HISPANIC DENTAL ASSOCIATION

SUPPORTED BY:

CareQuest Institute for Oral Health

Addressing the Oral Health Needs of Hispanics in the U.S.

AN EXPLORATION OF ORAL HEALTH STATUS, DENTAL NEEDS, UTILIZATION OF DENTAL SERVICES, AND WORKFORCE

White Paper | Part 1

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INTRODUCTION

Hispanics have reached a demographic inflexion point in our social landscape, increasing their impact in the U.S. economy and politics. The 2020 U.S. Census confirmed that Hispanics or Latinos now represent approximately 18.7% of the total population. The Hispanic Dental Association (HDA), representing over 35,000 members of dental teams across the country, reflects the diversity of the Hispanic population.

Our diversity includes racial and geographic heterogeneity with African American and Native American members, as well as colleagues from Central and South America, the Caribbean, Asia, Europe, Oceania, the Middle East, the Indian subcontinent, and other world regions.

In a previous HDA evaluation of the impact of oral health among Hispanics, we identified a lack of relevant data to develop policies supporting the oral health of our community. HDA, in partnership with CareQuest Institute for Oral Health®, is assuming a vital role identifying policies that can be improved for the benefit of our communities, through reliable and updated information.

Disparities in oral health affecting the most vulnerable populations in the U.S. are especially impacting Latino communities. Factors such as culture, language, immigration policies, anti-immigrant sentiments, and racism, in addition to other social determinants of health, are influencing Latinos' inability to access oral health care.

Now, under the partnership between CareQuest Institute and HDA, the HDA Research Team (HDART) is working to collect and analyze data approaching Hispanic Population Oral Health and the Hispanic dental health workforce, expecting to influence several policies that will be summarized within the joint white paper.

Among the topics analyzed to influence current health policies are the dental workforce planning at the national and state level, oral health status by age, use of dental services, the dental insurance market, increasing scope and options of dental services, and the equity in public insurance advocacy.

In addition, other priority topics connected to workforce training include the U.S. dental diversity in teaching and students, the promotion of postdoctoral dental training in dental shortage areas, and the increase of the presence of minority dental providers such as Hispanics.

This white paper will allow the HDART to perform evidence-based data analyses and provide data-driven health policy recommendations. This framework can be used for multi- and interdisciplinary approaches to engage public and private stakeholders. All this is for the purpose of developing action plans to improve oral health and reduce inequalities among Hispanics in the U.S.

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EXECUTIVE SUMMARY

The Hispanic Dental Association Research Team (HDART) conducted a scoping review of the existing databases with data representation for Hispanic/Latino populations at the national and state level. We focused on outcomes within the following areas:

1. dental caries and periodontal disease occurrence (prevalence and severity)
2. utilization of dental services (dental visits)
3. utilization of emergency services
4. workforce issues

We identified data for Hispano/Latino populations in each database and compared those against the overall estimates of those from other racial/ethnic groups. In some surveys, we reported estimates for specific Hispanic groups, such as Mexican Americans and Other Hispanics (e.g., NHANES).

In other surveys, all Hispanic/Latino populations were included as a group due to the sample size. Some surveys provided normative and self-reported data (e.g., NHANES), while others only self-reported information (e.g., all data for dental visits). NHAMC and NEPS are unique data sources because they used codes for specific dental-related emergency claims from two national health care organizations.

We obtained estimates from either the publicly available data systems (e.g., NHANES, MEPS, NHAMC, or NEPS) or the query systems available from websites (e.g., PRAMS, BRFSS, YRBSS). All the information in this summary corresponds to the latest data available for each data system. In most systems, data was obtained for 2015 or later.

The following is a summary of the most important findings:

- Family poverty level and education appear to be more sensitive than race/ethnicity in detecting inequities in dental caries. Furthermore, filled teeth were the main contributor to dental caries prevalence and severity across all age groups regardless of race and ethnicity. Still, the prevalence of untreated decay among Hispanics ranged from 10% to 25%.
- On average, less than half of Hispanic children from 12 to 19 years had one or more dental sealants, with few racial/ethnic differences.
- Around 15% of the Hispanic adults 65 and over were edentulous. There is consistency in the edentulism estimates between normative (NHANES) and self-reported (BRFSS) data.
- Across all age groups, Hispanics reported lower "excellent" or "very good" status of teeth and gums than non-Hispanic Whites.
    - The utilization of dental services (more than one dental visit in the previous year) or preventive dental visits (e.g., for tooth cleaning) among Hispanics varied by age and the surveillance system. Not all systems use the same question, focus on the same age group, or follow the same pattern/language in the questions and answers. Thus, a lack of congruency among systems was common. Overall, dental utilization was higher among adolescents and lower in working-age adults. Data systems with data provided by the state show considerable variation.
    - In NHANES, the utilization of dental services by Hispanics was as high as 88% in those 6–11 years old and 44% in those 20–34 years old. Hispanics had lower utilization of dental services (52%) than non-Hispanic Whites (63%), but the inequity was larger in 1999–2002 than in 2017–2020.
    - In MEPS, Hispanics had lower utilization of dental services (29%) than non-Hispanic Whites (48%). However, in NHANES, the inequity was larger in 2006 than in 2019. Thus, both systems (NHANES and MEPS) detected changes in inequities while having different estimates.
    - Trend data from NHIS (1997–2020) suggest a decrease in inequities in dental utilization among all participants, but mostly among Hispanics, and especially among children and adolescents aged 2–17 years.
    - Around 80% of Hispanic children aged 1–17 had a dental visit, according to NSCH. There were no differences with those having a preventive dental visit or if the child had special needs. There was a large variation by state, from 59% in West Virginia to 95% in Vermont.
    - Seventy percent of Hispanic adolescents reported a dental visit in YRBSS, which is about ten percentage points lower than in non-Hispanic White adolescents. Historical data showed a larger increase in self-reported dental visits (from 51% to 70%) in Hispanics than among non-Hispanic Whites (76% to 82%).
    - In BRFSS (adults ≥ 18 years), the utilization of dental services was 60%, varied from 46% in Maine to 73% in Tennessee, and was consistently lower than non-Hispanic Whites in the states with the highest proportion of Hispanics.

- Around 46% of pregnant women had a preventive (dental cleaning) visit (PRAMS). The published national figure from NHANES 1999–2004 was 61% (any visit). In 7 of the 10 states with the highest proportion of Hispanics, preventive dental visits were lower in Hispanic women than in non-Hispanic White and Asian participants. Data from California show a variation by county (25% to 70%).
- Trends in the utilization of dental services match the trends in untreated decay (more dental visits, less untreated decay).

- There was remarkable agreement in the estimates of dental visits to emergency departments for non-traumatic dental conditions. Both national systems reported 1.2% of the 150 million (NHAMC) and 1.3% of the 143 million (NEDS). Hispanics were represented in 11% to 13% of these visits.

The following table provides the significant technical difficulties in analyzing and interpreting the findings:

Issue	Description
Lack of consistency in race/ethnicity classification across data systems	Most databases use the USPHS classification of race/ethnicity. However, some databases, especially at the state level, do not report race/ethnicity, and it is unclear whether race categorization (e.g., White or Blacks) included Hispanics or not.
Inconsistencies in dental utilization estimates from different data sources	MEPS, the data system used in Healthy People National Objectives, provides lower estimates than other data systems, including the NHIS, from which the MEPS sample is derived. Also, the inequalities and trends differed among data systems.
Difficulties in data availability	Most national data sources were available for download from public sites. The exception was PRAMS, for which we could not obtain a working dataset from the CDC despite a couple of attempts. Our approach was to contact the state data coordinators directly.
Workforce data	Many states do not collect information on race/ethnicity, so it is impossible to evaluate workforce diversity.

The following points are the topics detected by the HDART for future research:

- to examine trends in payment/reimbursement for dental services, using specific national surveys (MEPS)
- to correlate dental utilization and dental status and those with more frequent dental services in better oral health status modified by the type of insurance (NHANES, MEPS), among others
- to determine causes for lack of consistency in dental utilization data

See table below for all the topics and national surveys included in this white paper.

Database	Oral Health Status	Outcomes			
		Utilization of Dental Services	Morbidity	Utilization of Emergency Services	Workforce
National Health and Nutrition Examination Survey—NHANES (All ages)	Caries prevalence/ severity Sealants Tooth loss/number of teeth Edentulism	Dental visits (Self)	Oral Health Status (Self)		
Birth Defects Prevention Network (NBDPN) (Newborn)	Cleft lip and palate birth defect		Cleft lip Cleft palate		
Behavioral Risk Factor Surveillance System—(BRFSS) (Adults—self-reported)	Tooth loss/edentulism	Dental visits			
Basic Screening Survey—BSS (Children—all parents reported)	Dental caries Sealants				
Medical Expenditure Panel Survey—MEPS (Adults)		Dental visits			
National Health Interview Survey—NHIS (Children and adults)		Dental visits			
Pregnancy Risk Assessment Monitoring System—PRAMS (Pregnancy)		Dental visits			
National Survey of Children's Health—NSCH (Children)		Dental visits			
Youth Risk Behavior Surveillance System YRBSS (School adolescents)		Dental visits			
National Hospital Ambulatory Medical Care Survey—NHAMC (All ages)				Dental visits	
The Nationwide Emergency Department Sample—NEDS (All ages)				Dental visits	
Dental Education and Dental Workforce Surveys —ADA HPI Databases					Workforce
Dental Education Surveys—ADEA Reports					Workforce
HDA National Workforce Survey					Workforce
Health Resources and Services Administration—HRSA Databases					Workforce
Bureau of Labor Statistics—BLS Databases					Workforce

TRACING THE ROOTS OF HISPANICS/LATINOS

Origins and Destinies of Ethnicity in the United States

Hispanics/Latinos have inhabited the North American territory since colonial times and have been part of the demographic makeup of the U.S. since the early stages of its expansion and consolidation as a nation. The ways Hispanics/Latinos have been defined by the federal government have changed since the late 1700s.

Hispanic/Latinos are considered a racial/ethnic minority that has been growing. Even though Hispanics/Latinos are a diverse group, general and by-state data (though not necessarily consistent) on different indicators such as economic achievement and poverty, education achievement, health status and utilization of health care services, employment, and English language proficiency have shown this group has been at a disadvantage when compared to the mainstream non-Hispanic White majority.

Often, Hispanics/Latinos are seen in the U.S. as newcomers often associated with the ongoing influx of immigrants from the Latin American region (most which used to be part of the Spanish colonies). Immigration adds to the diversity and complexities of Hispanics/Latinos in the U.S. Hispanics/Latinos show that the U.S. is a multicultural nation, which clashes at times with the idea of one “American way.”

