

## Leveraging Public Data for Health Workforce Research: Interactive Data Dashboard of Supply & Distribution, Age Cohorts, and Commuting Patterns of Health Care Occupations

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### BACKGROUND

Prior research by University of Washington Center for Health Workforce Studies' (UW CHWS) researchers compared and discussed how estimates of health professionals vary at the national and state levels across secondary data sets such as the American Community Survey, Current Population Survey, and the Occupational Employment Statistics.<sup>1,2</sup> Additional UW CHWS analyses examined age cohort trends and commuting patterns for select occupations. These findings, along with interactive versions of supply estimates from a previously published report,<sup>2</sup> are made available on a Web-based interactive data dashboard on the UW CHWS website.

### DATA AND METHODS

Data for the display of the supply of nine allied health occupations (including three occupation groups) by state used the publicly available national datasets American Community Survey (ACS) and Occupational Employment and Wage Statistics (OEWS) from 2011, 2014, and 2017. These findings are displayed for clinical laboratory technologists and technicians, diagnostic-related technologists and technicians, medical assistants, occupational therapists, pharmacists, physical therapists, respiratory therapists, social and human service assistants, social workers, speech-language pathologists, and dental hygienists) for each of three analysis years and for each data source.

ACS data from 2011, 2014, and 2017 were also the basis for analyses leading to interactive displays illustrating national changes in age cohorts over time for the same nine occupations. These findings are viewable for each of 11 age categories by total count, percent in each category, and number per 100,000 population.

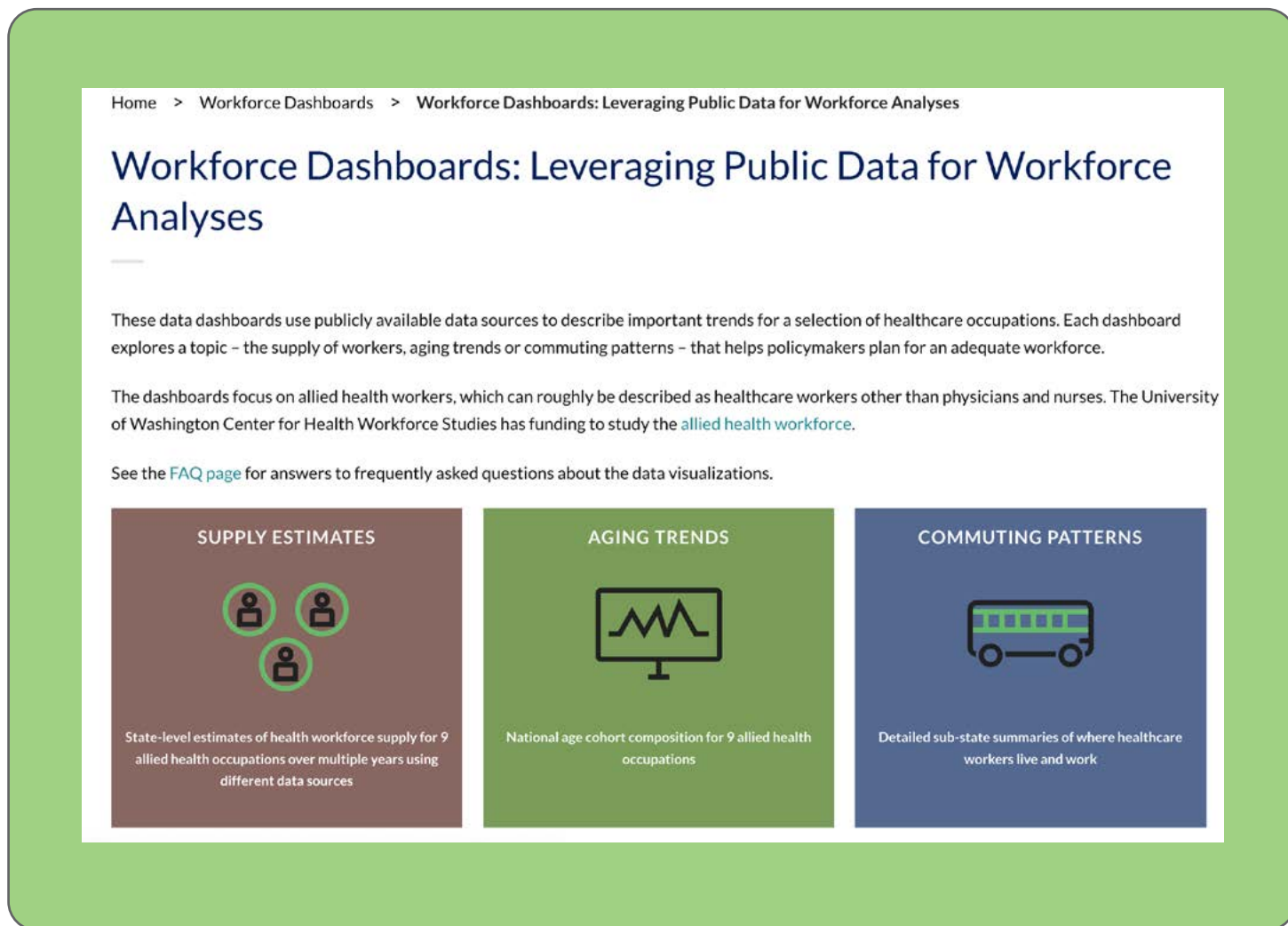
Analyses for the dashboard displays of commuting patterns were based on data from a five-year (2014-2017) pooled sample of national ACS data for 16 occupations and occupation groups, restricted to the adult population age 18 and older who were employed and did not work from home. For these commuting analyses, areas in which people live were defined by Residential Public Use Microdata Areas (PUMAs) and where they work by Work PUMAs. The 16 health occupations examined for commuting analyses are clinical laboratory technologists and technicians, diagnostic-related technologists and technicians, medical assistants, occupational therapists, pharmacists, physical therapists, respiratory therapists, social and human service assistants, social workers, speech-language pathologists, dental assistants, dental hygienists, dentists, advanced practice nurses, registered nurses, and licensed practical and vocational nurses. Tableau software was used to create interactive visualizations of the clusters of individuals in each occupation by sub-state (PUMA) regions of residence and work locations.

