



2021

ANNUAL REPORT

MARYLAND STATE POLICE

FORENSIC SCIENCES DIVISION

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2021 FORENSIC SCIENCES DIVISION TEAM MEMBERS

Matt Abbott	Samantha George	Taylor Lentz	Cathy Savage
Shelly Adams	Michelle Groves	Rebecca Levine	Liz Schneider
Kris Amspacker	Amy Hager	Jennifer Lewis	Lindsey Schultz
Stephanie Anschuetz	Arnetta Haith	Ryan List	Adonia Sedore
Jose Ayala	Joe Harant	Ross Lowe	Kelly Sexton
Tina Bankard	Melissa Harvey	Roshell Mack	Wayne Shu
Dean Bartchy	Bruce Heidebrecht	Argi Magers	Chris Shunney
Heather Baxivanos	Debbie Heller	Alex Mankevich	Ed Sisco
Kevin Beardsley	Kelsey Herbert	Whitley Mayo	Tiffany Smith
Laura Beck	Cindy Hoffmann	Naomi McAuley	Barbara Solomon
Jason Befus	Jeanine Hotchkin	Corrie Mellott	Angie Spessard
Delaney Berryman	David Iden	C.R. Miller	Adam Stachurski
Laurel Bobka	Linda Idso	Jamie Miller	Morgan Stanley
Megan Buck	Ikenna Ikpeama	Shawn Miller	Darby Stemple
Jessica Bullis	Maggie Iman	Gary Moore	Zach Suber
Amber Burns	Valerie Imschweiler	Leslie Mounkes	Bruce Tanner
Kathy Busch	Jenn Jeudy	Jaimie Myer	Mekonnen Tesfaye
Jessie Campbell	Sashi Kambhampati	Robert Noland	Dawn Trusty
Theresa Chamberlayne	Dan Katz	Nicholas Palmer	Laura Waters
Megan Cleek	Tiffany Keener	Madison Pennington	Rosalie Weimer
Theresa DeAngelo	Amy Kelly	Greg Phillips	Brooke Welsh
Brooke Demby	Julie Kempton	Rita Phillips	Michael Whitmore
Mitch Dinterman	Susan Kim	Alicia Quinn	Heath Wilkins
Tony Edogu	Angela Kortchak	Ying Ren	Stacey Wise
Sierra Fleegle	Wanda Kuperus	Theia Rene	Lauren Wolfe
Christina Fraling	Subha Kuriakose	Stephanie Roberg	Sam Woods
Patricia Frantz	Stephanie Laufert	Pat Rogers	Annie Wright
Gisselle Fredericks	Diane Lawder	Rebecca Roher	Carol Young
Alla Frenkil	Cesia Lazo Vera	Richard Russell	Teri Zerbe
Nancy Garcia	Sara Lee	Cat Rust	

FORENSIC SCIENCES DIVISION **DESCRIPTION**



The Maryland State Police Forensic Sciences Division (MSP-FSD) is an accredited, full-service forensic laboratory system offering analysis in the following disciplines: Crime Scene, Latent Print/Impressions, Firearms/Toolmarks, Controlled Dangerous Substances (CDS), Toxicology, Biology, Trace Evidence, and Questioned Documents. Although the MSP-FSD operates under the administration of the Maryland State Police, the laboratory is available to provide service to all law enforcement agencies in Maryland. The MSP-FSD is accredited by ANSI National Accreditation Board (ANAB) and licensed by the Maryland Department of Health, Office of Health Care Quality. As such, the laboratory utilizes generally accepted practices and procedures and conforms to ISO/IEC 17025 - General requirements for the competence of testing and calibration laboratories.

The MSP-FSD employs approximately 100 scientific and support staff and operates out of three laboratories located in Pikesville, Hagerstown and Berlin, as well as 14 Crime Scene Offices located strategically throughout the state. The MSP-FSD is comprised of the Office of the Director, the Administrative Services Branch, the Field and Evidence Services Branch, and the Laboratory Services Branch. The Office of the Director consists of the Director, Deputy Director, Assistant Commander and Quality Assurance/ Safety Manager. This administrative unit is responsible for the overall management of the Division. The Director oversees the management of the entire Division while the Assistant Commander oversees the Field and Evidence Services Branch, the Deputy Director oversees the Laboratory Services Branch, and the Quality Assurance/ Safety Manager oversees the Administrative Services Branch. The Field and Evidence Services Branch consists of the Crime Scene Section and the Forensic Support Services Section. The Laboratory Services Branch consists of the following Sections: Pattern Evidence, Chemistry, Biology and Trace Evidence. The Administrative Services Branch consists of the Administrative Support Staff Unit and Data Support Unit. The personnel within the Field and Evidence Services Branch and the Laboratory Services Branch provide scientific support services to the criminal justice community.

The MSP-FSD operates under the following principles:

Core Values

Our dedication to integrity, fairness, and service ensures that our clients are always provided with reports and expert testimony that are informative, ethical, impartial, reliable, and scientifically valid.

Mission Statement

The mission of the Forensic Sciences Division is to serve as the model laboratory for the analysis of forensic evidence in the State of Maryland by employing the following elements:

- Promotion of employee morale through a respectful, inclusive, equitable, unified, and safe work environment.
- Meeting the forensic science needs of Maryland and its citizens.
- Maintaining ISO 17025 accreditation and compliance with all oversight requirements.
- Minimizing backlogs and turnaround time.
- Operating in a planned, prepared, and proactive manner.

Vision Statement

- To respect, acknowledge, value, challenge, and retain our employees within a diverse workplace.
- To collaborate with other laboratories and agencies and maximize the forensic services available to Maryland and its citizens.
- To promote state of the science operations through continuing education and the routine evaluation of current procedures.
- To eliminate backlogs and initiate cases upon submission.
- To maximize the public's return on investment by ensuring that sufficient resources are always available to the FSD and that those resources are always procured in the most fiscally responsible manner possible.

DIRECTOR'S MESSAGE

Daniel E. Katz

On Friday September 24, 2021, I had the pleasure of doing a ride-along with TFC Derek Eckhardt. While I have been a member of the Maryland State Police (MSP) for nearly 15 years, I had never been on a ride-along. After spending a shift with TFC Eckhardt, I have a new perspective and appreciation of the daily duties of a MSP Trooper, and I simply cannot say enough about the professionalism, integrity, and humanity that he demonstrated during his shift. A prime example occurred within the first ten minutes of the shift when we received a report of a suspicious individual. We located the individual and soon learned that he had an outstanding warrant. The individual was on temporary release from a drug treatment program and he knew that if he got in trouble while on leave, the ramifications would be severe. He became quite agitated when he learned he would be taken into custody. His girlfriend showed up at the scene and was also quite upset. While TFC Eckhardt could have simply forced him into the car against his will and been done with it, a different approach was taken. The individual was complaining about being very thirsty and needing a smoke. TFC Eckhardt evaluated the situation and agreed to drive down the road to the girlfriend's home so that she could retrieve him a drink and cigarette while he remained handcuffed in the car. From then on, the individual was cooperative. In fact, he stated that he usually would have run, but he did not because he was treated with respect and dignity. Throughout the rest of the night, TFC Eckhardt answered all of my questions with thoughtful explanations that showed he has a distinct philosophy of how to carry out his job based in part on how he was raised, how he was taught, and how he was mentored. My guess is that TFC Eckhardt will eventually promote through the ranks, but for now, he takes pride in being a Trooper in the field doing his job to the best of his abilities.

I believe that the honorable manner in which TFC Eckhardt performs his job is consistent with the vast majority of law enforcement officers. Nonetheless, in recent years, we have witnessed repeated instances of unacceptable police conduct, and complaints about the current state of the criminal justice system are more prevalent today than perhaps ever before in our country's history. Reform efforts have begun through education and legislation, but this is not an easy or quick fix. Furthermore, checks and balances need to be in place ensuring that the balance of power does not shift too far in the opposite direction. Interestingly, forensic science may play a significant role in this rebalancing effort, as demonstrated by the following examples.

This past year, Maryland became the first state to pass legislation establishing safeguards for the use of Forensic Genetic Genealogy (FGG). What began in 2019 as an effort to ban the practice, eventually resulted in a 2021 law that creates sensible guardrails that balance public safety with privacy concerns. The story of how a highly controversial topic became a model of compromise is an interesting instance of using the principles of forensic science to find common ground. The initial bill to ban FGG was squashed because of strong opposition by law enforcement who see this new technology as the key to solving violent crimes that have long gone cold. In preparation for revisiting the topic during the 2020 legislative session, a summit on FGG was held during a

House Judiciary Committee retreat in which two panels made presentations to educate the legislators. The first panel focused on potential benefits associated with FGG while the second panel focused on the potential risks. The first panel included representatives from law enforcement and the Maryland State's Attorney's Association. Bioethicists concerned with the potential misuse of individuals' genetic information dominated the second panel. Both sides provided good information, but there was no denying the adversarial nature of the event.

While I was included in the first panel, I decided to take the opportunity to present the forensic science perspective and make the point that our goal was to balance public safety and personal right to privacy. I advised that forensic science functions on the principles of impartiality in an adversarial criminal justice system and as a forensic scientist, I saw that there were legitimate arguments on both sides of the issue worthy of compromise. I was hopeful that my message had made a difference, but unfortunately when the 2020 bill was drafted much of the problematic language remained. Therefore, during the house committee hearing, I reiterated my message for compromise and ultimately the bill was withdrawn and the sponsor agreed to establish a FGG Workgroup composed of both sides to work together on drafting the 2021 bill. A collaborative workgroup emerged that was willing to listen to the other side and learn, rather than focusing just on winning the argument. The final result being a well-balanced FGG law that not only provides a fair solution for Maryland citizens, but also offers guidance for the rest of the country still trying to decide how to handle FGG.

Another initiative that took effect in 2021 was the creation of the Office of the Attorney General's (OAG) Independent Investigation Division (IID), which is tasked with investigating all alleged or potential police-involved deaths of civilians that occur in Maryland. This new law goes to the heart of the concerns about the historical practice of law enforcement self-investigating incidents of potential police misconduct. It was quickly realized upon passage of the law that a major gap existed concerning the OAG having the necessary resources to conduct such investigations. This was a brand new Division and the solution was to establish a cooperative relationship with MSP as allowed by the law. This meant that the MSP Homicide Unit would work all IID investigations in conjunction with newly hired investigators within the OAG. It also meant that the MSP Forensic Sciences Division (FSD) would need to process crime scenes and analyze evidence in order to realize the law's core principle of impartiality.

It is an understatement to say that the MSP-FSD Crime Scene Technicians and Forensic Scientists already have a full plate. This additional responsibility not only spreads thin resources within the Crime Scene Section, Firearms and Toolmarks Unit, Latent Print and Impressions Units, and DNA Casework Units, but it adds additional pressure and stress to those performing the work as all IID cases are deemed top priorities and are therefore subject to enhanced scrutiny. The law went into effect on October 1, 2021, and I cannot say enough about the dedicated staff that have worked these cases and how well they have represented the Department and Division.

The cultural divide that has emerged in recent years is significant. It has shifted focus to the extremes rather than looking for common ground in the middle. While high profile cases garner

attention and provide opportunities to highlight the important role that forensic science can play in leveling the criminal justice playing field, the reliable application of forensic science on a daily basis is what ultimately determines whether or not the system works. If the public has confidence that impartial forensic practitioners routinely perform the collection and analysis of evidence in a fair and unbiased manner that allows for the guilty to be held accountable and the innocent to be exonerated, then real positive change can occur. Alternatively, if that trust is broken, forensic science can quickly go from a tool capable of helping solve the current problems in the criminal justice system to an additional source of skepticism and doubt.

The potential to make a positive impact on society is what led most of us to this profession. What we may have not initially realized though is the extent of the responsibility that goes along with our noble intentions. The reality is that we have very difficult and stressful jobs because the stakes are so high if we fail. The pressure of the job is enormous by itself; and that is before you add in dealing with a pandemic for two years along with managing ever-growing work-life balance challenges. The FSD Annual Report traditionally concludes with a section acknowledging a selection of employees who distinguished themselves somehow, but what there needs to be more of is acknowledging all of the people who believe in the mission and are committed to doing their job every day to the best of their ability. We need to recognize our TFC Eckhardts. That is why this year, the first item listed in the table of contents is the “2021 Forensic Sciences Division Team Members”. This alphabetical list of staff will now be a permanent feature at the beginning of the FSD Annual Report. Everyone listed has made a difference and I am very proud of all of you.

STATISTICAL SUMMARY

Activity Summary - Field and Evidence Services Branch				
	2018	2019	2020	2021
Crime Scene Section				
Crime Scenes Processed	653	674	625	676
Photography Unit				
Special Assignments	225	211	181	177
VeriPic/Color Film Rolls Processed	634	868	845	773
Color Prints	5,779	5,073	1,175	2,884
ID Cards	750	657	522	617
Central Receiving Unit				
CDS cases submitted for destruction	8,382	11,129	8,100	9,390
Forensic Cases Received	14,023	13,952	11,871	11,942

Activity Summary – Laboratory Services Branch				
	2018	2019	2020	2021
Latent Prints/Impressions				
Cases Received	1,014	1,060	1,034	916
Cases Completed	1,019	1,348	1,043	984
MAFIS Latent Hits	324	540	418	368
Case Uploads to MAFIS	456	624	459	441
Latent Print Uploads to MAFIS	1,227	1,640	1,368	1,248
Firearms/Toolmarks				
Cases Received	780	811	925	1,291
Cases Completed	822	921	1,018	1,163
Number of Firearms for Handgun Roster Board	130	181	92	92
Exhibit Uploads to NIBIN	575	833	912	1,169
Number of NIBIN Leads Generated	32	81	185	263
Number of NIBIN Hits Confirmed	9	2	11	11
Operation Test Shot Samples Completed	273	305	400	702
Walk-In Test Fires (# of Firearms)	198	75	26	22
CDS				
Cases Received in Pikesville	3,711	3,867	2,657	3,207
Cases Received in Berlin	2,779	2,387	1,489	1,166
Cases Received in Hagerstown	1,957	840	1,486	1,956
Subtotal Cases Received	8,447	7,094	5,632	6,329
Cases Received by Allied Forensic Scientists ¹	1,541	2,835	1,921	1,792
Total Cases Received	9,988	9,929	7,553	8,121
Cases Completed in Pikesville	3,238	3,867	3,152	3,278
Cases Completed in Berlin	2,826	2,207	1,806	1,088
Cases Completed in Hagerstown	1,804	800	1,665	1,517
Subtotal Cases Completed	7,868	6,874	6,623	5,883
Cases Completed by Allied Forensic Scientists ²	1,431	3,103	2,475	1,665
Total Cases Completed	9,299	9,977	9,098	7,548
Toxicology				
Blood Alcohol Cases Received	683	789	694	693
Blood Drug Cases Received	481	660	625	566
Total Cases Received	1,164	1,449	1,319	1,259
Blood Alcohol Cases Completed	664	713	630	713
Blood Drug Cases Completed	435	458	695	481
Total Cases Completed	1,099	1,171	1,325	1,194
Biology				
Submitted Cases Received	639	648	607	652
Directly Outsourced Cases Received	265	298	290	281
Total Cases Received	904	946	897	932
Submitted Cases Completed	640	626	657	613
Directly Outsourced Cases Completed	266	266	333	261
Total Cases Completed	906	892	990	874
Maryland Case CODIS Hits	940	872	1,128	1,170
Arrested/Charged CODIS Hits	128	130	144	141
Convicted Offender Uploads to CODIS	3,828	3,787	2,285	2,655
Arrested/Charged Uploads to CODIS	2,608	2,884	2,741	3,374
Case Uploads to CODIS	1,057	958	1,568	1,284

Activity Summary – Laboratory Services Branch				
	2018	2019	2020	2021
Trace Evidence				
Cases Received	138	133	125	138
Cases Completed	151	124	124	137
Question Documents				
Cases Received	35	23	18	14
Cases Completed	30	27	18	16

1 - Allied Forensic Scientists = Forensic Scientists hired by allied agencies or other governmental entities who are authorized to perform CDS analysis in FSD facilities under the provisions provided for in a Memorandum of Understanding.

Laboratory Services Branch Casework Summary								
Unit	Cases Received		MSP Cases Received		Allied Agency Cases Received		Cases Completed	
	2020	2021	2020	2021	2020	2021	2020	2021
Latent Prints/Impressions	1,034	916	16%	20%	84%	80%	1,043	984
Firearms/Toolmarks	925	1,291	29%	41%	71%	59%	1,018	1,163
CDS-Pikesville	2,657	3,207	39%	46%	61%	54%	3,152	3,278
CDS-Berlin	1,489	1,166	31%	26%	69%	74%	1,806	1,088
CDS-Hagerstown	1,486	1,956	40%	39%	61%	61%	1,665	1,517
CDS-Allied ¹	1,921	1,792	23%	35%	77%	65%	2,475	1,665
Toxicology	1,319	1,259	36%	35%	64%	65%	1,325	1,194
Biology- Submitted	607	652	19%	18%	81%	82%	657	613
Biology- Direct Outsourcing	290	281	4%	3%	96%	97%	333	261
Trace Evidence	125	138	44%	35%	60%	65%	124	137
Questioned Documents	18	14	39%	29%	61%	71%	18	16
Totals	11,871²	12,672	31%	36%	69%	64%	13,616	11,916

1- CDS-Allied = Forensic Scientists hired by allied agencies or other governmental entities who are authorized to perform CDS analysis in FSD facilities under the provisions provided for in a Memorandum of Understanding.

2- Cases that are routed to multiple units are counted as a unique case for each unit.

Laboratory Services Branch Backlogs and Turn Around Times				
Casework Type	Pending Caseload (Cases)¹	Backlog (Cases pending >30 days)¹	2021 Turn Around Time (Calendar Days)²	4th Quarter Turn Around Time (Calendar Days)³
Latent Prints/Impressions	26	6	26	20
Firearms/Toolmarks	490	432	130	148
CDS-Pikesville	398	208	47	42
CDS-Berlin	278	214	63	77
CDS-Hagerstown	656	559	60	67
CDS-Allied	326	202	67	76
Toxicology	483	393	108	121
Biology-Submitted	196	143	102	96
Biology-Directly Outsourced	93	84	111	102
Trace Evidence	18	12	54	59
Question Documents	3	2	104	85
Totals	2967	2255	66	71

1- Number of cases as of last day of calendar year.

2- Average turnaround time for cases completed throughout the calendar year.

3- Average turnaround time for cases completed during the 4th quarter.

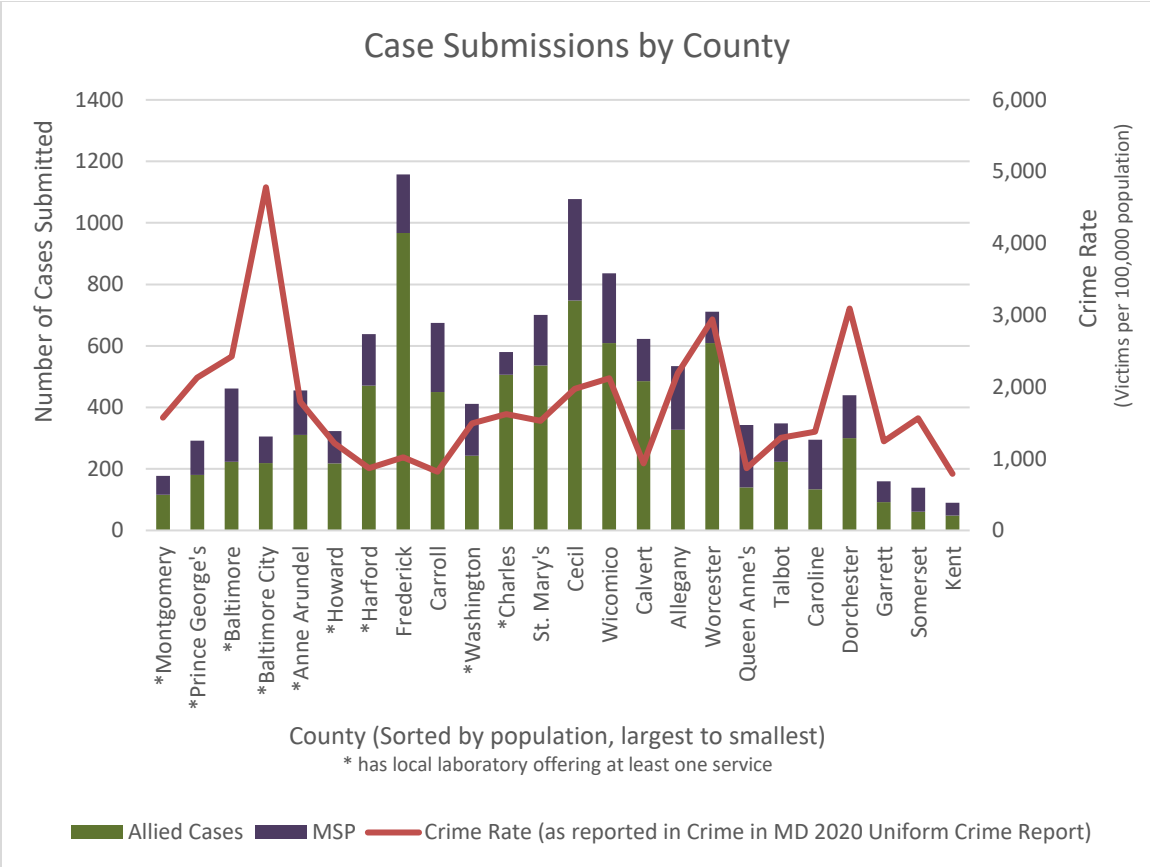
Quantity of FSD Requests by County						
County	2020			2021		
	Cases Submitted to Lab	Crime Scenes	Total	Cases Submitted to Lab	Crime Scenes	Total
Cecil	1,077	75	1,152	1,103	89	1,192
Frederick	1,158	14	1,172	1,151	28	1,179
St. Mary's	702	20	722	836	22	858
Wicomico	836	65	901	801	52	853
Harford	638	14	652	802	26	828
Carroll	675	41	716	758	24	782
Worcester	711	16	727	751	21	772
Charles	580	3	583	706	6	712
Anne Arundel	455	20	475	659	43	702
Allegany	534	36	570	586	60	646
Washington	412	18	430	504	30	534
Baltimore	461	47	508	470	36	506
Calvert	623	9	632	464	5	469
Queen Anne's	343	13	356	427	13	440
Dorchester	440	30	470	390	33	423
Talbot	348	27	375	344	33	377
Caroline	295	23	318	310	15	325
Baltimore City	305	39	344	268	27	295
Howard	322	16	338	271	16	287
Prince George's	292	31	323	239	27	266
Somerset	139	42	181	218	42	260
Garrett	160	17	177	199	4	203
Montgomery	177	4	181	182	8	190
Kent	90	4	94	140	15	155
Statewide/Not Determined*	97	1	98	90	0	90
Out of State	1	0	1	3	1	4
Totals	11,871	625	12,496	12,672	676	13,348

*County where offense occurred was not provided to FSD.

Quantity of Laboratory Submissions to FSD Ranked by MSP Installation			
2021 Rank	2020 Rank	MSP Installation	Counties Served
1	1	MSP-CID/CED	Statewide
2	2	MSP-Easton	Caroline, Dorchester, Talbot
3	7	MSP-Frederick	Frederick
4	4	MSP-Centerville	Kent, Queen Anne's
5	5	MSP-North East	Cecil
6	8	MSP-Cumberland	Allegany
7	10	MSP-Leonardtown	St. Mary's
8	9	MSP-Hagerstown	Washington
9	3	MSP-Westminster	Carroll
10	13	MSP-JFK Highway	Cecil, Harford, Baltimore
11	17	MSP-Glen Burnie	Anne Arundel
12	6	MSP-Golden Ring	Baltimore
13	11	MSP-Salisbury	Wicomico
14	16	MSP-Bel Air	Harford
15	14	MSP-Berlin	Worcester
16	24	MSP-Annapolis	Anne Arundel
17	15	MSP-Waterloo	Howard
18	12	MSP-Prince Frederick	Calvert
19	20	MSP-Princess Anne	Somerset
20	23	MSP-College Park	Prince George's
21	19	MSP-La Plata	Charles
22	25	MSP-Forestville	Prince George's
23	18	MSP-McHenry	Garrett
24	21	Office of State Fire Marshal	Statewide
25	22	MSP-Rockville	Montgomery
25	26	MSP-Homicide	Statewide
27	27	MSP-DED/C3I	Statewide
28	28	MSP-Crash Team	Statewide
28	29	MSP-CVED	Statewide

Quantity of Laboratory Submissions to FSD Ranked by Allied Agency County		
2021 Rank	2020 Rank	County
1	1	Frederick
2	2	Cecil
3	6	Charles
4	3	Worcester
5	5	St. Mary's
6	4	Wicomico
7	8	Harford
8	9	Carroll
9	7	Calvert
10	11	Anne Arundel
11	10	Allegany
12	13	Washington
13	12	Dorchester
14	15	Baltimore
15	16	Baltimore City
16	14	Talbot
17	17	Howard
18	19	Queen Anne's
19	22	Garrett
20	21	Montgomery
21	20	Caroline
22	23	Somerset
23	18	Prince George's
24	24	Kent
25	25	Statewide/Not Determined*
26	26	Out of State

*County where offense occurred was not provided to FSD.



ADMINISTRATIVE SERVICES BRANCH

The Administrative Services Branch consists of the Administrative Support Staff Unit and the Data Support Unit, both provide support throughout the MSP-FSD. The Administrative Support Staff Unit provides office management functions including recruiting for civilian vacancies, processing working fund expenditures, ordering laboratory supplies, conducting capital inventory, various administrative duties involving the laboratory budget, personnel inquiries, maintaining service agreement contracts, processing invoices, logging and maintaining all submitted court summonses, logging and processing training requests, and maintaining the Division's filing system. The Administrative Support Staff Unit is essential in providing the MSP-FSD staff with what they need to do their jobs in the field and in the laboratory.

MSP-FSD receives additional support through functions provided within the Data Support Unit consisting of a Research Statistician. The Research Statistician collects, analyzes, evaluates and disseminates data for this Annual Report as well as for MSP-FSD's Annual DNA Statewide Database Report, the Monthly Activity Report, and other laboratory statistical needs. The Research Statistician also provides ongoing statistical information for MSP-FSD grants.

In addition to the MSP-FSD administrative staff, a contractual employee that is sub-contracted through Falcon is assigned to provide security/receptionist coverage for the MSP-FSD front lobby security desk. This individual screens and logs all visitors, including personnel delivering evidence, and also monitors laboratory security cameras and communicates with the Headquarters Duty Officer and the Baltimore County Police Department regarding security issues. This contracted employee also provides clerical assistance to various units when feasible.

FIELD AND EVIDENCE SERVICES BRANCH

The Field and Evidence Services Branch of MSP-FSD is comprised of the Crime Scene Section and the Forensic Support Services Section. The Assistant Commander of MSP-FSD is responsible for the planning, organization, direction and control of this branch.

CRIME SCENE SECTION

The Crime Scene Section (CSS) is responsible for processing crime scene evidence to include identifying, collecting, preserving, photographing, sketching, storing and transporting evidence to the laboratory facilities. Bloodstain pattern analysis, facial composite generation, and bullet trajectory analysis are also available. Crime Scene Technicians (CSTs) work closely with criminal investigators, processing crime scenes and providing technical assistance, thereby allowing investigators the opportunity to conduct thorough investigations. Technicians are available to Maryland's law enforcement community twenty-four hours a day, seven days a week. The CSS also provides assistance to neighboring states upon request. The Section Manager oversees the overall operations of the Crime Scene Section.

In 2021, the Crime Scene Section expanded its operations to include four regional units and 14 Crime Scene offices. When fully staffed, there are four Regional Supervisors and Crime Scene Technicians assigned to each of the four regions: Western, Northern, Southern, and Eastern. There will be nineteen CSTs assigned to each of the four regions.

Much of the evidence examined by the MSP-FSD is transported by CSTs. They not only transport evidence for the majority of the Department's installations, but also for many of the local police and sheriff's departments. These transports are to and from the Pikesville Laboratory as well as the two satellite laboratories located in Hagerstown and Berlin.

The CSS is involved in the MSP-FSD Disaster Identification Team (DIT), which is available to assist the Office of the Chief Medical Examiner in locating, marking, photographing, and identifying disaster victims.

The technical abilities and expertise of the CSTs are often utilized for training. They provide instruction at the Maryland State Police Academy, Natural Resources Police Academy, various in-service law enforcement agency programs, and provide lectures during training and seminars hosted by allied police departments. CSTs are actively involved in community outreach as well.

Law enforcement personnel provided valuable feedback to the CSTs and their supervisors by submitting Technician Evaluation Forms in 2021. These evaluations were consistently highly rated and praised CSS personnel for their exemplary service and performance.

In March 2021, the Maryland General Assembly passed SB600 - Maryland Police

Accountability Act of 2021, creating the Independent Investigations Division (IID) within the Office of the Attorney General. The Division is charged with investigating all alleged or potential police-involved deaths of civilians, and to provide a report containing detailed investigative findings to the State's Attorney of the County that has jurisdiction. The Crime Scene Section is responsible for processing these IID cases.

CRIME SCENE REGIONAL UNITS

Western Region Unit: Allegany, Frederick, Washington, Carroll, and Garrett Counties

Northern Region Unit: Harford, Howard, Baltimore, and Cecil Counties as well as Baltimore City (Maryland Port Authority, Maryland Transportation Authority, DOC)

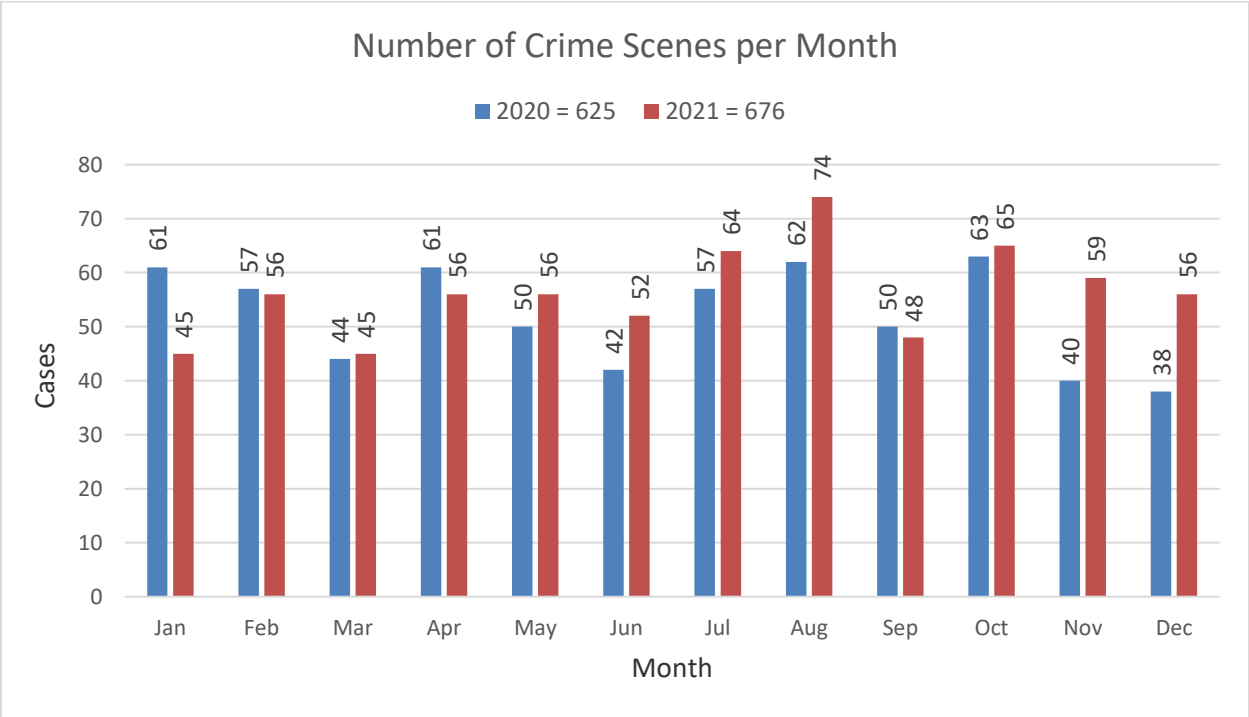
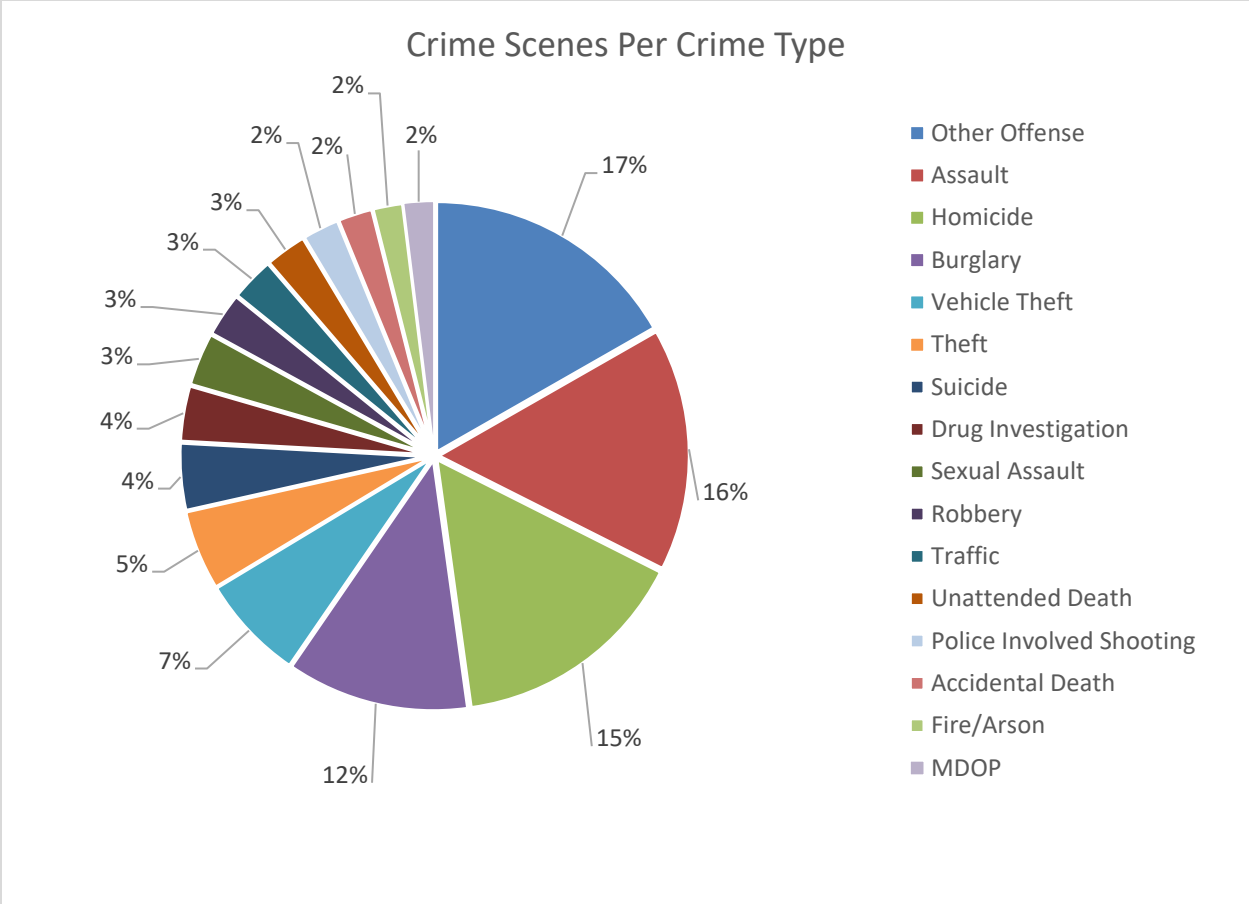
Southern Region Unit: Montgomery, Anne Arundel, Prince George’s, Calvert, Charles, and St. Mary’s Counties

Eastern Region Unit: Kent, Queen Anne’s, Talbot, Caroline, Dorchester, Wicomico, Somerset and Worcester Counties

Crime Scene Summary								
Crime Scene Region	Scenes Processed		MSP Scenes		Allied Agency		Scene Assists	
	2020	2021	2020	2021	2020	2021	2020	2021
Eastern	233	210	60%	52%	40%	48%	10	24
Western	147	177	72%	68%	28%	32%	31	29
Central	245	289	70%	72%	30%	28%	16	18
Totals	625	676	67%	65%	33%	35%	57	71

Total Number of Crime Scenes Processed per County	
County	Total Crime Scenes
Cecil	89
Allegany	60
Wicomico	52
Anne Arundel	43
Somerset	42
Baltimore	36
Dorchester	33
Talbot	33
Washington	30
Frederick	28
Baltimore City	27
Prince George's	27
Harford	26
Carroll	24
St. Mary's	22
Worcester	21
Howard	16
Caroline	15
Kent	15
Queen Anne's	13
Montgomery	8
Charles	6
Calvert	5
Garrett	4
Out of State	1
TOTAL	676

*County where offense occurred was not provided to FSD.



