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A Professional Profile of the Physical Anthropology Section Membership, American Academy of Forensic Sciences

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ABSTRACT: The membership of the Physical Anthropology Section of the American Academy of Forensic Sciences was surveyed regarding training; section activity; teaching; forensic science activities; and trial, deposition, and caseloads over the last 20 years. Over 75% of the active members responded. Over half of the respondents had formal forensic anthropology training, 70% held a Ph.D. degree and 52% had primary appointments in university and college departments of anthropology. Approximately half of those involved in teaching were producing forensic anthropology students. Local areas (36%) and states (45%) are primary sources of cases. Respondents spend nearly 60% of their professional time on forensic science activity, mostly in casework and research/writing. Over the past 20 years, there has been a revolution in the training of forensic anthropologists, in terms of formal coursework and supervision of student cases. Also in that time, caseloads, depositions given, and trial appearances have greatly increased. When region, highest degree earned, membership status, and board certification are considered, there are few significant differences in the forensic anthropology activity of members, and most of these differences are in training and Academy membership status.

KEYWORDS: physical anthropology, surveys, education, forensic science casework, forensic science training, forensic science activity, membership profile

In 1971 there were four forensic anthropologist members of the American Academy of Forensic Sciences (AAFS). The Physical Anthropology section of the AAFS was chartered in 1971 and held its first meeting in 1972; Snow's excellent summary [1] contains a personal account of the Section's establishment. By 1978, it had grown to 37 members [2], and to 91 in 1987 [3], when this survey was conducted. By 1988, it had grown to 103 members. The growth in Section membership in the 10-year period between 1978 and 1988 was 178%, an increase exceeded only by the Odontology Section (199%). During the same period, the rate of growth of the entire Academy was 58.9%. Figure 1 depicts the growth in the Physical Anthropology Section from 1967 to 1986, by region.

Methods

All members of the Physical Anthropology Section of the AAFS were surveyed by mail questionnaire following the Academy's annual meeting in February 1987. The question-

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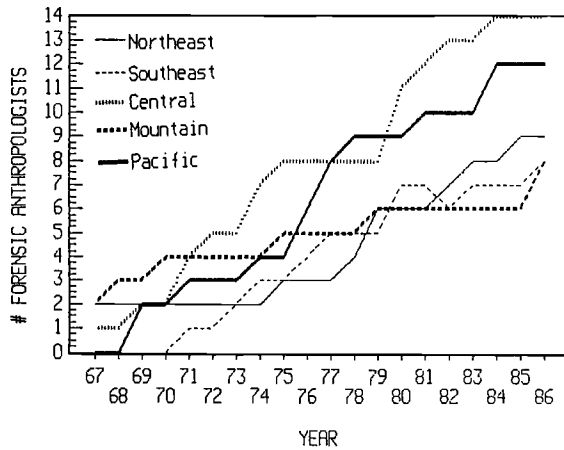


FIG. 1—Growth in number of Physical Anthropology Section members of the Academy, 1967–1986, by region, for respondents to this survey.

naire, accompanied by a stamped, addressed return envelope, was anonymous; information elicited including the respondent's formal training in forensic anthropology, background data related to a variety of matters regarding forensic anthropology and the Section, one's formal institutional affiliation/affiliations, the nature of one's forensic anthropology activities, including teaching, trial appearances, depositions, and caseloads for the previous 20 years. Members were also queried with respect to the number of supervised cases on which they had worked as students over the previous 20 years. A month after the first mail-out, a follow-up mailing was conducted.

This report focuses on an analysis of 67 of the responses received from regular (non-retired, non-honorary) members in all categories: Trainee Affiliates, Provisional Members, Members, and Fellows. The sample includes 77.9% of the 86 "regular" living members of the Section as of 1 Dec. 1987; it is not significantly different from the membership composition of the Section at large ($X^2 = 1.3090$, 3 degrees of freedom (df), $p > 0.70$). Unfortunately, 2 of the Section's members with very heavy caseloads did not respond to the survey, perhaps as a result of the volume of their forensic science work. Consequently, the figures cited later probably somewhat understate the true level of recent professional activity by forensic anthropologists.

Individual responses were recorded as reported, unless the data were not precise. All data transformations were made using prudent, if not conservative, assumptions. The data were computerized and analyzed using SAS [4].

