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Trends in the Environmental Health Job Market for New Graduates

Editor's Note: In an effort to promote the growth of the environmental health profession and the academic programs that fuel that growth, NEHA has teamed up with the Association of Environmental Health Academic Programs (AEHAP) to publish two columns a year in the *Journal*. AEHAP's mission is to support environmental health education to ensure the optimal health of people and the environment. The organization works hand in hand with the National Environmental Health Science and Protection Accreditation Council (EHAC) to accredit, market, and promote EHAC-accredited environmental health degree programs.

This column will provide AEHAP with the opportunity to share current trends within undergraduate and graduate environmental health programs, as well as their efforts to further the environmental health field and available resources and information.

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Introduction

The question of whether the job market can support future graduates of environmental health programs remains an important and difficult question for environmental health programs, current and prospective students, parents, and other stakeholders. Our previous report using 2014 data from the U.S. Bureau of Labor Statistics demonstrated anticipated growth and higher than average

pay in the profession through at least 2022 for baccalaureate degree holders (Marion & Sinde, 2015). Growth in the profession does not necessarily translate into job availability if the market is saturated with job candidates. In 2013, *U.S. News & World Report* indicated that public health is one of the 11 hottest choices as a major for current college students (Gandel & Haynie, 2013). Some of the graduates of these popular public health pro-

grams could potentially influence the environmental health market, particularly in the public sector, if they do not obtain adequate skills prior to graduation.

While university programs produce graduates, local health departments (LHDs) have suffered tremendous job losses nationally. From 2008–2012, LHDs eliminated 44,000 positions (National Association of County and City Health Officials, 2014). From 2012–2015, nearly 8,000 more positions were lost nationally in LHDs, totaling almost 52,000 fewer positions since 2008 (Newman, Ye, Leep, & Zometa, 2016). Although there was a net gain of 850 positions in LHDs in 2016 (Robin & Leep, 2017), the U.S. has 50,000 fewer LHD employees today than one decade ago.

In terms of job opportunities in the public workforce, the Public Health Workforce Interests and Needs Survey (PH WINS) indicated that despite these major job losses over the last decade, turnover and retirement are likely contributing to an increase in future position availability. Specifically, 18% of all PH WINS respondents indicated intentions to leave their agency during the survey year, while an additional 25% indicated plans to retire by 2020 (Pourshaban, Basurto-Dávila, & Shih 2015). Job satisfaction and pay were identified as the top two reasons why voluntary job departure was occurring in PH WINS. To fill positions, unless pay and job satisfaction issues are addressed by policy solutions, the quality of the incoming workforce might diminish and the demand for college graduates will decrease as communities with fewer financial resources cannot recruit highly qualified college graduates.

TABLE 1

Percentage of Recent Graduates Working in the Private Sector Among National Environmental Health Science and Protection Accreditation Council Undergraduate Programs, 2012–2017

| Year | Responding Programs | Private Sector Average (%) | SD | Minimum | Maximum |
|------|---------------------|----------------------------|------|---------|---------|
| 2012 | 24 | 49.6 | 0.23 | 20 | 80 |
| 2013 | 22 | 49.6 | 0.22 | 0 | 86 |
| 2014 | 24 | 52.8 | 0.22 | 0 | 88 |
| 2015 | 27 | 53.1 | 0.23 | 0 | 100 |
| 2016 | 25 | 52.1 | 0.26 | 14 | 100 |
| 2017 | 17 | 48.2 | 0.24 | 0 | 100 |

SD = standard deviation.

TABLE 2

Current Job Market Perceptions of National Environmental Health Science and Protection Accreditation Council Undergraduate Programs, 2012–2017

| Year | N | Decreasing # (%) | No Change # (%) | Increasing # (%) |
|------|----|------------------|-----------------|------------------|
| 2012 | 29 | 2 (6.9) | 17 (59) | 10 (34) |
| 2013 | 29 | 3 (10) | 13 (45) | 13 (45) |
| 2014 | 31 | 3 (3.2) | 11 (35) | 19 (61) |
| 2015 | 32 | 2 (6.3) | 7 (22) | 23 (72) |
| 2016 | 29 | 0 (0) | 8 (28) | 21 (72) |
| 2017 | 29 | 2 (6.9) | 12 (41) | 15 (52) |

Methods

For monitoring potential changes in job availability, an annual survey is performed among the programs accredited by the National Environmental Health Science and Protection Accreditation Council (EHAC). The annual survey provides a holistic perspective of the health of environmental health programs nationally with data being obtained from all undergraduate and graduate programs. A variety of data points, including program enrollment, number of annual graduates, number of recent job placements, types of job placements, and more, are included in the annual survey. Using the data from these reports (2012–2017), we examined the annual responses of program leaders for approximately 30

undergraduate programs and eight graduate programs regarding whether they thought the job market for their graduates was increasing, decreasing, or not changing.

