



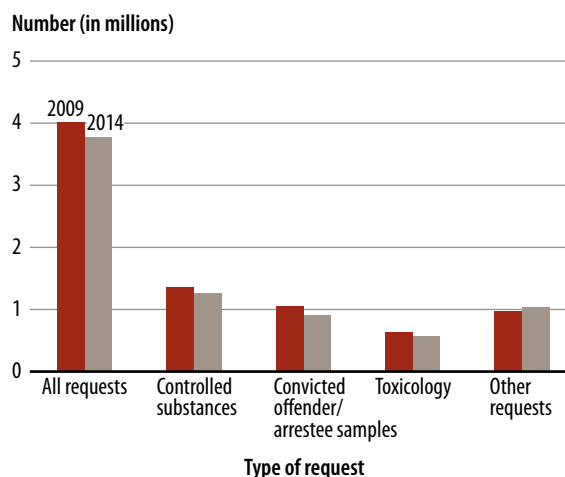
Publicly Funded Forensic Crime Laboratories: Resources and Services, 2014

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In 2014, the nation's 409 crime labs received an estimated 3.8 million requests for forensic services, down from the 4 million requests received in 2009 (figure 1). The analysis of controlled substances, biological samples collected from convicted offenders and arrestees for a DNA database, and toxicology accounted for about 3 in 4 requests submitted to crime labs in both 2009 and 2014.

This report summarizes data from the Bureau of Justice Statistics' (BJS) 2014 Census of Publicly Funded Forensic Crime Laboratories (CPFFCL) and provides comparisons with data from prior years. It focuses on the forensic services performed by crime labs across the nation and the resources devoted to completing the work. For information on accreditations, proficiency tests, and other quality assurances within publicly operated labs, see *Publicly Funded Forensic Crime Laboratories: Quality Assurance Practices, 2014* (NCJ 250152, BJS web, November 2016).

FIGURE 1
Number of requests for services received by publicly funded forensic crime labs, by type of request, 2009 and 2014



Note: See table 4 and appendix table 4 for estimates and standard errors.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2009 and 2014.

HIGHLIGHTS

- Publicly funded crime labs received an estimated 3.8 million forensic requests in 2014 and completed 3.6 million requests that year (which included requests received prior to 2014).
- At the end of 2014, U.S. crime labs had an estimated backlog of 570,100 requests for forensic services—a decline from 895,500 backlogged requests at yearend 2009.
- DNA database samples from convicted offenders and arrestees made up 39% of requests to federal labs, 36% of state labs, and less than 5% of requests to county and municipal labs.
- Thirty-eight percent of publicly funded crime labs outsourced one or more types of forensic services during 2014.
- Publicly funded crime labs employed 14,300 full-time personnel in 2014.
- The combined operating budgets for publicly funded crime labs in 2014 was \$1.7 billion.

Publicly funded forensic crime labs examine and report on physical evidence collected during criminal investigations for federal, state, and local jurisdictions. Crime labs perform a variety of forensic analyses and receive requests for these services from criminal justice agencies, such as police departments, prosecutors offices, courts, and correctional facilities. The ability of a lab to handle its forensic workload depends on many factors, including the complexity of the procedures and the availability of analysts and other resources.

Most crime labs provided forensic services in multiple disciplines

Publicly funded crime labs provided an average of five different forensic functions in 2014 (not shown) (See *Methodology* for definitions of forensic functions.) Since 2002, crime labs most commonly performed analyses of controlled substances. Eighty-one percent of crime labs handled the identification of illegal drugs and other controlled substances in 2014 (table 1). Among crime labs that processed controlled substances, 9 in 10 analyzed synthetic cannabinoids (e.g., Spice or K2) and synthetic cathinones (e.g., bath salts) in 2014 (not shown).

Sixty-two percent of crime labs analyzed biological samples, such as blood and saliva, during 2014. Sixty-one percent analyzed forensic biology collected during criminal casework from crime scenes, victims, or suspects, and 16% analyzed biological samples collected from convicted offenders and arrestees for inclusion in a local, state, or national DNA database (not shown). Crime labs enter DNA profiles from criminal casework, convicted offenders, and arrestees into the FBI's Combined DNA Index System (CODIS). CODIS software allows crime labs to compare biological evidence collected from criminal investigations to DNA profiles stored in a database for the purpose of linking serial crimes together and identifying suspects. All 50 states, the District of Columbia, and the federal government require offenders convicted of certain crimes to provide DNA samples. Some jurisdictions

must also collect DNA from certain arrestees. In 2014, state labs (25%) were more likely than county (9%) and municipal (4%) labs to analyze biological samples collected from convicted offenders and arrestees for a DNA database (table 2).

Among crime labs that handled forensic biology requests in 2014, 15% conducted familial searching of a DNA database for the purpose of identifying close biological relatives to an unknown DNA profile collected from a crime scene (not shown). Three percent of crime labs that performed forensic biology services in 2014 reported using a Rapid DNA instrument, which provided a fully automated method to develop a DNA profile for a database.