NOTEWORTHY CASES

Western Region

On June 24, 2021, CST Anschuetz processed a recovered stolen vehicle at the Rockville Barrack. CST Anschuetz recovered a total of twelve latent lifts resulting in the Latent Print and Impressions Unit (LPIU) identifying six of those latent lifts being to a suspect.

On July 13, 2021, CST Jeudy was requested to process a stolen vehicle for Frostburg City Police Department. The vehicle had been stolen from a residence and was spotted by Frostburg City PD. When the officer attempted to approach the driver of the vehicle, the suspect fled on foot. CST Jeudy processed the vehicle, obtaining latent lifts. The latent lifts were submitted to the LPIU and a positive hit on a female suspect who was charged with multiple charges related to the theft of the vehicle.

On July 19, 2021, CST Kortchak responded to a call for a commercial robbery in Smithsburg, MD. The store, Cavetown Liquors, had been robbed multiple times recently. Each time the suspect brandished a gun while wearing gloves and a mask. However, on this evening, security cameras on the premises showed the suspect was not wearing gloves. Upon arrival, CST Kortchak was advised by troopers on scene that the suspect had stolen money and cigarettes from the shop. One unopened pack of cigarettes was observed on the ground just outside of the business. CST Kortchak promptly photographed and processed the cigarette pack for latent prints. Latent prints were developed on the plastic covering the cigarette pack. The prints were lifted (at 0026 hours), packaged and secured for submission to the Hagerstown Latent Print Impressions Unit. On July 20, 2021 the latent prints were submitted to FSD Hagerstown for analysis. That same day, CST Kortchak received an email from Latent Print Analyst, FS III Wise stating that both prints were able to be identified to one individual. Investigators were notified and agreed that the individual whose fingerprints were identified, matched the suspect's description. A suspect was then identified.

Southern Region

On January 30, 2021, CST Idso responded to a scene where an assault had taken place. It was a shooting in a parking lot of a hotel in St. Mary's County. A party had taken place inside one of the hotel rooms which later resulted in an altercation in the parking lot of the hotel. No suspects were identified at that time, and all suspects had fled the scene. CST Idso processed the hotel room where the party occurred and was able to collect suspected fingerprints from various items at the scene. Three latent print identifications were made by the LPIU from these lifts, and three suspects were identified.

On February 23, 2021, CST Myer completed an in-house processing case from the Annapolis Barrack for a Handgun Violation investigation. She processed numerous items to include a black and green Taurus G2C 9mm handgun, one black magazine, and four live cartridges. CST Myer processed the items for latent fingerprints and obtained twelve latent lift cards, which resulted in the LPIU identifying a possible suspect. This case is directly related to a case CST Myer

responded to on April 28, 2021, where she completed another in-house processing case from the Annapolis Barrack. CST Myer processed a Black A-Canik TP9SF 9mm handgun, one black magazine, and eighteen live cartridges. The investigator requested fingerprint processing and DNA collection. CST Myer collected fifteen latent lifts from this evidence resulting in the LPIU identifying the same individual who was identified in the above case on both the magazine from the weapon as well as the weapon itself. CST Myer immediately notified the Annapolis Barrack Detective/Sergeant of the association with the cases.

Northern Region

On March 8, 2021, CST Sexton responded to the scene of an Arson Investigation. During the investigation, Deputy Ewing spoke with a neighbor that had identified several items throughout his yard that did not belong to him. The items led down to the North East River bank where a lighter fluid bottle was located. Additional latent print processing was conducted on the lighter fluid bottle and two latent lift cards were collected. Upon further analysis by the FSD Pikesville LPIU, a suspect was identified.

On July 31, 2021, CST Frantz responded to the scene of a shooting of an individual in Perryville. The victim and suspect were seen on video walking down the street as the suspect pulled out a gun and shot the victim. The suspect fled on foot. The suspect's vehicle was taken into custody from a nearby parking lot and processed for latent prints. CST Frantz developed and collected latent prints from the suspect's vehicle that led to the identification of the victim print within that vehicle. This led investigators to associate the suspect in the case to the victim.

Eastern Region

On February 10, 2021, CST Woods responded to a case where an elderly man was found deceased in his residence by law enforcement who were conducting a welfare check at the request of the victim's daughter. The victim had been beaten to death by a suspect who removed several antique revolutionary and civil war long guns from the victim's residence. While processing the crime scene, it was reported that the suspect had been stopped due to traffic violations and was found to be in possession of the victim's long guns. The suspect was apprehended at that time. The suspect's clothing was observed to have suspected blood on them and collected by investigators for later examination. The victim's body was examined by the Office of the Chief Medical Examiner's Office and several of the victim's bruises/injuries and his hands were swabbed for possible transfer DNA. After analysis by the MSP FSD Biology Section, the suspected blood on the suspect's clothing was found to be that of the victim's and the suspect's DNA was found to be on the victim's left hand. The suspect, now defendant, is awaiting trial.

On June 22, 2021, CST George responded to a recovered stolen vehicle investigation. The vehicle had been stolen the previous week. The vehicle was located in a parking lot. Two suspects were observed on video leaving the vehicle. CST George processed the vehicle for latent prints and DNA. CST George obtained nine latent lift from the vehicle. There was an

identification made by LPIU on a latent lift obtained from the driver's seat belt. The identification was to a juvenile suspect that had previously not been identified by law enforcement. The case is scheduled for trial.

On July 20, 2021, CST Roher responded to an assault investigation. A daughter and two friends attempted to murder her father. The suspects had purchased a knife, rolls of duct tape, gloves and a tarp. The suspects stabbed the victim in the living room, but the victim escaped to a neighbor's apartment. The knife used by the suspects had been covered along with a bandana and duct tape. CST Roher processed the scene for DNA, latent prints and fracture match evidence (the duct tape). Fourteen latent lifts were obtained from the scene and from other items recovered from the scene including rolls of duct tape, packaging for gloves, a tarp with duct tape, and the knife. Seven latent prints impressions from the latent lifts from the packaging of the gloves and tarp were identified by LPIU to the daughter. The suspects are awaiting trial.

FORENSIC SUPPORT SERVICES SECTION

This Section consists of the Photography Unit and the Central Receiving Unit. These units play an important role in allowing the FSD to function as efficiently and effectively as possible.

The Photography Unit is supervised by one Forensic Photographer Supervisor and is staffed by one Forensic Photographer II. The Central Receiving Unit includes one Administrative Officer (CRU Supervisor) and is staffed by six MSP Forensic Inventory Control Officers (MSP-FICO's).

PHOTOGRAPHY UNIT

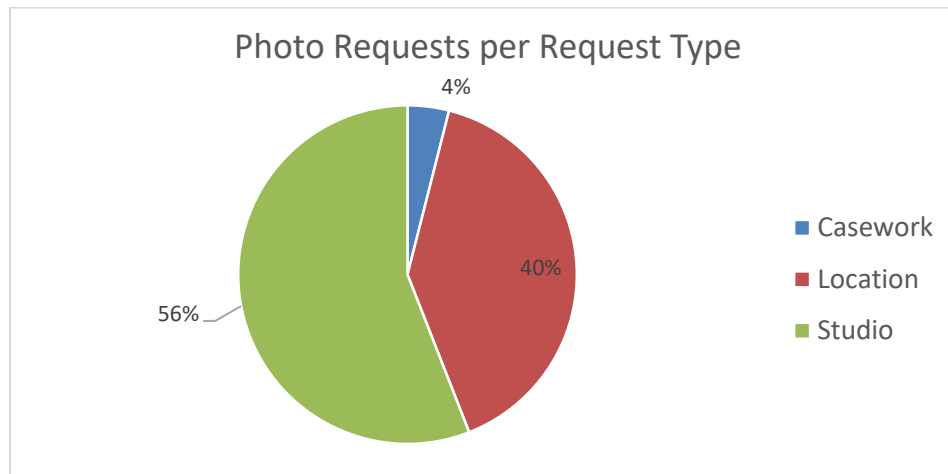
The Photography Unit provides photographic services to the Maryland State Police.

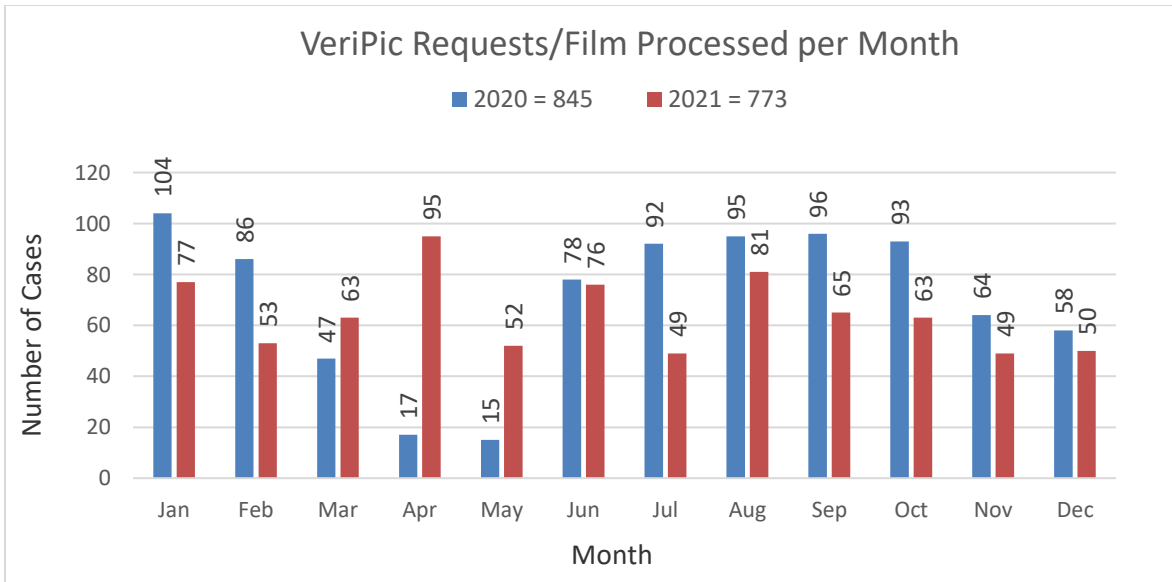
Duties within the unit include the development and printing of images related to crime scenes and motor vehicle accidents for the Maryland State Police and other agencies. This unit also serves as the VeriPic system administrator. Reprints or CDs are provided to various divisions and units throughout the Department upon request. Other duties include public relations photos, expungement requests relating to the digital Barrack Identification Photo System, ID card production, and the support of other units within the Department. The Photography Unit assisted in creating the 2021 MSP Safety Calendar.

In 2022, the Photography Unit will pursue replacement of the ID card system adding in iClass SEOS cards for the transition of the Department to a high security card. The goal of this change is to replace an aging system and create a more secure environment for the Department.

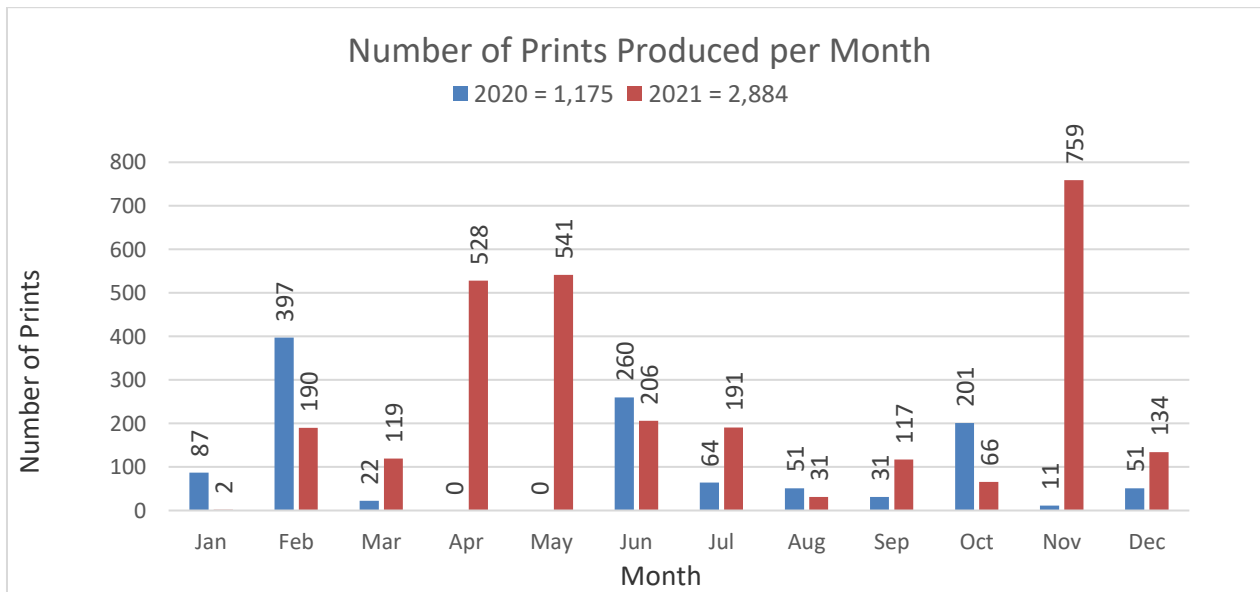
Photography Unit personnel serve as members of the Disaster Identification Team and provide technical training and equipment recommendations in photography.

Photography Requests	
MSP Requestors	Requests
Portraits (<i>by # of days, not requestors</i>)	99
Headquarters	19
SSB	21
CIB	18
FOB	13
Casework	7
TOTAL	177



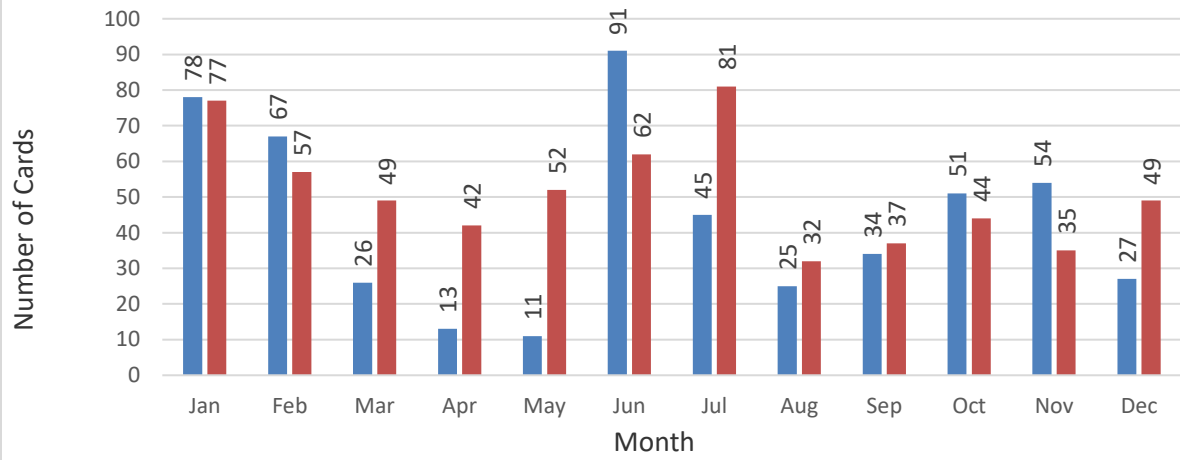


Note: Film processing was eliminated in 2021



Employee ID Cards Processed per Month

■ 2020 = 522 ■ 2021 = 617



CENTRAL RECEIVING UNIT

The Central Receiving Unit (CRU) functions as the liaison between the MSP-FSD and agencies that submit evidence for scientific analysis and CDS destruction. All three laboratory sites have a Central Receiving Unit that controls the security of evidence while awaiting analysis and again while pending return to the submitting agency. Personnel assigned to the unit ensure the integrity and protection of each item of evidence while in their custody. Regularly scheduled inventories of the evidence within Central Receiving and the laboratory units are coordinated through the unit. The unit reports directly to the MSP-FSD Assistant Commander.

Berlin Satellite Location

This location has an MSP Forensic Inventory Control Officer (MSP-FICO) who manages the CDS evidence submitted for analysis. The MSP-FICO assigns casework to the forensic scientists, manages rush requests and faxes laboratory reports to the local State's Attorney's Offices. The MSP-FICO also performs administrative tasks for the site such as logging subpoenas, completing requisitions, scheduling evidence transfer appointments, and distributing mail.

Hagerstown Satellite Location

The Hagerstown site has one MSP-FICO that manages CDS and Latent Print evidence. In addition, the MSP-FICO manages rush requests, processes discovery requests and emails laboratory reports to the local State's Attorney's Offices. The MSP-FICO also does administrative tasks for the laboratory, such as conducting the capital equipment inventory, maintaining the working fund and retaining analytical case files. This position is currently vacant and has been since August 2021. Unit Supervisors at the lab are temporarily doing the duties of the FICO. A second FICO has also been authorized for that location to assist with the increased workload anticipated with the addition of a Toxicology Unit to the Hagerstown laboratory. Both positions should be posted within the second quarter of 2022.

Pikesville Headquarters Location

This location has one Administrative Officer (CRU Supervisor) and three MSP-FICO's. The Pikesville location manages evidence submissions for the Chemistry, Trace Evidence, DNA, and Pattern Evidence sections. These Sections are comprised of eight scientific disciplines. In addition to evidence handling responsibilities, the Pikesville CRU administers and carries out the Department's CDS destruction process. During this process, MSP-FICO's randomly select a number of cases to be re-tested for quality control. The CRU also coordinates with various MSP Divisions for the local destruction of marijuana plants and confiscated parcels.

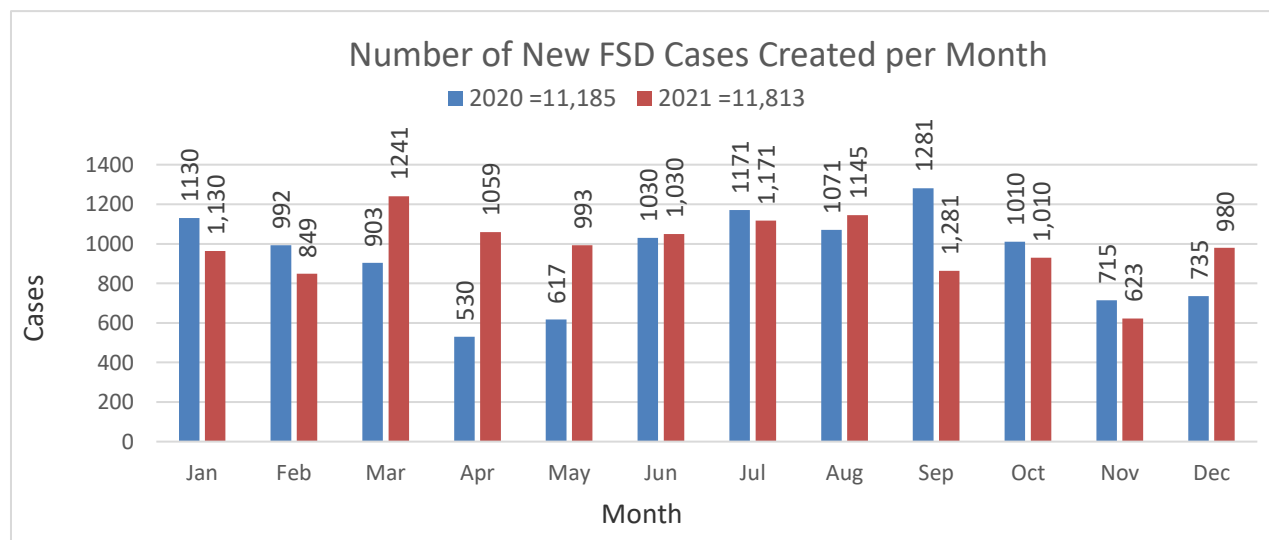
The Pikesville CRU is also responsible for archiving scientific analytical case records for all sections of the MSP-FSD and coordinates the transmittal of files to and from the State Records Management Center. The CRU coordinates the expungement of records for the Division.

Additionally, the CRU plays an essential role in the use of StarLIMS, the laboratory information management system, utilized by MSP-FSD. The CRU supervisor functions as a StarLIMS Administrator and acts as the primary liaison between FSD end users and ITD.

A new directive was issued in July of 2020 that requires all SAFE kits to be forwarded to the FSD within 30 days of MSP taking possession and when all associated standards have been collected. SAFE kits are forwarded to the Central Receiving Unit for storage, analysis, and inventory until transferred to CED Headquarters for long-term storage.

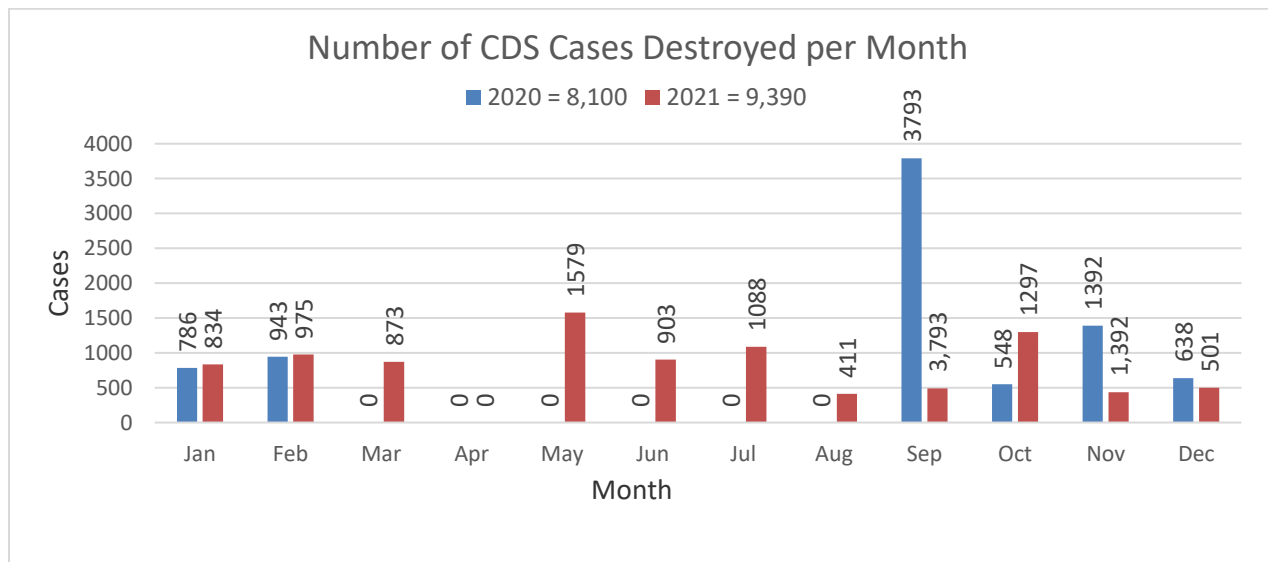
The Pikesville CRU had two vacant FICO positions for the first half of 2021. This forced the Unit to operate with only half of its staff and the CRU Supervisor took on MSP-FICO duties in order to maintain the Unit’s efficiency as much as possible. The Supervisor resigned in June 2021 and the Assistant Commander took over the duties of this supervisory position. All positions in the Unit were filled by the beginning of 2022 to help with the Unit’s continuity of operations. Training will be ongoing for the three new staff members.

Note: Cases are counted only once, regardless of the number of units to which they are routed. Also, cases that were deleted or cancelled were excluded.



Number of Containers Received by Lab in 2021			
	Berlin	Hagerstown	Pikesville
Jan	89	277	1,140
Feb	104	307	764
Mar	116	379	1,252
Apr	74	414	1,011
May	77	410	852
Jun	160	367	956
Jul	138	340	1,040
Aug	106	273	1,253
Sep	134	291	847
Oct	116	219	1,072
Nov	74	157	715
Dec	75	241	1,040
Total	1,263	3,675	11,942

Note: 'Containers' refers to individual evidence packages. A case can consist of one or more containers, depending on the amount or type of evidence.



LABORATORY SERVICES BRANCH

The Laboratory Services Branch is comprised of the Pattern Evidence Section, the Chemistry Section, the Biology Section and the Trace Evidence Section of MSP-FSD. The Deputy Director of MSP-FSD is responsible for the planning, organization, direction and control of this branch.

PATTERN EVIDENCE SECTION

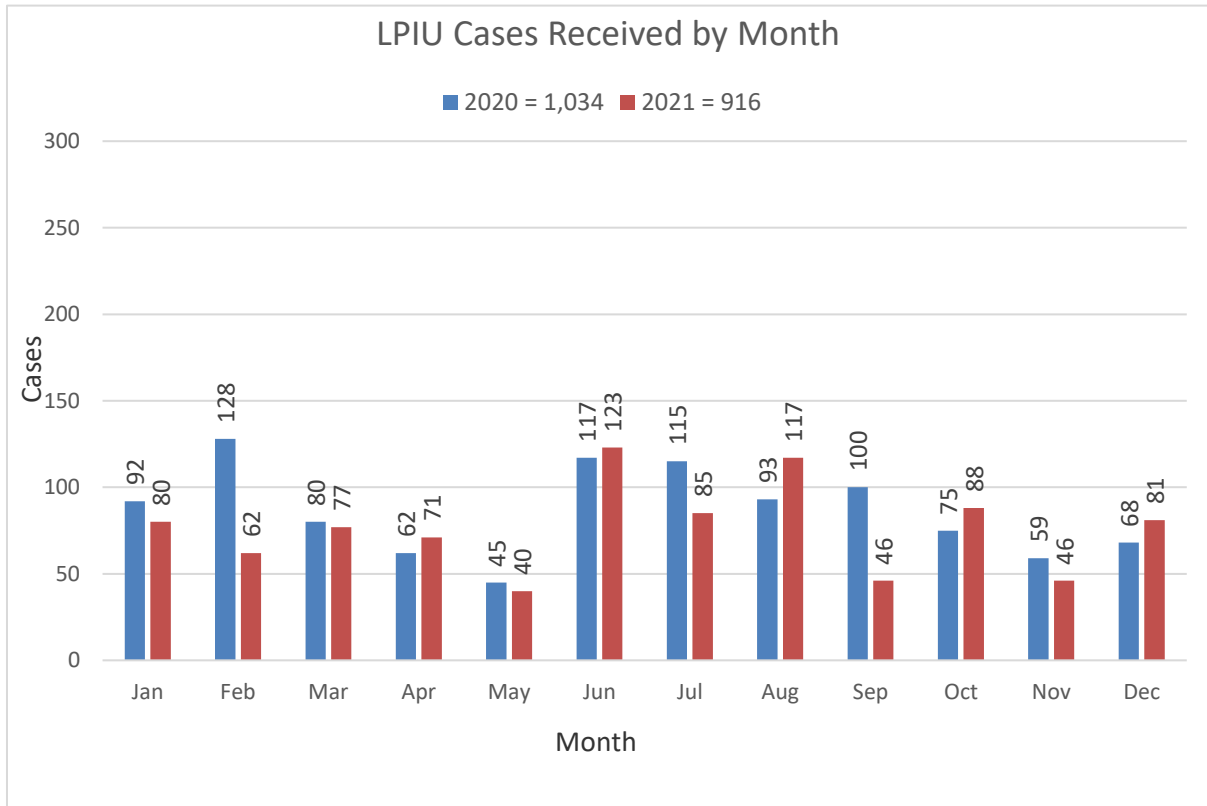
The Pattern Evidence Section is comprised of two units: the Latent Prints/Impressions Units (LPIU) and the Firearms/Toolmarks Unit (FATMU). Both disciplines operate out of the Pikesville laboratory and there is an additional LPIU in Hagerstown. The LPIUs perform analysis of latent friction ridge impression, footwear, and tire track related evidence. The FATMU performs analysis on firearms and toolmarks using comparison microscopy and conducts serial number restoration. One Forensic Scientist Manager oversees all three units. The LPIUs consist of two supervisors (Pikesville/Hagerstown), two Forensic Scientist Advanced positions and five Forensic Scientist III's (one part-time contractual and four full time). The FATMU consists of one supervisor, two Forensic Scientist Advanced positions (one of these positions is vacant), four Forensic Scientist III's, three Laboratory Technicians (one of these positions is vacant), and one Forensic Scientist I position (currently vacant).

LATENT PRINTS/IMPRESSIONS UNITS

The LPIUs perform examination of latent friction ridge impressions. Various methods involving chemicals, powders and illumination techniques are used for the visualization of latent prints. The units record developed friction ridge impressions using digital capture processes as well as gel and adhesive lifts. Comparisons between latent prints and known prints are conducted to determine if they originated from the same individual. In cases where an identification is made, a second examiner completes an independent verification. Any unidentified latent prints meeting the system requirements are searched through the Maryland Automated Fingerprint Identification System (MAFIS) and, when warranted, through the FBI database (NGI).

The LPIUs are also responsible for the examination of footwear and tire track evidence. Various powders, chemicals and photography are used for the proper recovery of this impression evidence. Images are recorded with digital imaging devices. An analysis and comparison are performed as required for these sub-disciplines. Any footwear images that are suitable are entered and searched through the Shoe Print Image Capture and Retrieval database (SICAR) for brand recognition. Tire images can be searched through the Tread Design Guide for brand recognition. In cases where either an "identification" or "could have been made" conclusion is reached, a second examiner performs an independent verification.