Results

Section Profile

As of 1 Dec. 1987, the official roster of the Section [3] included 5 retired or honorary members. Of the remaining 86 members, 14% (13) were trainee affiliates, 39% (35) provisional members, 13% (12) members, and 29% (26) fellows. Slightly less than 40% of the respondents were Diplomates of the American Board of Forensic Anthropology, Inc. (ABFA).

In several fundamental ways, some features of the general section profile mirror the findings of Field et al. [5], who focused on forensic anthropologists in a survey of physical anthropologists and anthropology departments over a decade ago. However, for a relatively

small group of individuals, the membership of the Section is surprisingly diverse with respect to training in forensic anthropology, professional affiliations, and the extent of their involvement in forensic science teaching, research, and casework.

Patterns in Education and Teaching

Over 70% (47) of the respondents possessed the Ph.D. degree; 19% (13) had earned a master's degree. The rest possessed either a baccalaureate, an M.D., or a D.D.S. degree. The modal year in which respondents earned their highest degree was 1972; 1975 was the median. Slightly less than half of the respondents earned their highest degree during the 1970s.

Only recently has the subject matter of forensic anthropology begun to be recognized as a legitimate focus in the academic arena, as earlier reported by Brooks [6]. The involvement of students in supervised casework has systematically increased over the past 20 years, as demonstrated in Table 1. As a group, respondents did not have strong formal training in forensic anthropology. Over two thirds of the respondents had not had any casework supervision as students, and over three quarters had not had any formal forensic anthropology courses as undergraduates. Of the respondents 45% also had no such training at the graduate level; only 9% indicated any formal post-graduate training in forensic anthropology.

Respondents reported spending an average of 15% of their professional time teaching forensic anthropology and 22% of their time in forensic science research or writing. Of those respondents actively engaged in teaching, approximately 60% had current forensic science students at either the bachelor's, master's, or doctoral levels. Over 40% had seen forensic science students through to graduation, primarily at the master's level.

Professional Affiliations

University anthropology departments were the primary professional affiliation of 52.2% of respondents; an additional 17.2% were students. Medical examiner's and Coroner's of-

TABLE 1—Mean supervised cases as students (N = 19).

Dates	\bar{X}	N
1967-1970	0.00	0
1971	1.00	2
1972	1.67	3
1973	1.67	3
1974	1.50	2
1975	2.00	1
1976	3.00	1
1977	6.50	2
1978	16.50	2
1979	10.50	4
1980	17.50	2
1981	10.00	5
1982	3.40	5
1983	7.60	5
1984	10.10	7
1985	10.00	8
1986	12.00	9
1967-1971	1.0/year	2
1972-1976	1.8/year	4
1977-1981	11.5/year	7
1982-1986	9.3/year	12

fices employed 7.5%, and 14.4% were either with government agencies such as the U.S. Army's Central Identification Laboratory (CILHI) or were privately employed. This is a noteworthy change from the past, when few forensic anthropologists were found outside academia, and none was employed fulltime in forensic science work [6]. As forensic anthropology becomes better established, the opportunity for "novel" kinds of employment will probably increase as well, including private consultation after retirement from formal institutional careers.

Regional Patterns

The United States and adjacent areas of Canada and the Pacific Ocean were divided into the regions shown in Fig. 2. Responses were assigned to a geographical area on the basis of survey return envelope postmarks, with approximately equal numbers of members in each. The five regions were Pacific (16 members), Mountain (18), Central (16), Southeast (14), and Northeast (18).

Regionally, there are statistically significant patterns to few variables (Table 2). For the percentage of time spent in forensic science research and writing, the Northeast is relatively low and the Pacific is comparatively high. Respondents in the Mountain region had proportionately more, and those in the Pacific less, formal forensic anthropology graduate training.

That is due to a larger number of senior forensic anthropologists in the Pacific region and the large number of trainee affiliates (students) in Arizona and New Mexico. The latter fact also explains the proportionately larger number of bachelors- and masters-degree holders in the Mountain region, a contrast to the proportionately greater concentration of Ph.D./M.D./D.D.S. degrees in the Central region.

