



## Brief communication

## Understanding epidemiologists who serve as preceptors

Jessica Arrazola, DrPH, MPH, CHES<sup>a, \*</sup>, Gulzar Shah, PhD, Mstat, MS<sup>a</sup>, Jeff Jones, PhD, MA<sup>a</sup>, Jingjing Yin, PhD, MA<sup>b</sup>, Elizabeth Harper, DrPH, MPH<sup>c</sup>

<sup>a</sup> Department of Health Policy, Jiann-Ping Hsu College of Public Health, Georgia Southern University, Statesboro

<sup>b</sup> Department of Biostatistics, Jiann-Ping Hsu College of Public Health, Georgia Southern University, Statesboro

<sup>c</sup> Association of State and Territorial Health Officials, Arlington, VA



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## ABSTRACT

**Purpose:** This study describes factors associated with epidemiologists from state health departments (HDs) who served as preceptors.

**Methods:** We used the 2014 Public Health Workforce Interests and Needs Survey, a national survey of state health agency workers, and selected those who identify their role in the organization as an epidemiologist and a state HD employee for analysis. Variables related to recruitment and retention were studied, and predictor variables were assessed. We applied statistical analysis of complex sampling design based on weights generated by the distribution of the epidemiologists. Logistic regression was used to determine factors that are significant predictors of preceptorship.

**Results:** Significant factors of increased preceptorship included being black (adjusted odds ratios [AOR] = 3.98, 95% confidence interval [CI], 2.01–7.88), being a team leader (AOR = 2.09, 95% CI, 1.07–4.05), a supervisor (AOR = 2.75, 95% CI, 1.25–6.08), or a manager (AOR = 2.70, 95% CI, 1.15–6.34), and collaborating with academia (AOR = 3.11, 95% CI, 1.82–5.34).

**Conclusions:** State HDs and academic institutions should collaborate to offer applied epidemiology practicum opportunities to (1) increase job satisfaction among applied epidemiologists and (2) prepare the incoming workforce to work in applied epidemiology.

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## Introduction

Practicums are applied student learning experiences that are supervised by a preceptor. All schools and programs of public health accredited by the Council on Education for Public Health require a practicum component for all graduate students [4]. The practicum is an opportunity for the student to practice the skills they have learned in the classroom in practice-based setting. While “field placement programs benefit students, employers, and academic institutions, they can be difficult to establish, manage, sustain, and evaluate” [17]. Academic institutions facilitating practicum experiences rely on community partnerships with

willing working professionals to serve as preceptors for the students. The role of the preceptor is to provide supervision and mentorship for the student. The preceptor is expected to “monitor the implementation of practicum projects, model effective public health practices, and provide important feedback to faculty and students” [20].

Accredited Schools of Public Health are required to offer an epidemiology concentration [4], yet collaborations between these institutions and potential employers of their students tend to be low [18]. In 2014, only 27% of state workers indicated they had worked with the academic community [7], while 12% of the state public health workforce participated in a successful collaboration in the past year [18]. Practicum opportunities are also limited by the availability of staff to serve as preceptors [3]. Approximately 18% of epidemiologists intend to leave the workforce in the next 5 years, which may exacerbate the existing demands and pressures on the workforce [11]. While the number of epidemiology trainees is increasing, the capacity for applied epidemiology practicum opportunities necessary to prepare a student for employment may be insufficient [11].

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\* Corresponding author. Department of Health Policy, Jiann-Ping Hsu College of Public Health, Georgia Southern University, PO Box 8015, Statesboro, GA 30460.

E-mail address: [jessicapittman@gmail.com](mailto:jessicapittman@gmail.com) (J. Arrazola).

The applied learning experience that practicums offer is essential for graduates to be qualified for entry-level positions. Practicums rooted in competencies, such as the Applied Epidemiology Competencies, have the potential to improve the capacity of the current workforce in performance of the 10 Essential Public Health Services [1,16]. Epidemiology field training programs that incorporate mentoring and competency-based frameworks can produce highly capable epidemiologists [6]. Lack of relevant competencies can make the graduates less “competitive for employment in the current and future job market” [2]. Epidemiology field placements are key to strengthening health systems [23]. Students are able to observe the agency's organization, processes, people, and culture through their practicum experience [5]. In addition, practicums provide exposure to public health practice that may guide the student's chosen career path.

The purpose of this study is to identify predictors of applied epidemiology graduate preceptorships and other associated factors such as years of experience, race, and academic partnerships. A better understanding of who serves as a preceptor offers a novel perspective and foundation for enhancing the applied epidemiology workforce pipeline.

