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## Census of Publicly Funded Forensic Crime Laboratories, 2005

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### Overview

In 2005 the nation's forensic crime laboratories received evidence from an estimated 2.7 million criminal investigations. These cases included requests for a variety of forensic services, such as DNA analysis, controlled substance identification, and latent fingerprint examination. A case not completed within 30 days was classified as backlogged. An estimated 359,000 cases were backlogged at the end of 2005—a 24% increase from the estimated 287,000 cases backlogged at yearend 2002. Other major findings on publicly funded forensic crime laboratories in 2005 included—

- Controlled substance identification accounted for about half of all requests backlogged at yearend.
- DNA testing was performed by about half of the laboratories.
- About half of the public laboratories outsourced one or more types of forensic services to private laboratories.
- Eight in 10 laboratories were accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board.

About 80% of forensic requests backlogged from 2004 and new requests received in 2005 were completed by the end of 2005. The remaining requests were backlogged at yearend. To achieve a 30-day turnaround on all 2005 requests, the different forensic disciplines would have needed varying increases in the number of full-time examiners performing that work—ranging from an estimated 73% increase in DNA examiners to an estimated 6% increase in examiners conducting toxicology analysis.

The average backlog rose for a wide range of forensic analyses during 2005. A typical laboratory performing DNA testing began 2005 with 86 backlogged requests for DNA analysis and finished the year with a backlog of 152 requests (figure 1).

The nation's crime laboratories experienced an increase in the median number of backlogged requests during 2005

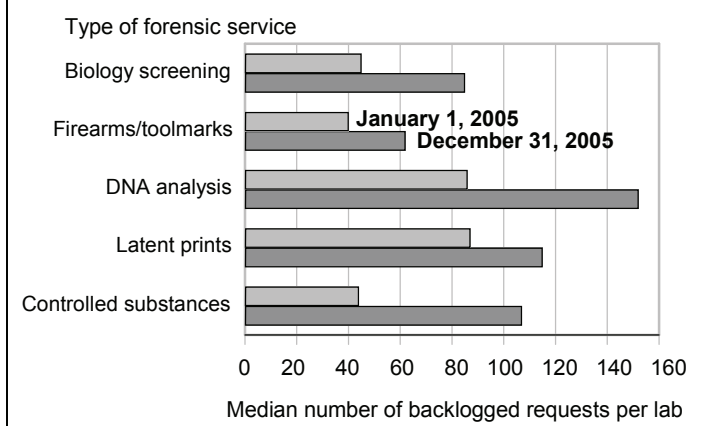


Figure 1

These findings are based on data from the Bureau of Justice Statistics' (BJS) Census of Publicly Funded Forensic Crime Laboratories. Forensic crime laboratories are responsible for examining and reporting on physical evidence collected during criminal investigations for federal, state, and local jurisdictions. This report provides a comprehensive look at forensic services across the nation and the resources devoted to completing the work.

BJS first surveyed forensic crime laboratories in 1998, focusing solely on agencies that performed DNA analysis. The National Institute of Justice (NIJ) funded the 1998 study as part of its DNA Laboratory Improvement Program.<sup>1</sup> The BJS' National Study of DNA Laboratories was repeated in 2001. An expanded version of the data collection, called the Census of Publicly Funded Forensic Crime Laboratories, was conducted among all forensic crime laboratories in 2002. A total of 306 of the 351 crime laboratories operating in 2002 responded to the census. The latest census obtained data from 351 of the 389 laboratories operating in 2005, including at least 1 lab from every state.

<sup>1</sup>More information on NIJ forensic science research can be obtained on the Internet at <<http://www.ojp.usdoj.gov/nij/topics/forensics/welcome.htm>>.

State-operated laboratories, which can serve the entire state or regional areas, accounted for more than half of all forensic crime laboratories in 2005. More than 80% of state laboratories were part of a multiple laboratory system.

### Crime laboratories had nearly 12,000 full-time employees in 2005

The nation's forensic crime laboratories employed an estimated 11,900 full-time personnel in 2005, compared to about 11,000 in 2002 (table 1). About half of full-time crime laboratory employees worked in state laboratories. In 2005 forensic crime laboratories filled about 98% of their authorized full-time equivalent (FTE) positions (not shown in table). The median staff size in 2005 was 16. With more than 600 employees, the Federal Bureau of Investigation (FBI) Laboratory Division was the largest publicly funded laboratory in the United States.

Most crime laboratory employees (58%) were analysts or examiners who were responsible for preparing and analyzing evidence (table 2). Managers (directors and supervisors) accounted for 13% of all the crime laboratory employees. About 10% of staff provided technical support to the analysts.

### The combined annual budget for all laboratories exceeded \$1 billion

The 2005 census obtained budget data from 254 laboratories. The median budget among these laboratories was \$1.7 million. The FBI Laboratory had an annual budget of more than \$130 million. The estimated budget for all 389 crime laboratories in 2005 exceeded \$1 billion, nearly half of which funded state laboratories (table 3).

Personnel costs, including salaries and fringe benefits, typically accounted for three-quarters of a laboratory's total budget. Median base annual salaries for laboratory directors ranged from \$62,900 to \$94,700, and for supervisors from \$51,000 to \$77,000 (table 4). Analysts or examiners at both the state and local level had a median maximum salary of about \$70,000.

