

Caseloads in forensic anthropology

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Abstract

Objectives: There are currently no baseline data regarding the amount and types of case reports produced by forensic anthropologists. This research fills that gap by providing data on caseloads of practicing forensic anthropologists and identifying variables that may contribute to amount and type of casework.

Materials and methods: A survey was distributed to practicing forensic anthropologists ($n = 364$) to explore number of case reports written and possible influential factors. Questions included demographic information, employment type, institution where master's degree or PhD were obtained, type of reports written, professional organization membership, certification, graduate research focus, among others. Data were analyzed using summary statistics, a random forest model, network analysis, and structural equation modeling.

Results: The mean number of sole-authored skeletal analysis reports per year was 12.33 and field recovery reports was 2 per year. Statistical analyses identified several variables influencing case loads which included: number of fieldwork reports per year, current employment, total number of cases analyzed, age, publication record, and institution of doctoral degree. Network analyses revealed that individuals in academic settings tended to have a bioarchaeological research focus from their graduate work, whereas those in an applied setting had a focus on forensic anthropology. Further, degree institution influenced employment type.

Discussion/conclusions: These data address expectations for the number of cases analyzed by a forensic anthropologist per year and set a baseline for expectations and performance. Based on these results, we suggest that forensic anthropology is underutilized in the medicolegal death investigation system and more forensic anthropologists should be employed within Medical Examiner/Coroner's Offices.

KEYWORDS

caseload, education, employment, network analysis

1 | INTRODUCTION

Forensic anthropology as a discipline largely arose from a need to provide answers regarding questioned skeletal material in the medicolegal death investigation system (Klepinger, 2006; Stewart, 1979). Due to the legal nature of this work, the results of such analyses are typically presented in the form of reports which themselves serve as the basis for any possible testimony (Bunch & Stoppacher, 2015; National

Association of Medical Examiners, 2018; National Research Council, 2009; Passalacqua & Pilloud, 2018; SWGAnth, 2010; Zephro & Galloway, 2019). Presently there are no widely accepted best practice recommendations (i.e., guidelines) or standards for forensic anthropology reports, or for most aspects of forensic anthropological practice (Passalacqua & Pilloud, 2021). The American Academy of Forensic Sciences Standards Board is an ANSI-accredited Standards Developing Organization (SDO) that is developing consensus-based forensic

standards in conjunction with the NIST Organization for Scientific Area Committees (OSAC) for forensic sciences, and is considering developing a standard on report writing; however, this standard has not yet been published. Although, there are some guidelines on what reports should contain (e.g., Jantz, 2017; Passalacqua & Pilloud, 2018; SWGANth, 2012; Zephro & Galloway, 2019). This lack of standardization may in part arise from the diversity of forensic anthropological employment and practice as forensic anthropologists work in diverse contexts (Tersigni-Tarrant & Shirley, 2013). Some individuals are employed full time in applied positions at medical examiner/coroner (ME/C) offices or at the Defense POW/MIA Accounting Agency (DPAA), while others are employed full time at academic institutions and consult on casework on a contractual or volunteer basis.

Interestingly, regardless of employment, there are no baseline data available concerning the amount or types of cases analyzed by forensic anthropologists. Without such data, there is no way to know if an individual is performing an unreasonably large amount of casework (i.e., being exploited by their employer), or if someone may be misrepresenting the amount of casework they perform (i.e., they report an amount of casework that is well beyond the norm and are therefore misrepresenting themselves, which is an ethical violation). Nor is it possible to demonstrate the utility or need for additional forensic anthropology staff in an organization. While some casework data are reported to the American Board of Forensic Anthropology (ABFA) by ABFA-certified diplomates as part of their re-certification, this information is confidential and unavailable for research purposes.

To investigate casework in forensic anthropology, a survey was distributed to practicing forensic anthropologists that asked a series of questions about qualifications and casework, among other things. We have previously reported on the survey responses regarding qualifications (Passalacqua & Pilloud, 2020). The present project examines the average amount and types of casework performed by forensic anthropologists, as well as the factors that have the greatest impact on number of cases analyzed.

2 | MATERIALS AND METHODS

Data compiled here are from a digital survey that consisted of 96 questions concerning forensic anthropologists' backgrounds, qualifications, and casework experience (summarized in Passalacqua & Pilloud, 2020). The survey was reviewed and approved by the Internal Review Boards (IRB) of the authors' institutions (Western Carolina University and University of Nevada, Reno). It was then distributed on a number of biological and forensic anthropology listservs and to the members of various professional organizations. Participation was open to any individual aged 18 years or older. As this survey was designed to be completed by practicing forensic anthropologists, the first question was: "Have you ever assisted with, or sole analyzed a forensic anthropology case? Or do you consider yourself qualified to perform forensic anthropological casework?" If respondents answered "yes" they entered the rest of the survey, if they responded "no" they were exited from the survey. Note that the data presented here only reflect

individuals who reported having worked on forensic anthropological casework and excludes the individuals who had reported not working on casework, but considered themselves qualified anyway. The survey reached a global audience; however, the distribution of the survey was primarily through U.S.-based associations, which did bias the survey towards U.S. respondents. Approximately 75% of respondents practiced forensic anthropology within the U.S.