In addition, we examined where each of these programs were placing their students (public or private sector) to see if programs historically placing students in public sector positions were being adversely impacted by changes in the public sector. Private and public are the terms used in the annual surveys from 2012–2017. The annual surveys include questions ascertaining how many recent graduates over the past year were employed in the public and private sector. Within public and private categories, data are further collected annually for the public sector by obtaining employment data for recent gradu-

ates employed in local health departments, federal service, state service, educational institutions, nonprofits, and other as subcategories of the public sector categorization. For private sector work, consulting, manufacturing, resource extraction, and other were the subcategories. Using the responses to the overarching categories of public sector and private sector employment, a logistic regression model was generated to see if programs perceiving increasing job growth were oriented more toward having graduates placed in private sector positions.

Results

During 2012–2017, the undergraduate institutions reported graduating 2,047 students. Graduate programs reported 553 new graduates. Among the undergraduate programs providing data on job placement during this timeframe, 950 graduates (48%) were described as being placed in the public sector and 1,013 graduates (52%) in the private sector. The ratio of placement (public versus private) among respondent undergraduate programs remained approximately 50% during the observation period (Table 1). Similar findings are true for the graduate programs, whereby 226 of 480 (47%) recent masters-level graduates were placed in the public sector from 2012–2017.

In regard to perspectives on the market, 179 undergraduate program responses and 48 graduate program responses were received from 2012–2017 as to whether the job market was increasing, decreasing, or not changing for their future graduates. From 2012–2017, a total of 10 (5.6%) of the undergraduate program responses suggested a decreasing market. The majority of respondents, 101 (56%), perceived the market increasing, with 68 (38%) indicating no change (Table 2). Among graduate program respondents from 2012–2017, only one (2.1%) program perceived a decreasing job market (response occurred in 2012). The graduate programs overwhelming perceived an increasing job market with 33 (69%) respondents reported an increasing job market and 14 (29%) perceived no change.

During 2012, the majority of undergraduate programs (59%) perceived a flat job market. In 2013, however, an equal amount perceived a flat and increasing job market (45%) (Table 2). Since 2014, over half of the undergradu-

ate programs have perceived an increasing job market although the rate of increase may be slowing towards prerecession levels (Figure 1). For the graduate programs, the frequency of program respondents perceiving an increasing job market has been 50% or higher since the observation period (Figure 1).

Beyond the numerical data obtained in the annual survey, programs provide qualitative feedback. Such open-response feedback on the job availability portion of the survey has consistently and frequently generated responses indicating that job opportunities are increasing in the private sector and declining in the public sector for their students. To investigate the impact of the private sector employment opportunities on undergraduate program expectations as related to increasing job opportunities, undergraduate programs expecting employment increases were coded as “1” and programs expecting otherwise were coded as “0”. Then, using the numerical responses for how many of their recent graduates were placed in the public sector versus the private sector, we generated a new variable, “private.” The new variable represents the proportion of graduates working in private industry. For example, a program with 5 of 10 graduates in a given year working in the private sector would be coded as 0.5. Using these data, a logistic regression model was generated to examine the likelihood of a program to perceive an increasing job market. The model was also adjusted for year effect, whereby 2012 was set as the reference group.

Upon performing the regression analysis, the year effect was significant, whereby the likelihood of expecting an increasing job market for undergraduates was significantly greater ($p < .05$) in 2015, 2016, and 2017 compared with 2012. The odds of an undergraduate program in 2017 perceiving an increasing job market were 3.9 times greater than the perceptions of 2012 (Table 3). Furthermore, the proportion of students for a given program entering the private sector was also a significant predictor of whether a program anticipated an increasing job market. Specifically, as the proportion of private sector employment increased, so did the odds of a program reporting a perception that job opportunities were increasing for their students (odds ratio = 6.0; 95% confidence interval [1.1, 32]).

