

# Access to Oral Health Workforce Report Part II

Pennsylvania Coalition for Oral Health  
[www.paoralhealth.org](http://www.paoralhealth.org)

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## Table of Contents

Introduction	2
Data Collection and Utilization	3
PA's Dental Care Workforce	4
Access to Care	7
Certifications	11
PHDHP Survey	11
Well-being and Satisfaction	17
Training and Education	21
Secret Shopper Project	25
Community Investment	29
The Security of the Safety Net	31
DHCW Volunteering	34
Recommendations	35
References	36
Appendix A (Methods & Limitations)	39 (1-2)

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### **Pennsylvania Coalition for Oral Health**

Pennsylvania Coalition for Oral Health (PCOH) is a diverse group of leaders from across the state from schools of public health, philanthropic organizations, businesses, dental organizations, health insurance, firms, advocacy organizations, state agencies, and other champions. PCOH research agenda includes, but is not limited to, supporting Pennsylvania oral workforce development, improving oral health for Pennsylvania's most vulnerable populations, advancing, and advocating for oral health policy and infrastructure across all systems, and advocating for community water fluoridation. PCOH has established relationships with many advocacy groups, community organizations, and individuals throughout the last four years. For more information:

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# Access to Oral Health Workforce Report Part II



The current dental environment is experiencing rapid changes in informatics, consumer habits, technology, consolidation, operational costs, and workforce.<sup>1-5</sup> These changes have intensified and progressed even more rapidly during the COVID-19 pandemic. Dentistry now has new business models that increase the spectrum of how and where one receives services; and emerging payment strategies, which alter the traditional dental industry.

Not surprisingly, these changes resulted in loss of the workforce. Dental offices faced shifting priorities as changes in labor expectations, time for treatment, and expenses remodeled the profession. Pennsylvania lost a significant portion of its dental care workforce since 2015.<sup>6</sup> Retirement, physical demands, burnout, and change of career were the most frequently cited reasons for leaving the Pennsylvania dental workforce.<sup>7</sup> Rural areas and Medicaid provider networks saw the most significant attrition. Compared to the nation, Pennsylvania ranked low in available workforce due to a reduced number of dental assistants and lower than average dentist-to-dental hygienist ratios.<sup>8</sup>

Future demand will be impacted by new diseases and the development of drugs, and technologies, as well as the growth of managed care and private equity investment. A major obstacle to workforce reform is distrust of *supply vs. demand* projections, skepticism about government planning, conservatism of established institutions, and increased worker dissatisfaction and burnout. Pennsylvania's oral health stakeholders must develop a solid pathway to ensure a healthy and proficient dental workforce.

To effectively address dental workforce issues in Pennsylvania, it is vital to recognize that communities vary across the state and need to be addressed individually. Solutions for a community may look different in its development and implementation. To understand and then expand the oral healthcare workforce, input from those who face access issues every day must be considered. Community-level data must also be utilized to implement changes and reach sustainability.

This document represents Part II of the oral health workforce analysis in Pennsylvania, a final report that will evaluate and discuss patient access to oral health care. Part I provides more descriptive, regionalized data and findings to identify trends at a county level as well as financial and community impacts. Part II provides more demographic and well-being information. In addition, more in-depth analysis of variables affecting workforce outcomes and access to care are examined.

# Data: Collection and Utilization



Data used in the analysis were obtained from dental licensure surveys conducted by the Pennsylvania Bureau of Professional and Occupational Affairs (BPOA) during biennial license renewal, the Pennsylvania Coalition for Oral Health (PCOH) Public Health Dental Hygiene Practitioner (PHDHP) survey, and a secret shopper survey. Following review, [Sterling IRB](#) determined the project to be exempt<sup>1</sup>. The specific data sources are discussed below:

- (1) Primary data collection and reporting was completed by the Pennsylvania Department of Health after receiving the the Bureau of Professional and Occupational Affairs (BPOA) the biennial Pennsylvania Dental Licensure Survey results. Dentists and dental hygienists licensed under the State Board of Dentistry were surveyed during license renewal in March 2021. The surveys were conducted online and the years 2015, 2019, and 2021 were evaluated for this report. The number of respondents for the years evaluated was 7,590 (80.1%) in 2015, 8,927 (86.4%) in 2019, and 7,900 (93.4%) in 2021 for dentists and 7,384 (83.6%) in 2015, 7,569 (96.6%) in 2019, and 7,903 in 2021 (98.9%) for registered dental hygienists (RDHs).
- (2) PCOH launched an online prospective questionnaire-based survey. The aim of the survey was to evaluate current practice environments, types of care delivery, opinions on opportunities and challenges, and levels of burnout and satisfaction with PHDHPs in Pennsylvania. Approximately 20.0% (173) of the PHDHP workforce in the state completed the survey.
- (3) A secret shopper survey was completed by PCOH during Q3 of 2022. Secret shopper surveys are tools used to gauge the issues experienced by patients when seeking health care and to evaluate the accuracy of the information that is publicly accessible.<sup>9-12</sup> As a result, it provides an accurate picture of a provider network's capacity and adequacy.<sup>9-11</sup> The final number of secret shopper sites included in the data analysis was 1,212.
- (4) BPOA serves as the processing department for all dental-related licensing and certifications. A list of all licensees and certification holders was obtained through a direct request from PCOH to this department. A list was received that represented licensees and certifications for Quarter 2 of 2022.

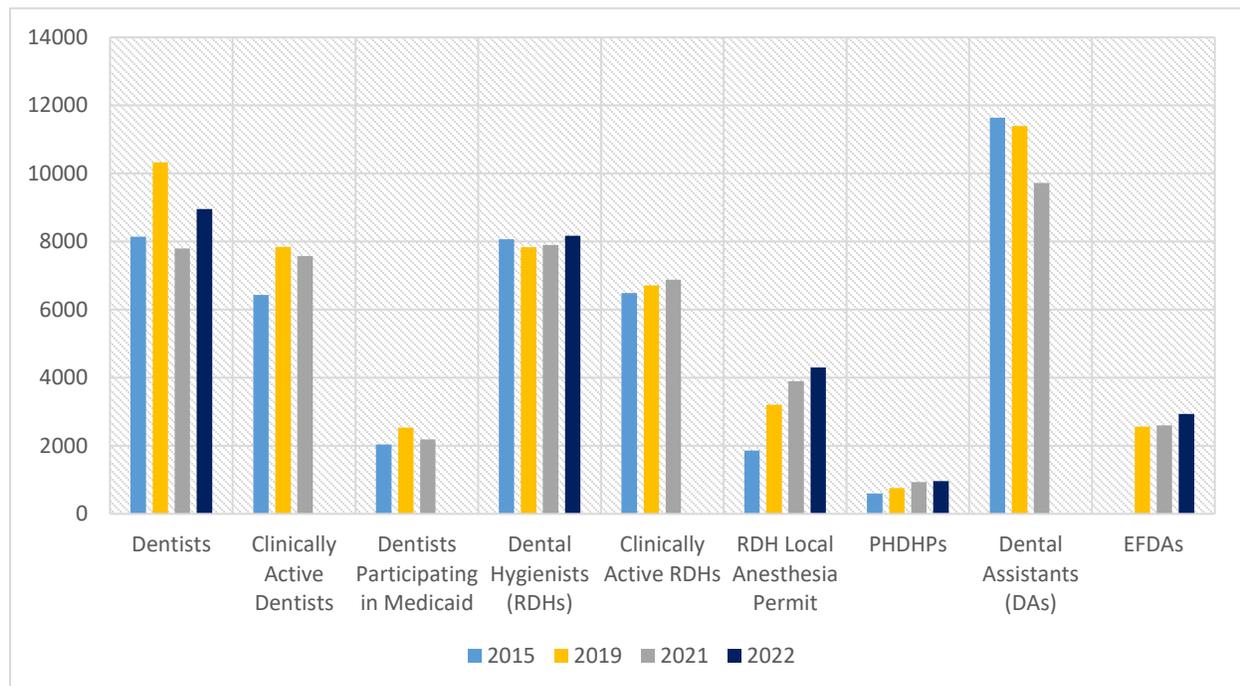
More information is available within Appendix A: Methodologies and Limitations.

<sup>1</sup> Human subjects research that is classified as “exempt” means that the research qualifies as no risk or minimal risk to subjects and is exempt from most of the requirements of the Federal Policy for the Protection of Human Subjects, but is still considered research requiring an Institutional Review Board (IRB) review for an exemption determination.

## Pennsylvania's Dental Care Workforce

Pennsylvania has seen a general attrition of dental health care workers (DHCWs) since the turn of the millennium. In 2020, COVID-19 closures and care limitations impacted the density of the workforce; and this lingered throughout 2021. The workforce has rebounded since 2021; however, improvements did not reach pre-pandemic workforce levels overall (Figure 1). Residual disparities with the number of DHCWs in rural areas, low participation in Medicaid and Medicare, and sub-optimal personnel ratios remain as challenges. Certifications such as public health dental hygiene practitioner (PHDHP), expanded function dental assistant (EFDA), or dental hygiene local anesthesia administration have seen consistent increases since 2015.

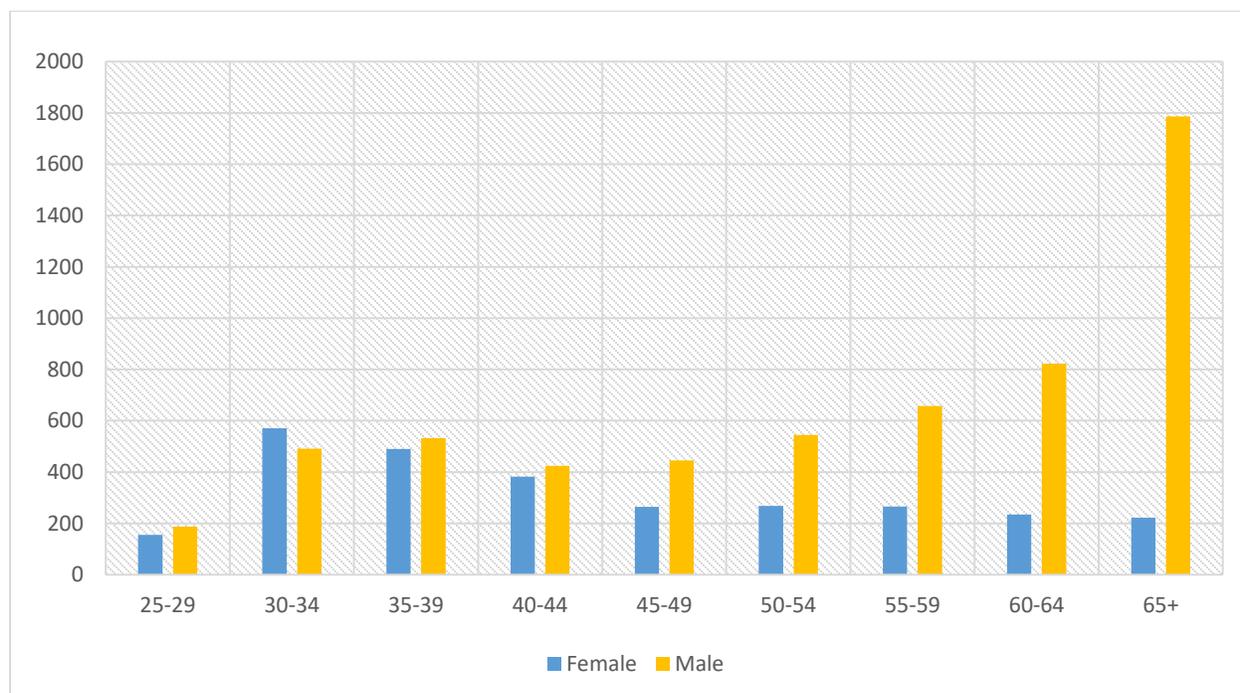
Figure 1: Total number of licensed and certified dental providers in Pennsylvania



### Workforce Demographics

Pennsylvania has a more diverse and female dentist population compared to seven years ago. The percentage of female dentists has increased year-to-year from 26.0% in 2015 to 32.6% in 2021. Women made up approximately 34.0% of the dentist workforce nationally in 2020.<sup>13</sup> These numbers are expected to grow in Pennsylvania considering that 44.3% of male dentists are over the age of 60 compared to 16% of females (Figure 2).

Figure 2: Dentist respondents to the biennial licensure survey by age group and sex in 2021



The average age of Pennsylvania dentists in 2021 was 51.9 years, down slightly from 2015 (52.5 years) and 2019 (52.0 years). The average age of dentists in the U.S. in 2021 was 49 years, a decrease from 50 years of age in 2014.<sup>13</sup> Dental hygienists have a much younger workforce in the state averaging 45.7 years, an increase from 45.4 years in 2019 and 44.0 years in 2015. Nationally, dental hygienists averaged 43 years of age in 2021, slightly up from 42.5 years in 2015.<sup>14</sup>

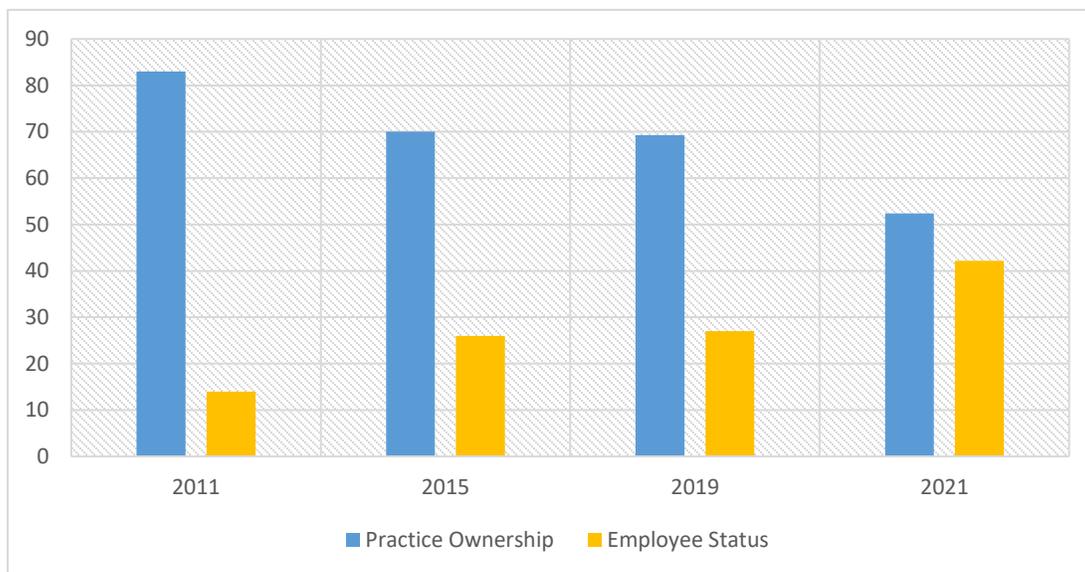
The percentage of Pennsylvania dentists identifying as non-white/Caucasian increased from 16% in 2015 to 22.7% in 2021. State averages for individuals identifying as non-white/Caucasian were listed as 20.6% for 2022. The Hispanic population of dentists averaged 2.5% in 2021, while the state population is 8.4%. Dental hygienists are overwhelmingly female, at 98.8% in 2021 (averaging 98.9% from 2015-2021) and predominantly white (93.5% in 2021).