## Material and methods

This research uses a cross-sectional survey of public health employees, the 2014 Public Health Workforce Interests and Needs Survey (PH WINS), led by the Association of State and Territorial Health Officers and the de Beaumont Foundation. The PH WINS used a complex sampling design (described in [14,19]), with a total of 19,171 completed surveys, of which 10,246 were completed by the state central office. This was the first national assessment of the state agency level public health workforce. This study uses data from a subset of the sample limited to those who self-identify their role in the organization as an epidemiologist and a state health department (HD) employee ( $n = 681$ ). The Georgia Southern University Institutional Review Board determined this research was “exempt” from a full review (H16362).

Preceptorship is the dependent variable of interest for this study and was self-reported by participants indicating “yes” or “no” to supervising a student experience in the last year. Other relevant measures included race, age, gender, supervisory level, annual salary, educational attainment, years in current position, years in the agency, years in public health practice, collaborate with academia, and overall job satisfaction.

The original sample was designed to be nationally representative of the state health agency workforce. Because the analyses for this study were limited to state health agency epidemiology workforce, we generated new weights using poststratification, for this sample to be representative of epidemiologists at all state health agencies. The denominators for weight calculations were derived from the state enumeration data compiled through the Council of State and Territorial Epidemiologists' 2013 Epidemiology Capacity Assessment. Descriptive analyses (PROC SURVEYFREQ) were performed, and logistic regression (PROC SURVEYLOGISTIC) was used to determine factors that are significant predictors of preceptorship. The analysis was conducted using SAS Studio, version 3.6 (SAS Studio, Cary, NC).

## Results

Among epidemiologists, 26% serve as preceptors ( $n = 174$ ). The subgroup analysis of preceptors (Table 1) shows that 45% are below

the age of 40 years and almost 73% are female. Most are white (66%). Preceptors hold positions across all supervisory levels: nonsupervisor (33%), team leader (19%), supervisor (32%), and management (16%). Over 58% earn less than \$75,000 annually. Nearly 61% hold bachelor's and master's degrees, whereas 29% hold bachelor's, master's, and doctorate degrees. Approximately 56% of preceptors have been in their current position for 5 years or less, 56% have been at their agency for 10 years or less, and 62% have more than 10 years of experience in public health practice. Nearly 72% collaborate with academia. Almost 89% of preceptors strongly agree or agree they have overall job satisfaction.

Table 2 describes the distribution of preceptorships and academic partnerships. In 2013, over 26% of epidemiologists served as a preceptor. Nearly 79% reported that the benefit of hosting the practicum outweighed or equaled the work required to host the practicum. Furthermore, 52% of epidemiologists collaborated with members of the academic community (faculty/staff/students) on public health practices issues. Almost 92% of those that collaborate with the academic community identify the value of the academic partnership to be somewhat or very helpful.

The unadjusted odds ratios (Table 3) indicate that higher odds of serving as preceptors were associated with increased age, black (vs. white), supervisor or manager (vs. nonsupervisor), higher annual salary, higher educational attainment, more years in current position, more years in agency, more years in public health practice, experience collaborating with academia, and higher overall job satisfaction (Table 3).

Adjusted odds ratios are reported in Table 3, to statistically control for confounders, while assessing the association of each independent variable in the model with the dependent variable preceptorship. After controlling for other independent variables in the model (e.g., age, gender, race, supervisory level, annual salary, educational attainment, years in current position, years in the agency, years in public health practice, collaborating with academia, and overall job satisfaction), few factors were significant in predicting preceptorship. The odds of being a black preceptor were significantly higher (adjusted odds ratio: 3.98; confidence interval [CI]: 2.01–7.88) than the adjusted odds of being a white preceptor. Compared to the adjusted odds of a preceptor being a nonsupervisor, the adjusted odds of being a team leader were 2.09 (CI: 1.07–4.05), a supervisor were 2.75 (CI: 1.25–6.08), or a manager were 2.70 (CI: 1.15–6.34). The adjusted odds of a preceptor collaborating with academia were 3.11 (CI: 1.82, 5.34), compared with preceptors not collaborating with academia.

## Discussion

This large-scale retrospective study examines the factors associated with odds of serving as preceptors among applied epidemiologists. This study found that one in every four epidemiologists serve as preceptors. Epidemiologists who serve as preceptors (plan, supervise, and evaluate a student experience) overwhelmingly believed the benefits from the preceptorship outweighed or equaled the work required to host the practicum. Principles of Rational Choice Theory—individuals are rational decision-makers based on perceived costs and benefits [13]—would suggest that findings about net value of preceptorship might motivate some of the remaining 74% of epidemiologists who do not currently serve as preceptors.

The data suggest epidemiologists who serve as preceptors sort into two types: first, the most experienced epidemiologists—professionals 56–65 years in age, earning \$85,000

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