

Are careers in biological anthropology sustainable?

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1 | INTRODUCTION

Faculty must act as gatekeepers and advocates for various students that are interested in pursuing post-baccalaureate education and careers, in addition to educating and mentoring students in biological anthropology. In doing so, there are many factors advising faculty consider in terms of what qualities are needed in order to succeed in biology anthropology graduate programs (see Passalacqua and Garvin, 2017). However, advising faculty may not always consider the viability of a future career for these students as part of this process. Similarly, when attending graduate programs, few graduate students consider their potential career options after graduation (Sauermann and Roach, 2016; Speakman et al., 2018).

Recently, Speakman et al. (2018: p 9) argued that within the United States, tenure track faculty positions in archaeology are highly unsustainable, available to only ~20% of those that have graduated with a doctoral degree since 1995. This is not surprising, as the academic job market in anthropology is often described as “bleak” (Speakman et al. 2018: p 3). However, not all doctoral graduates seek academic positions, and not all of those that do, desire tenure track positions. Thus, while concern about the availability of tenure track jobs is important (Ghaffarzadegan, Hawley, Larson, & Xue, 2015), it may be more important to ask the broader question: are careers in biological anthropology sustainable? Taking the approach that a career is “the evolving sequence of a person’s work experiences over time” (Arthur, Hall, & Lawrence, 1989: p 8; Cochran, 1994), and that tenure track positions are just one potential job which an individual may have during their career.

2 | MATERIALS

Here we will examine job advertisements from the Biological Anthropology Academic Job Wiki webpages (see: <http://academicjobs.wikia.com>) as reflective of career opportunities available to biological anthropologists at the doctoral level. This is because (1) a doctoral degree is often the minimum requirement for permanent jobs (i.e., jobs that do not have a predetermined end-date) in biological anthropology, particularly those in academia; (2) when comparing candidates for a position, the candidate with a doctoral degree will often be more seriously considered than one with a terminal master’s degree; (3) the amount of

doctoral degrees produced in biological anthropology are able to be quantified (see below for details); (4) the majority of doctoral-level biological anthropologists have jobs in academia (Passalacqua and Garvin, 2017); and (5), these wiki pages are the only accessible record of past job advertisements, as organization career pages such as <http://phys-anth.org/jobs/>, only host active job advertisements.

Job advertisements in biological anthropology were collected from the Biological Anthropology Academic Job Wiki webpages (see: <http://academicjobs.wikia.com>). The academic job search wiki webpages are organized by academic year (e.g., fall 2012 to spring 2013), community run, and freely accessible. Because the wiki pages are generated by volunteers, it is likely that not all academic biological anthropology jobs advertised during these times were found and posted. However, these pages do appear to reflect the vast majority of biological anthropology jobs advertised during these academic years. Additionally, these pages include some nontraditional or nonacademic positions such as medical school faculty positions for anatomy instructors, and various positions at museums, and the Max Planck Institute for Evolutionary Anthropology.

A total of 7 years of completed job searches were available as archived webpages for each academic year from 2010–2011, to 2016–2017. In addition to the wiki webpages, doctoral graduation and career data ranging from 2010 to 2016, from the Survey of Graduate Students and Postdoctorates in Science and Engineering were used as supplementary data (National Science Foundation, 2012a; National Science Foundation, 2012b; National Science Foundation, 2013; National Science Foundation, 2014; National Science Foundation, 2015; National Science Foundation, 2016; National Science Foundation, 2017).

3 | METHODS

All job advertisements posted to the biological anthropology academic job wiki webpages were examined in terms of preferred specialties (e.g., human biology, bioarchaeology), job type (e.g., visiting assistant professor, tenure track), job rank (e.g., assistant professor), and college/university classification using the Carnegie Classifications (Carnegie Foundation for the Advancement of Teaching, 2017).