### Practice type and ownership

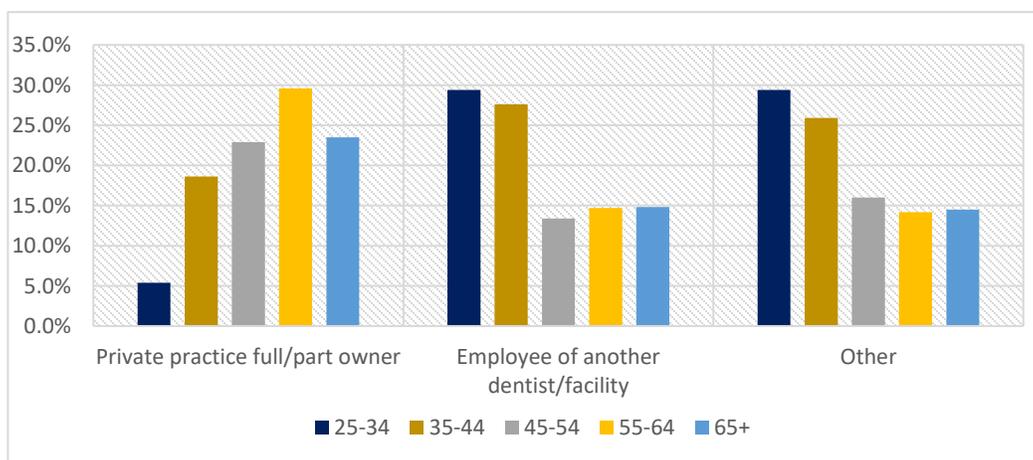
The ownership status of dental providers and dental practices has shifted significantly in the nation since 2015. According to the American Dental Association (ADA), practice ownership by a dentist declined from 84.7% in 2005 to 73% in 2021. According to the [ADA Health Policy Institute](#), the “percentage of private practice dentists in solo practice [also] continues to decline at 46.2%, down from 66.5% in 2001. While a decrease in the prevalence of solo practices is seen among all dentists, the trend is pronounced among younger dentists.” In Pennsylvania, the percentage of dentists in solo private practice as a full or part owner is 52.4% in 2021, a decrease from 70.0% in 2015. The number of Pennsylvania dentists reporting as an employee of another dentist or facility increased from 26.0% in 2015 to 42.2% in 2021. The most significant changes in practice ownership were seen from 2019 to 2021 when a decrease from 69.3% to 52.4% (16.9%) occurred. This same period also saw the largest increase in dentists being employees, at 15.4%. Younger

dentists were more likely to work as an employee compared to an older cohort who owns a dental practice. Figures 3 and 4 provide additional comparisons of ownership and employee statuses.

**Figure 3: Percentage of Pennsylvania dentists by practice ownership or employee status (2011-2021)**



**Figure 4: Dentist respondents who provided direct patient care in Pennsylvania by private practice ownership and age group, 2021**



The practice setting or place of employment has remained consistent since 2015 with most Pennsylvania dentists working in a private practice, office or clinical care settings (88.0%-2015; 92.1%-2019; and 90.8%-2021). The largest increase in practice setting was within a hospital site which saw a jump from 0.1% to 2.6% over the last seven years. Those working within a public health setting, including Federally Qualified Health Centers (FQHCs), increased slightly from 1.7% to 2.0%. Dentists working within an academic institution decreased from 2015 (3.0%) to 2021 (2.3%).

The primary employment setting for dental hygienists is similar to the reports for dentists with 90.2% in a private practice or dental office setting (91.0% in 2015 and 91.8% in 2019). There was

a slight increase in the percentage of actively practicing RDHs reporting employment in a public health or community health center setting, increasing from 6.0% in 2015 to 8.2% in 2021. The remaining practice setting types have been consistently under 1% since 2015: school health (K-12/college/university), mobile dental units, retail industry/sales, and correctional facilities.

The percentage of dental hygienists working in more than one location or dental office has remained consistent between 2015 (25.0%) and 2019 (24.1%), with a decrease to 19.4% in 2021. A national profile survey completed by *RDH eVillage* (n=872) found that in 2014, 31% of dental hygienists worked at more than one dental office.<sup>15</sup> It was much more common for those 18-34 years of age to work in multiple locations (average of 25.4%) during 2015 and 2019. The 45-54 age group reported the highest percentage (23.4%) of dental hygienists working in multiple office settings in 2021.

## **Access to Care**

One of the primary measures used across the oral health sector is access to care delivery. This is often measured through an understanding of how many licensed clinicians are providing direct clinical care. Pennsylvanians experienced a peak of dentists providing direct patient care in 2021 when 93.4% of all dentists were clinically active. In 2019, 92.8% of survey respondents reported a significant increase in clinical activity from 2015 when 79.0% reported clinical activity. In 2015, the definition for clinically active was providing at least one-hour of direct patient care while the updated questionnaire in 2019 utilized a general self-report of being regularly active in care delivery. Non-clinical licensed dentists include retired providers who maintain a license, those working as faculty in academic institutions, or those in executive management. Over one-third of clinical dentists were over the age of 60 in 2015 and 2019. No significant differences were observed with race, ethnicity, or age between dentists providing direct care and those who did not. The number of clinically active dental hygienists also increased between 2015 and 2019, from 80.4% to 85.6%; however, a decrease was observed from 2019 to 2021 with 81.6% reporting direct patient care delivery activity.

In 2021, dentists and dental hygienists who provided direct patient care were employed in all 67 counties in Pennsylvania. In 2015, there were 50.4 clinically active dentists in the state per 100,000 population; this increased to 61.4 in 2019. However, in 2021 a significant decrease occurred to 52.6 per 100,000 population. The ADA's national average of 61 dentists per 100,000 population.<sup>16</sup> In 2021, county-level disparities were present in Pennsylvania with rural counties experiencing lower clinical dentist ratios per population, at 40.8 compared to 56.7 in urban counties (Figure 5). In 2021, the ratio of dental hygienist respondents who provided direct patient care was 55.4 per 100,000 population. The rate in rural counties was 46.8 compared to 51.3 in urban areas (Figure 6). It should be noted that not all respondents provided their primary practice location and as a result, county level data are lower than overall state data. The recommendation from the Pennsylvania Office of Rural Health is to achieve a 1:2 dentist to dental hygienist ratio to enhance access to care.<sup>17</sup> Pennsylvania's overall ratio per 100,000 population is 1:1.08; in rural areas, it is 1:1.15 vs. urban setting at 1:1.10. Additional county-level, rural-to-urban comparisons are available in [Part I of this report](#).

Figure 5: Dentists who provided direct patient care per 100,000 population by county of primary practice in Pennsylvania, 2021

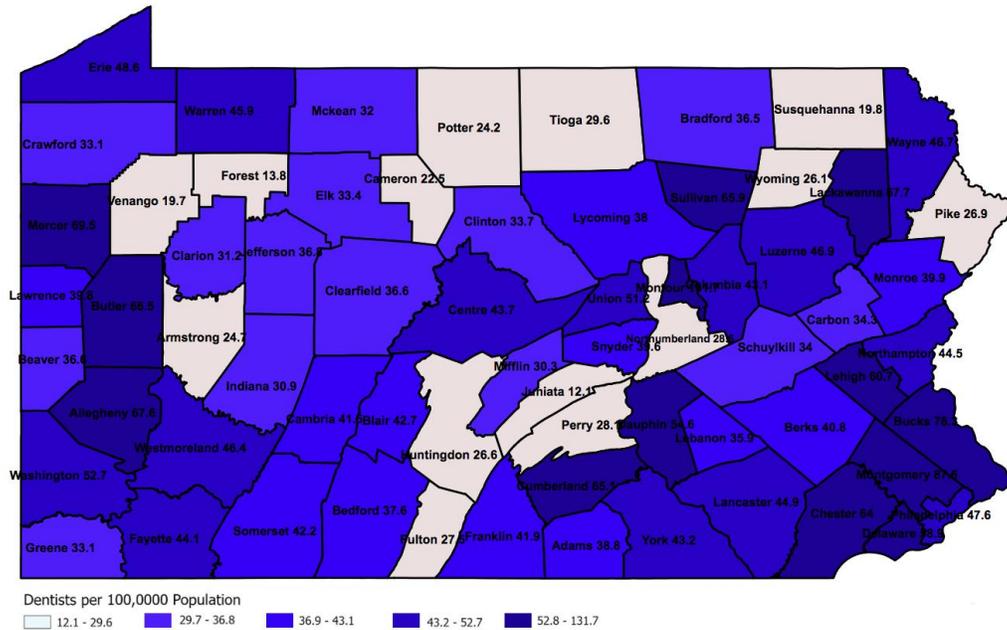
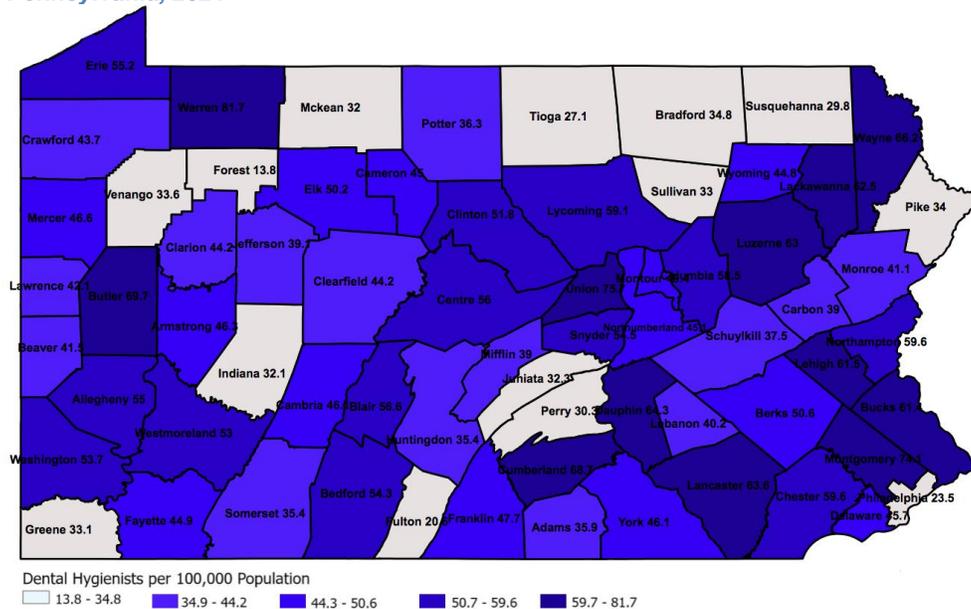


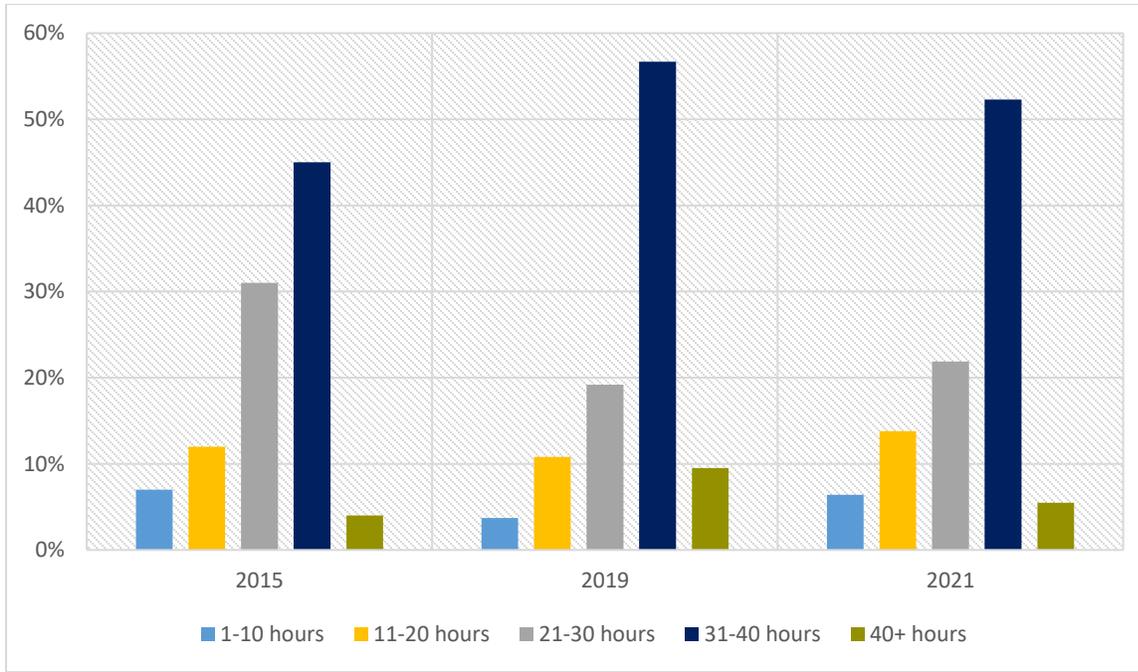
Figure 6: Dental hygienists who provided direct patient care per 100,000 population by county of primary practice in Pennsylvania, 2021



To understand the availability of direct care providers more accurately, it is important to identify how many hours are utilized for providing care. As seen in Figures 7 and 8, the majority of dentists and dental hygienists who provide direct patient care were employed full-time (31 or more hours per week). Dentists working more than 31 hours per week peaked in 2019 and demonstrated a decrease of almost 10% in 2021 (49% in 2015; 67% in 2019; and 58% in 2021). Over the seven-year period reviewed, one out of 10 dentists worked more than 40 hours a week compared

to one out of 20 dental hygienists. In comparison to previous reports, the average number of hours worked per week has decreased overall since 2015.

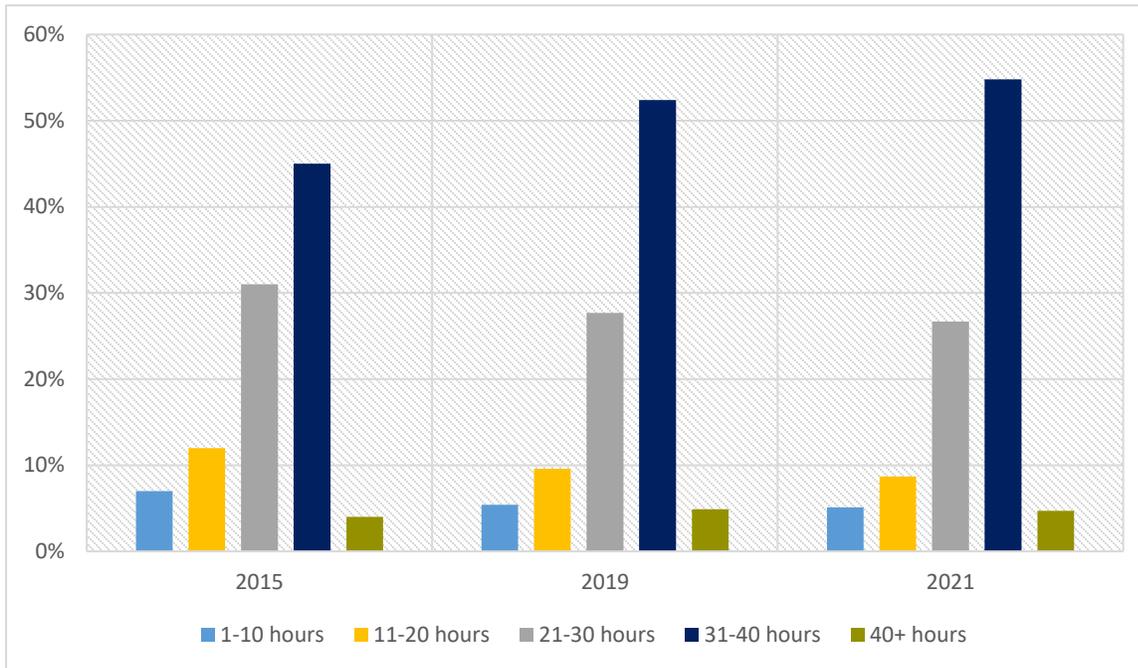
*Figure 7: Dentist respondents who provide direct patient care by the number of hours spent in care delivery.*



An evaluation of hours worked between white/Caucasian and non-white/non-Caucasian respondents determined little differences in hours worked with 59.8% of non-white dentists and 57.4% of white dentists working 31 hours or more. There was a slight difference in those working 20 or fewer hours per week, at 21.7% of non-white dentists and 19.6% of white dentists. White dentists comprised the majority of dentists working more than 40 hours per week at 77.2%.

