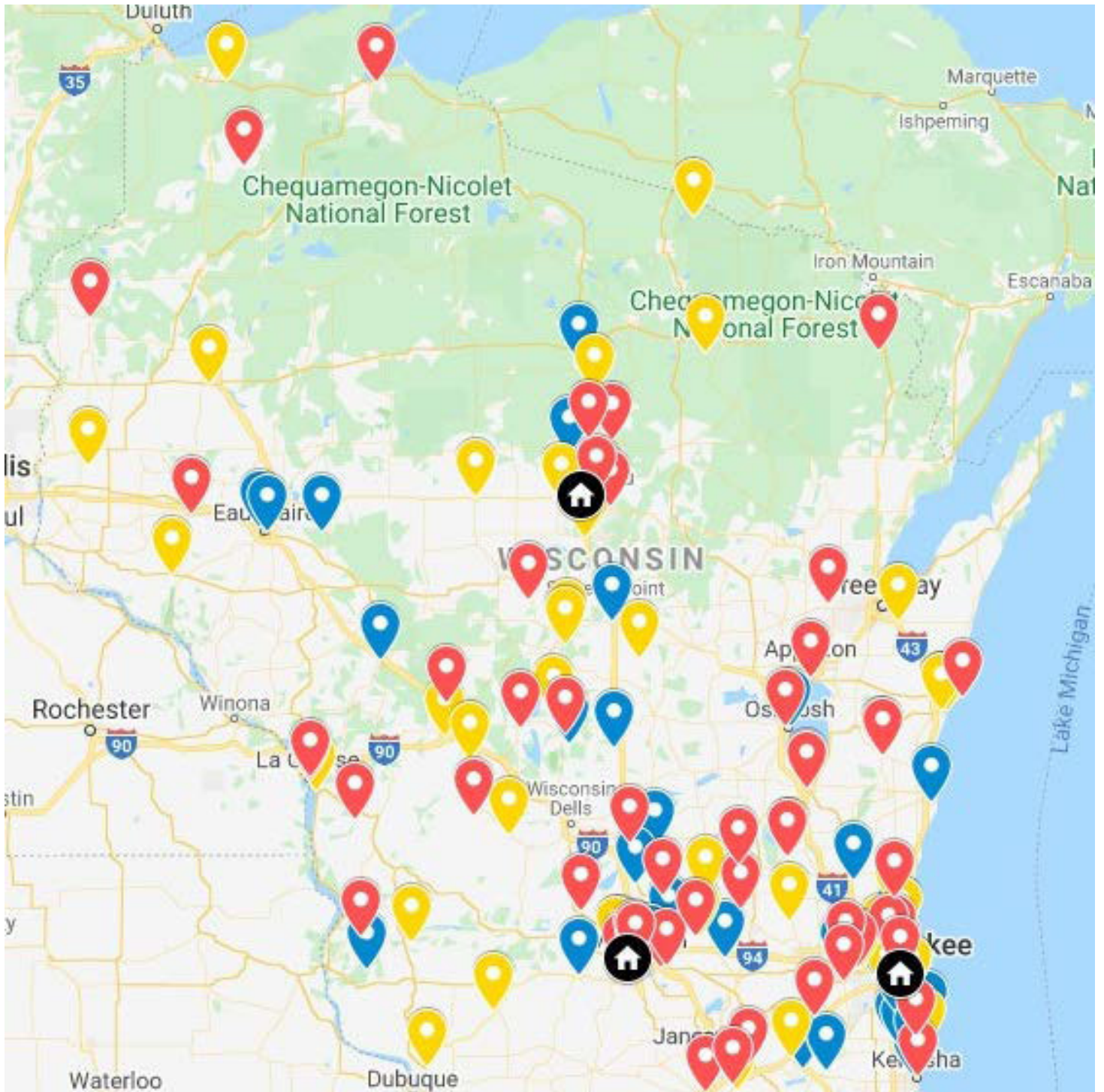


Figure 1: Location of crime scenes processed by the Crime Scene Response (CSR) Unit from 2017-2019.



MILWAUKEE METRO RESPONSES

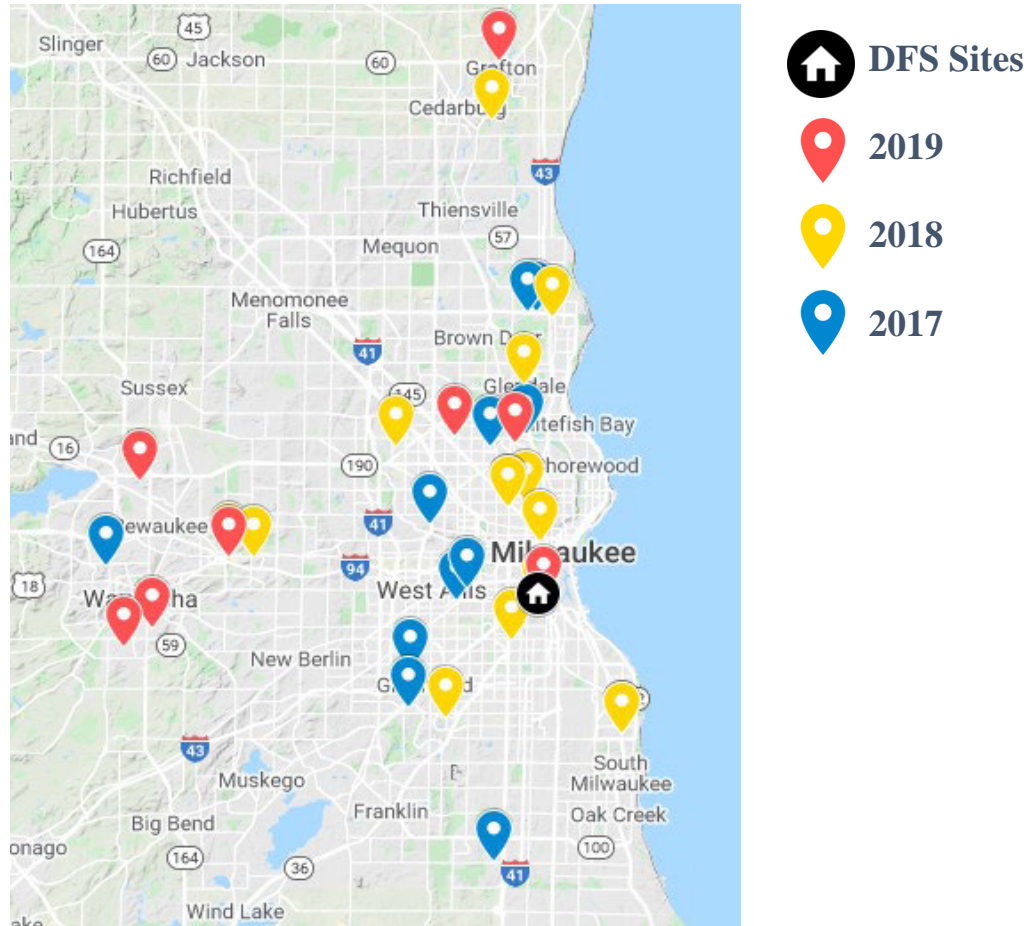


Figure 2: Location of crime scenes processed in the Milwaukee Metro area from 2017-2019.

MADISON METRO RESPONSES



Figure 3: Location of crime scenes processed in the Madison Metro area from 2017-2019.