Laboratory expenditures also included supplies, equipment, and construction costs. In addition to their budgets, laboratories received funding from other sources, such as fees and grants. Twenty-eight percent of laboratories charged fees for forensic services in 2005, and nearly two-thirds (65%) received some funding from grants (not shown in table).

**Table 1. Full-time employees in the nation's publicly funded crime laboratories in 2005 and 2002, by type of jurisdiction**

Type of jurisdiction	Full-time employees reported <sup>a</sup>				National estimate of full-time employees <sup>b</sup>			
	2005		2002		2005		2002	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All labs	9,364	100%	9,013	100%	11,900	100%	11,000	100%
State	4,842	52	4,336	48	5,600	47	5,200	47
County	1,720	18	1,644	18	2,200	18	1,900	17
Municipal	1,602	17	1,594	18	1,900	16	1,900	17
Federal	1,200	13	1,440	16	2,100	18	2,000	18
Number of labs	296		278		389		351	

Note: Detail does not sum to total due to rounding.

<sup>a</sup>Number of employees reported by labs in the census.

<sup>b</sup>Based on imputations for labs that did not report employee data. See *Methodology* for imputation procedures.

**Table 2. Positions of employees in publicly funded crime laboratories in 2005, by type of jurisdiction**

Type of position	Total <sup>a</sup>	State	County	Municipal
All employees	100%	100%	100%	100%
Analyst/examiner	58	63	57	50
Technical support	10	11	11	5
Manager	13	13	14	13
Clerical support	8	9	8	6
Crime scene technician	6	1	8	16
Other	5	3	1	10
Estimated national total <sup>b</sup>	11,900	5,600	2,200	1,900

Note: Percentages are based on labs reporting personnel data. Detail does not sum to total due to rounding.

<sup>a</sup>Includes federal labs, not shown separately.

<sup>b</sup>National estimates were adjusted to account for missing data.

**Table 3. Total operating budget (in millions) for publicly funded crime laboratories in 2005 and 2002, by type of jurisdiction**

Type of jurisdiction	Total operating budget reported (in millions)		National estimate (in millions) <sup>a</sup>	
	2005	2002	2005	2002
All labs <sup>b</sup>	\$821	\$835	\$1,155	\$1,036
State	406	345	529	454
County	173	164	236	172
Municipal	94	83	130	112
Number of labs	254	267	389	351

Note: Budget totals were not adjusted for inflation.

<sup>a</sup>Based on imputations for labs that did not report budget data.

<sup>b</sup>Includes federal labs, not shown separately.

**Table 4. Median base salaries of employees in publicly funded crime laboratories in 2005, by type of jurisdiction**

Type of position	Total*	State	County	Municipal
<b>Director</b>				
Maximum	\$94,700	\$92,500	\$99,100	\$89,800
Minimum	62,900	59,000	76,100	69,700
<b>Supervisor</b>				
Maximum	\$77,000	\$76,200	\$84,800	\$77,000
Minimum	51,000	50,100	58,600	58,000
<b>Analyst/examiner</b>				
Maximum	\$67,700	\$66,700	\$71,600	\$66,800
Minimum	37,800	35,400	42,300	40,700
<b>Technical support</b>				
Maximum	\$42,200	\$40,100	\$45,000	\$44,200
Minimum	27,400	26,400	29,800	30,700

\*Includes federal labs, not shown separately.

### More laboratories were accredited in 2005

In 2005 more than three-quarters of laboratories (78%) were accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) (table 5). Another 3% were accredited by some other professional organization, such as the International Organization for Standardization. State-operated laboratories (91%) were more likely to be accredited than laboratories serving county (67%) or municipal (62%) jurisdictions.

Among the 230 laboratories providing accreditation information in both the 2002 and 2005 censuses, the accreditation rate increased during the 3 years from 75% to 87%.

### Crime laboratories provided an average of 6 different forensic services

Crime laboratories are typically responsible for several analytical services. They receive evidence from criminal investigations submitted by a variety of sources, including law enforcement officials, prosecutors, and medical examiners. In 2005 laboratories provided a median number of six functions. Controlled substance identification was the analysis performed by the largest percentage (89%) of the 351 laboratories responding to the census (table 6). Forensic work for computer crime investigations was the function reported to be performed by the smallest percentage of laboratories (12%).

**Table 5. Percent of crime laboratories accredited by a professional organization in 2005 and 2002**

Type of accreditation	Labs reporting in—		Comparable labs reporting in both year	
	2005	2002	2005	2002
Total	82%	71%	87%	75%
ASCLD/LAB*	78	61	84	67
Other organization	3	10	3	8
Number of labs reporting	293	299	230	230

Note: Detail does not sum to total because of rounding.

\*American Society of Crime Laboratory Directors/Laboratory Accreditation Board.

About 6 in 10 crime labs examined firearms or toolmarks in 2005. Labs that performed this function were asked about their use of the Bureau of Alcohol, Tobacco, Firearms and Explosives' National Integrated Ballistic Information Network (NIBIN). Using this electronic system, forensic examiners can compare evidence (such as fired bullets and cartridges) from crime scenes to firearm evidence from other criminal investigations for matches (or hits). Seventy-six laboratories reported making about 95,000 NIBIN entries and searches in 2005. Almost 2,000 hits that year were reported by 56 laboratories.

