



Survey of Forensic Service Providers

EXECUTIVE SUMMARY

Government funded studies, to date, have focused on forensic science within the laboratory setting. Recent studies have suggested that there is a significant amount of forensic services that take place outside of the forensic laboratories¹. There has been a lack of research that quantifies and benchmarks forensic services performed outside of the traditional forensic laboratories. This study, funded through the West Virginia University Forensic Science Initiative by a grant from the National Institute of Justice and conducted in collaboration with the International Association for Identification (IAI), examines forensic services that are conducted outside of forensic laboratories. Data on forensic identification was gathered through two surveys. The first survey, a detailed survey about the organization's jurisdiction, employment, functions performed, caseload, backlog, budget, and outsourcing, was sent to IAI members in the U.S. The second survey, a brief survey, was sent to every police chief and sheriff in the U.S.

Summary results from the *Survey of Forensic Identification Professionals* (sent to IAI members in the U.S.) include:

- 79.4% of units serve local city or county jurisdictions
- More than two-thirds of units have 10 or fewer employees
- Over three-fourths of units conduct latent print identification
- Units serving city (or city-equivalent) jurisdictions spend 88% of their budget on personnel, leaving only 7.2% (\$40,600) for equipment and supplies
- Units serving city jurisdictions have budgets of \$77,000 per FTE compared to \$150,000 for units serving county jurisdictions
- Units serving city jurisdictions received 214 cases per FTE compared to 226 for units serving county jurisdictions
- Units serving states report backlogs of 4 months.

¹ The National Institute of Justice's report, "Status and Needs of the Forensic Science Service Providers: A Report to Congress", suggests that two-thirds of fingerprint identification is performed outside of forensic laboratories. A copy of this report is available at <http://www.ncjrs.gov/pdffiles1/nij/213420.pdf>.

Summary results for the Forensic Awareness Survey (sent to every police chief and sheriff in the U.S.) include:

- Average employment of departments is 120
- 60% of departments report having one or more employees that work directly on forensic services
- 85% of departments report that they conduct crime scene investigations
- Departments with forensic services have an average of 8.6 employees that work directly on forensic services.

These results provide the first look at forensic service providers outside of the Census of Publicly Funded Crime Labs from the Bureau of Justice Statistics.² As such the research indicates the larger scope of forensic services undertaken in the U.S.

² The *Census of Publicly Funded Forensic Crime Laboratories, 2005* is available at <http://www.ojp.usdoj.gov/bjs/pub/pdf/cpffcl05.pdf>.

INTRODUCTION

Mention the word “forensics” and many of us think of the popular television crime drama programs where crimes occur and are solved, including the “forensics,” all in one hour. Unfortunately, the reality is that forensic analysis takes much longer and, with recent improvements in forensic science, the demand for these services has increased to the point that significant backlogs exist in many disciplines.

The issue of backlogs at the nation’s publicly funded forensic laboratories has received considerable attention, especially with regards to DNA analysis. There have been numerous surveys of forensic laboratories over the years, including two recent studies³ from the Bureau of Justice Statistics, the *Census of Publicly Funded Crime Laboratories, 2002* and the *Census of Publicly Funded Crime Laboratories, 2005*, that have quantified and benchmarked the forensic analysis that takes place within the nations publicly funded forensic laboratories. In addition, research studies have specifically targeted DNA analysis.

While the existing research has provided much needed information on forensic analysis that takes place within the forensic laboratories, there has been a lack of research that quantifies and benchmarks other forensic services. According to the International Association for Identification’s (IAI) *180 Day Study Final Report*, two-thirds of fingerprint identification occurs outside the traditional forensic laboratory setting. The study also suggests that backlogs are prevalent in many of the identification units.

The current study, funded through the West Virginia University Forensic Science Initiative by a grant from the National Institute of Justice and conducted in collaboration with the IAI, examines forensic identification that is conducted outside of forensic laboratories. Data on forensic identification was gathered through two surveys. The first survey, a detailed survey about the organization’s jurisdiction, employment, functions performed, caseload, backlog, budget, and outsourcing, was sent to IAI members in the U.S. The second survey, a brief survey, was sent to every police chief and sheriff in the U.S. An overview and summary of the results for each survey is provided below.

