

# Oral Health County Ranking Background and Data Sources

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## Summary

This project aimed to gather existing data and rank Pennsylvania (PA) counties based on various indicators for oral health. The goal was to identify potential areas for improvement and discern patterns within and across counties. Seventeen indicators were selected, and a threshold was established for each indicator. If the data for a county met or exceeded this threshold, the county was awarded a point. If a value was below the threshold, the county received a score of zero. Indicators with insufficient data were marked as “NA”. The scores for all 17 indicators were summed to assign a total score. This scoring system created an effective and simple method to rank the counties. By analyzing these rankings, potential improvements and patterns were identified. This methodology provides a framework for understanding each county’s oral health status to guide future oral health interventions and programs.

## Selecting Indicators

Two main factors influenced indicator selection:

- 1) Followed the County Health Rankings and Roadmaps Conceptual Model**  
The [County Health Rankings and Roadmaps conceptual model](#) groups population health measures into “Health Outcomes” and “Health Factors.” Within each area, some sub-areas include measures of the social determinants of health. Due to the interconnected nature of oral health status with one’s social and physical environment, it was essential to include a few indicators to account for this.
  
- 2) Availability of Data**

Only existing data was used to ensure the data system was reproducible and could be adopted by states outside of PA. Existing data included data that was publicly available on state and national databases, or data that had previously been requested or purchased by the Pennsylvania Coalition for Oral Health (PCOH). There is a lack of available oral health outcomes data at the county level. As such, any oral health outcome data was included if it was available.

In addition to these two factors, the data system also focused on the themes of dental access, children's health, and prevention. These are further explained in the "Domain" section.

## Acronyms

ADA – American Dental Association

ALICE – Asset Limited Income Constrained Employed

BRFSS – Behavioral Risk Factor Surveillance System

CDC – Centers for Disease Control and Prevention

CHR – County Health Rankings

CSDH – Certified School Dental Hygienist

DDS – Doctor of Dental Surgery

EDDIE – Enterprise Data Dissemination Informatics Exchange

FPL – Federal Poverty Level

HP 2030 – Healthy People 2030

HPV – Human papillomavirus

PACHC – Pennsylvania Association of Community Health Centers

PLACES – Population Level Analysis and Community Estimates

RDH – Registered Dental Hygienist

SSP – School-Based Sealant Program (PA Department of Health)

## Domain Definitions

Indicators were grouped into four domains.

### Oral Health Outcomes and Behaviors:

Includes measures of oral health status and health behaviors that directly influence oral health.

### Access to Care & Dental Care Availability

Includes access to dental providers and physical locations which provide dental care. The insurance status of the population's health insurance status is also included here.

### Quality of Care

Preventive measures that directly influence oral health outcomes. This section also focuses on children's health, by emphasizing adolescent HPV vaccination, school sealant programs (primarily serving elementary school aged children), and water fluoridation which strengthens children's tooth structure as it develops.

### Social and Environmental Factors

Elements in a community that influence oral health.

Oral Health Outcomes and Behaviors	
1	Incidence of oral cancer
2	Tooth loss (adults 65+)
3	Adult dental visit
4	Adult smoking
Access to Care & Dental Care Availability	
5	Certified School Dental Hygienists
6	Dentists registered with Medicaid
7	Hygienists
8	Dentists
9	Health center with dental services
10	Free clinic with dental services
11	Uninsured population (healthcare)
Quality of Care	
12	HPV vaccination
13	School Sealant Program
14	Water fluoridation status
Social and Environmental Factors	
15	Asset Limited, Income Constrained, Employed (ALICE) households
16	Food insecurity
17	Drinking water violation

## Indicator Definitions, Thresholds, Data Sources, and Relevance

### Oral Health Outcomes and Behaviors

Indicators 1 – 4

Incidence of oral cancer	
Definition:	Incidence of oral cancer and oropharyngeal cancer at the invasive stage
Range:	7.1 – 23.2 (Age-Adjusted Rates per 100,000)
Threshold:	12.7
Rationale:	PCOH recommendation (state average)
Year:	2021
Source, Location:	PA Cancer Registry, EDDIE
Relevance:	<ul style="list-style-type: none"> <li>Oral cancer is largely preventable and curable when detected early. Multiple measures in this project, namely</li> </ul>