Survey responses were collected between 26 March and 12 November 2018. There were a total of 364 respondents who answered at least one of the survey questions. The survey did not require respondents to answer all questions; thus, sample sizes vary by question. A list of the questions in the survey analyzed are provided in Table 1. For the analysis, we also computed two additional variables to include the Carnegie Classification of institutions where individuals received their master's and doctoral degrees. The data that support this study are not available to further protect the anonymity of respondents.

All data were analyzed and visualized using Excel and the R statistical computing environment (R Core Team, 2019). In addition to summary statistics, we investigated the variables that had the greatest effect on number of forensic anthropology case reports authored. A Random Forest Model (RFM) was constructed using the R package `randomForest` (Liaw & Wiener, 2002), and variables having the greatest impact on the average number of forensic anthropology reports written were identified by variable importance based on residual sum of squares. Subsequently, networks were generated to graph the role of employment type, focus of degree, and university attended on the amount of casework being performed. Modularity classes were computed in Gephi using the Louvain method (Blondel et al., 2008). Finally, a path model based on structural equation modeling (SEM) was created in the R package `lavaan` (Rosseel, 2012) to identify the questions in the survey (i.e., variables) that most influenced the amount of casework being performed by respondents. The authors report no conflicts of interest.

3 | RESULTS

Table 2 provides an overview of the employment type of the respondents at the time of the survey. The majority of respondents were tenure-track anthropology faculty, followed by "other," and then students. Table 3 shows the area of study of respondents for their terminal degree. Most respondents indicated forensic anthropology as the focus of study, followed by bioarchaeology. Figure 1 illustrates the age of respondents. It is clear that the data are skewed to the left, with most respondents being in their 30s.

Overall, the survey found that the mean number of sole-authored human skeletal forensic anthropology case reports authored per year was 12.33 (median = 3, SD = 20.91, $n = 169$). The histogram (Figure 2) illustrates how these results follow a power-law distribution with most respondents producing a few reports per year, and a few producing high numbers of reports per year. Sixty respondents indicated that they author zero reports per year, while two respondents

TABLE 1 Questions in the survey analyzed in this study

Q#	Question	Type of response
1	What is your gender? – Selected choice	Selected choice
2	What is your gender? – Other: – Text	Free text
3	What is your age in years?	Free text
4	What is your primary current employment status? – Selected choice	Selected choice
5	What is your primary current employment status? – Other: – Text	Free text
6	Approximately how many years have you been assisting with and/or supervising forensic anthropology casework total?	Free text
7	Approximately how long have you been sole-authoring forensic anthropology case reports?	Free text
8	Approximately how many forensic anthropology-specific publications have you authored in peer reviewed journals?	Free text
9	Approximately how many forensic anthropology-specific publications have you authored in edited volumes?	Free text
10	Are you a member of the Anthropology Section of the American Academy of Forensic Sciences (AAFS)?	Free text
11	What is your membership level in the AAFS?	Free text
12	If eligible, are you currently certified by the American Board of Forensic Anthropology?	Free text
13	Have you completed a master's degree in, or related to, anthropology?	Free text
14	Have you completed a doctoral degree in, or related to, anthropology?	Free text
15	What institution did you earn your master's degree from?	Free text
16	What was the general focus of your master's thesis? – Selected choice	Selected choice
17	What was the general focus of your master's thesis? – Other: – Text	Free text
18	In what year did you complete your doctoral degree?	Free text
19	What institution did you earn your doctoral degree from?	Free text
20	What was the general focus of your doctoral dissertation? – Selected choice	Selected choice
21	What was the general focus of your doctoral dissertation? – Other: – Text	Free text
22	Please estimate the total number of forensic anthropology cases you have worked on (in any capacity, as an assistant or analyst):	Free text
23	Please estimate the number of fieldwork (i.e., search and/or recovery) cases you have participated in (in any capacity, as an assistant or analyst):	Free text
24	Approximately, how many fieldwork-only reports do you author per year?	Free text
25	Approximately, how many reports per year do you author that include both a field and laboratory component?	Free text
26	Please estimate the total number of forensic anthropology reports you have sole-authored, or been the senior author on:	Free text
27	Approximately how many human skeletal forensic anthropology case reports you do sole-author per year?	Free text
28	Generally, how many of the following types of reports do you author per year? – Only determining medicolegal significance? (e.g., human vs. non-human)?	Free text
29	Generally, how many of the following types of reports do you author per year? – Only generating a biological profile?	Free text
30	Generally, how many of the following types of reports do you author per year? – Only trauma analysis?	Free text
31	Generally, how many of the following types of reports do you author per year? – Only radiographic comparisons?	Free text
32	Generally, how many of the following types of reports do you author per year? – Only estimating the postmortem interval?	Free text
33	Generally, how many of the following types of reports do you author per year? – Complete skeletal analysis (including: biological profile, trauma analysis, identification, and/or PMI estimation as needed)	Free text
34	Approximately how many human skeletal forensic anthropology case reports do you assist with per year, that you were not the sole, or senior author on?	Free text