### RESULTS

The Leveraging Public Data for Workforce Analyses Dashboards can be viewed at <https://familymedicine.uw.edu/chws/resources/leveraging-data/> (see illustration of the landing page in **Figure 1**). These interactive visualizations allow users to view variations and changes over time in supply and distribution of selected occupations by state and by data source, and changes over time in their age distributions. The visualizations of commuting patterns demonstrates that many health

care workers do not live and work in the same locations. For each occupation, users can identify, at the sub-state PUMA-level, estimates of the number of workers by work location and then view the PUMAs where those workers live, providing a visualization of areas from which employers in specific geographic areas draw their workforce. Alternatively, users of the dashboard can select geographic areas where individuals in each occupation live, and then view the different areas where those individuals work. For each of the three data dashboards an “Additional Information” tab provides details about the data sources and definitions, as well as step-by-step instructions to assist users.

Figure 1. Workforce Dashboards Website Landing Page



## CONCLUSIONS

The ability to visualize workforce distribution and supply trends over time adds depth to our understanding of health workforce. The Leveraging Public Data for Workforce Analyses Data Dashboard can be a useful resource for health workforce planners, educators and policy makers.

## UW CHWS WORKFORCE DASHBOARD WEBSITE LINK

<https://familymedicine.uw.edu/chws/resources/leveraging-data/>

## REFERENCES

1. Dahal A, Stubbs BA, Frogner BK, Skillman SM. *Leveraging Data to Monitor the Allied Health Workforce: State Supply Estimates*. Center for Health Workforce Studies, University of Washington, Nov 2021. <https://familymedicine.uw.edu/chws/wp-content/uploads/sites/5/2021/11/Leveraging-Data-States-FR-2021.pdf>
2. Skillman SM, Dahal A, Frogner BK, Stubbs BA. *Leveraging data to monitor the allied health workforce: national supply estimates using different data sources*. Center for Health Workforce Studies, University of Washington, Dec 2016. [http://familymedicine.uw.edu/chws/wp-content/uploads/sites/5/2017/01/leveraging\\_data\\_allied\\_health\\_supply\\_estimates\\_fr\\_dec\\_2016\\_skillman.pdf](http://familymedicine.uw.edu/chws/wp-content/uploads/sites/5/2017/01/leveraging_data_allied_health_supply_estimates_fr_dec_2016_skillman.pdf)

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