Hispanics/Latinos, a widely diverse ethnicity, have been in the territory for centuries and will continue to be an essential part of the U.S. to promote its justice, its development, and its democratic ideals. Nevertheless, Hispanic/Latino individuals and communities need access to the adequate conditions and benefits to thrive within the mainstream U.S. society.

Hispanic/Latinos in U.S. Demographic History

The Spanish Empire would expand across the Caribbean Islands, half of South America, almost all of Central America, and more than two thirds of what is now the U.S. (Gibson, 2019).

The territories ruled by Spain between late 15th century until the beginning of the 19th century were from top to bottom: Nueva España (New Spain), Nueva Granada, Perú, and Río de la Plata, including the Caribbean islands as part of the New Spain jurisdiction.

Only two colonies belonged under the rule of Spain until the end of the 18th century. Cuba and Puerto Rico were Captaincy Generals, political entities that were part of the Viceroyalty of New Spain until 1898. In that moment, under the Paris Agreement, they passed from the Hispanic hegemonic power to the U.S. sphere of geopolitical influence (Gibson, 2019).

Figure 1 shows a map of the American continent in 1794. Highlighted in red are the four Spanish Vice Royalties that the Spanish crown created to manage its colonies. The original U.S. territory is colored in light green. It can be appreciated how the vast territory of the current Western, Southern, and Central U.S. was occupied by Spanish colonies. Thus, people of Hispanic/Latino descent have inhabited the region for a long time.

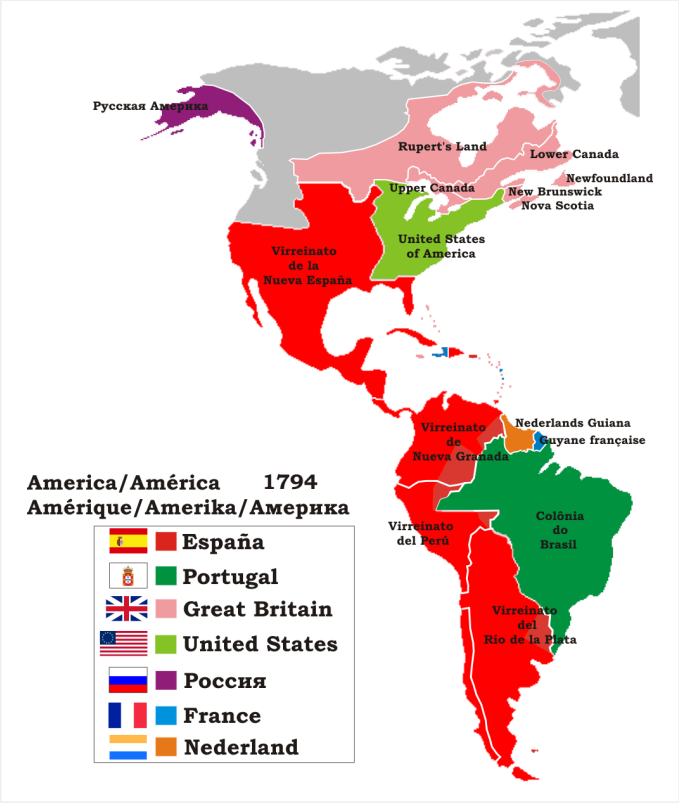


Figure 1. Political Map of the American Continent in 1794, Colonization of the Americas. August 2008. Source: Wikimedia Commons, Author Jluisrs, under GNU Free Documentation License, version 1.2

Figure 2 represents a map of the territories the U.S. acquired between 1783 and 1853, marking its westward and southward expansion. In 1803, the U.S. purchased the Louisiana territory located west of the Mississippi River from France (U.S. National Archives, 2022a).

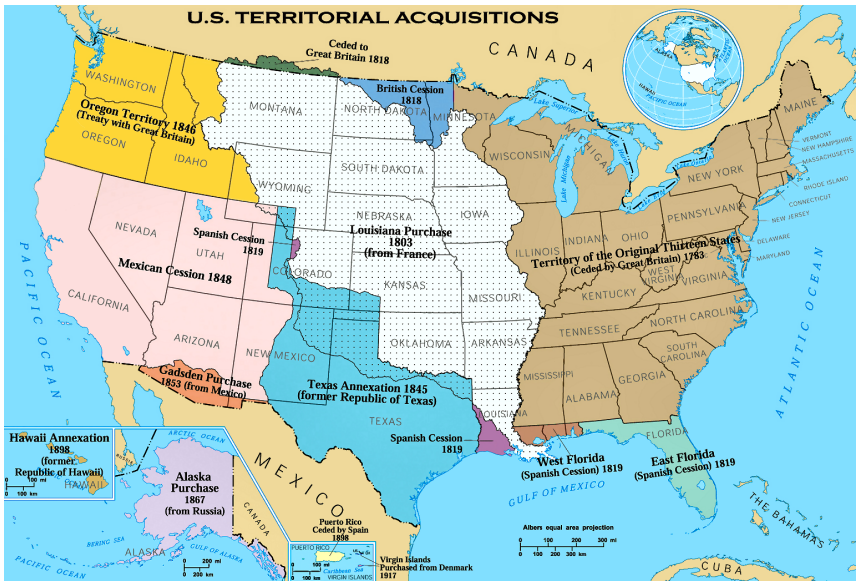


Figure 2. Map of US Territorial Acquisitions, 1783–1853
Source: Wikimedia Commons, public domain from the National Atlas of the United States 1970 printed edition.

The territory west of the Mississippi River used to be known as Spanish Louisiana and was part of the Vice Royalty of New Spain between 1763 and 1803, until Spain returned it to France, which subsequently sold it to the U.S. In 1819, Spain ceded West and East Florida to the US through the Adams-Onís Treaty, ending a territorial dispute and releasing Spain from a difficult-to-manage region (Blodgett, n.d.).

The annexation of the Republic of Texas to the United States took place in 1845, after Texas declared independence from the Republic of Mexico and applied for annexation to the U.S. in 1836. Meanwhile, the Oregon territory (including what is now the state of Washington) was incorporated in 1846, solving a dispute with the United Kingdom. The United Sates took 55% of the Mexican territory in 1848 after the two-year Mexican American War. Through the Guadalupe Hidalgo Treaty, Mexico ceded territory that today includes the states of California, Nevada, Utah, New Mexico, Colorado, and parts of Arizona, Oklahoma, Kansas, and Wyoming. Mexico also surrendered rights to Texas and accepted the Rio Grande as the southern border of the U.S. (U.S. National Archives, 2022b).

A 30,000-mile southern territory that corresponds today to southern Arizona and southwestern New Mexico was purchased in 1853 through the Gadsden Treaty (U.S. National Archives, 2019). On the other hand, Alaska was purchased from Russia in 1867, while Puerto Rico was ceded by Spain (Treaty of Paris) and Hawai'i was annexed in 1898 (History.com Editors, 2022; Schamel & Schamel, 1999).

Figure 3 represents the influence of the Spanish conquistadors and colonizers in the different states that are now part of the U.S. The arrival of these Europeans brought with them their Spanish language, their culture, their religion, and even the architecture that has been referenced by historians of these territories.

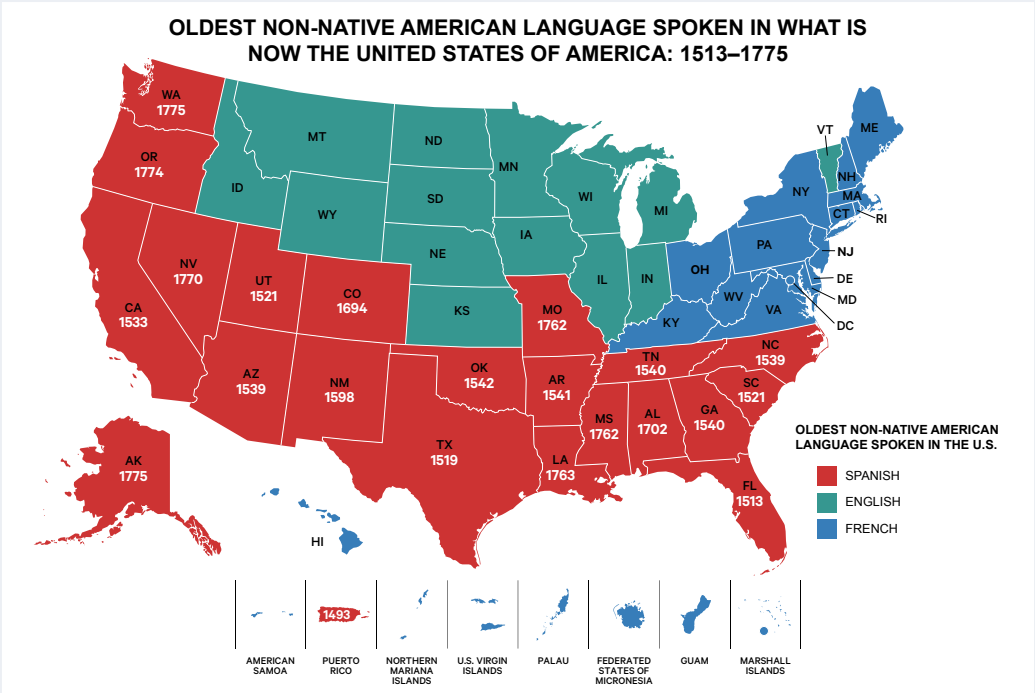


Figure 3. Map of U.S. Territories Influenced and Ruled by Spain, Bringing Their Language During the Colonial Period, 1513–1775
Source: Created by authors by reviewing each state's history regarding the arrival of conquerors, colonizers, and/or royal armies.

Immigration and the Construction of the U.S.

Recent census data reveals that newborns have driven the recent growth of Hispanics/Latinos in the U.S., and the share of Hispanics/Latinos who are immigrants to the U.S. has declined. Immigration, however, continues to be a driving demographic force, and English language proficiency has been increasing among Hispanic/Latino immigrants. This has been recognized throughout U.S. history, but this narrative competes with the idea of assimilation to a type of singular U.S. norm. Narratives in favor of acknowledging multicultural identities and racial/ethnic richness and those supporting assimilation and one discourse, often associated with a Modernist, Western European, and Christian perspective, tend to clash (DiMaggio & Bryson, 1995; Krogstad et al., 2022; Skerry, 2000).