Compared to females and consistent with the 2015, 2019, and 2021 BPOA Biennial Licensure Survey data, male dentists were more likely to work more hours per week, especially over 40 hours. In 2019 and 2021, the average percentage of female dentists working less than 30 hours per week was significantly higher at 42.6% compared to male dentists at 34.9%. Research evaluating the entire U.S. dental workforce, going as far back as 1979, has seen decreases in hours worked per week by clinicians; most often by an increase in the percentage of females who work fewer hours per week and weeks per year than their male counterparts.<sup>7, 17-18</sup> As discussed later in this report, quality of life and work-life balance are primary drivers of career satisfaction and linked to hours worked.

**Figure 8: Dental hygiene respondents who provide direct patient care by the number of hours spent in care delivery.**



During the seven-year period evaluated, dentists who practiced in the specialties of periodontics, orthodontics, pediatric dentistry, and prosthodontics rarely worked more than 40 hours per week. Those in oral surgery were more likely to work more than 40 hours per week compared to other specialists. In addition, more than 50% of dentists in anesthesiology, prosthodontics, endodontics, and oral surgery were more likely to work full time or close to full time (31+ hours per week).

### *Early Intervention and Prevention*

The majority of clinically active dentists (90%, 2015–2021) reported seeing “children” during direct patient care. There was a significant increase in the number of children within their first two years of life being seen in a dental practice. In 2015, only 12% of dentists provided care to patients from 0-23 months of age while in 2019, that increased to 20.2% and to 25.9% in 2021. It is more common for dentists to see patients at 5 years of age and over (28.2%) than any other age group. Over the seven-year review period, 95% of dental hygienists reported seeing children during direct care. Less dental hygienists, 10% in 2015 and 14.6% in 2019, reported seeing children from 0-23 months of age when compared to dentists.

**Certifications**

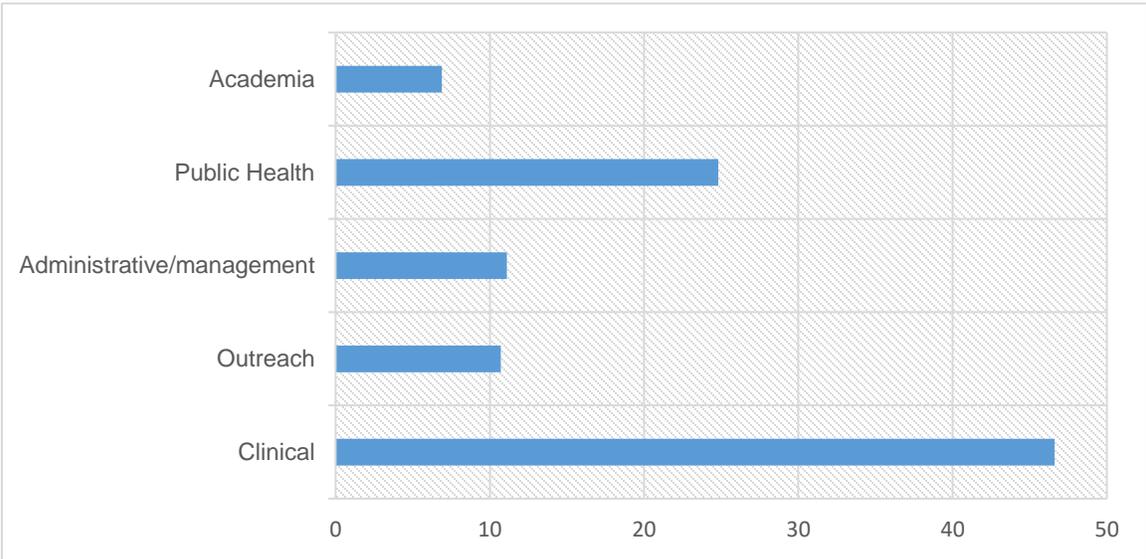
Pennsylvania uses a traditional licensure system for its dental specialists, dentists, and dental hygienists. Certifications or scope of practice permits are also offered to licensed and non-licensed practitioners. These certifications are described below.

Public Health Dental Hygiene Practitioner (PHDHP) certification was developed in 2010 to increase access to dental services for individuals living in dental-Health Professional Shortage Areas (d-HPSA)<sup>2</sup> by allowing these dental hygienists to perform education, preventive, therapeutic, intra-oral, and radiologic procedures without the supervision of a dentist at identified public health practice sites.<sup>20</sup> PHDHP certifications have increased almost six-fold since 2010, with 940 PHDHP certifications in 2021. In 2021, the distribution of PHDHPs was predominantly in urban areas (72.3%) with rural counties accounting for 27.7% of certified PHDHPs, a decrease in rural areas of 6.3% since 2019.

In 2015, 7.9% of dental hygienists that provided direct care were certified as PHDHPs; 24.0% reported performing as a PHDHP in their primary job.<sup>21-22</sup> In 2021, 9.9% of PHDHPs reported providing direct care with only 3.1% performing as a PHDHP as a primary position. Pennsylvania has seen a significant decrease in those providing direct care and serving the majority of their working week as a PHDHP since 2015 (-20.9%).

The 2022 PCOH PHDHP Survey had a response rate of approximately 20% (n=173) of the total number of certified PHDHPs in the state. As seen in Figure 9, when PHDHPs selected multiple areas of time spent, the majority of their time was reported in clinical care, followed by public health, outreach, and administrative tasks/management.

*Figure 9: PHDHP percentage response to all areas where time is spent (n=173)*



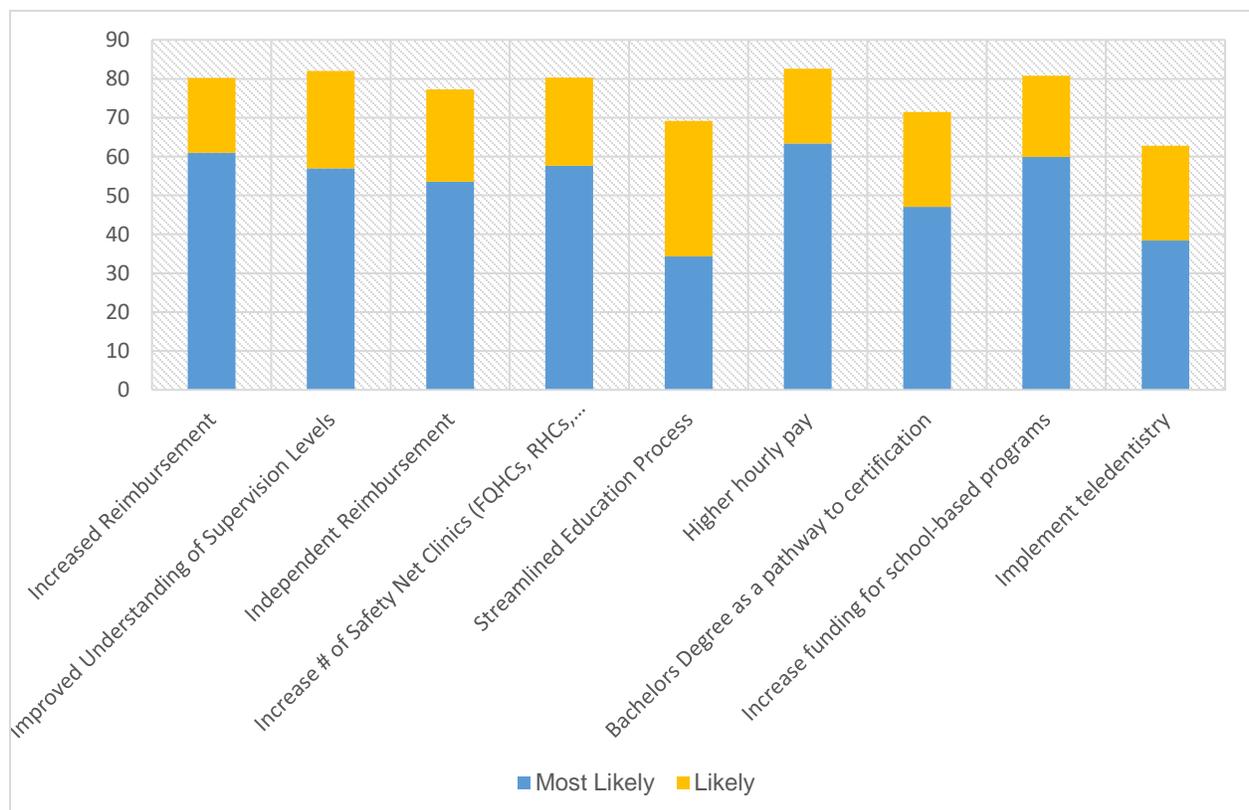
<sup>2</sup> A dental Health Professional Shortage Area (d-HPSA) is a federal designation that may be applied for by communities which suspect they have a shortage of dental professionals. To qualify for designation as a DHPSA, an area must be: a rational service area, population to general practice dentist ratio: 5000:1 or 4000:1 plus population features demonstrating an unusually high need; and a lack of access to dental care in surrounding areas because of distance, overutilization or access barriers.

The types of employment and primary practice settings vary among PHDHPs. Most respondents were not currently practicing to their fullest scope with 48.6% practicing as RDHs under supervision of a dentist. Dental hygienists working at the scope of PHDHPs reported being employed by FQHCs or Rural Health Clinics (RHC) more often than other locations or types of employers (20.5%). The more commonly selected locations include mobile dentistry (8.9%), academia (6.2%), and school dental hygienist (6.2%). Only 17.6% of PHDHPs are credentialed through a Medicaid managed care organization (MCO) and 27% worked directly with a medical professional team.

In Pennsylvania, PHDHPs were first permitted to become credentialed with Medicaid managed care organizations in August of 2017. The administrative burdens of adding a new provider type for MCOs were not ironed out until late 2019, which has led to a slow uptake on PHDHPs becoming Medicaid providers. Each of the state’s six physical health MCOs works with a third-party dental benefit administrator, and the logistics of working through the paperwork of this system can be discouraging to new providers.

Nearly 60% (58.5%) of PHDHP respondents to the PCOH survey agreed that they work below the standard scope of practice and could have more responsibilities (41.9%=strongly agree). While PHDHPs strongly disagree (45.3%) that improved compensation occurred due to earning their certification, they strongly agreed that improved reimbursement would improve access to oral health using PHDHPs and would increase the rural workforce. Additional responses on how PHDHPs can impact access to oral health is shown in Figure 10.

**Figure 10: Percent PHDHP response of what is most likely and likely to improve oral health access to care with PHDHPs**



A qualitative analysis was completed based on an open-ended prompt within the PHDHP workforce survey that asked: “We would love to hear from you on what makes you most excited to be a PHDHP, and what frustrates you or what makes it difficult to fully utilize your capabilities.” As seen in *Table 1*, 112 responses were captured and assigned to seven specific themes. Any responses that could not be grouped into a singular theme were categorized as “other.”

*Table 1: PHDHP response according to assigned themes from the PCOH survey’s open-ended question, “We would love to hear from you on what makes you most excited to be a PHDHP, and what frustrates you or what makes it difficult to fully utilize your capabilities.” (N=112)*

Theme description	Number	Percent
Better understanding of PHDHP scope of practice / increased acceptance by dentists or supervisors	30	26.8%
Grateful to make an impact	22	19.6%
Limited job opportunities / ability to make more money as a clinical RDH	22	19.6%
Limited resources	12	10.7%
COVID-19 impacted my ability to work as an PHDHP with my organization / office requiring me to work as a clinical RDH due to workforce shortages	5	4.5%
Burned out as only Medicaid provider in the area	4	3.6%
Continued difficulty working with school districts	4	3.6%
Other	13	11.6%

The most common theme expressed was a need for better understanding of PHDHP scope of practice or better acceptance of the role by dentists. One respondent provided that more clarity is needed to improve policy interpretation. *“In my opinion, the current PHDHP scope of practice laws contain many gray areas that interfere with our ability to have a true impact on the dental provider shortage PA is currently facing.”* Several responses related to being grateful for the certification to better make an impact on the communities served. One respondent provided her journey to being a satisfied PHDHP, *“I am a brand new PHDHP. I was completely burned out from being an RDH and started hating my job. It was to the point I was looking for a brand-new career and decided that maybe I should look outside of the dental field and go back to school. I am 37 with two young children and I knew that would be nearly impossible, but I couldn't stay at my job anymore. Until a friend of mine explain[ed] to me about becoming PHDHP. So I took a couple of ce [continuing education] credits, put in hours and I tried it out, and why not? I then landed a fantastic job. This has made me love my job once again... and again enjoy the dental field.”* There were also several descriptions of limited job opportunities for PHDHPs and an inability to receive higher income as a PHDHP versus working as a RDH in clinical practice. *“I am not currently practicing as a PHDHP because the opportunities are limited with full time and only offer minimal compensation. As an RDH, I work part-time with fair compensation and benefits.”*

The findings of the Pennsylvania dental licensure survey along with the PCOH PHDHP workforce survey demonstrate that PHDHPs are under-utilized by dental organizations and supervisors while dental hygienists with the certification are choosing not to primarily work under that designation, most likely because of lower pay and decreased job opportunities.

Certified School Dental Hygienists (CSDH) are valuable members of the Pupil Services Team in Pennsylvania school districts.<sup>23</sup> A certified school dental hygienist writes a dental hygiene services plan for the unique needs of the school district and works alongside the school nurse to enhance

the health of students. Aspects of this plan may include classroom dental health education; operation of a fluoride supplement program, dental screenings, community organizing, and preventive services (if one is a PHDHP) to include prophylaxis, sealants, X-rays, and fluoride treatments.<sup>23-24</sup>

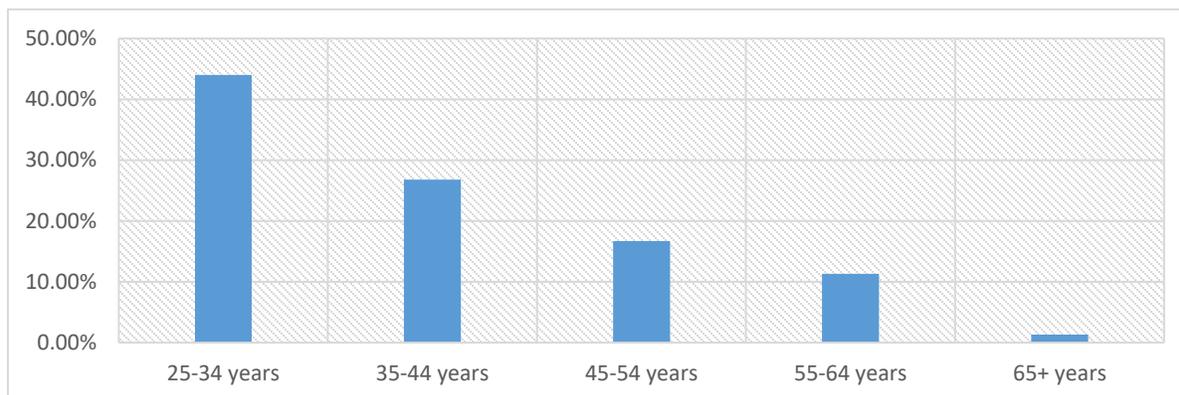
One must be certified, or emergency certified, by the Pennsylvania Department of Education (PDE) as an Educational Specialist-Dental Hygienist. There is currently not certification programs for school dental hygienists; however, the PDE offers emergency certification to dental hygienists who meet the following qualifications:

- Bachelor's degree;
- Valid Pennsylvania dental hygienist license;
- Good moral character and U.S. Citizenship;
- Coursework from an accredited college/university to meet the competencies stated in the guidelines (Specialist-Dental Hygienist K-12);
- A supervised practicum (at least 60 hours) serving as a school dental hygienist; and
- Application for the Educational Specialist certificate or emergency certificate using the online Teacher Information Management System (TIMS)

The number of CSDHs is difficult to determine currently. According to the Pennsylvania Department of Health Division of School Health, the number of districts who were approved for a Dental Hygiene Services Program (DHSP) in the 2022-2023 school year is 28. There are currently 500 school districts in the state. Of the 28 school districts with an approved DHSP, the majority have one CSDH on staff. However, the biennial survey analysis demonstrates a larger total number of CSDH than there are school districts in Pennsylvania: 1,258 (17.0% of all licensed RDHs) in 2015 to 1,630 (18.7%) in 2019 and 823 (10.4%) in 2021. These higher than typical results may relate to respondents answering the question on whether they work within schools (K-12) to provide oral health care or misunderstanding the separate process of becoming certified as a CSDH. Many programs exist in Pennsylvania that provide preventive care and screening within the public school system. Small studies evaluating school-district embedded dental hygienists within a school district health team showed positive outcomes with access to preventive care, plaque scores, and oral health awareness.<sup>25-26</sup> Improving the number of school districts with a CSDH program may provide improved oral health care and prevention for children in Pennsylvania. Pennsylvania Department of Health, Division of School Health data show that students who are referred for restorative care by a CSDH are more than twice as likely to complete that care than students who receive a one-time screening by the school dentist or a dental hygienist mobile program.