The majority (63%) of crime labs analyzed latent (or hidden) fingerprints recovered from crime scenes. About 8 in 10 (82%) of these labs used the FBI's Integrated Automated Fingerprint Identification System to perform latent fingerprint comparisons in 2014 (not shown). Overall, nearly half (48%) of crime labs examined trace evidence in 2014. Among these crime labs, 70% performed fire debris analysis, 44% conducted hair examinations, and 38% analyzed gunshot residue (table 3).

TABLE 1
Functions performed by publicly funded forensic crime labs, 2002, 2005, 2009, and 2014

Forensic function	2002	2005	2009	2014
Controlled substances	89%	89%	81%	81%
Crime scene	60	39	52	52
Digital evidence	12	15	19	22
Firearms/toolmarks	60	57	54	55
Forensic biology*	65	61	59	62
Impressions	...	50	44	40
Latent prints	59	57	60	63
Questioned documents	24	20	16	14
Toxicology	46	50	42	43
Trace evidence	56	54	50	48
Number of labs	351	389	411	409

Note: See appendix table 1 for standard errors.

...Not available.

*Includes forensic biology from either criminal casework or convicted offenders and arrestees for a DNA database.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2002, 2005, 2009, and 2014.

TABLE 2
Functions performed by publicly funded forensic crime labs, by type of jurisdiction, 2014

Forensic function	Federal	State	County	Municipal
Controlled substances	55%	87%	86%	71%
Crime scene	42	48	51	75
Digital evidence	54	10	20	36
Firearms/toolmarks	27	58	60	58
Forensic biology casework	27	71	68	42
Forensic biology from convicted offender/arrestee samples	12	25	9	4
Impressions	26	43	46	35
Latent prints	67	53	62	88
Questioned documents	34	12	12	14
Toxicology	9	48	52	36
Trace evidence	57	53	50	29
Number of labs	39	193	98	79

Note: See appendix table 2 for standard errors.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

TABLE 3
Percent of publicly funded forensic crime labs that examined trace evidence, by type of examination, 2009 and 2014

Trace evidence	2009	2014
Explosives analysis	32%	32%
Fiber examination	60	52
Fire debris analysis	72	70
Gunshot residue	36	38
Hair examination	50	44
Paint analysis	59	52
Unknown chemical	62	63
Number of labs that examined trace evidence	204	197

Note: Percentages based on labs that examined trace evidence. See appendix table 3 for standard errors.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2009 and 2014.

Crime labs received nearly 4 million requests for forensic services in 2014

Crime labs play a critical role in the justice system, analyzing millions of pieces of evidence from criminal investigations each year. A criminal case may generate more than one type of request to process or analyze evidence. For example, a crime lab may receive fingerprints and DNA evidence from the same case, which requires two separate requests for analysis by different sections of the lab.

The CPFFCL asked labs to provide the total number of requests received and completed within their facility for each forensic service. Completed requests included those received prior to and during 2014. Submitting agencies sometimes canceled requests before labs completed them because services were no longer needed (e.g., law enforcement solved or closed the case). The CPFFCL defined a pending forensic request as backlogged if it was not completed within 30 days.

In 2014, the nation's 409 crime labs received an estimated 3.8 million new requests for forensic services and completed 3.6 million requests (table 4). About three-quarters of requests received in 2014 were for either analysis of controlled substances (33%), biological samples collected from convicted offenders and arrestees for a database of DNA profiles (24%), and toxicology (15%). Forensic biology casework accounted for a larger proportion of the overall number of requests received in 2014 (9%) than in 2009 (6%).

More than half of all requests for forensic services were sent to state labs

In 2014, more than half (2.2 million) of the estimated 3.8 million requests for forensic services received by publicly funded crime labs nationwide were submitted to state labs (table 5). Labs serving county and municipal jurisdictions received 1.4 million forensic requests in 2014.

TABLE 5
Percent of requests for services received by publicly funded forensic crime labs, by type of jurisdiction, 2014

Type of request	Federal	State	County	Municipal
All requests	100%	100%	100%	100%
Controlled substances	27	33	40	31
Crime scene	--	--	9	17
Digital evidence	2	--	--	3
Firearms/toolmarks	--	3	5	10
Forensic biology casework	2	9	9	13
Forensic biology from convicted offender/arrestee samples	39	36	1	4
Impressions	--	--	--	--
Latent prints	24	4	10	12
Questioned documents	1	--	--	--
Toxicology	4	14	25	9
Trace evidence	1	1	2	1
Total requests received*	254,000	2,164,000	775,000	589,000

Note: Detail does not sum to total due to rounding. See appendix table 5 for standard errors.

--Less than 0.5%.