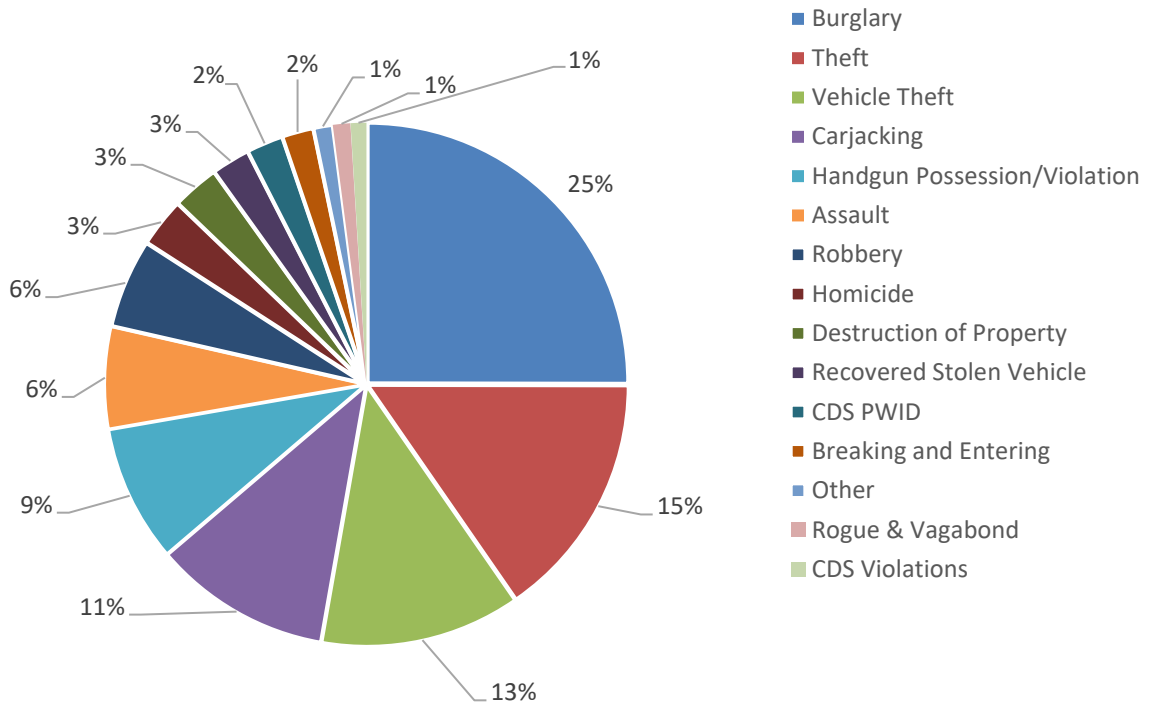
Latent Print/Impressions Casework Statistics



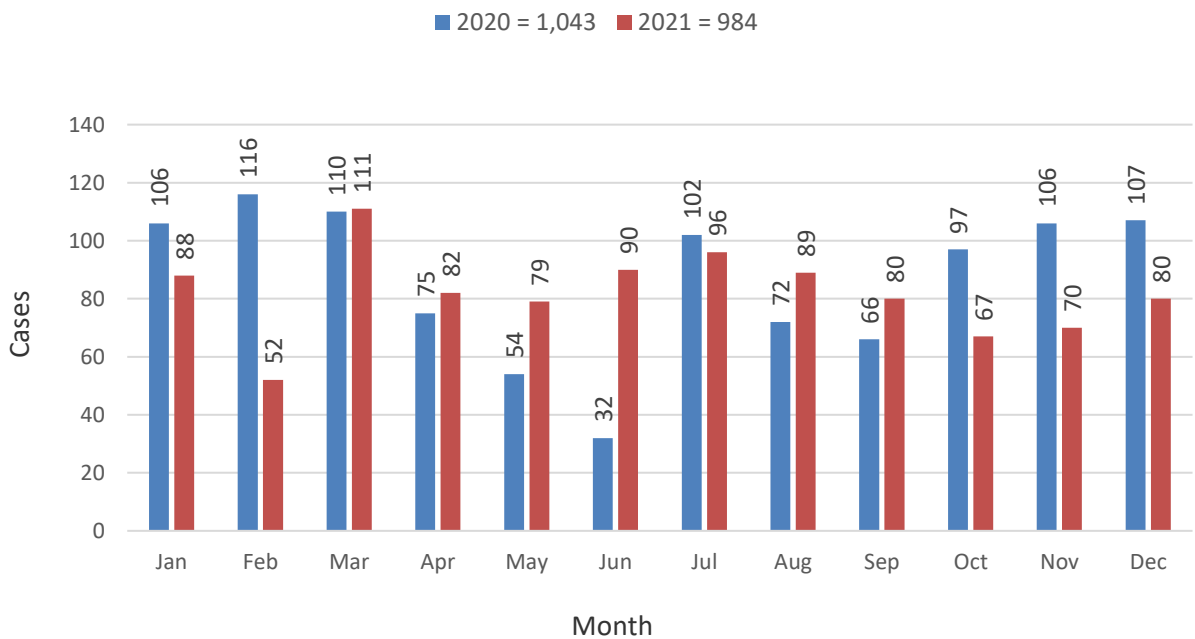
LPIU Cases Received per MSP Installation		
MSP Installation	Counties Served	Submissions
MSP-CID/CED	Statewide	34
MSP-North East	Cecil	21
MSP-Hagerstown	Washington	11
MSP-Westminster	Carroll	10
MSP-Golden Ring	Baltimore	8
MSP-Bel Air	Harford	8
MSP-Homicide	Statewide	8
MSP-Princess Anne	Somerset	7
MSP-Frederick	Frederick	7
MSP-Annapolis	Anne Arundel	7
MSP-Easton	Talbot, Caroline, Dorchester	6
MSP-Crash Team	Statewide	6
MSP-Berlin	Worcester	5
MSP-Cumberland	Allegany	5
MSP-Centerville	Kent, Queen Anne's	5
MSP-Salisbury	Wicomico	4
MSP-Prince Frederick	Calvert	4
MSP-Leonardtown	St. Mary's	4
MSP-College Park	Prince George's	4
OSFM	Statewide	3
MSP-DED/C3I	Allegany	3
MSP-JFK Highway	Cecil, Harford, Baltimore	3
MSP-Rockville	Montgomery	2
MSP-La Plata	Charles	2
MSP-Waterloo	Howard	2
MSP-Forestville	Prince George's	1
	TOTAL	180

Allied Agency Cases Received by LPIU per County	
County	Submissions
St. Mary's	147
Frederick	94
Worcester	90
Dorchester	87
Carroll	55
Wicomico	46
Prince George's	33
Talbot	29
Washington	27
Anne Arundel	19
Cecil	18
Calvert	15
Garrett	14
Baltimore City	14
Allegany	13
Queen Anne's	11
Baltimore	5
Somerset	5
Caroline	3
Harford	3
Montgomery	3
Kent	3
Charles	1
Howard	1
TOTAL	736

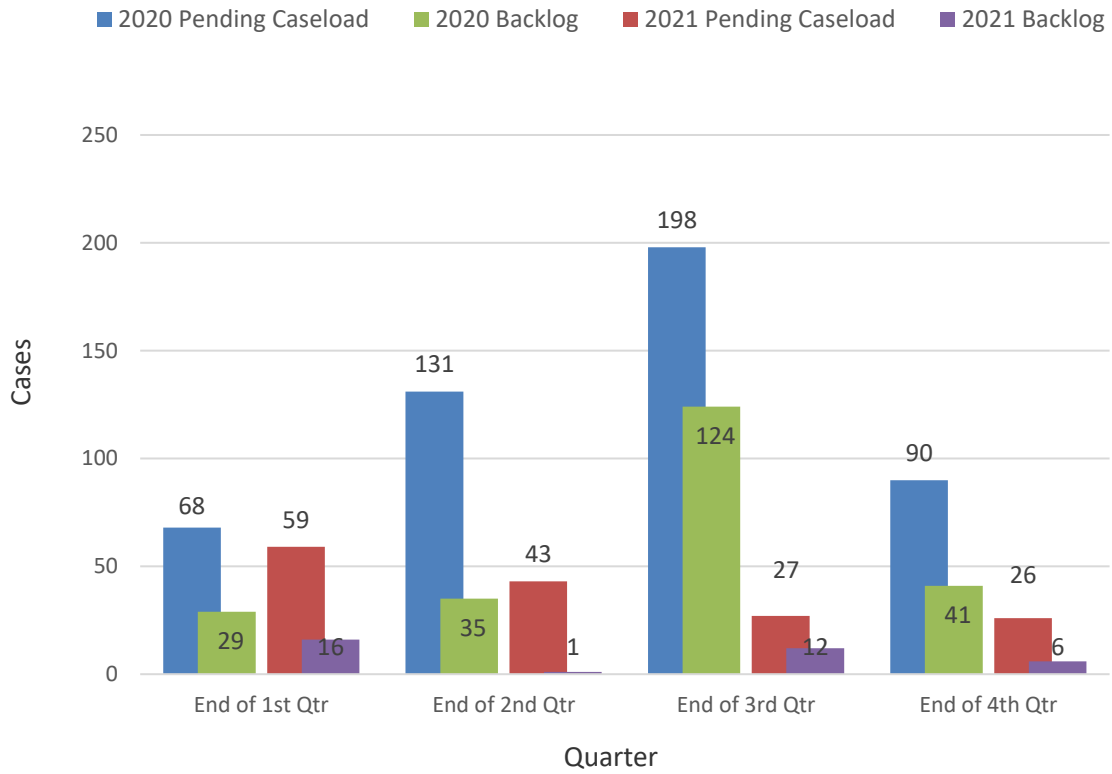
LPIU Cases Received per Crime Type



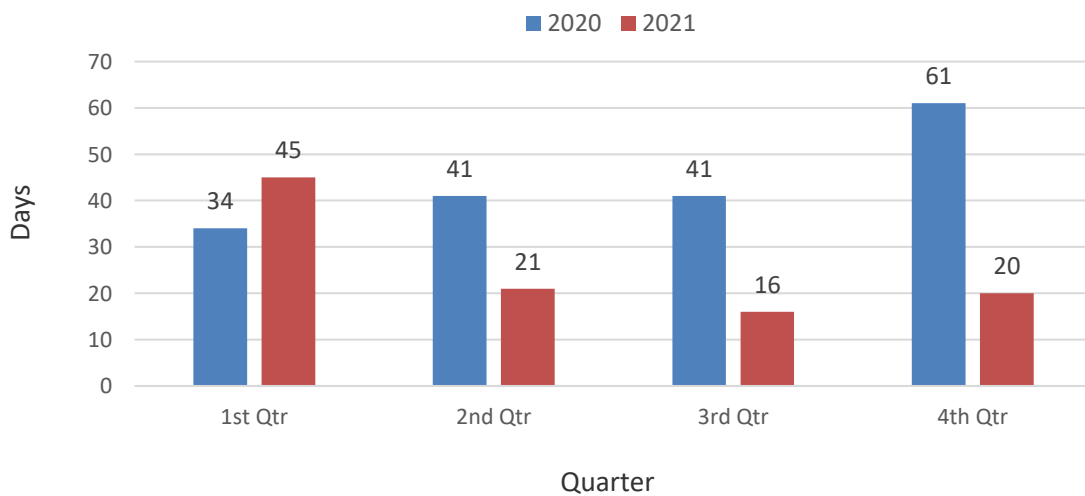
LPIU Cases Completed per Month



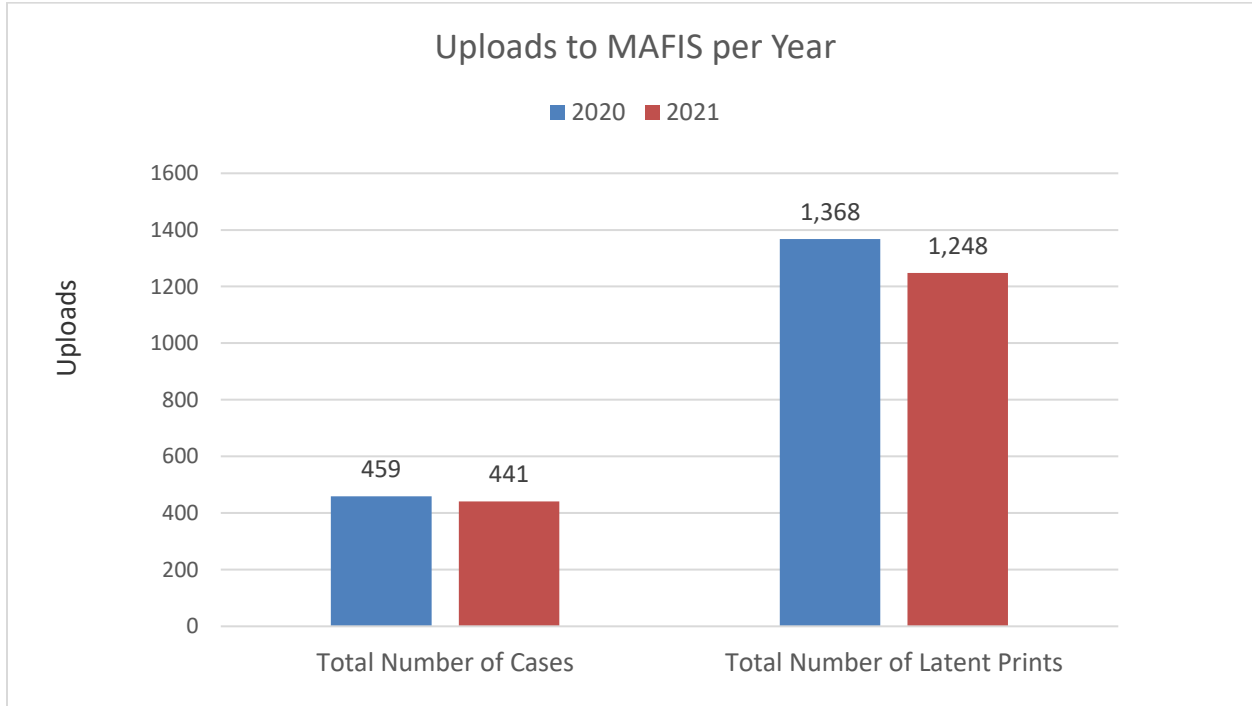
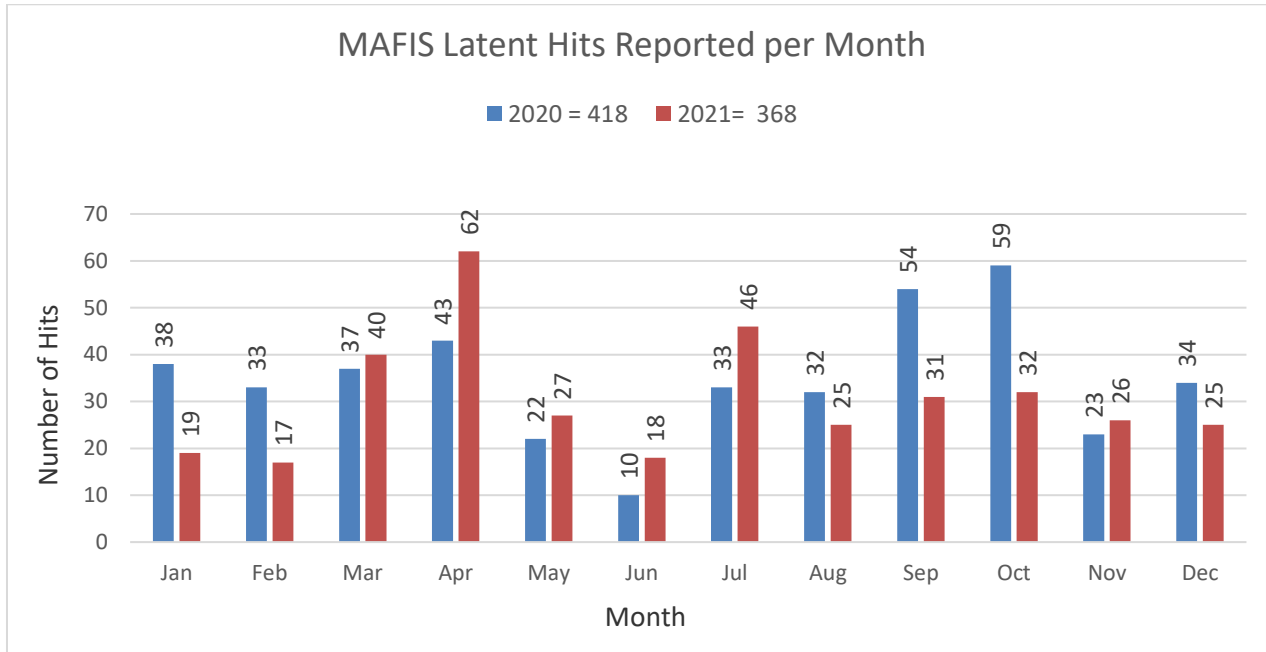
LPIU Pending Caseload and Backlog per Quarter



LPIU Case Turn Around Time per Quarter



Latent Print/Impressions Database Statistics



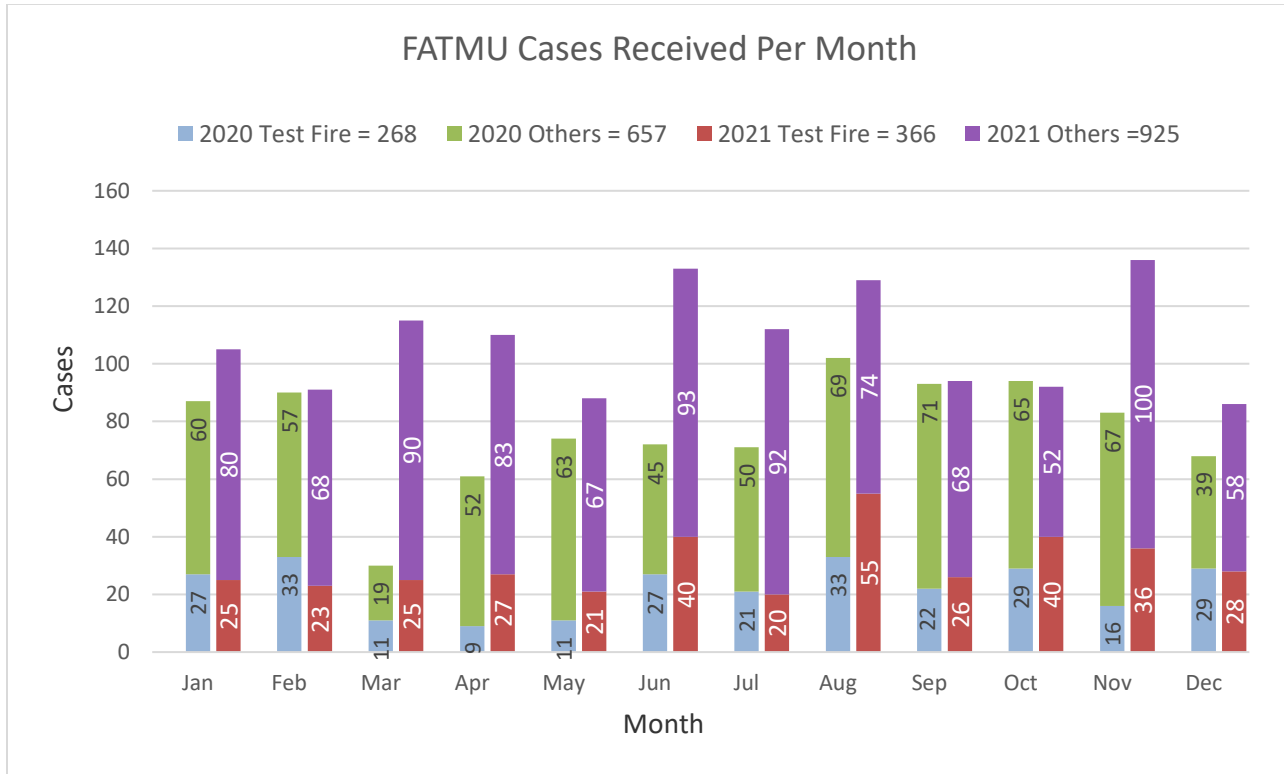
FIREARMS/TOOLMARKS UNIT

The Firearms/Toolmarks Unit (FATMU) provides microscopic and functional examination of firearms and firearm-related evidence. Examiners in this unit also perform serial number restoration and toolmark examinations. In addition, FATMU is responsible for test firing firearms for possible entry into the National Integrated Ballistic Information Network (NIBIN) BrassTrax system. Fired cartridge case data (digital images) are entered into the system to search against previously entered fired evidence cartridge cases from various scenes and against cartridge cases from test fired weapons.

The unit has two programs assisting with turnaround time for both firearms operability testing and NIBIN entries. These programs are Walk-In Test Fire (WITF) and Operation Test Shot (OTS). The WITF program involves allied law enforcement agencies bringing firearms directly to the FATMU for functionality examinations. This program allows the agency representative to observe the test fire, and then serve as a witness in court in lieu of requiring the examiner to appear. OTS involves supplying law enforcement agencies with Forensic Buddy Systems (portable firearm canisters). The Forensic Buddy System enables the agencies to test fire handguns at their location and submit fired bullets/cartridge cases in pristine condition to the FATMU. These programs have been effective and instrumental in the unit's success with obtaining NIBIN Leads.

The FATMU also provides a service to the Maryland Handgun Roster Board (HRB). The HRB is responsible for evaluating new firearms for compliance with Maryland regulations and determining if they should be approved for sale in the State. FATMU performs a non-forensic examination of the petitioned firearms specifically for the qualifying criteria established in COMAR.

Firearms/Toolmarks Casework Statistics

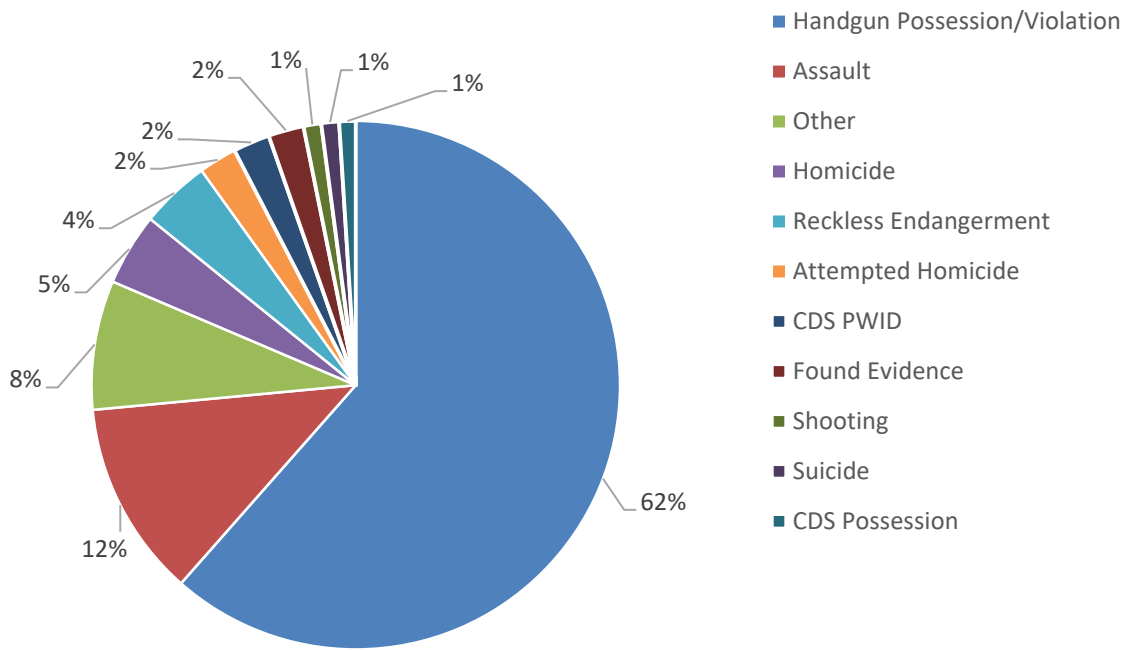


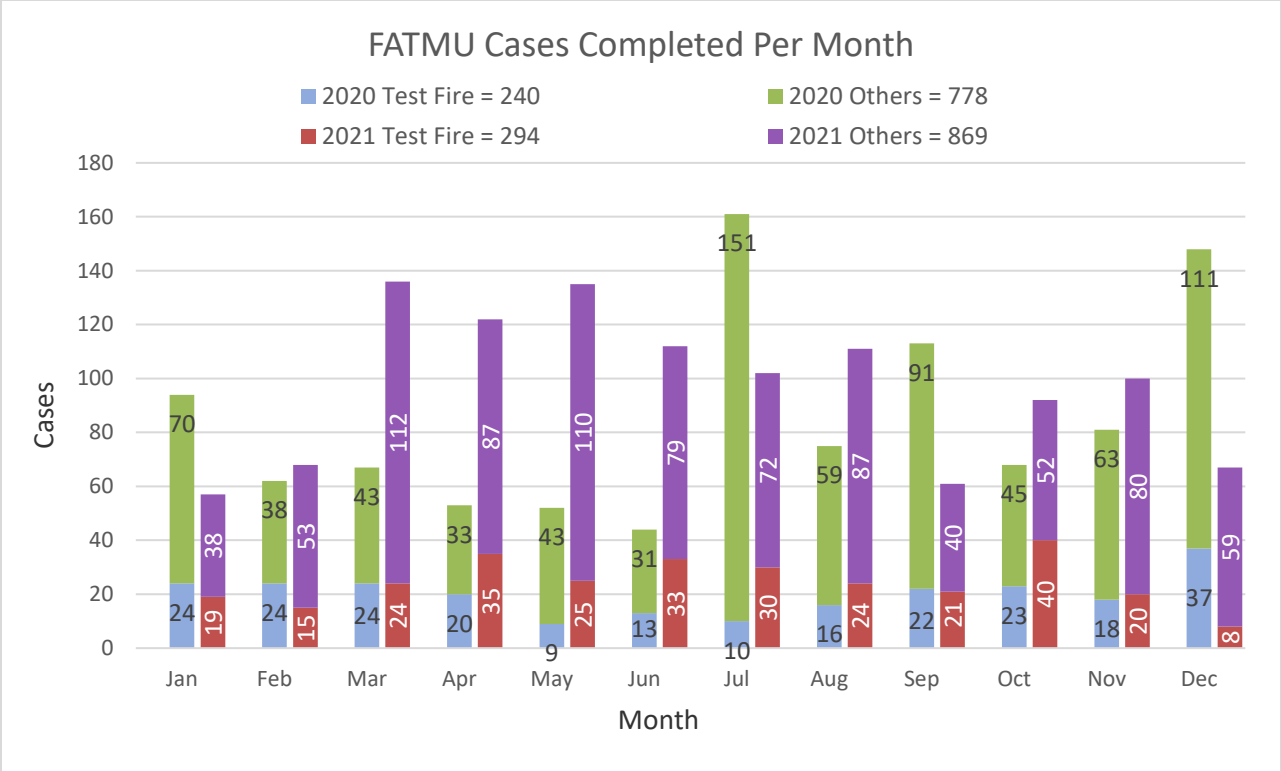
Note: Test fire = operability with and without serial number restoration. Others = all other types including OTS and microscopic comparisons.

FATMU Cases Received per MSP Installation				
Installation	Counties Served	Test Fire	Others	Total
MSP-CID/CED	Statewide	31	86	117
MSP-Easton	Talbot, Caroline, Dorchester	9	31	40
MSP-JFK Highway	Cecil, Harford, Baltimore	24	7	31
MSP-Forestville	Prince George's	0	29	29
MSP-Golden Ring	Baltimore	20	8	28
MSP-Centerville	Kent, Queen Anne's	3	22	25
MSP-Leonardtown	St. Mary's	6	18	24
MSP-Frederick	Frederick	10	13	23
MSP-Hagerstown	Washington	10	12	22
MSP-Cumberland	Allegany	4	16	20
MSP-Glen Burnie	Anne Arundel	5	15	20
MSP-La Plata	Charles	5	11	16
MSP-College Park	Prince George's	2	14	16
MSP-North East	Cecil	6	10	16
MSP-Rockville	Montgomery	0	15	15
MSP-Princess Anne	Somerset	13	1	14
MSP-Homicide	Statewide	3	9	12
MSP-Berlin	Worcester	9	2	11
MSP-Annapolis	Anne Arundel	8	3	11
MSP-Prince Frederick	Calvert	3	7	10
MSP-Bel Air	Harford	2	3	5
MSP-Waterloo	Howard	1	4	5
MSP-CVED	Statewide	3	2	5
MSP-McHenry	Garrett	4	1	5
MSP-Westminster	Carroll	3	2	5
MSP-DED/C3I	Allegany	1	3	4
MSP-Salisbury	Wicomico	2	0	2
	TOTAL	187	344	531

Allied Agency Cases Received by FATMU per County			
County	Test Fire	Others	Total
Washington	14	125	139
St. Mary's	23	82	105
Worcester	7	86	93
Cecil	35	50	85
Wicomico	9	48	57
Charles	16	37	53
Anne Arundel	9	40	49
Baltimore City	17	10	27
Calvert	3	22	25
Frederick	3	18	21
Harford	5	11	16
Montgomery	2	14	16
Baltimore	11	4	15
Somerset	2	10	12
Carroll	6	3	9
Dorchester	3	6	9
Prince George's	2	5	7
Howard	3	3	6
Queen Anne's	1	4	5
Talbot	4	1	5
Allegany	3	0	3
Caroline	0	2	2
Garrett	1	0	1
TOTAL	179	581	760

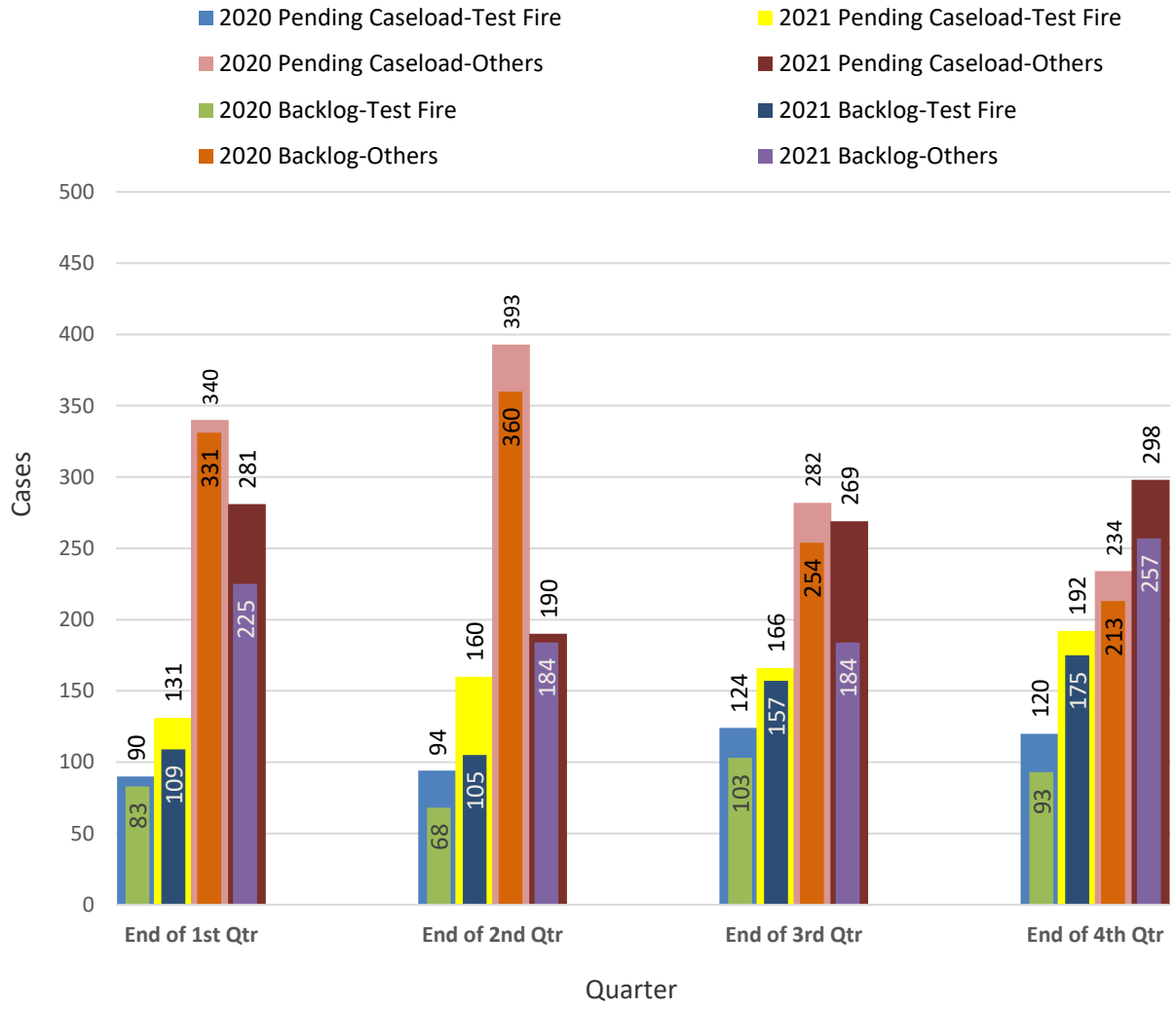
FATMU Cases Received per Crime Type

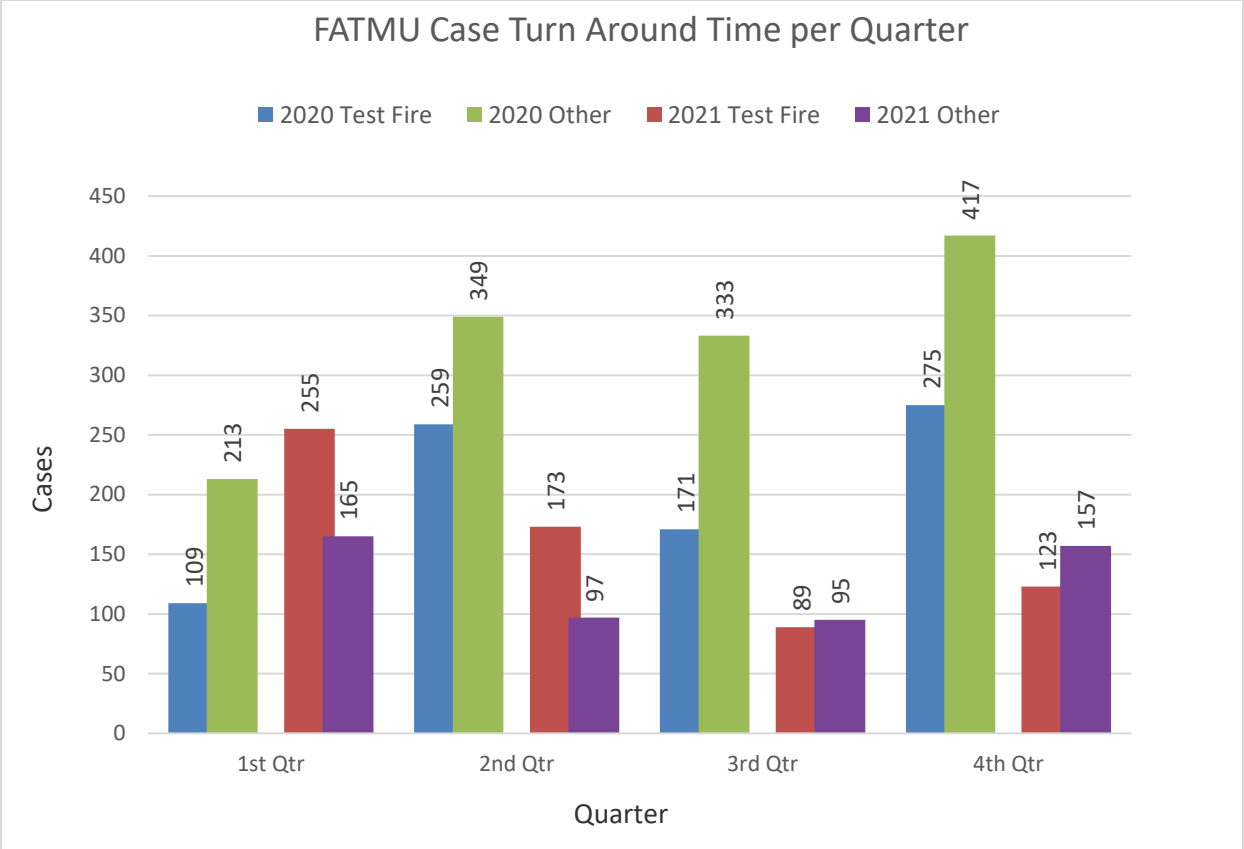




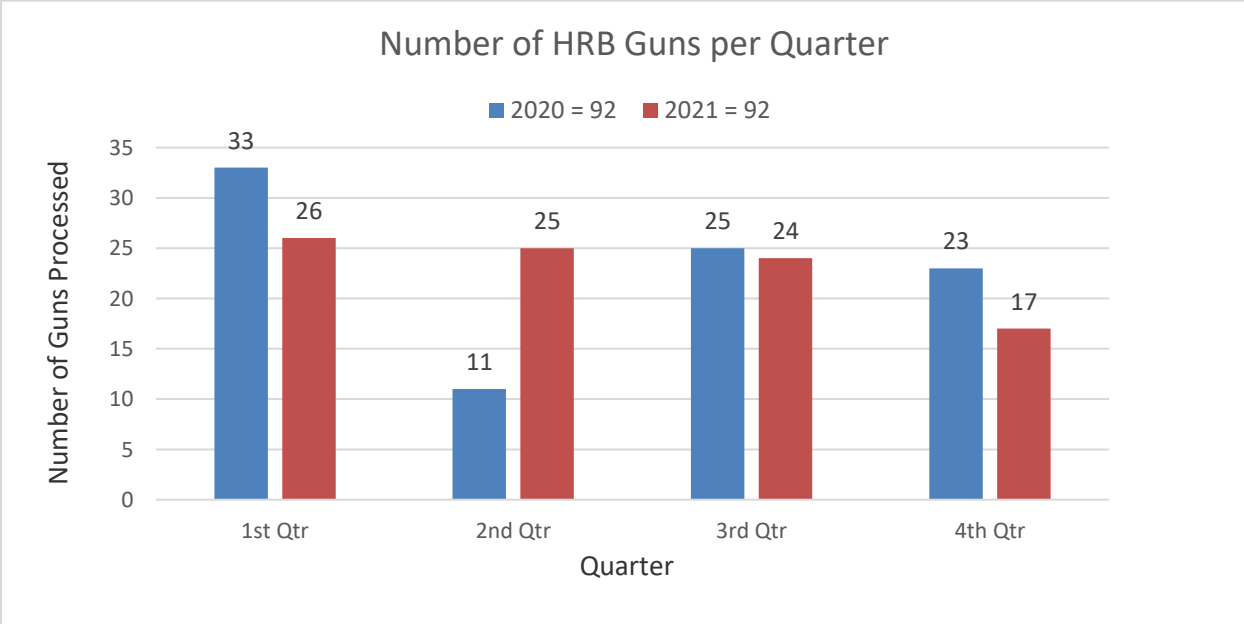
Note: Test fire = operability with and without serial number restoration. Others = all other types including OTS and microscopic comparisons.