More than half (55%) of crime laboratories analyzed latent (or hidden) fingerprints recovered from crime scenes. These laboratories were asked to report on their use of the FBI's Integrated Automated Fingerprint Identification System (IAFIS) in 2005. More than 100 laboratories reported making about 328,000 searches and finding 33,000 hits using IAFIS in 2005.

### Crime laboratories received an estimated 2.7 million cases in 2005

Laboratories have different methods for measuring workload, such as cases or requests. A case is defined as evidence submitted to a crime laboratory from a single criminal incident. A case may require more than one request for forensic services. For instance a laboratory may receive samples of fibers and blood from the same case that require analysis by different discipline areas of the laboratory. This study examined workload in terms of both cases and requests.

The nation's 389 crime laboratories received an estimated 2.7 million new cases during 2005 (table 7). Almost half—or 1.3 million—were submitted to state laboratories. Laboratories serving local jurisdictions received about 1.3 million cases in 2005, including 727,000 cases received by county laboratories and 566,000 by municipal laboratories. Federal laboratories received the fewest cases that year.

**Table 6. Forensic functions performed by crime laboratories in 2005, by type of jurisdiction**

Forensic function	Total*	State	County	Municipal
Controlled substances	89%	88%	94%	85%
Firearms/toolmarks	59	60	59	56
Biology screening	57	58	61	51
Latent prints	55	50	51	76
Trace evidence	55	57	59	44
DNA analysis	53%	55%	61%	42%
Toxicology	53	57	49	47
Impressions	52	50	53	56
Crime scene	40	36	46	56
Questioned documents	20	18	22	24
Computer crimes	12	9	16	15
Number of labs reporting	351	207	79	55

Note: Detail sums to more than 100% because some laboratories reported performing more than one function. See *Methodology* for definitions of individual forensic functions.

\*Includes federal labs, not shown separately.

An estimated 359,000 cases were backlogged (not completed within 30 days) at the end of 2005, compared to 287,000 at yearend 2002 (table 8). This represents a 24% increase in backlogged cases between 2002 and 2005. State laboratories accounted for more than half of the backlog in both years.

Among the 288 laboratories that reported this information, the median number of cases received in 2005 was about 4,100. Overall, laboratories ended the year with a median backlog of about 400 cases. Six percent of laboratories that received cases in 2005 reported having no backlog at yearend.

Two hundred laboratories provided data in both the 2002 and the 2005 censuses on the total numbers of cases received during each year. The number of cases received during 2005 (1,654,023) was less than the total received in 2002 (1,862,009). Of the 172 laboratories that reported backlog totals for the 2002 and 2005 censuses, the number of backlogged cases increased from 142,739 to 192,126.

#### Nearly 20% of all requests in 2005 were backlogged at yearend

About 75% of the forensic requests pending at the beginning of 2005 had been held for 30 days or more and were classified as backlogged. To examine the capacity of laboratories to process all requests within a 30-day period, BJS asked crime laboratories to provide the total number of requests for each forensic function performed that were:

- backlogged as of January 1, 2005
- received in 2005
- completed during 2005.

#### About half of laboratories performed DNA analysis in 2005

DNA testing was conducted by about half (53%) of all laboratories in 2005, mainly involving casework and offender samples. Laboratories were asked how many of these requests they completed in 2005; however, the information was not provided by all laboratories that conducted DNA analysis that year.

Casework involves the processing of biological samples (such as blood and saliva) collected from crime scenes, victims, or suspects to develop a DNA profile for cases with or without a suspect. In 2005, 86 laboratories reported completing about 14,000 DNA requests for cases where no suspect had been identified. Ninety laboratories reported analyzing about 25,000 requests from cases that year where a suspect had been identified.

In 2005 all 50 states and the District of Columbia required offenders convicted of certain crimes to submit DNA samples. Most states required samples from all felons. A few states also collected DNA from certain arrestees. In the census 22 laboratories reported processing about 234,000 samples from offenders and arrestees in 2005.

Federal, state, and local laboratories enter DNA profiles from offenders, arrestees, and casework into the FBI's Combined DNA Index System (CODIS). CODIS software enables crime laboratories to compare biological evidence from criminal investigations to profiles in the database for matches (or hits). In 2005 crime laboratories provided more than 800,000 profiles to the National DNA Index System of CODIS. About 8,700 hits were made between profiles in CODIS that year.<sup>2</sup>

<sup>2</sup>The Federal Bureau of Investigation *FBI Laboratory 2005 Report* is accessible at <<http://www.fbi.gov/hq/lab/labannual05.pdf>>.

**Table 7. Cases received by publicly funded crime laboratories during 2005 and 2002, by type of jurisdiction**

Type of jurisdiction	Reported cases received in—		Cases received by comparable labs reporting in both years		National estimate <sup>a</sup>	
	2005	2002	2005	2002	2005	2002
All labs <sup>b</sup>	2,106,478	2,399,468	1,654,023	1,862,009	2,712,000	2,891,000
State	1,166,786	898,642	837,154	803,545	1,302,000	1,230,000
County	495,665	798,118	466,017	555,456	727,000	847,000
Municipal	413,932	622,775	335,667	498,813	566,000	711,000
Number of labs	288	265	200	200	389	351

<sup>a</sup>Based on imputations for labs that did not report data on cases received.