(Continues)

TABLE 1 (Continued)

Q#	Question	Type of response
35	Are the forensic anthropology reports you author, peer reviewed?	Selected choice
36	Approximately, how many times have you testified as an expert witness in forensic anthropology?	Free text
37	Do you currently work, or have you ever worked, in a forensic-based accredited institution?	Free text

TABLE 2 Summary of respondents by employment type

Employment type	n
Anatomy faculty	12
Anthropology faculty (non-tenure track)	14
Anthropology faculty (tenure-track)	40
Contract anthropologist at the DPAA	5
Employed outside of anthropology	7
Forensic anthropologist at Coroner/ME office	19
GS anthropologist at the DPAA	6
Non-forensic anthropology position at Coroner/ME office	5
Postdoctoral position (academic)	5
Postdoctoral position (applied)	1
Retired	5
Student	25
Unemployed	2
Other faculty	7
Other	30
Total	183

TABLE 3 Field of study of respondents

Field of study	n
Bioarchaeology	49
Biological anthropology	10
Evolutionary Anthropology/Paleoanthropology	3
Forensic Anthropology	75
Human biology	9
Molecular anthropology	7
Other	2
Total	155

indicated that they sole-authored 100 reports per year, which was the maximum answer given. Total reports written in one's career was a mean of 197 (median = 35, SD = 69.18, $n = 179$), with one respondent estimating they have worked on 12,000 cases in their career. When dividing total human remains reports written in a career by reported total years of practice, forensic anthropologists averaged 22 reports per year (median = 8, SD = 63.7, $n = 125$). A correlation between years in practice and the total number of reports, yielded a Pearson correlation coefficient ($r = 0.179$) showing little correlation, which is also reflective of the large standard deviation found in dividing years in practice by total number of reports. Forensic

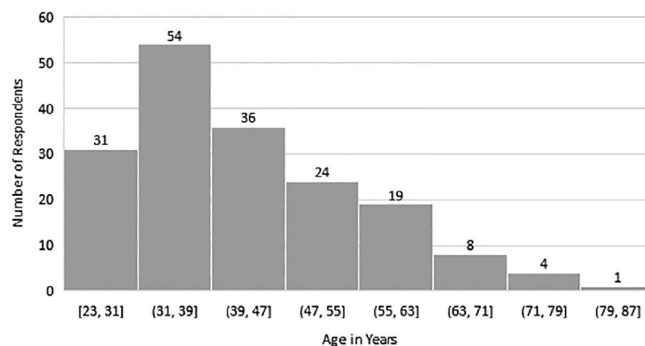


FIGURE 1 Histogram of age in years of respondents

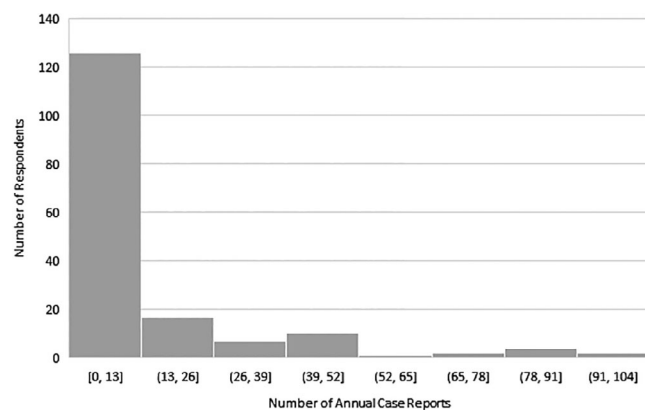


FIGURE 2 Histogram of reports written per year

anthropologists reported writing on average two field recovery (i.e., forensic archaeology) reports per year (median = 0, SD = 4.8, $n = 166$).

To identify which variables had the greatest impact on the average number of forensic anthropology reports per year, a RFM was run. The RFM found these variables to be the most important (in descending order): number of fieldwork reports per year; primary current employment status; total number of cases analyzed; institution of doctoral degree; number of reports that include both field and laboratory components; and number of fieldwork cases in which you have participated (in any capacity) (Figure 3). Modularity class as determined from the network evaluating University attending and caseload was included as a variable in the RFM.