³ *Census of Publicly Funded Forensic Crime Laboratories, 2002*, February 2005;
<<http://www.ojp.usdoj.gov/bjs/pub/pdf/cpffcl02.pdf>>

Census of Publicly Funded Forensic Crime Laboratories, 2005, July 2008;
<<http://www.ojp.usdoj.gov/bjs/pub/pdf/cpffcl05.pdf>>

FORENSIC IDENTIFICATION SURVEYS

Although studies examining forensic science within forensic laboratories exist, little is known about other forensic services, which are often performed outside the traditional forensic laboratory setting. In an effort to quantify and benchmark this forensic identification activity, two surveys were conducted, both sponsored by a grant (#2001-RC-CX-K003) from the National Institute of Justice. Copies of the two surveys, *Survey of Forensic Identification Professionals* and *Forensic Awareness Survey*, are available on this journal's website at <INSERT URL FOR WEBSITE HERE>.

The *Survey of Forensic Identification Professionals* was conducted in collaboration with the International Association for Identification (IAI), one of the largest forensic professional organizations. IAI's membership includes members from throughout the U.S. and around the world. Use of the IAI member mailing list, for active U.S. members, provided an ideal sample of forensic identification professionals, not only geographically, but also across many forensic disciplines, including: crime scene, latent print, photography, tenprint, bloodstain pattern, digital evidence, footwear, tire track, firearms, tool mark, questioned documents, forensic art, polygraph, and odontology.

The *Forensic Awareness Survey* was distributed to every police chief and sheriff throughout the U.S. The *Forensic Awareness Survey* was designed as a brief survey that would provide a snapshot of these local departments regarding their employment and role in forensic analysis.

SURVEY OF FORENSIC IDENTIFICATION PROFESSIONALS

Using active U.S. resident IAI members, the *Survey of Forensic Identification Professionals* was distributed to 5,353 forensic identification professionals. Surveys from 815 individuals (15.2 percent) were returned. In order to complement the 2002 and 2005 Census of Publicly Funded Crime Labs, members were asked if they worked "at a laboratory that is a member of the American Society of Crime Laboratory Directors (ASCLD)." Surveys from these members were not included in the analysis because the goal of the project was to quantify and benchmark forensic identification being conducted outside of the forensic laboratories (and thus not included in the 2002 and 2005 Censuses). In addition, respondents were excluded from the final results if they were retired or if more than one survey was completed for their organization. The final completed surveys used in this analysis represent 300 organizations that perform some level of forensic service.

Survey respondents were asked to provide information regarding their organization's jurisdiction, employment, functions performed, caseload, backlog, budget, outsourcing, and more. Several methods were utilized to increase the survey response rate, including:

- a cover letter from the IAI president was mailed with each initial survey
- researchers attended meetings of forensic service professionals and made presentations on the goals and benefits of the survey
- articles were published in the IAI newsletter and a prominent forensic magazine
- a follow-up post card was mailed reminding members to complete the survey
- members returning a completed survey were included in two drawings for an iPod nano
- reminder emails were sent to members with a valid email address
- surveys could be returned via fax or mailed back using an enclosed postage-paid envelope (or scanned and returned via email)
- multiple copies of the survey were provided by either a mailed hard-copy and/or an emailed Adobe PDF file

RESULTS

The following tables summarize the results of the survey. Over one-half of all respondents serve local city (or city-equivalent) jurisdictions (Table 1). Nearly 80 percent of the forensic identification units serve sub-state areas (city or county).

<INSERT TABLE 1 HERE>

The forensic identification units are generally small units with 68.3 percent of organizations consisting of 10 or fewer employees (Table 2). While more than 90 percent of the forensic identification units have 50 or fewer employees, they account for just over one-third (35.4 percent) of total employment. Over 50 percent of the total employment comes from organizations with more than 100 employees.