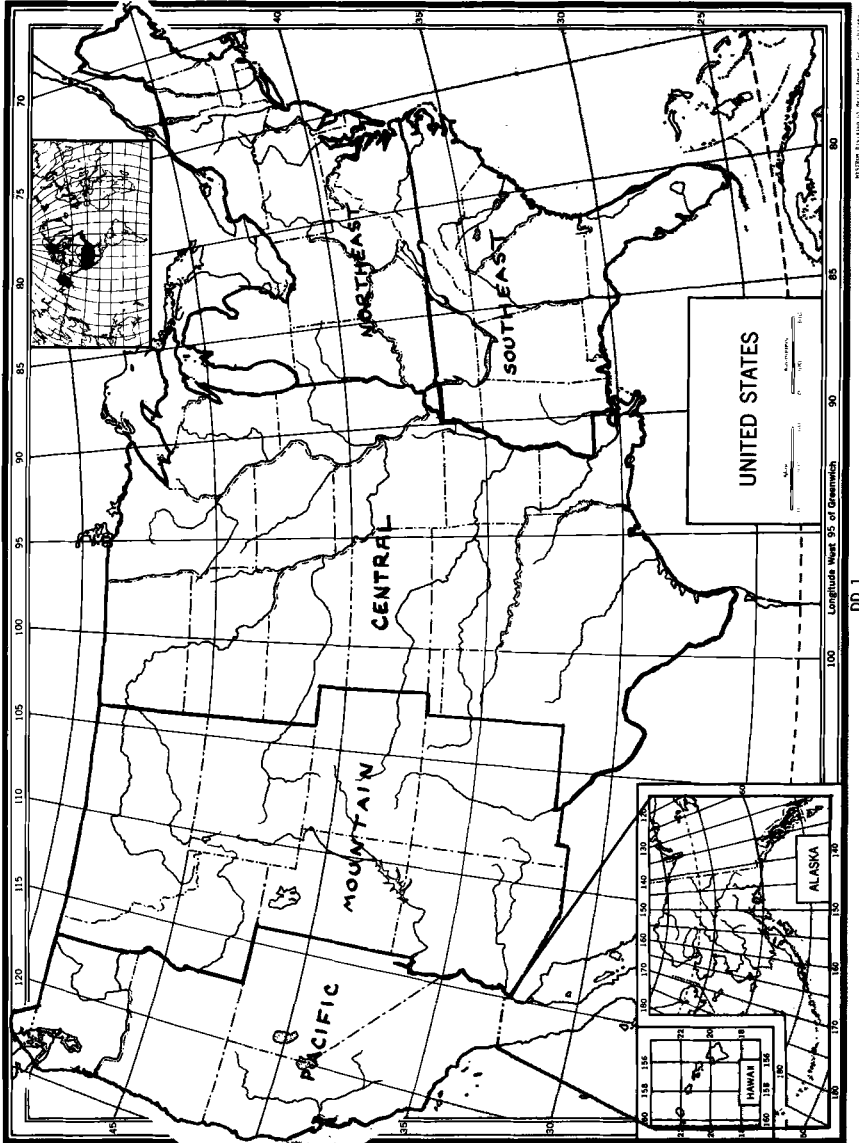
The Southeast region had the smallest average caseload (Table 3). This may be partly due to the potential for facile disposal of bodies off the very long shorelines of the nearby Atlantic Ocean and Gulf of Mexico. The Pacific region manifested the highest average caseload. Here the potential of the ocean as a repository would seem to be offset by the use of the deserts near the Los Angeles area. The deserts would seem to offer an easy, unobserved disposal ground for bodies. However, bodies are encountered by hikers and people in off-road vehicles. In addition, several respondents in the Pacific region were connected with the U.S. Army's CILHI, which processes sizeable numbers of remains from missing or unidentifiable U.S. military personnel, from the western and southwestern Pacific and other venues worldwide.

Both the Pacific and Mountain regions began steady growth in caseloads during the middle 1970s, followed closely by the Northeast (Fig. 3). A recent dramatic increase in caseloads in the Central region has moved 4 of the 5 regions above 150 cases each in 1986, the last year covered by the survey (Fig. 4). Also in 1986, there was a spurt in the number of cases in the Pacific region, probably attributable to the recent arrival of respondents at CILHI.

Patterns in Casework and Court Appearances

Respondents reported spending an average of 21% of their professional time on forensic science casework. The modal and median year for initiation of formal consultation was 1974. Most respondents (39%) derived caseloads primarily from medical examiners. Twenty-four percent indicated that coroners were the primary source of their cases, and 22% listed police. Only two (3.7%) obtained most of their cases from the private sector.

Table 3 summarizes the growth in forensic anthropology caseloads since 1967. The number of forensic anthropologists, the total caseload, and the average caseload per anthropologist is given; totals are given regionally by year. Of the 67 respondents 5 (7.5%) reported a total of only 10 cases in 1967. When the Section held its first meeting in 1972, 32% of those



DD 1

FIG. 2.—Regional configuration used in data analysis.