There were clear divisions between applied and academic positions. The greatest number of forensic anthropology reports were

written by individuals employed at the DPAA. At the DPAA, anthropologists can have two employment types, as a government employee for the Department of Defense (i.e., GS employee) or as a contractor with SNA International. The results for employment types and number of reports written per year are shown in Table 4, and only showing those employment types with sufficient data available. An analysis of variance of these data revealed significant differences between employment types and total number of reports written per year ($F_9 = 11.70, p < 0.001$).

Respondents were asked to provide information on the type of reports they write per year, which included: medicolegal significance, only biological profile, only trauma analysis, only radiographic comparison, only postmortem interval, or complete skeletal analysis. When considering report types together, the most common were medicolegal significance (34.5%); complete skeletal analysis (30.8%); trauma

analysis (13.4%); biological profile (10.2%); radiographic comparison (8.4%); and postmortem interval estimation (2.7%).

For institution of doctoral degree, individuals from the University of Tennessee, Knoxville had the greatest number of cases, followed in descending order by the University of Florida, The Ohio State University, and Michigan State University. While certification by the American Board of Forensic Anthropology (ABFA) was not a factor in the RFM, ABFA-Diplomates had much larger numbers of case reports overall (ABFA mean total case reports = 678.74; non-ABFA mean total case reports = 114.24); however, when examined by annual number of reports, ABFA-Diplomates did not have significantly greater caseloads (ABFA annual reports = 18.88; non-ABFA annual reports = 16.07).

Two different networks were generated, one showing the number of forensic anthropology reports by current employment and topic for terminal degree research (i.e., thesis for individuals with a terminal master's degree, or dissertation for individuals with a doctoral degree—see Table 3). The other network examined the number of forensic anthropology reports authored by terminal degree institution.

For the network examining current employment status and degree focus (Figure 4), there are relatively large separations between forensic anthropologists working in academic versus applied positions. Academic positions are more closely related to terminal degree research focused on bioarchaeological topics, while individuals in applied positions, particularly those employed by the DPAA were more closely related to terminal degree research focused on forensic anthropological topics. This finding could represent the relatively large number of terminal master's students employed by the DPAA, who likely got their degrees from programs focused on forensic anthropology.

For the network examining the number of forensic anthropology reports authored by terminal degree institution (Figure 5), the University of Tennessee, Knoxville had the largest amount of graduates who were also authoring the greatest numbers of forensic anthropology reports. The University of Tennessee, Knoxville was followed (in descending order) by the University of Florida; Mercyhurst University; The Ohio State University; Louisiana State University; California State University, Chico; and Michigan State University. This plot also demonstrates ties between multiple programs when respondents attended different graduate schools for their master's degree and PhD.

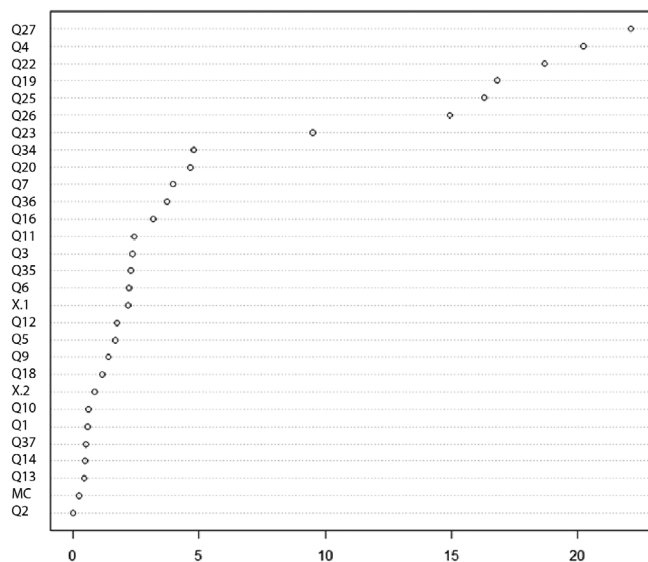


FIGURE 3 Random Forest importance plot. The question number (Q#) is provided in Table 1. Variable X.1 is Carnegie classification of master's degree institution and X.2 is Carnegie class of PhD institution. The MC is the modularity class from the university caseload network

TABLE 4 Number of sole-authored reports written per year by employment type

Employment type	Mean	Median	Mode	St dev	Min	Max
Anatomy faculty	5.9	5.5	0	5.88	0	15
Anthropology faculty (nontenure)	8.18	3	0	9.5	0	25
Anthropology faculty (tenure)	7.69	3	0	17.99	0	100
Contract DPAA	32.4	30	NA	30.88	1	75
C/MEO	23.72	20	10	19.7	0	80
GS DPAA	20	17.5	NA	18.17	0	50
Post-doc (academic)	1.67	0	0	3.2	0	8
Retired	7.2	1	0	9.58	0	20
Student	2	0	0	7.04	0	35
Other faculty	19.8	12	0	23.41	0	50