FATMU Pending Caseload and Backlog per Quarter

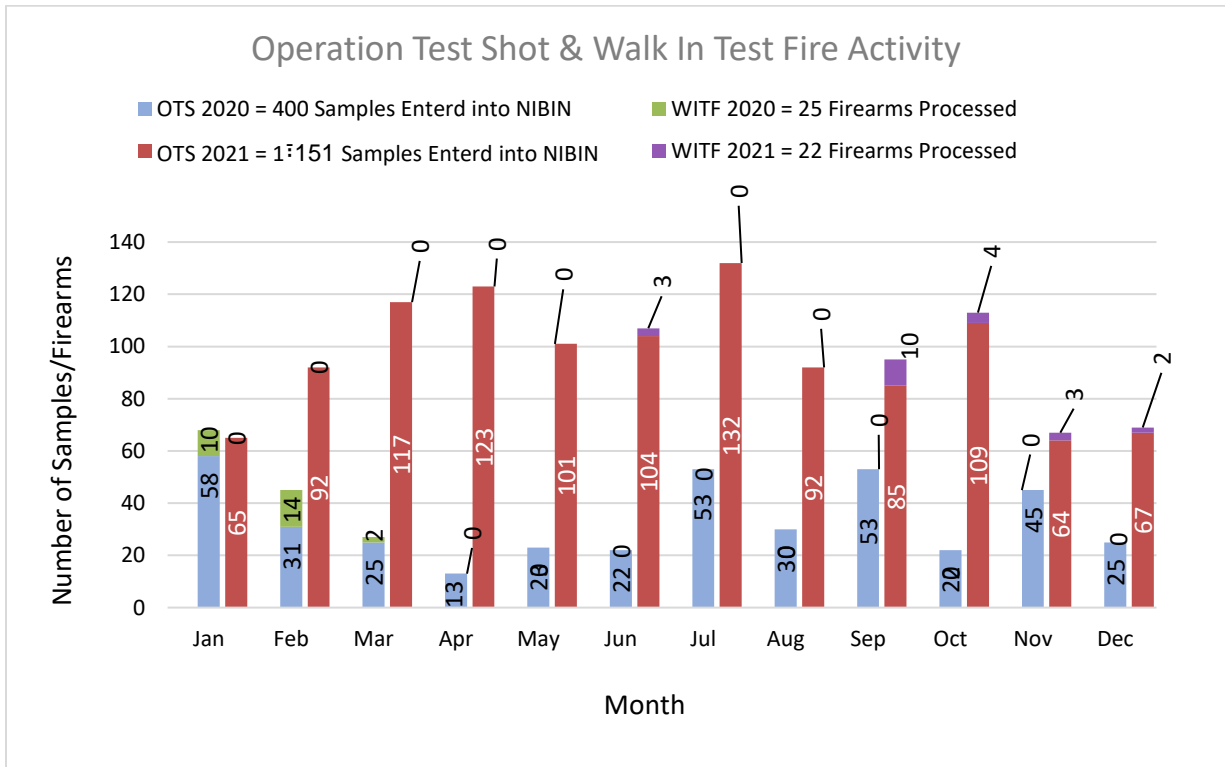
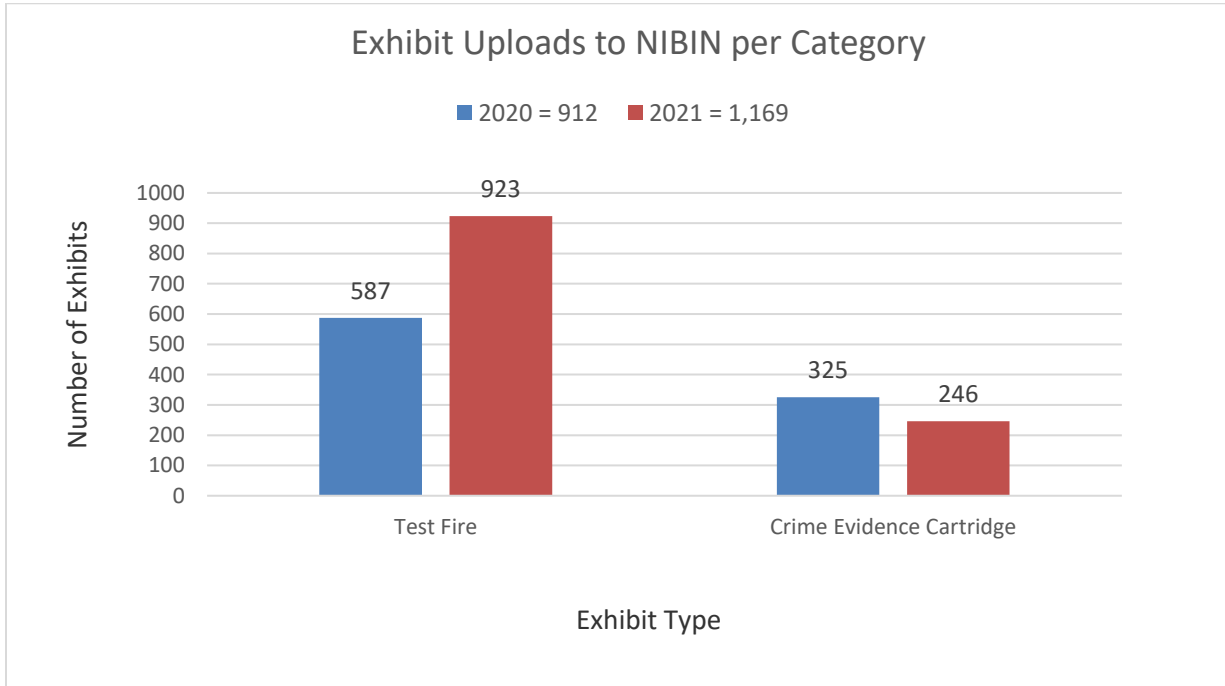




Note: Test fire = operability with and without serial number restoration. Others = all other types including OTS and microscopic comparisons.



Firearms/Toolmarks Database Statistics



NIBIN Associations			
Associated Agencies		Number of Leads	Number of Confirmed Hits
C3I	Baltimore County PD	1	0
C3I	West Manchester Township PD (PA)	0	1
Calvert Co SO	MSP Central South CED	1	0
Charles County SO	Charles County SO	0	4
Elkton PD	Baltimore PD	2	0
Elkton PD	Elkton PD	7	0
Elkton PD	New Castle County PD (DE)	1	0
Elkton PD	Wilmington City PD (DE)	13	0
Frederick PD	Frederick PD	5	0
Hagerstown PD	Baltimore PD	3	0
Hagerstown PD	DC Metro PD	1	0
Hagerstown PD	Frederick PD	3	0
Hagerstown PD	Hagerstown PD	14	1
Hagerstown PD	Washington County Narcotics Task Force	2	0
Hagerstown PD	Washington County SO Hagerstown	2	0
Howard Co PD	Howard Co PD	1	0
Maryland Transit Administration PD	Baltimore PD	2	0
Maryland Transportation Authority PD	Baltimore County PD	1	0
Maryland Transportation Authority PD	Baltimore PD	12	0
Maryland Transportation Authority PD	Farmville PD (VA)	1	0
Maryland Transportation Authority PD	Hampton PD (VA)	1	0
Maryland Transportation Authority PD	Prince George's County PD	2	0
Maryland Transportation Authority PD	Richmond City PD (VA)	2	0
Metro Transit PD	DC Metro PD	0	1
Montgomery County PD	Montgomery County PD	1	0
Montgomery County PD	Prince George's County PD	3	0
MSP Annapolis	Baltimore PD	2	0
MSP Berlin	Virginia Beach PD (VA)	1	0
MSP CED	Baltimore PD	8	0
MSP CED	DC Metro PD	1	0
MSP CED	Delaware Co Crim Inv Div (PA)	2	1

NIBIN Associations			
Associated Agencies		Number of Leads	Number of Confirmed Hits
MSP CED	Delaware SP HDQ Dover (DE)	4	0
MSP CED	Montgomery County PD	1	0
MSP CED	MSP CED	0	1
MSP CED	MSP Leonardtown	1	0
MSP CED / MSP Salisbury	MSP CED Salisbury	1	0
MSP CED Gun Unit	MSP North East	1	1
MSP CED South	MSP CED	1	0
MSP CED / Wicomico	MSP Princess Anne	0	1
MSP Easton	Baltimore PD	1	0
MSP Easton	Cambridge PD	1	0
MSP Easton	Delaware SP HDQ Dover (DE)	1	0
MSP Easton	Howard Co PD	1	0
MSP Easton	Prince George's County PD	1	0
MSP Easton	Prince William County PD (VA)	1	0
MSP Forestville	DC Metro PD	2	0
MSP Forestville	Baltimore County SO	1	0
MSP Forestville	Norfolk PD (VA)	1	0
MSP Forestville	Prince George's County PD	1	0
MSP Glen Burnie	Baltimore PD	5	0
MSP Homicide Task Force	Delaware SP HDQ Dover (DE)	1	0
MSP Homicide Task Force	Wicomico Co SO	1	0
MSP JFK	Baltimore PD	3	0
MSP La Plata	Charles Co SO	1	0
MSP La Plata	DC Metro PD	1	0
MSP La Plata	Prince George's County PD	1	0
MSP Leonardtown	MSP Leonardtown	1	0
MSP Leonardtown	MSP Pikesville	1	0
MSP Leonardtown	St. Mary's Co. SO	8	0
MSP Prince Frederick	MSP Prince Frederick	1	0
MSP Rockville	DC Metro PD	1	0
MSP Rockville	Montgomery County PD	1	0
MSP Rockville	Richmond City PD (VA)	1	0
North East PD	Elkton PD	1	0
Ocean City PD	Charles Co SO	2	0

NIBIN Associations			
Associated Agencies		Number of Leads	Number of Confirmed Hits
Ocean City PD	DC Metro PD	3	0
Ocean City PD	Ocean City PD	1	0
Ocean City PD	Salisbury PD	2	0
Salisbury PD	Accomack Co SO (VA)	1	0
Salisbury PD	Cambridge PD	1	0
Salisbury PD	MSP CED Salisbury	1	0
Salisbury PD	MSP Salisbury	4	0
Salisbury PD	Salisbury PD	4	0
Salisbury PD	Wicomico Co SO	9	0
Salisbury PD	Worcester Co SO	1	0
St. Mary's Co. SO	ATF Hyattsville (St Mary's Co PD)	1	0
St. Mary's Co. SO	Calvert Co SO	1	0
St. Mary's Co. SO	Charles Co SO	4	0
St. Mary's Co. SO	MSP CED	7	0
St. Mary's Co. SO	MSP CED South	7	0
St. Mary's Co. SO	St. Mary's Co. SO	52	0
Washington Co Narcotics Task Force	Baltimore PD	2	0
Wicomico Co. SO	Accomack Co. SO (VA)	1	0
Wicomico Co. SO	Crisfield PD	1	0
Wicomico Co. SO	MSP Salisbury	2	0
Wicomico Co. SO	Wicomico Co SO	3	0
Wicomico Co. SO	Worcester Co SO	2	0
	TOTAL	263	11

Note: NIBIN leads are developed through a correlation review of NIBIN data. Confirmed hits have been verified microscopically by an examiner.

NOTEWORTHY CASES

Hagerstown LPIU:

In August 2021, Dorchester County submitted eight related cases concerning Motor Vehicle Thefts with the same two suspects. Between the eight cases there were twenty two fingerprints and eight palm prints of value. Both suspects and two additional individuals were identified multiple times. One of the defendants plead guilty in November 2021.

Pikesville LPIU:

In January 2021, a female pedestrian died after being struck by a car on Route 40/Pulaski Highway in Elkton, Cecil County. The woman had entered the road from a grass median, and was struck by a car. The pedestrian was pronounced dead at the scene. The MSP Crash Team enlisted CST. Kelly Sexton to fingerprint the deceased at the Medical Examiner's Office in an attempt to identify her. Utilizing MAFIS, the latent print examiners were able to positively identify the deceased.

Firearms/Toolmarks:

In February 2021, the Crime Scene Section was contacted and requested to respond to a shooting scene in St. Mary's County to collect and process spent shell casings. A black Honda involved in the incident was processed at the Leonardtown MSP Barrack. The collected firearms evidence from the scene and vehicle were submitted to FATMU. FATMU produced a NIBIN Lead Notification, matching between a shell casing recovered during this investigation and a shell casing recovered from a different shooting incident. NIBIN connected these two shootings to other incidents in long series of violence between two gangs. This violence originated with an illicit drug transaction that went bad, resulting in a series of retaliatory attacks on various members of the two gangs.

In June 2021, jurors delivered a guilty verdict for all the charges against a Dorchester County man accused of killing an Eastern Shore correctional officer in 2001. Evidence from this case was originally examined by FATMU in 2001. The case went cold until 2019, when enough evidence came together for a grand jury to indict the suspect on first- and second-degree murder, first- and second-degree assault and firearms charges. FATMU played an important role with examination and communication efforts for this now closed case.

CHEMISTRY SECTION

The Chemistry Section is responsible for performing Controlled Dangerous Substances (CDS) analysis on submitted drug evidence and Toxicology analysis of blood for alcohol and drugs. The Chemistry Section consists of the following four units: CDS-Pikesville, CDS-Berlin, CDS-Hagerstown and Toxicology. The CDS Units focus on identifying submitted evidence as being a specific type of drug while the Toxicology Unit focuses on identifying alcohol and drugs in blood taken from individuals suspected of driving while intoxicated/impaired. The Chemistry Section Manager oversees the work of all four units.

The CDS-Pikesville Unit consists of one Forensic Scientist Supervisor, and four Forensic Scientist III's. In addition, three Allied Forensic Scientists work in the CDS-Pikesville laboratory. One Allied Forensic Scientist is employed by the Cecil County State's Attorney's Office and the second is employed by both the St. Mary's and Calvert County State's Attorney's Offices. A third Allied Forensic Scientist is currently in training for the Howard County Police Department.

The CDS-Berlin Unit consists of one Forensic Scientist Supervisor and one Forensic Scientist III. There is still a vacant Forensic Scientist I position, which will be filled in the first quarter of 2022. The CDS-Berlin Unit operates out of the Berlin Regional Laboratory located at the MSP-Berlin Barrack.

The CDS-Hagerstown Unit consists of one Forensic Scientist Supervisor and two Forensic Scientist III's. In addition, one Allied Forensic Scientist is employed by the Frederick County State's Attorney's Office. The CDS-Hagerstown Unit operates out of the Hagerstown Regional Laboratory located at the MSP-Hagerstown Barrack.

The Toxicology Unit consists of one Forensic Scientist Supervisor, one Forensic Scientist Advanced, one Forensic Scientist II, one Forensic Scientist I, and one Laboratory Technician I. The Toxicology Unit operates out of the main laboratory in Pikesville. There are plans to expand the Toxicology Unit to Hagerstown in 2022, as well as hire a Chief Toxicologist to oversee both units.

CDS UNITS

In order to confirm the presence of CDS in a sample, several different types of analyses are performed in the CDS Units, including microscopy, color tests, microcrystalline tests, gas chromatography (GC), gas chromatography/mass spectrometry (GC/MS), and Fourier transform infrared (FTIR) spectroscopy. Another important component of CDS analysis is obtaining accurate net and gross weights of the suspected CDS material through the use of analytical balances, precision balances, bench top balances, and bulk scales.

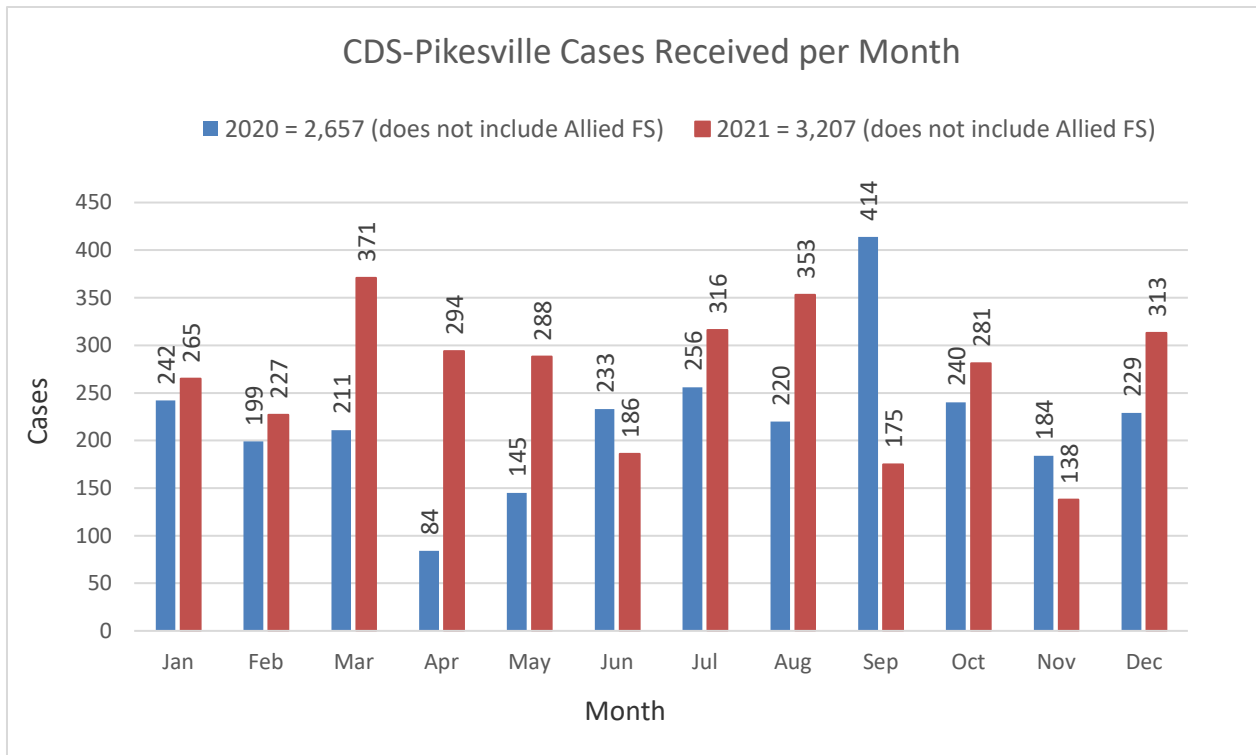
The CDS Units submit monthly reports to the National Forensic Laboratory Information System (NFLIS) that document the type and number of drugs detected in casework. These reports provide the DEA with current and accurate trends that can be used by law enforcement and policy makers to address the nation's drug problem. This data is also shared with the Washington/Baltimore High Intensity Drug Trafficking Area (HIDTA) program to track trends of which drugs are being identified in casework throughout the state and region.

The FSD has noted a significant increase in fentanyl submissions, as well as analogs of fentanyl. In fact, opiate pharmaceuticals are now encountered more often than heroin in casework. Fentanyl analogs are similar in structure to fentanyl with similar effects in the body, but are new and novel drugs. It is a challenge for the lab to identify these new fentanyl analogs as they emerge in casework. To meet this challenge, the CDS Units participated in a joint project with the National Institute of Standards and Technology (NIST) to evaluate the Direct Analysis in Real Time, coupled with Time-of-Flight Mass Spectrometer (DART-TOF MS) for screening of drug evidence. Furthermore, through the NIST collaboration, new targeted GC/MS methods were designed to improve the ability of the labs to confirm the presence of these dangerous fentanyl substances in casework. The validation of the DART-TOF MS is complete and will be implemented in casework in 2022. The targeted methods for three drug categories have been created, and more research funded by the National Institute of Justice (NIJ) is being done to establish a general method to identify multiple classes of drugs in one GC-MS method. The goal is to have this general method validated for casework in 2023.

CDS-PIKESVILLE UNIT

The Pikesville CDS laboratory services primarily the Central Maryland counties including Baltimore City, Baltimore County, Cecil County, Anne Arundel County, Prince George's County, St. Mary's County, Calvert County, Charles County, Kent County, Queen Anne's County, Caroline County, Dorchester County, and Talbot County.

Where indicated, the data shown below does not include cases assigned to the Allied Forensic Scientists (Allied FS).



CDS-Pikesville Cases Received per MSP Installation*		
	Counties Served	Submissions
MSP-Easton	Talbot, Caroline, Dorchester	334
MSP-Centerville	Kent, Queen Anne's	267
MSP-CID/CED	Statewide	206
MSP-Leonardtown	St. Mary's	161
MSP-Glen Burnie	Anne Arundel	133
MSP-Annapolis	Anne Arundel	67
MSP-Prince Frederick	Calvert	65
MSP-Golden Ring	Baltimore	64
MSP-JFK Highway	Cecil, Harford, Baltimore	61
MSP-La Plata	Charles	42
MSP-College Park	Prince George's	40
MSP-Forestville	Prince George's	24
MSP-Bel Air	Harford	11
MSP-CVED	Statewide	1
	TOTAL	1,476

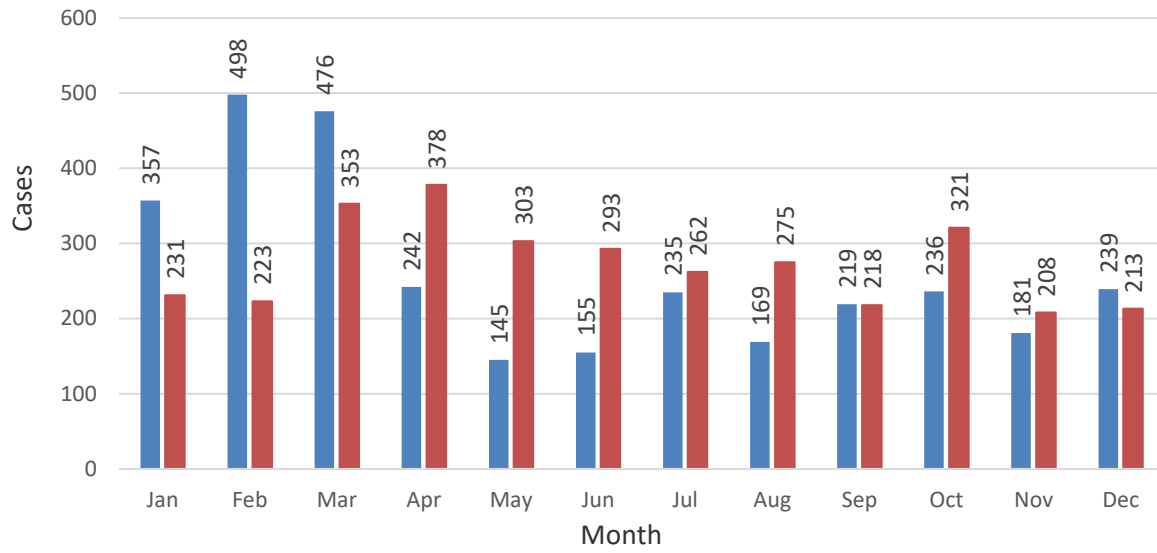
* Does not include Allied FS

Allied Agency Cases Received by CDS-Pikesville per County*	
County	Submissions
Charles	345
Calvert	302
St. Mary's	210
Dorchester	131
Talbot	127
Queen Anne's	119
Baltimore City	114
Caroline	102
Harford	101
Anne Arundel	62
Kent	52
Baltimore	42
Prince George's	17
Montgomery	3
Worcester	2
Carroll	1
Wicomico	1
TOTAL	1,731

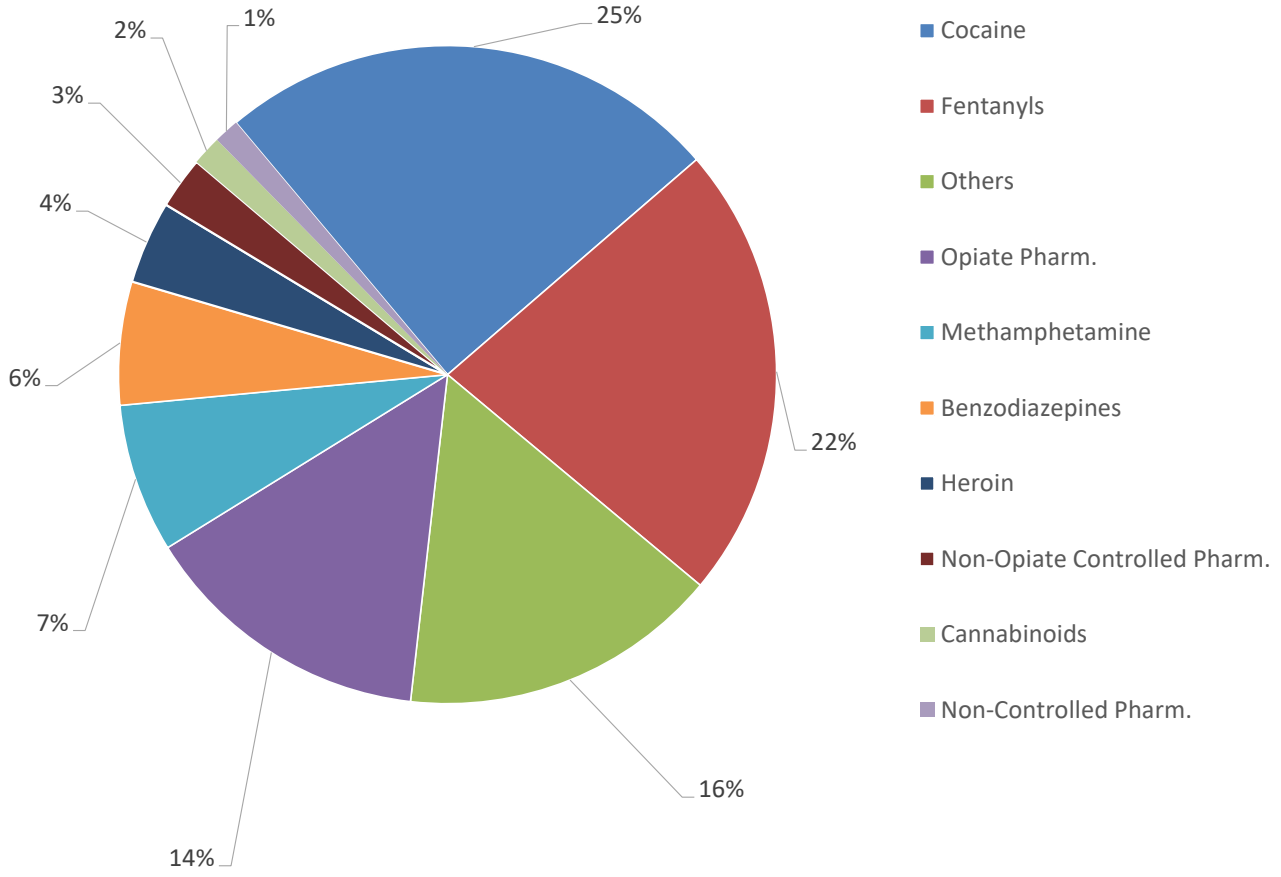
* Does not include Allied FS

CDS-Pikesville Cases Completed per Month

■ 2020 = 3,152 ■ 2021 = 3,278

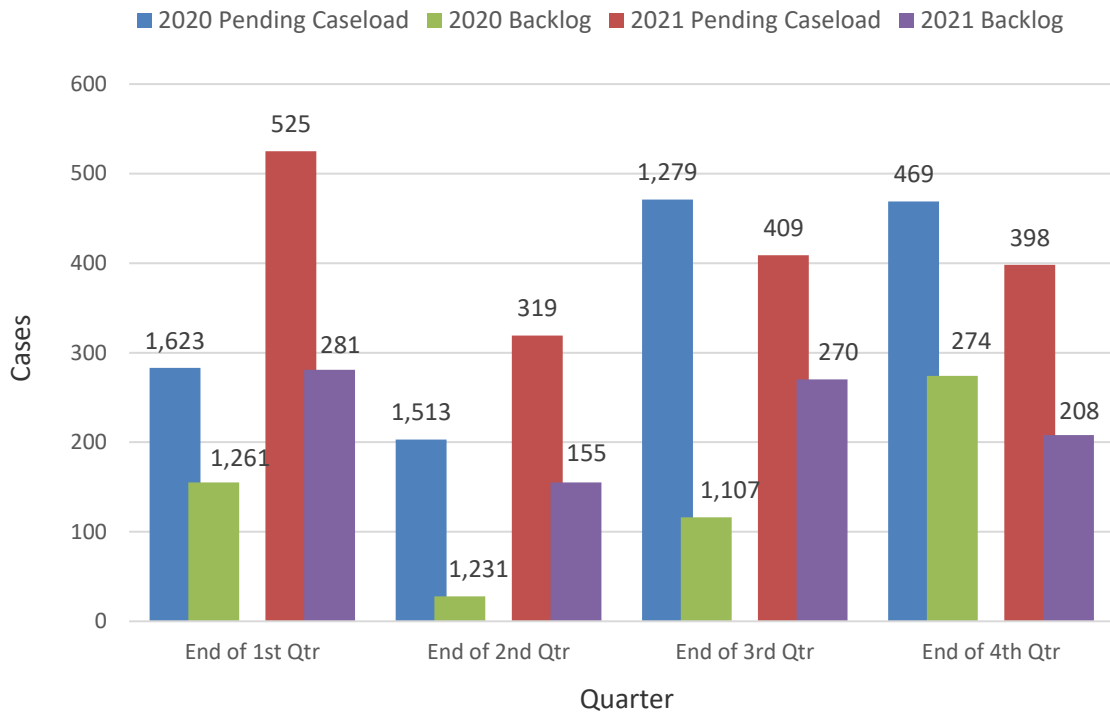


CDS-Pikesville Analyses Reported per Drug Type
(Includes Allied FS)

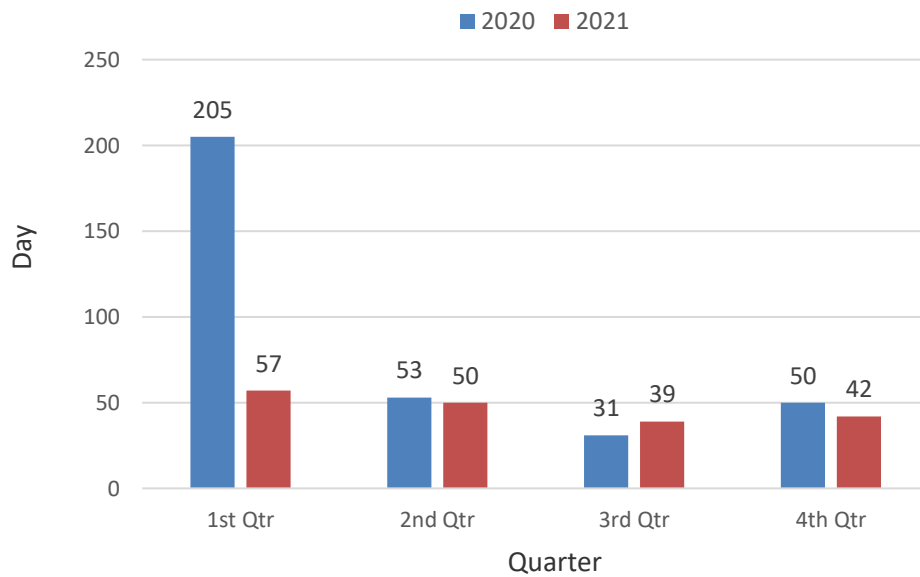


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CDS-Pikesville Pending Caseload and Backlog per Quarter

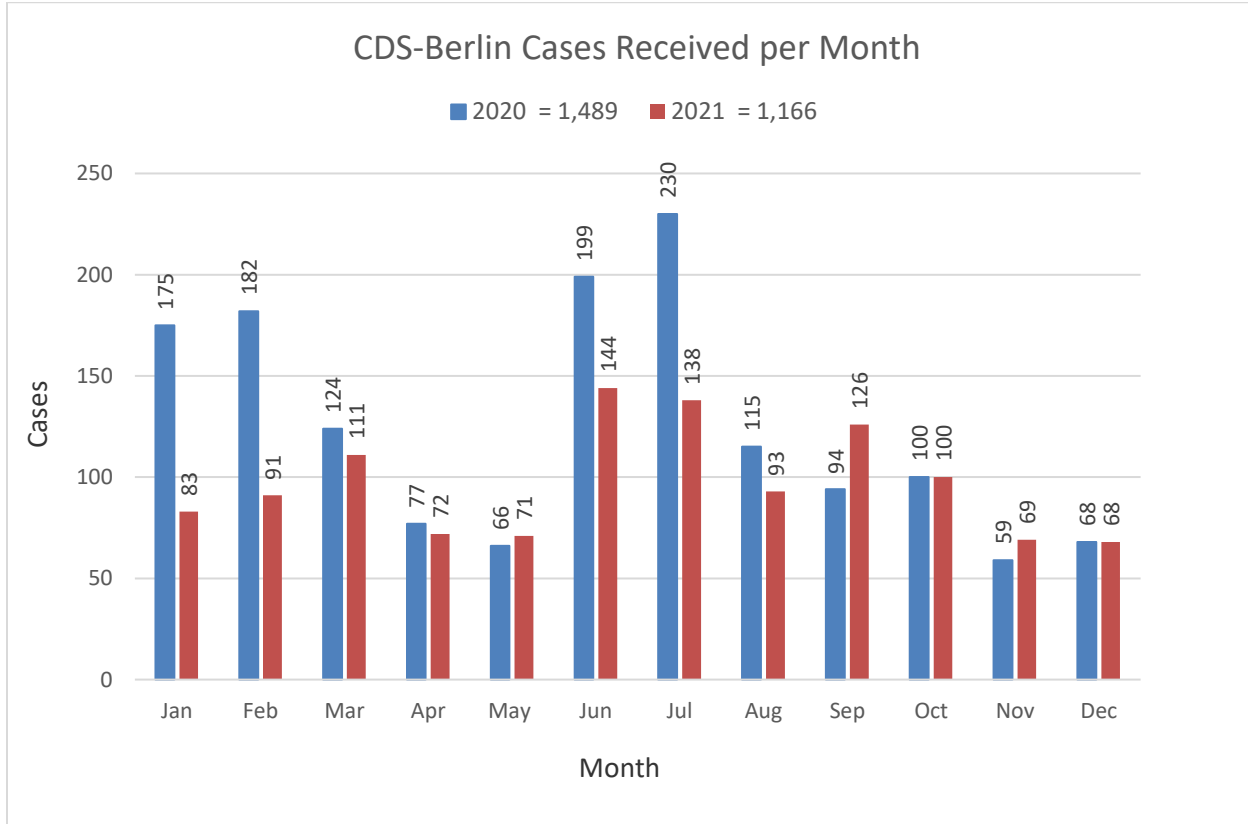


CDS-Pikesville Case Turn Around Time per Quarter



CDS-BERLIN UNIT

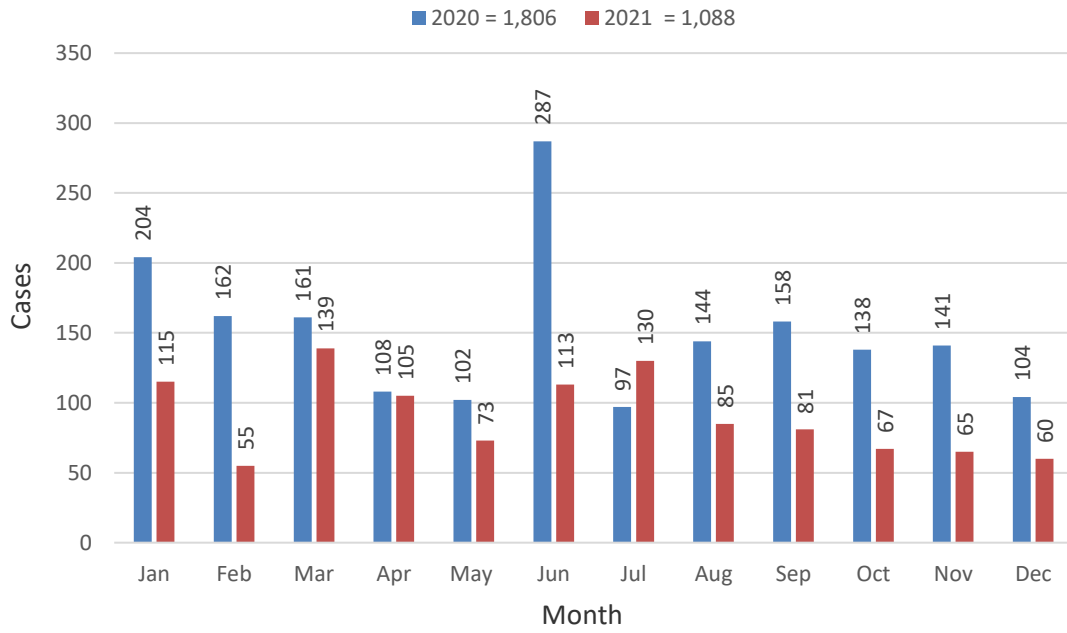
The CDS-Berlin laboratory services primarily the Eastern Maryland counties including Somerset County, Wicomico County and Worcester County.