For preferred specialty, subfields were associated with a particular job advertisement based on terms used, even if the specialty was not specifically named. For example, terms such as health, nutrition, or

TABLE 1 Job advertisements by year

2010–2011	60
2011–2012	79
2012–2013	94
2013–2014	60
2014–2015	72
2015–2016	57
2016–2017	52
Average	67.7

demography were associated with the subfield of human biology, unless the advertisement was explicit about seeking a different specialty that also had research interests in these areas (e.g., bioarchaeology). Some advertisements were open to various specialties (e.g., bioarchaeology and/or forensic anthropology, or evolutionary anthropology and/or nonhuman primates), in these cases the job advertisements counted towards both specialties.

4 | RESULTS

A total of 474 job advertisements from 271 institutions were examined from this 7-year period (Table 1). The majority of advertisements were from academic institutions within the United States ($n = 422$), however international ($n = 52$) and nonacademic advertisements ($n = 12$) were present as well. Approximately 52% of these advertisements were for tenure track positions at the rank of assistant professor, and ~25% were for limited term faculty (e.g., adjunct/visiting) (Table 2).

The most frequently advertised biological anthropology specialties were evolutionary anthropology (to include: paleoanthropology) and human biology (to include specialties in: health, nutrition, and demography) with these specialties averaging nearly double the postings of the other biological anthropology specialties (Table 3).

Using the current Carnegie Classifications, the majority (~58%) of job advertisements were for positions at doctoral institutions (Table 4). When institutions were further broken-down by type, doctoral universities with highest research activity had the most job advertisements (~44% of all academic job advertisements), while master's colleges and universities with small programs had the fewest advertisements (Table 5).

TABLE 2 Job advertisements by type and rank

Level	<i>n</i>	Percent
None listed	26	5%
Visiting asst. professor	45	9%
Adjunct/other term	75	16%
Postdoctoral position (postdoc)	37	8%
Tenure Track—Assistant	246	52%
Tenure Track—Assistant/Associate	22	5%
Tenure Track—Senior	23	5%

4.1 | Are careers in biological anthropology sustainable?

The National Center for Science and Engineering Statistics (NCSES) part of the United States' National Science Foundation (NSF) makes a large amount of data available from its surveys of individuals who completed their doctoral degrees each year. These datasets include the number of doctoral graduates per year for anthropology, and in 2014 the NCSES began also collecting information on subfield (for cultural anthropology and biological anthropology only). Table 6 presents relevant data made available by the NCSES from 2010 to 2016 (National Science Foundation, 2012a; National Science Foundation, 2012b; National Science Foundation, 2013; National Science Foundation, 2014; National Science Foundation, 2015; National Science Foundation, 2016; National Science Foundation, 2017).

Based on the NCSES data from 2014 to 2016 (National Science Foundation, 2015; National Science Foundation, 2016; National Science Foundation, 2017), the only years with subfield information currently available, biological anthropology PhDs represent ~16% of all anthropology doctoral degrees (note that these are self-reported data and no direction is given between the available options of “anthropology (general)” and “biological anthropology”). If we assume a constant rate of 16% of all anthropology doctoral degrees being from the biological anthropology subfield, then from 2010 through 2016 ~575 biological anthropology doctorates were graduated from academic institutions in the United States. For the same period (academic years 2010–2011 through 2016–2017), there were 474 job advertisements in biological anthropology, or a ratio of 1.21 doctoral degrees to job advertisements per year (Figure 1). Figure 1 demonstrates that the rates of biological anthropology job advertisements has decreased in the past two years, while the rates of doctoral degrees in biological anthropology has increased.

The NCSES also makes available data regarding postgraduation employment. For anthropology as a whole, a subsample of individuals with definite postgraduate commitments is presented in Table 7 for the available years of 2012–2016 (National Science Foundation, 2013; National Science Foundation, 2014; National Science Foundation, 2015; National Science Foundation, 2016; National Science Foundation, 2017). Based on these data, ~39% of all anthropology doctoral graduates were committed to a postdoctoral position after their graduation, while ~43% were committed to academic positions. Unfortunately, data specifically for biological anthropology is unavailable.