*Rounded to the nearest thousand.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

TABLE 4
Requests for services received and completed by publicly funded forensic crime labs, by type of request, 2009 and 2014

Type of request	Received				Completed			
	2009		2014		2009		2014	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All requests	4,020,000	100%	3,783,000	100%	3,830,000	100%	3,646,000	100%
Controlled substances	1,358,000	34	1,265,000	33	1,261,000	33	1,197,000	33
Crime scene	188,000	5	171,000	5	188,000	5	170,000	5
Digital evidence	33,000	1	25,000	1	33,000	1	24,000	1
Firearms/toolmarks	147,000	4	154,000	4	132,000	3	142,000	4
Forensic biology casework	260,000	6	333,000	9	239,000	6	296,000	8
Forensic biology from convicted offender/arrestee samples	1,053,000	26	908,000	24	1,027,000	27	904,000	25
Impressions	11,000	--	7,000	--	11,000	--	7,000	--
Latent prints	270,000	7	295,000	8	274,000	7	301,000	8
Questioned documents	13,000	--	9,000	--	12,000	--	9,000	--
Toxicology	629,000	16	566,000	15	606,000	16	554,000	15
Trace evidence	58,000	1	49,000	1	47,000	1	41,000	1

Note: Totals exclude requests outsourced to other labs. The number of requests completed in 2009 and 2014 exceeded the number of requests received during that year for certain disciplines because the completed requests included some requests received prior to that year. Numbers are rounded to the nearest thousand. Detail does not sum to total due to rounding. See appendix table 4 for standard errors.

--Less than 0.5%.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2009 and 2014.

The composition of the forensic work handled by U.S. crime labs during 2014 varied among those serving federal, state, county, and municipal jurisdictions. Toxicology requests accounted for 25% of the requests received by county labs, compared to less than 10% received by federal and municipal labs. In comparison, biological samples collected from convicted offenders and arrestees for a database of DNA profiles comprised 39% of requests made to federal labs and 36% of requests to state labs, compared to less than 5% of requests to county (1%) and municipal (4%) labs. Crime scene investigations accounted for 17% of requests made to municipal labs, compared to 9% of requests to county labs and less than 1% of requests to state and federal labs.

Publicly funded crime labs had a backlog of 570,100 requests for forensic services at yearend 2014, down from 895,500 backlogged requests at yearend 2009 (table 6). Biological samples collected from convicted offenders or arrestees for a DNA database that were backlogged decreased from 502,500 at yearend 2009 to 64,800 at yearend 2014. The FBI crime lab reported the majority of these backlogged requests in 2009 because of an increase in the collection of DNA samples as mandated by federal legislation. Since 2009, the FBI crime lab has reduced its backlog of requests for DNA samples taken from convicted offenders and arrestees. The overall reduction in DNA samples led to a decline in the overall number of backlogged requests within U.S. crime labs observed at yearend 2009. The DNA samples collected from convicted offenders and arrestees for a database of DNA profiles made up 11% of all backlogged requests at yearend 2014. Forensic biology casework samples accounted for 19% of the overall backlog at yearend 2014.

The CPFFCL asked labs about requests to process forensic biology from sexual assault cases. Not all labs that handled forensic biology requests were able to separately report how

TABLE 6
Requests for services backlogged in publicly funded forensic crime labs, by type of request, yearend 2009 and 2014

Type of request	2009		2014	
	Number	Percent	Number	Percent
All requests	895,500	100%	570,100	100%
Controlled substances	139,200	16	213,700	37
Digital evidence	1,600	--	7,800	1
Firearms/toolmarks	48,300	5	51,100	9
Forensic biology casework	103,500	12	107,800	19
Forensic biology from convicted offender/arrestee samples	502,500	56	64,800	11
Impressions	6,100	1	2,400	--
Latent prints	49,500	6	69,400	12
Questioned documents	2,600	--	800	--
Toxicology	27,600	3	40,000	7
Trace evidence	14,700	2	12,200	2

Note: A request is classified as backlogged if it was not examined and reported to the submitting agency within 30 days of submission. Totals exclude requests outsourced to other labs. Numbers are rounded to the nearest hundred. Detail does not sum to total due to rounding. See appendix table 6 for standard errors.

--Less than 0.5%.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2009 and 2014.

many received, completed, or backlogged requests were from sexual assault cases. In the 2014 CPFFCL, 135 labs reported receiving an estimated 45,000 requests to process sexual assault evidence during 2014 and completed about 43,000 of these types of requests that year (not shown). The requests completed in 2014 included evidence collected before and during 2014. At yearend 2014, 128 crime labs reported approximately 9,000 backlogged requests to process sexual assault evidence.

About 4 in 10 labs outsourced some forensic work in 2014

To address the demands for forensic services, some publicly funded crime labs outsourced work to private labs or other public facilities. Thirty-eight percent of publicly funded crime labs outsourced one or more types of forensic services in 2014, up from 28% in 2009 (table 7). During 2014, municipal labs (60%) were more likely than federal (28%) and state (23%) labs to outsource requests for services. Publicly funded crime labs that outsourced requests to private or other public labs in 2014 were most likely to outsource toxicology analysis (68%) and forensic biology casework (55%) (table 8).

TABLE 7
Percent of publicly funded forensic crime labs that outsourced requests for services, by type of jurisdiction, 2002, 2005, 2009, and 2014

Type of jurisdiction	2002	2005*	2009	2014
All labs	40%	47%	28%	38%
Federal	17	^	20	28
State	31	39	23	23
County	61	68	40	54
Municipal	64	57	32	60
Number of labs	351	389	411	409

Note: See appendix table 7 for standard errors.