FIGURE 1

Undergraduate and Graduate Program Perceptions of an Increasing Environmental Health Job Market by Year

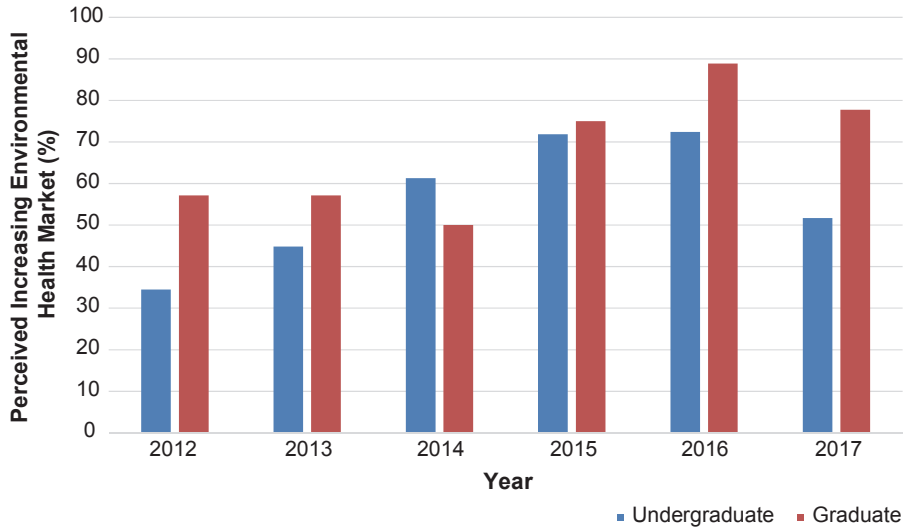


TABLE 3

Multivariable Logistic Regression Model for Predicting the Likelihood of a Perceived Increasing Environmental Health Job Market for National Environmental Health Science and Protection Accreditation Undergraduate Programs, 2012–2017

| Covariate | β | SE (β) | aOR (95% CI) | p-Value |
|-----------|---------|----------------|----------------------|-------------|
| Private* | 1.8 | 0.85 | 6.0 (1.1, 32) | .036 |
| 2012 | 1.0 | – | reference | – |
| 2013 | 0.61 | 0.62 | 1.8 (0.54, 6.2) | .331 |
| 2014 | 1.1 | 0.62 | 3.1 (0.92, 10) | .067 |
| 2015 | 1.5 | 0.61 | 4.7 (1.4, 16) | .012 |
| 2016 | 1.7 | 0.63 | 5.2 (1.5, 18) | .009 |
| 2017 | 1.4 | 0.68 | 3.9 (1.0, 15) | .044 |
| Constant | -1.6 | 0.62 | – | – |

SE = standard error; aOR = adjusted odds ratio; CI = confidence interval.

Note. Significant values are shown in bold.

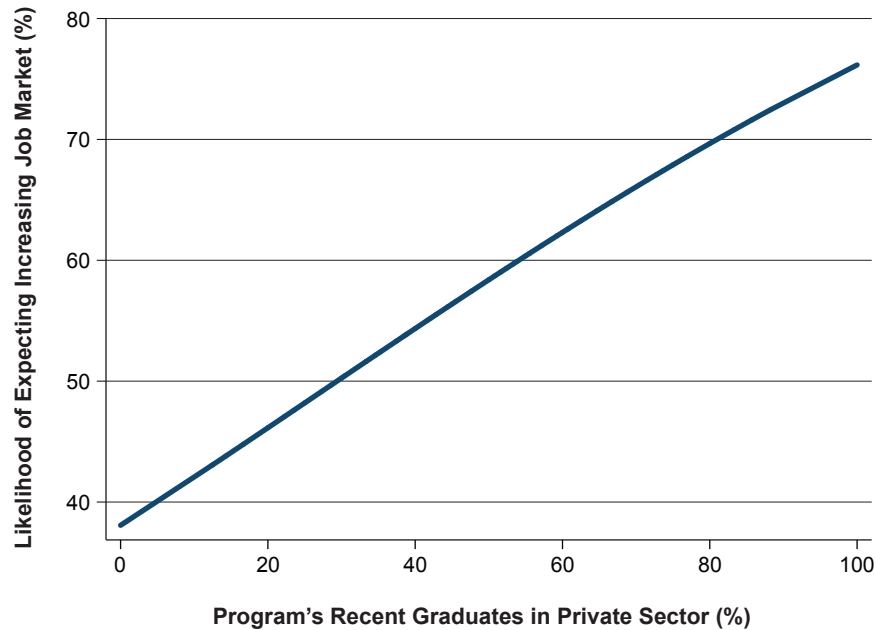
*The proportion of recent graduates working in private industry.