<INSERT TABLE 2 HERE>

The forensic identification units may include both sworn and civilian employees, but these make up less than one-third of all units (Table 3). Forensic identification units are much more likely to be completely staffed by civilian employees (42.4 percent of all units) or completely staffed by sworn employees (25.5 percent of all units).

<INSERT TABLE 3 HERE>

Forensic identification units perform numerous forensic functions. Crime scene investigation and latent print identification/AFIS are most common with 78.5 percent of all units conducting crime scene investigation and 76.5 percent conducting latent print identification (Table 4). Less than one in five units conduct firearms/tool mark examinations, as staffing of these positions has become challenging with many of the existing analysts nearing retirement and with a shortage of qualified firearms analysts available.

<INSERT TABLE 4 HERE>

Budgets of forensic identification units vary widely. Not surprisingly, forensic service units that serve larger jurisdictions are likely to require, and indeed do have, larger average total budgets. What is potentially alarming is that the forensic service units that serve the city jurisdictions (accounting for more than one-half of all units) spend nearly 88 percent of their budget on personnel (wages, salaries, and benefits), while units at the county and state level spend 49.6 percent and 42.6 percent, respectively. This leaves forensic service units at the city-level with little money left over for purchasing equipment and supplies (\$40,600 on average). This is compared to equipment and supplies budgets of \$333,400 for county-level forensic service units and \$1,349,000 for state-level forensic service units.

<INSERT TABLE 5 HERE>

While the forensic service units that serve cities have little money for equipment and supplies compared to units with county or state jurisdictions, the units with city jurisdiction have nearly as many cases per FTE and almost double the number of cases per \$1,000 of budget (Table 6). The budget per FTE of units serving city jurisdictions falls well short of budget per FTE of units serving county jurisdictions. Units serving city jurisdictions have budgeted \$77,233 per FTE compared to \$149,765 for units serving county jurisdictions. On the other hand, units serving county jurisdictions averaged 3,508 cases, more than double that of units serving city jurisdictions that averaged 1,542 cases.

<INSERT TABLE 6 HERE>

The following figures plot the individual units using cases per FTE on the vertical axis and budget per FTE of the unit on the horizontal axis. Figure 1 provides all units with respect to the average cases per FTE and budget per FTE. As the figure shows, relatively few units with very large cases per FTE or budgets per FTE can influence the averages. This is most evident with regard to the budget per FTE.

<INSERT FIGURE 1 HERE>

Figure 2, plotting the same units by case and budget per FTE, shows the mean (average) and median (middle value) for each measure. Using the median cases per FTE and median budget per FTE provides a more meaningful way of looking at these individual units. Thus the remaining figures are shown with the median values only.

<INSERT FIGURE 2 HERE>

The earlier tables provided a look into the differences of units based on the jurisdiction they serve. While this is useful from a descriptive standpoint, it may be useful from a policy view to examine the units based on a different measure because some units with city jurisdiction may actually be serving a larger area than some of the units that are serving a county jurisdiction. The following figures take a look at units of varying employment size, plotting the cases per FTE against the budget per FTE as in Figure 1 and 2.

Figure 3 shows the units with 1-5 employees (plotted in red). These very small units account for the vast majority of units with low cases and budget per FTE. These units are also likely to have above the median number of cases per FTE, regardless of budget per FTE, while they are not likely to have a high (relative to the median) budget per FTE with a low number of cases per FTE.

<INSERT FIGURE 3 HERE>

Figure 4 shows the units with 6-10 employees (plotted as solid red dots). These units tend to have above the median budget per FTE, while they may be above or below the median cases per FTE. Units with 11-20 employees (plotted as solid red dots in Figure 5), on the other hand, are just as likely to be in all four quadrants: low cases-low budget; low cases-high budget; high cases-low budget; high cases-high budget. Finally, Figure 6 shows the units with more than 20 employees (plotted as solid red dots). These units, almost exclusively, have above the median budget per FTE and are just above or below the median number of cases per FTE.