^Too few cases to provide a reliable estimate.

*Total includes federal labs, not shown separately.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2002, 2005, 2009, and 2014.

TABLE 8
Percent of publicly funded crime labs that outsourced requests for services, by type of service, 2014

Type of request	Percent
Controlled substances	19%
Digital evidence	15
Firearms/toolmarks	25
Forensic biology casework	55
Forensic biology from convicted offender/arrestee samples	37
Impressions	16
Latent prints	10
Questioned documents	24
Toxicology	68
Trace evidence	37
Number of labs that outsourced requests	155

Note: Percentages based on labs that performed the forensic service and outsourced requests. See appendix table 8 for standard errors.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

More than 14,000 full-time employees worked in crime labs in 2014

Overall, the combined operating budgets for the 409 crime labs in 2014 was \$1.7 billion (table 9). Labs serving state jurisdictions accounted for nearly half (\$796 million) of the overall budget in 2014. Labs with 25 or more employees accounted for more than 80% of the total combined budget nationwide. Typical expenditures among crime labs include personnel (salaries and fringe benefits), supplies, equipment, and construction costs. In addition to their budgets, crime labs received funding from other sources, such as grants and fees. In 2014, about 4 in 10 crime labs charged the submitting agencies fees for completing the forensic services (not shown).

TABLE 9
Annual operating budget for publicly funded forensic crime labs, by type of jurisdiction and number of full-time employees, 2014

	Number of labs	Annual operating budget (in millions)
All labs	409	\$1,680
Type of jurisdiction		
Federal	39	\$302
State	193	796
County	98	306
Municipal	79	277
Number of full-time employees*		
100 or more	27	\$568
50–99	51	416
25–49	90	378
10–24	134	262
9 or fewer	107	56

Note: Numbers are rounded to the nearest million. Detail does not sum to total due to rounding. See appendix table 9 for standard errors.

*Includes both full-time and part-time employees, with a weight of 0.5 assigned to part-time employees.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

Publicly funded crime labs employed 14,300 full-time personnel in 2014, an increase from 11,000 in the 351 labs operating in 2002 (table 10). Nearly half (6,600) of these employees in 2014 worked in state-operated labs. In 2014, the majority (59%) of crime labs had 24 or fewer employees (not shown). The mean number of full-time lab employees was 35, and the median number was 20 employees per lab. Twenty-six percent of federal labs, 19% of state labs, and 18% of county and municipal labs had 100 or more employees in 2014. In 2014, more than half (60%) of crime lab employees were analysts or examiners who prepared and analyzed evidence and reported on their conclusions (table 11). The majority of analysts were intermediate- or senior-level employees. Municipal and county labs were more likely than state and federal labs to employ crime scene technicians, who record and collect evidence from crime scenes and submit that evidence to a crime lab for analysis.

TABLE 10
Number of full-time employees in publicly funded forensic crime labs, by type of jurisdiction, 2002, 2005, 2009, and 2014

Type of jurisdiction	2002	2005	2009	2014
All labs	11,000	12,200	13,100	14,300
Federal	2,000	2,400	2,300	2,100
State	5,300	5,600	6,100	6,600
County	1,900	2,200	2,500	2,900
Municipal	1,900	2,000	2,200	2,700
Number of labs	351	389	411	409

Note: Estimates include both full-time and part-time employees, with a weight of 0.5 assigned to part-time employees. Numbers are rounded to nearest hundred. Detail does not sum to total due to rounding. See appendix table 10 for standard errors.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2002, 2005, 2009, and 2014.

TABLE 11
Positions of full-time employees in publicly funded forensic crime labs, by type of jurisdiction, 2014

Type of position	Total	Federal	State	County	Municipal
All full-time employees	100%	100%	100%	100%	100%
Analyst/examiner	60%	52%	66%	56%	55%
Entry level	12	2	16	11	11
Intermediate/senior level	48	51	50	45	44
Technical support	7%	13%	8%	7%	4%
Manager	13%	16%	12%	12%	12%
Clerical support	9%	10%	8%	8%	10%
Crime scene technician	6%	--	1%	12%	15%
Other*	5%	15%	3%	4%	2%

Note: Detail does not sum to total due to rounding. See appendix table 11 for standard errors.

--Less than 0.5%.

*Includes other positions in labs, such as building maintenance, photographers, and polygraph examiners.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

Methodology

Overview

The Bureau of Justice Statistics (BJS) periodically conducts the Census of Publicly Funded Forensic Crime Laboratories (CPFFCL) to collect data on crime lab services, budgets, staffing, workload, outsourcing, and quality assurance practices. The data collection is directed to federal, state, county, and municipal crime labs that are funded solely by the government or whose parent organization is a government agency. The CPFFCL includes agencies that employ one or more full-time scientists (1) with a minimum of a bachelor's degree in chemistry, physics, biology, criminalistics, or a closely related forensic science field, and (2) whose principal function is examining physical evidence in criminal matters and providing reports and testimony to courts of law regarding such evidence.