<sup>b</sup>Includes federal labs, not shown separately.

**Table 8. Cases backlogged in publicly funded crime laboratories at yearend 2005 and 2002, by type of jurisdiction**

Type of jurisdiction	Reported backlogged cases in—		Cases backlogged in comparable labs reporting in both years		National estimate <sup>a</sup>	
	2005	2002	2005	2002	2005	2002
All labs <sup>b</sup>	260,821	212,676	192,126	142,739	359,000	287,000
State	166,337	117,092	126,162	90,056	203,000	155,000
County	40,314	47,954	35,859	29,555	65,000	55,000
Municipal	44,881	42,218	29,544	22,128	70,000	59,000
Number of labs	265	243	172	172	389	351

<sup>a</sup>Based on imputations for labs that did not report data on backlogged cases.

<sup>b</sup>Includes federal labs, not shown separately.

A total of 260 laboratories (of the 351 that responded to the census) provided complete request processing data for at least one forensic service (table 9). These 260 laboratories reported a total of 252,810 backlogged requests on January 1, 2005, and that they received 2,003,544 new requests during 2005 for a total of 2,256,354 requests. Laboratories completed 81% (1,820,475) of those requests by the end of 2005, leaving 19% (435,879) backlogged at yearend. The yearend backlog represented a 72% increase in backlogged requests from the beginning of 2005.

In November 2004, California voters passed Proposition 69 requiring a DNA sample from all persons convicted of felonies and certain misdemeanors or arrested for rape or murder. As a result of the increased workload, the state data bank reported ending 2005 with about 235,000 backlogged samples.

Although the California DNA Data Bank reported completing nearly 67,000 samples in 2005, the laboratory did not provide the number of backlogged DNA samples from 2004 and the number of new DNA samples received in 2005. Without complete request processing data from this laboratory, the number of samples completed (67,000) and backlogged at yearend 2005 (235,000) could not be included in the analysis of request processing.

During 2005 the backlog grew for a range of commonly performed services. Laboratories performing controlled substance identification began 2005 with a median backlog of 44 such requests. At yearend the median backlog was 107. A typical lab performing DNA testing in 2005 began

with a backlog of 86 requests for DNA analysis, received 337 new requests, completed 265 requests, and finished the year with 152 backlogged requests.

Controlled substance identification (51%), latent print examination (16%), and DNA analysis (9%) accounted for about three-quarters of the total yearend backlog (figure 2). Firearm and toolmark examination (8%), biology screenings (7%), and toxicology analysis (5%) made up an additional 20% of backlogged requests at the end of 2005.

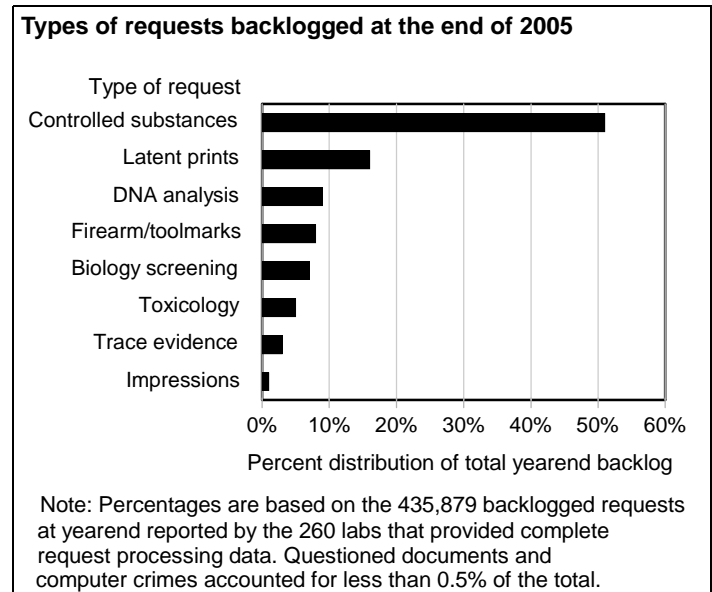


Figure 2

**Table 9. Median number of requests for forensic services and yearend backlog in 2005, by type of request**

Type of request	Labs performing function	Labs reporting request totals		Median number of forensic requests—			
		Number <sup>a</sup>	Percent	Backlogged on January 1	Received	Completed	Backlogged at yearend
All requests	351	260	74%	215	4,328	3,980	401
Controlled substances	312	226	72%	44	2,716	2,638	107
Firearms/toolmarks	207	133	64	40	257	249	62
Biology screening	200	115	58	45	358	296	85
Latent prints	194	130	67	87	909	931	115
Trace evidence	194	132	68	11	108	105	19
DNA analysis	187	124	66%	86	337	265	152
Toxicology	185	133	72	5	1,234	1,226	23
Impressions	181	81	45	1	16	16	2
Questioned documents	70	43	61	5	105	105	7
Computer crimes	43	12	28	15	76	71	14
Total number of requests reported <sup>b</sup>				252,810	2,003,544	1,820,475	435,879

Note: Numbers based on the 260 labs that reported complete request processing data. Request processing data were not collected for crime scene analysis. Table does not include data from the California DNA Data Bank. See appendix table 1 for request totals for each type of request.