In 2021, immigrants and their U.S. born children number approximately 87.7 million people, or close to 27% of the U.S. population. According to the Census data, 28% of all immigrants in the United States in 2021 arrived prior to 1990, 20% between 1990 and 1999, 24% between 2000 and 2009, and 28% since 2010 (Migration Policy Institute, 2023). Regarding the Hispanic/Latino population, in 2019 Mexican immigrants made up to 30% of the U.S. population, the largest self-identified origin among Hispanics/Latinos (DiMaggio & Bryson, 1995; Frey, 2020; Skerry, 2000). Much of the current global political economy promotes the "free" flow of markets, which includes

international mobility of capital and talent. The idea behind immigration is that diversity fosters creativity, innovation, and development.

However, at the social and socioeconomic levels, multiculturalism and nationalism/assimilation do not seem to agree on the roots, reasons, opportunities, and risks of immigration. The U.S. development has relied on immigration since its colonial past.

Invention of Latin America: What Is in a Name?

The terms "Latin America," "Hispanic," and "Latino" have been traditionally controversial because of the history of oppression they signify for some population groups throughout the American continent and within the U.S. Another controversy arises because such terms are not necessarily inclusive or representative of all the people they intend to portray, including Indigenous peoples or individuals from countries where official languages are not Spanish, Portuguese, or even French (Taylor et al., 2012).

The term "Latin America" was first recorded as early as 1856 in a speech given by the Chilean politician and activist Francisco Bilboa in France (Mix, 1986). One year later, the Colombian diplomat José María Torres included the term in a poem that was published in a French Spanish–language newspaper (Ardao, 1980).

The spread of the term "Latin America" was ignited during the protests/criticism among the region's intellectual White elite against the U.S. invasions/expansion to the Southern hemisphere. The intervention into Southern affairs was part of the U.S. 1823 Monroe Doctrine strategy to contain interests and invasion attempts by the English and French (Blakemore, 2022; Gobat, 2013; Martínez & González, 2021).

The idea of a "Latin race" emerged during France's invasions of Mexico. The first took place in 1838–1839 during what is known as the Pastry War, which was caused by an incident with a French restauranteur in Mexico City. The most serious invasion occurred between 1862 and 1867 during the French-Mexican War, when Mexico threatened to default its foreign debt with France. Napoleon III invaded and had the intention of turning Mexico into a monarchy. The invasion ended with the intervention of the U.S. and allies (Denegre, n.d.).

The term Hispano was used in the 19th century by the Spaniards before the annexation of the Southeast region to the U.S. Posteriorly, as part of the Monroe Doctrine of 1823 ("America for the Americans"), the term Latino started to be used in the 1850s as an abbreviation of Latin American, and it was preferred over Hispanic. In the 1960s, with the rise of racial awareness, Mexican Americans coined the term Chicano, and the Puerto Ricans embraced the term Boricua. In current times, Latino is more commonly used in academia, though Hispanic is a more pan-ethnic term.

Even more recently, in the 2000s, gender-neutral terms such as Latinx (mainly in the U.S.) and Latine (primarily in Latin America) have been introduced with the increased awareness and advocacy for gender justice (Blakemore, 2022; Martínez & González, 2021). Nevertheless, in academic and research fields, it has been recommended to stop using Latinx and continue using

the terms used by the U.S. Census, because in conservative political and social circles Latinx is considered a racial/ethnic offense. In some academic circles, Latinx is considered an Anglicanism that does not represent the Hispanic culture (Pew Research Center, 2020).

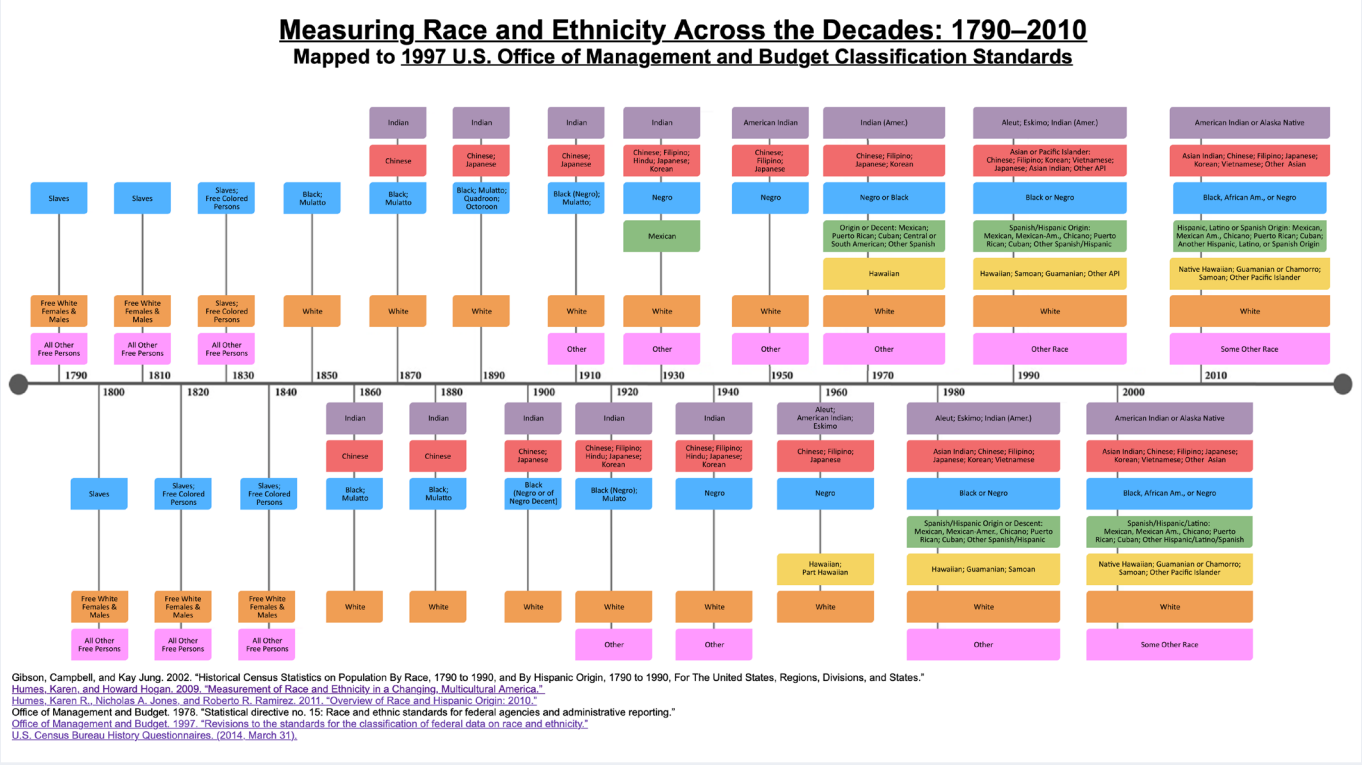
Hispanic/Latino Definition in the U.S. Census

The U.S. Census Bureau has collected data on race and ethnicity since 1790, though the ways to define both categories and the specific groups under each have changed over time.

In 1790, the U.S. Census differentiated only between Free White Females/Males, other Free Persons, and Slaves. In 1820, the latter category changed to add Free Colored Persons. In 1850, the Census only differentiated between White and Black/Mulatto. The categories Chinese and Indian were added in 1860.

During the following decades, the general categories remained the same, with minor changes and additions. In 1930, there was a new category, Mexican, and Asian American was expanded to include Chinese, Filipino, Hindu, Japanese, and Korean. In the subsequent censuses, as shown in Figure 4, the Mexican category was not included until 1970, when "Origin or Descent" was added to refer to Mexican, Puerto Rican, Cuban, Central or South American, and other Spanish people (Pratt, Hixson, & Jones, 2015).

Figure 4. Mapping Race and Ethnicity in the U.S: A Timeline of Racial and Ethnic Categories in the U.S. Census 1790–2010



Source: Pratt, Hixson, & Jones, 2015

In 1968, the National Council La Raza (NCLR) was founded. Now known as UNIDOS U.S., it is the

United States' largest Latino nonprofit progressive public policy advocacy organization. With the lobby and influence of the NCLR, the U.S. Census included in 1970 the term "Spanish origin" to collect data of specific populations. In 1976, the U.S. Congress passed Law 94-311, requesting that all federal agencies have to collect Spanish-speaking background data, specially focused on U.S. residents of Mexican, Puerto Rican, Cuban, Central American, South American, and other Spanish-speaking country origins (Pew Research Center, 2020).

The term Hispanic was first used in a full census in 1980. The alternative term Latino emerged during the 1990s and generated resistance to the term Hispanic, as it embraced a strong connection with Spain. By 1997, the U.S. Office of Management and Budget issued a directive to add the term Latino to government publications.

On November 30, 1999, the U.S. Department of Health and Human Services (HHS) released a report titled *Improving the Collection and Use of Racial and Ethnic Data in HHS*, with a set of guidelines that should be followed and reported by any administrative and medical records. The 1999 HHS report included the lineament to interchangeably use Hispanic or Latino terms, which subsequently led the 2000 U.S. Census to include the term Latino first, alongside Hispanic (HRSA, 2020; Pew Research Center, 2020).

The current definitions of race and ethnicity were established for the Census and the entire federal government (Rouan, 2021). Both categories are seen as "social-political constructs" and do not imply any biological, anthropological, or genetic criteria (HRSA, 2020).

Currently, ethnicity refers to ancestry or origin of a person/group and is classified as Hispanic or not Hispanic, while race is broken into categories based on origin: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White, plus "some other race" (HRSA, 2020; Rouan, 2021). In 2020, the Census asked questions about age, sex, ethnicity, and race, separating Hispanic origin from the notion of race, and using guidelines from the Office of Management and Budget (U.S. Census Bureau, 2022b) for the federal statistical system. Persons self-identifying as Hispanic in the U.S. Census can report being of any single race or combination of races (Rouan, 2021; U.S. Census Bureau, 2022a).

The U.S. Census Bureau defined Hispanic/Latino (interchangeable terms) as "a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race" (U.S. Census Bureau, 2022a). This definition is not explicit about people of Dominican Republic origin and does not mention other populations commonly regarded as Latino/Latina, such as Portuguese/Brazilian and Haitian. Within the Hispanic/Latino category, there are four groups that are currently included in decennial census questionnaires: a) Mexican, Mexican American, or Chicano; b) Puerto Rican; c) Cuban; and d) another Hispanic, Latino, or Spanish origin. The 2010 Census differentiated between Not Hispanic and Hispanic (with the four groups listed above) and provided a space for write-ins that could contain over 30 subgroups, mentioned in the previous section, regarded as Hispanic with specific nationality/origin (Rouan, 2021; U.S. Census Bureau, 2021d).

