



HHS Public Access

Author manuscript

J Public Health Manag Pract. Author manuscript; available in PMC 2022 January 01.

Published in final edited form as:

J Public Health Manag Pract. 2021 ; 27(4): 412–416. doi:10.1097/PHH.0000000000001029.

A Novel Approach for Workforce Surveillance at the US Department of Health and Human Services

**Purni Abeysekara, DrPH, Fátima Coronado, MD, MPH, M. Kathleen Glynn, DVM, MPVM,
Patricia M. Simone, MD**

Association of Schools and Programs of Public Health and Centers for Disease Control and Prevention Fellowship Program (Dr Abeysekara), Division of Scientific Education and Professional Development (Drs Abeysekara, Coronado, Glynn, and Simone), Centers for Disease Control and Prevention, Atlanta, Georgia.

Abstract

Background: Expert groups have recommended ongoing monitoring of the public health workforce to determine its ability to execute designated objectives. Resource- and time-intensive surveys have been a primary data source to monitor the workforce. We evaluated an administrative data source containing US Department of Health and Human Services (HHS) aggregate federal civil service workforce-related data to determine its potential as a workforce surveillance system for this component of the workforce.

Methods: We accessed FedScope, a publicly available online database containing federal administrative civilian HHS personnel data. Using established guidelines for evaluating surveillance systems and identified workforce characteristics, we evaluated FedScope attributes for workforce surveillance purposes.

Results: We determined FedScope to be a simple, highly accepted, flexible, stable, and timely system to support analyses of federal civil service workforce-related data. Data can be easily accessed, analyzed, and monitored for changes across years and draw conclusions about the workforce. FedScope data can be used to calculate demographics (eg, sex, race or ethnicity, age group, and education level), employment characteristics (ie, supervisory status, work schedule, and appointment type), retirement projections, and characterize the federal workforce into standard occupational categories.

Conclusions: This study indicates that an administrative data source containing HHS personnel data can function as a workforce surveillance system valuable to researchers, public health leaders, and decision makers interested in the federal civil service public health workforce. Using administrative data for workforce development is a model that can be applicable to federal and nonfederal public health agencies and ultimately support improvements in public health.

Correspondence: Fátima Coronado, MD, MPH, Division of Scientific Education and Professional Development, Centers for Disease Control and Prevention, 1600 Clifton Rd, MS E-96, Atlanta, GA 30329 (FEC2@cdc.gov).

Publisher's Disclaimer: Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

The authors have no conflicts of interest to declare.

Keywords

administrative data; surveillance; workforce

The effective delivery of public health services depends on a workforce with the appropriate characteristics and skills.^{1,2} Public health workforce monitoring has been recommended for years^{3–5} but conducted on an ad hoc basis primarily using a mixture of surveys.^{6–8} Surveys are resource intensive and can present challenges such as susceptibility to response bias.^{9,10} Administrative data sources have been less frequently used but could be an accessible, economical, and timely data source to guide public health workforce planning.^{11,12} Administrative data are typically collected to support administration of a program and relate to individuals or entities participating in that program.^{13,14} Because administrative data are collected for reasons other than ongoing workforce monitoring, determining the degree to which these data sources are useful for workforce surveillance is necessary. In this study, we apply established methods to evaluate surveillance systems using a federal workforce administrative data source as a public health workforce surveillance system.

Methods

The US Department of Health and Human Services (HHS) includes 11 operational divisions (OpDivs) that comprise a substantial portion of the federal public health workforce. Our analysis evaluated FedScope, an online, publicly available registry containing HHS federal civil service administrative data, established by the US Office of Personnel Management (OPM).¹⁵ The OPM is the primary administrative data source for all federal civil service employees. On the basis of guidelines for evaluating surveillance systems,¹⁶ we defined the system's goal and evaluated the following system attributes: simplicity, data quality, acceptability, flexibility, timeliness, sensitivity, and stability. Definitions and evaluation criteria for each attribute are described in the guidance document.¹⁶ Using assessment of these attributes, we made conclusions about the utility of FedScope in achieving federal civil service public health workforce surveillance objectives. This project was reviewed by the Centers for Disease Control and Prevention for human subjects' protection and was deemed to be nonresearch.

Results

FedScope's goal is to provide administrative data for the federal workforce. If FedScope could be used for monitoring the public health workforce, the surveillance system goal would be to monitor HHS workforce characteristics. Consistent with guidance on evaluation of surveillance systems, FedScope was assessed using surveillance attributes including simplicity, data quality, acceptability, flexibility, timeliness, sensitivity, and stability in the context of meeting this goal.