<sup>a</sup>Some labs provided data for more than one function.

<sup>b</sup>The yearend backlog was calculated by subtracting the number of requests completed in 2005 from the total number of new requests that year and backlogged from 2004.

**The percent of requests backlogged at yearend 2005 was similar to the percent backlogged at yearend 2002**

To examine change in the overall capacity of crime laboratories to turn around all requests within a 30-day period, comparisons were made among laboratories that provided request processing data in 2002 and 2005 for individual forensic services including controlled substance identification, latent prints, DNA analysis, firearm and toolmark, biology screening, and toxicology. Together these types of requests accounted for almost the entire backlog.

Both censuses received complete data for controlled substance requests from 150 laboratories (table 10). These laboratories began 2002 with an initial backlog of approximately 51,000 requests for controlled substance identification and received an additional 793,000 requests. During 2002, 80% (676,000) of the 844,000 total requests were completed, leaving 20% backlogged at the end of the year. The same laboratories reported a total of 856,000 controlled substance requests received during 2005 and backlogged from 2004. As in 2002 about 20% of these requests were backlogged at yearend 2005. The overall number of full-time examiners in these laboratories increased 5% between 2002 and 2005 (not shown in table).

About 1 in 4 (23%) of the requests for latent prints analysis in 2002 were backlogged at yearend. Despite more latent print requests in 2005, these laboratories ended the year with a similar percentage backlogged (24%). The ability to maintain a similar completion rate in 2005 may have been aided by the increase in personnel to process the requests. The number of examiners in these 79 laboratories increased 4% from 2002 to 2005.

Relatively no change was found in the percentage of DNA requests that were backlogged at yearend 2002 and 2005. During both years laboratories were able to process about 60% of the requests backlogged from the previous year and received during the year. About 40% were backlogged at yearend. The number of examiners in these 67 laboratories grew 5% during the 3 years.

**Greatest personnel need was DNA analysts**

The ability to process a larger percentage of evidence depends on numerous factors including the complexity of the procedures, use of innovative solutions, and availability of examiners and other resources. Overall, laboratories were able to complete about 80% of all outstanding requests in 2005. The remaining requests were backlogged at yearend. This completion rate was lower for more complex types of examinations, such as DNA analysis and biology screening.

Laboratories were asked how many full-time examiners or analysts were required to process their requests. The work of a single examiner varied depending on the type of request. DNA analyses were more time consuming and complex than the examination of controlled substances or toxicology.

**Table 10. Percent of total forensic requests backlogged at yearend 2005 and 2002, by type of request**

Type of request	Number of requests			Status at yearend	
	Total	New	Backlogged from previous year	Number completed	Percent backlogged
<b>Controlled substances</b>					
2005	855,817	774,001	81,816	677,030	21%
2002	844,183	793,492	50,691	675,595	20
<b>Latent prints</b>					
2005	197,471	171,470	26,001	150,792	24%
2002	155,793	128,983	26,810	120,037	23
<b>Toxicology</b>					
2005	251,585	242,034	9,551	238,262	5%
2002	298,704	287,108	11,596	279,662	6
<b>Firearms/toolmarks</b>					
2005	77,876	59,923	17,953	54,693	30%
2002	70,132	60,050	10,082	52,919	25
<b>DNA analysis</b>					
2005	51,269	38,227	13,042	30,932	40%
2002	37,202	27,730	9,472	22,882	38
<b>Biology screening</b>					
2005	38,463	29,214	9,249	25,689	33%
2002	41,362	33,619	7,743	28,464	31

Note: Numbers for each request type were based on labs that reported data for the 2005 and 2002 censuses: 150 labs for analysis of controlled substances, 79 for latent prints, 81 toxicology, 97 firearms/toolmarks, 67 DNA analysis, and 67 biology screening. Totals do not represent all requests received by the nation's crime labs.

A typical DNA analyst completed 77 requests in 2005 (figure 3). By comparison, the average forensic examiner completed about 10 times the number of controlled substance requests that year (752). These examiners compared drug-related evidence with standards of known origin to identify unknown substances.