4.2 | What do these data mean?

There is a current diverging trend of decreasing academic job advertisements and increasing doctoral degrees in biological anthropology which could result in serious consequences for the discipline. This is something all professionals, and our students, should be concerned with. However, it is difficult to generate strong conclusions about the current state, or future, of biological anthropology as a sustainable career as these data span a relatively short period and primarily reflect the availability of academic positions.

TABLE 3 Biological anthropology specialties sought in advertisements per year, ranked from most (left) to least (right)

Academic Year	Evolutionary anthropology	Human biology	Forensic anthropology	Bioarchaeology	General biological anthropology	Non-human primates	Molecular anthropology	Anatomy	Medical anthropology
2010–2011	18	8	9	8	14	7	4	5	3
2011–2012	24	21	10	11	10	8	11	12	4
2012–2013	33	28	13	10	10	11	10	15	4
2013–2014	24	25	11	14	8	8	8	9	6
2014–2015	27	26	13	9	8	12	10	11	2
2015–2016	17	26	15	14	5	8	10	5	6
2016–2017	19	18	8	8	13	13	12	3	4
Total	162	152	79	74	68	67	65	60	29
Average	23.1	21.7	11.3	10.6	9.7	9.6	9.3	8.6	4.1

Passalacqua and Garvin (2017), recently distributed an electronic survey to biological anthropologists focused on human skeletal biology (e.g., bioarchaeology, forensic anthropology, paleoanthropology). These authors found that of the 124 respondents with completed PhDs, ~67% were currently in academic positions, ~23% were in applied positions, ~8% were in post-doctoral positions, ~2% were employed in a position unrelated to biological anthropology, and none were unemployed. If we assume only ~67% of PhD biological anthropologists pursue academic careers, then the ratio of doctoral degrees to academic jobs can be adjusted to 0.81 PhDs to job academic advertisements per year. Thus, it appears that at the current rate of production

of biological anthropology PhDs and the current rate of biological anthropology job advertisements (ranging from 1.21 to 0.82), that academic positions in biological anthropology are near sustainable levels, so long as we consider all academic careers in biological anthropology (not just tenure track positions).

Recently, there have been discussions about how sustainable doctoral degrees in various disciplines currently are (Ghaffarzadegan et al., 2015; Larson, Ghaffarzadegan, & Xue, 2014). Sauermann and Roach (2016: p 664) argue that because not all individuals with PhDs seek careers in academia, graduates pursuing such careers have a higher probability of obtaining faculty positions. While the available data here

TABLE 4 Broad classifications of academic institutions seeking biological anthropologists

Broad classification	n	%
Doctoral universities	275	58
Master's colleges & universities	95	20
Baccalaureate college	26	5
Other (e.g., medical schools)	78	16
Total	474	100

TABLE 5 Detailed Carnegie classifications of academic institutions seeking biological anthropologists

	Moderate research activity	Higher research activity	Highest research activity
Doctoral universities (n)			
275	30	70	175
	Small programs	Medium programs	Larger programs
Master's colleges & universities (n)			
95	4	12	79
	Arts & sciences focus	Diverse programs	
Baccalaureate colleges (n)			
26	20	6	

TABLE 6 Number of PhD anthropologists produced by year (from the NCSES data)

Subfield of study	Total (n)	Males (n)	Females (n)	% Female
2010				
Anthropology (all)	509	202	307	60.3%
2011				
Anthropology (all)	555	224	331	59.6%
2012				
Anthropology (all)	546	186	360	65.9%
2013				
Anthropology (all)	552	189	363	65.8%
2014				
Anthropology (all) ^a	527	197	330	63.0%
Anthropology (biological)	73	25	48	65.8%
2015				
Anthropology (all)	493	186	307	62.3%
Anthropology (biological)	76	25	51	67.1%
2016				
Anthropology (all)	460	171	289	62.8%
Anthropology (biological)	80	26	54	67.5%

^aThere was no anthropology (all) category for 2014, so the available subfield data was aggregated to produce these numbers.