For the purpose of statistical analysis and reporting, the following are implications of separating Hispanic origin from race (U.S. Census Bureau, 2021d):

- People who are Hispanic/Latino may be of any race: each race group may be Hispanic or Not Hispanic; and every person has both attributes (i.e., race and Hispanic/Not Hispanic ethnicity).
- An overlap of race and Hispanic/Latino origin is the main comparability issue, when comparing population size of one race with the number of Hispanics/Latinos, or population size of any race with another race.
- The "More than one race" option increases possible numbers and overlapping groups.
- The complete cross-tabulation of race and Hispanic origin data is problematic, which allows tailoring data for a specific use but can confuse readers from general audiences.
- Comparability of data on race and Hispanic origin is affected by several factors, such as samples built by self-identification surveys, the number of Hispanics according to different races, and the exclusion of the "Two or more races" category in all federal surveys like the Current Population Survey (CPS).

For data collection and analysis purposes by federal and state agencies (and hopefully other entities generating public data), the U.S. Department of Health and Human Services released a guide in 1999 aimed at improving the collection and use of racial and ethnic data (ASPE, 1999).

Hispanic/Latinos used to be considered a race until the 2010 Census. However, this group is not homogeneous but made up of several individual and combined races, national origins, and other demographic characteristics, so it is not logical to consider Hispanic/Latino a race. Since 2010, the U.S. Census includes the categories of "ethnicity" and "race," allowing the census respondents to identify themselves as Hispanic and non-Hispanic on one side, and White, Black, Native, Asian, and/or another race on the other side (Pew Research Center, 2020).

Hispanics/Latinos in the US Population: The Numbers

The U.S. Census Bureau's July 1, 2021, estimates indicated that the total population in the United States was 331,893,745 inhabitants, of which 18.9% self-identified as Hispanics/Latinos—that is, around 62.7 million (U.S. Census Bureau, 2021a).

This makes Hispanics/Latinos the second-largest racial/ethnic group after non-Hispanic Whites (57.7%) (DHHS & OMH, 2022; Jones et al., 2021). Data shows how the racial/ethnic composition of the country is changing. It is projected that the Hispanic/Latino population's growth will outpace that of other races/ethnicities. For instance, when comparing data of the 2010 and 2020 Censuses, the Hispanic/Latino population grew 23%, while the non-Hispanic/Latino population increased by only 4.3% (Jones et al., 2021).

Population growth projections also suggest that by 2060, the Hispanic/Latino population will reach 111 million people, or 28% of the national demographic fabric by race/ethnicity. By 2060, racial/ethnic minorities are projected to be 57% of the total population of the country (Passel & Cohn, 2008; U.S. Census Bureau, 2012; U.S. Census Bureau, 2021b).

Figure 5 shows calculations by the Pew Research Center (Krogstad, Passel, & Noe-Bustamante, 2022) that Hispanics/Latinos self-identify with 20 origins/nationalities, in addition to other South Americans, other Central Americans, and other Latinos. The largest group consists of Mexican (59.5%), followed by Puerto Ricans (9.3%) as the second-largest self-identified origin. An additional 4.9% is made up of other Hispanic/Latino origins. The group with the highest growth between 2010 and 2021 were Venezuelans with a 172% increase (1.1% of all Hispanic/Latinos), Dominicans with 59% (3.8%), Hondurans with 57% (1.8%), Guatemalans with 53% (2.8%), and Colombians with 46% (2.2%).

Hispanic origin groups in the U.S., 2021

Origin group	Population	% among all U.S. Hispanics	% change 2010-2021
U.S. total	**62,530,000**	**100%**	**23%**
Mexican	37,235,000	59.5	13
Puerto Rican	5,800,000	9.3	24
Salvadoran	2,475,000	4.0	35
Cuban	2,400,000	3.8	28
Dominican	2,395,000	3.8	59
Guatemalan	1,770,000	2.8	53
Colombian	1,400,000	2.2	46
Honduran	1,150,000	1.8	57
Spaniard	995,000	1.6	43
Ecuadorian	815,000	1.3	25
Peruvian	720,000	1.2	20
Venezuelan	660,000	1.1	172
Nicaraguan	455,000	0.7	19
Argentinean	295,000	0.5	26
Panamanian	240,000	0.4	37
Costa Rican	190,000	0.3	44
Chilean	190,000	0.3	35
Bolivian	130,000	0.2	15
Uruguayan	65,000	0.1	9
Paraguayan	30,000	0.0	42
Other South American	40,000	0.1	62
Other Central American	30,000	0.0	1
All other Latinos	3,050,000	4.9	96

Notes: Hispanic origin is based on self-described ancestry, lineage, heritage, nationality group or country of birth. Population rounded to nearest 5,000. Listed in descending order of population size: differences between ranks may not be statistically significant.
Rankings and percentages based on unrounded populations.
Source: Pew Research Center calculations based on the 2010 and 2021 American Community Surveys (U.S. census Bureau).

PEW RESEARCH CENTER

Figure 5. Hispanic Origin Groups in the US, 2021.
Source: Pew Research Center calculations based on the 2010 and 2021 American Community Surveys (Krogstad et al., 2022).

Regarding racial/ethnic changes, census data of states show that Hispanics/Latinos became a majority in California (40%, or 15.8 million) and Texas (40%, or 11.9 million) from 2010 to 2021. New Mexico continues to be the state with the most Hispanic/Latino inhabitants, accounting for 50% of the population (2.2 million). Besides Puerto Rico, the most populated states with Hispanics/Latinos, as a percentage of the whole state population, are Arizona, California, Colorado, Florida, Illinois, Nevada, New Jersey, New Mexico, New York, and Texas (Krogstad et al., 2022).

MINORITY RESEARCH FRAMEWORK IN ORAL HEALTH FOR HISPANIC/LATINOS

Why has it been quite challenging to implement impactful strategies to improve Hispanics/Latinos' general/oral health and quality of life?

To address the question, a general framework builds around the notion of minority research. The argument is that for a country such as the U.S. to improve standards of living and economy, national and state-based data, research, and decisions, must recognize and consider the multiple demographic characteristics of its people. This applies, for instance, to Hispanic/Latinos' general and oral health and their social determinants of health.

The HDART defines some components for a framework that reflects Healthy People 2030, the most recent master plan to guide health research and decision-making in the U.S. within the next decade in order to build the category of minority research. Through the analysis of concepts such as health equity, health disparities, health literacy, social determinants of health, structure-agency, structural racism, and minority health, this framework builds the structure of the minority research perspective and serves as a justification to have differentiated data by race/ethnicity in health. In addition, it briefly mentions the research conducted by the U.S. federal government to achieve the current category of ethnicity used to define and differentiate Hispanics/Latinos from other racial/ethnic minorities.

Healthy People 2030

The Department of Health and Human Services' decennial initiative, Healthy People, states that "for 2030, all efforts have to be directed to promote healthy development, healthy behaviors, and well-being across all life stages" (DHHS et al., 2022). The five overarching content areas that Healthy People 2030 goals emphasize are 1) preventable diseases, disability, and premature death; 2) health disparities, health equity, and health literacy; 3) social, physical, and economic environments; 4) healthy development and behaviors across the lifespan; and 5) leadership, key constituents, and the public to act and design policies.

On the matter of oral conditions, the main goal of Healthy People 2030 is to improve oral health through increasing access to oral health care and preventive services.

On the matter of oral conditions, the main goal of Healthy People 2030 is to improve oral health through increasing access to oral health care and preventive services. The goal on oral conditions is unfolded into categories such as general oral conditions (tooth decay, oropharyngeal cancers at early stages, and use of the oral health care system); adolescents (lifetime, active, and untreated tooth decay); health care access and quality (not getting dental care and dental insurance); health policy (fluoride in water systems); nutrition and healthy eating (sugar intake); older adults (untreated root caries, lost teeth, and periodontitis); preventive care (preventive dental visits by low-income youth and sealants); and public health infrastructure (states with oral and craniofacial health surveillance systems) (DHHS et al., 2022).

The OH-08 is the only one Leading Health Indicator in Healthy People 2030 related to Oral Health, measuring the increased use of the oral health care system (CDC, 2020). Regular visits to the dentist can help prevent oral diseases and related problems, but most people haven't been to the dentist in the last year. Strategies to make it easier for people to get dental care are critical for better oral health and overall health outcomes (CDC, 2020; DHHS et al., 2022). Equally, Healthy People 2030 prioritizes removing health disparities and generating equitable opportunities for people to live healthy lives. The priority areas for the decade are health equity, health literacy, and social determinants of health throughout the country. Health equity is defined by Healthy People 2030 as "the attainment of the highest level of health for all people. Achieving health equity requires valuing everyone equally with focused and ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health care disparities" (DHHS et al., 2022).

Pursuing the highest health level for everybody should distinguish between the notions of parity, equality, and equity to define and measure population differences and act upon them. Parity is when there are no differences between population groups, which is not the case of a diverse

and dynamic country like the U.S. Equality refers to providing the same resources to all the population, while equity indicates allocating resources fairly across people's social, economic, and environmental differences (Klein & Huang, 2010).

The rationale for having chosen minority research as an overarching category and framework to analyze and address struggles and needs related to health and quality of life among Hispanic/Latino individuals and communities is the existence of health disparities, and oral health disparities in particular. Minorities are groups of the population who, due to one or more traits or conditions, are disadvantaged, discriminated against, and/or excluded from societal benefits and opportunities. When the exclusions are associated with health characteristics and attributes of racial/ethnic minority groups, it is referred to as minority health (NIMHD, 2022).

Health equity is a response to health disparities, whose definition in Healthy People 2030 points out the types of disadvantages and reasons for a person/group to be minoritized. It is important to mention that Healthy People's definition of health disparity does not include the term "minority." However, minorities are implicit when Healthy People describes "groups of people", and "health disparities" as "a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion" (DHHS et al., 2022).

Healthy People 2030 measures, tracks progress, features evidence-based resources, and collects stories (Healthy People in Action) to address health disparities by using evidence-based interventions, evaluating interventions, and forming multisector collaborations.

The second priority area, health literacy, is divided into personal and organizational literacy. The former looks at how individuals find, understand, and employ information to make informed health-related decisions. The latter examines how organizations equitably enable individuals to develop their own personal health literacy (DHHS et al., 2022).

The third priority area, social determinants of health, refers to "conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks" (DHHS et al., 2022). They consist of five domains: economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context. Examples of the social determinants of health are fair housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; nutritious foods and physical activity; polluted air and water; and language and literacy skills (DHHS et al., 2022).