TABLE 2—Statistically significant differences in responses by region.

Variable	F	df	p
Number of graduate forensic courses	2.59	4,62	< 0.05
Highest degree earned	5.10	4,62	< 0.002
Time spent in research/writing, %	2.69	4,55	< 0.05

responding to the survey had completed their first formal consultation in forensic anthropology. By 1980, 77% had done so.

Figures 3 and 4 show the growth in average and total caseloads. Forensic anthropology casework remained infrequent until the mid 1970s. The number of forensic anthropology cases reported from 1967 to 1974 was well exceeded by those reported for 1979. The total number of cases reported for 1986 (1019) surpassed the total reported from 1967 to 1978 by more than 12%. There has been spectacular growth in overall caseloads and a clear increase in average caseloads. This suggests that, as forensic anthropology students progress in their educations and careers, there will most likely be ample forensic science work for them.

Forensic science work naturally implies the willingness of its practitioners to appear in court as expert witnesses. Table 4 documents a significant increase in trial appearances by forensic anthropologists. Yet, forensic anthropologists are rarely called upon to testify, perhaps because their findings are usually incorporated into the report of the coroner or medical examiner. Also, the legal profession may not be sufficiently familiar with forensic anthropology to request that the anthropologist appear as a witness.

In 1986, for respondents who consulted formally, there was an average of 0.67 trial appearances, 0.55 depositions, and 20.0 cases. The comparable respective figures for 1967 were 0.17, 0.67, and 2.0. As Figs. 3 and 4 document, while trial appearances increased only fourfold in 20 years, caseloads increased tenfold. Table 4 documents an almost invariable statistically significant increase in forensic science activity between each successive 5-year period from 1967 to 1986, as well as between the earliest and the most recent period.

This continuing increase in the number of cases accorded forensic anthropological treatment across the country would seem to be a clear indication of the value of anthropology under a variety of conditions. Annual surveys, including the most recent,³ of the diplomates board certified in forensic anthropology by the ABFA, have shown a wide variety of casework, including nonhuman, historical, and prehistoric skeletons initially thought to be human, isolated skulls, more complete skeletons, incinerations, decomposed bodies, and a significant number of "fleshed" remains as well. The latter were recently discussed in a symposium [7] in the Physical Anthropology Section's program at the 1988 annual meeting of the Academy.

The "Longevity" Factor

There were many statistically significant relationships between such synergistic variables as Academy membership category, diplomate status, highest degree earned, the year of one's first formal forensic consultation, the year that the highest degree was earned, the year that one was accepted into the Academy, and participation in Academy meetings. Those relationships were to be expected and can be primarily ascribed to longevity of interest and experience in the professional practice of forensic anthropology.

³J. S. Rhine, "Update Report" (unpublished), American Board of Forensic Anthropology, Albuquerque, NM, 87106.

TABLE 3—Annual caseloads of respondents, 1967–1986, by region: N = number of forensic anthropologists; Total = total number of cases.

Year	Pacific		Mountain		Central		Southeast		Northeast		Total	
	N	\bar{X}	N	\bar{X}	N	\bar{X}	N	\bar{X}	N	\bar{X}	N	\bar{X}
1967	...	...	2	1.00	1	2.00	...	...	2	6	5	2.00
1968	...	...	3	1.67	1	3.00	...	...	2	6	6	3.00
1969	2	1.50	3	1.33	2	1.50	...	...	2	6	9	1.78
1970	2	1	4	1.50	2	4	...	...	2	6	10	1.70
1971	3	12	4	1.75	4	8	...	...	2	6	14	3.00
1972	3	4	4	1.33	5	9	1	5	2	7	15	2.33
1973	3	12	4	1.33	5	7	1	4	2	7	16	3.00
1974	4	29	4	1.33	5	7	2	9	2	7	20	4.05
1975	4	50	4	1.33	7	15	3	14	2	7	23	6.00
1976	6	43	5	3.6	8	33	3	11	3	8	26	5.27
1977	8	64	5	4.3	8	35	4	7	3	9	29	5.48
1978	9	60	5	4.7	8	16	5	19	3	13	31	6.81
1979	9	137	5	6.4	8	17	5	28	4	42	34	9.32
1980	9	96	6	8.0	8	22	5	23	6	55	39	8.92
1981	10	149	6	12.8	11	29	7	44	6	85	41	10.56
1982	10	119	6	13.3	12	49	7	45	6	65	42	9.88
1983	10	143	6	15.3	13	49	6	18	7	76	44	11.57
1984	12	174	6	15.3	13	48	7	62	8	130	47	13.83
1985	12	224	6	14.9	14	93	7	87	8	147	48	15.85
1986	12	396	6	18.6	14	165	7	59	9	118	51	19.98
TOTALS	1716		1406		782		502		950		5356	

TABLE 4—Trial appearances, depositions given, and cases in five-year periods, 1967-1986; N = number of forensic anthropologists.