<INSERT FIGURE 4 HERE>

<INSERT FIGURE 5 HERE>

<INSERT FIGURE 6 HERE>

While economies of scale may suggest that the larger units would have an efficiency advantage over the smaller units, as measured by cases and budget per FTE, the above figures do not support this suggestion. A closer examination of the individual units may provide the answer. For example, are the larger units analyzing the more difficult cases with more forensic requests per case or with forensic requests that take more time to complete?

Table 7 provides information regarding the backlog of cases that exist in units by type of jurisdiction they serve. A case was to be considered backlogged if it remained unreported for a period of 30 days or more. The number of backlogged cases was reported as of December 31, 2006.

Approximately three-fourths of units that serve local city or county jurisdictions provided the number of cases received by their unit in 2006, compared to two-thirds of units that serve a state jurisdiction. Those units providing information on the number of cases and the number of backlogged cases were used to compute the average backlogs presented in the table. Most notably, forensic service units that provide services for a state jurisdiction average significantly longer backlogs (31.2 percent of annual cases received). The backlog in these units is equivalent to 4 months in terms of annual cases received. Units serving local jurisdictions (city or county) also had significant numbers of backlogged cases, albeit much less than units serving entire states. Units serving a city reported an average backlog of 6.4 weeks and units serving counties reported backlogs of nearly 1 month. Given the nature of many of the smaller units and their budget concerns, it is not surprising to see the longer backlogs at the state-level units since many of the local-level units rely on the state-level units for analysis they are not equipped to handle.

<INSERT TABLE 7 HERE>

Additionally, respondents were asked about outsourcing and quality assurance. Fifty percent of units reported outsourcing with tenprint, latent print, and firearms/tool mark examinations being the most frequent requests outsourced. Nearly 15 percent of units also outsource peer review for verification. Many units value accreditation with 13 percent already accredited and another one-third are currently considering accreditation. Two-thirds of units have a system to verify results and one-third having LIMS or other system.

FORENSIC AWARENESS SURVEY

The *Forensic Awareness Survey* was mailed to every U.S. police chief and sheriff. In all, 15,918 surveys were mailed. Surveys were completed for 1,219 departments. The Forensic Awareness Survey was intended to identify how many of the local city police and county sheriff departments had personnel to work on forensic services and what types of forensic functions they performed. This survey was sent to every department, regardless of whether or not they had an employee who was a member of IAI. For this reason, these results stand on their own and must be used with caution when comparing to the limited sample of units covered by the detailed IAI survey.

Survey respondents were asked to provide information regarding their organization's jurisdiction, total employment, FTE employment, forensic employment, and forensic functions performed. Due to the number of departments included in the survey, the survey instrument was mailed only once and no reminder post cards or emails were sent to the departments. In order to increase the response rate, the survey was able to be returned without postage and a version of the survey was provided online. Only 16.4 percent of respondents chose to fill out the online version of the survey. The remaining 83.6 percent returned the survey via the U.S. Postal Service.

RESULTS

The following tables summarize the results of the survey. The city police and sheriff departments averaged 120 full-time and part-time employees (Table 8). These departments had, on average, 4.3 percent of their employees that worked directly on forensic services. Only 59 percent of departments reported having one or more employees work directly on forensic services. These departments had an average of 8.6 employees that worked directly on forensic services (median = 7.5).

<INSERT TABLE 8 HERE>

Survey respondents were also asked what forensic functions they performed. These results are provided in Table 9. While less than 60 percent of departments reported having at least one employee that worked directly on forensic services, nearly 85 percent of departments listed crime scene investigation as a forensic function they performed. This indicates that many of these departments do not consider crime scene work as forensic services. The other forensic functions, possibly more generally accepted as "forensic services," all fall below the 60 percent threshold. While several of the forensic functions provided from the *Forensic Awareness Survey* are similar to those reported

from IAI members, others are quite different. Most notable is latent print identification where IAI members reported 76.5 percent of units performed this function compared with 33.9 percent for this survey.

<INSERT TABLE 9 HERE>

CONCLUSION

While previous government funded studies have focused primarily on forensic science that takes place in the laboratory setting, recent studies have suggested that a significant amount of forensic analysis takes place in law enforcement agencies across the United States. This report summarizes the findings from two surveys aimed at these “non-laboratory” forensic service providers.