Local anesthesia administration as a scope of dental hygiene practice within the United States began when the state of Washington first allowed the procedure in 1971. Fifty years of utilization and research provide a significant record of safety and success for local anesthesia administration by registered dental hygienists (RDH). Additionally, research demonstrate improved workflow, time savings, and increased productivity when RDHs administer local anesthesia.<sup>27-29</sup> Pennsylvania adopted local anesthesia regulation for RDHs in 2010. From 2015 to 2021, the number of RDHs holding a local anesthesia permit doubled from 28.6% to 56.7%. The year 2021 represented the first time since the scope of practice changed that the majority of clinically active RDHs have a certification to administer local anesthesia. This is most likely due to current graduates of dental hygiene programs have the necessary qualifications when applying for initial licensure. (Figure 11).

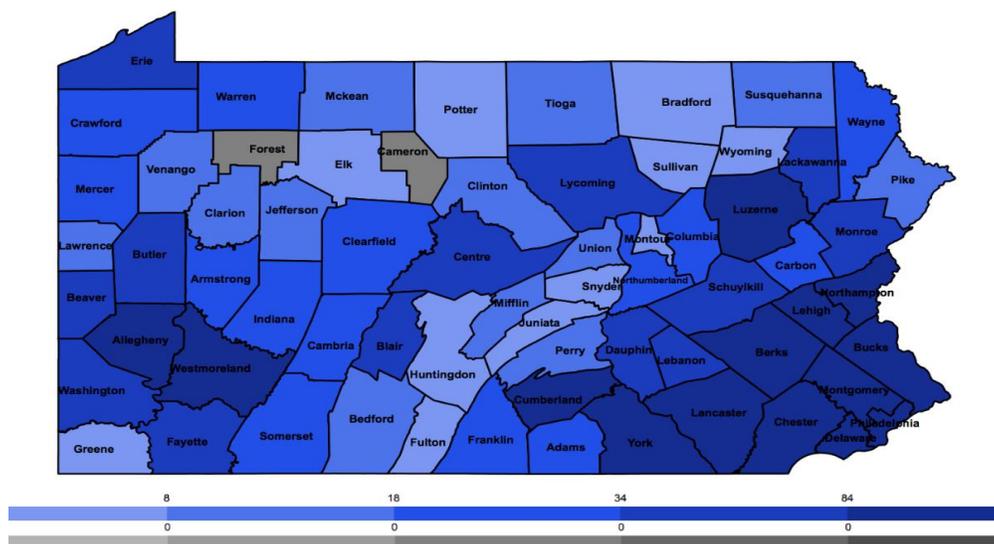
**Figure 11: Respondents to the Pennsylvania licensure survey who provided direct patient care and administer local anesthesia in their primary job by age group, 2021**



An evaluation of primary practice areas revealed that urban areas have the preponderance of RDHs with local anesthesia permits. Figure 12 provides county-level densities of RDHs with local anesthesia permits based on 2022 licensure data.

A 2022 analysis of Pennsylvania RDHs administering local anesthetic injections determined that 26.1% of respondents are not currently administering local anesthetic injections even though they can do so; 11.3% do not currently perceive a need to provide the service, and 14.8% responded that their supervisor dentist does not find it beneficial to the practice.<sup>30</sup> The respondents that are currently administering injections were more likely to provide local anesthesia care on their own oral hygiene patients (33.5%) and patients to be seen by the dentist for care (26.9%).

**Figure 12: Number of dental hygienists with local anesthesia administration permits by county in Pennsylvania (2022)**



function dental assistants. Unlike traditional DAs, who are not required by the state to have any formal training or education, EFDAs must complete the following to hold a state certification:

- Graduate from a state-board approved expanded function dental assisting program OR;
- Graduate from a CODA-accredited dental hygiene program with 75 hours of clinical and didactic instruction in restorative functions OR;
- Complete an expanded function dental assisting certification program with at least 200 hours of didactic and clinical instruction, AND
- Apply for state certification with the Pennsylvania State Board of Dentistry, AND
- Pass the written board exam, AND
- Complete three hours of child abuse and reporting training, as approved by the Pennsylvania Department of Human Services.<sup>31</sup>

As a result, expanded functions allowed by EFDAs include, but are not limited to: coronal polishing; placing, condensing, carving, and contouring amalgam restorations; placing and finishing composite resin restoration and/or sealant material; and applying cavity liners and bases. Compared to sites without expanded function personnel, dental care sites with expanded function personnel treated more patients with higher net incomes and gross billings.

There was a 5% increase in EFDAs from 2019 to 2021 (2,458 to 2,603) and an 11.5% increase from 2021 to 2022 (2,603 to 2,940). Most EFDAs (77.9%) are practicing in urban areas, which saw an increase of 5.1% (1,927 to 2,029) from 2019 to 2021. Rural counties had an increase of 7.5% (531 to 574). Additional evaluations and county-level and rural-to-urban comparisons with the dental assistant and EFDA workforce is available in [Part I of this report](#).

*Community Health Workers (CHWs)* are becoming a commonly recognized component of the dental health care team. The American Public Health Association has adopted the following definition of CHW: “A community health worker is a frontline public health worker who is a trusted member of and/or has an unusually close understanding of the community served. This trusting relationship enables the worker to serve as a liaison/link/ intermediary between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery. A community health worker also builds individual and community capacity by increasing health knowledge and self-sufficiency through a range of activities such as outreach, community education, informal counseling, social support, and advocacy.”<sup>32</sup>

The utilization of CHWs in dentistry is relatively new and dates back one or two decades. A 2021 scoping review by Garcia, et al., reported that CHWs were most often incorporated into oral health programs that focused on access to dental care, oral health awareness, and early childhood caries.<sup>33</sup> This was followed by CHW involvement in oral health promotion and services, and oral cancer screening. Among the tasks they performed were providing oral health education and motivation for behavior change, facilitating access to dental services, and increasing diagnostic and dental services to the community.

According to the United States Bureau of Labor Statistics (US-BLS), in 2021 there were 2,050 CHWs employed in Pennsylvania, a 33% increase from 1,370 in 2015.<sup>34</sup> The average hourly wage of CHWs in Pennsylvania was \$21.19 ±3.5. The 2021 location quotient<sup>3</sup> rating of Pennsylvania was 0.85 and ranks 31 out of 54 states and territories evaluated in the annual US-BLS survey.

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<sup>3</sup> Location quotients are ratios that allow an area's distribution of employment by industry, ownership, and size class to be compared to a reference area's distribution. The U.S. is used as the reference area for all LQs within the files. The reference industry is always the all-industry, all-ownerships total for the local area, and for the nation.

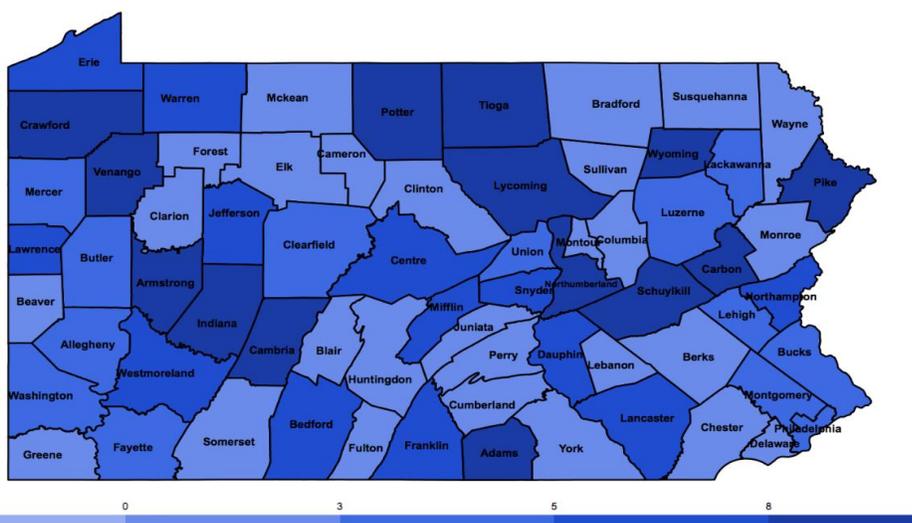
Pennsylvania began formal certification of CHWs in 2020 through the Pennsylvania Certification Board (PCB). By late 2021, the PCB reported nearly 600 Certified Community Health Workers (CCHW) in Pennsylvania. Though the number of CHWs who perform oral health services in Pennsylvania is unknown, a survey sent by PCOH to all CCHWs through the PCB in December of 2021 revealed 64% reported talking with their clients about oral health. For the seven certified educational programs for CHWs in Pennsylvania, there is no formal requirement for oral health in the curriculum, though some programs will require it in 2023.

### Well-being and professional satisfaction

Many medical and dental care teams reported that they do not have enough time to connect with patients, face increasing pressures to meet daily production demands, and meet the mounting regulatory reporting requirements, all while losing autonomy in decision-making along with self-worth. These factors have contributed to heightened levels of compassion fatigue, burnout, and depression among U.S. healthcare providers. <sup>20-21, 35-38</sup>

The Pennsylvania BPOA Biennial Licensure Survey also gathered data on dentists' satisfaction with their dental career overall. The percentage of dentists that were dissatisfied or very dissatisfied has varied over the years: 4.0% in 2015, peaking at 7.3% in 2019, and leveling back out at 4.1% in 2021. As seen in Figure 13, county-level evaluations from 2021 revealed a higher level of dentist dissatisfaction in rural counties. Clinically active dental hygienist respondents reported being dissatisfied or very dissatisfied with their dental career at the following rates: 6.0% in 2015, 5.8% in 2019, and 6.9% in 2021. These dissatisfaction percentages were much lower than national and other Pennsylvania analyses. This is most likely due to the question focusing on satisfaction with overall career decision.

Figure 13: Clinically active dentists' rating of dissatisfaction with their dental career over the last 12 months by county (2021).



Trends in Pennsylvania dentist job satisfaction have changed considerably from 2015 to 2021. In 2015, geriatric dentists reported the highest percentage (14%) of dissatisfaction. In 2019, dentists who worked in anesthesiology (48.0%), and orthodontics (45.3%) reported higher job satisfaction most often while dentists who worked in other specialties (20.0%), prosthodontics (30.6%), and oral surgery (39.3%) reported being satisfied less often. In 2021, orthodontists (97.1%), oral surgeons (89.3%), and pediatric dentists (74.6%) reported being the most satisfied with dental

career choice. Dental anesthesiologists reported the lowest levels of satisfaction (7.8%) followed by prosthodontists (24.3%), periodontists (43.3%), and endodontists (46.8%). The most significant decreases in satisfaction among specialists between 2019 and 2021 occurred with dentist anesthesiologists which decreased 40.2%, followed by prosthodontists, 6.3%. Future research should focus on understanding the level of satisfaction and the causes of such a decrease in enjoyment of work for dental anesthesiologists and prosthodontists.

In 2015, patient relationships were reported as the greatest source of professional satisfaction (53%) by clinically active dentists, followed by decision-making autonomy (17%) and intellectual challenge (11%). In 2019, the five reasons most frequently reported for dentist job satisfaction were: patient relationships (59.9%), decision-making autonomy (17.7%), practice environment (7.0%), financial reasons (5.3%), and intellectual challenge (5.2%). The differences from 2019 to 2021 included an increase in the importance of decision-making autonomy for satisfaction and the availability of leisure time, burdensome insurance companies, and staff relationships impacting dissatisfaction. Table 2 provides a breakdown of reasons for satisfaction among dentists in 2015, 2019, and 2021.

**Table 2: Reasons for satisfaction and dissatisfaction among dentists who provide direct patient care**

<b>Reasons for Satisfaction (2015)</b>	<b>Reasons for Satisfaction (2019)</b>	<b>Reasons for Satisfaction (2021)</b>
Patient relationships (53%)	Patient relationships (59.9%)	Patient relationships (58.7%)
Decision-making autonomy (17%)	Decision-making autonomy (17.7%)	Decision-making autonomy (19.4%)
Intellectual challenge (11%)	Practice environment (7.0%)	Practice environment (6.9%)
	Financial reasons (5.3%)	Intellectual challenge (6.0%)
	Intellectual challenge (5.2%)	Financial reasons (5.5%)
<b>Reasons for Dissatisfaction (2015)</b>	<b>Reasons for Dissatisfaction (2019)</b>	<b>Reasons for Dissatisfaction (2021)</b>
Reimbursement / insurance (28%)	Financial reasons (21.0%)	Financial reasons (23.3%)
Availability of leisure time (21%)	Availability of leisure time (13.9%)	Availability of leisure time (22.7%)
	Staff relationships (6.5%)	Insurance Companies (12.5%)
	Practice environment (4.4%)	Staff relationships (11.5%)
	Patient relationships (3.3%)	Practice environment (7.2%)

Regarding practice projections, over one third of dentists reported they would continue working for 16 years or longer (32.2%). Consequently, 34.3% of dentists who provide direct patient care are anticipating leaving the workforce within 6 years (2027).

**Table 3: Dentist Respondents Who Provided Direct Patient Care in Pennsylvania by Years Anticipating Practicing Direct Patient Care in Pennsylvania, 2021**

<b>Anticipated Dental Practice</b>	<b>Number</b>	<b>Percent</b>
Less than 3 years	1,261	16.7%
3 to less than 6 years	1,326	17.6%
6 to less than 11 years	1,504	20.0%
11 to less than 16 years	1,012	13.4%
16+ years	2,426	32.2%
Total	7,529	100.0%

Figure 14 displays the primary projected reasons for dentists leaving direct patient care in Pennsylvania in less than 6 years by age group. Family reasons were the most frequently reported for 49.7% of dentists aged 25-34 years, and 30.8% for those aged 35 to 44 years. Physical demands were also a main reason for younger (35 to 44 years) and middle-aged (45 to 54 years) dentists leaving direct patient care. For older dentists, retirement was the primary reason dentists provided for leaving direct patient care in less than 6 years (96.0% for those aged 65 years or older, 85.6% for those aged 55 to 64 years, and 50% for those aged 45 to 54 years).