The three priority areas—health equity, health literacy, and social determinants of health—help structure the objectives of Healthy People 2030. Those areas can be analyzed through a

structure-agency lens (Cockerham, 2005; Williams, 2003) to identify how much of the context and the personnel will determine health outputs and outcomes. Health disparities and social determinants of health mainly emphasize social structures and individual/community conditions that limit people's abilities to achieve health and well-being. They are structural factors that explain how much the health status, economic progress, and social advancement among groups, such as ethnic/racial minorities, are determined by their context and social structures, and how much of those conditions transfer from one generation to another (social reproduction) (Burton, 2014).

For instance, it is estimated that it takes three to five generations to break the cycle of poverty (NCSL, 2018). Poverty is defined by Healthy People 2030 as "a multifaceted issue that requires being addressed from multiple directions." Two of those facets challenging access to educational and employment opportunities perpetuate the cyclical effects of poverty. In the U.S., where there is not a national health care system but a health care market, poverty limits people's possibilities to obtain health insurance and/or pay for expensive treatments and medications (DHHS et al., 2022).

Addressing structural racism to improve the health and well-being of individuals and communities requires creating a research agenda that considers historical roots, current policies, other structural factors, and the ways to measure them.

Another structural factor, when it relates to race and ethnicity, is known as structural racism, which is defined by the National Academy of Science, Engineering, and Medicine (NASEM) as "the public and private policies, institutional practices, norms, and cultural representations that inherently create unequal freedom, opportunity, value, resources, advantage, restrictions, constraints, or disadvantage for individuals and populations according to their race and ethnicity both across the life course and between generations" (NASEM, 2022, p. 1).

Addressing structural racism to improve the health and well-being of individuals and communities requires creating a research agenda that considers historical roots, current policies, other structural factors, and the ways to measure them (NASEM, 2022).

On the other hand, it is frequently assumed that just promoting healthy choices and making informed decisions (agency component) eliminate health disparities and overcome limiting systemic conditions such as structural racism. Nevertheless, public health organizations and partners in sectors such as education, transportation, housing, and primary health care need to take action to tackle and improve adverse circumstances in people's environments (DHHS et al., 2022).

In this context, the access to primary care and screening programs without bilingual health services could negatively affect Hispanic/Latino patients (particularly, children and elderly), including their health outcomes and quality of life. Having non-differentiated data could mask

causes of poor health and persistent poverty. Among environmental conditions, poor air quality for people living in industrial urban areas, which is often the situation of Hispanics/Latinos, affects their health by exposing them to pollutants such as chlorine, aluminum, and carbon. Likewise, Hispanics/Latinos are more likely to work long-shift jobs (e.g., agriculture and construction) that expose them to adverse weather conditions, which is detrimental to their health and quality of life. There is also residential segregation toward racial/ethnic minorities in neighborhoods with good school districts, perpetuating the cycle of poverty and poor quality of life (DHHS et al., 2022; Lopez et al., 2022).

Differentiated Data Collection to Inform Research

The previous section described how the U.S. Census Bureau has been reviewing and updating ways to define, classify, and count racial/ethnic groups in order to provide accurate data for decision-making (Pratt et al., 2015). For around five decades, the Census Bureau has carried out content tests to investigate and adjust the characteristics and purpose of different questions, including those on race and ethnicity.

Currently, data are based on self-identification, and their collection follows the guidelines of the U.S. Office of Management and Budget (U.S. Census Bureau, 2022a). Recent data collection updates differentiated between race and ethnicity (Hispanic and not Hispanic) and created subcategories to specify different Hispanic origins (HRSA, 2020; Rouan, 2021).

The National Institutes of Health funded the “All of US” research program, which explores the relationship between lifestyle, environment, and genetics. All of the U.S. is collecting health data of one million people to obtain more differentiated data of the population. Subsequently, more specific population data will render faster, more efficient medical products, innovations, and advances (Mapes et al., 2020).

UNDERSTANDING ORAL HEALTH OUTCOMES

Oral Health Outcomes Framework

The HDART developed a framework for understanding how different elements in this report act in dissonance or consonance to impact the outcomes described. This complex interaction is hardly discussed in an integrated way. Instead, statistical figures for different elements of oral health status and utilization of dental services are provided without integration. Figure 6 offers an approach to evaluate the personal, social, and commercial determinants in the utilization of dental services and the oral health outcomes included in the other sections of this report.

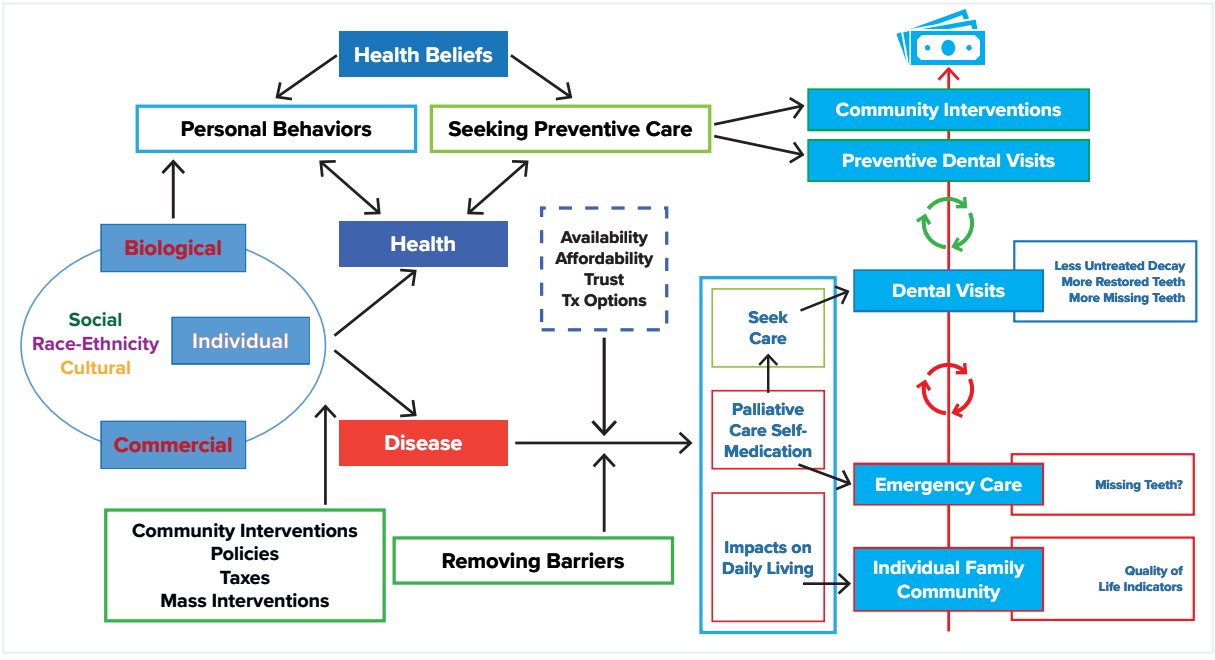


Figure 6. HDART Framework for Understanding Oral Health Outcomes

The left side of Figure 6 represents how biological, social, and commercial determinants influence personal and cultural factors to produce dental disease. Also, the figure highlights the effect of personal (beliefs) and community interventions affecting disease occurrence and barriers and facilitators for seeking dental care once the need is perceived. Seeking dental care is influenced by barriers and facilitators described in the literature, from access to payment for services.

All outcomes, from community interventions to impacts on daily living, can be assigned a monetary value and help to assess the burden of disease at the family, community, and national levels.

The integrated combination of such elements affects what type of care—preventive, curative, or palliative—is sought and how they are represented in clinical outcomes. All outcomes, from community interventions to impacts on daily living, can be assigned a monetary value and help to assess the burden of disease at the family, community, and national levels.

For example, a child from a family with the economic resources to receive regular dental visits because of beliefs, availability, affordability, and trust will use preventive dental services, have more preventive visits, receive more sealants, and have lower caries experience (treated lesions) and fewer untreated lesions. On the other hand, a child from a family living in poverty with no availability, affordability, or trust will seek palliative or emergency care, which eventually will lead to more missing teeth for lesions not receiving earlier appropriate care.

The graph also includes the effect of community interventions in preventing disease, providing care when present (dental workforce), and reducing the burden of disease. Although some of these interventions, such as taxes on sugary products or restricting access to such products—an attempt to address the commercial determinants of health and disease—show a direct effect on health outcomes, these have not yet been described with sufficient rigor in the literature.

The model has several limitations, including timeliness, patterns in health care access, and morbidity trends, among others. For our analysis, however, the model can serve to demonstrate some of the inequities in oral health status and utilization of dental services.

UTILIZATION OF DENTAL SERVICES IN THE UNITED STATES AT THE NATIONAL LEVEL

The utilization of medical and dental services represents an essential aspect of health, that is, the person's interaction with the medical care system and how those interactions are financed. Furthermore, the utilization of health services, through barriers and facilitators, is influenced by personal, family, and community beliefs and molded by cultural and societal values. The policies of Universal Health Services and Essential Health Services assume the population's access to essential preventive and curative care, including rehabilitation of sequelae, with no additional burden to the recipient, dental and oral care included (Benzian et al., 2021; Lopez et al., 2022).

Dental visits, a proxy for utilization of dental services, are an essential and complex health indicator. Various national and state data efforts have been used to measure it. The current recommendation in the U.S. is to have at least one dental visit per year (Health People 2030), with its frequency increasing as the risk of disease or need for treatment demands. At the national level, dental visits are measured by the NHANES, the NHIS, and the Medical Expenditure Panel Survey MEPS. Additionally, the BRFSS measures dental visits at the state level, the YRBSS among high schoolers, and the PRAMS among pregnant women, while the NSCH monitors dental utilization in selected populations. In this report, we consider the estimates of dental visits in NHANES by age and race/ethnicity.

Published estimates on dental utilization for the U.S. population from NHANES, NHIS, and MEPS do not necessarily agree. For example, Macek, Manski, Vargas, and Moeller compared NHANES, NHIS, and surveys sponsored by the Agency for Health Research Quality (AHRQ), including MEPS, and reported differences of up to 15 percentage points (Macek et al., 2002). In their report, 60% and 64% of adults in NHIS had dental visits in 1986 and 1993, respectively. In contrast, two AHRQ surveys in 1987 and 1996 reported 47% and 45% of adults had dental visits, respectively. The differences between data sources were explained by recall bias (three to four months versus one year), leading and following questions in the instrument, and social desirability. Despite the overall differences, Macek et al. concluded that the sociodemographic differences remained the same in each data source (Macek et al., 2002).

NHANES and NHIS interviews include questions regarding the time of the participant's last dental visit. Up to 2018, both surveys included all dental visits to dentists and dental hygienists. In 2019, NHIS changed the question to examinations and cleanings (preventive visits). In NHANES, the question is asked in the dental section of the home interview.