The first survey, *Survey of Forensic Identification Professionals*, was sent to members of the International Association for Identification and asked detailed questions about the organization’s jurisdiction, employment, functions performed, caseload, backlog, budget, and outsourcing. The second survey, *Forensic Awareness Survey*, was sent to every police chief and sheriff in the U.S. The second survey asked only for the organization’s total employment, employees working on forensics, and the forensic functions performed by the organization.

The results from these surveys suggest that forensic services are widely performed outside of the traditional laboratory setting. In fact, 85 percent of these local (city and county) jurisdictions conduct crime scene investigations with 60 percent of the departments having one or more employees that work directly on forensic services.

The results also suggest a significant difference in funding across organizations. Units serving city (or city-equivalent) jurisdictions spend 88 percent of their budget on personnel, leaving only 7.2 percent (\$40,600) for equipment and supplies, while units serving county jurisdictions spend less than 50 percent of their budgets on personnel. The results also indicate a difference in funding per full-time equivalent employee (FTE) with units serving city jurisdictions reporting budgets of \$77,000 per FTE compared to \$150,000 per FTE for units serving county jurisdictions.

These results provide the first look at forensic service providers outside of the Census of Publicly Funded Crime Labs from the Bureau of Justice Statistics. As such the research indicates the larger scope of forensic services undertaken in the U.S. and provides a snapshot of these service providers that can be used as a benchmark for future research.

Table 1	
Jurisdiction Served	
Survey of Forensic Identification Professionals, IAI Members	
Jurisdiction Served	Percent of Organizations
City, Borough, Village, or Town	50.9%
County	28.5
State	10.0
Federal/National	3.8
Other (Private, International, etc.)	6.9

Table 2		
Total Full-Time and Part-Time Employment		
Survey of Forensic Identification Professionals, IAI Members		
Employment	Percent of Organizations	Percent of Total Employment
1 - 10 Employees	68.3%	11.5%
11 - 50 Employees	27.1	23.9
51 - 100 Employees	2.8	12.9
Greater Than 100 Employees	1.8	51.7

Table 3	
Sworn vs. Civilian Units	
Survey of Forensic Identification Professionals, IAI Members	
	Percent of Organizations
100% Sworn Employees	25.5%
80%-99% Sworn Employees	7.8
80%-99% Civilian Employees	9.8
100% Civilian Employees	42.4

Table 4	
Forensic Functions Performed	
Survey of Forensic Identification Professionals, IAI Members	
Forensic Function	Percent of Organizations
Crime Scene	78.5%
Latent Print	76.5
Photography	72.0
Tenprint	66.6
Bloodstain	40.6
Digital Evidence	34.1
Footwear	31.4
Firearms	18.1
Forensic Art	12.6
Questioned Documents	12.3
Polygraph	7.2
Odontology	1.4

Table 5

Budget by Jurisdiction Served

Survey of Forensic Identification Professionals, IAI Members

Jurisdiction Served	Average Total Budget	Percent of Total Budget		
		Personnel (including Fringe)	Equipment and Supplies	Other
City, Village, or Town	\$561,000	87.9%	7.2%	4.9%
County	\$1,741,000	49.6	19.1	31.3
State	\$8,436,000	42.6	16.0	41.4

Table 6		
Cases and Budget per FTE		
Survey of Forensic Identification Professionals, IAI Members		
Average Unit	City, Village, or Town	County
Number of Cases	1,542	3,508
Cases per FTE	214	226
Budget per FTE	\$77,233	\$149,765
Cases per \$1,000 Budget	2.8	1.5

Respondents that provided detailed budget, number of cases, and full-time equivalent (FTE) employment are included. Averages for units serving state jurisdictions are not included due to small sample size.