5-Year Period	N	Trials			Depositions			Cases					
		\bar{X}	t	df	p	\bar{X}	t	df	p	\bar{X}	t	df	p
1967-1971	14	0.43				1.43	1.17	39	0.265	6.79	2.61	39	0.022
1972-1976	27	0.78	2.12	39	0.054	1.00	2.11	66	0.045	16.26	3.28	66	0.003
1977-1981	41	1.15	2.74	66	0.011	1.15	2.29	90	0.028	35.81	4.51	90	0.001
1982-1986	51	3.04	2.55	90	0.015	2.67				65.77			
1967-1971/ 1982-1986			2.77	63	0.016		1.68	63	0.116		3.20	63	0.008

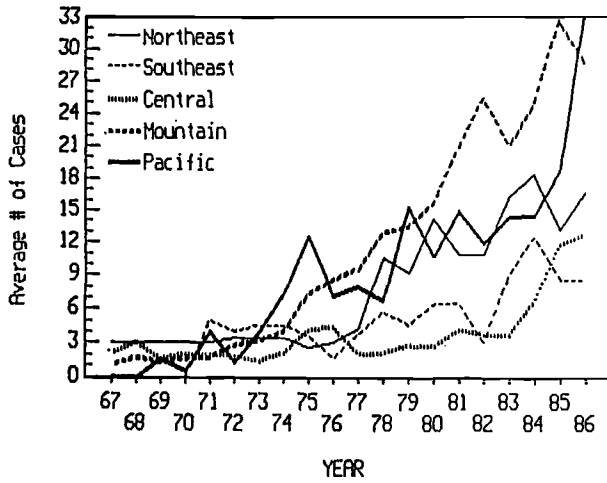


FIG. 3—Average annual caseloads of respondents, by region.

Patterns in Membership Status

Several statistically significant patterns exist with respect to Academy membership status. When Academy meeting attendance and authorship of papers are correlated with highest degree earned and membership status, controlling for the year that the highest degree was earned and for the year of entry into the Academy (checks on longevity), membership status emerges as a most meaningful variable; results are both positive and significant (Table 5). Fellows are the most active participants in the Section, trainee affiliates, the least, as one would expect.

Table 6 summarizes the statistically significant findings discussed in the rest of this section and in the following sections. Analyses of variance by membership status reveal that there are significant patterns regarding undergraduate forensic science training (members have more), graduate forensic science training (fellows more), and caseloads in the last ten years (a hierarchy with fellows having the heaviest).

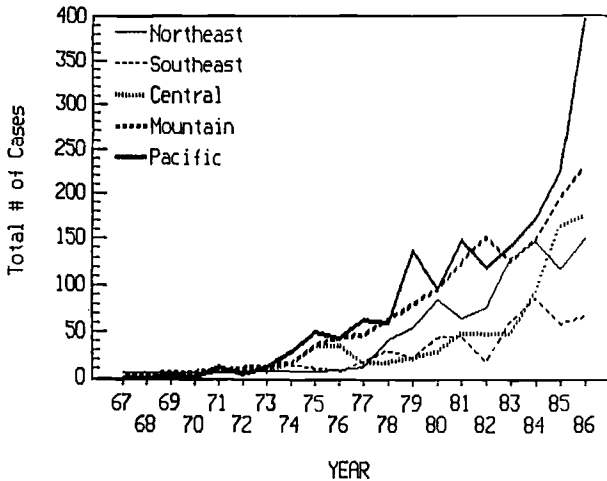


FIG. 4—Total caseloads of respondents, by region.

TABLE 5—*Partial correlations of highest degree earned and Academy membership status with number of Academy meetings attended and total number of Academy meeting papers authored or co-authored, when year of acceptance into Academy and year the highest degree was earned are controlled (N = 60).*

Variable	<i>r</i> : Meetings Attended	<i>p</i>	<i>r</i> : Papers Authored	<i>p</i>
Highest degree ^a	0.125	0.166	0.181	0.080
Member status ^b	0.365	0.002	0.432	0.001

^aOrdinal variable. 1 = Bachelor's, 2 = Master's, 3 = Ph.D., 4 = M.D., D.D.S.