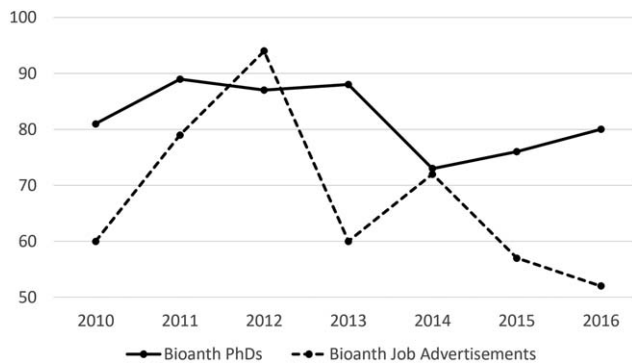


FIGURE 1 Biological anthropology PhDs versus biological anthropology job advertisements (note PhDs in biological anthropology were estimated for 2010–2013)

suggest that careers in biological anthropology are near-sustainable, it is unclear how this may change when also considering specialties within biological anthropology. For example, evolutionary anthropology and human biology positions were in relatively high demand; but there is no available data for how many qualified anthropologists were seeking those positions in comparison with the other specialties. It may be that there are relatively few PhDs awarded for evolutionary anthropology each year, while there are relatively many PhDs awarded to individuals studying nonhuman primates. Further, it is not uncommon that a job advertisement seeking one specialty ends up hiring an individual outside of that specialty. For example, in the last few years, multiple job searches have specifically sought a forensic anthropologist, preferably one that is certified by the American Board of Forensic Anthropology; however, the candidate that was eventually hired for some of these positions was a bioarchaeologist with no experience in forensic anthropology.

Postdoctoral positions only accounted for ~8% of all advertisements posted to the Biological Anthropology Academic Job Wiki webpages. Passalacqua and Garvin (2017) also found that only ~8% of PhDs were currently employed in a postdoctoral position. The NCSES data indicated that ~39% of all anthropologists pursued a postdoc after graduation. It is unclear how representative the holistic anthropology data are for biological anthropologists, but these data do suggest that postdoctoral positions are relatively rare in biological anthropology, which may not necessarily a bad thing. Kahn and Ginther (2017), examined the financial impact of doing a postdoc in biomedicine and found that individuals that worked at postdocs rather than entry-level non-academic positions earned ~20% less in the first 15 years after finishing their PhDs. Passalacqua and Garvin (2017) found that for

individuals that did not have a funded degree, the average doctorate in biological anthropology resulted in ~\$34,000.00 of debt. Considering this cost, if the trend found by Kahn and Ginther (2017) also applies to biological anthropology, it may be in the best interest for early career professionals to avoid postdoctoral positions, if they have other options, in order to best manage their financial obligations. It may also be worth noting that Kahn and Ginther (2017: p 92) found no evidence that pursuing a postdoc assisted individuals with later acquisition of tenure track academic positions.

Regarding potential issues surrounding careers in academia, it is noteworthy that women are generally underrepresented in tenure track positions at research universities, and overrepresented among adjuncts and nontenure track faculty jobs (Jacobs & Winslow, 2004). Further, Rivera (2017) examined discrimination in R1-level institution hiring practices of faculty, and found that search committees actively considered women's relationship statuses, but not men's, when selecting hires; increasing the bias towards hiring men into tenure track positions. This is noteworthy, as the majority of biological anthropology doctorates were awarded to females (averaging ~66.8% from 2014 to 2016). Recently Turner et al. (2018: p 127) reviewed experiences of women in biological anthropology and found that while gender equality in academia has improved since the 1970s, "the percentage of female full professors in the discipline remains low" reflecting the glass-ceiling effect and highlighting the need for efforts to promote and retain women in senior-level positions (Jones & Palmer, 2011).