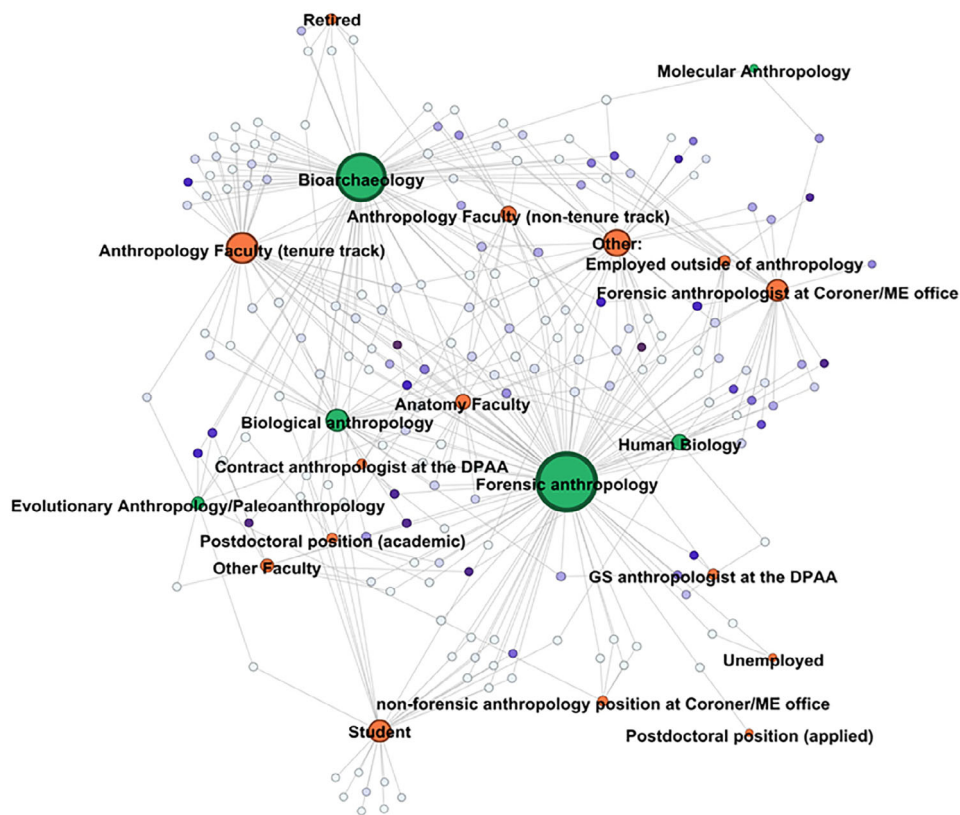


FIGURE 4 Tripartite network of career, focus of degree, and caseload. Orange nodes represent career status, green nodes represent degree focus and white to purple nodes represent respondents colored by their annual caseload, with darker purple representing higher caseload for each individual. Career and degree focus nodes are sized based on the number of respondents affiliating with those career parameters

The structural equation model generated, showed that the number of fieldwork-only reports (Figure 6, F4, $\text{coeff} = 0.46$) had the largest influence on annual case load, which was similar to the RFM. Unsurprisingly, the total number of reports produced (Figure 6, F2, $\text{coeff} = 0.40$) also had a high level of influence on annual case load. The number of field and case reports written (Figure 6, F5, $\text{coeff} = 0.27$) had the next highest influence on case load, while the number of all other reports (including assisting with non-sole authored reports, field and case reports, and fieldwork in any capacity, F7, $\text{coeff} = 0.26$) had a similar influence. The influence of factor seven was mediated through factor four (fieldwork only reports) suggesting that individuals who did fieldwork in any capacity were also writing fieldwork only reports. Factor seven was also mediated through field and case reports, likely because factors five and seven were both heavily loaded with this question. The two least important factors (F1, F3, $\text{coeff} < 0.12$) represented career stage and academic publication record. The relative independence of case load from academic publication record suggests there are not tradeoffs between report writing and case load, which would yield a strongly negative coefficient – respondents with a high case load are also writing peer-reviewed academic publications.

Of note, testifying was rare in this sample, with forensic anthropologists averaging three instances of providing expert witness testimony during their entire career (median = 0, $\text{SD} = 8.6$, $n = 178$). One hundred respondents had never testified at all, 48 had testified between one and three times, 13 reported testifying between four and 10 times, eight testified between 15 and 30 times, and four

respondents indicated they had testified 50 times, which was the maximum response.