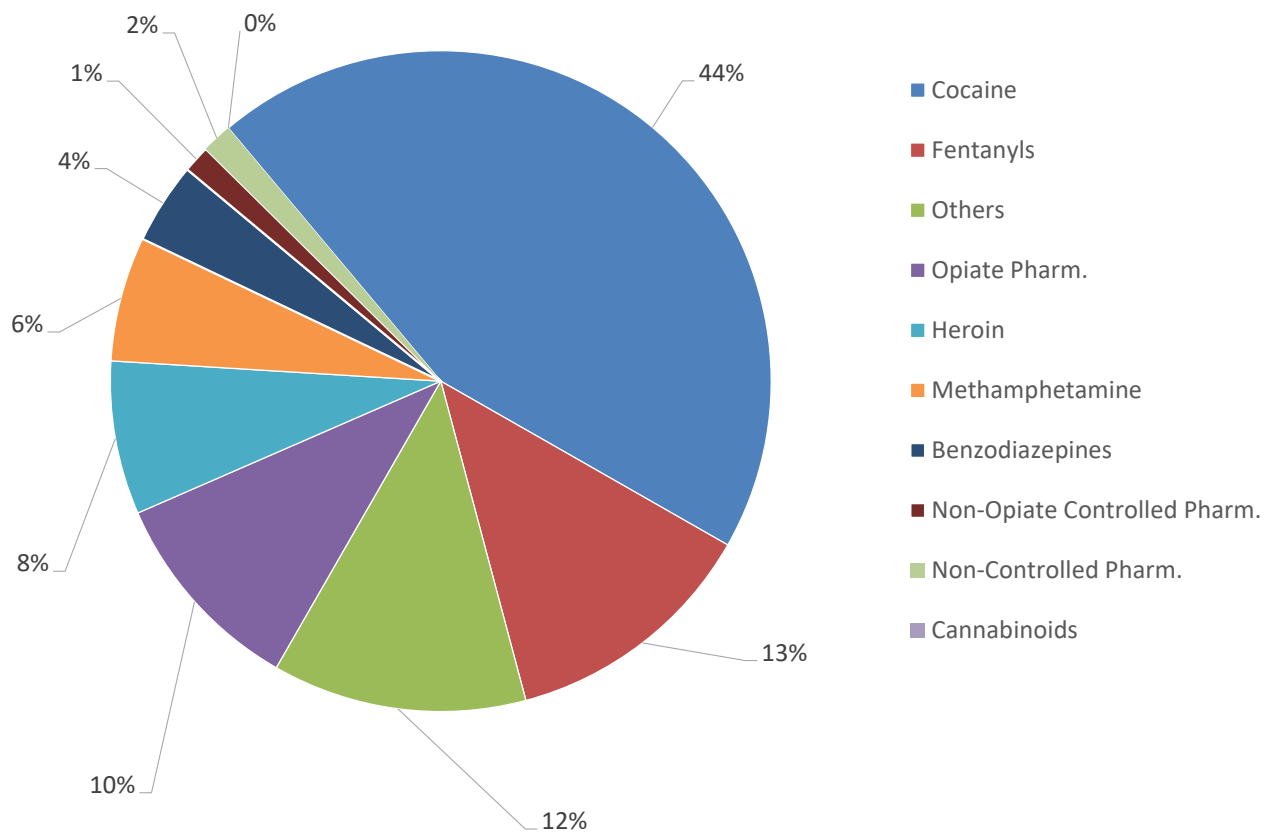
CDS-Berlin Cases Received per MSP Installation		
MSP Installation	Counties Served	Submissions
MSP-Salisbury	Wicomico	118
MSP-Berlin	Worcester	80
MSP-CID/CED	Statewide	58
MSP-Princess Anne	Somerset	45
	TOTAL	301

Allied Agency Cases Received by CDS-Berlin per County	
County	Submissions
Wicomico	425
Worcester	357
Somerset	83
TOTAL	865

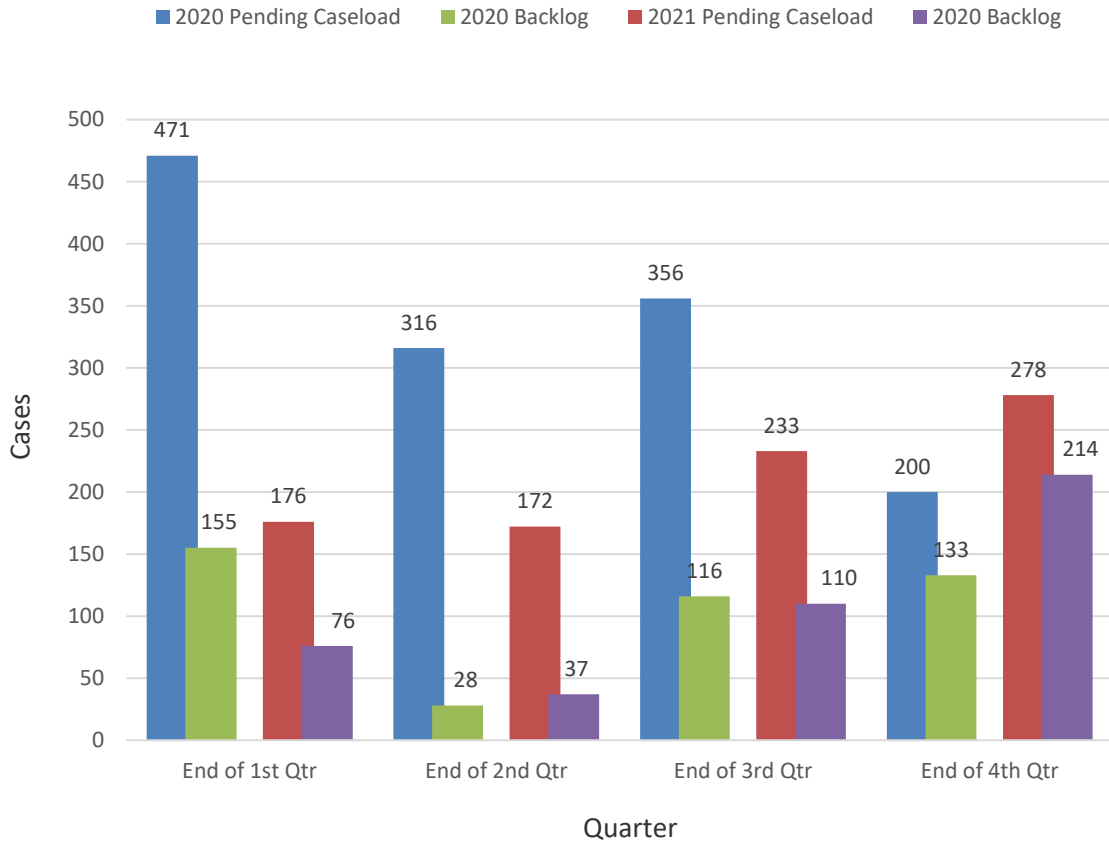
CDS-Berlin Cases Completed per Month



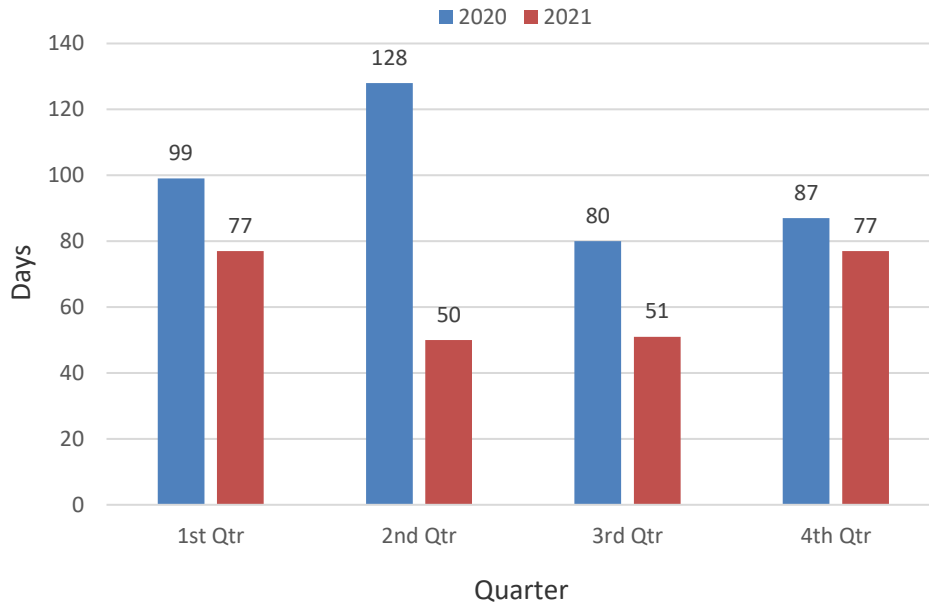
CDS-Berlin Analyses Reported per Drug Type



CDS-Berlin Pending Caseload and Backlog per Quarter



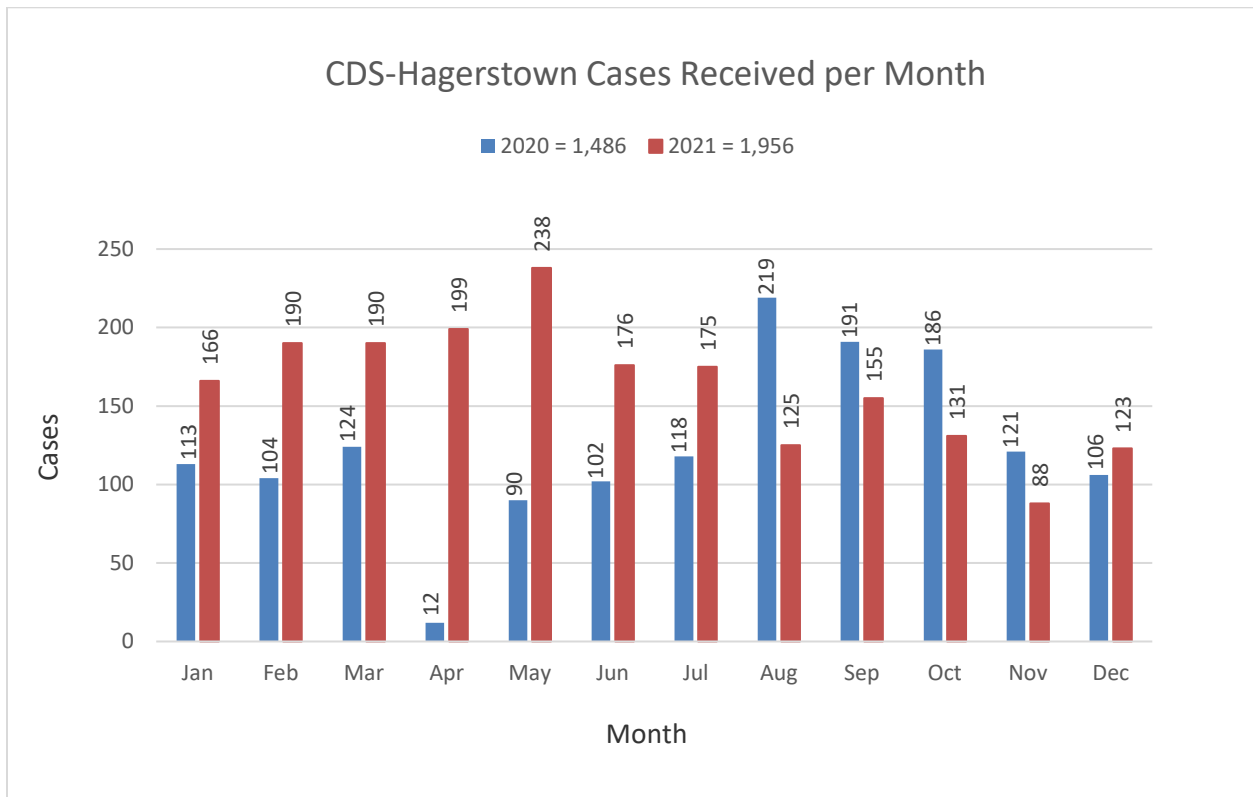
CDS-Berlin Case Turn Around Time per Quarter



CDS-HAGERSTOWN UNIT

The Hagerstown CDS laboratory services primarily the Western Maryland counties including Washington County, Allegany County, Carroll County, Garrett County, Montgomery County and Frederick County. For the majority of 2021, Harford County and Howard County cases were also analyzed in Hagerstown.

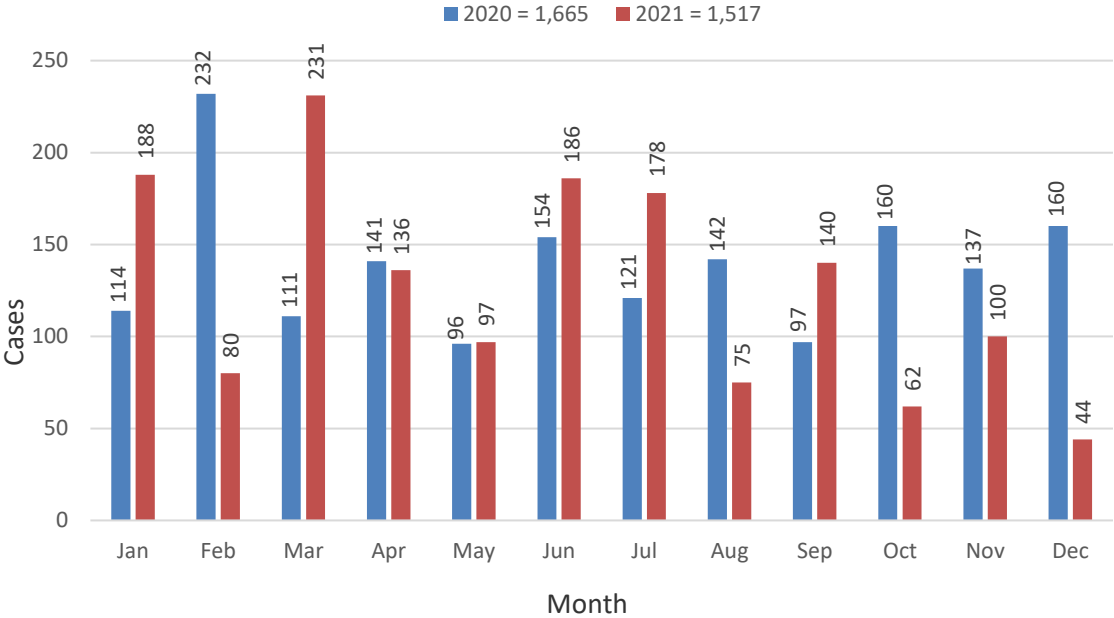
Where indicated, the data shown below does not include cases which were assigned to the Allied Forensic Scientist (Allied FS).



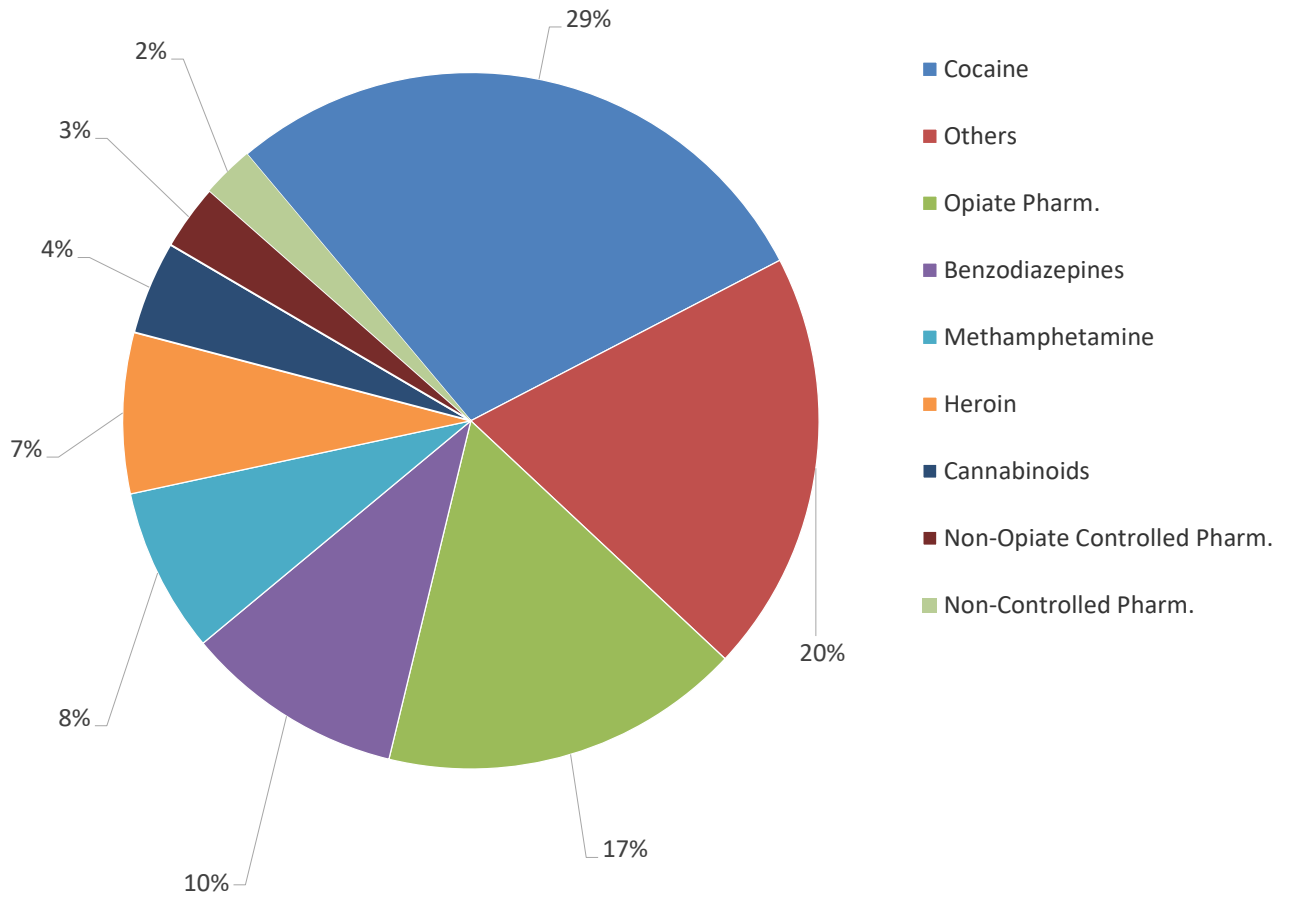
CDS-Hagerstown Cases Received per MSP Installation		
MSP Installation	Counties Served	Submissions
MSP-Cumberland	Allegany	207
MSP-Hagerstown	Washington	149
MSP-Westminster	Carroll	135
MSP-Bel Air	Harford	74
MSP-Waterloo	Howard	63
MSP-McHenry	Garrett	47
MSP-CID/CED	Statewide	42
MSP-JFK Highway	Cecil, Harford, Baltimore	30
MSP-Rockville	Montgomery	11
MSP-Frederick	Frederick	1
OSFM	Statewide	1
	TOTAL	760

Allied Agency Cases Received by CDS-Hagerstown per County	
County	Submissions
Carroll	401
Harford	315
Allegany	271
Garrett	115
Howard	72
Washington	19
Anne Arundel	2
Out of State	1
TOTAL	1,196

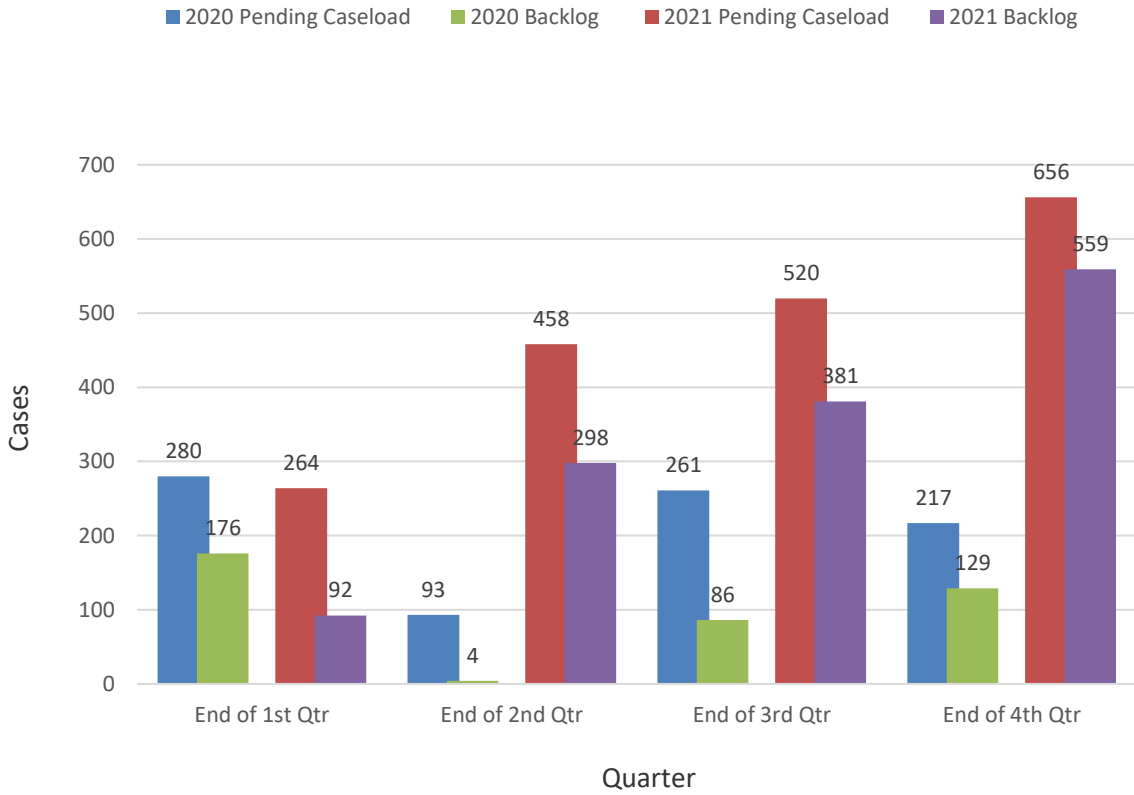
CDS-Hagerstown Cases Completed per Month



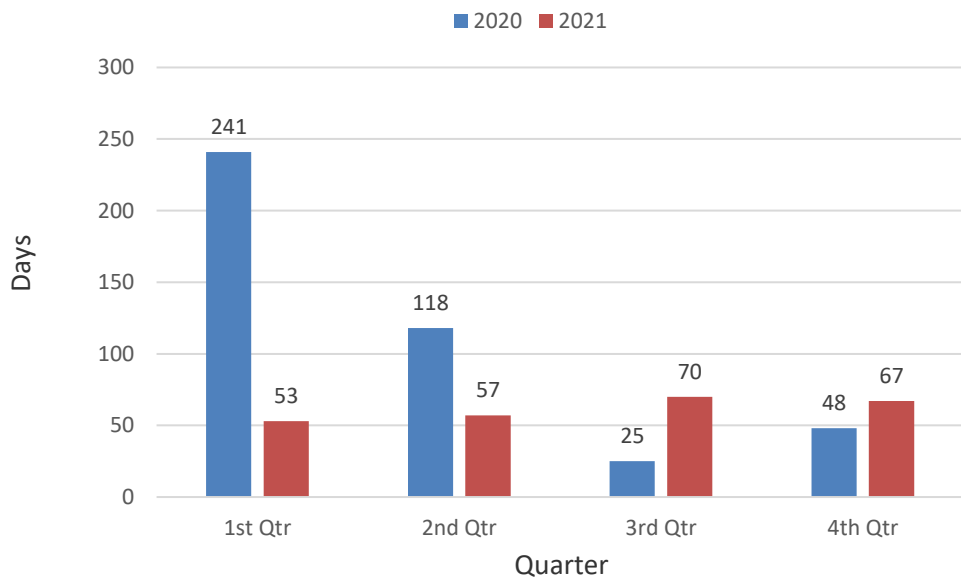
CDS-Hagerstown Analyses Reported per Drug Type
(Includes Allied FS)



CDS-Hagerstown Pending Caseload and Backlog per Quarter



CDS-Hagerstown Case Turn Around Time per Quarter



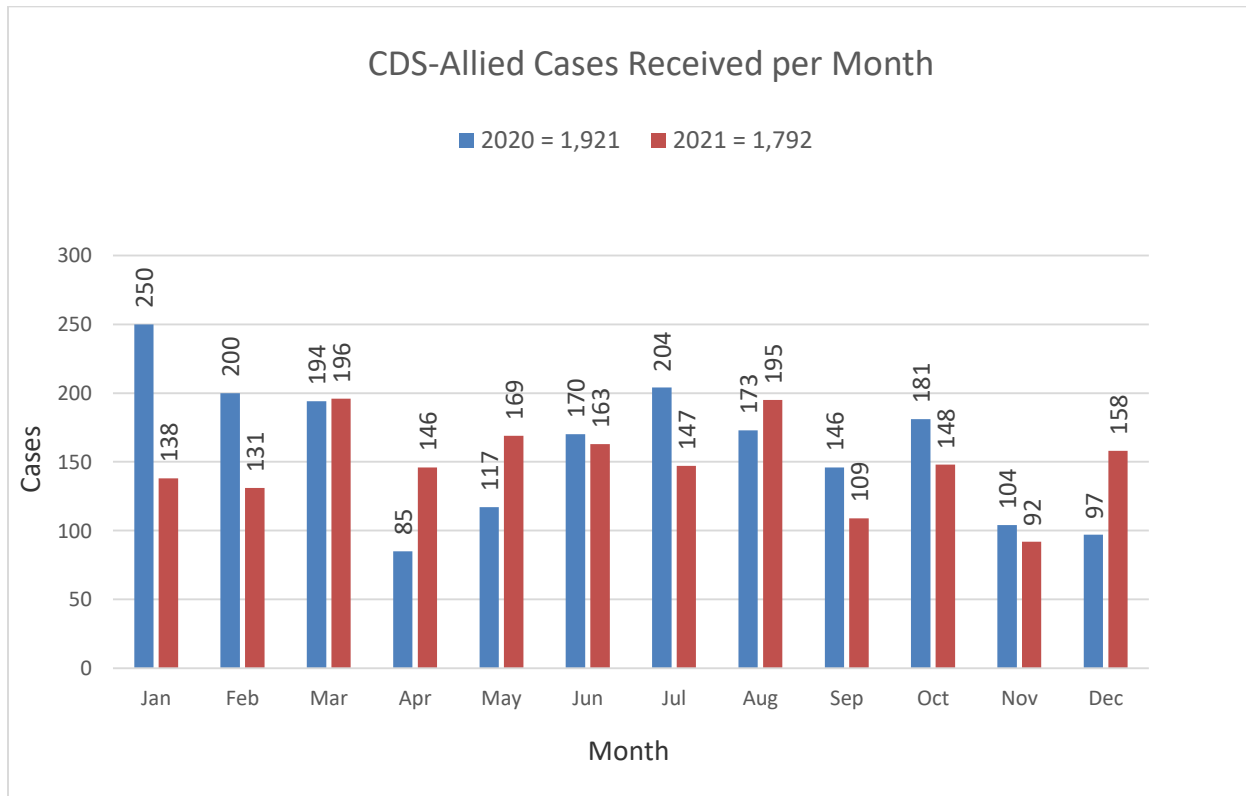
CDS-ALLIED FORENSIC SCIENTIST PROGRAM

The Allied Forensic Scientists working in the CDS Units are employees of allied agencies or other governmental entities. These scientists are authorized to perform CDS analysis in MSP-FSD facilities under the provisions provided for in a Memorandum of Understanding. Even though these scientists are not MSP employees, they perform forensic testing in accordance with the MSP-FSD Quality Assurance system by complying with the MSP-FSD Quality Assurance Manual and following the MSP-FSD standard operating procedures.

Four Allied Forensic Scientists, representing the following agencies, work in the CDS Units: Howard County Police Department, Cecil County State’s Attorney’s Office, Frederick County State’s Attorney’s Office, and St. Mary’s County State’s Attorney’s Office in conjunction with Calvert County State’s Attorney’s Office.

The Howard County Allied Chemist position was filled in 2021 and the chemist is anticipated to complete her training in 2022. Until the training is completed, the CDS-Hagerstown lab and CDS-Pikesville Unit have been completing the Howard County casework. In this report, the Howard County casework statistics are split between CDS Hagerstown and CDS-Pikesville Unit for 2021.

The St. Mary’s County/Calvert County Allied Chemist completed his training in 2021 and is anticipated to perform independent casework in 2022. In this report, the Saint Mary’s and Calvert County casework statistics are included under the CDS-Pikesville Unit for 2021.



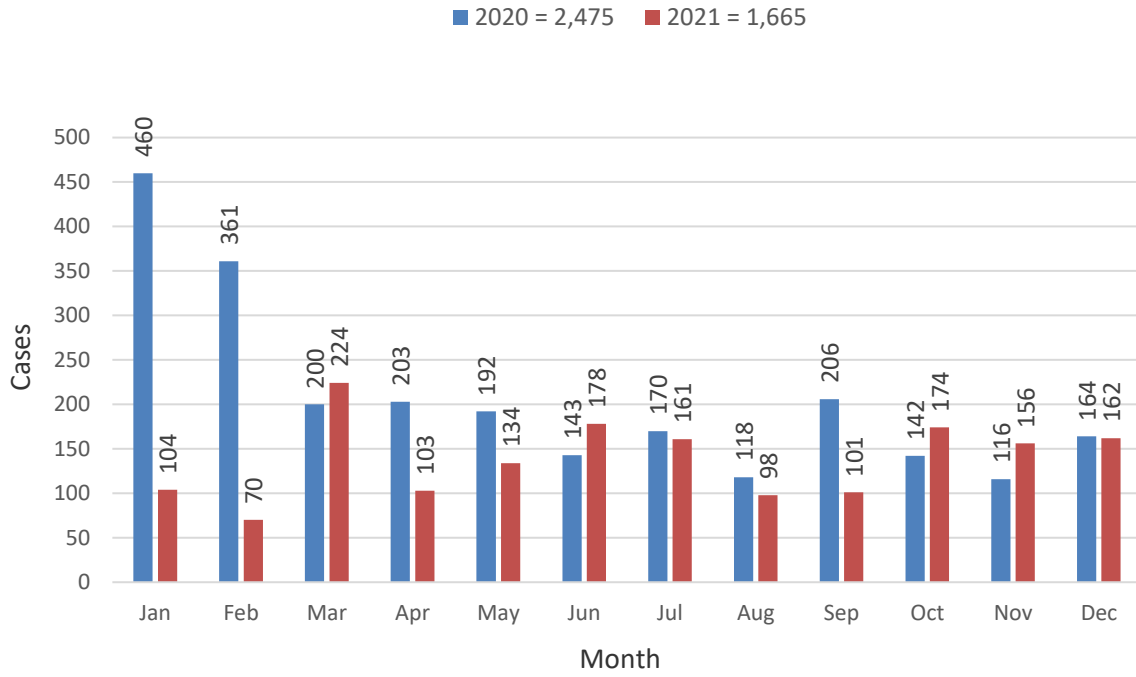
CDS Cases Received by Allied Forensic Scientists per MSP Installation		
MSP Installation	Counties Served	Submissions
MSP-Frederick	Frederick	272
MSP-North East	Cecil	232
MSP-CID/CED	Statewide	60
MSP-JFK Highway	Cecil, Harford, Baltimore	39
MSP-Waterloo	Howard	20
MSP-Hagerstown	Washington	4
MSP-Leonardtown	St. Mary's	1
MSP-Centerville	Kent, Queen Anne's	1
	TOTAL	629

Note: Cases designated above are received by FSD from an Allied Forensic Scientist's County, but cases may be completed by FSD staff or Outsourced.