System general characteristics

Data files through March 2018 accessed from FedScope contained aggregate data from 83 338 HHS staff members and included 5 publicly available data files containing employment,

diversity, accession, separation, and employment trend characteristics. Currently, aggregate data have been released online quarterly from 2010 through March 2018 and are available as a single cross-sectional data set. Agency-specific data are submitted by each federal agency to FedScope using system standard fields and definitions.

FedScope data include employees' demographics (ie, sex, race or ethnicity, age, and education level) and employment characteristics. Employment characteristics include supervisory status (employees' managerial, supervisor, or nonsupervisory responsibilities), general schedule classification pay (eg, federal wage system pay plans), work schedule (full-time vs part-time), type of appointment (permanent vs nonpermanent), and length of service. Data can be used to characterize the HHS workforce into 23 OPM-established occupational categories. Length of service data can be used to estimate potential staffing losses through retirement in future years.

System attributes

The Table summarizes the system's attributes.

Simplicity (structure and ease of use).¹⁶—FedScope's structure is simple, easy to access, and operate. The system is offered as a self-service tool, is easy to manipulate by using multidimensional data sources, and provides fast data retrieval and drill-down capability through a point-and-click method. FedScope provides public users with direct access to personnel data from any federal agency.

Data quality (completeness and validity of data).¹⁶—Overall, data quality recorded by FedScope was moderate. At submission, data undergo validity checks to ensure codes are valid and consistent; however, this identifies invalid data but not misclassified data (eg, incorrect education attainment). To avoid possible individual reidentification, small cell values are suppressed in some files. All variables had less than 0.005% missing, invalid, or unknown values. Furthermore, data collected at the time of the employee's appointment might not be regularly updated, leading to possible misclassification by using outdated information.

Acceptability (willingness of persons and organizations to use the system).¹⁶—Because OpDivs are required to submit their administrative workforce data to FedScope quarterly, data submitted are consistent, complete, and timely. Aggregate administrative data are representative from all 11 HHS OpDivs and included in the database.

Flexibility (system's ability to adapt to changing information and new demands).¹⁶—FedScope is a moderately flexible system that allows users to create cross-tabulations of different workforce characteristics and create new variables using available data that can produce outputs using those variables. However, to preserve employee privacy and avoid individual reidentification, variables in certain data files are not available. For example, accession, separation, and employment trend files do not include education or supervisory status.

Timeliness (speed between steps in a public health surveillance system).¹⁶—

Timeliness of FedScope is high. Employee characteristics and position attributes are submitted to the OPM quarterly (March, June, September, and December) by each OpDiv administrative personnel system. The system releases data approximately 6 months after each quarter ends (eg, December 2017 data were available in June 2018); availability of quarterly data allows for cross-sectional analyses and monitoring over time.

Sensitivity (system's ability to detect activity under surveillance).¹⁶—

Sensitivity of FedScope is moderate. Although workforce data are available for all OpDivs, only civil service employees are included, excluding US Public Health Service (USPHS) Commissioned Corps officers and contractors. In addition, data aggregation can lead to loss of sensitivity. Finally, the OPM does not classify certain public health occupations (eg, epidemiologists and public health informatics specialists); therefore, use of FedScope to describe aspects of the workforce related to these occupations is not possible.

Stability (system's reliability and availability).¹⁶—

FedScope is stable; it is a reliable and publicly available system, with limited down time experienced. Data have been available annually since 1998 and quarterly since 2010. As of March 2018, the interface includes approximately 20 years of employment and diversity data and approximately 12 years of accession and separation data.

Discussion

A challenge for advancing the public health workforce as a whole is that, to date, no system that monitors the federal public health workforce exists. We have taken a novel approach to assess the utility of an administrative workforce data source for a secondary purpose—to serve as a surveillance system where the goal of surveillance is monitoring HHS civil service workforce characteristics. Our study indicates that an existing, publicly available administrative data source containing HHS personnel information can function as a workforce surveillance system for federal civil service employees and can contribute information to state and local health department workforce data being collected through surveys and, ultimately, to workforce development.

Review of FedScope's attributes revealed it to be a simple, reliable, flexible, and timely system that meets its intention to support statistical analyses of federal civil service personnel (a person employed in the public sector and receiving pay from a governmental agency)¹⁵ and used to track workforce characteristics. The system is publicly available and can satisfy needs for federal administrative workforce data from multiple users including federal agencies, researchers, and the public.