Table 7

Backlogged Cases

Survey of Forensic Identification Professionals, IAI Members

Jurisdiction Served	Percent of Respondents That Provided # of Cases	Percent of Respondents with # of Cases That Provided # of Backlog	Backlog as a Percent of Cases Received in 2006	Backlog in Weeks
City, Village, or Town	75.7%	29.5%	12.3%	6.4
County	73.5	31.1	7.3	3.8
State	65.5	36.8	31.2	16.2

Table 8

Selected Characteristics of City Police and Sheriff Departments

Forensic Awareness Survey

City Police and Sheriff Departments

Average Number of Employees	120
Average Number of FTE Employees	101
Percent of Employees that Work Directly on Forensics	4.3%

Table 9

Forensic Functions Performed by City Police and Sheriff Departments

Forensic Awareness Survey

Forensic Function	Percent of City Police and Sheriff Departments
Crime Scene	84.7%
Photography	44.9
Footwear	34.0
Latent Print	33.9
Digital Evidence	25.3
Bloodstain	22.6
Tenprint	21.3
Firearms	18.3
Polygraph	17.6
Questioned Documents	11.7
Forensic Art	6.5
Odontology	1.0

Figure 1
Cases and Budget per FTE
Survey of Forensic Identification Professionals, IAI Members

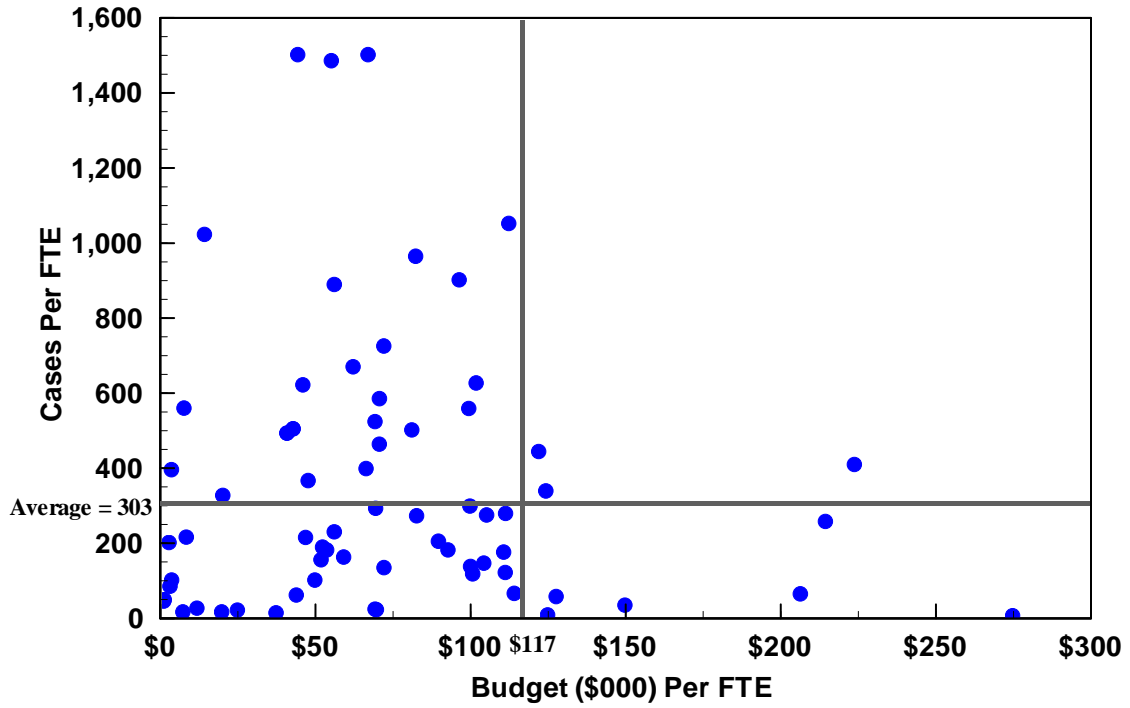


Figure 2
Cases and Budget per FTE – Mean vs. Median
Survey of Forensic Identification Professionals, IAI Members