Considering diversity within biological anthropology, Antón, Malhi, & Fuentes (2018: p 158) reviewed issues regarding race and diversity and found that biological anthropology has less "ethnoracial diversity than even the affiliated STEM disciplines." Further, Antón et al. (2018: p 163) found that only ~10.8% of biological anthropology faculty identified as non-White. This is important when considering that success of non-White undergraduate students is associated, among other things, with their ability to identify with non-White faculty (Gibbs, McGready, Bennet, & Griffin 2014; Hess & Leal 1997; Krupnick, 2016). Thus if biological anthropology cannot engage with and retain non-White undergraduate students, this will have implications for future non-White graduate students and non-White faculty (see Passalacqua & Pilloud, 2018 for further discussion).

Although it is highly likely that the majority of academic job advertisements were reflected in these wiki pages, the rates of nonacademic job advertisements for biological anthropologists is much more difficult

TABLE 7 Postgraduation commitments of anthropology doctoral recipients (from the NCSES data)

	Anthropology PhD recipients	Postdoctoral study	Academic employment	Industry employment	Other
2012	546	78 (37%)	93 (44%)	9 (4%)	32 (15%)
2013	552	70 (36%)	87 (45%)	15 (8%)	23 (12%)
2014	527	73 (39%)	87 (46%)	5 (4%)	24 (13%)
2015	493	58 (37%)	72 (46%)	7 (4%)	20 (13%)
2016	460	72 (44%)	58 (36%)	10 (6%)	22 (14%)

to measure. There is currently no “applied biological anthropology job wiki,” nor do other job sites (e.g., USAJobs.gov) provide easily searchable records of previous position advertisements. An official, widely distributed systematic annual survey by the American Association of Physical Anthropologists, similar to one previously attempted by the American Anthropological Association (Givens & Jablonski 2000) is needed. Such a survey which would serve to generate a fuller picture of the discipline and benefit prospective students, current students, and professionals alike. This survey could target all membership levels and include questions regarding: demographic information, biological anthropology specialty, debt generated from graduate school, time to degree completion, current employment, desired employment, current salary, annual publications, etc.