Our study offers an example of leveraging an extensive and accessible administrative data source as a means to understand the complex composition of the HHS workforce. FedScope provides access to updated administrative data that can be used to establish and monitor trends over time and determine possible workforce gaps. Additional administrative data systems (eg, OpDiv learning management systems) could provide additional information to combine with findings from FedScope analysis. Evidence gathered from using

administrative data sources for workforce surveillance purposes might reduce other more complex and resource-intensive surveys used to monitor the workforce and supported by philanthropic investments.

Despite its potential for contributing to monitoring the public health workforce, FedScope's limitations must be recognized for it to be used effectively. The system only supports monitoring a subset of the federal workforce, specifically the civil service workforce. A remaining challenge will be to have a surveillance system, or system of systems, that includes information from all components of the federal (including Commissioned Corps officers), state, and local public health agencies. Currently, different data sources exist to capture different levels of workforce data including biannual profiles of the state and local health department workforce.^{6,7} In 2014 and 2017, the Public Health Workforce Interests and Needs Survey was implemented to more fully understand the state and local health departments' workforce characteristics and needs.⁸ However, no single administrative data system is available that includes all federal, state, and local public health agency workforce data.

Individuals using FedScope data should consider limitations presented in this evaluation. First, misclassifications exist and might be a concern for interpretation of certain variables (eg, educational attainment). This could be minimized if OpDivs increased data quality of the originating data systems. Improved data quality would benefit agencies by better supporting the primary function and increasing the value as administrative data sets. Second, although we attempted to characterize the HHS workforce, USPHS Commissioned Corps officers and contractors are not included in FedScope. As an indicator of the impact of these exclusions, a characterization of the federal workforce at the Centers for Disease Control and Prevention in 2014 indicated that USPHS Commissioned Corps officers comprised approximately 8% of the workforce.¹² Finally, other agencies not included in this analysis (eg, US Departments of Agriculture, Defense, and Veterans Affairs) contribute to public health efforts.

Summary

This study illustrates how assessing the value and utility of workforce-related data from an existing administrative data source can provide researchers, public health leaders, and decision makers evidence to support workforce development. Although different surveys have been conducted to characterize the public health workforce or section of it, a coordinated approach for monitoring the public health workforce is needed to determine its ability to execute designated objectives and to efficiently target efforts at all levels of the public health enterprise. Using our surveillance evaluation approach, individual agencies at the federal, state, tribal, local, or territorial level could review their existing administrative data sources and evaluate whether it can be used for workforce surveillance. A future goal will be to determine whether a combination of complementary data sources can help the public health community achieve the goal of continuous and more comprehensive monitoring of the workforce.

Acknowledgments

All work was supported by program funds of the Centers for Disease Control and Prevention.

References

1. DeSalvo KB, O'Carroll PW, Koo D, Auerbach JM, Monroe JA. Public Health 3.0: time for an upgrade. *Am J Public Health* 2016;106(4): 621–622. [PubMed: 26959263]
2. Lichtveld MY, Cioffi JP. Public health workforce development: progress, challenges, and opportunities. *J Public Health Manag Pract* 2003;9(6):443–450. [PubMed: 14606182]
3. Crawford CA, Summerfelt WT, Roy K, Chen ZA, Meltzer DO, Thacker SB. Perspectives on public health workforce research. *J Public Health Manag Pract* 2009;15(6)(suppl):S5–S15. [PubMed: 19829231]
4. Beck AJ, Coronado F, Boulton ML, Merrill JA. The public health workforce taxonomy: revisions and recommendations for implementation. *J Public Health Manag Pract* 2017;24(5):E1–E11
5. Sumaya C. Enumeration and composition of the public health work-force: challenges and strategies. *Am J Public Health* 2012; 102(3):469–474. [PubMed: 22390509]
6. Association of State and Territorial Health Officials. *ASTHO Profile of State and Territorial Public Health*. Vol 4. Arlington, VA: Association of State and Territorial Health Officials; 2017.
7. National Association of County and City Health Officials. *2016 National Profile of Local Health Departments*. Washington, DC: National Association of County and City Health Officials; 2017.
8. Sellers K, Leider JP, Harper E, et al. The Public Health Workforce Interests and Needs Survey: the first national survey of state health agency employees. *J Public Health Manag Pract* 2015;21(suppl 6): S13–S27. [PubMed: 26422482]
9. The National Academies of Sciences, Engineering, and Medicine. *Innovations in Federal Statistics: Combining Data Sources While Protecting Privacy*. Washington, DC: National Academies Press; 2017.
10. Hilliard TM, Boulton ML. Public health workforce research in review: a 25-year retrospective. *Am J Prev Med* 2012;42(5)(suppl 1): S17–S28. [PubMed: 22502923]
11. Jabine TB, Scheuren F. Goals for statistical uses of administrative records: the next 10 years. *J Bus Econ Stat* 1985;3(4):380–391.
12. Coronado F, Polite M, Glynn MK, Massoudi MS, Sohani MM, Koo D. Characterization of the federal workforce at the Centers for Disease Control and Prevention. *J Public Health Manag Pract* 2014;20(4):432–441. [PubMed: 23963253]
13. Office of Management and Budget. *Guidance for Providing and Using Administrative Data for Statistical Purposes*. Washington, DC: Office of Management and Budget, Executive Office of the President; 2014. M-14-06.
14. The PEW Charitable Trusts. *How States Use Data to Inform Decisions*. Washington, DC: The PEW Charitable Trusts; 2018.
15. US Office of Personnel Management. *FedScope system. Enterprise Human Resources Integration-Statistical Data Mart*. <https://www.fedscope.opm.gov>. Accessed December 17, 2018.
16. German RR, Lee LM, Horan JM, et al. Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group. *MMWR Recomm Rep* 2001; 50(RR-13):1–35; quiz CE31–CE37.