About half of the crime labs included in the CPFFCL were part of a multi-lab system (two or more physically separate facilities that were overseen by a single organization). The CPFFCL attempted to collect information from each lab in multi-lab systems. The CPFFCL did not include operations that engage exclusively in evidence collection and documentation, such as fingerprint recovery and development, crime scene response, and photography. In addition, the census did not collect data on the forensic services performed by police identification units outside of the crime lab, and it also did not include privately operated crime labs.

Data collection and response rate

BJS conducted its fourth CPFFCL to collect detailed information on the workload and operations of the nation's 409 crime labs during 2014 and to examine changes since the previous censuses conducted in 2002, 2005, and 2009. The CPFFCL population frame and questionnaire were developed by BJS and the Urban Institute with input from the American Society of Crime Laboratory Directors and researchers and practitioners in the forensic science field. BJS pretested the CPFFCL questionnaire on a small sample of labs representing facilities of different sizes and governmental affiliations.

In April 2015, the Urban Institute initiated the data collection on behalf of BJS through a web-based data collection interface and mailed questionnaire. Follow-up emails and phone calls were made to nonrespondents and labs that submitted incomplete questionnaires. Of the 409 eligible crime labs that received the questionnaire, 360 (88%) provided responses to at least some of the items (table 12).^{*} Of the 360 respondents, 351 (98%) completed the questionnaire through the automated web system. The 2014 CPFFCL response rate ranged from 72% for federal labs to 94% for state labs.

^{*}Of the 351 crime labs in the 2002 CPFFCL, 306 (87%) provided responses to the 2002 questionnaire. Of the 389 crime labs in the 2005 CPFFCL, 351 (90%) provided responses to the questionnaire. Of the 411 crime labs surveyed in the 2009 CPFFCL, 397 (97%) provided responses to that data collection.

Methods for producing national estimates

To generate national estimates for this report, BJS used several imputation methods to account for missing data among labs that did not respond to either the entire CPFFCL questionnaire (unit-level response) or certain questions (item-level response). Because the CPFFCL data collection was a census with no sampling, each crime lab was initially self-representing and had a design weight of 1. BJS developed weighting class adjustments for the 2002, 2005, 2009, and 2014 CPFFCL data to compensate for unit nonresponse and reduce nonresponse bias. Sixteen subpopulations of labs were stratified into groups by crossing four categories of jurisdiction (federal, state, county, and municipal) and four categories of staff size (9 or fewer, 10 to 24, 25 to 49, and 50 or more). A seventeenth stratum was assigned to the FBI crime laboratory, given its unique size of more than 500 employees. Within each of the subgroups, statistical weights were applied to the data from the crime labs that responded to the census to allow their responses to represent the labs that did not respond.

In addition to adjusting for unit nonresponse through the use of weighting class adjustments, BJS also imputed for item nonresponse. BJS measured staff size by full-time equivalent employees and included both full-time and part-time employees with part-time employees weighted by 0.5. For the labs that responded to the CPFFCL but did not report employee data, imputations were made for the count- and percentage-based measures using their employee data reported in the other CPFFCL data collections. If that information was not available, BJS used the median staff size in 2014 among labs of similar jurisdiction. Among the 360 labs that responded to the 2014 CPFFCL, 339 reported their 2014 employee total. For the 22 labs that did not report their 2014 staff total, the previous reported staff total was used. Estimates for the 2002, 2005, and 2009 CPFFCL were generated using similar imputation methods. When employee totals from other CPFFCL data collections were not available to account for item nonresponse, the median staff size of labs of similar jurisdiction was used.

TABLE 12
Publicly funded forensic crime labs, by type of jurisdiction, 2014

Type of jurisdiction	All labs in CPFFCL	Labs responding to CPFFCL	Response rate
All labs	409	360	88%
Federal	39	28	72
State	193	182	94
County	98	87	89
Municipal	79	63	80

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories (CPFFCL), 2014.

When a crime lab responded to the CPFFCL questionnaire but was unable to provide budget data, imputations were made for the count- and percentage-based measures using their budget data from the other CPFFCL data collections. If that information was unavailable, the lab's staff size was multiplied by the median ratio of budgets per employee for labs of similar jurisdiction and size. Among the 360 labs that responded to the 2014 CPFFCL, 331 reported their 2014 budget. Twenty-four labs did not report their 2014 budget and the previous reported budget was used. Five labs did not report their 2014 or previous budget and the median ratio of budgets per employee was used.

When a crime lab responded to the CPFFCL questionnaire but did not provide data on the number and types of requests received, completed, and backlogged, data imputations were made for the count- and percentage-based measures within each category of a forensic function they performed that year. Depending on the availability of data, imputations for requests received and completed were based on either information provided in the other CPFFCL data collections or on the median number of requests among labs of similar size and jurisdiction. Depending on the availability of information, imputations for backlogs were made using the number of pending requests in 2014, the number of backlogged requests reported in the other CPFFCL data collections, or the median backlog among labs of similar size and jurisdiction.