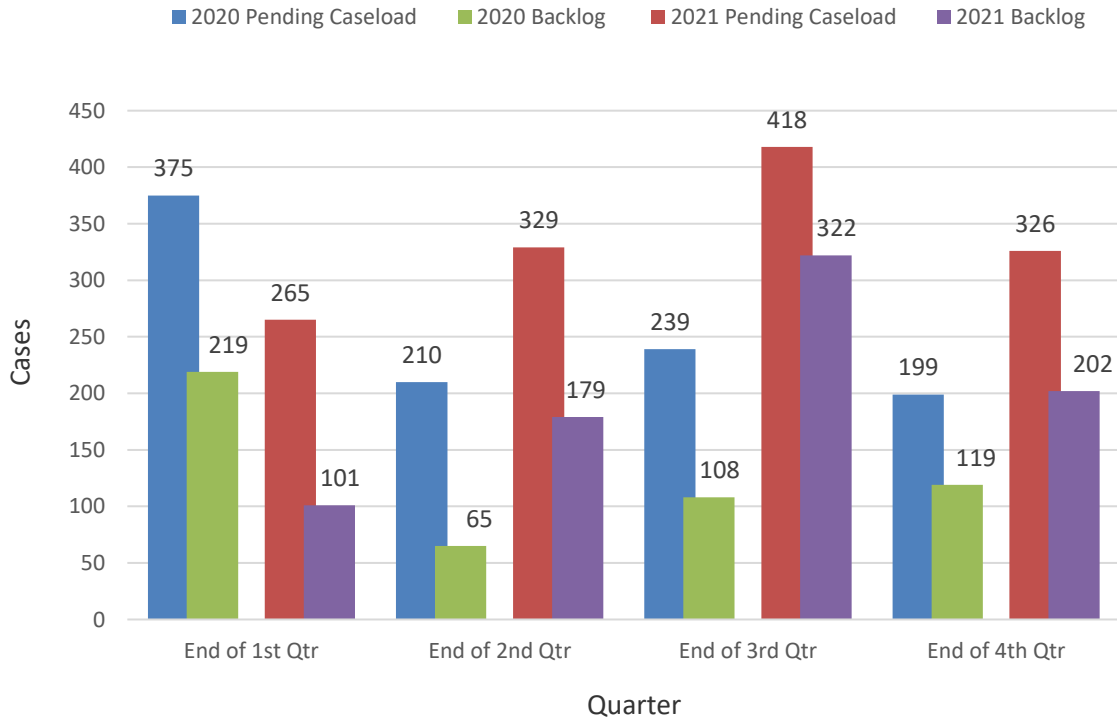
CDS Cases Received by Allied Forensic Scientists from Allied Agencies per County	
County	Submissions
Frederick	587
Cecil	526
Howard	50
TOTAL	1,163

Note: Cases designated above are received by FSD from an Allied Forensic Scientist's County, but cases may be completed by FSD staff or Outsourced.

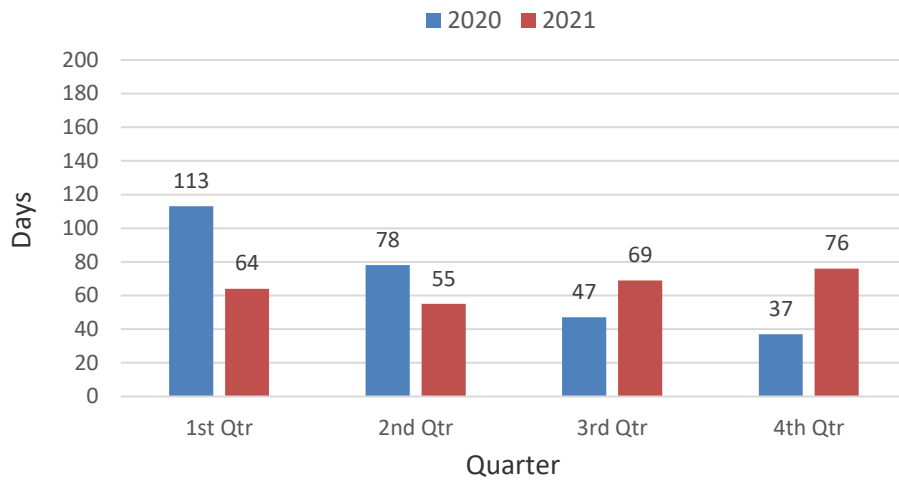
CDS-Allied Cases Completed per Month



CDS-Allied Pending Caseload and Backlog per Quarter



CDS-Allied Case Turn Around Time per Quarter



CDS UNIT/ HIDTA DATA ANALYSIS*

Drug Categories Identified in 2021**

Quarter	Cocaine	Cannabis	Heroin	Fentanyl	Fentanyl Analogs	Other Opioids***	Methamphetamine	Phenethylamine****	Synthetic Cannabinoid	Controlled Rx	Rx	Over-the-Counter	PCP/Analogs	Psychedelic	Cathinones	Etizolam	Xylazine	Other	CDS Positive Total
Total 1Q	973	583	293	984	40	542	293	84	57	316	70	39	68	38	95	163	9	47	4694
%	20.7	12.4	6.2	21	0.9	11.5	6.2	1.8	1.2	6.7	1.5	0.8	1.4	0.8	2	3.5	0.2	1	
Total 2Q	1041	508	271	983	83	543	327	81	35	367	79	53	40	24	136	137	400	46	5154
%	20.2	9.9	5.3	19.1	1.6	10.5	6.3	1.6	0.7	7.1	1.5	1	0.8	0.5	2.6	2.7	7.8	0.9	
Total 3Q	954	188	143	755	25	324	213	55	57	276	38	-	29	29	115	134	416	34	3785
%	25.2	5	3.8	20	0.7	8.6	5.6	1.5	1.5	7.3	1	-	0.8	0.8	3	3.5	11	0.9	
Total 4Q	793	617	107	631	33	268	207	169	42	293	54	1	36	36	58	43	365	21	3674
%	21.6	16.8	2.9	17.2	0.9	7.3	5.6	1.9	1.1	8	1.5	0.1	1	1	1.6	1.2	9.9	0.6	

*This data was provided by the Washington/Baltimore High Intensity Drug Trafficking Area (HIDTA) program in their 2021 report.

**This is an overview of samples submitted to the MSP-FSD labs only and does not represent all drugs seized in the State of Maryland. Categories are as defined by the MSP Lab Drug Constituents Table dated 03/25/2019. Each type of drug was analyzed, as a unique value for each sample and included in the total number of reported samples.

***The Other Opioids group includes Oxycodone, Tramadol, Methadone, Hydrocodone, Morphine, Oxymorphone, Codeine mixtures, Tarpentadol, a Fentanyl precursor 4-Anilino-N-phenethyl-4-piperidine (ANPP) and other less common opioids.

****The Phenethylamine group includes Amphetamine and MDMA.

TOXICOLOGY UNIT

The Toxicology Unit is responsible for the analysis of alcohol and drugs contained in blood specimens submitted to the MSP-FSD. Testing is performed in conjunction with the Driving While Impaired (DWI) program of the Maryland State Police and the State Toxicologist's Office. Testing for alcohol and drugs is performed for both the Maryland State Police and allied law enforcement agencies requiring laboratory support for impaired driving programs.

The Toxicology Unit is the only laboratory within the state approved by the State of Maryland, Office of the Chief Medical Examiner to analyze blood samples for alcohol and drugs in cases related to DWI arrests. Blood specimens submitted to the Toxicology Unit for testing are collected by qualified medical personnel when requested by police. Blood is collected from suspected impaired drivers after being taken to hospital for injury, or at the request of a Drug Recognition Expert Officer when drug impairment is suspected. Many cases, therefore, involve serious personal injury and vehicular manslaughter homicide charges that require the Forensic Scientist's expert testimony at trial.

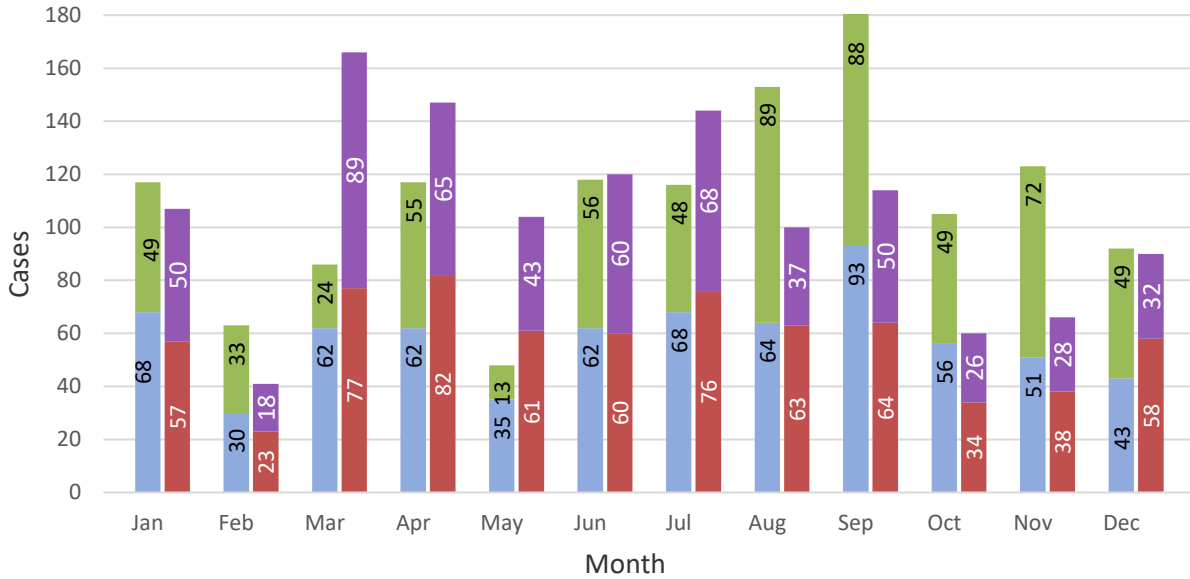
The Toxicology Unit continued to expand its staffing over the past year. A Forensic Scientist I position was filled in 2021. Another Forensic Scientist completed their blood drug training in 2021 and now can analyze DRE cases independently.

The unit also expanded its LC/MS/MS confirmation testing to include fentanyl in the opiate panel in 2021. The opiate panel now consists of morphine, codeine, oxycodone, oxymorphone, hydrocodone, hydromorphone, methadone, buprenorphine and fentanyl confirmation testing.

Funding for outsourcing was utilized in 2021 to help address the blood drug case backlog, allowing the unit to focus their attention on blood alcohol casework and training staff. In 2021, 209 blood drug cases were outsourced.

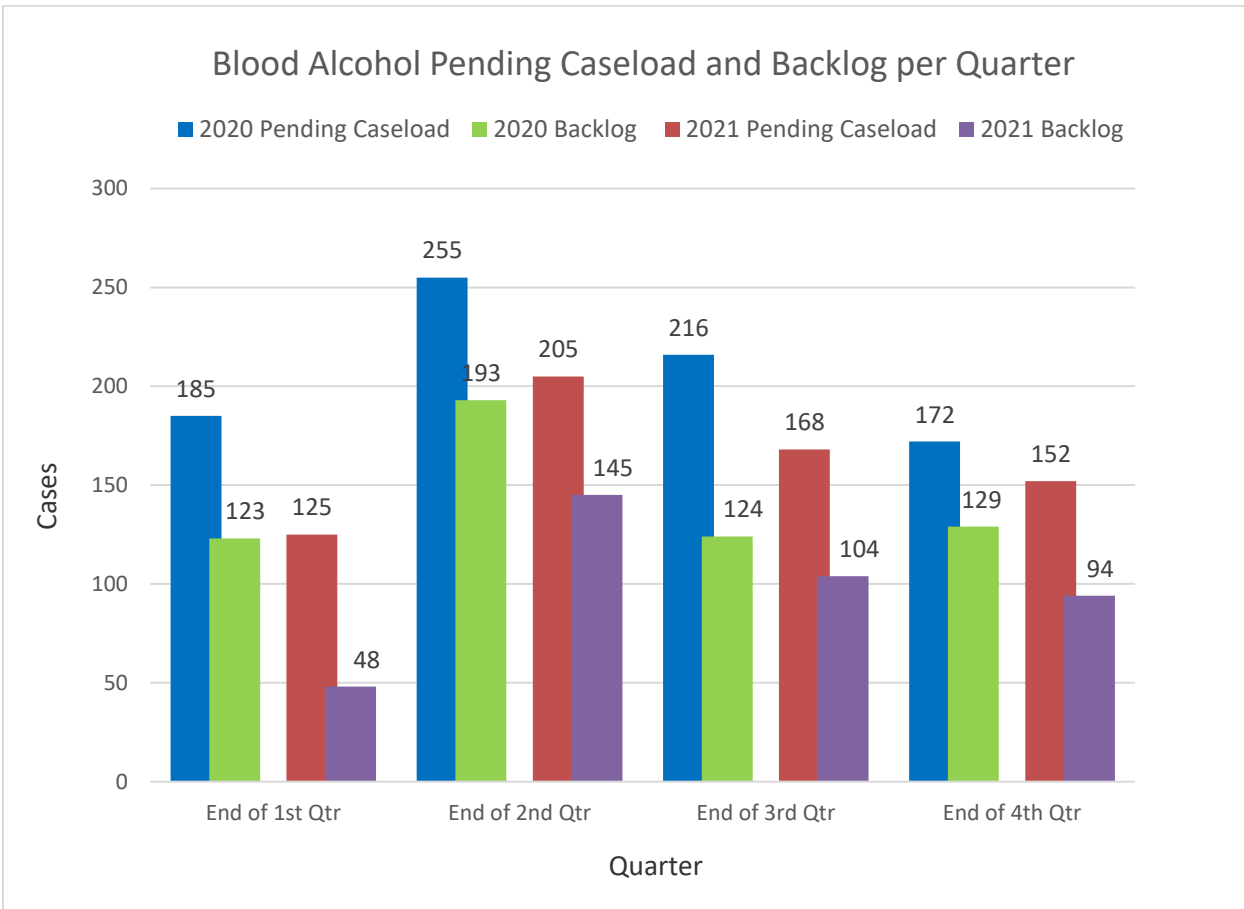
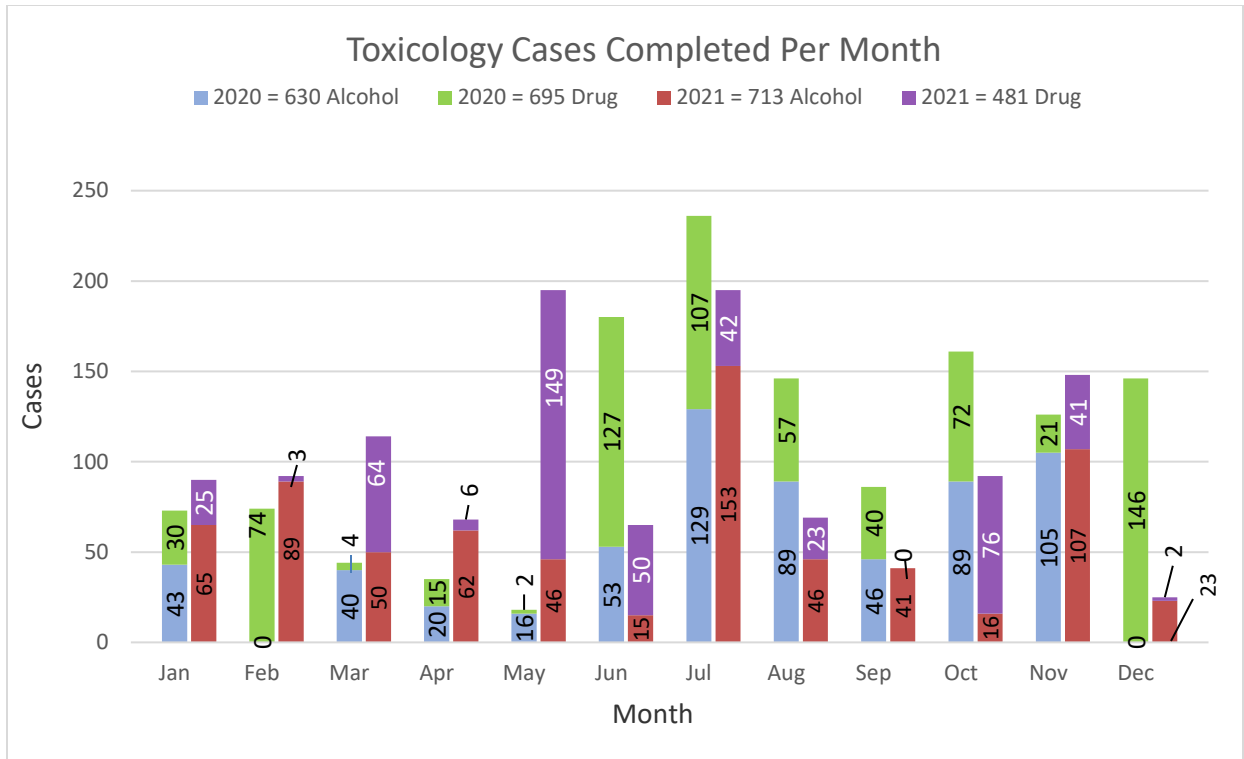
Toxicology Cases Received Per Month

■ 2020 = 694 Alcohol ■ 2020 = 625 Drug ■ 2021 = 693 Alcohol ■ 2021 = 566 Drug

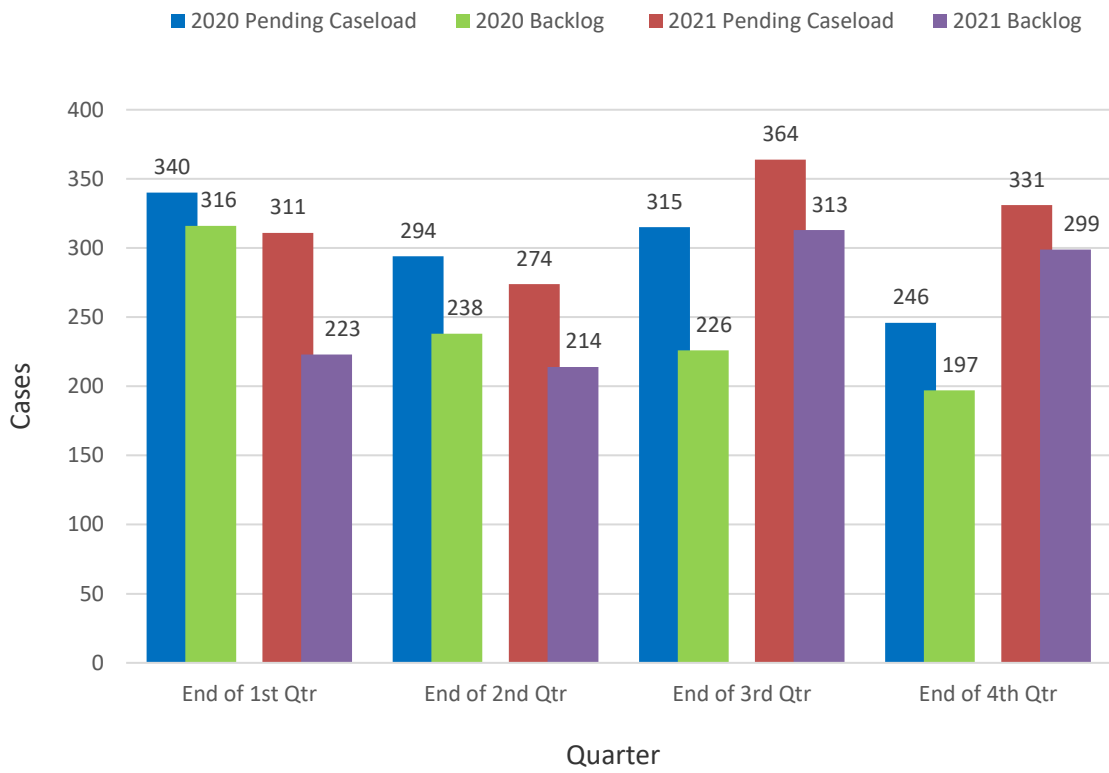


Toxicology Cases Received per MSP Installation		
MSP Installation	Counties Served	Submissions
MSP-Golden Ring	Baltimore	60
MSP-Bel Air	Harford	42
MSP-Frederick	Frederick	38
MSP-Westminster	Carroll	33
MSP-Salisbury	Wicomico	27
MSP-Easton	Talbot, Caroline, Dorchester	22
MSP-JFK Highway	Cecil, Harford, Baltimore	21
MSP-Centerville	Kent, Queen Anne's	21
MSP-Annapolis	Anne Arundel	20
MSP-Leonardtown	St. Mary's	18
MSP-Berlin	Worcester	17
MSP-Forestville	Prince George's	16
MSP-Glen Burnie	Anne Arundel	15
MSP-College Park	Prince George's	14
MSP-Rockville	Montgomery	12
MSP-La Plata	Charles	12
MSP-Waterloo	Howard	12
MSP-Prince Frederick	Calvert	11
MSP-Hagerstown	Washington	10
MSP-McHenry	Garrett	8
MSP-Princess Anne	Somerset	8
MSP-North East	Cecil	5
MSP-Cumberland	Allegany	4
	TOTAL	446

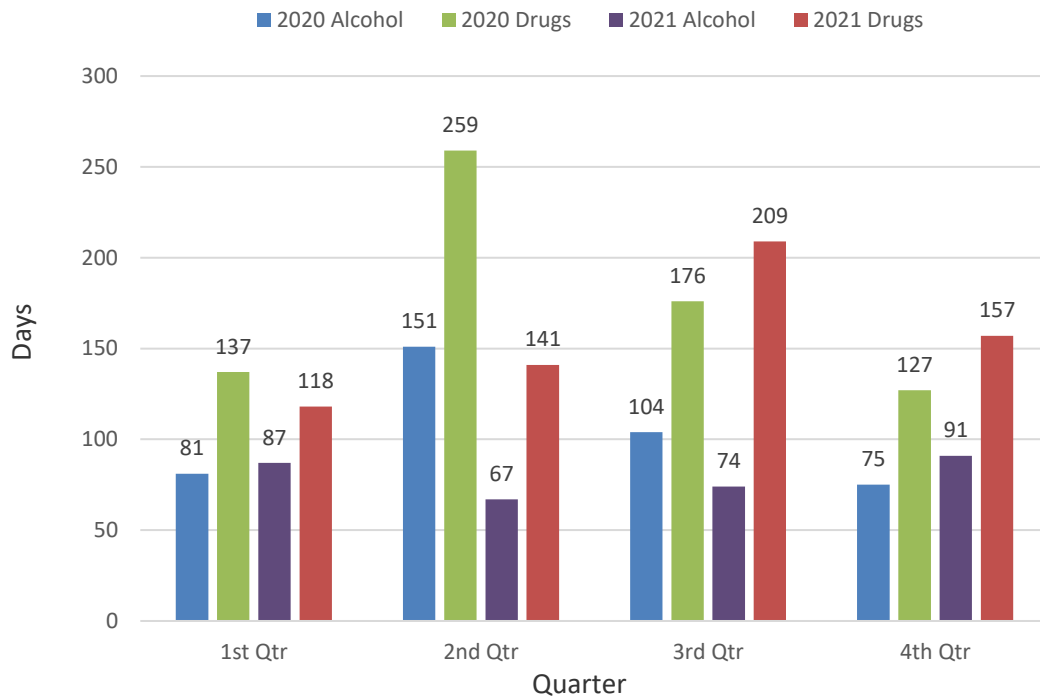
Toxicology Cases Received from Allied Agencies by County	
County	Submissions
Baltimore	166
Anne Arundel	158
Montgomery	86
Harford	48
Carroll	48
Baltimore City	44
Washington	43
Frederick	39
Allegany	33
St. Mary's	26
Howard	22
Prince George's	19
Calvert	17
Charles	16
Worcester	8
Talbot	8
Dorchester	8
Queen Anne's	5
Caroline	4
Cecil	4
Wicomico	4
Somerset	3
Garrett	3
Kent	1
TOTAL	813



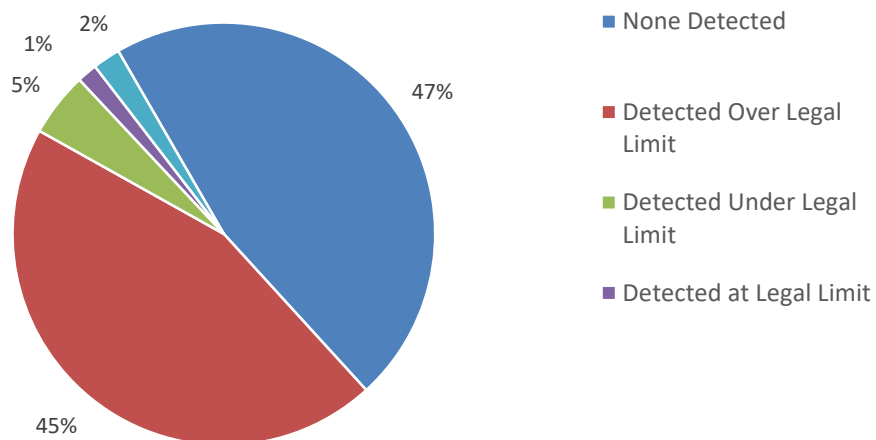
Blood Drug Pending Caseload and Backlog per Quarter



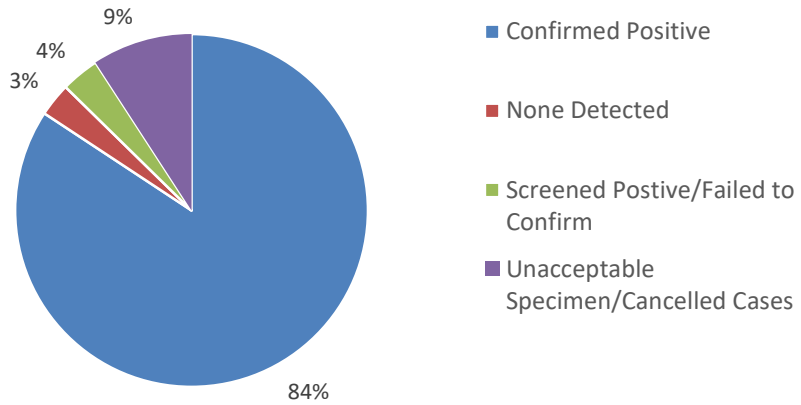
Toxicology Case Turn Around Time



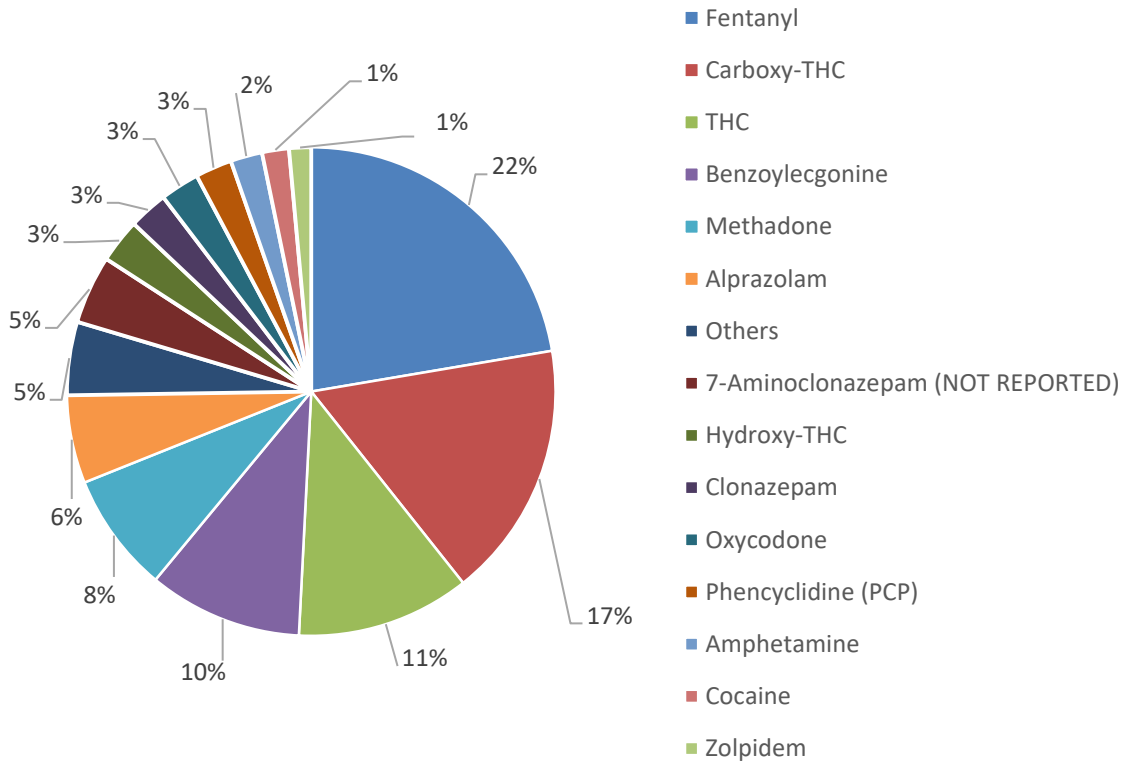
Blood Alcohol Cases Reported per Detection Level



Blood Drug Cases Reported per Result Type (excludes cancelled cases)