**Figure 14: Dentists' Primary Reasons for Leaving Direct Patient Care in Pennsylvania in Less Than 6 Years by Age Group among Dentist Respondents Who Provided Direct Patient Care in Pennsylvania, 2021**

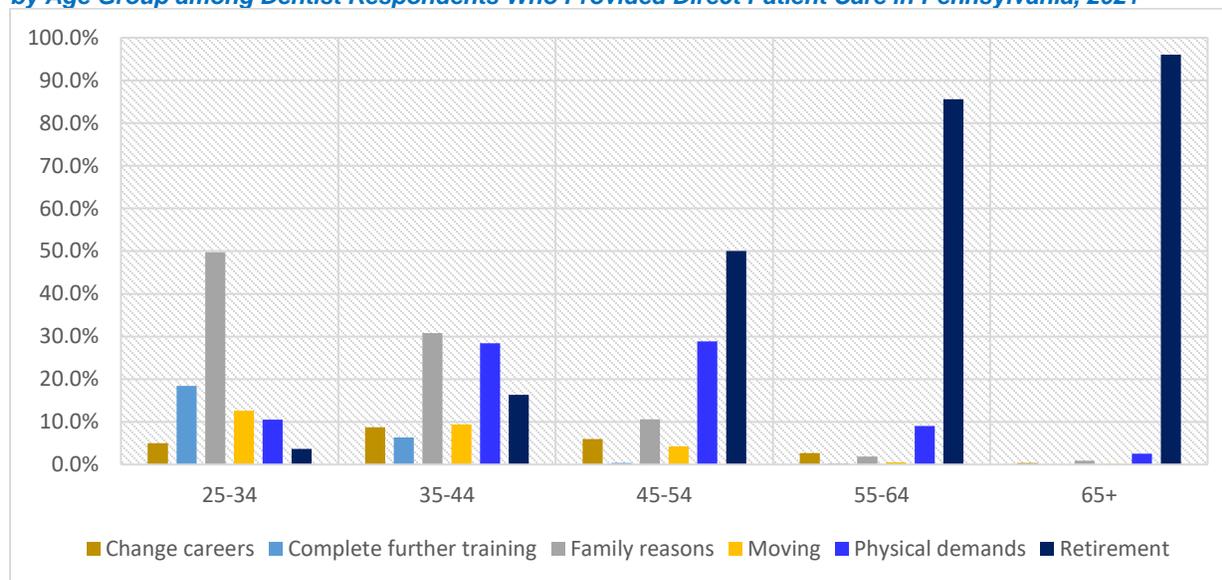


Table 4 presents the anticipated length of practice among dental hygienist respondents who provided direct patient care in Pennsylvania. In general, most dental hygienist respondents did not plan to leave the practice soon. 6.9% of respondents planned to leave the practice in the next three years and the other 93.1% of respondents planned to stay in the practice for three years or longer, including 35.4% of respondents who planned to stay in the practice for 16 years or longer.

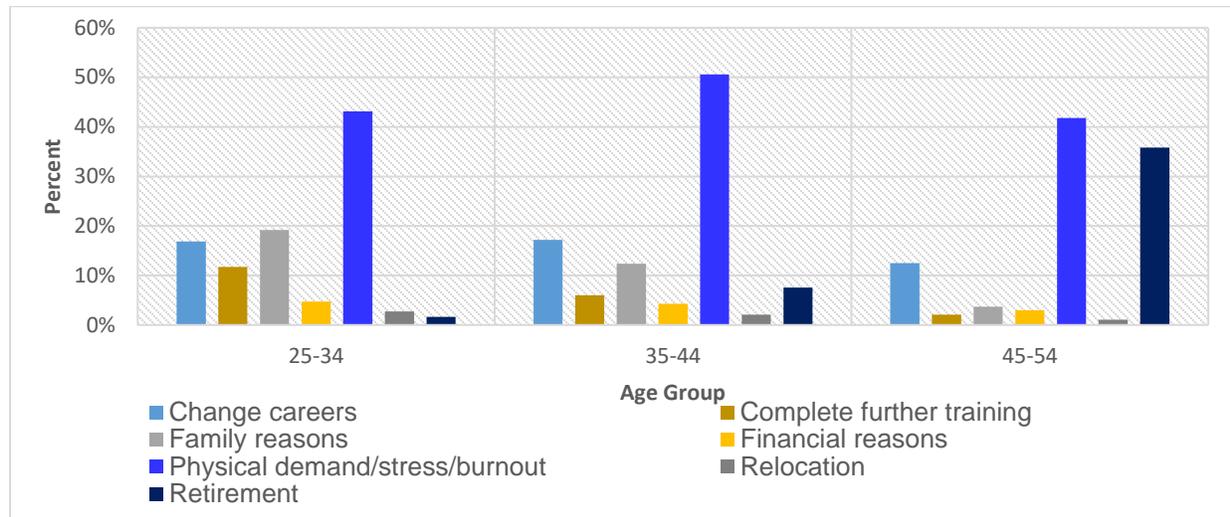
**Table 4. Dental Hygienist Respondents Who Provided Direct Patient Care in Pennsylvania by the Length of Time They Anticipated Remaining in Dental Hygiene, 2021**

Anticipated Length of Practice	Number	Percent
Less than 3 years	472	6.9%
3 to less than 6 years	1024	15.0%
6 to less than 11 years	1,560	22.8%
11 to less than 16 years	1,353	19.8%
16+ years	2,421	35.4%
Total	6,830	100.0%

Figure 15 displays the reasons why respondents who provided direct patient care in Pennsylvania planned to leave direct patient care in less than six years by age group. Because retirement was the primary reason for leaving direct patient care in less than six years for those aged 65 years or older and for those aged 55 to 64 years, the figure excluded these two age groups. Physical

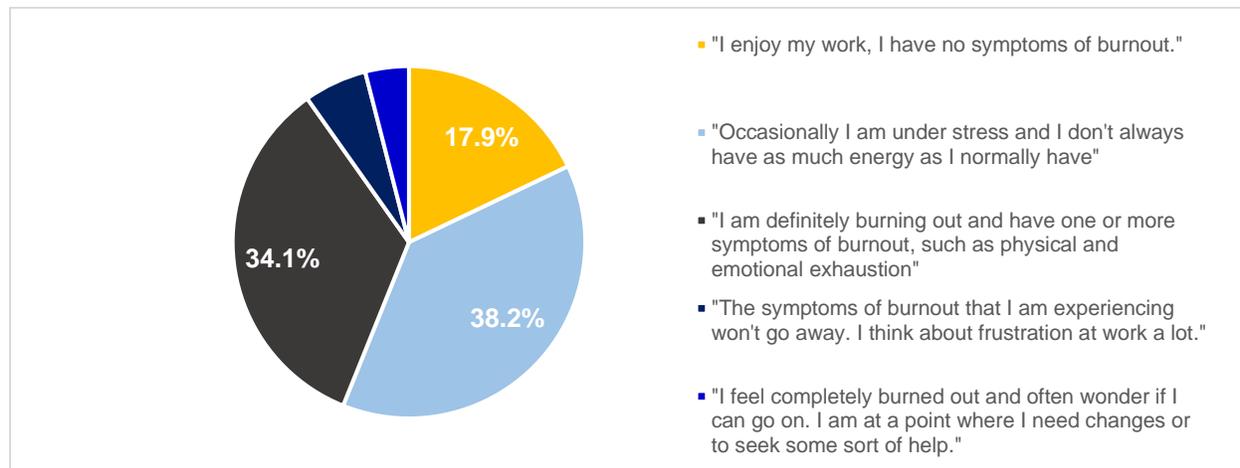
demand, stress, or burnout was the primary reason for dental hygienists to leave direct patient care in less than six years for each of the three age groups. In addition, dental hygienists aged 25 – 34 years were more likely to leave direct patient care in less than six years for family reasons. For dental hygienists aged 35 – 44 years, career changes were another reason to leave, and for dental hygienists aged 45 – 54 years, retirement was the second most frequently reported reason to leave.

**Figure 15: Dental Hygienist Respondents Who Provided Direct Patient Care in Pennsylvania and Planned to Leave Direct Patient Care in the Less Than Six Years by Reason for Leaving and Age Group, 2021**



Findings from the 2022 PCOH PHDHP survey (n=173) revealed that respondents strongly agree that the Pennsylvania workforce shortage will be more pronounced in 7 years (30.8% agreeing and 43.6% strongly agreeing). The percentage of PHDHPs reporting symptoms of burnout was 44.9%, with 9.8% reporting severe burnout (Figure 16). A 2021 survey of Pennsylvania DHCWs employed at Federally Qualified Health Centers (FQHCs) determined that more than half of respondents (52.5%, n=24 from 18 FQHCs) are reporting burnout, with 21.7% reporting severe burnout.<sup>6,39</sup>

**Figure 16: PHDHP response to the level of single-item burnout measure from the MBI Emotional Exhaustion Subscale (2022)**



## Training and education

### Dentists

Dental schools are the main resource to increase the number of dentists serving Pennsylvania. In 2015, 73.0% of dentists that provide direct patient care graduated from dental school in the Commonwealth. The percentage decreased in 2019 to 68.5% and an additional decrease in 2021 to 67.1%. From 2015 to 2021, 18.9% to 24.1% of clinically active dentists graduated from a neighboring state to Pennsylvania: New York (7.4%), Maryland (4.1%), Massachusetts (3.3%), West Virginia (2.4%), New Jersey (2.4%) and Ohio (1.2%).

Currently, the commonwealth has three dental schools operating four-year programs that graduate approximately 350 new dentists each year: Temple University, University of Pittsburgh, and the University of Pennsylvania. A fourth school headquartered in Bradenton, FL, Lake Erie College of Osteopathic Medicine (LECOM), has a satellite clinical teaching facility in Erie, Pennsylvania. The clinical site in Erie accommodates half of the approximately 100 fourth-year dental students for clinical instruction.

As seen in Table 5, the highest number of new dentists joining the workforce in rural counties (3.8 per year) came from the University of Pittsburgh.<sup>15</sup> The highest number of new dentists to dental-HPSA counties (9.4 per year) came from Temple University. The percentages of first-year dental students from in-state, 2019-20, were 47 percent at Temple University, 10 percent at the University of Pennsylvania, and 53 percent at the University of Pittsburgh.<sup>40</sup> In considering out-of-state dental schools, West Virginia University produces the highest number of dentists in Pennsylvania’s rural and dental-HPSA areas annually, 0.6 and 1.4 respectively. A September 2022 report from the Health Resources and Services Administration (HRSA) indicated that Pennsylvania would need 337 new dentists in the counties with designated dental-HPSAs to meet the needs of those residents.

**Table 5: Annual inflows of dentists to rural and d-HPSA areas in Pennsylvania by dental school**

School Name	Location	Percent of First Year Students from PA	Annual # of New Dentists to d-HPSA	Annual # of New Dentists to Rural
<b>University of Pittsburgh</b>	PA	48.3%	8.2	3.8
<b>Temple University</b>	PA	42.8%	9.4	3.2
<b>University of Pennsylvania</b>	PA	14.5%	2.2	0.4
<b>LECOM*</b>	PA	5.0%	0.6	0.6
<b>West Virginia University</b>	WV	10.0%	1.4	0.6
<b>University of Maryland</b>	MD	8.1%	0.8	0.2
<b>New York University</b>	NY	3.6%	0.8	0.2
<b>Boston University</b>	MA	3.0%	0.4	0.2

\*LECOM dental students spend the first two-years learning in Bradenton, FL, and half (50) of the class complete their training in Erie, PA.

### Dental Hygienists

In 2015, dental hygienist respondents to the PA Pulse Survey reported they had graduated from dental hygiene programs across 45 states, Washington D.C., and many U.S. territories. Of those, 74% graduated from Pennsylvania programs, followed by West Virginia (6.0%), Maryland (5.0%), New York (4.0%), and New Jersey (3.0%). In 2021, there was a slight increase in the number of dental hygienists graduating from a Pennsylvania program (77.7%). The data in 2021 was like 2015, with the main difference being added representation from Ohio training programs: West Virginia (5.7%), Maryland (4.6%), New York (3.0%), Ohio (2.5%) and New Jersey (2.4%).

According to the Pennsylvania Dental Hygienists' Association, there are 13 dental hygiene training programs in Pennsylvania.<sup>41</sup> Eleven programs offer Associate Degrees, two offer both Associate and Baccalaureate degrees, and one offers a bachelor's degree completion option for practicing dental hygienists with an associate degree. Combined, the programs graduate approximately 336 students each year with a potential maximum enrollment of 406 students.

As seen in Table 6, bachelor's degree attainment has steadily increased in the dental hygiene workforce since 2015. RDHs are more likely to have an advanced degree and a higher educational degree outside of clinical dentistry than in previous years. A more highly-educated workforce leads to improvements in clinical care and more professional opportunities. Higher education may result in an RDH leaving clinical dentistry or dentistry in general to pursue career advancement. Future research may be able to discern what types of additional degrees dental hygienists pursue or the different fields or sectors they enter.

**Table 6: Dental hygienist response to the PA BPOA Licensure Survey by highest education achieved**

<b>Degree Type</b>	<b>Clinical Degree [2015]</b>	<b>Clinical Degree [2019]</b>	<b>Clinical Degree [2021]</b>	<b>Non-Dental Hygiene Degree [2015]</b>	<b>Non-Dental Hygiene Degree [2019]</b>
<b>Certificate</b>	10.0%	7.8%	5.9%	---	---
<b>Associate</b>	74.0%	74.3%	74.0%	25.0%	55.9%
<b>Bachelor's</b>	16.0%	17.1%	19.3%	16.0%	35.8%
<b>Master's</b>	1.0%	0.8%	0.8%	3.0%	7.3%
<b>Doctorate</b>	---	---	---	<1%	1.0%

*\*The 2021 survey did not include a question for non-dental hygiene degrees*

### **Dental Assistants**

There is a frequent change in dental assisting program locations, and curriculum varies significantly. While some programs utilize online training and on-the-job training, they may not be listed with any official registry. Many of these programs provide a pathway to radiology certification. Currently, there are 13 publicly listed dental assisting training programs that offer clinical training experience. Most programs are located in the north- and south-eastern regions. In addition, there up to 22 high school vocational training programs across the commonwealth that provide dental assistant training. The total number of programs fluctuates depending on available resources, faculty/teacher availability, and student interest.

EFDA programs must be certified by the state board of dentistry, and it is unknown how many applications are pending. At the time of publication, there were six recognized programs listed as providing EFDA training in Pennsylvania. There were two additional out-of-state programs that regularly admit Pennsylvania residents near the eastern (New Jersey) and western borders (Ohio) of the state.

### **Education Pipelines**

Society affords healthcare providers an inherent level of trust to serve their needs. Educational programs are the vessels that deliver competent providers into the community. Society trusts educational programs to supply future generations of the workforce and not leave communities with a deficit of providers. From 2015 to 2021, Pennsylvania has seen a decrease in licensed dentists that graduated from Pennsylvania programs (73% to 67.1%), and an increase in dental

hygienists that graduated from Pennsylvania programs (75% to 77.7%). From the on dental assistants in [Part I](#), Pennsylvania lost 14.7% of its dental assisting workforce from 2019-2021.

Each year, dental schools contribute approximately 350 graduates to the workforce and dental hygiene programs contribute between 338-406 graduates. However, due to the COVID-19 pandemic, some Pennsylvania dental hygiene programs did not enroll new students in 2021. The effects of that will not be realized until 2023, when those graduates are supposed to enter the workforce. Even though dental hygienists showed an increase from 2015 to 2021 in the percentage of graduates who chose to practice in Pennsylvania, data demonstrate the decrease in providers. [Part I](#) of the workforce report showed that in 2015, there were 63.1 licensed Pennsylvania dental hygienists per 100,000, and by 2021, that ratio decreased to 60.8 per 100,000. The national benchmark is 68 dental hygienists per 100,000.