	<p>HPV vaccination and reduction of tobacco smoking can help reduce oral cancer risk.</p> <ul style="list-style-type: none"> <li>• Measurable outcome A13 in the Plan.</li> </ul>
<b>Tooth loss among adults 65 or older</b>	
Definition:	Respondents aged 65 years or older who report having lost all their natural teeth because of tooth decay or gum disease
Range:	7.9 – 17.3 (Age-adjusted prevalence)
Threshold:	14.8
Rationale:	PCOH recommendation (state average)
Year:	2020
Source, Location:	BRFSS, CDC PLACES
Relevance:	<ul style="list-style-type: none"> <li>• Loss of all natural permanent teeth (complete tooth loss) significantly reduces one’s quality of life, self-image, and daily functions such as eating, drinking, and talking.</li> <li>• Preventive dental care and dental care access throughout the lifespan will reduce the risk of complete tooth loss (edentulism).</li> <li>• Measurable outcome A8 of the Plan.</li> <li>• Like the HP 2030 Objective (<a href="#">OH-05</a>) to reduce tooth loss in adults aged 45 years and over.</li> </ul>
<b>Adult dental visit</b>	
Definition:	Respondents aged 18 or older who report having been to the dentist or dental clinic in the previous year.
Range:	53.6 – 72.7%
Threshold:	68%
Rationale:	PCOH recommendation (state average)
Year:	2020
Source /Location:	BRFSS, CDC PLACES
Relevance:	<ul style="list-style-type: none"> <li>• Regular use of the oral health system leads to better oral health by providing an opportunity for preventive services and early detection of oral diseases.</li> <li>• Measurable outcome A5 in the Plan.</li> <li>• HP 2030 Objective (<a href="#">OH-08</a>) and a Leading Health Indicator.</li> </ul>
<b>Adult smoking</b>	
Definition:	Adults who report that they currently smoke every day or some days and have smoked at least 100 cigarettes in their lifetime
Range:	13 – 25 (Age-adjusted)
Threshold:	6.1
Rationale:	HP 2030 Target
Year:	2020
Source, Location:	BRFSS, CHR
Relevance:	<ul style="list-style-type: none"> <li>• Adult cigarette smoking and tobacco use disorder increase the risk of tooth loss, untreated tooth decay, and oral cancer.</li> <li>• County tobacco control programs and initiatives can help improve oral health.</li> <li>• HP 2030 Objective (<a href="#">TU-02</a>)</li> </ul>

## Access to Care and Dental Care Availability

Indicators 5 – 11

<b>Certified School Dental Hygienists (School Hygienists)</b>	
Definition:	One or more school districts in the county employ a <a href="#">Certified School Dental Hygienist</a> .
Range:	0 – 4
Threshold:	The presence of one or more in the county
Rationale:	PCOH recommendation
Year:	2022
Source, Location:	PCOH internal
Relevance:	<ul style="list-style-type: none"> <li>• CSDHs are uniquely positioned to deliver dental hygiene services that are particular to their school student population. They provide services and education to students who may not have access to other regular, preventive dental care.</li> <li>• A CSDH typically works in multiple schools and can provide preventive treatments and oral health education.</li> </ul>
<b>Dentists registered with Medicaid dental plans (Medicaid Dentists)</b>	
Definition:	The ratio of the number of general dentists enrolled with Medicaid through the PA Department of Human Services to the number of people enrolled in Medicaid.
Range:	0 – 5 (dentists per 2,500 people enrolled in Medicaid)
Threshold:	Greater than 1 dentist for 2,500 people enrolled in Medicaid
Rationale:	PCOH recommendation
Year:	2022
Source, Location:	PA Department of Human Services, PCOH
Relevance:	<ul style="list-style-type: none"> <li>• Dental providers who accept Medicaid are necessary to provide access to dental care for people enrolled in Medicaid, typically low-income Pennsylvanians.</li> <li>• The ratio was selected based on patient capacity per dentist and ideal payer mix ratios.</li> <li>• Only general dentists were included as they are most likely to serve as a dental home for the adult Medicaid population. General dentists provide a majority of preventive and restorative services.</li> <li>• Related to measurable outcome B1 in the Plan.</li> </ul>
<b>Hygienists</b>	
Definition:	The ratio of the number of licensed Registered Dental Hygienists (RDHs) to licensed dentists
Range:	0 to 6
Threshold:	Above 1.5 to 1 RDH to DDS ratio
Rationale:	PCOH recommendation
Year:	2021
Source, Location:	PA Department of State Provider Licensure, PCOH