**Mean number of requests completed per full-time examiner in 2005**

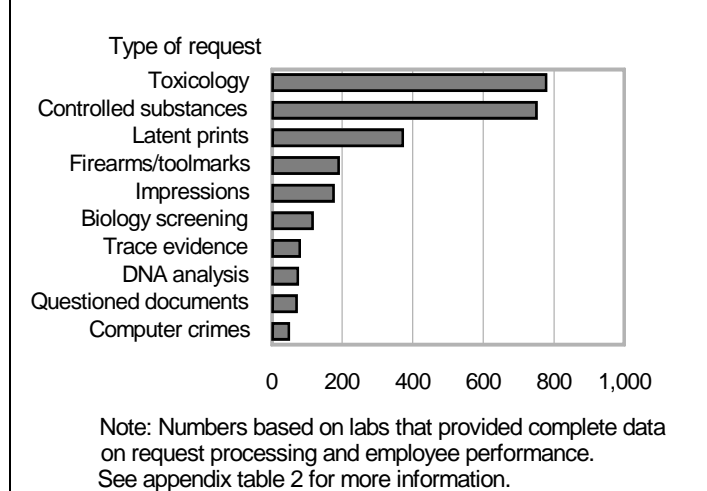


Figure 3

Information on work performance (the average number of requests an examiner completed in 2005) was used to determine which forensic disciplines were most understaffed to handle their workload. DNA work needed the largest increase in full-time examiners to eliminate the yearend backlog. Based on the average performance of a DNA analyst in 2005 (77), laboratories performing DNA analysis would have needed an estimated 73% more staff to complete all DNA requests in 2005 (figure 4). Biology screening (usually in preparation of DNA analysis) represented the next highest need for an increase in full-time analysts (57%) followed by firearm and toolmark analysis (46%) and examination of trace evidence, such as hair and fibers, (43%).

### 8 in 10 crime labs had a Laboratory Information Management System (LIMS)

A LIMS is used by laboratories to manage and track forensic evidence received from criminal investigations. In 2005 about 80% of crime laboratories had a LIMS (table 11). Laboratories serving state jurisdictions (90%) were more likely than county (70%) or municipal (45%) laboratories to have this system. Overall 4 in 10 laboratories with a LIMS reported that the system needed major improvements or replacement.

### About half of laboratories outsourced some forensic work

To meet demands for forensic services, about half of the publicly funded forensic crime laboratories contracted private laboratories for at least one type of forensic service in 2005 (table 12). Nearly 30% of laboratories reported outsourcing DNA casework, and 11% outsourced CODIS samples.

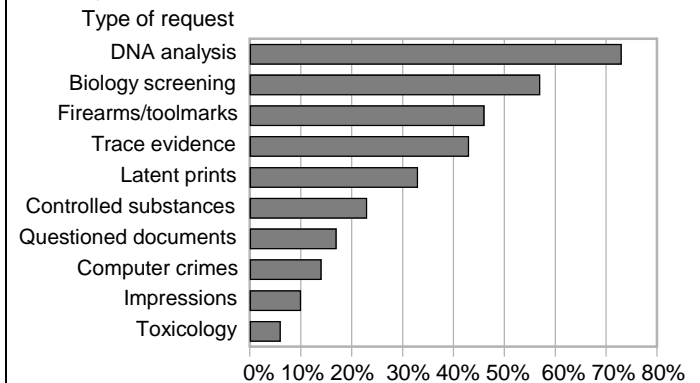
A total of 190 laboratories provided outsourcing data for both censuses. A larger percentage of those laboratories outsourced forensic work in 2005 (54%) than in 2002 (44%).

### Different strategies helped to manage workload

Laboratories were asked whether they engaged in any special procedures to manage their workloads in 2005. The following are examples of strategies laboratories reported using:

- prioritize requests by investigative need
- screen out requests for cases that will not be prosecuted
- allow customers to cancel requests for services no longer needed
- assist laboratories in the same system that have larger backlogs.

**Percent increase in full-time examiners needed to achieve a 30-day turnaround on all requests in 2005**



Note: Numbers based on labs that provided complete data on request processing and employee performance. See appendix table 3 for more information.

Figure 4

**Table 11. Percent of crime laboratories with a Laboratory Information Management System (LIMS) in 2005 and 2002, by type of jurisdiction**

Type of jurisdiction	Labs reporting in—		Comparable labs reporting in both years	
	2005	2002	2005	2002
All labs*	79%	75%	81%	77%
State	90	88	89	89
County	70	70	76	69
Municipal	45	33	56	33
Number of labs reporting	302	271	216	216

\*Includes federal labs, not shown separately.

**Table 12. Percent of publicly funded crime laboratories outsourcing requests for forensic services in 2005 and 2002**

Type of request	Labs reporting in—		Comparable labs reporting in both years	
	2005	2002	2005	2002
Any outsourcing	51%	41%	54%	44%
DNA casework	28	19	29	23
Toxicology	17	14	18	15
CODIS* samples	11	9	11	11
Controlled substances	6	4	5	5
Number of labs reporting	268	269	190	190

\*Combined DNA Index System.

## Methodology

### Data collection

Data collection for the 2005 Census of Publicly Funded Forensic Crime Laboratories was conducted by Sam Houston State University (SHSU) for BJS. The National Forensic Science Technology Center and the American Society of Crime Laboratory Directors assisted in developing and administering the data collection instrument, which was pre-tested with 17 laboratories.

In May 2006 the census form was mailed to 393 facilities that self-identified as crime laboratories. Some laboratories were part of a multiple laboratory system. The census attempted to collect information from each laboratory in the system. Police identification units, although sometimes responsible for crime scene analysis, were not included in the census.

Four laboratories were subsequently dropped because they did not meet the project definition of a publicly funded forensic crime laboratory (see *Definitions section*). Completed forms were obtained from 291 of the 389 eligible laboratories. Follow-up telephone calls and emails encouraged non-responding laboratories to participate. In a final effort to improve response, a shorter census instrument was developed to collect basic information about laboratory operations. An additional 60 laboratories responded to the short form, for a final response rate of 90% (table 13). Of the 351 responses received for the 2005 census, 197 were submitted electronically and 154 were mailed or faxed.