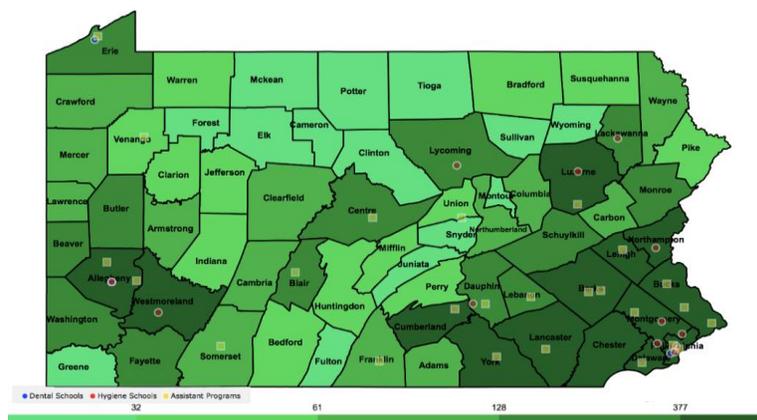
These data could be state-level evidence of a national trend facing higher education. Although more dental hygienists graduated from Pennsylvania training programs and chose to work in the state, there are fewer hygienists practicing in the state overall, as compared to 2015. Economic factors, similar to those experienced after the Great Recession of 2008 may start to influence choices of higher education programs and where to live and work. In many rural areas, colleges and universities are major contributors to the economy for small towns. Many of these community resources are facing the possibility of deconstruction. From 2009 to 2012, “Pennsylvania cut public funding for higher education by more than 19 percent, some \$430 million. Nationwide, state funding for college dipped by 9 percent.”<sup>42</sup> If fewer Pennsylvanians have access to an institution of higher education, then finding a dentist will not be the only challenge in once thriving rural communities.

A similar concern can be raised regarding the decrease in Pennsylvania trained dental students who graduated and chose to work in Pennsylvania. According to the ADA HPI, dental school enrollment nationally has increased 2.8%, but allied dental health providers, including dental hygienists, have decreased 9.8%. “In addition to dental staff data, the HPI report found that dental school and advanced dental education programs’ first-year enrollment did not decrease due to the COVID-19 pandemic. Both continued to increase slightly.” Pennsylvania needs to see improvement in the retention of its graduates. The number of dental students is increasing nationally, but the number of dentist providers in Pennsylvania is decreasing.<sup>43</sup>

In the early 1970s, the Carnegie Commission on Higher Education called for a 20% increase of dental students to combat a forecasted dental shortage and address significant urban maldistribution of dental care personnel. This Commission suggested that a principal method to combat the maldistribution of health personnel should be the development of additional health education centers in remote, rural areas to attract health personnel to those areas. The logic underlying this approach is that graduates would tend to remain around their school, and that other professionals might be encouraged to locate there due to the accessibility of facilities and professional colleagues. As seen in Figure 17, PCOH findings align with this proposal and demonstrate a correlation between the county of training program and the density of dental providers in that county, regardless of rural or urban status.

Currently, Pennsylvania has a maldistribution of DHCWs specifically with direct access and expanded function personnel. Addressing this maldistribution could alleviate patient backlog and rural oral health access challenges we have documented. Additional information on education and training of DHCWs in Pennsylvania is available in [Part I](#) of this report.

Figure 17: All licensed/certified dental workforce by county density and training program location.



Another consideration in the education pipeline is the prospective “enrollment cliff” predicted for 2026 and beyond. In four years, the number of high school graduates will be even less than it is today. This is the result of the Great Recession in 2008 and the sustained decrease in births since then. Many colleges and universities, especially in rural areas, will face difficult decisions about how to remain viable and some may close. For elite institutions, this “enrollment cliff” will be barely noticeable because they can keep their classes full. However, rural colleges and universities may have considerable financial constraints which could negatively impact the local tax base and economic activity. According to the Hechinger Report, college enrollments surged in 2010, just as the federal government cut funding for public education. This was the year that student loan debt outpaced credit card debt for Americans for the first time in history.<sup>44</sup> In 2010, the millennial enrollment in college peaked and, simultaneously, many non-traditional students returned to education to increase their career prospects following the recession in 2008.

With a shrinking number of students graduating from high school, higher education will be challenged in the upcoming years. Rural institutions will face difficulty recruiting students if they must continue to increase their tuition to cover costs. The COVID-19 pandemic shuttered many physical assets as colleges moved instruction online. College leaders in small towns in Pennsylvania are selling unused dormitories and other physical spaces to raise capital due to shrinking enrollment. In western Pennsylvania, some state universities have consolidated campuses and resources to improve resource allocation and achieve economies of scale.

Although dental schools are not currently being affected by the enrollment cliff, as evidenced by the ADA HPI, a 2.8% increase in first-year students enrolling and plans to build several new dental schools across the nation, the allied dental professions may have fewer training program options as economic factors affect high school and community college programs. According to the ADA HPI, 54% of CODA-accredited dental hygiene programs across the nation are in community colleges, and community college enrollment has decreased.<sup>43</sup>

According to the Hechinger Report, “students have moved away from the traditional humanities toward degrees in business, health care, and IT.”<sup>44</sup> The labor market is the driving force behind college enrollment, and according to the Occupational Outlook Handbook, dentistry, as a profession, is expected to grow at an average (dentists) to an above average (dental hygienists and dental assistants) rate from 2021-2031. Pennsylvania stakeholders must plan dental workforce needs of their communities from existing and new educational pipelines.

# Secret Shopper Project

A secret shopper survey can gauge patient experiences when seeking health care and evaluate the accuracy of the information that is publicly accessible.<sup>9-12</sup> It provides an accurate picture of a provider network's capacity and adequacy.<sup>9-11</sup> For the PCOH secret shopper survey, dental practices and care organizations that are listed within Google Places registries were queried by the county of location. The results of the query were utilized to make telephone calls to dental care sites for data collection and reporting. Care sites were contacted in order of appearance of the search query.

Four shopper scenarios were enlisted to collect practice and availability data for dental care delivery sites in Pennsylvania: *Medicaid child, individual with a developmental disability who has primary commercial and secondary Medicaid dental benefit coverage, adult with commercial insurance, and self-pay family* (primary caregiver and one child). Secret Shopper calls were conducted from May through August 2022.

A total of 1,256 dental care delivery sites were called by four secret shoppers. Following a review of the data collected, 44 entries were eliminated from the analysis due to incomplete calls (prolonged hold, disconnected, busy signal, or unanswered attempts), missing information, or misaligned data entry. The final number of secret shopper calls included in the data analysis was 1,212 dental care delivery sites.

Evaluation of all sites determined that 15.5% of practices were currently not accepting any new patients with the average wait to a first dental appointment taking 54.6 ±2.9 days and a range of 0-730 days or up to 24 months. The percentage of all sites with the first available appointment within 30 days was 39.6%. The sites were also asked how long it would be if a cavity was found for a second appointment to be scheduled. The treatment visit would take an additional 35.6 ±2.0 days and a range of 1-377 days or up to 12 months. The average total wait time for treatment of a cavity in Pennsylvania is 98.6 ±14.4 days, or just over 3 months.

As seen in Table 7, further evaluation of the type of practice was completed. FQHCs (n=76) were impacted the greatest by workforce shortages with an average of 102.4 ±16.2 days to the first appointment and 67.3 ±1.8 additional days to a treatment visit for a cavity. Corporate dental sites were the most likely to accept new patients (93.6%) compared to sole proprietors (82.0%) or group practices (91.2%).

**Table 7: Evaluation of access to care wait times by type of site**

Description	All Sites (n=1,212)	Corporate (n=158)	Sole Proprietor (n=699)	Group Practice (n=262)	FQHCs (n=76)	Other Non-Profits* (n=17)
Not accepting new patients	15.5%	6.4%	18.0%	8.8%	31.2%	41.2%
Days to first available appointment	54.6 ± 2.9	44.0 ± 3.8	53.4 ± 2.5	50.6 ± 3.2	102.4 ± 16.2	58.1 ± 30.9
Percentage of sites with first available appointment within 30 days	39.6%	44.3%	41.7%	38.0%	19.5%	11.7%
Days to second appointment if a cavity is found and needs care	35.6 ± 2.0	33.4 ± 5.4	37.9 ± 2.8	34.6 ± 4.0	67.3 ± 1.8	19.6 ± 6.3
Total wait time for treatment of disease	90.2	77.4	91.3	85.2	169.7	77.7

\*Free clinics, school-based clinics, county health departments, academia, non-profit hospital systems

The analysis determined a significant increase in time to initial and treatment visit compared to previously published secret shopper studies. In 2014, the Connecticut Dental Health Partnership completed a mystery shopper study of 781 dental practices.<sup>45</sup> The data revealed that more than 75% of the practices offering an appointment had one available in less than 2 weeks (76%), with a majority offered in less than 1 week (59%), and 11% offered for the same day. The analysis determined that the average wait time for a new patient appointment was 9.9 days. In a 2011 focus group of parents of Medicaid-enrolled children in North Carolina, a parent reported a 90-day waiting period until first visit and difficulty in finding a dentist accepting new patients.<sup>46</sup>

In 2018, Stoner completed a secret shopper analysis in Allegheny County, Pennsylvania, which had one of the highest numbers of dentist providers in the state.<sup>9</sup> Contact was made with 198 of the 227 dental practices, a rate of 87.2%. Of these 198 practices, 145 (73.2%) were general dentists; and 98 (67.6%) of these accepted Medicaid. The analysis determined appointment wait times of those contacted as follows: 28 (28.5%) stated that the wait time was 1 week or less, 47 (48%) stated a wait time of 2 to 4 weeks, 13 (13.3%) had a wait time of 5 to 8 weeks, nine (9.2%) had a wait time of eight or more weeks, and one (1%) would not say how long. The range of wait times was same-day appointments to 85 days. In comparing this 2018 analysis to the 2022 report, a significantly lower percentage of practices with a one-month or less wait for the initial visit (76.5% in 2018 and 39.6% in 2022), and a considerably higher range of wait times 0-85 days in 2018 compared to 0-730 days was identified.

According to the Pennsylvania Department of Human Services (DHS) Health Choices Agreement, Managed Care Organizations (MCOs) are contracted to maintain wait times to an initial visit of less than 15 business days of referral for treatment to a general or pediatric dentist.<sup>47</sup> In addition, the MCOs must have options of at least two dentists accepting new patients within a 30-minute drive in urban areas and a 60-minute drive in rural areas. If an MCO cannot ensure this level of access they must go out-of-network to achieve access to care for the Medicaid member. In evaluating practices that accept Medicaid, the average wait times were 76.8 ±6.9 with a range of 3 – 730 days. Approximately 20.0% of Medicaid offices contacted were not accepting new patients. The Google rating (0-5 stars) for Medicaid provider sites was 3.91 ±0.07 compared to the Pennsylvania average Google rating of 4.45 ±0.07.

**Table 8: Analysis of insurance participation, scheduling and google ratings by site type.**

Description	All Sites (n=1,212)	Corporate (n=158)	Sole Proprietor (n=699)	Group Practice (n=262)	FQHCs (n=76)	Other Non-Profits* (n=17)
Accept Medicaid only	4.4%	<1.0%	3.5%	<1.0%	13.0%	2.5%
Accept Medicare only	9.1%	7.2%	9.7%	4.0%	0.0%	15.4%
Accept Medicaid and Medicare	14.1%	7.5%	11.0%	2.8%	87.0%	38.5%
<b>Do not</b> accept any commercial insurance	16.4%	16.0%	24.6%	7.8%	18.2%	58.9%
Online scheduling	9.7%	47.1%	2.1%	5.8%	13.2%	5.8%
Google rating score (0-5)	4.45 ±0.02	4.32 ±0.03	4.56 ±0.02	4.63 ±0.03	3.45** ±0.11	3.54** ±0.35

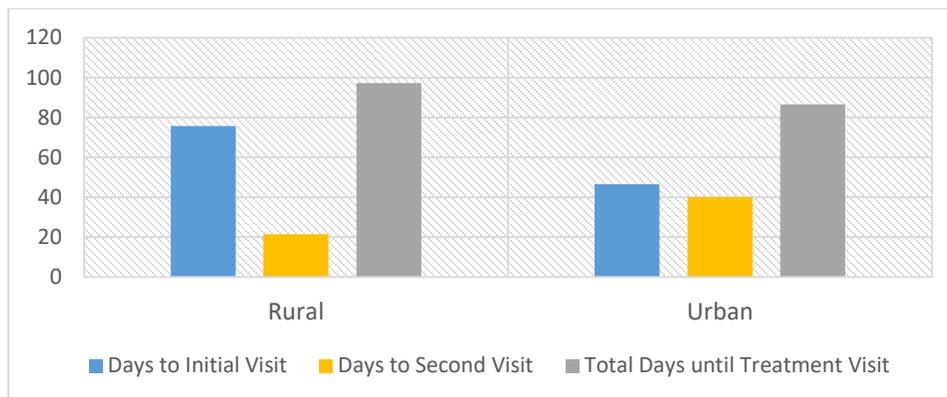
\*Free clinics, school-based clinics, county health departments, academia, non-profit hospital systems

\*\*The google ratings for these sites may reflect the entire health system and not just the dental care sites

In comparing rural (n=369) and urban (n=843) care sites, there were no statistical differences between days open per week (4.6 urban and 4.5 rural), hours open per day (8.3 urban and 8.3, rural), weekend hours (4.8 urban and 4.6 rural), and evening hours (1.9 urban and 1.8 rural).

Pennsylvania dental care sites, on average, are open close to 40 hours per week with safety net practices open slightly over 40 hours per week. No difference in hours of operation was determined between rural and urban care sites. The secret shopper analysis also determined no difference between the cost of an initial visit (all sites-\$177 ±3.3; urban-\$176 ±3.7; rural-\$180 ±6.8). The average number of dentists per site is slightly lower in rural areas (all sites-1.81 ±0.08; urban-1.85 ±0.04; rural-1.75 ±0.06).

**Figure 18: Evaluation of days to dental visits between rural and urban dental care sites.**



The time to first and second appointments were different between rural and urban care sites (Figure 18). The average time at urban sites to first appointment was 46.5 ±1.5 days and 40.1 ±2.4 days to second appointment for a total of 86.6 days to a treatment visit. Rural sites reported a longer wait period for the initial visit 75.7 ±5.5 days and shorter second appointment with 21.5 ±1.7 days. The total time to a treatment visit in rural sites contacted was 97.2 days and 10.6 days longer than their urban counterparts.

As seen in Table 9, four scenarios were utilized by the four secret shoppers to evaluate different populations and types of coverage that may affect timely access to care.