When a crime lab responded to the CPFFCL questionnaire but could not provide data on outsourcing requests for services, BJS used sequential hot-deck imputation procedures to impute the missing responses for 2002, 2005, 2009, and 2014. Sequential hot-deck imputation replaces a missing value with a response provided by a crime lab with similar characteristics. Data on outsourcing were reported by 93% of the 360 labs responding to the 2014 CPFFCL, 98% of the 397 labs responding to the 2009 CPFFCL, 76% of the 351 labs responding to the 2005 CPFFCL, and 88% of the 306 labs responding to the 2002 CPFFCL. BJS grouped both respondents and nonrespondents into the strata previously described and then sorted within each stratum by the number of forensic functions each lab performed. Once the list of crime labs was sorted within strata, the respondents provided donor responses for nonrespondents using the nearest neighbor method. This method identifies and replaces a missing value with the response donated from the lab listed immediately prior to the lab with missing data. If the donor listed immediately prior to the lab with missing data also had a missing response, BJS imputed a response from a donor listed immediately after the lab with the missing value. BJS repeated the process of going backwards and forwards to obtain donated responses from neighbors until all missing values were imputed.

Comparability to prior reports

Except for count-based estimates for staff size, budget, and workload, data presented in the 2002, 2005, and 2009 CPFFCL reports were not adjusted for unit or item nonresponse. Estimates presented in this report may be different from previously presented data because some adjustments for unit or item nonresponse were made. For example, *Census of Publicly Funded Forensic Crime Laboratories, 2009* (NCJ 238252, BJS web, August 2012) reported that 31% of municipal crime labs outsourced forensic services in 2009. However, this publication reported that 32% of municipal crime labs outsourced forensic services in 2009. In the August 2012 report, data on outsourcing were based on 389 crime labs (of the 397 labs that responded to the 2009 CPFFCL). In this report, 2009 data have been adjusted to account for nonresponse and represent all 411 crime labs in the 2009 CPFFCL. In addition to the revisions to the workload estimates based on the new imputation procedures, the overall number of requests received, completed, and backlogged in 2009 for forensic biology casework reported in *Census of Publicly Funded Forensic Crime Laboratories, 2009* were adjusted because of a revision in the information collected from the FBI crime lab.

Conducting tests of statistical significance

BJS conducted tests to determine whether differences in the estimates were statistically significant. All differences discussed in this report are statistically significant at or above the 95% confidence interval. Standard errors were generated using SPSS statistical software that estimates variance for complex survey designs. The standard errors for the tables and figures are presented in appendix tables. These standard error estimates may be used to construct confidence intervals around percentages in this report. For example, the 95% confidence interval around the percentage of crime labs that outsourced requests for services in 2014 is $38\% \pm 1.96 \times 0.9\%$ (or approximately 1.8%), where 38% is the point estimate in table 6 and 0.9% is the standard error in appendix table 7.

The standard errors may also be used to test the significance of the difference between two statistics by pooling the standard errors of the two estimates. For example, the standard error of the difference between state and county crime labs that outsourced requests for services in 2014 is 3.9% (or the square root of the sum of the squared standard errors for each group). The 95% confidence interval around the difference is $1.96 \times 2\%$ (or 3.9%). Because the observed difference of 31% (54% minus 23%) is greater than 3.9%, the difference is considered statistically significant.

Pilot study of digital evidence laboratories

BJS expanded the 2014 CPFFCL from previous data collections to include a pilot study of agencies that solely analyze digital and multimedia evidence in support of criminal investigations and prosecutions. Law enforcement agencies obtain digital evidence in various formats, including audio, video, and graphical images from computers, cell phones, cameras, and other electronic devices. The traditional CPFFCL definition of a crime lab limited the information collected about digital evidence. Some crime labs only handle this type of evidence and employ forensic experts with training in computer science or information technology as opposed to natural sciences. The expanded scope of the 2014 CPFFCL included additional questions related to the analysis of digital evidence. BJS will use the results of this pilot study to inform future data collections directed toward criminal justice agencies that process forensic evidence.

Definitions

Analyst/examiner—an investigator who inspects, analyzes, and interprets physical evidence, writes reports, and delivers testimony in court about the evidence.

Backlogged request—a request that has been submitted to a specialized area of the crime laboratory and is not completed within 30 days.

Controlled substance analysis—the identification of drugs and other substances whose possession or use, in either legal or illicit dosages, is restricted by the government.

Crime scene analysis—the identification, documentation, collection, and interpretation of physical evidence at a location external to a laboratory facility and where a suspected crime has occurred.

Digital evidence—the investigation of various types of analog or multimedia evidence, such as the recovery, extraction, and analysis of computer files, film, tape, and magnetic and optical media.

Firearms analysis—the examination and comparison of evidence resulting from the discharge or use of firearms.

Forensic biology—includes the discipline areas of biology screening and DNA analysis. Biology screening is the examination of evidence for the presence of stains from blood, saliva and other physiological fluids. DNA analysis is the process used to develop a DNA profile from convicted offenders or arrestees as required by federal and state laws or casework samples collected from crime scenes, victims, or suspects.

Impressions analysis—the identification, documentation, collection, and interpretation of two- and three-dimensional impressions and imprints found at crime scenes (including shoes and tires).

Latent prints analysis—the development or comparison of finger or palm print impressions.

Municipal—cities, towns, villages, and boroughs.

Questioned documents analysis—the examination of printed, typed, or written material for the purpose of identifying the source or determining alterations, or other means of gaining information about the item or the circumstances surrounding its production.

Request—the submission of physical evidence from a case to a single specialized area of a crime laboratory. Multiple submissions of new evidence from the same case to one or more sections of the laboratory are counted as separate requests.

Synthetic cannabinoids—synthetically produced compounds that mimic naturally occurring cannabinoids. These compounds are added to some other substrate, marketed as “spice” or herbal incense products, and are used illicitly for their psycho-active properties.

Synthetic cathinones—a cathinone is a compound naturally found in the khat plant. When produced synthetically, these compounds are marketed as bath salts and abused for their stimulant properties.

Toolmark analysis—the comparison of marks made by various tools.

Toxicology—the analysis of biological samples for the presence of drugs and other potentially toxic materials. Includes antemortem, postmortem, and blood alcohol content.

Trace evidence—any analytical procedure using microscopy or chemical and instrumental techniques. Includes the examination of gunshot residue, explosives, hair, fibers, and fire debris.

APPENDIX TABLE 1

Standard errors for table 1: Functions performed by publicly funded forensic crime labs, 2002, 2005, 2009, and 2014

Forensic function	2002	2005	2009	2014
Controlled substances	0.8%	0.8%	0.4%	0.9%
Crime scene	1.0	0.7	0.5	0.9
Digital evidence	0.7	0.9	0.4	0.8
Firearms/toolmarks	1.0	1.0	0.4	0.9
Forensic biology	0.9	1.0	0.4	0.9
Impressions	...	1.0	0.4	0.9
Latent prints	1.0	0.8	0.4	0.8
Questioned documents	0.7	0.8	0.3	0.7
Toxicology	0.9	0.8	0.4	0.8
Trace evidence	1.0	1.0	0.5	0.8

...Not available.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2002, 2005, 2009, and 2014.

APPENDIX TABLE 3

Standard errors for table 3: Percent of publicly funded forensic crime labs that examined trace evidence, by type of examination, 2009 and 2014

Trace evidence	2009	2014
Explosives analysis	1.9%	2.2%
Fiber examination	2.2	2.5
Fire debris analysis	2.0	2.3
Gunshot residue	1.9	2.2
Hair examination	2.3	2.6
Paint analysis	2.1	2.4
Unknown chemical	2.1	2.4

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2009 and 2014.

APPENDIX TABLE 2

Standard errors for table 2: Functions performed by publicly funded forensic crime labs, by type of jurisdiction, 2014

Forensic function	Federal	State	County	Municipal
Controlled substances	5.0%	0.6%	1.5%	2.8%
Crime scene	5.7	0.8	1.9	2.5
Digital evidence	5.1	0.4	1.4	2.7
Firearms/toolmarks	4.6	0.8	1.8	2.8
Forensic biology casework	4.6	0.7	1.7	2.5
Forensic biology from convicted offender/arrestee samples	3.8	0.5	1.1	1.0
Impressions	4.5	0.7	1.8	2.6
Latent prints	5.2	0.8	1.8	1.8
Questioned documents	5.5	0.4	0.9	1.5
Toxicology	2.3	0.8	1.9	2.7
Trace evidence	4.6	0.8	1.8	2.3

...Not available.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

APPENDIX TABLE 4

Standard errors for table 4: Requests for services received and completed by publicly funded forensic crime labs, by type of request, 2009 and 2014

Type of request	Received				Completed			
	2009		2014		2009		2014	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All requests	57,609		56,050		56,623		55,354	
Controlled substances	13,576	0.6%	22,041	0.5%	14,035	0.6%	20,104	0.5%
Crime scene	3,471	0.1	8,804	0.2	3,469	0.1	8,808	0.2
Digital evidence	824	0.0	2,099	0.1	816	0.0	2,140	0.1
Firearms/toolmarks	1,611	0.1	4,411	0.1	1,391	0.1	3,570	0.1
Forensic biology casework	2,088	0.1	10,699	0.3	2,074	0.1	4,622	0.2
Forensic biology from convicted offender/arrestee samples	57,036	1.1	34,970	0.8	56,036	1.1	36,428	0.8
Impressions	478	0.0	366	0.0	543	0.0	381	0.0
Latent prints	2,462	0.1	24,275	0.6	2,457	0.1	24,401	0.6
Questioned documents	2,103	0.1	774	0.0	1,801	0.0	821	0.0
Toxicology	14,100	0.4	23,675	0.6	13,305	0.4	23,304	0.6
Trace evidence	1,662	0.0	2,446	0.1	1,668	0.0	1,991	0.1

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2009 and 2014.