4 | DISCUSSION

Overall, the number of reports varied by employment type, with faculty writing on average between five and seven reports per year, those employed at the DPAA and in ME/C authored 32 and 23 per year, respectively (see Table 4). While not captured in this survey, forensic anthropologists at the Harris County Institute of Forensic Sciences have stated that they author an average of 150 reports per year and that caseloads have increased by ~25% over the last 5 years (Christian Crowder Pers. Com. Feb 2021). Additionally, while the most common report type authored by forensic anthropologists was forensic significance, others have commented that their specific office generates more identification reports (~80% of all reports) than any other type (Jered Cornelison Pers. Com. Feb 2021). That is this office generates reports that establish a positive/scientific identification. We did not specifically ask in the survey about such reports, but we did ask about radiographic comparisons (8.4% of reports written), which is one type of identification report. The point being that there is much variation in the practice of forensic anthropology, even between full-time forensic anthropologists employed at ME/C offices.

It is to be expected that forensic anthropologists in academic settings would write fewer reports than those employed full-time as forensic anthropologists. These academics are performing this work in

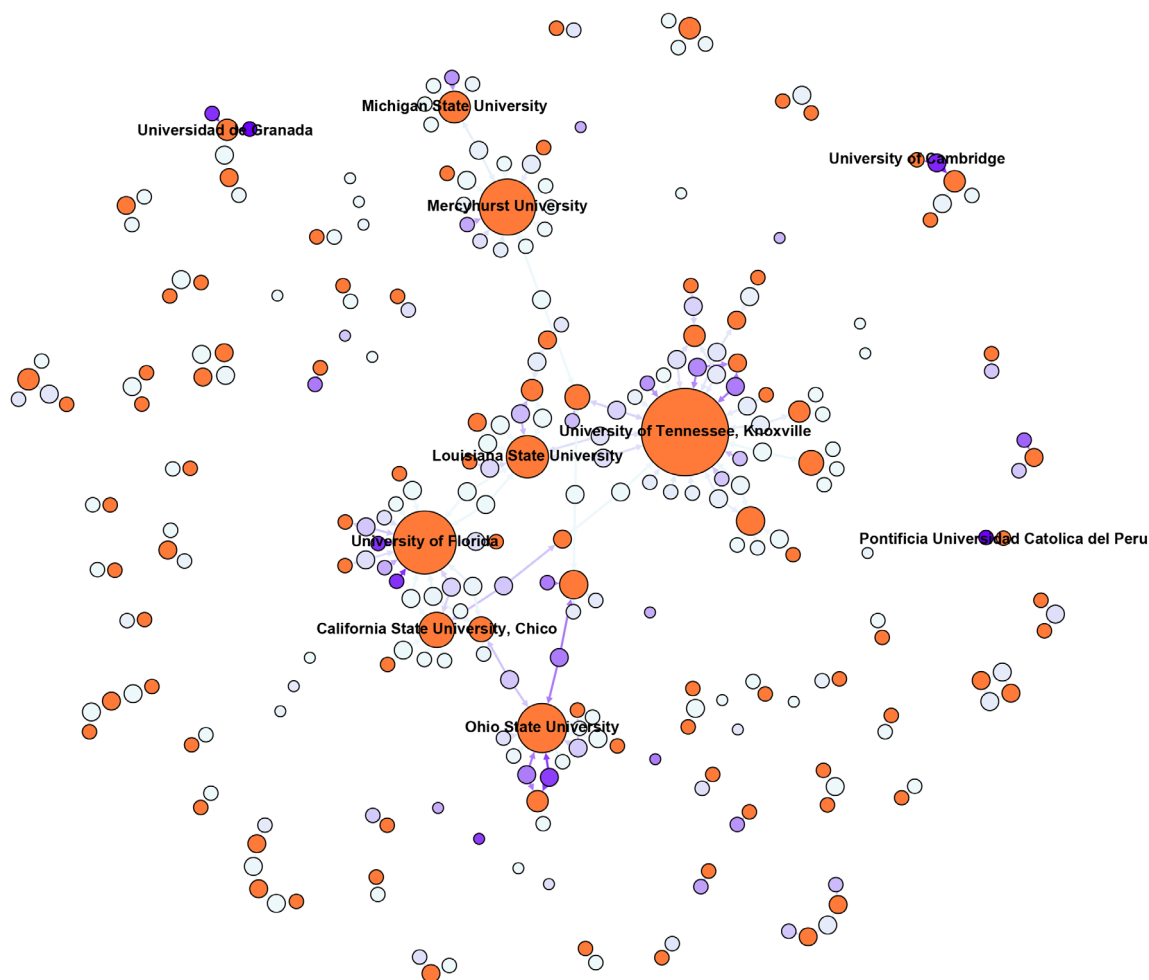


FIGURE 5 Bipartite network of degree institution and number of case reports. Orange nodes represent degree institution (nodes were labeled with institution if more than five respondents attended the institution, or if it was linked to an individual in the 80th percentile of caseloads), with the size of each node representing the number of respondents that attended each institution. The white to purple nodes represent individual respondents colored by their annual caseload, with darker purple representing higher caseload for each individual. Edges represent attendance by a respondent to an institution for graduate education

addition to an already full workload of teaching, scholarship, and service. We did not ask if academics received credit for this work as part of their role in their universities, and there is great variation in the value that academic administrations and departments place on this type of work (Passalacqua, Mulholland, et al., 2021). Therefore, there may be roadblocks and/or deterrents preventing academics from pursuing this type of work outside the scope of their academic responsibilities (e.g., lack of time, lack of laboratory support, and lack of academic credit for this work). However, we argue that this type of work should be valued by universities as an important service to the community, advanced training for students, and that it presents the opportunity for collaboration and research with the medicolegal community.