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REFERENCES

- Antón, S. C., Malhi, R. S., & Fuentes, A. (2018). Race and diversity in U.S. Biological Anthropology: A decade of AAPA initiatives. *Yearbook of Physical Anthropology*, 165, 158–180.
- Arthur, M., Hall, D., & Lawrence, B. (1989). *Handbook of career theory*. Cambridge, England: Cambridge University Press.
- Carnegie Foundation for the Advancement of Teaching (2017). Carnegie Classification of Institutions of Higher Education. Available at: <http://carnegieclassifications.iu.edu/>
- Cochran, L. (1994). What is a career problem?. *The Career Development Quarterly*, 42, 204–215.
- Ghaffarzadegan, N., Hawley, J., Larson, R., & Xue, Y. (2015). A note on PhD population growth in biomedical sciences. *Systems Research and Behavioral Science*, 32, 402–405.
- Gibbs, K. D., McGready, J., Bennet, J. C., & Griffin, K. (2014). Biomedical science Ph.D. career interest patterns by race/ethnicity and gender. *PLOS One*, 9, e114736.
- Givens, D. B., Jablonski, T. (2000). Survey of PhD recipients. Available at: <http://www.americananthro.org/LearnAndTeach/ResourceDetail.aspx?ItemNumber=1499>
- Hess, F. M., & Leal, D. L. (1997). Minority teachers, minority students, and college matriculation: A new look at the role-modeling hypothesis. *Policy Studies Journal*, 25(2), 235–248.
- Jacobs, J. A., & Winslow, S. E. (2004). Over-worked faculty: Jobs, stresses, and family divides. *Annals of the American Academy of Political and Social Science*, 596, 104–129.
- Jones, S. J., & Palmer, E. M. (2011). Glass ceilings and catfights: Career barriers for professional women in academia. *Advancing Women in Leadership*, 31, 189.
- Kahn, S., & Ginther, D. K. (2017). The impact of postdoctoral training on early careers in biomedicine. *Nature Biotechnology*, 35, 90–94.
- Krupnick, M. (2016). The shortage of non-white professors is a self-perpetuating problem. PBS News Hour. Available at: <https://www.pbs.org/newshour/education/shortage-non-white-professors-self-perpetuating-problem>
- Larson, R. C., Ghaffarzadegan, N., & Xue, Y. (2014). Too many PhD graduate or too few academic job openings: The basic reproductive number R_0 in Academia. *Systems Research and Behavioral Science*, 31, 745–750.
- National Science Foundation, National Center for Science and Engineering Statistics. (2012a). *Doctorate Recipients from US Universities: 2010*. Special Report NSF 12–305. Arlington, VA. Available at: <https://www.nsf.gov/statistics/srvydoctorates/#tabs-2>.
- National Science Foundation, National Center for Science and Engineering Statistics. (2012b). *Doctorate Recipients from U.S. Universities: 2011*. Special Report NSF 13–301. Arlington, VA. Available at: <https://www.nsf.gov/statistics/srvydoctorates/#tabs-2>.
- National Science Foundation, National Center for Science and Engineering Statistics. (2013). *Doctorate Recipients from US Universities: 2013*. Special Report NSF 15–304. Arlington, VA. Available at: <http://www.nsf.gov/statistics/sed/2013/>.
- National Science Foundation, National Center for Science and Engineering Statistics. (2014). *Doctorate Recipients from US Universities: 2012*. Special Report NSF 14–305. Arlington, VA. Available at: <https://www.nsf.gov/statistics/srvydoctorates/#tabs-2>.
- National Science Foundation, National Center for Science and Engineering Statistics. (2015). *Doctorate Recipients from US Universities: 2014*. Special Report NSF 16–300. Arlington, VA. Available at: www.nsf.gov/statistics/2016/nsf16300/.
- National Science Foundation, National Center for Science and Engineering Statistics. (2016). *Doctorate Recipients from US Universities: 2015*. Special Report NSF 17–306. Arlington, VA. Available at: www.nsf.gov/statistics/2017/nsf17306/.
- National Science Foundation, National Center for Science and Engineering Statistics. (2017). *Doctorate Recipients from US Universities: 2016*. Special Report NSF 18–304. Alexandria, VA. Retrieved from: www.nsf.gov/statistics/2018/nsf18304/.
- Passalacqua, N. V., & Garvin, H. M. (2017). Experiences in the application and attendance of human skeletal biology graduate programs. *American Journal of Physical Anthropology*, S64, 310.
- Passalacqua, N. V., & Pilloud, M. A. (2018). *Ethics and professionalism in forensic anthropology*. San Diego, CA: Elsevier Press.
- Rivera, L. A. (2017). When two bodies are (not) a problem: Gender and relationship status discrimination in academic hiring. *American Sociological Review*, 165, 1–28.
- Sauermann, H., & Roach, M. (2016). Why pursue the postdoc path?. *Science (New York, N.Y.)*, 352, 663–664.
- Speakman, R. J., Hadden, C. S., Colvin, M. H., Cramb, J., Jones, K. C., Jones, T. W., . . . Thompson, V. D. (2018). Choosing a path to the ancient world in a modern market: The reality of faculty jobs in archaeology. *American Antiquity*, 83, 1–12.
- Turner, T. R., Bernstein, R. M., Taylor, A. B., Asangba, A., Bekelman, T., Cramer, J. D., . . . Vogel, E. (2018). Participation, representation, and shared experiences of women scholars in biological anthropology. *American Journal of Physical Anthropology*, 165, 126–157.

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