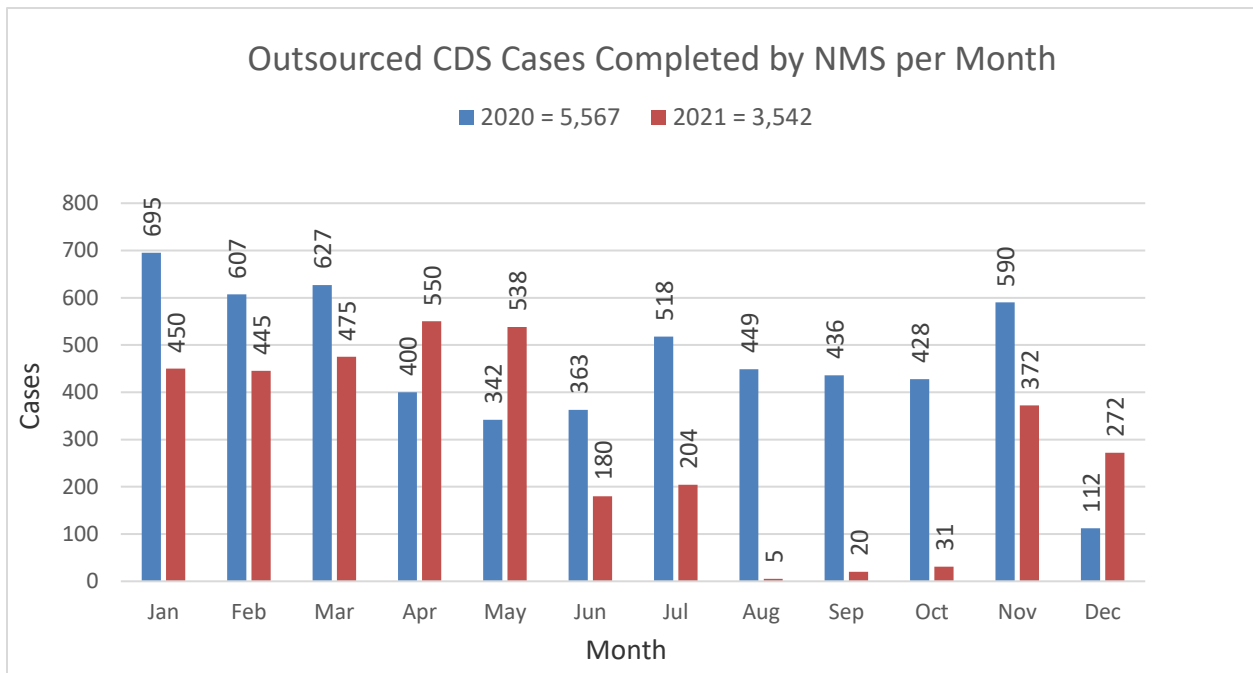


Confirmed Results of Blood Drug In-House Cases per Drug Type

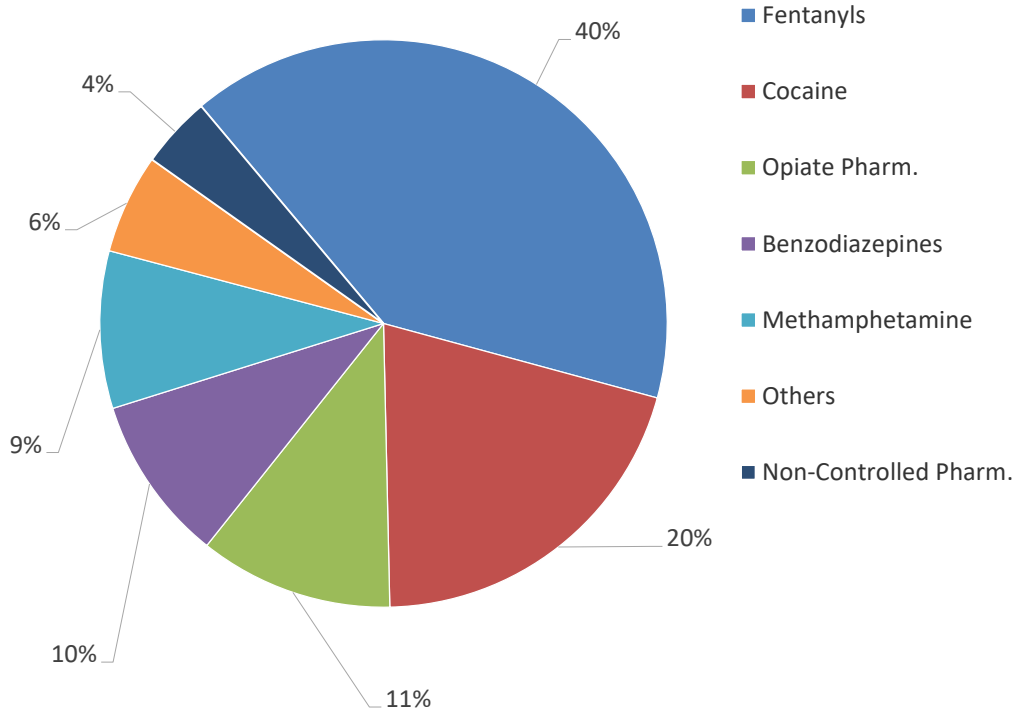


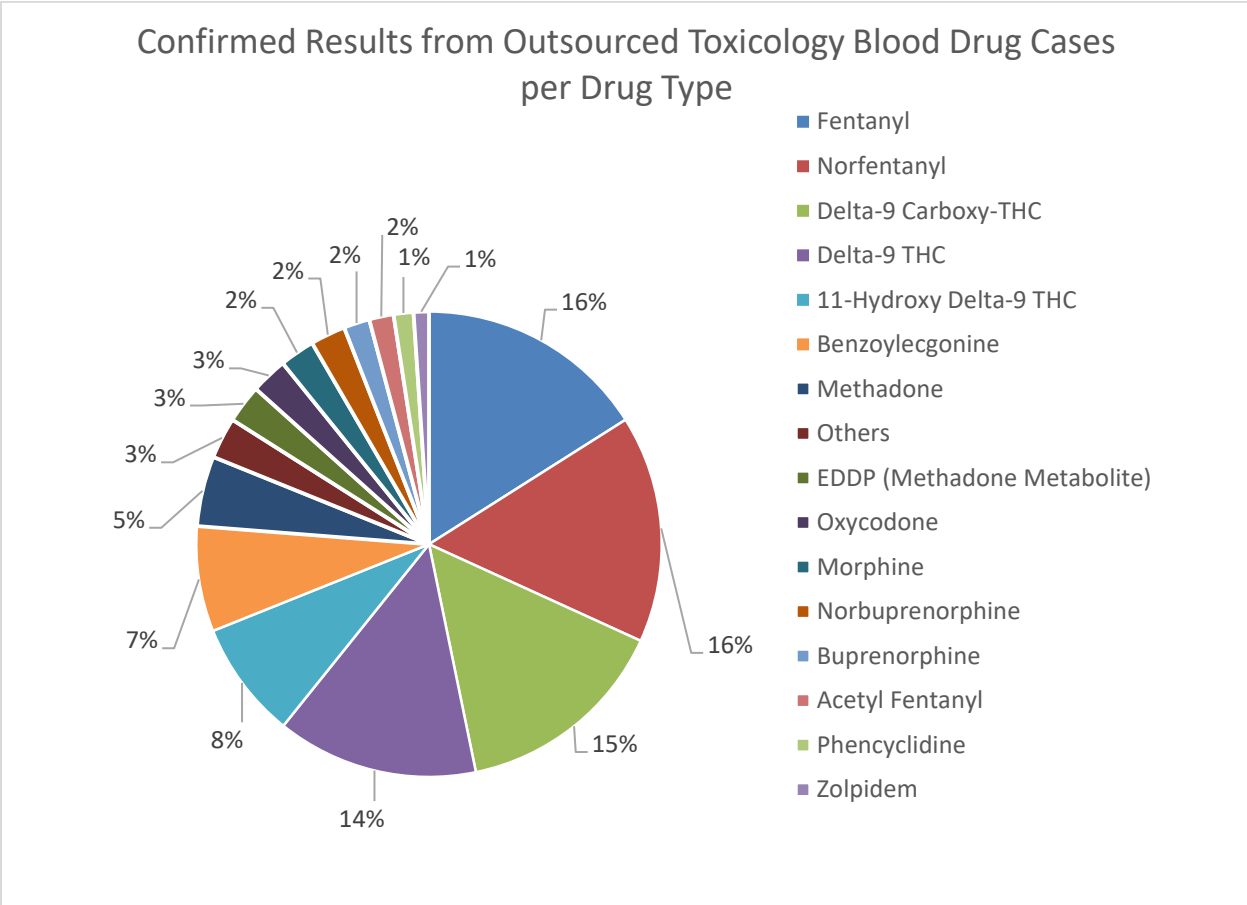
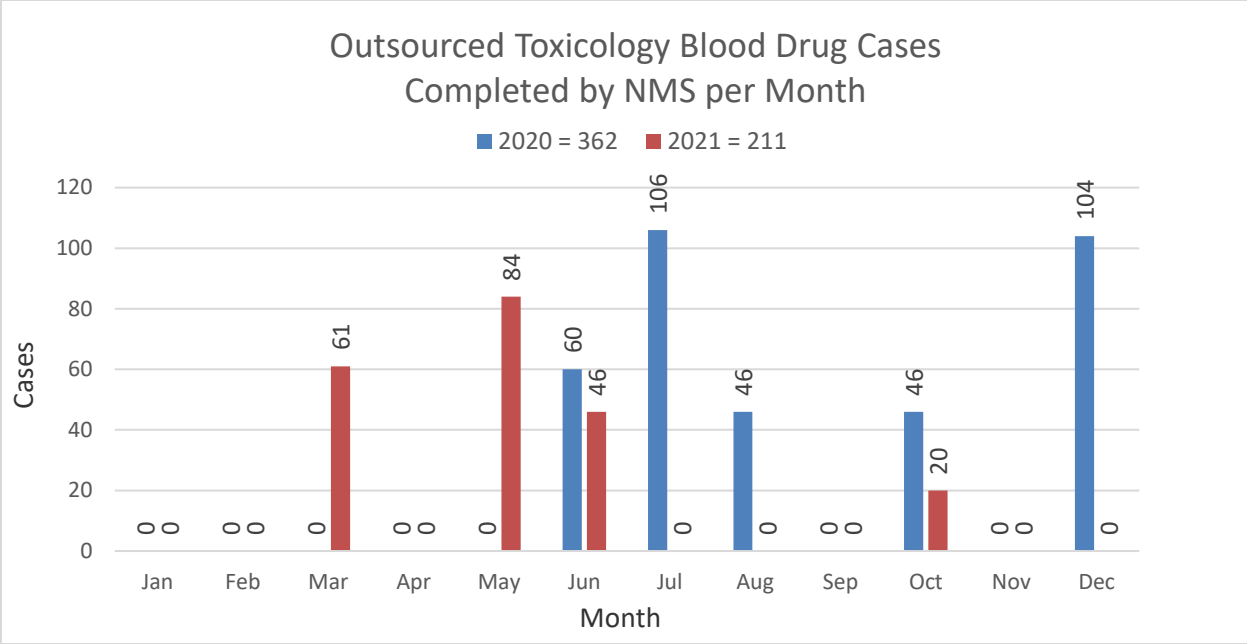
CHEMISTRY SECTION OUTSOURCING

In an effort to eliminate the CDS and Toxicology case backlog, FSD outsources select CDS cases and Toxicology Blood Drug cases for analysis to National Medical Services (NMS) Labs, Inc. FSD uses a US DOJ Office of Community Oriented Policing Services grant under the Anti-Heroin Task Force Program to fund both Toxicology and CDS case outsourcing. The Toxicology Unit was able to successfully reduce their backlog in 2020, and the CDS Units were able to successfully reduce their backlogs in 2020 and 2021. This grant covers the outsourcing costs of both the analysis and courtroom testimony for casework.



CDS Outsourcing Analyses Reported per Drug Type
(Includes all three labs)





NOTEWORTHY CASES AND ACHIEVEMENTS

In January 2021, a combined law enforcement investigation led to the arrests of six people alleged to be part of a significant drug trafficking organization on the upper Eastern Shore. The investigation concerned the operation of a drug trafficking organization believed to be distributing large amounts of opioid pills and cocaine. One suspect in the investigation was alleged to be involved in the daily distribution of both powder and crack cocaine and illegal opioid prescription pills in Kent and Queen Anne's counties. Evidence that was recovered by a search warrant was tested by the Pikesville CDS Unit and included cocaine, buprenorphine, amphetamine, and oxycodone. The results of the CDS testing along with other charges for handgun violations led to the arrest of the suspects.

In March 2021, a Sykesville man was driving erratically when he struck the corner of another vehicle and caused that vehicle to flip multiple times. The occupant of the second vehicle was flown to Shock Trauma and was pronounced dead six days after the collision. A blood sample taken from the erratic driver was submitted to the Toxicology Unit for Blood Alcohol and Blood Drug testing. Alcohol was not detected in the blood sample, but the sample did test positive for Alprazolam and Benzoyllecognine (a cocaine metabolite). The CDS - Pikesville Unit tested a vial of substance which was found to contain cocaine. The driver pled guilty to the charge of auto manslaughter and possession of a controlled dangerous substance and was sentenced to 10 years in prison.

BIOLOGY SECTION

The Biology Section is responsible for performing Serological and DNA analyses associated with criminal casework as well as maintaining and operating the State's DNA Database in conjunction with the FBI's Combined DNA Index System (CODIS). In order to efficiently address these functions, the Biology Section is structured on a four-unit basis overseen by one Forensic Scientist Manager.

There are two casework units: the Investigative Casework Unit and the Trial Casework Unit. The Investigative Casework Unit is staffed by five individuals: one Forensic Scientist Supervisor, one Forensic Scientist Advanced, one Forensic Scientist III, one Forensic Inventory Control Officer (FICO), and one vacant Forensic Scientist I position. The Trial Casework Unit is staffed by five individuals: one Forensic Scientist Supervisor, one Forensic Scientist Advanced, two Forensic Scientist III's, and one vacant Forensic Scientist I position.

The Database Unit is staffed by nine individuals: one Forensic Scientist Supervisor (CODIS Administrator), three Forensic Scientists Advanced, and three Forensic Scientist III's, one Contractual Paralegal II and one vacant Forensic Scientist I position.

The Technical/Validation Unit is staffed by five individuals: four forensic scientists including one Forensic Scientist Supervisor (Technical Leader), one Forensic Scientist Advanced, and two Forensic Scientist III's. The fifth position is a Forensic Laboratory Technician I.

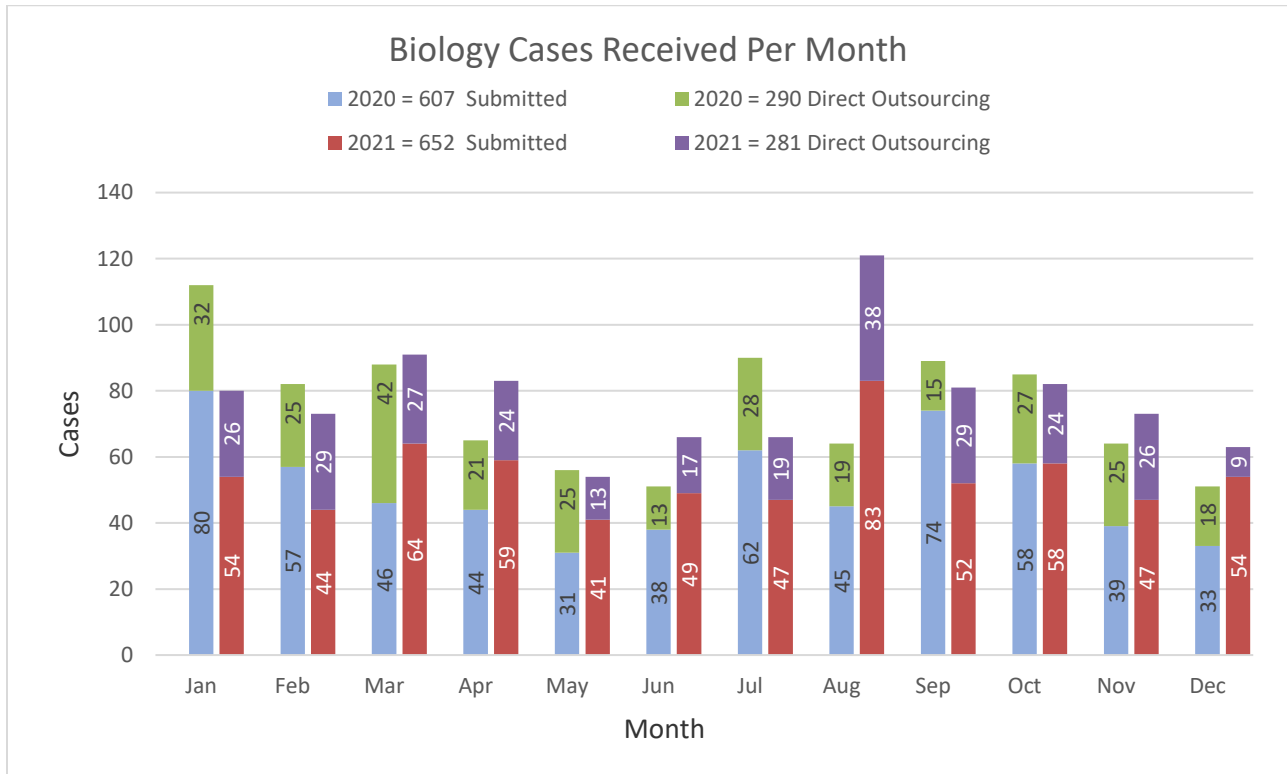
BIOLOGY CASEWORK UNITS

The Trial Casework Unit performs serology and/or DNA testing on cases that have resulted in an arrest and are being tested in support of the adjudication of the arrestee. While the primary responsibility of this unit is cases with pending trial dates, it also assists with the analysis of investigative and cold cases, the preparation and review of outsourced casework, and training of new analysts, as necessary.

The Investigative Casework Unit performs serology and/or DNA testing on cases without pending court dates, which have not resulted in an arrest but are being tested in support of an investigation or making an arrest. This unit is responsible for handling high-priority/high-profile investigative cases, routine investigative cases, and cold cases. The Investigative Casework Unit is also responsible for the management and processing of outsourced casework to the contract vendor laboratory and training of new analysts, as necessary.

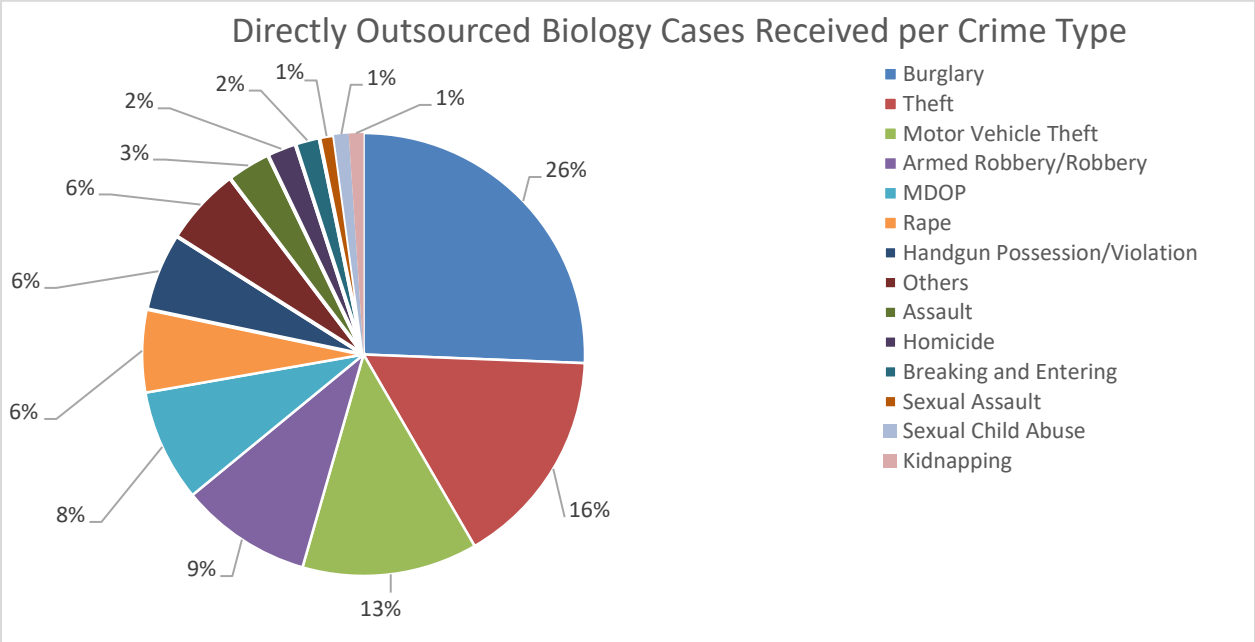
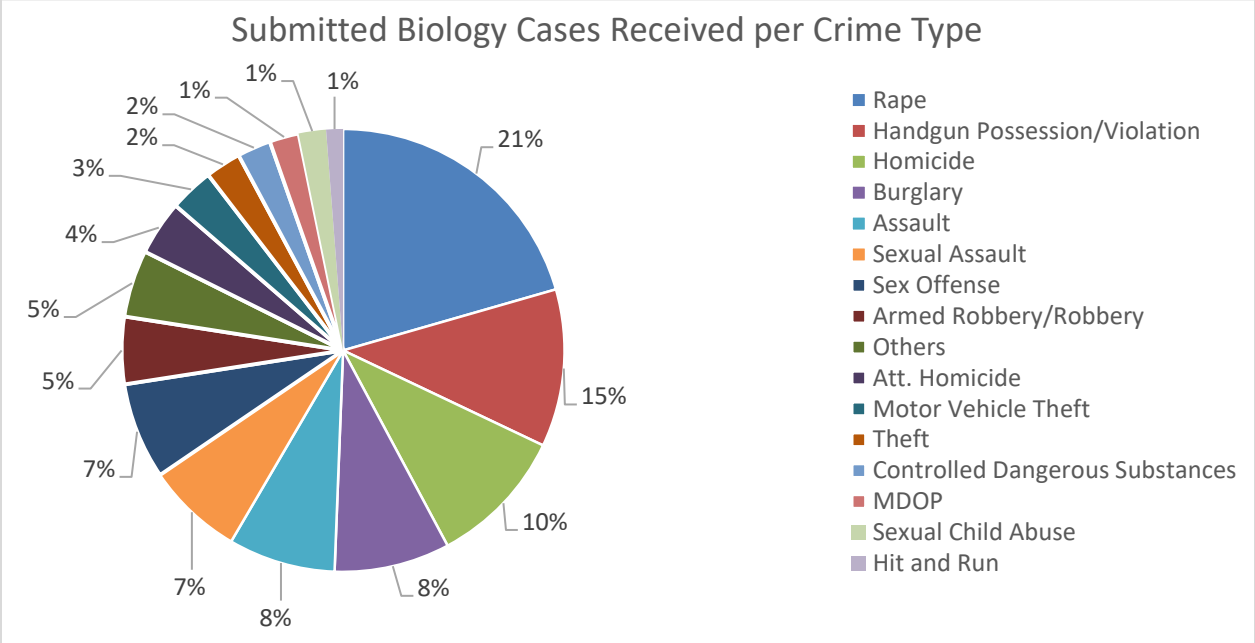
The overall number of case submissions to the Biology Section slightly increased in 2021. There were 652 cases received in the Biology Section, which is approximately a 7.4% increase from 2020. There was a 3.4% decrease in the number of cases that were directly outsourced in 2021. Even though these cases were directly outsourced from the investigating agency to the contract lab, they were still monitored and tracked by Biology Section staff. Upon completion of all outsourced cases, the data is reviewed by FSD scientists, and suitable profiles are uploaded to the CODIS database. When considering both in-house cases and directly outsourced cases, the total

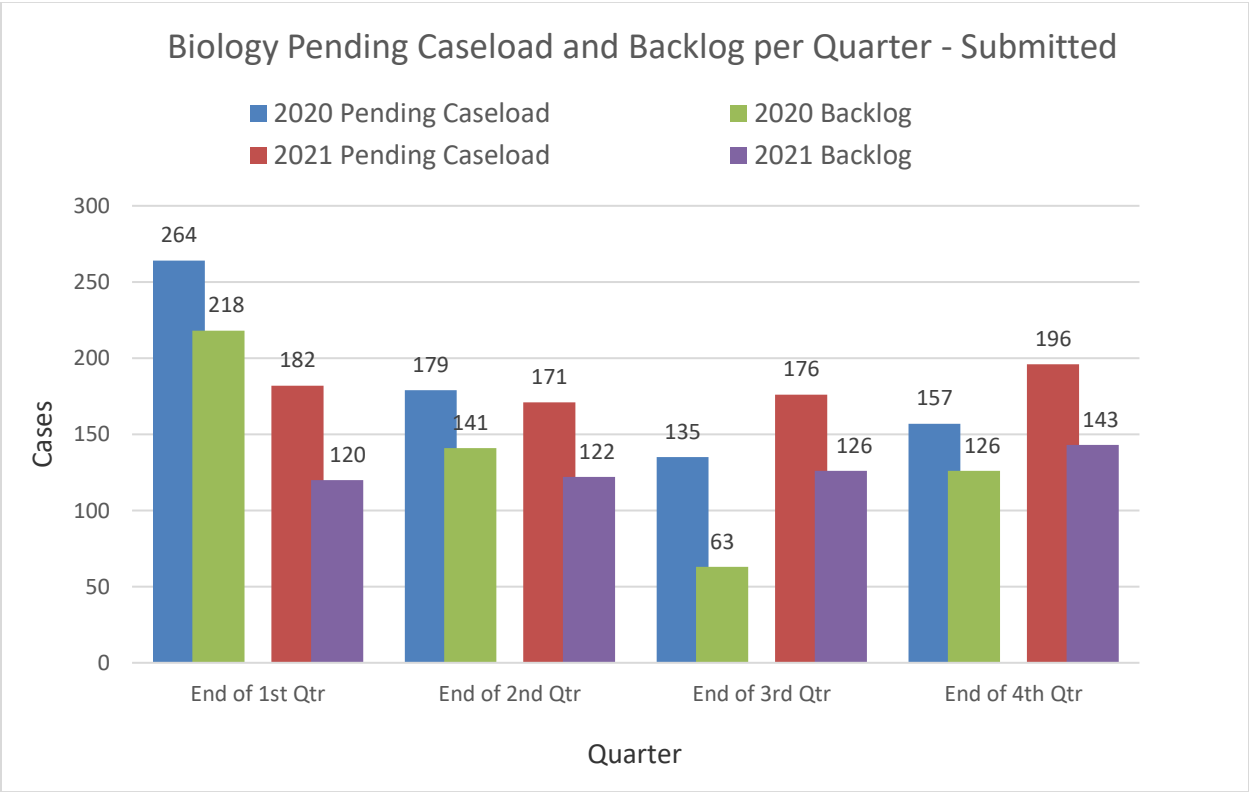
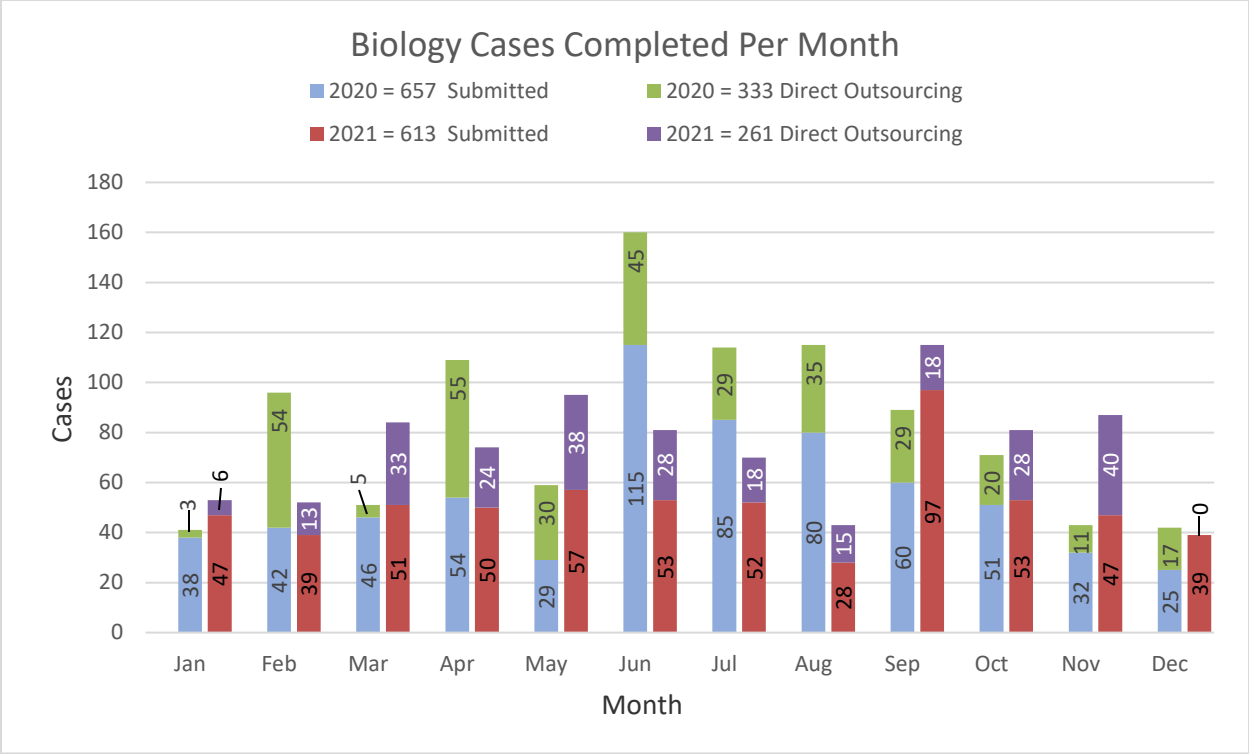
number of cases completed within the Biology Section decreased by 11.7% in 2021. By utilizing a combination of direct outsourcing, in-house outsourcing (evidence is received at MSP-FSD and then either the entire case or a portion of it is forwarded to a contracted laboratory for analysis), and in-house casework, the casework units have been able to continue to monitor and maintain the backlog at manageable levels.



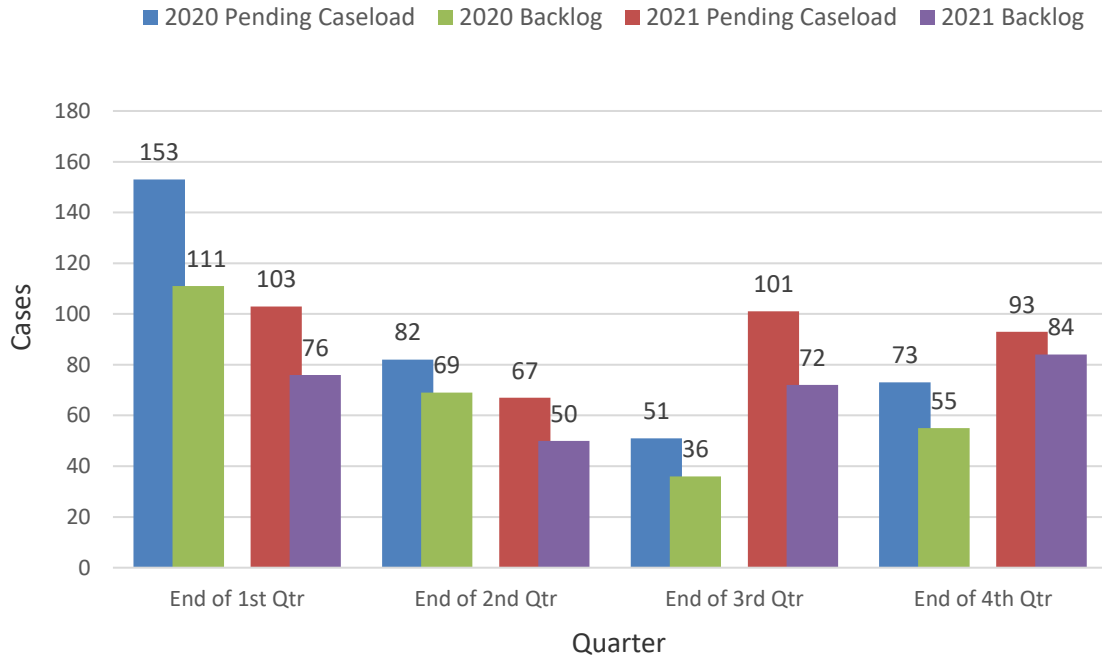
Biology Cases Received per MSP Installation				
MSP Installation	Counties Served	Case Type		
		Submitted	Directly Outsourced	Combined
MSP-CID/CED	Statewide	37	3	40
MSP-Homicide	Statewide	21	1	22
MSP-DED/C3I	Allegany	14	1	15
OSFM	Statewide	5	0	5
MSP-North East	Cecil	5	0	5
MSP-Princess Anne	Somerset	5	0	5
MSP-Westminster	Carroll	2	2	4
MSP-Easton	Talbot, Caroline, Dorchester	3	0	3
MSP-Hagerstown	Washington	3	0	3
MSP-Leonardtown	St. Mary's	3	0	3
MSP-College Park	Prince George's	3	0	3
MSP-Bel Air	Harford	3	0	3
MSP-Rockville	Montgomery	3	0	3
MSP-Salisbury	Wicomico	2	0	2
MSP-Berlin	Worcester	2	0	2
MSP-Frederick	Frederick	2	0	2
MSP-McHenry	Garrett	1	0	1
MSP-Golden Ring	Baltimore	1	0	1
MSP-Cumberland	Allegany	1	0	1
MSP-Annapolis	Anne Arundel	1	0	1
MSP-Glen Burnie	Anne Arundel	0	1	1
MSP-Prince Frederick	Calvert	1	0	1
MSP-Waterloo	Howard	1	0	1
	TOTAL	119	8	127

Allied Agency Cases Received by Biology per County			
County	Case Type		
	Submitted	Directly Outsourced	Combined
Charles	88	119	206
St. Mary's	45	68	113
Harford	58	12	70
Worcester	31	28	59
Wicomico	49	3	52
Frederick	41	7	48
Washington	33	13	46
Anne Arundel	30	12	42
Cecil	36	3	39
Carroll	25	1	26
Statewide/Not Determined*	25	0	25
Dorchester	24	0	24
Talbot	13	1	14
Prince George's	7	3	10
Calvert	7	1	8
Queen Anne's	6	1	7
Somerset	5	0	5
Caroline	4	0	4
Garrett	2	1	3
Kent	2	0	2
OUT OF STATE	2	0	2
TOTAL	533	273	805

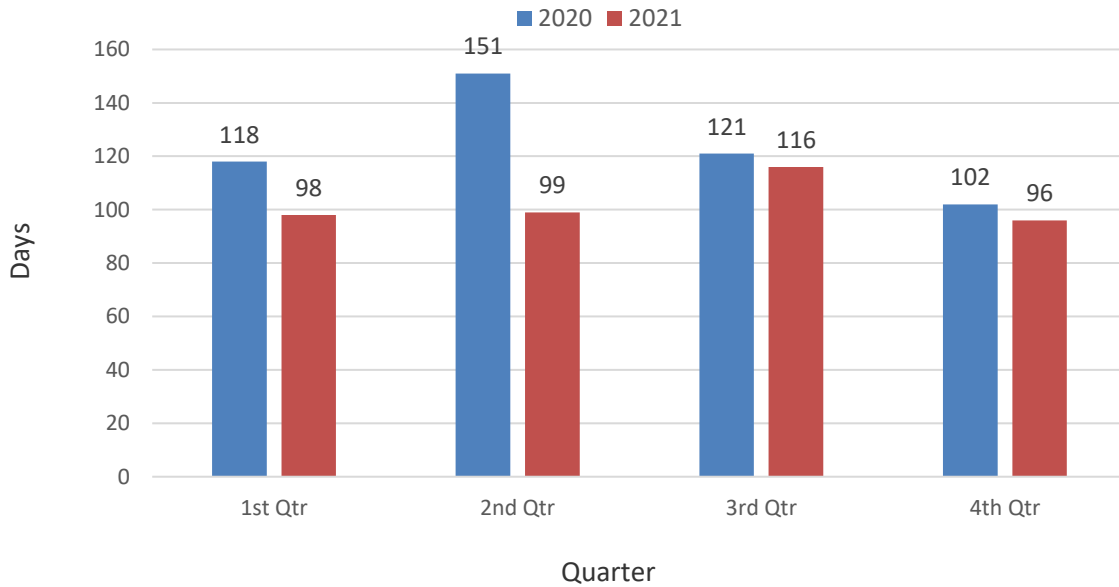




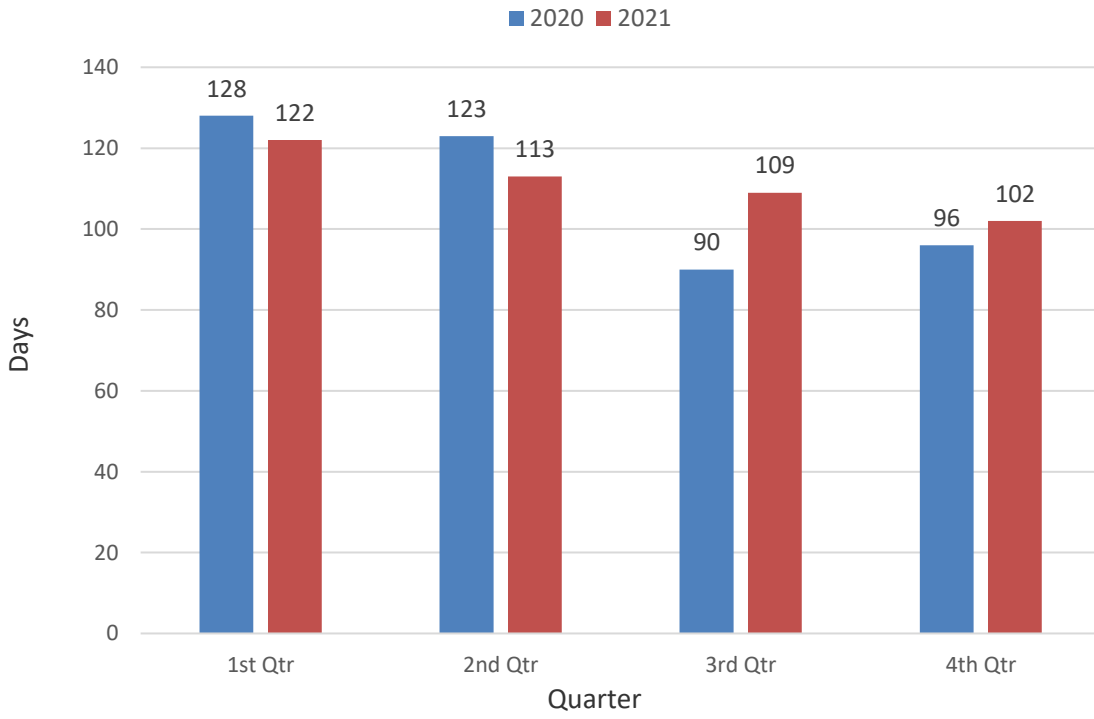
Biology Pending Caseload and Backlog per Quarter - Directly Outsourced



Biology Case Turn Around Time per Quarter - Submitted



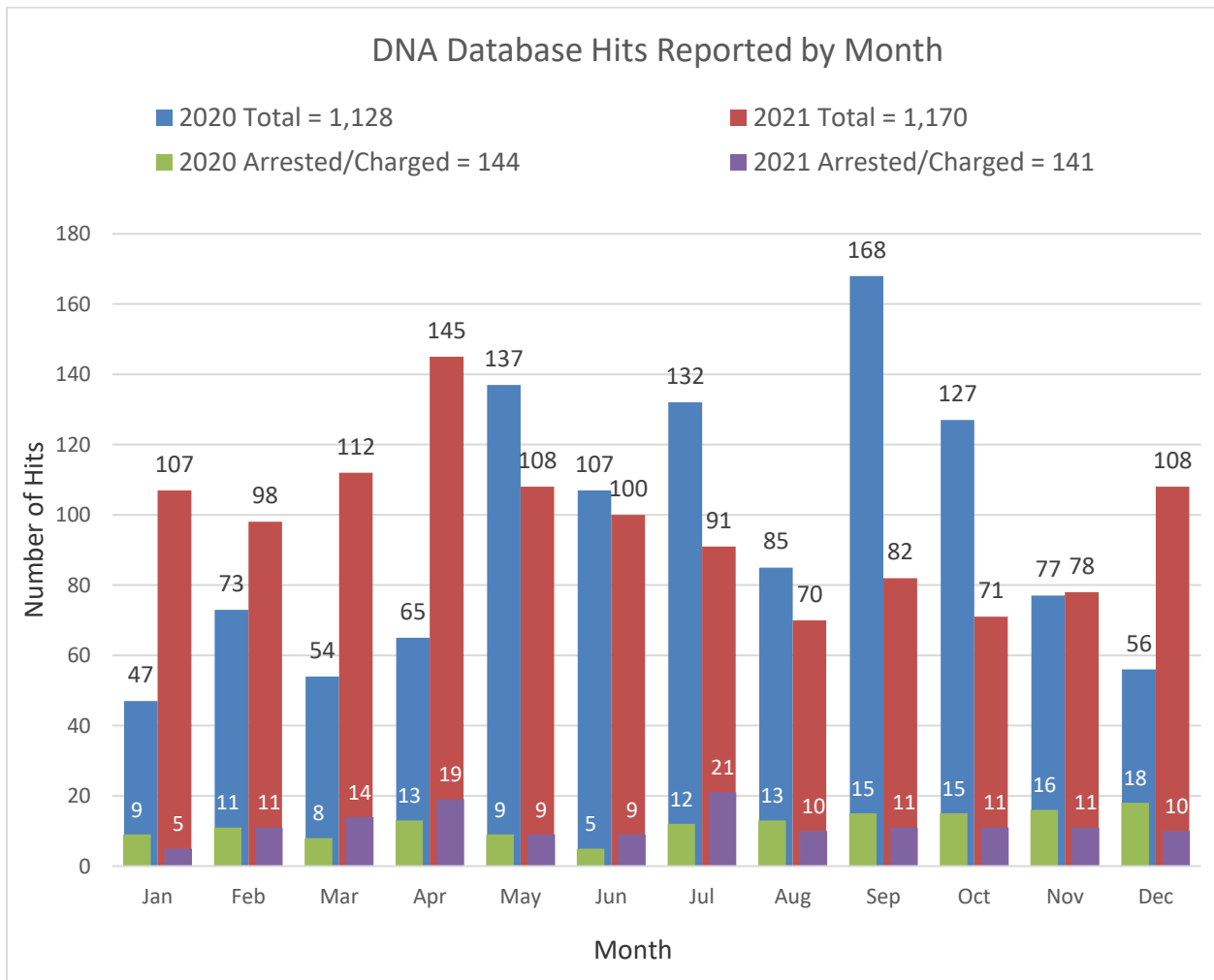
Biology Case Turn Around Time per Quarter - Directly Outsourced



BIOLOGY DATABASE UNIT

The Biology Database Unit is responsible for collecting DNA Database samples from individuals required under Maryland law to provide a sample. The law was expanded in 2009 to include individuals arrested and charged with crimes of violence, burglary, and attempts of these crimes. While the majority of samples are collected by Allied Agencies, the Biology Database Unit is responsible for ensuring that all samples that were collected are received by FSD. The Biology Database Unit is also responsible for processing the DNA database samples received (as per Maryland law), entering DNA profiles from DNA database samples into the database, searching the database for hits, and reporting database hits. The Biology Database Unit also oversees the entry of DNA profiles from casework evidence into the database.