^bOrdinal variable. 1 = Trainee Affiliate, 2 = Provisional Member, 3 = Member, 4 = Fellow.

Patterns in Board Certification Status

Diplomates of the ABFA have had an average of eight and one-half years more consulting experience, and, as a result, have no doubt made more professional contacts and are better known within the medicolegal system than are non-diplomates (who are also younger). Yet there is no statistically significant difference in trial appearances, depositions given, or case-loads, between those who are and those who are not board certified, for the last five-year period (1982 to 1986) covered by the survey. One possible explanation of that apparent incongruity may be the lack of responses and recent data from some very senior and active diplomate fellows of the Section, as noted earlier.

Note that the mean number of trial appearances and depositions given by those respondents who began formal consultation during the final five-year period (1982 to 1986) ex-

TABLE 6—*Statistically significant differences in responses by Academy membership status, Board Certification status, and highest degree earned.*

Variable	<i>F</i>	df	<i>p</i>
ACADEMY MEMBERSHIP STATUS			
Number of undergraduate forensic courses	2.83	3,63	<0.05
Number of graduate forensic courses	5.18	3,63	<0.003
Number of current baccalaureate students	4.98	3,63	<0.002
Number of trial appearances: 1977-1981	3.80	2,38	<0.05
Number of cases: 1977-1981	6.25	2,38	<0.005
Number of cases: 1982-1986	3.34	2,48	<0.05
BOARD CERTIFICATION STATUS			
Number of graduate forensic courses	3.80	58,5	<0.001
Primary professional affiliation	2.12	65,0	<0.05
Cases from within state, %	2.43	52,0	<0.05
Number of trial appearances: 1977-1981	2.33	26,7	<0.05
Number of cases: 1967-1971	2.60	9,9	<0.05
Number of cases: 1977-1981	2.99	25,5	<0.007
HIGHEST DEGREE EARNED			
Number of graduate forensic courses	9.31	3,63	<0.001
Cases from within local area, %	3.92	3,50	<0.02
Cases in United States, beyond region, %	3.40	3,52	<0.03
Number of trial appearances: 1982-1986	8.94	2,48	<0.005
Number of depositions given: 1982-1986	20.00	2,48	<0.001

ceeded those of diplomates, for the same time span. Although the differences in mean caseloads for the 1972 to 1976 or 1982 to 1986 periods are not significant *statistically* with respect to certification status, in both periods those who are board certified had over twice as many cases as those who are not board certified. Those are certainly *meaningful* differences from the point of view of forensic science caseloads.

Diplomates had significantly fewer graduate forensic anthropology courses than did non-certified respondents. The latter were less likely to have primary professional affiliation with an anthropology department in a college or university. Expertise of the diplomates was evident in that they derived a significantly greater portion of their cases from statewide venues.

Patterns in Educational Level (Highest Degree Earned)

Formal forensic anthropology training and the involvement of students in supervised casework is recent. There is an inverse relationship between the number of college degrees respondents possessed and the number of graduate forensic science courses and supervised cases which they had completed. Those holding baccalaureate degrees had significantly more, and those with Ph.D.s, significantly fewer graduate *forensic* anthropology courses. Those with masters degrees had more, and those with doctorates less, supervised cases as students. Respondents with less than a doctorate derived a significantly greater portion of their cases from local vicinities and a significantly smaller percentage from beyond their geographical region.

For trial appearances and depositions given for the years 1982 to 1986, there was a statistically significant, sequenced pattern to the highest degree held by respondents. Baccalaureate holders had the least judicial-related activity.

Conclusions

The last 20 years of professional forensic anthropological practice have seen an astonishing increase in both the number of practitioners and the number of cases per practitioner. There also has been important growth in educational opportunities for students interested in formal training in forensic anthropology.

It is clear from this that forensic anthropology has demonstrated its value to the forensic sciences in the identification and analysis of skeletonized or partially skeletonized human remains, burned and decomposed bodies, and a variety of other work which depends upon a detailed understanding of the musculoskeletal system. Projecting from the past to the future is inherently risky. However, the data presented here suggest that forensic anthropology is an area of vital, growing, and proliferating interest, a field which promises continuing advances and harmonious interactions with the rest of the forensic sciences.

Acknowledgments

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