Relevance:	<ul style="list-style-type: none"> <li>• Having enough dental hygienists in a practice allows dentists and hygienists to practice at their full scope. This leads to improved patient care.</li> <li>• Registered dental hygienists provide many preventive dental services and oral health education, including sealants, fluoride varnish, cleanings, and X-rays.</li> </ul>
<b>Dentists</b>	
Definition:	Number of licensed dentists (Doctor of Dental Surgery or Doctor of Dental Medicine) per 100,000 people in the county.
Range:	0 – 133 per 100,000 people
Threshold:	60 per 100,000
Rationale:	ADA recommendation
Year:	2021
Source, Location:	PA Department of State Licensure List, PCOH
Relevance:	<ul style="list-style-type: none"> <li>• Most counties are experiencing a decline in the number of dentists per population ratio.</li> <li>• Dentist shortages particularly affect children, people with disabilities, and people living in rural areas.</li> <li>• Related to measurable outcome B3 in the Plan.</li> </ul>
<b>Health center(s) offering dental services</b>	
Definition:	One or more health centers in the county provide dental services. Health centers can be a Federally Qualified Health Center (FQHC), look-alike, or a Rural Health Clinic (RHC).
Range:	0 to 29
Threshold:	Presence of 1
Rationale:	PCOH recommendation
Year:	2022
Source, Location:	PA Office of Rural Health, Pennsylvania Association of Community Health Centers (PACHC), PCOH
Relevance:	<ul style="list-style-type: none"> <li>• Community health centers increase access to dental services for low-income populations as they accept all forms of Medicaid and have a sliding scale fee schedule.</li> <li>• Health centers utilize a team of providers and community health workers to increase oral health access. Expanding or introducing dental services at existing health centers is one way to expand access to care and facilitate medical-dental integration.</li> </ul>
<b>Presence of a free clinic with dental services</b>	
Definition:	One or more free clinics in the county provide dental services. A free or charitable clinic provides services at no cost. Only permanent free clinics are included (not weekend pop-ups).
Range:	0 to 3
Threshold:	Presence of 1 clinic
Rationale:	PCOH recommendation
Year:	2023
Source, Location:	PCOH Internal, and Pennsylvania Free and Charitable Healthcare Coalition

Relevance:	<ul style="list-style-type: none"> <li>Free clinics increase access to dental care for low-income populations.</li> <li>They are an essential component of the dental safety net and are increasingly viewed as a crucial component of the health and dental care system.</li> <li>Adding dental care services to existing free clinics providing health care allows for medical-dental integration opportunities.</li> </ul>
<b>Uninsured (healthcare)</b>	
Definition:	Percentage of population under age 65 without health insurance.
Range:	193 – 116,921
Threshold:	92.4
Rationale:	HP 2030 Target
Year:	2020
Source, Location:	Small Area Health Insurance Estimates, County Health Rankings
Relevance:	<ul style="list-style-type: none"> <li>People with health insurance are more likely to receive screenings and treatment for chronic diseases and conditions that directly influence oral health such as diabetes and heart disease.</li> <li>Certain oral health conditions, such as cavities, are more common among those without health insurance.</li> <li>HP 2030 Objective (<a href="#">AHS-01</a>)</li> </ul>