The 389 eligible laboratories included 210 state, 84 county, 62 municipal, and 33 federal laboratories. Ten federal laboratories responded to the 2005 census, compared to 25 for 2002. Because of the low response rate in 2005, summary statistics for federal laboratories were not presented in many of the tables.

Data from the FBI Laboratory were included in the summary statistics of this report. The FBI Laboratory provided 2003 data for the 2002 collection.

### Imputation procedures for national estimates

To generate national estimates for personnel, budgets, and case totals, several imputation methods were used to account for missing data. For the 2005 census 296 laboratories reported a combined staff of 9,364 full-time employees in 2005 (table 14). Employee data were obtained for 13 non-responding laboratories through alternative sources (call backs, the Internet, or annual reports). For the other 80 laboratories, imputations were made using either the number of authorized FTE in 2005, employee data from the 2002 census, or the median staff size in 2005 among laboratories of similar type, depending on the availability of data. Estimates for 2002 were generated using the same methods.

Budget data were provided by 254 laboratories for the 2005 census, 10 of which provided combined budget data for the entire system. Those totals were distributed proportionately across each laboratory in the system based on the staff size. Budget information from the 2002 census was used for 65 laboratories that had missing budget data in 2005. For the 70 remaining laboratories, the staff size was multiplied by the median ratio of expenditures per employee for laboratories of similar type and size.

The 2002 national estimates in this report differ from the respondent-level estimates in the BJS report *Census of Publicly Funded Forensic Crime Laboratories, 2002* published in February 2005. The revised estimates represent all laboratories operating in 2002, not just those that responded to the census.

### Reason for no nationally estimated forensic request totals

Findings in this report on the processing of forensic requests are based on laboratories that reported complete information. Table 9 provides the total number of requests received, processed, and backlogged among the 260 laboratories that reported complete data for at least 1 of their services. National estimates could not be generated for all 389 laboratories operating in 2005.

Data on laboratory functions were provided by 351 laboratories. Without knowing the services performed by the 38 other laboratories, nationally estimated request totals cannot be generated for all laboratories performing a specific function. To illustrate, of the 194 laboratories that reported performing latent print analysis in 2005, 130 laboratories provided complete request processing data for that function. Although it would be possible to estimate request totals for the 64 latent print laboratories missing request data, imputations could not be made for the 38 laboratories that did not respond to the census. Without information on how many of the 38 laboratories performed this function, the number of latent print requests received, completed, and backlogged cannot be reliably estimated at the national level.

**Table 13. Response rates for the Census of Publicly Funded Forensic Crime Laboratories, 2005 and 2002**

Type of jurisdiction	Number of labs in census		Labs reporting to census			
	2005	2002	Number		Percent	
All laboratories	389	351	351	306	90 %	87 %
State	210	198	207	171	99 %	86 %
County	84	67	79	62	94	93
Municipal	62	53	55	48	89	91
Federal	33	33	10	25	30	76

Note: Seventeen labs reported a different government affiliation in 2005 than 2002. To allow for jurisdiction-level comparisons between 2002 and 2005, the government affiliation of these labs was based on information from the most recent census.



**Table 14. Imputation procedures for national estimates**

	Number of labs	
	2005	2002
<b>All publicly funded forensic labs</b>	389	351
<b>Full-time employees</b>		
Reported to census	296	278
Obtained from alternative source (call back, website, or annual report)	13	0
Imputed using—		
the number of FTE positions authorized that year	55	25
employee data from the other census	24	43
median staff size for labs of similar jurisdiction	1	5
<b>Annual operating budget</b>		
Reported to census	244	225
Distributed combined budget data across each lab in system	10	42
Imputed—		
using budget data from the other census	65	42
by multiplying the staff size by the median ratio of expenditures per employee for labs of similar size and jurisdiction	70	42
<b>Number of cases received during the year</b>		
Reported to census	288	265
Imputed—		
using data on cases received from the other census	51	52
by multiplying the staff size by the median ratio of cases per employee for labs of similar size and jurisdiction	50	34
<b>Number of cases backlogged at yearend</b>		
Reported to census	265	243
Imputed—		
using data on backlogged cases from the other census	46	56
by multiplying the number of cases received by the median percentage of backlogged cases for labs of similar size and jurisdiction	78	52

**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.

**Biology screening**—the location, screening, identification, and characterization of blood and other biological stains and substances.

**Case**—all physical evidence from a single criminal investigation submitted for crime laboratory analysis.

**Computer crimes analysis**—investigation of various types of computer-based crime, such as the recovery, extraction, and analysis of electronic digital images.

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

**Crime laboratory**—a scientific laboratory (with at least one full-time natural scientist) that examines physical evidence in criminal matters, and provides reports and opinion testimony with respect to such physical evidence in courts of law.

**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.

**DNA analysis**—the identification and comparison of DNA in biological samples, including those from crime scenes (casework) and those from convicted offenders.

**Firearms/toolmarks analysis**—examination and comparison of evidence resulting from discharge and/or use of firearms; comparison of marks made by various tools.

**Impressions analysis**—identification, documentation, collection, and interpretation of two-dimensional and three-dimensional impressions and imprints found at crime scenes (including footwear and tire tread).