Implications for Policy & Practice

- Administrative data systems for public health agency personnel management can provide useful information for workforce surveillance.
- Agencies can use established methods for evaluating surveillance systems to assess extent to which their administrative data systems could support workforce surveillance.
- The public health community still lacks a comprehensive means to monitor the workforce at the federal, state, local, tribal, and territorial levels.

TABLE

FedScope Attributes as a Federal Workforce Surveillance System

Attribute ^a	Characteristics	Examples for Use
Simplicity [high]	<ul style="list-style-type: none"> System's structure is simple, publicly available online, and easy to access and operate Offers fast data retrieval and drill-down capability through point-and-click method Data files contain employment, diversity, accession, separation, and employment trend characteristics 	Users can easily identify demographic or employment characteristics of 1 or multiple federal agencies within and outside HHS
Data quality [moderate]	<ul style="list-style-type: none"> Data completeness is high, but validity of data completed is moderate Data undergo validity checks for invalid data but not for misclassified data 	Users need to carefully assess certain variables (eg, education attainment among medical officers incorrectly classified as at bachelor's level) and cautiously interpret findings
Acceptability [high]	<ul style="list-style-type: none"> Data submitted by OpDivs are consistent, complete, and timely Database includes aggregate administrative data representative from all 11 HHS OpDivs and other federal agencies 	Users can access data on the HHS workforce as a whole or by OpDiv and monitor changes over time
Flexibility [moderate]	<ul style="list-style-type: none"> System allows creation of cross-tabulations of different workforce characteristics Users can determine the categorization that best fits their agency needs System allows retirement estimation by cross-tabulating employee age and length of federal service Maintains employee privacy by using aggregate data and restricting use of certain data files 	Users can capture supervisory status by age only at a particular HHS OpDiv; they can restrict the data by OpDiv and assign each variable to a row and column
Timeliness [high]	<ul style="list-style-type: none"> Data submitted quarterly by each OpDiv Data are released approximately 6 mo after each quarter ends (eg, December 2017 data were available in June 2018) Data are available any time as a cross-sectional database and previous years are readily available 	Users can conduct cross-sectional analyses and monitoring over time
Sensitivity [moderate]	<ul style="list-style-type: none"> Certain variables do not fully capture their intent or validity, and some data are only collected at the time of the employee's appointment Data include civil servants (eg, exclude US Public Health Service Commissioned Corps officers and contractors) Certain occupations are not indicated (eg, epidemiologists and public health informatics specialists) 	Users need to recognize workforce findings related to certain occupations, or OpDivs could be more affected by the missing information
Stability [high]	<ul style="list-style-type: none"> Reliable and publicly available system Limited downtime experienced Approximately 20 years of data available 	Data can satisfy needs for federal workforce data from multiple users including federal agencies, researchers, and the public

Abbreviations: HHS, US Department of Health and Human Services; OpDiv, operational division.

The definitions and evaluation criteria for each attribute are based on the Updated guidelines for evaluating surveillance systems: Recommendations from the Guidelines Working Group.¹⁶

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript