



Methodology

Arizona Health Workforce Core Profile Report | 2023

Purpose

The purpose of the Arizona Health Workforce Core Profile Report is to provide an estimate of the health workforce in Arizona at the statewide, county, tribal, Zip Code, and rural levels.

Limitations

There are several important limitations to be aware of when using this report.

- The data represents a snapshot of the workforce based on the date of the data request
- The data sources are licensing data from the health professional licensing boards. Licensing data does not tell us if a professional is actively working, how much, or in what setting
- The report includes only licensed professionals with any active status license type and a valid Arizona ZIP code included in their address that can be linked to a Zip Code Tabulation Area (ZCTA)
- Dentists and dental hygienists were added in 2021, so no trend data is available for these groups
- The Rural Urban Area Commuting codes (RUCA) have not been updated since 2013. An update is planned for mid-2023

Data Sources

Health Professionals

The data on health professionals for the Core Profile report is from the Arizona licensing boards. The boards provide public record mailing list files upon request. The board data represented in this report includes:

- The Arizona Board of Behavioral Health Examiners <https://www.azbbhe.us/>
- The Arizona Medical Board <https://www.azmd.gov/>
- The Arizona Board of Osteopathic Examiners <https://www.azdo.gov/>
- Arizona Board of Psychologist Examiners <https://psychboard.az.gov/>
- The Arizona Regulatory Board of Physician Assistants <https://www.azpa.gov/>
- Arizona State Board of Nursing <https://www.azbn.gov/>
- Arizona State Board of Dental Examiners <https://dentalboard.az.gov/>

The licensure data used in this report represents two snapshots of the licensed health workforce: one in 2019 and one in 2021. For the 2019 snapshot, data files were requested between January 2019 and March 2020. For the 2021 snapshot, data files were requested between February 2021 and April 2022. Dentists and dental hygienists were added to the 2021 snapshot. In the between year trend pages, the report profession filters exclude (but they can be added back in by the user) dental and dental hygienists for a more consistent comparison between years.

The data in the report is limited to professionals with any active license status (if license status is included in the source data) and those with an Arizona public record address that included an accurate Arizona ZIP code. For



most of the boards data (all boards except Nursing) addresses were geo-coded to connect the location to relevant geographies (e.g., county).

Geographies

US Census data from the Census American Community Survey (ACS) 5-year estimates was used for the population estimates for geographic areas including counties, Tribal Areas, and ZCTAs. The [Rural-Urban Commuting Area](#) (RUCA) code information is from the United States Department of Agriculture (USDA), Economic Research Service (ERS). The four-level grouping of RUCA codes into urban, large rural, small rural, and isolated small rural follows an [approach](#) from the University of Washington Rural Health Research Center. This report uses the ZIP Code based RUCA provided by ERS.

Population

US Census data from the 2020 ACS 5-year population estimates were used for population data at the different geographies. Currently counties, RUCAs, ZCTAs, and Tribal Areas have professionals per 10,000 population ratios included in the report. The counts of professionals and population are used to create the professional to population ratios. To calculate the ratios, the health workforce in an area is multiplied by 10,000 then divided by the population of that area. For example, if there are 5 health professionals in a county with a population of 20,000, then to create the professional per 10,000 population ratio, we multiply 5 by 10,000 and divide by the county population of 20,000, $(5 \times 10,000) / 20,000$, resulting in a ratio of 2.5 professionals per 10,000. The professional per population ratio helps to standardize the comparison between different geographies with different populations sizes. However, keeping professional counts and population in mind will help contextualize the ratios, particularly in geographic areas with populations of less than 10,000.

Workforce Groups

The health professionals in this report are sometimes combined into groups. The profession groups may include multiple license types. The workforce groups include multiple profession types and license types. The professions and the license types included in each profession are listed in the table below.

Profession Group	Workforce Group	Licenses Included
Behavior Analysts	Behavioral Health	BA
Counselors	Behavioral Health	LAC, LPC
Dentists	Dentist	BDS, DDS, DMD
Dental Hygienists	Dentist	RDH
Marriage and Family Therapists	Behavioral Health	LAMFT, LMFT
Nurses- Advanced Practice Registered Nurse	Nurse	APRN-RNP, APRN-CNM, APRNS-CNS, APRN-CRNA
Nurses - Nurse Assistant	Nurse	UCNA, CNA, CMA, LNA
Nurses – Practical Nurse	Nurse	LPN
Nurses – Registered Nurse	Nurse	RN
Physicians	Physician	MD, DO
Physician Assistants	Physician	PA



Psychologists	Behavioral Health	PSYCH
Social Workers	Behavioral Health	LBSW, LCSW, LMSW
Substance Abuse Counseling	Behavioral Health	LASAC, LISAC, LSAT

Use of Ratios on Heat Maps

Ratios are utilized to create heat maps. Ratios and counts are provided in the map tooltip.

ZIP Codes and ZIP Code Tabulation Areas

ZIP codes represent postal delivery routes and locations and are maintained by the United States Postal Service (USPS). ZIP codes do not represent geographic areas with boundaries. The US Census has developed ZIP Code Tabulation Areas or ZCTAs to provide an area approximation of the USPS ZIP code delivery routes. Find more information on the US Census ZCTAs [here](#). There is not always a direct one-to-one match between ZIP codes and ZCTAs. We used a ZIP to ZCTA [crosswalk](#) available from the Robert Graham Center, used in their Uniform Data System (UDS) Mapper. On the ZCTA map in the Core Profile Report, some areas do not have an assigned ZCTA. These include large land areas that have no ZCTA assigned or ZCTAs where there is no workforce.

Other Considerations

The data in this report should be considered an estimate of the selected health workforce in Arizona. The data represents a snapshot in time from the date the data was requested. Additionally, the health workforce included in the report are those who have an active license (if license status is available in the data). An individual may maintain a license but not necessarily be active in their field.

Some licensees may have multiple license types. If this occurs within a single board dataset, we apply a selection process to identify a primary license associated with an individual. This is implemented to limit some over-counting of individuals. To select the primary license, we rely on a selection function that examines the license active date as well as the type of license and its associated education and training requirements. Some individuals may maintain licenses for different professions licensed under different boards. We are unable to deduplicate in these instances.

The nurse public licensing data contains nurse mailing address, however the information available in this field indicates most entries are unlikely to represent an employment address. Therefore, in this data we use the nurse ZIP code to represent their possible employment location. Utilizing the nurse address ZIP code instead of the full address is a limitation as we are unable to provide counts or ratios of nurses by Tribal Area.

The number of nurses and physicians in the 2021 dataset should be interpreted with caution. Between 2019 and 2021, a new policy was passed permitting licensees to suppress their address from the public record data in certain cases (e.g., if they do not maintain a business address) (A.R.S. § 32-3226). We used a data imputation process to identify geographic information for some licensees with missing public record addresses.

Updates

New health profession data may be integrated in future reports. If you have questions, please contact Bryna Koch, DrPH at brynak@email.arizona.edu.