**Latent prints analysis**—development and/or comparison of finger or palm print impressions.

**Municipal**—pertains to cities, towns, villages, and boroughs.

**Questioned documents analysis**—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**—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 would count as separate requests.

**Toxicology**—analysis of biological samples for the presence of drugs and other potentially toxic materials. Includes antemortem, postmortem, and BAC (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.

**Other BJS reports related to forensics are available on the BJS website.**

*Survey of DNA Crime Laboratories, 1998*, February 2000; <<http://www.ojp.usdoj.gov/bjs/abstract/sdnacl98.htm>>

*Survey of DNA Crime Laboratories, 2001*, January 2002; <<http://www.ojp.usdoj.gov/bjs/abstract/sdnacl01.htm>>

*50 Largest Crime Labs, 2002*, September 2004; <<http://www.ojp.usdoj.gov/bjs/abstract/50lcl02.htm>>

*Census of Publicly Funded Forensic Crime Laboratories, 2002*, February 2005; <<http://www.ojp.usdoj.gov/bjs/abstract/cpffcl02.htm>>

*Medical Examiners and Coroners' Offices, 2004*, June 2007; <<http://www.ojp.usdoj.gov/bjs/abstract/meco04.htm>>

*Unidentified Human Remains in the United States, 1980-2004*, November 2007; <<http://www.ojp.usdoj.gov/bjs/abstract/uhrus04.htm>>

**Appendix table 1. Number of requests for forensic services and yearend backlog in 2005, by type of request**

Type of request	Labs reporting request totals <sup>a</sup>	Number of forensic requests reported in 2005			
		Backlogged on January 1	Received	Completed	Backlogged at yearend <sup>b</sup>
All requests	260	252,810	2,003,544	1,820,475	435,879
Controlled substances	226	112,693	1,086,672	976,687	222,678
Firearms/toolmarks	133	26,316	84,453	75,889	34,880
Biology screening	115	18,545	62,127	51,429	29,243
Latent prints	130	44,123	237,049	211,019	70,153
Trace evidence	132	8,685	38,491	32,838	14,338
DNA analysis	124	24,030	67,009	52,812	38,227
Toxicology	133	16,200	389,446	383,441	22,205
Impressions	81	1,041	29,623	27,890	2,774
Questioned documents	43	931	6,793	6,605	1,119
Computer crimes	12	246	1,881	1,865	262

Note: Numbers based on the 260 labs that reported complete request processing data. Request processing data were not collected for crime scene analysis. Table does not include data from the California DNA Data Bank. Totals do not represent all requests received by the nation's crime labs.

<sup>a</sup>Some labs provided data for more than one function.

<sup>b</sup>Calculated by subtracting the number of requests completed in 2005 from the total number of new requests that year and requests backlogged from 2004.

**Appendix table 2. Mean number of requests completed per full-time examiner in 2005, by type of request**

Type of request	Labs reporting	Number of requests			Total requests completed in 2005	Reported full-time examiners completing requests	Requests per examiner*
		Total	New in 2005	Backlogged from 2004			
Toxicology	131	404,473	388,281	16,192	382,279	490	780
Controlled substances	223	1,187,443	1,077,028	110,415	967,218	1,286	752
Latent prints	127	281,049	236,937	44,112	210,946	563	375
Firearms/toolmarks	130	110,007	83,729	26,278	75,193	389	193
Impressions	80	30,650	29,612	1,038	27,882	157	178
Biology screening	114	77,871	59,474	18,397	49,658	417	119
Trace evidence	130	47,086	38,447	8,639	32,834	398	83
DNA analysis	120	89,648	65,907	23,741	51,905	672	77
Questioned documents	43	7,724	6,793	931	6,605	89	74
Computer crimes	12	2,127	1,881	246	1,865	36	52

Note: Numbers based on labs that provided complete data on request processing and employee performance. Request processing data were not collected for crime scene analysis.

\*Calculated by dividing the number of requests completed in 2005 by the number of examiners completing requests that year.

**Appendix table 3. Percent increase in full-time examiners needed to achieve a 30-day turnaround on all requests in 2005, by type of request**

Type of request	Labs reporting	Requests per examiner	Requests backlogged at yearend	Full-time examiners needed to eliminate backlog	
				Number <sup>a</sup>	Percent increase <sup>b</sup>
DNA analysis	120	77	37,743	490	73%
Biology screening	114	119	28,213	237	57
Firearms/toolmarks	130	193	34,814	180	46
Trace evidence	130	83	14,252	172	43
Latent prints	127	375	70,103	187	33
Controlled substances	223	752	220,225	293	23%
Questioned documents	43	74	1,119	15	17
Computer crimes	12	52	262	5	14
Impressions	80	178	2,768	16	10
Toxicology	131	780	22,194	28	6

Note: Numbers based on labs that provided complete data on request processing and employee performance. Request processing data not collected for crime scene analysis.

<sup>a</sup>Calculated by dividing the number of requests backlogged at yearend by the number of requests completed per examiner.

<sup>b</sup>Calculated by dividing the number of examiners needed to complete the backlog in 2005 by the number of examiners completing requests that year.

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This report in portable document format (includes (2) appendix tables) and in ASCII and its related statistical data are available at the BJS World Wide Web Internet site: <<http://www.ojp.usdoj.gov/bjs/abstract/cpffcl05.htm>>

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