In August 2021, the Maryland DNA Database released its 9000th hit. This hit was connected to an open 2017 St. Mary’s County Sheriff’s Office rape and armed robbery case still under investigation.



Note: Arrested/Charged DNA Database Hits do not include Convicted Offender DNA Database Hits

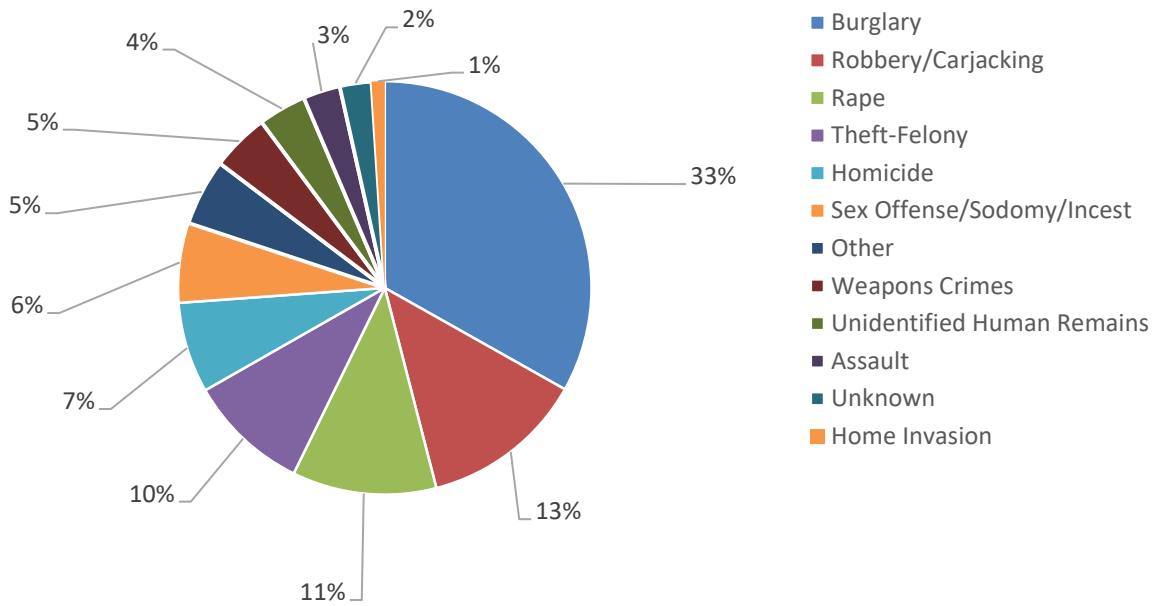
Maryland Case DNA Database Hits	
	Hits
Hits to Offenders/Arrestees (MD or National)	419
Hits to Cases (MD or National)	751
Total	1,170

Note: Maryland case hits include a Maryland case hitting to a Maryland offender/arrestee, a Maryland case hitting a National offender/arrestee, a Maryland case hitting a Maryland case, and a Maryland case hitting a National case. A Maryland case hitting a Maryland case is considered as two Maryland case hits (this is not consistent with how hits are reported for the National DNA Index System (NDIS)). A Maryland case hitting to a Maryland offender/arrestee is counted as both a Maryland offender/arrestee hit and a Maryland case hit.

Maryland Case DNA Database Hits by County	
County	Hits
Baltimore City	338
Anne Arundel	217
Montgomery	123
Charles	114
Prince George's	98
Baltimore	66
Wicomico	36
St. Mary's	34
Howard	31
Cecil	25
Frederick	24
Washington	19
Harford	12
Somerset	10
Carroll	6
Worcester	5
Calvert	4
Talbot	2
Queen Anne's	2
Caroline	2
Dorchester	1
Allegany	1
TOTAL	1,170

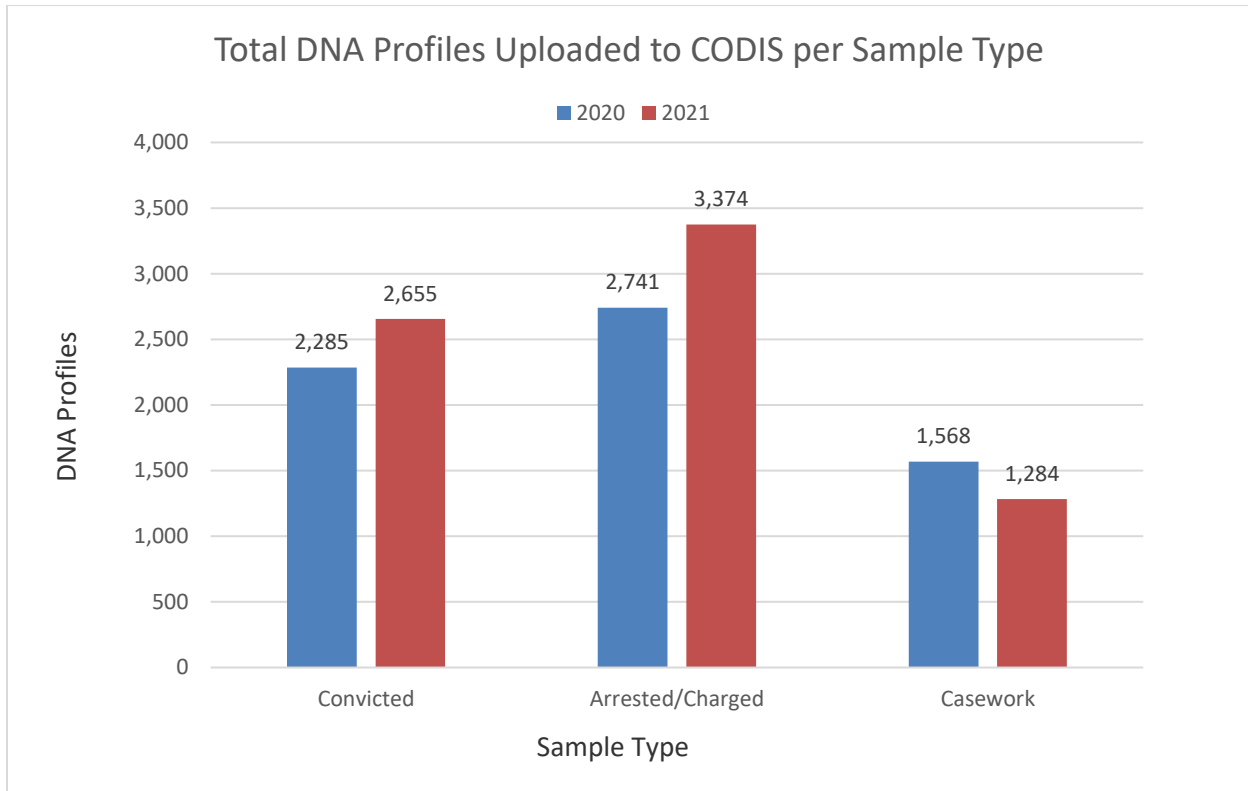
Maryland DNA Database Case Hits by Crime Year	
Crime Year	Hits
1977	1
1982	2
1986	7
1987	2
1988	5
1990	1
1991	1
1992	2
1993	2
1994	2
1996	2
1997	7
1998	2
1999	3
2000	5
2001	0
2002	1
2003	4
2004	6
2005	8
2006	6
2007	6
2008	6
2009	21
2010	18
2011	9
2012	18
2013	12
2014	20
2015	33
2016	71
2017	111
2018	90
2019	127
2020	384
2021	139
Unknown	36
Total	1,170

Maryland Case DNA Database Hits per Crime Type



Maryland Offender/Arrestee DNA Database Hits per Crime Jurisdiction*	
Jurisdiction	Number of Hits
Maryland	302
District of Columbia (Metro PD)	24
FBI	11
Virginia	11
ATF	6
Pennsylvania	5
Texas	4
West Virginia	3
Florida	2
North Carolina	2
California	2
Georgia	2
New York	1
Delaware	1
Illinois	1
Michigan	1
Oregon	1
South Carolina	1
Total	380

*Includes both Convicted Offender and Arrestee/Charged DNA Database Hits



BIOLOGY TECHNICAL UNIT

The Technical Unit of the Biology Section is responsible for the evaluation of new technologies to determine if they are appropriate to implement into the Section, validation of new technologies, training of personnel on new and current technologies, and quality assurance / quality control aspects of the Biology Section.

In 2021, the Technical Unit:

- Validated the ProFlex thermal cyclers for casework and database DNA amplifications
- Completed the performance check of the Leeds alternate light system and trained analysts on its use
- Received NDIS approval to use the GMID-X v1.6 software as a database sample Expert System
- Validated the Y-Screen procedure for streamlining analysis of sexual assault cases
- Signed off two newest scientists for DNA analysis
- Assisted a student with their research project concerning a Y-Screen survey of labs in the US
- Successfully prepared for and passed the external FBI QAS audit
- Performed continual trouble shooting for the Hamilton instrument used for database sample processing. This led to the company performing a full refresh in 2022.

NOTEWORTHY CASES

A female victim was found behind a shopping center in a creek bed. She was nude, with 29 stab wounds to her body. The suspect was unknown. Several items were located near her body and submitted for DNA analysis. Probative results on the first round of testing included an unknown male DNA profile from a stain on the shirt found at the scene, an unknown Y-STR profile from the collar of that same shirt and an unknown Y-STR profile from a stain on a rock at the scene. The Y-STR DNA profile on the rock came from a blood indicated stain where the autosomal DNA profile matched the victim. Multiple rounds of known standards from persons of interest were submitted to compare to these unknown profiles, all were excluded. The final submission included a known standard that matched the unknown profiles previously tested.

A bank robbery case was rushed due to public safety concerns. The suspect fled the scene. Using surveillance footage, investigators were able to follow the flight path and observe the suspect discarding clothing, gloves, a cigarette lighter and a facemask. This clothing and face mask were worn during the robbery. A suspect was developed once analysis began on the case, and that suspect's known sample was submitted for comparison. Many of the items produced a profile from the same unknown male, which excluded the suspect. This profile was entered into CODIS, which resulted in a hit to a Maryland convicted offender.

In a home invasion/attempted rape with an unknown suspect, a female victim hit the suspect with her cane, injuring him and causing him to bleed. Several items were submitted in this case, which included a window punch tool that was left behind by the suspect and a blanket with apparent blood stains. An unknown male profile was obtained from a blood indicated stain on the blanket and from the window punch tool. The profile from the blanket stain was entered into CODIS, resulting in a hit to a Maryland convicted offender.

TRACE EVIDENCE SECTION

The Trace Evidence Section (TES) consists of two units, the Trace Evidence Unit and the Questioned Documents Unit. The Trace Evidence Section consists of one Forensic Scientist Acting Supervisor, one Forensic Scientist Advanced, and two Forensic Scientist III's. The previous supervisor retired in 2021 and the position will be filled permanently in 2022.

Being the only laboratory in Maryland to provide trace and questioned document examinations, the TES works closely with our allied agencies so that the various types of examinations included in this discipline are available to the citizens of Maryland. For the trace sub-disciplines, that MSP-FSD has only one qualified examiner, the section relies on external experts for technical review of casework. In 2021, a second MSP examiner was approved to perform casework for several types of evidence in this section. TES has obtained some equipment from the former Baltimore County and Baltimore City Trace Labs and is in the process of validating this instrumentation for casework.

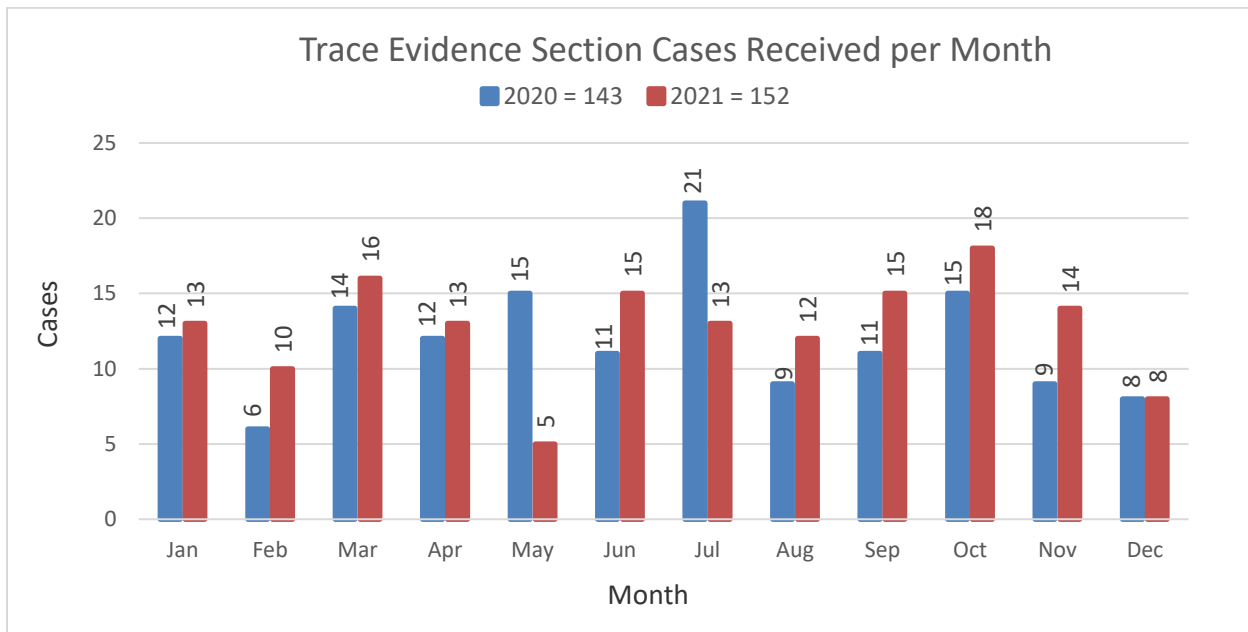
TRACE EVIDENCE UNIT

The Trace Evidence Unit performs analyses on evidence that either contain or produce unique characteristics that provides beneficial information to the investigators of the case. These include analyses in the areas of Fire Debris, Paint, Bank Dye Packs, Fibers/Textiles, Tapes and Adhesives, Hair to determine suitability for DNA analysis and miscellaneous liquids, powders and solids. These analyses may also include Fracture Matches, Lamp Examinations and Plastic Bag comparisons. The Unit is currently evaluating if any less common analyses should be discontinued and may dissolve those types of analyses offered in the future.

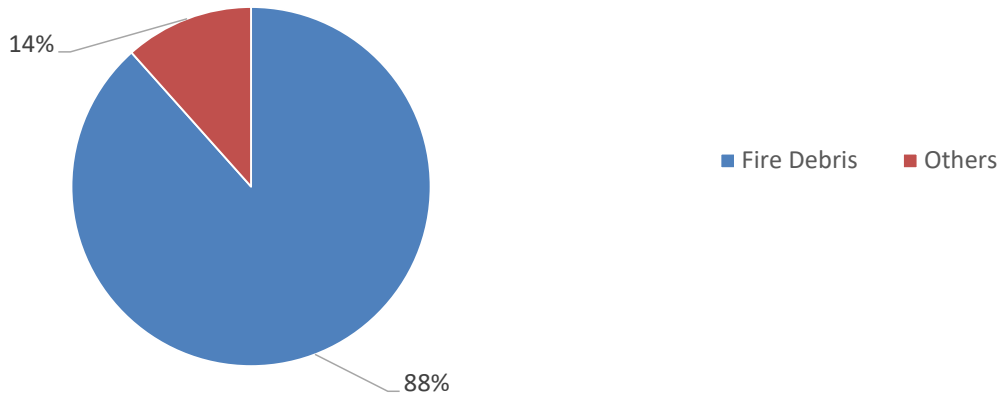
QUESTIONED DOCUMENTS UNIT

The Questioned Documents Unit performs analyses and comparisons of handwriting as well as hand-printed and machine-printed materials. This unit also performs examinations of obliterated and indented writing.

Historically, the MSP-FSD has had only a single Questioned Documents examiner who has collaborated with their counterpart at Baltimore City PD for technical reviews. In 2021, a second MSP-FSD examiner became fully qualified to perform Questioned Documents examinations and technical reviews. This second examiner allows the Unit to no longer rely on outside MSP-FSD technical reviewers.



Trace Evidence Section Cases Received by Type of Test



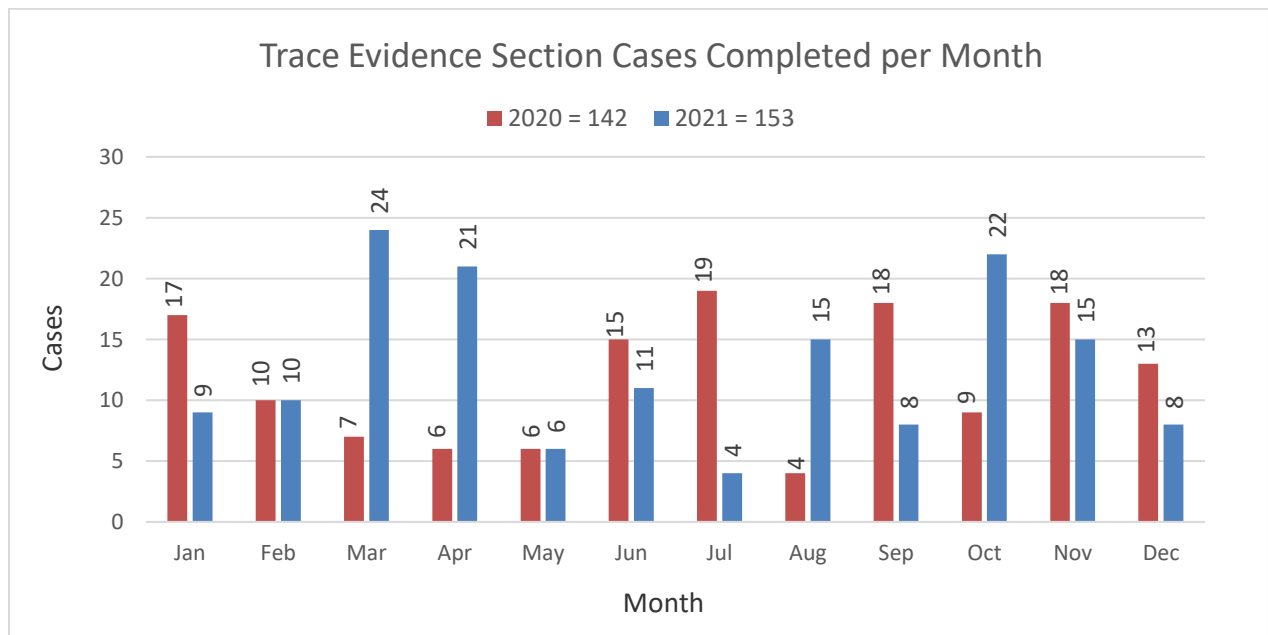
Trace Evidence Section Cases Received per MSP Installation

Installation	Counties Served	Submissions
MSP-CID/CED	Statewide	2
MSP-Homicide	Statewide	1
MSP-Centerville	Kent, Queen Anne's	1
MSP-DED/C3I	Allegany	1
MSP-Princess Anne	Somerset	1
	TOTAL	6

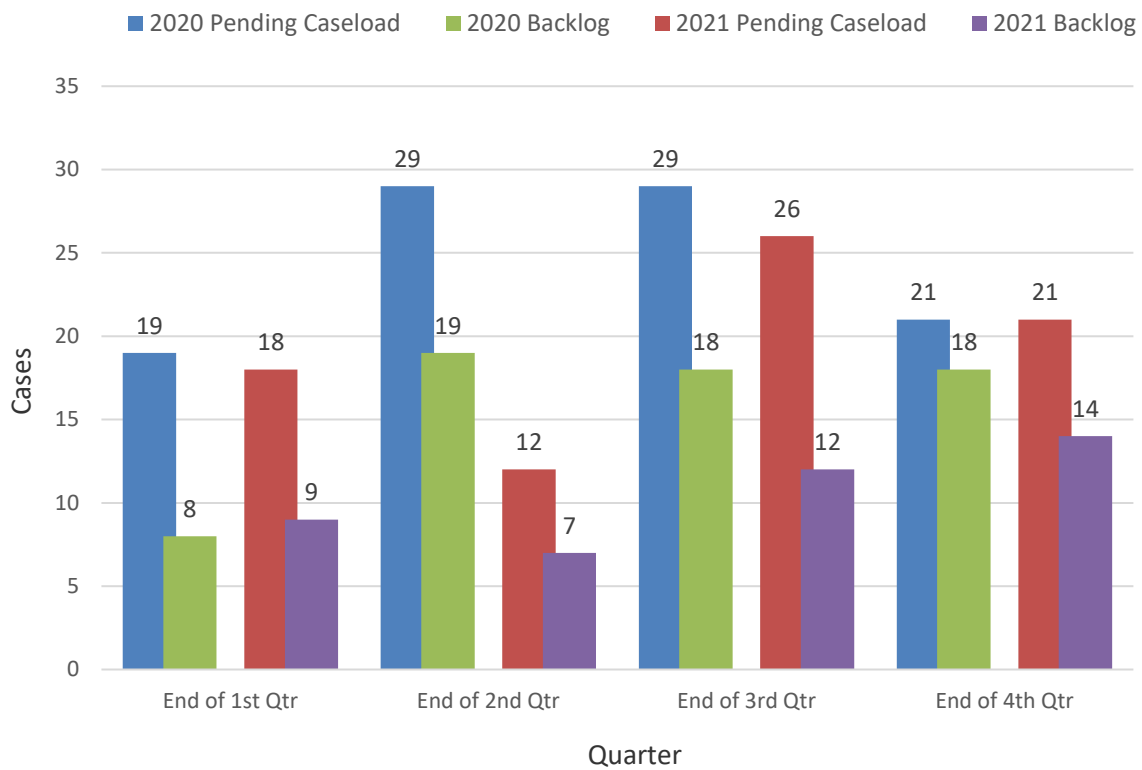
OSFM Cases Received by the Trace Evidence Section per OSFM Region

Region	Counties Served	Submissions
OSFM – Lower Shore	Dorchester, Somerset, Wicomico, Worcester	17
OSFM – North East	Harford, Cecil	13
OSFM – Southern	Calvert, Charles, St. Mary's	8
OSFM – Upper Shore	Caroline, Kent, Queen Anne's, Talbot	4
OSFM – Western	Allegany, Garrett, Washington	2
Montgomery County	Montgomery	2
	TOTAL	46

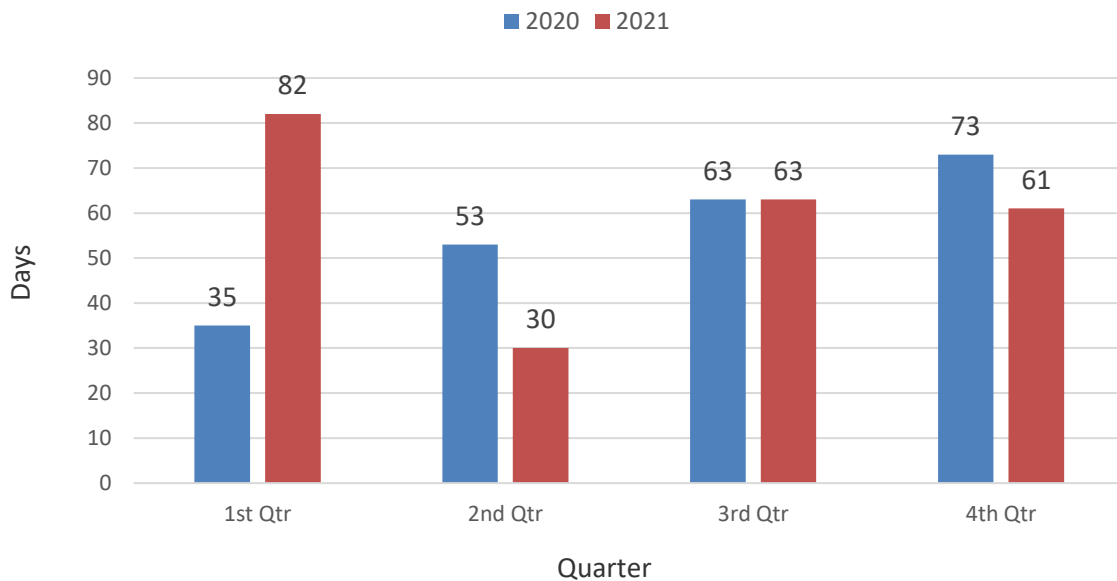
Allied Agency Cases Received by TES per County	
County	Submissions
Montgomery	28
Anne Arundel	23
Baltimore	16
Baltimore City	8
Howard	5
Frederick	4
Washington	4
Worcester	3
St. Mary's	3
Charles	1
Carroll	1
Cecil	1
Prince George's	1
Harford	1
Garrett	1
TOTAL	100



Trace Evidence Section Pending Caseload and Backlog per Quarter



Trace Evidence Section Case Turn Around Time per Quarter



NOTEWORTHY CASES

In May 2021, evidence pertaining to a fatal fire in Salisbury suspected of being arson was submitted to the Trace Evidence Section for Fire Debris analysis. The case was completed as a rush due to the seriousness of the offense. The Trace Evidence Section was able to provide results to investigators within a week, which allowed them to charge and arrest the suspect in the fatal fire.

In August of 2021, a letter, envelope and known writing of a suspect were submitted for analysis to the Questioned Documents Unit for a witness intimidation case from a local jail in Harford County. The letter and envelope were compared to the known writing and the Forensic Document Examiner was able to eliminate the suspect as being the writer.

EMPLOYEE RECOGNITION

Special Appointments

Jason Befus, Forensic Scientist Supervisor in the Biology Section, continued to serve as Executive Secretary of the OSAC Biological Methods Subcommittee. The ANSI/ASB Standard 110, Standards for Training in Forensic Serological Methods, First Edition, which Mr. Befus helped to write, was published on the OSAC Registry in August 2021.

Amber Burn, Forensic Scientist Manager for the Chemistry Section, served as a NIST Visiting Scientist for 2021.

Theresa DeAngelo, Quality Assurance/Safety Manager, served as the Chair for the Ethics Subdivision of the American Chemical Society's Division of Professional Relations in 2021. Ms. DeAngelo was also invited to serve on the Stevenson University's Forensic Advisory Board in March 2021.

Mitchell Dinterman, Crime Scene Section Manager, continued to serve on Loyola University's Forensic Studies Advisory Board in 2021.

Michelle Groves, Forensic Scientist Supervisor and CODIS State Administrator, continued to serve on the Maryland Sexual Assault Evidence Kit Policy and Funding Committee for 2021.

Bruce Heidebrecht, Forensic Scientist Supervisor in the Biology Section, continued to serve as the Vice-Chair of the Scientific Working Group on DNA Analysis Methods, Autosomal STR Interpretation Committee.

Daniel Katz, Director, continued to serve on the Maryland Sexual Assault Evidence Kit Policy and Funding Committee as well as the Maryland Forensic Laboratory Advisory Committee for 2021.

Dr. Wanda Kuperus, Deputy Director, continued to serve on Towson University's MSFS Academic Advisory Board and Loyola University's Forensic Studies Advisory Board for 2021.

Argi Magers, Forensic Scientist Manager for the Biology Section, continued to serve on the Maryland Sexual Assault Evidence Kit Policy and Funding Committee as well as the CJIS Advisory Policy Board Rapid DNA Task Force for 2021.

Catherine Savage, Forensic Scientist Supervisor in CDS-Pikesville, served as the President for the Mid-Atlantic Association of Forensic Scientists (MAAFS) for 2021 and continued to serve as the MAAFS American Board of Criminalistics Chair in 2021.

Certification Achievements

MSP-FSD provided the resources for several MSP-FSD staff members to achieve/maintain certification by nationally/internationally recognized certification boards for forensic science specialties. In 2021, MSP-FSD staff member Jeanine Hotchkin became certified by the International Association for Identification (IAI) in Latent Prints. In addition, Corrie Mellott, Stephanie Roberg and Lindsey Schultz were recertified by IAI in Latent Prints in 2021.

Promotions

Several MSP-FSD staff members were promoted in 2021. Julie Kempton and Holeatheia Rene were both promoted to Forensic Scientist Advanced. Ms. Rene also became the new Technical Leader for the Trace Evidence Unit. The following staff were promoted from Forensic Scientist II to Forensic Scientist III: Rebecca Levine and Catherine Rust. (CST) Rebecca Roher was promoted from CST I to CST II.

Publication of Scientific Papers

The FSD CDS Units participated in a joint project with NIST to evaluate the DART-TOF MS for screening of drug evidence. Furthermore, through the NIST collaboration, new targeted GC/MS methods were designed to improve the ability of the labs to confirm the presence of different dangerous substances in casework. FSD CDS staff in conjunction with NIST authored the following published studies in 2021:

[“A framework for the development of targeted gas chromatography mass spectrometry \(GC-MS\) methods: Synthetic cannabinoids”](#), Edward Sisco, Amber Burns, Arun Moorthy, JFS, June, 2021.

[“Development and evaluation of a synthetic cathinone targeted gas chromatography mass spectrometry \(GC-MS\) method”](#), Edward Sisco, Amber Burns, Arun Moorthy, JFS, June 2021.

[“Evaluation of an Internal Standard for Qualitative DART-MS Analysis of Seized Drugs”](#), Edward Sisco, Amber Burns, Elizabeth Schneider, Ikenna Ikpeama, Analytical Chemistry, July 2021.

[“Development and evaluation of a synthetic opioid targeted gas chromatography mass spectrometry \(GC-MS\) method”](#), JFS, August, 2021

[“Comparing two seized drug workflows for the analysis of synthetic cannabinoids, cathinones, and opioids”](#), Edward Sisco, Amber Burns, Elizabeth Schneider, Charles R. Miller IV, Laurel Bobka, JFS, Nov, 2021

Commander's Award for Outstanding Performance

Rebecca Roher, Crime Scene Technician

Director Katz awarded the 2021 Commander's Award to Ms. Rebecca Roher, MSP-FSD Crime Scene Technician assigned to the Eastern Region. In just three and a half years, Becca has made a substantial impact on the Forensic Sciences Division, both as a FICO and as a CST. She has gained a reputation as a very skilled worker who is dedicated to always providing the best quality product to our customers. The MSP Homicide Unit has repeatedly commended her this year for her crime scene processing. Furthermore, upon her own initiative, she has repeatedly offered her help to the short-staffed Central Receiving Unit by assisting with LIMS entries, inventory, and troubleshooting. Perhaps most importantly though, she does all of this with a positive attitude and an enthusiasm for the job that serves as an example for all of MSP-FSD.





END OF DOCUMENT