**Quality of Care**

Indicators 12 -14

<b>School Sealant Program</b>	
Definition:	One or more schools that participate in the PA Department of Health (DOH) School-Based Sealant Programs (SSPs). SSPs provide dental sealants to children using portable equipment in a school setting.
Range:	0 - 22
Threshold:	Presence of 1 or more in the county.
Rationale:	PCOH recommendation
Year:	2022
Source, Location:	PA Department of Health, PCOH
Relevance:	<ul style="list-style-type: none"> <li>Sealants reduce cavities among school-age children.</li> <li>School sealant programs are especially important for reaching children who are at greater risk for developing cavities and less likely to receive private dental care.</li> <li>Only PA DOH sealant programs are included as they promote data sharing and partnership with FQHCs, county health departments, and CSDHs and focus on schools with primarily low-income students who may have limited access to dental preventive care.</li> </ul>
<b>Human papillomavirus (HPV) Vaccination</b>	

Definition:	Percentage of adolescents ages 13-17 who have received two doses of the HPV vaccination series.
Range:	15.14 – 40.47%
Threshold:	80%
Rationale:	HP 2030 Target
Year:	2021
Source, Location:	Pennsylvania Department of Health, PCOH
Relevance:	<ul style="list-style-type: none"> <li>• HPV vaccination reduces the risk of developing oropharyngeal (oral) cancer.</li> <li>• Dental providers can help increase adolescent vaccination by talking about HPV and recommending vaccination.</li> <li>• HP 2030 Objective (<a href="#">IID-08</a>).</li> </ul>
<b>Water fluoridation status</b>	
Definition:	Percentage of people with optimally fluoridated water (water containing a minimum of 0.7 mg/L of fluoride).
Range:	0 – 100%
Threshold:	77.1%
Rationale:	HP 2030 Target
Year:	2020
Source, Location:	Pennsylvania Department of Health and Pennsylvania Department of Environmental Protection, PCOH
Relevance:	<ul style="list-style-type: none"> <li>• Community water fluoridation is one of the most effective ways to prevent tooth decay.</li> <li>• Tooth decay in children is reduced in communities that adjust the naturally occurring level of fluoride to be optimal for dental health.</li> <li>• Measurable outcome A1 in the Plan.</li> <li>• HP 2030 Objective (<a href="#">OH-11</a>).</li> </ul>

**Social and Environmental Factors**

Indicators 15 - 17

<b>Asset Limited, Income Constrained, Employed (ALICE) households</b>	
Definition:	The percentage of ALICE households above the federal poverty level (FPL), but below the basic cost of living.
Range:	22 – 38%
Threshold:	27%
Rationale:	PCOH recommendation, state average
Year:	2021
Source, Location:	United for Alice, United for Alice
Relevance:	<ul style="list-style-type: none"> <li>• Income and economic status have recognized effects on overall health, including oral health. The use of ALICE households further draws attention to people who do not meet the income requirements for Medicaid or other social programs, and still face significant obstacles to accessing and affording necessary dental care.</li> </ul>



<b>Food insecurity</b>	
Definition:	Percentage of population who lack adequate access to food.
Range:	6 – 15%
Threshold:	11%
Rationale:	PCOH recommendation, state average
Year:	2020
Source, Location:	Map the Meal Gap, County Health Rankings
Relevance:	<ul style="list-style-type: none"> <li>• Food insecurity prevents people from maintaining a healthy diet and proper nutrition, which are essential for healthy mouth tissues, and the prevention of dental cavities.</li> </ul>
<b>Drinking water violation</b>	
Definition:	The presence of health-related drinking water violations. 'Yes' indicates the presence of one or more violations, 'No' indicates no violation.
Range:	N/A (Yes or No)
Threshold:	No (no violations)
Rationale:	PCOH recommendation, state average
Year:	2021
Source, Location:	Safe Drinking Water Information System, County Health Rankings
Relevance:	<ul style="list-style-type: none"> <li>• For community members to benefit from drinking optimally fluoridated tap water, the tap water must be safe to drink.</li> <li>• Drinking water violations decrease public confidence in drinking water.</li> </ul>