A network analysis showed that individuals with research foci on bioarchaeology were more often employed in academic settings, performing casework as consultants. Whereas, individuals with research foci on forensic anthropology were more likely employed in an applied setting and were performing slightly more casework (see Figure 4).

These results are interesting in light of recent research (Passalacqua, Mulholland, et al., 2021), which illustrated that individuals with backgrounds in bioarchaeology were more likely to be employed in academic positions that expressed interest in hiring a forensic anthropologist.

Another network analysis showed the relationship of University attended with casework (see Figure 5). This network showed that only a handful of schools were producing practicing forensic anthropologists. These are University of Tennessee, Knoxville; University of Florida; Mercyhurst University; The Ohio State University; California State University, Chico, Michigan State University; and Louisiana State University. This finding merits additional attention as we critically reflect on diversity within the discipline. A reliance on a small number of programs to produce practicing forensic anthropologists may homogenize the discipline and overly canonize the individuals teaching at these institutions (Kawa et al., 2019). It could also serve to privilege certain methods and perspectives and could function as a form of gatekeeping. However, this may also reflect a wider

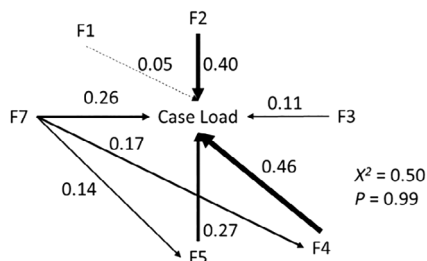


FIGURE 6 Structural equation model (SEM) of seven factors influencing case load defined as annual number of reports. This model has a high probability of explaining the underlying processes based on chi-square goodness of fit ($X^2 = 0.50$, $P = 0.99$). Factor analysis of continuous results from survey questions yielded seven composite factors. The highest loading variables for each factor follow. **F1:** Career stage (questions 3, 6, 7, and 18); **F2:** Total number of reports produced (questions 22 and 26); **F3:** Publication record (questions 5 and 9); **F4:** Fieldwork only reports (question 27); **F5:** Field and case reports (question 25); **F7:** Other reports. Factor six was not important to explaining case load and was omitted. Arrow width is weighted to coefficient magnitude and black arrows show the direction of influence from one variable to another

disciplinary reluctance to hire forensic anthropologists at larger doctoral degree generating anthropology programs, limiting the available options for doctoral-level forensic anthropologists (Passalacqua, Mulholland, et al., 2021). During the hiring process, managers should prioritize training and experience over university attended to ensure diverse perspectives within the laboratory. As these data may suggest that graduates from certain universities may receive preferential treatment; a likely result of prestige bias (Morgan et al., 2018; Skinner, 2020). However, further work is needed to explore the impacts of only a handful of universities producing the majority of practicing forensic anthropologists.

Combined with the recent work of Passalacqua, Mulholland, et al. (2021) as well as the findings here that individuals with backgrounds in bioarchaeology were more likely to be hired as forensic anthropologists in academic settings; there is evidence of a possible systemic problem in forensic anthropology pedagogy, at least in part generated by the greater anthropological discipline. That is, only a few academic institutions produce practicing forensic anthropologists, and individuals with backgrounds in bioarchaeology (rather than forensic anthropology) are being hired into positions to train future generations of forensic anthropologists. While we recognize that bioarchaeology and forensic anthropology are similar areas of inquiry, being competent in one subdiscipline does not translate to competency in the other (Passalacqua, Pilloud, et al., 2021). It is important that training in the application of forensic anthropology is provided by individuals with demonstrated competency in the discipline, and that those without such competencies do not misrepresent themselves as capable to perform such work (Passalacqua, Mulholland, et al., 2021).

The survey did not capture data regarding the number of forensic anthropology reports peer reviewed per year, but based on anecdotal conversations with those employed at larger applied forensic anthropology laboratories, we might anticipate that forensic anthropologists peer review an additional 20 reports per year or so. Passalacqua and

Pilloud (2020) found that the majority of forensic anthropologists have their reports peer reviewed (Hartnett-McCann et al., 2019). Peer review of professional reports is considered best practice and peer review generally, has been demonstrated to improve manuscript quality (Benos et al., 2007; Berkenkotter, 1995; Cicchetti, 1997; Passalacqua & Pilloud, 2018; Passalacqua & Pilloud, 2020; Rennie, 2003; Smith, 1997).