In NHIS, the question about dental visits is included among health encounters with other medical specialties. Data for NHIS have been included in the National Center for Health Statistics (NCHS) report. The estimates for 2018 were 86% in children aged 2–17 and 66% in adults aged 18–64 (CDC, 2022).

NHANES data are routinely reported in National Center for Health Statistics publications such as Vital and Health Statistics and Data Briefs. The most recent publication (2019 data) among adults 18–64 reported 63% having dental visits (Cha & Cohen, 2022). The report described inequities by race/ethnicity. Non-Hispanic Asian and White adults reported 68% and 70% dental service utilization, compared to 61% among non-Hispanic Black adults and 59% among Hispanic adults.

Since 1996, the Agency for Healthcare Research and Quality (AHRQ), within the U.S. Department of Health and Human Services (USHHS), has sponsored the MEPS and followed previous efforts to collect medical encounters and expenditures in a representative sample of the U.S. population. Data from MEPS is currently used to monitor specific Healthy People National Objectives.

A 2006 evaluation of MEPS data by NIDCR reported that 42% of non-institutionalized U.S. adults 18 years and older had a dental visit in the previous year (Christian et al., 2013). In this report, 23% of Hispanic and 28% of non-Hispanic Black adults had a dental visit in the previous year, contrasted with 49% among non-Hispanic White participants. A more recent report on race/ethnic differences in utilization of dental services among adults aged 18–85 years (Zhang, 2016) used MEPS data from 2012. Zhang showed that non-Hispanic Black, Hispanic, and other participating minorities were less likely than non-Hispanic White participants to have a dental visit after adjusting for demographic and socioeconomic factors. There were methodological differences between Zhang's 2016 report and other MEPS reports. For example, Zhang used the dental file (see methods below) to estimate "general" visits, including examinations, prophylaxis, X-rays, fluoride treatment, space maintainers, and sealants. Thus, the estimate of those having a dental visit (29%) was below that of other MEPS reports. From the data provided in the publication, we estimated that 40% of non-Hispanic White, 21% of non-Hispanic Black, and 18% of Hispanic participants had a general dental visit the previous year. Unfortunately, Zhang's estimates were not directly comparable to Christian et al. (2013). However, both analyses showed that racial/ethnic differences in the utilization of dental services persisted over the 2006–2012 period.

Thus, a comparison of NHANES, NHIS, and MEPS data shows a lack of agreement among data systems, where NHIS reports the highest proportion of dental utilization while MEPS reports the lowest. In agreement with Macek et al.'s evaluation, it seems that the systems can detect inequalities by race and ethnicity.

EMERGENCY DEPARTMENT VISITS FOR NON-TRAUMATIC DENTAL CONDITIONS

Hospitals play an essential role in the delivery of acute ambulatory and inpatient care. Inpatient and outpatient care have differences in scope and type of services. Usually, inpatient care requires a patient to stay in a hospital overnight and to be monitored by a health care team in a hospital throughout treatment and recovery. Outpatient care or ambulatory care does not require hospitalization (DHHS & AHRQ", 2001).

While the U.S. health care system is changing in response to economic, clinical, cultural, and political influences, the role of the emergency departments (EDs) is also changing in its shift to serving the patients who cannot get health care elsewhere (Morganti et al., 2013). Hispanics, the largest racial/ethnic group in the U.S. (U.S. Census Bureau, 2021d), experience a higher prevalence of dental diseases, more barriers to access oral health care and education, less ability to afford oral health care, and limited or no oral health insurance coverage for basic diagnostic, preventive, and treatment services (Castañeda et al., 2010; Tomar et al., 2016). Consequently, although EDs usually do not provide regular dental services to the public, the use of EDs has become the first and last resort for many Hispanics and other minority groups seeking long-delayed dental care (Lopez et al., 2022).

The ED visits for Non-Traumatic Dental Conditions (NTDCs) might be prevented with early detection and intervention to reduce the progression of dental diseases to a more severe form (Allareddy et al., 2012). Moreover, most EDs lack adequate equipment, dental supplies, and trained staff to diagnose and treat dental diseases. Patients seeking non-traumatic oral and dental care at the EDs may be better served in dental settings where consistent and definitive care can be provided (Okunseri et al., 2012).

Treating NTDCs in hospital settings can cost far more than a routine dental visit, averaging $1,887 per visit and costing the U.S. health care system $3.4 billion annually (CareQuest Institute for Oral Health, 2022). Using EDs for the treatment of NTDCs is a growing challenge for the U.S. health care system, with costs and clinical practice implications (Morón et al., 2019; DeLia et al., 2016).

UNDERSTANDING THE LINK BETWEEN ORAL HEALTH AND BIRTH DEFECTS

Birth defects affect approximately 1 in 33 newborns and are a leading cause of infant mortality in the U.S. (CDC, 2008; Heron et al., 2009). Given the heterogeneity of the U.S. population, it is important to understand how birth defects are affecting different racial/ethnic communities.

Birth defects are generally referred to as abnormalities of structure, function, or metabolism/body chemistry present at birth that result in physical or mental disabilities or death. Most states (44 states and Puerto Rico) have a type of birth defect surveillance system. Surveillance data are used to detect birth defect trends, suggest areas for further research, and link people to needed services. States also report data to the National Birth Defects Prevention Network (NBDPN, 2022).

Cleft lips and palates are a form of birth defect that impacts oral health. Children born with cleft lip have the highest survival rates in Iowa and the lowest in Kentucky. For children born with cleft palate, or with both cleft lip and palate combined, the highest survival rate is found in Maine and the lowest in Maryland. These findings underscore the importance of assessing differences in the prevalence of cleft lips and palates across Hispanic subgroups. (NBDPN, 2022; PeriStats™, 2022).

Health disparities in both prevalence and survival are well described in non-Hispanic Black as well as Hispanic children with birth defects compared with non-Hispanic White children (Broussard et al., 2012; Lopez et al., 2018; CDC, 2010). Health disparities exist in birth defects, and specifically in cleft lip/palate, especially reviewing data between states and comparing between race/ethnicity groups.

DENTAL WORKFORCE

Increasing diversity in oral health care providers can promote or enhance the ability of the oral health workforce to effectively provide optimum care for the most vulnerable populations in the U.S.

Racial and ethnic disparities in health care are known to determine access to care and other issues that arise from differing socioeconomic conditions. There is, however, increasing evidence that even after such socioeconomic differences are accounted for, race and ethnicity remain significant predictors of the quality of health care received. Increasing diversity in oral health care providers can promote or enhance the ability of the oral health workforce to effectively provide optimum care for the most vulnerable populations in the U.S.

Blacks, Hispanic/Latinos, and American Indian/Alaska Natives have a disproportionally lower presence in the dental workforce compared to the U.S. population overall and are cumulatively referred to as underrepresented minorities (URM) (Lopez et al., 2022).

The majority of the state dental examining or licensing boards do not capture demographic data. For the purposes of this project, we have searched for alternative sources such as data from the State Dental Associations and the American Dental Association (ADA).

We have noticed that there is no consistency or requirement to capture demographic data. Clear guidance from the federal and state health agencies is required. At a minimum, gender, race, and ethnicity of patients should be captured using the definitions from the Office of Management and Budget (OMB) and the U.S. Census Bureau.

In 2021, Hispanic individuals continue to be underrepresented among dental professionals nationally.

According to the 2020 U.S. Census, Hispanics represent 18.5% of the total population in the U.S. (about one in every five people are Hispanic). However, in 2021, Hispanic individuals continue to be underrepresented among dental professionals nationally, representing approximately 6% of U.S. dentists and 10.7% of dental hygienists (Lopez et al., 2022). This data in 2021 matches the 6% of Hispanic dentists reported by HRSA in 2017, showing no improvement since 2017. A similar trend of underrepresentation is observed among other Hispanic health care professionals (i.e., physicians, nurses, and pharmacists).

A review was performed by the HDART to ascertain the effects of allied dental and midlevel provider models on Hispanic oral health and was guided by four focus areas: training and workforce trends in the profession of dental hygiene (including expanded scopes of practice); training and workforce trends for dental assistants, dental therapists, and community health care workers; an overview of dental team members in the U.S. and the impact, if any, on provision of professional oral health services to Hispanic populations; and a professional vision to improve the number of Hispanics in dental teams, especially registered dental hygienists (Cahoon et al., 2023).

Dental hygiene, dental assistants, and dental therapy models have been utilized for over 100 years, and the trend toward expansion of scopes of practice was shown. The evidence shows that these provider models have been utilized by different states to provide care to underserved populations, but none of the reviewed studies were done specifically to ascertain the effects on Hispanic populations (CHWS, 2012; Mertz, 2021).

PUBLIC POLICY AND ORAL HEALTH MILESTONE 1900–2022

The HDART built a Policy Change Timeline monitoring all public policies, rules, norms, and guidelines promulgated by federal and state institutions, which have been able to improve or limit access to oral health services since 1900. This exercise was developed as a reference for current and future policymakers and stakeholders in order to show possible gaps in our policy frameworks and the possible solutions based on what has already been achieved.