In terms of percentages rather than proportions, for each 1% increase in private sector employment, the odds of a program perceiving increasing job opportunities for their students increase by 1.8%. The model, in terms of percentages, demonstrates in Fig-

ure 2 that even for programs with no private sector employment (0%), less than 40% of these programs anticipated an increasing job market. For programs with 100% private sector employment, approximately 75% of these programs perceived an increasing job market.

FIGURE 2

Modeled Environmental Health Job Market Perceptions by Program as a Function of Graduate Placement in Private Sector



In terms of model quality, the model had adequate discrimination (area under the receiver operator characteristic curve = 70.5%). The model predicted results were not significantly different than the observed results ($p = .17$), indicating adequate fit.

Discussion

The overall perception among EHAC program respondents continues to indicate a favorable job market for current students and recent graduates. Among programs that indicated decreasing job opportunities or no change in the market, many of these programs provided supplemental comments referencing downturns in local/regional economies or lack of available jobs with traditional government employers. The programs reporting the largest enrollments and highest opinions about the job market are those most closely aligned to the private sector.

Nationally, low pay for environmental health professionals working in state and local government could be impacting perceptions about job availability for baccalaureate degree holders from EHAC programs. As we have previously described, EHAC graduates

possess a strong science background and technical skills suitable for private and public sector work, as well as fields beyond environmental health (Marion & Murphy, 2016). The value of the EHAC degree, which was designed for the modern environmental public health workforce, is often not fully appreciated by government policies or budgeting that impacts local public health. Accordingly, many agencies do not recruit EHAC college graduates when more affordable high school graduates and college graduates of other disciplines are seeking employment. Circumstances, such as long-standing salary concerns as described in the North Carolina environmental health community in 2009, will need to be addressed if the most-qualified persons are to be recruited and retained in the environmental public health workforce (Zontek, DuVernois, & Ogle, 2009).

As public agencies develop budgets intending to be conscientious about their limited financial resources, by offering salaries not commensurate with the private sector, these agencies will struggle to recruit well-trained persons ready to “hit the ground running.” By lowering the hiring requirements or not

maintaining hiring requirements on par with the private sector, these agencies will need to invest additional staff time into education and training that would not be needed as extensively for EHAC program graduates (Neistadt & Murphy, 2009).

Retention issues from low pay will result in high turnover and a greater need to invest more resources into training the frequent new hires lacking basic environmental public health core competencies. Such education costs to be assumed by the employer for these under qualified persons were estimated in 2007 to be \$9,500 (Murphy & Neistadt, 2007). Substantial increases in U.S. education costs have since occurred. The U.S. Department of Labor, Bureau of Labor Statistics (2017a) estimates that from 2006–2016, U.S. education costs increased by 63%. If the same holds true from 2007–2017, training and educating an under qualified environmental health professional could now likely cost a minimum of \$15,000. Upon the employer making the education and training investment, the newly trained environmental health professional will then be more marketable and difficult to retain if pay is not on par with other public sector environmental health positions or the private sector.

Until there are more significant investments in state and local environmental health agencies and their workforces, graduating EHAC students examining compensation and career advancement will seek opportunities in the private sector. As graduates head to the private sector, alumni will encourage their peers to do better paying cooperative education and internship opportunities in the private sector. Such experiences are and will likely continue to result in graduates choosing private sector careers. The findings here are further supported by data from the Bureau of Labor Statistics, which indicates that environmental jobs requiring a baccalaureate degree will remain concentrated and stable in state and local levels of government; however, most growth will be occurring in the private sector, particularly among private consultants (U.S. Department of Labor, Bureau of Labor Statistics, 2017b).

Overall, even among the environmental health programs with the fewest number of recent graduates in the private sector, few foresee a declining job market. Most of the programs that are most closely aligned to

public sector employment opportunities perceive either no change or increasing opportunities in the job market. Future studies among recent graduates taking into consideration salary differences between public and private employers are encouraged. Such discrepancies, if any, between public versus private salaries among EHAC graduates could be useful in informing environmental public health budgets and policies.

Conclusions

- Over half of accredited EHAC undergraduate and graduate programs perceive increasing job opportunities for their graduating students.
- The programs most closely aligned to the private sector reported more favorable job outlook scenarios for their graduates.
- Assessments of salary differences among recent EHAC graduates entering the private sector versus the public sector are warranted. 🐼

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