In our sample, nearly 56% of respondents had never testified. Some of these results may be related to the age in years of the respondents (see Figure 1) who may have not yet had the opportunity to testify. Although, these results are in line with another study that specifically examined expert witness testimony by forensic anthropologists. Murray and Anderson (2007) found in a survey of 118 individuals that ~53% had testified, and of those 81% had testified fewer than 10 times. However, for both casework and testifying, there is a large amount of variability between practitioners.

Part of the NAME accreditation process for ME/C offices is that the office must have “access to forensic anthropology” (National Association of Medical Examiners, 2018, p. 7) and to be “affiliated with a forensic anthropologist certified by the American Board of Forensic Anthropology” (National Association of Medical Examiners, 2018, p. 30). Unfortunately, this does not mean that they must employ a forensic anthropologist, nor does it mean that they must consult with a forensic anthropologist in cases that would benefit from such analyses. The relatively low numbers of forensic anthropology reports of practitioners outside of ME/C offices and outside of the DPAA and the lack of full-time employed forensic anthropologists overall suggests forensic anthropologists are under-utilized in the death investigation system, especially considering ~500,000 deaths are investigated in the United States each year (National Science and Technology Council, 2016). Obenson (2014) argued that there should be a forensic anthropologist in every jurisdiction conducting death investigations; however, this is not the current practice. As such, forensic anthropologists must be greater advocates for our profession and our contributions to death investigations (Christensen et al., 2015). While data on forensic anthropology jurisdictions are not available, a rough calculation based on the populations served by ME/C offices with one or more forensic anthropologists (e.g., Harris County Institute of Forensic Sciences and the New York Office of Chief Medical Examiner) suggests that in such jurisdictions there is one forensic anthropologist employed for every 1,836,908 people (median = 1,661,743; SD = 1,320,336). While these data demonstrate the large variation in use of forensic anthropology (based on the large standard deviation), we could extrapolate this to suggest that ME/C offices should be employing *at least* one forensic anthropologist for every 2,000,000 people that office serves. Even using these very rough estimates, with the current population of the United States at ~328 million, there would need to be 164 full-time forensic anthropology positions at ME/C offices to meet current demands of forensic anthropology casework.

Unfortunately, the entire system of medicolegal death investigations is underfunded and understaffed (Hanzlick & Boden, 2014; National Research Council, 2009; Pyrek, 2010). For example, to be accredited by The National Association of Medical Examiners (NAME) the maximum recommended number of autopsies for a single forensic

pathologist is 250 per year (National Association of Medical Examiners, 2016, p. 10). The Scientific Working Group for Medicolegal Death Investigation (SWGDMI) states that ~10% of all deaths need investigating, thus there should be at least one forensic pathologist available for every 250,000 persons in a jurisdiction (SWGMDI, 2013, p. 3). According to this standard, only four of 24 possible state medical examiner offices had adequate numbers of forensic pathologists (Gill, 2014).

5 | CONCLUSIONS

This study has provided baseline data for the number of reports written by forensic anthropologists, as well as the relation between caseloads and focus of research in graduate school, type of employment, and University attended for graduate studies. Overall, academic forensic anthropologists write few reports, while those in applied settings tend to write more reports. These individuals are also more likely to have had forensic anthropology as a focus in graduate school and to have attended one of only a handful of schools in the United States for their graduate education.

These data address expectations for the number of cases analyzed by a forensic anthropologist per year, and set a baseline for expectations and performance. Finally, we argue that forensic anthropology as a whole is underutilized in the medicolegal death investigation system and that many more ME/C Offices should employ full-time forensic anthropologists (Christensen et al., 2015). As a discipline, we need to highlight the value of forensic anthropological analyses and advocate for the increased staffing of forensic anthropologists in full-time positions within the medicolegal system.

AUTHOR CONTRIBUTIONS

Marin A. Pilloud: Conceptualization (equal); data curation (equal); formal analysis (equal); investigation (equal); methodology (equal); visualization (equal); writing – review and editing (equal). **Nicholas V. Passalacqua:** Conceptualization (equal); data curation (equal); formal analysis (equal); investigation (equal); methodology (equal); visualization (equal); writing – review and editing (equal). **Casey S. Philbin:** Data curation (equal); formal analysis (equal); writing – review and editing (equal).

DATA AVAILABILITY STATEMENT

The data that support this study are not available to further protect the anonymity of respondents.

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How to cite this article: Pilloud, M. A., Passalacqua, N. V., & Philbin, C. S. (2022). Caseloads in forensic anthropology. *American Journal of Biological Anthropology*, 1–10. <https://doi.org/10.1002/ajpa.24471>