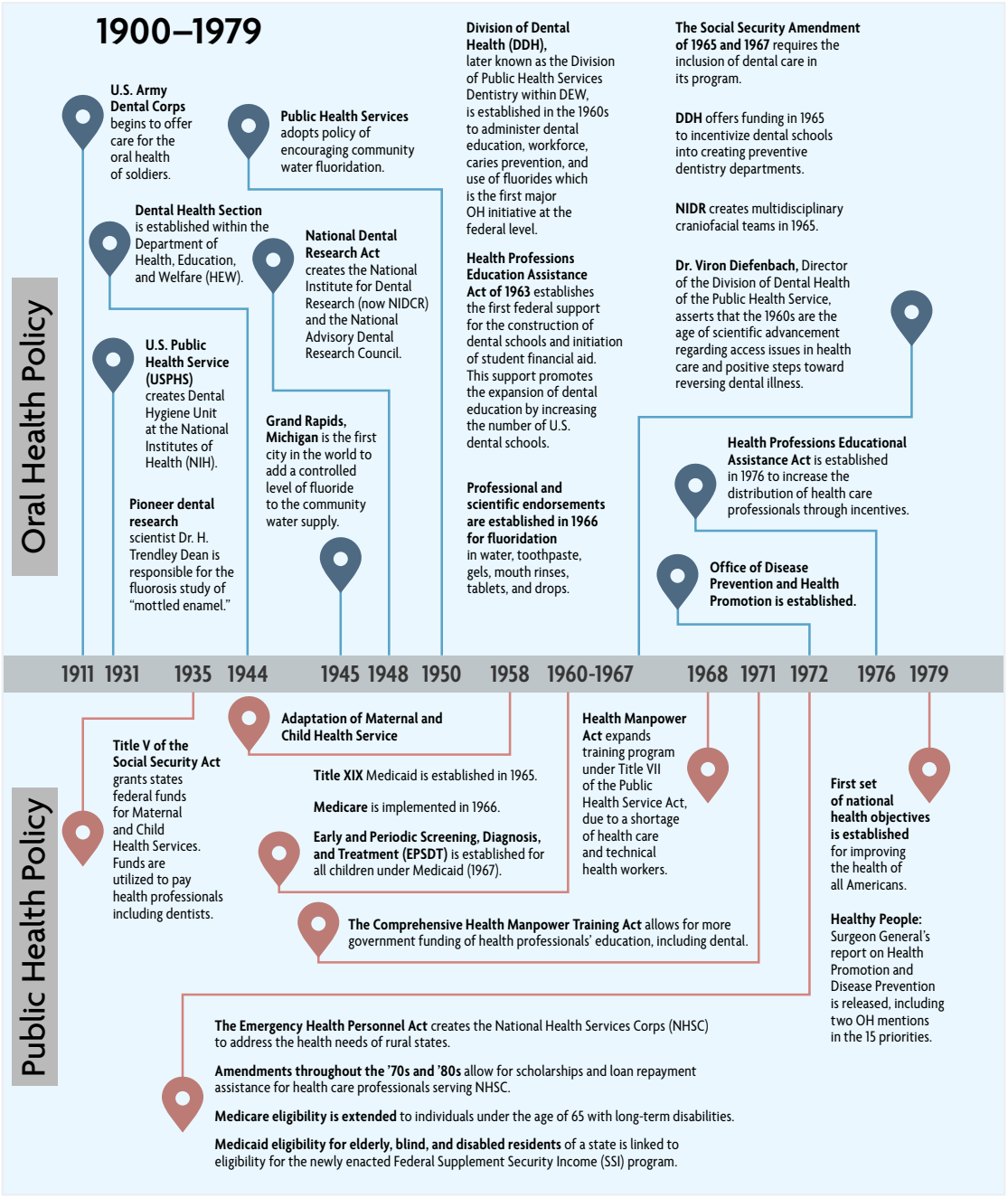


Figure 7. Policy Change Timeline Part 1: 1900–1979

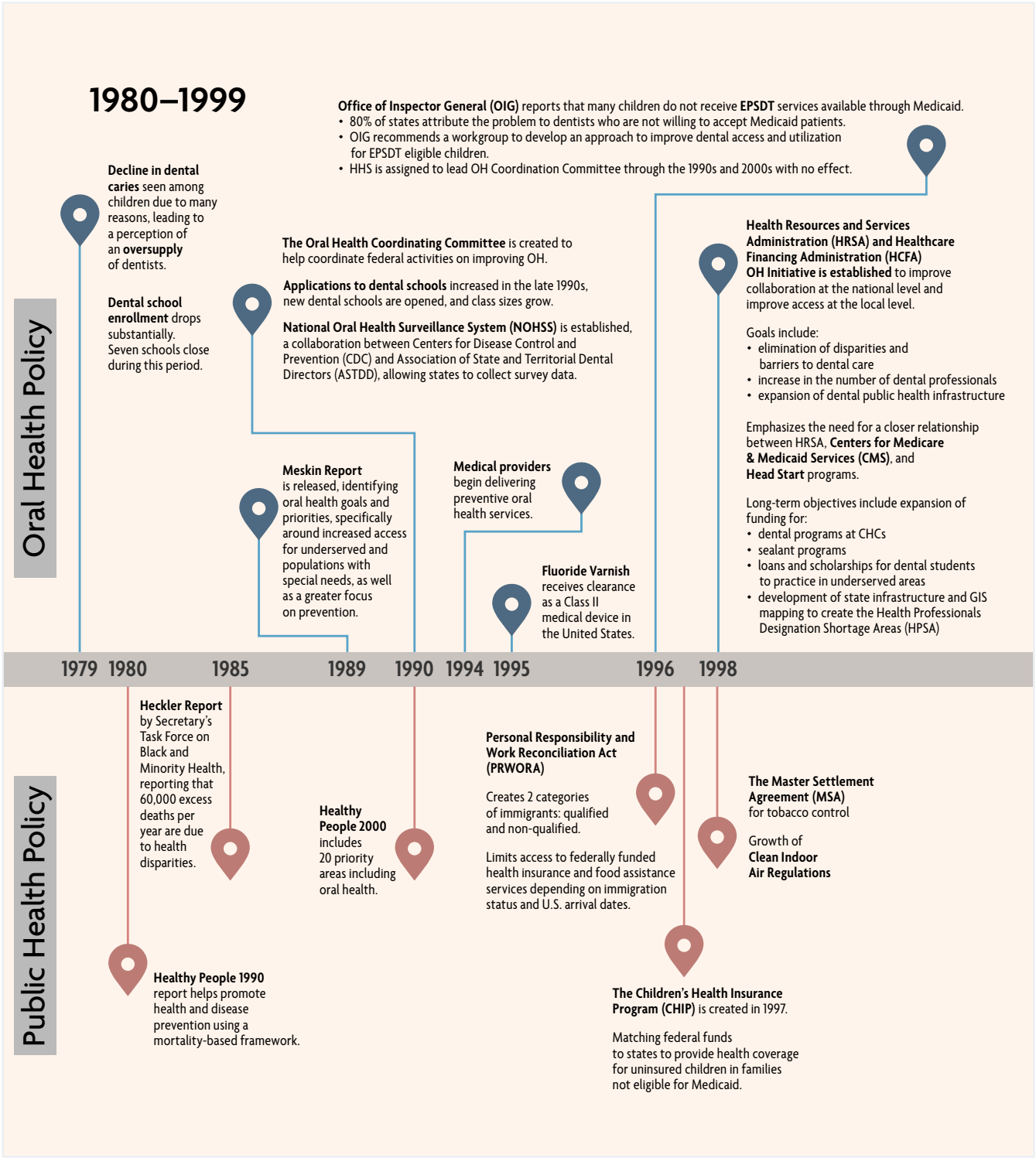


Figure 8. Policy Changes Timeline Part 2: 1980–1999

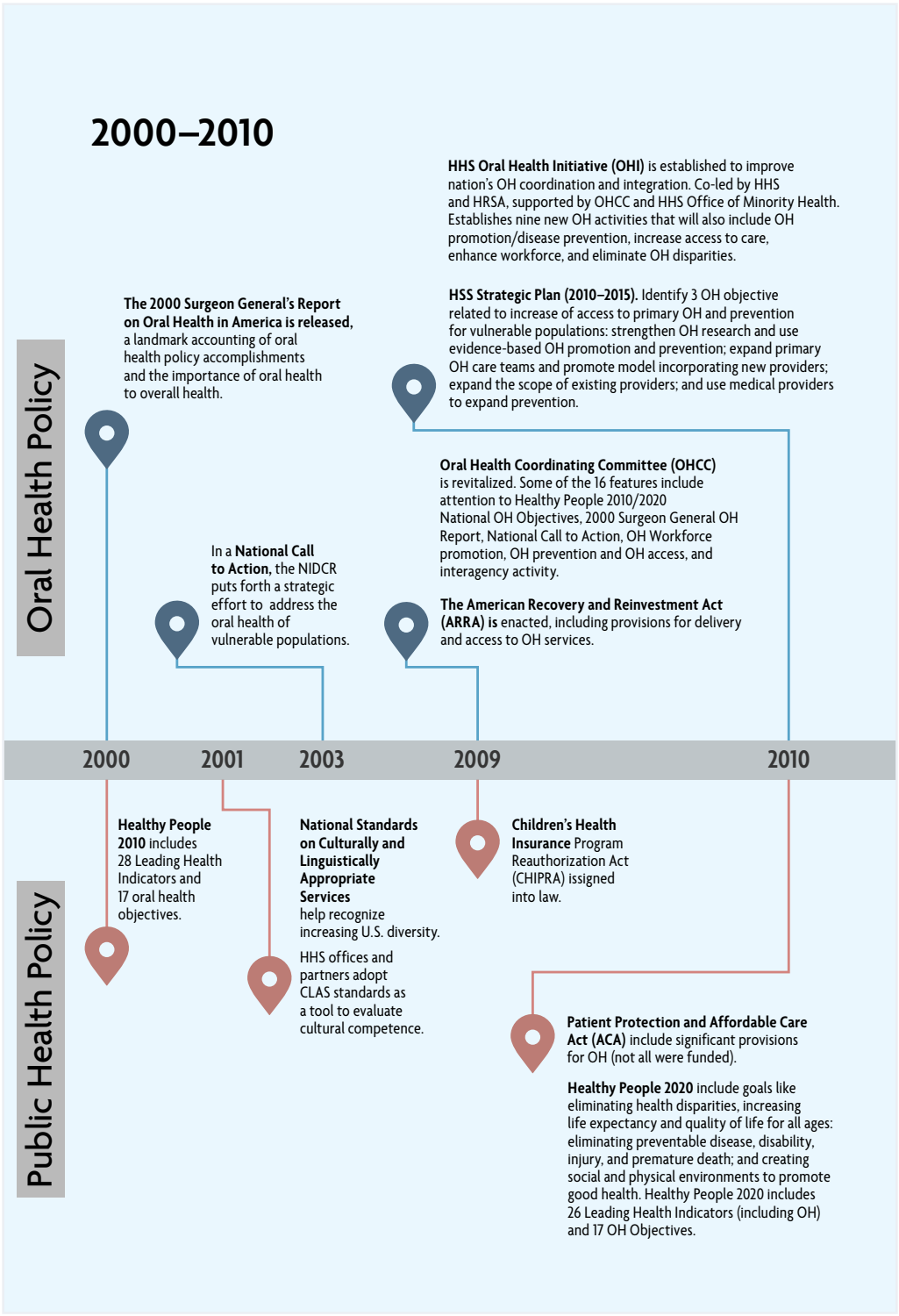


Figure 9. Policy Changes Timeline Part 3: 2000–2010

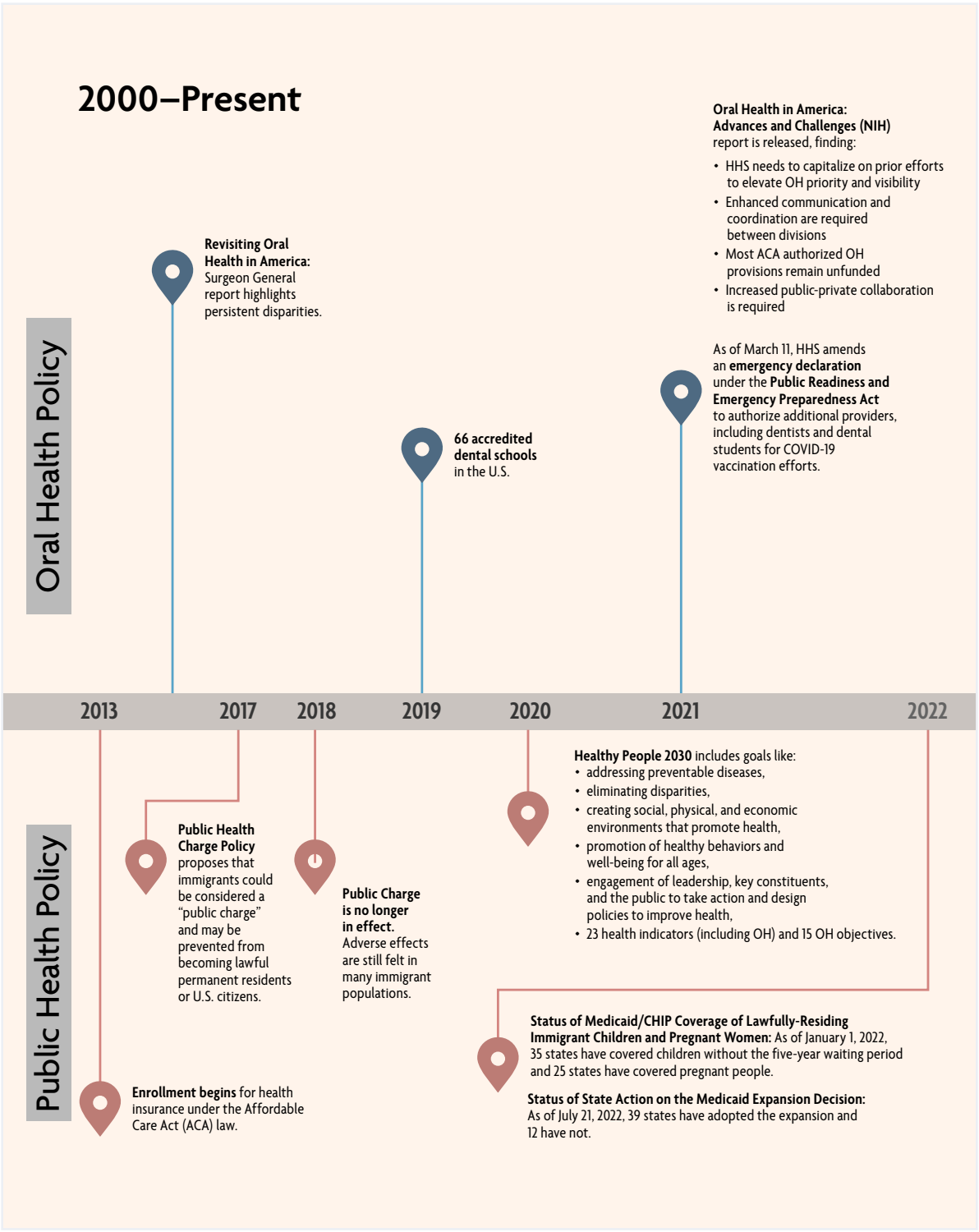


Figure 10. Policy Changes Timeline Part 4: 2001–2022

RECOMMENDATIONS FOR BETTER ORAL HEALTH POLICY CHANGES

The Hispanic Dental Association included more than 63 collaborators— including senior experts, researchers in public health, dental and dental hygiene students, and academic advisors from Dental Schools and Dental Hygiene Schools—to analyze the key findings of our secondary data analysis. All of them provided synchronous and asynchronous feedback from their areas of expertise. The HDA Research Team synthesized and organized this feedback, according to the main areas defined in the research methodology.

Minority Research, Latinos, and Policy

- Latinos are the largest minority group in the U.S. The U.S. will be a majority-minority nation by 2045. Disaggregating groups in the coming Census will be essential. The stratification of Latinos in the Census and other vital data collection efforts is critical to better understanding disparities among Latino subgroups (Mexicans, Puerto Ricans, etc.).
- Currently, we can have stratification of Latino subgroups by origin and cultural roots at some level in national data, but stratifying even more can be very costly for Federal and State agencies. When we think about oral health trends in the Hispanic population, we know the issues of access to care, literacy, transportation, and language, among others. The investment should be in collecting more local data, identifying cultural aspects, and using simple standard tools available to communities. Local efforts should be the way to go, and the HDA can play an essential role in giving communities a voice and promoting the importance of these data collection efforts.

In the same way, publishing local interventions that have overcome the recognized obstacles to oral health care for Latinos is essential. These interventions rarely would be accepted for publication in other journals. The *HDA Journal* should get behind these community efforts.

- Having a network of practices within the HDA where you can do demonstration programs, such as preventive interventions, can help to produce and disseminate information.
- Wellness can be dramatically improved with focused oral health interventions and making the demonstration of effectiveness the blueprint for future projects.
- It is essential to understand the micro-cultures within the Latino community to address behavioral patterns in oral health.
- A crucial next step will be to develop a call to action to outline solutions. This report currently focuses on the problem, which is an essential first step. It is also necessary to understand the role of racism in accounting for the lack of access to care, education, and disparities in care.

Oral Health Status and Utilization

- National survey efforts present limitations in the capacity to analyze data by race, ethnicity, and poverty level. Surveillance should account for the diversity of the U.S. population to portray a more accurate picture of the populations facing more difficulties accessing oral health services.
- Data collection for Hispanics/Latinos does not represent the heterogeneity of this population. Future surveillance efforts should account for the multiple backgrounds and ethnicities of the Latino population in the U.S.
- National data is essential, but in many ways, it feels disconnected from the people on the ground. Access issues could be very different from state to state. To understand these dynamics better, it will be essential to collaborate with private partners at the local level. Collaboration with multiple stakeholders, such as industries, government, and private partners, will be necessary. We need to get down to the community level where we can see the story.
- It is essential for clinicians and public health workers to understand the effects of the Social Determinants of Health (SDOH) on the oral health of Latinos in the country. Poverty indeed plays a role. It is not that clinicians are not educating patients or that patients do not want to change; it is that low-income communities do not have the resources to make the change. A good start will be to focus on studying the effect of SDOH on the 10 states with the highest Latino concentrations.
- Previous public health issues have taught us that we are ineffective in influencing the population's behavior changes as public health professionals. Therefore, to make a real impact on access to care issues, we need to locate patients' problems, understand environmental exposures and practice patterns, and identify things that can be altered to improve access to care.

- Increased funding is required to implement community oral health programs focusing on family approaches to decrease infant mortality/morbidity, low-birth-weight infants, high-risk teen pregnancies, and poor pregnancy outcomes, and to increase male responsibility.