**Table 9: Secret shopper scenarios with total contact numbers and descriptions.**

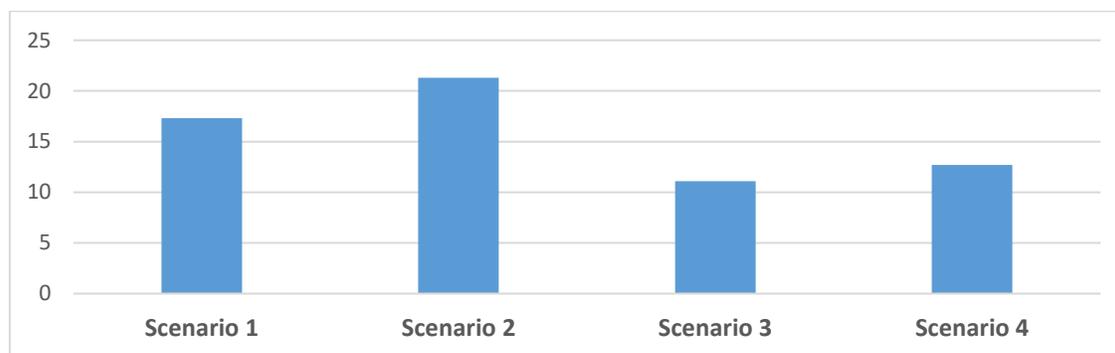
Scenario Type	Contacts	Descriptions
<b>Scenario One</b>	n=303	Caregiver calling for child (9 years old) with Medicaid coverage
<b>Scenario Two</b>	n=307	Caregiver calling for a cooperative child with developmental disability (9 years old) with primary commercial coverage and secondary Medicaid coverage
<b>Scenario Three</b>	n=316	Adult with commercial insurance
<b>Scenario Four</b>	n=286	Self-pay family (caregiver and child – 9 years old)

In evaluating all scenarios utilized, there were not significant differences between the time to the first or second appointments. Scenario 3 contacts presented with the longest initial visit wait times at 60.7 ±3.93 days followed by Scenario 2<sup>4</sup> at 54.1 ±4.08 days, Scenario 1 at 53.2 ±4.20 days, and Scenario 4 at 52.3 ±3.77 days. When evaluating the time to a second treatment appointment Scenario 4 was the longest at 37.7 ±4.35 days followed by Scenario 1 at 37.0 ±4.21 days, Scenario 3 at 33.4 ±3.40 days, and Scenario 2 at 34.6 ±7.21 days.

<sup>4</sup> This only includes the sites that provided appointment information as 50.2% of all the sites called did not see or had limitations on treating individuals with disabilities.

There was a significant difference in sites accepting new patients between contacts made with Scenarios 1 and 2 compared to Scenarios 3 and 4. Secret shoppers reported a higher percentage of sites not accepting new patients when calling to set up an appointment for a child with Medicaid coverage and an individual with a developmental disability (Figure 19). The highest percentage of sites contacted that did not accept new patients were seen for a child with a developmental disability (21.3%) followed by a Medicaid pediatric dental appointment (17.3%), a self-pay family (12.7%), and an adult with commercial insurance (11.1%).

*Figure 19: Percentage of sites not seeing new patients by scenario type.*



Secret shoppers reported the most difficulty in obtaining an appointment and information on access to care for Scenario 2 (caregiver in need of appointment for a pediatric patient experiencing a disability). Seventy-five of the 307 (24.1%) sites called informed the caller that they do not see patients with IDD: 15 stated they did provide care to IDD patients with no additional information, 11 sites provided a list of up to 3 referral sites, and 49 sites provided a recommendation to call a pediatric specialist. In addition, 80 of 307 sites (26.1%) stated that they could see the patient for an exam and cleaning but if additional restorative treatment or extensive work was needed, they would have to refer to a specialist or hospital for care. Additionally, 4.0% of care sites required a \$150-\$200 behavior management fee, often not covered by insurance and required before the appointment.

**Community investment**

*Economic Dependability and Development / Medicaid Investment*

Dentistry regularly accounts for more than two million jobs nationwide. Taxes generated directly or indirectly from dental activity totaled more than \$33B across the U.S.<sup>48</sup> The direct value of dental businesses is larger than many other sectors. Therefore, dentistry provides substantial local and national economic benefits, including increased economic activity, employment, and tax revenues. Additional information on Medicaid spending and community economic impact is available in [Part I of this report](#).

*Loan Repayment Programs*

According to the American Dental Education Association, the average educational debt for all dental school graduates in the Class of 2021 was \$301,583, with the average for public and private schools at \$261,226 and \$354,901, respectively.<sup>49</sup> Dental school debt has been linked to dissatisfaction with career choice, an inability to launch a dental practice or similar business, and limited options on where a new licensed dental provider can locate. Loan repayment programs in dentistry have increased over the last 20 years and aim at improving the distribution of dentists to underserved populations. The programs exchange paying all or a portion of student loan debt for providing dental care at designated locations for an agreed amount of time.

The Pennsylvania Department of Health administers the Primary Care Loan Repayment Program (LRP), which offers educational loan repayment to primary care practitioners who provide care in designated Health Professional Shortage Areas or serve a minimum of 30% low-income patients.<sup>50</sup> The program aims to increase access to primary health care services and improve recruitment and retention of health care practitioners in underserved communities. In previous years, the maximum award is \$60,000 for dental hygienists and \$100,000 for dentists for a two-year commitment. To increase the number of awards, the total available per awardee has been decreased to \$48,000 for dental hygienists and \$80,000 for dentists in 2023.

*Table 10: An evaluation of the award distribution for dental applicants of the Pennsylvania LRP*

<b>Start Date of 2-year Service</b>	<b>July 1, 2019</b>	<b>July 1, 2020</b>	<b>July 1, 2020</b>	<b>July 1, 2020</b>
Total applicants	205	211	226	139
Dental applicants	41	37 (18%)	33 (15%)	27 (19%)
Total awardees	52	51	56	69
Dental awardees	14 10 dentists 4 dental hygienists	10 9 dentists 1 dental hygienists	12 9 dentists 3 dental hygienists	18 12 dentists 6 dental hygienists
Dental percentage of awardees	27%	20%	21%	26%
Percent of Total Funding	---	25%	26%	30%
County Location	---	Allegheny (1) Berks (1) Lackawanna (1) Lancaster (1) Philadelphia (6)	Dauphin (1) Franklin (1) Philadelphia (6) Schuylkill (1) Washington (1) Wayne (2)	Bedford (1) Dauphin (1) Erie (1) Lebanon (4) Mercer (1) Philadelphia (4) Potter (1) Tioga (3) Wayne (2)

The LRP receives a significant number of applications each year. In 2019, 41 of 205 applications were from dental providers with 14 awards given to 10 dentists and 4 RDHs. As seen in Table 10, the number of dental applicants has decreased since a peak in 2019. Over the last 4 years, the LRP provided awards for 10-11 dentists per year) and 3-4 dental hygienists per year). From 2019 to 2022, dental applicants made up 17.5% of all applicants, represented 23.2% of all awardees, and received 28.0% of total funding. There are currently 30 awardees (21 dentists and 9 dental hygienists) within the LRP program. They provide care in 12 counties with 58.6% located in urban counties and 41.4% in rural counties. The LRP awarded 66.7% of oral healthcare providers in urban areas and 33.3% in rural areas since 2019.

Evaluations of LRPs are available in health care literature. These publications reported favorable outcomes and reveal not yet realized potential. According to the Oral Health Workforce Research Center (OHWRC), “the current evidence-base produced a reasonable amount of evidence of effectiveness of student LRPs as a recruitment strategy to address the shortage of dentists in rural communities, but less evidence on long-term retention.”<sup>51</sup> The OHWRC also determined that LRPs can decrease an individual’s educational debt and improve the number of dental providers in underserved areas. An analysis of state loan repayment programs in Georgia found LRPs to have cost savings potential with preventive dental care for young children after “netting out” the intervention cost.<sup>52</sup> A survey on rural provider recruitment and retention in Colorado found that 42% of respondents stated that LRPs had an important influence on the community in which they selected to practice.<sup>53</sup>

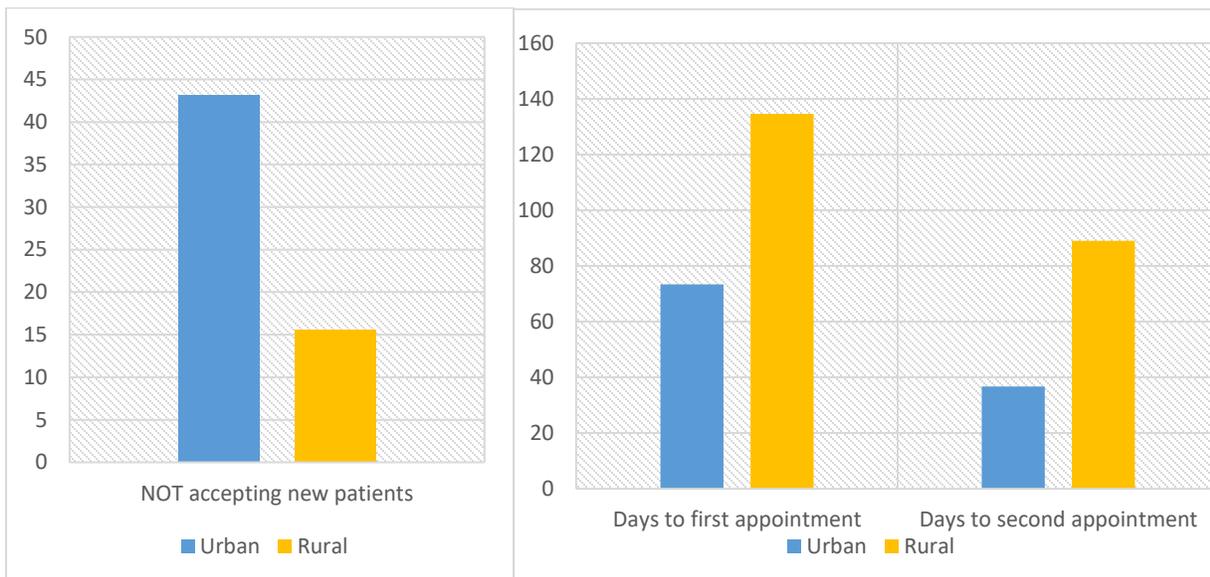
## The Security of the Safety Net

### Federally Qualified Health Centers (FQHCs)

As determined by the PCOH Secret Shopper Project, Federally Qualified Health Centers (FQHCs) (n=76) were impacted the greatest by workforce shortages with an average of 102.4 ±16.2 days to first appointment and 67.3 ±1.8 additional days to a treatment visit for a cavity. The availability of a first appointment for a new patient within 30 days occurred at 19.6% of FQHCs contacted. Stoner completed an analysis in Allegheny County of safety net programs in 2018 and determined that 76.5% of sites contacted had a new patient appointment available within 30 days.<sup>9</sup> In comparison with all sites contacted, FQHCs provided slightly higher hours of operation (43.6-FQHCs; 38.2-All PA sites). There was a slight difference in number of dentists per site with 1.83 ±0.04 dentists per all Pennsylvania sites and 1.71 ±0.13 dentists per FQHCs.

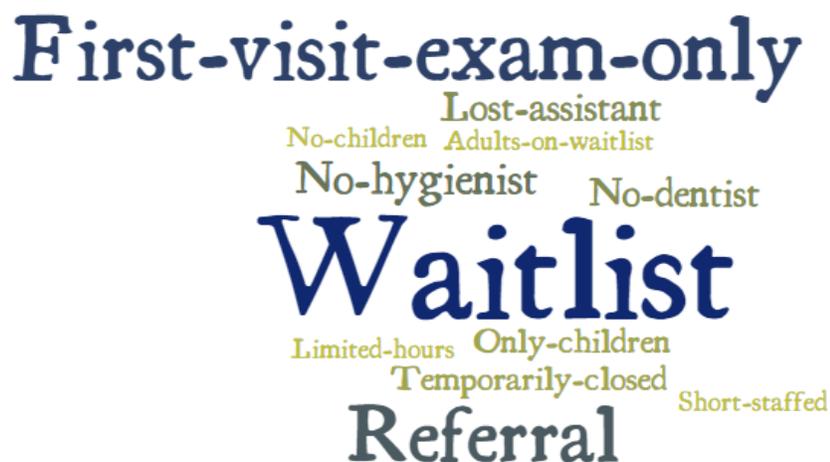
A comparison between urban and rural FQHCs was also completed. As seen in Figure 20, urban sites (43.2%) were more likely to not accept new patients than rural sites (15.6%). Caller notes demonstrated that urban sites were more likely to have recently lost a dentist or were actively seeking to hire a dental hygienist and/or dental assistant. The days to a first and second new patient appointment were higher for rural sites than urban sites (Figure 20). The total number of days to treatment was also higher in rural FQHCs, 223.7 days to 110.1 days.

**Figure 20: Rural and urban comparisons of new patient acceptance and days to appointment for FQHC sites contacted by the PCOH Secret Shopper Project, 2022**



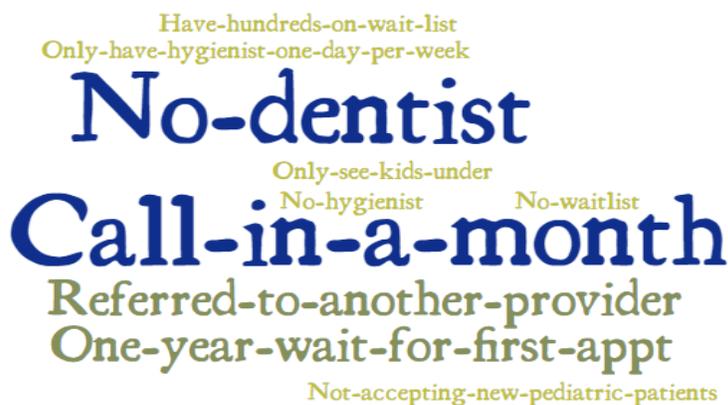
Evaluating the secret shopper notes from all FQHC sites revealed a new normal of patients being seen for an examination and diagnostics before a prophylaxis/cleaning or sealants due to a significant dental hygienist shortage as sites. This was also found, generally, at all Pennsylvania dental care sites contacted. In addition, FQHCs provided information about long waitlists [many over a year] or the need to call back at the beginning of each month to ascertain appointment availability. There were also increased chances of being referred to another site or other providers (Figure 21).

Figure 21: Word-cloud representation of secret shopper call notes for all FQHC sites contacted, 2022.



Secret shopper notes were also evaluated for those FQHC sites that were not currently accepting new patients (Figure 22). These sites were most likely to convey the loss of dentists and limited access to a dental hygienist, long wait lists, and overall staffing shortages affected the ability to be open for day-to-day operations.

Figure 22: Common secret shopper call notes for FQHC sites that were not accepting new patients, 2022.



### Individuals with Disabilities

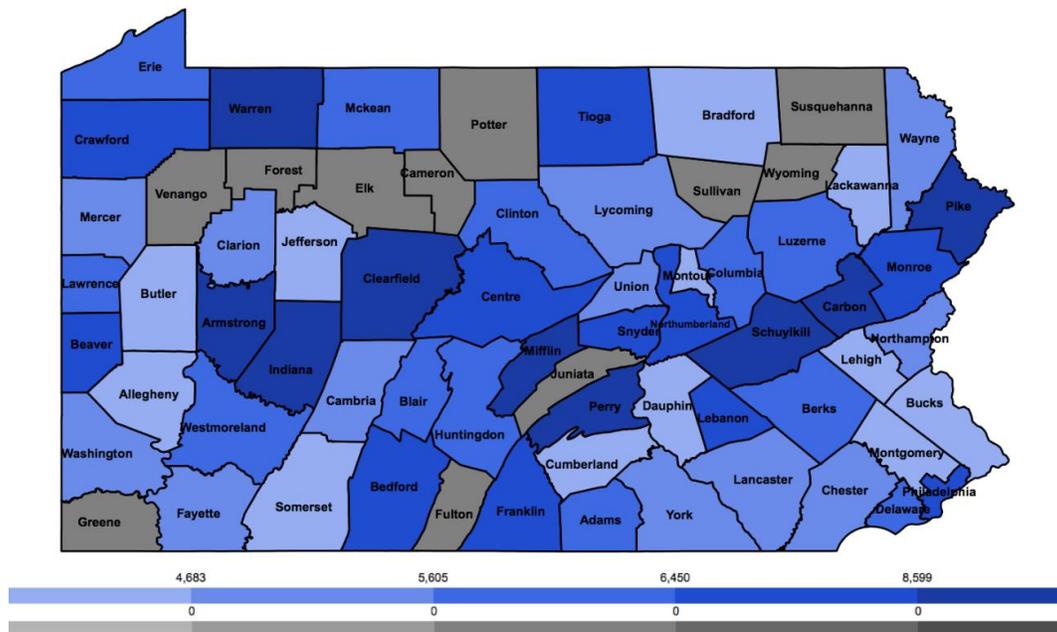
Individuals with disabilities depend on the healthcare safety net for a significant list of health needs, regardless of financial status. The National Council on Disability (NCD) is an independent federal agency responsible for advising the President, Congress, and other federal agencies on issues affecting the lives of people with disabilities. In February 2022, the NCD found that attaining good health for the disabled population has been "elusive for an unwelcome health system that has failed in producing an inclusive system of health care for decades. It is understandable for individuals with disabilities to view the U.S. healthcare system as a source of potential harm."