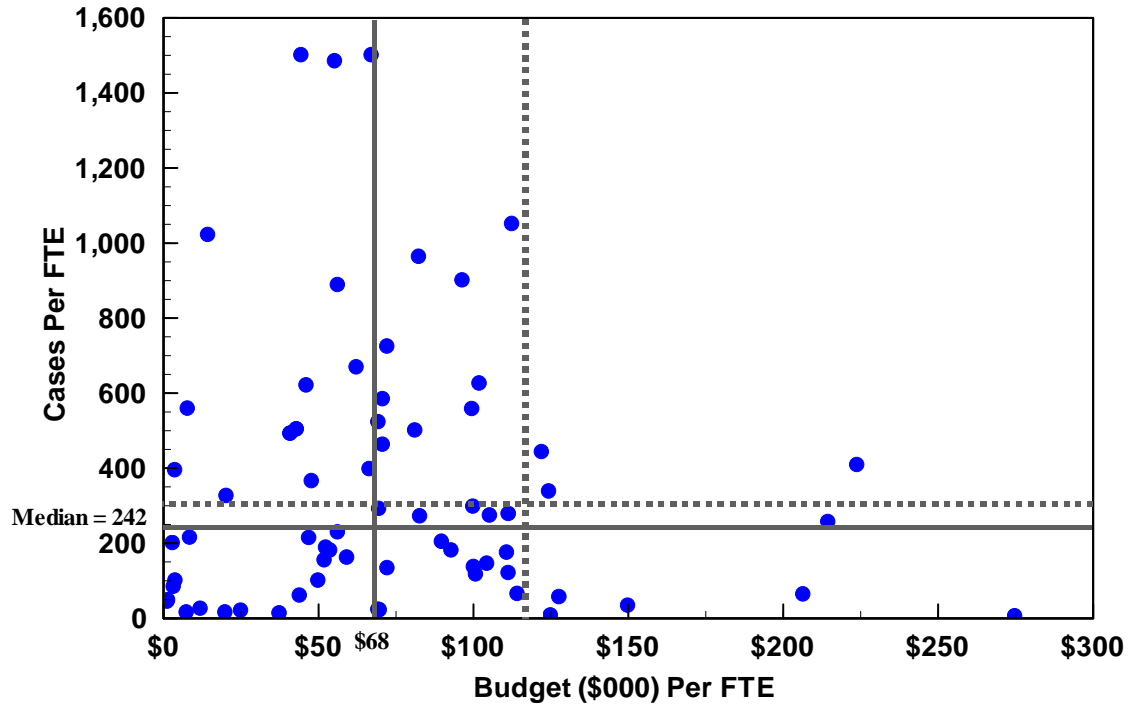


Figure 4
Cases and Budget per FTE – 6-10 Employees
Survey of Forensic Identification Professionals, IAI Members