APPENDIX TABLE 5

Standard errors for table 5: Percent of requests for services received by publicly funded forensic crime labs, by type of jurisdiction, 2014

Type of request	Federal	State	County	Municipal
Controlled substances	3.5%	0.6%	1.4%	1.5%
Crime scene	0.2	0.0	0.5	1.4
Digital evidence	0.5	0.0	0.0	0.3
Firearms/toolmarks	0.1	0.1	0.1	0.6
Forensic biology casework	0.4	0.1	0.4	1.5
Forensic biology from convicted offender/arrestee samples	6.3	1.0	0.2	1.2
Impressions	0.0	0.0	0.0	0.0
Latent prints	7.5	0.1	0.6	0.8
Questioned documents	0.4	0.0	0.0	0.0
Toxicology	1.6	0.4	2.2	0.7
Trace evidence	0.2	0.1	0.2	0.1
Total requests received	30,898	33,205	23,717	22,843

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

APPENDIX TABLE 6

Standard errors for table 6: Requests for services backlogged in publicly funded forensic crime labs, by type of request, yearend 2009 and 2014

Type of request	2009		2014	
	Number	Percent	Number	Percent
All requests	10,124		12,693	
Controlled substances	2,848	0.3%	8,147	0.9%
Digital evidence	97	0.0	87	0.0
Firearms/toolmarks	997	0.1	2,532	0.4
Forensic biology casework	1,172	0.2	3,782	0.6
Forensic biology from convicted offender/arrestee samples	8,961	0.5	4,702	0.8
Impressions	914	0.1	110	0.0
Latent prints	693	0.1	2,920	0.5
Questioned documents	518	0.1	62	0.0
Toxicology	931	0.1	1,789	0.3
Trace evidence	153	0.0	282	0.1

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2009 and 2014.

APPENDIX TABLE 7

Standard errors for table 7: Percent of publicly funded forensic crime labs outsourcing requests for services, by type of jurisdiction, 2002, 2005, 2009, and 2014

Type of jurisdiction	2002	2005	2009	2014
All labs	0.9%	1.1%	0.4%	0.9%
Federal	2.8	^	1.6	4.8
State	1.2	0.4	0.4	0.6
County	1.8	1.0	0.7	1.9
Municipal	2.3	2.3	1.3	2.9

^Too few cases to provide a reliable estimate.

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2002, 2005, 2009, and 2014.

APPENDIX TABLE 8

Standard errors for table 8: Percent of publicly funded crime labs outsourcing requests for services, by type of service, 2014

Type of request	Percent
Controlled substances	1.6%
Digital evidence	2.0
Firearms/toolmarks	1.5
Forensic biology casework	1.8
Forensic biology from convicted offender/arrestee samples	2.4
Impressions	1.7
Latent prints	1.1
Questioned documents	2.5
Toxicology	2.0
Trace evidence	2.0

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

APPENDIX TABLE 9**Standard errors for table 9: Annual operating budget for publicly funded forensic crime labs, by type of jurisdiction and number of full-time employees, 2014**

	Annual operating budget
All labs	\$27,666,159
Type of jurisdiction	
Federal	23,728,956
State	8,072,029
County	4,123,355
Municipal	10,963,271
Number of full-time employees	
100 or more	16,019,940
50–99	23,976,084
25–49	11,263,190
10–24	6,679,329
9 or fewer	1,816,089

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.

APPENDIX TABLE 10**Standard errors for table 10: Number of employees in publicly funded forensic crime labs, by type of jurisdiction, 2002, 2005, 2009, and 2014**

Type of jurisdiction	2002	2005	2009	2014
All labs	102	387	105	123
Federal	68	376	97	59
State	58	40	39	66
County	48	54	7	17
Municipal	7	61	7	84

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2002, 2005, 2009, and 2014.

APPENDIX TABLE 11**Standard errors for table 11: Positions of full-time employees in publicly funded forensic crime labs, by type of jurisdiction, 2014**

Type of position	Total	Federal	State	County	Municipal
Analyst/examiner	0.4%	3.0%	0.4%	0.9%	1.0%
Entry level	0.4	0.7	0.5	0.6	0.9
Intermediate/senior level	0.6	2.8	0.6	1.0	0.8
Technical support	0.2%	0.5%	0.3%	0.5%	0.5%
Manager	0.3%	1.0%	0.2%	0.3%	0.5%
Clerical support	0.2%	0.5%	0.2%	0.2%	1.0%
Crime scene technician	0.3%	0.3%	0.2%	0.6%	1.3%
Other	0.3%	2.3%	0.2%	0.4%	0.3%

Source: Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2014.



The Bureau of Justice Statistics of the U.S. Department of Justice is the principal federal agency responsible for measuring crime, criminal victimization, criminal offenders, victims of crime, correlates of crime, and the operation of criminal and civil justice systems at the federal, state, tribal, and local levels. BJS collects, analyzes, and disseminates reliable and valid statistics on crime and justice systems in the United States, supports improvements to state and local criminal justice information systems, and participates with national and international organizations to develop and recommend national standards for justice statistics. Jeri M. Mulrow is acting director.

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