The identified issues listed by the NCD are present in Pennsylvania where achieving access to quality dental care for intellectually and developmentally disabled populations have been elusive.<sup>54-55</sup> Over the last decade, only one-third of Medicaid enrollees with disabilities are seen

for dental care each year in Pennsylvania, despite a need and desire for more access.<sup>54-55</sup> The issues are pronounced enough that the current [Pennsylvania State Oral Health Plan](#) includes goals to improve access to care, training, and inclusivity of this population.

In the 2021 BPOA Biennial Licensure Survey, 40.2% of dentist respondents answered yes to currently accepting “individuals with developmental or physical disabilities” into their dental practice. This percentage of respondents is higher than what was determined with the secret shopper project in 2022. According to county-level data analysis, the number of dentists treating this patient population is small across every county. Dental-HPSA and rural areas demonstrate the largest gaps in providers per population in Pennsylvania (Figure 23).

*Figure 23: Pennsylvania dentists per capita that reported seeing individuals with intellectual and developmental disabilities within the 2021 SBOD PA BPOA Licensure Survey*



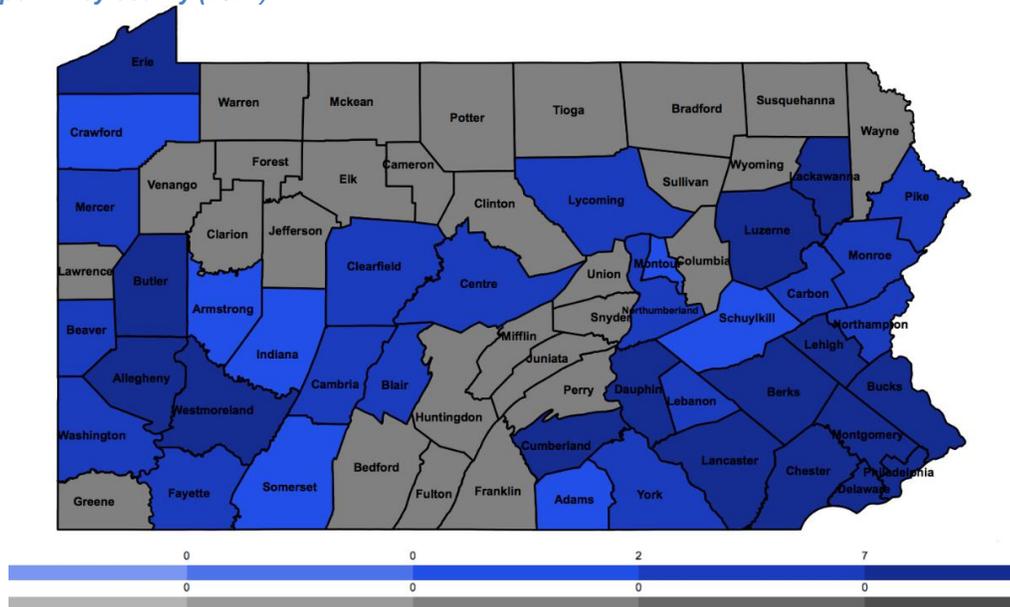
Within the 2015 and 2019 BPOA Biennial Licensure Surveys did not ask dentists if they accepted individuals with developmental or intellectual disabilities directly. Instead, the questions centered on what services they provide and in what setting. In 2015, 5.0% of clinically active dentist respondents (n=5993) provided general anesthesia or deep sedation for general dentistry procedures to “patients with severe developmental or physical handicaps.” When asked where these services are provided, responses included office (40.6%), hospital (28.4%), ambulatory surgical facility (25.2%), and other (5.8%).

In 2019, clinically active dentists (n=7848) were asked what techniques they utilized in the care of “patients with severe developmental or physical disabilities.” Most respondents used behavior management (55.4%) if assistance was needed for dental treatment, compared to deep sedation (14.3%) and general anesthesia (11.4%). Similar to the 2015 response, these services were provided primarily at the dental office or clinic (48.9%), followed by ambulatory surgical facilities (26.6%), and hospitals (24.5%).

As seen in Figure 24, the distribution and number of unrestricted anesthesia and sedation permit holders, or those providers who could provide the level of sedation necessary for some individuals experiencing disabilities, were mainly located in urban areas. Most of these permit holders are

oral surgeons that utilize anesthesia services only for oral surgery procedures.<sup>56</sup> While 3 of 4 individuals with disabilities enrolled in Medicaid can be seen for dental care without the need for any type of analgesia, sedation or general anesthesia, there still is a significant portion of this community that will require regular access to these services.<sup>54</sup>

**Figure 24: Density of dentists with an unrestricted (can provide all levels of sedation and anesthesia) sedation permit by county (2021)**



### Volunteering by DHCWs

Since 2015, about one-fifth (26.0% in 2015 and 20.1% in 2019) of dentists who provide direct patient care in the state reported that they volunteered their services (unpaid) as a dentist in Pennsylvania in the past year. Dental hygienists volunteered dental hygiene services at a lower rate than dentists with 13.0% in 2015 and 10.1% in 2019.

The volunteer locations for dentists have remained consistent with private dental offices as the main site (61.0% in 2015, 60.6% in 2019). Mission of Mercy (MoM) is an access to care program that operates mobile clinics in strategic and underserved locations across the U.S. In 2019, 12.8% of dentists who provide direct patient care volunteered at MoM events. Pennsylvania MoM events see approximately 400-800 patients per day and provide treatment for their chief complaint during a two-day period.<sup>57</sup> FQHCs were the third most reported volunteer site (7.4% in 2015 and 8.9% in 2019) by clinically active dentists. RDHs volunteered services most often at a private dental office (20.0% in 2015, 33.6% in 2019) followed by K-12 schools (19% in 2015 and 15.0% in 2019) and MoM events (15.2% in 2019).

Volunteer hours may increase in the future with the 2022 passage of Pennsylvania Senate Bill 1173, which will allow professionals to claim up to three hours served at a volunteer clinic or a charitable event as continuing education credit for licensure renewal.<sup>58</sup>

## Recommendations

- **Training and Education**
  - Re-evaluate training and education programs in the state, focusing on improving the total number of Pennsylvania residents enrolled in first year dental school classes while increasing training locations in rural counties
  - Improve the transparency of graduate programs and dental residencies to better understand how and where specialists are practicing after completing their programs
  - Increase non-traditional students applying to dental training programs utilizing hybrid or online curriculum
- **Certifications and Scope of Practice**
  - Improve the overall distribution of non-dentist personnel who hold advanced certifications and/or permits to areas of greatest need
  - Advance direct access dental hygienists and expanded function dental assistants being fully utilized to their scope of practice
  - Advance and fund new integrated care delivery and payment models to expand the reach of the oral health workforce
  - Increase the number of care teams that treat individuals with disabilities and maintain pathways of financial and technical support that will sustain the practice
- **Competitive Pay and Ability to Advance**
  - Develop new revenue and reimbursement structures that improve the average income of DHCWs
  - Develop new benefit design and payment models that align with the current post-COVID environment and increased labor and operational costs
  - Improve DHCW opportunities for upward mobility, professional development and income earned
  - Address further delineation of dental hygiene degrees, to align with other healthcare professions
- **Rural Interventions**
  - Incentivize needed change with new reimbursement models coupled with loan management support
  - Utilize telehealth and mobile/portable clinics may help alleviate some rural access to care issues, however, innovation is needed to determine how to offset the significant financial losses of labor income, tax-base, and economic activity that occur when brick-and-mortar dental practices close.
  - Educational institutions in rural communities should review their degree programs to remain competitive and relevant as a decrease in enrollment is predicted in the near future
- **Loan Repayment Programs**
  - Increase the number of dentists and dental hygienists receiving awards.
  - Increase state funding for loan repayment programs.
  - Encourage oral health students and practitioners to apply for National Health Service Corps (NHSC) loan repayment.
  - Improve the distribution of awardees in rural counties.
- **Burnout and Satisfaction**
  - Improve investment in research, evaluation, and support of DHCWs' well-being and professional satisfaction

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## **Appendix A: Methodologies and Limitations**

### *Data Analysis*

Quantitative evaluations are predominantly confined to descriptive statistics including standard summation, an estimation of means and valid percent for identified variables. Additional analysis for responses are tabulated and compared using chi-square, t-tests, and analysis of variance with significance placed on p value equal to or less than 0.05.

All data provided by multiple entities were transferred into master Microsoft (MS) Excel spreadsheets and used to calculate the number of dentists and hygienists per county in Pennsylvania. The master spreadsheet was used to create a snapshot of the dental workforce for each of the research years, utilizing data from 2015, 2017, 2019, 2021, and 2022. The master spreadsheet was further simplified into the six Pennsylvania Department of Health regions to determine any significant dental workforce changes. Inflow and outflow averages were calculated for each Pennsylvania county as well as the state average shortages in each given region. Over time, unique identifiers for each dentist and hygienist were used to track these key discoveries (e.g., location, whether they retired).

Data from the master spreadsheets were utilized to create a snapshot of the number of dentists and hygienists for each of the research years. Dentist-to-hygienist ratios were calculated by dividing the number of hygienists by the number of dentists in each of the counties who were active in 2021. The calculations were rounded to the nearest whole number. The average dentist:dental hygienist ratios in each of Pennsylvania's six regions were then computed.

All mapping was completed utilizing the visual analytics platform, Tableau®. Location information was imported from MS Excel files to provide a geographic role, which associates each value in a field with a latitude and longitude value. This was customized to Pennsylvania as a state and counties by designation. Tableau® automatically assigns latitude and longitude values to each location in that field by finding a match that is already built into the installed geocoding database. A value is then provided for each location and a range assigned to provide a lighter to darker shade based on percent change or total percentage (density) of the values of an assigned group. The Occupational Employment and Wage Statistics (OEWS) program conducts a semiannual survey designed to produce estimates of employment and wages for specific occupations. The OEWS program collects data on wage and salary workers in non-farm establishments to produce employment and wage estimates for approximately 830 occupations. Data from self-employed persons are not collected and are not included in the estimates. The OEWS program produces these occupational estimates for the entire nation, by state, by urbanpolitan or non urbanpolitan area, and by industry or ownership. The Bureau of Labor Statistics produces occupational employment and wage estimates for approximately 415 industry classifications at the national level. The employment data are benchmarked to an average of the May and November employment levels. The most recent wage data are for May 2021. The OEWS survey began using the North American Industry Classification System (NAICS) in 2002. The May 2021 OEWS estimates are based on the 2017 NAICS classification system. Data prior to 2002 are based on the Standard Industrial Classification (SIC) system.

For the secret shopper process, provider information from all practices was entered into a single database to ensure no duplication of patient scenarios with the dentists surveyed. The information stored in this database included business name, ZIP code, Google rating, business type (private

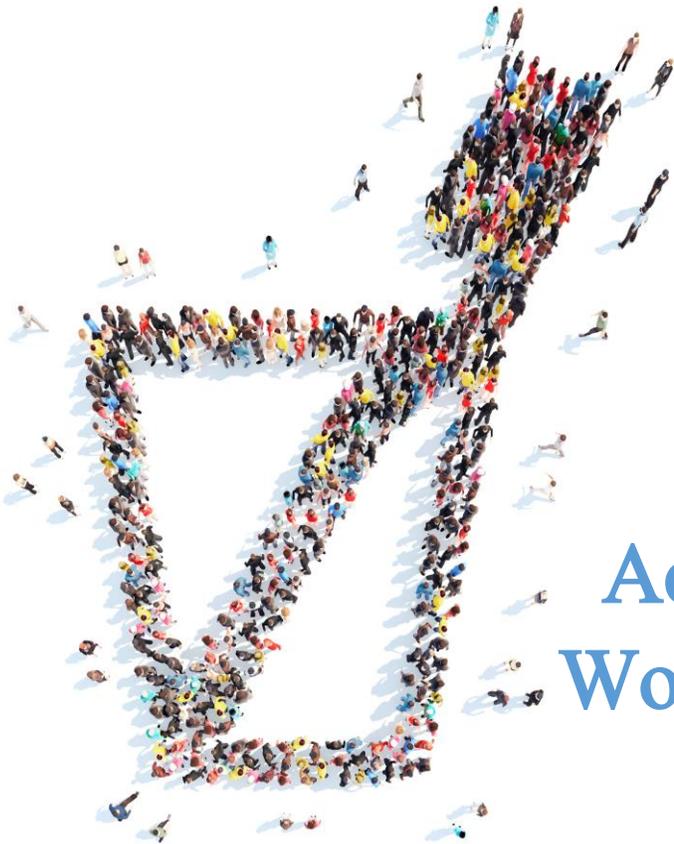
practice, group practice, corporate operation, FQHC, free clinic, academic institution, etc.), county of location, the days, and hours of operation if available, and number of dentists who were listed as working at the practice. The information collected was used to make the secret shopper telephone calls; all calls were made by a research team that made phone calls during the hours listed for the practice's hours of operation. Four shopper scenarios were enlisted to collect practice and availability data for dental care delivery sites in Pennsylvania: Medicaid child, individual with a developmental disability that has primary commercial and secondary Medicaid dental benefit coverage, an adult with commercial insurance, and self-pay family (primary caregiver and one child). From May to August 2022, 1,256 dental care delivery sites were called by four secret shoppers. Following a review of the data collected, 44 entries were eliminated from the analysis due to incomplete calls (prolonged hold, disconnected, busy signal or unanswered attempts), missing information, or misaligned data entry.

### *Limitations to Analysis and Publication*

This report is based on data gathered by the PA Coalition for Oral Health (PCOH), which includes data on dental care worker licensure and certification, as well as publicly available data. The accuracy of the raw data sets are the responsibility of each organization providing those data to PCOH. The analysis of these data is completed in good faith with the supplying organizations that the data are accurate and best practices were followed with data entry and management.

Not all individuals chosen to participate in surveys do so, and the extent of non-response (missing) data varies. Non-response bias results when respondents differ in meaningful ways from non-respondents which can affect how well the response data represent the population being surveyed.

Because there is no indication as to which is required, dental workforce licensure data addresses may differ (e.g., home address, address where one practices). As a result, the numbers of active dentists and hygienists by county in the study may contain some discrepancies. The PCOH team relies on the most trustworthy, credible, and scientifically-sound information accessible. PCOH recommends the inclusion of home and practice site addresses in future licensure surveys. The U.S. Bureau of Labor Statistics does not measure self-employed individuals as part of the Occupation, Employment and Wage data set. Given that many dentists are self-employed or owner-dentists, the data are limited when measuring dentists as a group.



# Access to Oral Health Workforce Report Part II EXECUTIVE SUMMARY

Pennsylvania Coalition for Oral Health  
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