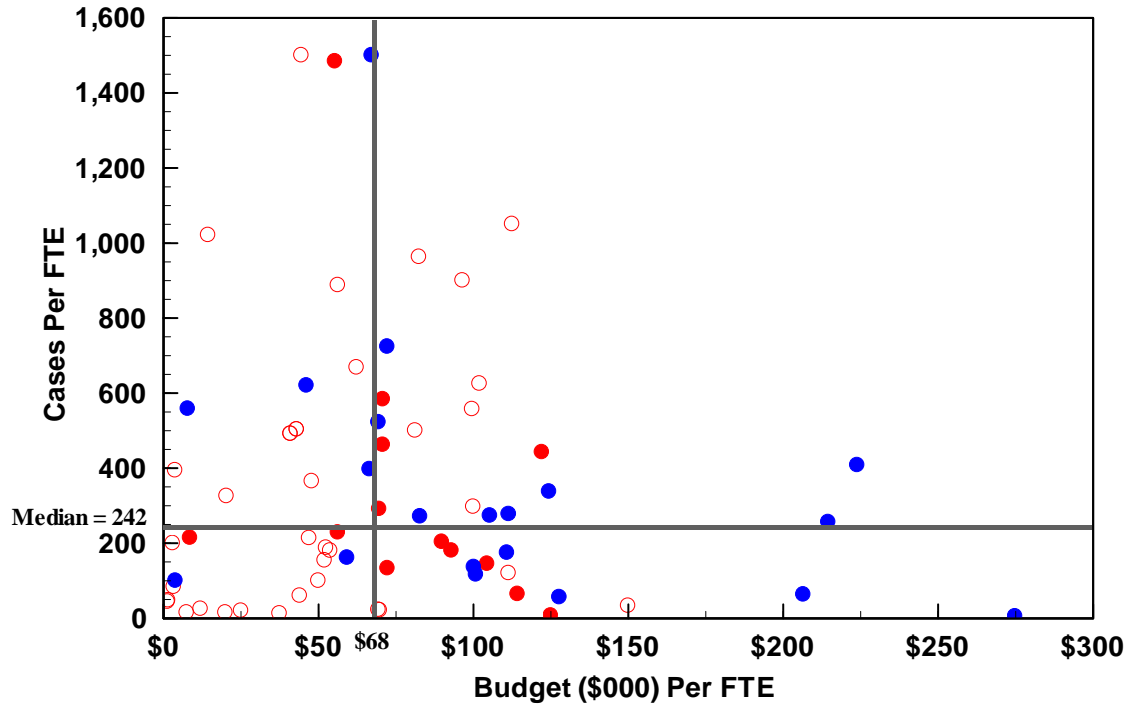


Figure 5
Cases and Budget per FTE – 11-20 Employees
Survey of Forensic Identification Professionals, IAI Members

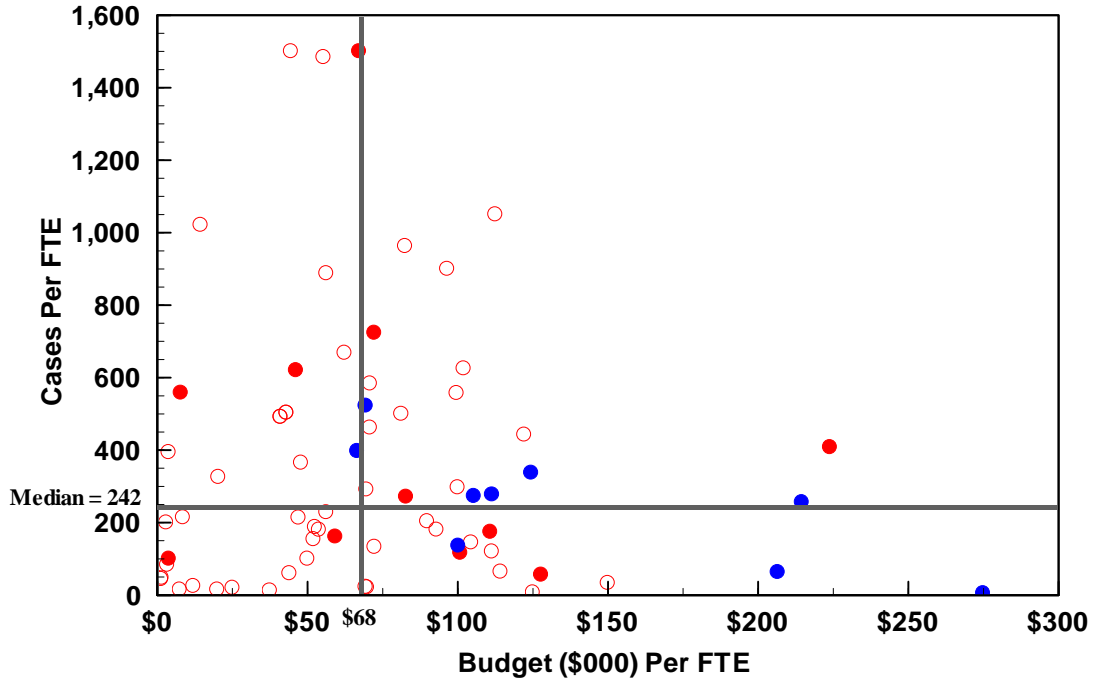


Figure 6
Cases and Budget per FTE – 21+ Employees
Survey of Forensic Identification Professionals, IAI Members