- An essential next step will be to paint a picture of those states that are delivering positive outcomes to improve the oral health of minority populations and to compare them with those that are not doing this. In addition, it will be critical to link outcomes with workforce restrictions and implement innovative workforce models focusing on delivering patient-centered care.
- We should also consider developing appropriate American Public Health Association (APHA) policies regarding oral health and the Hispanic population, especially addressing the issue of increasing oral health education and access to care for pregnant people as a mechanism to promote better oral health in young children.
- The association between periodontal disease and diabetes is especially important among Latinos due to their high diabetes burden. More clinical studies are needed to explore this connection in the Hispanic population.
- We should also increase parents' and children's oral health education at schools. Learning from established programs implemented by states and school districts who have successfully implemented these efforts.
- There is a lack of information about the oral health of older Latino adults.
- Improving prevention programs and reducing the rates of untreated decay in Latinos should be a call to action.
- Future studies in oral Health Status should include a section on oral health literacy (OHL), as individuals with a low level of OHL are more likely to have higher rates of decay, higher rates of no-shows, lower rates of dental visits and knowledge about caries prevention, and lower quality of life. Researchers should focus on understanding better OHL among Hispanics by conducting surveys of oral health literacy among Hispanics, health care providers who treat Hispanics, and policymakers. A good start is to focus on at least three states with a high Latino population, such as California, New York, and Arizona. Results can be used to develop targeted interventions for the public and for health providers and policymakers.
- Dentistry needs to be more integrated into the primary care model to succeed. Integration is a critical and fundamental approach to tackling our current problems and providing equitable oral health care.
- Policy efforts and local partnerships with maternal health organizations should be made to ensure that pregnant women in all states have access to comprehensive dental care. There should also be partnerships with other organizations and advocacy groups to address the health care needs of undocumented immigrants.
- The treatment of oral diseases is a significant financial drain on health care resources, whether paid for directly or by the state. Such costs are a huge barrier to care for those with limited financial means. Inequalities in oral health are increased by the inability of the poor to afford good-quality dental services.

- Policies toward undocumented immigrants have caused some people to fear seeking any health care services. In order to increase the utilization of dental services among Hispanic children and adults, it will be essential to provide more community-friendly access opportunities, such as mobile and school-based dental services, in communities with high proportions of undocumented persons.
- People who work in the food processing industry as well as migrant farm workers should be eligible to get some health care benefits such as preventive dental care.

Emergency Department (ED) Visits for Non-Traumatic Dental Conditions

- Younger children (0–5 years of age) visit the ED at higher rates for dental conditions than others. Is this a reflection of the lack of pediatric dental services? What is causing this increased number of visits? Some possible causes are the misdistribution of providers, significantly affecting rural communities. We need to explore this further.
- There is a need to continue to elevate oral health as part of well-being, especially concerning younger children, as they visit the pediatrician or family doctor more often than the dentist.

In addition, general dentists need to work more closely with physicians and pediatric dentists.

- General dentists must have better training to treat young children and people with special needs. It is important to consider prevention as an equal partner in the treatment equation.
- Integration of medical/nursing and dental education is essential as well. An integrated oral health curriculum is not standard unless you get a grant. The ability to put the mouth back in the body in academia is necessary. You have to link oral health to medicine because if not, medical providers do not consider dentistry.
- There are limitations to the datasets available to analyze ED dental visits and how non-dental providers code the information. In addition, it is crucial to consider the pressure that smaller hospitals might have to use diagnostic codes with higher reimbursement rates compared to larger hospitals.
- Targeting data collection to understand the situation of specific groups might be necessary. Undocumented immigrants, for example, might find EDs as their only available source of care.
- Using credible messengers such as Community Health Workers (CHW) is essential to ensure successful treatment after visiting the ED.
- Sharing all these findings with policymakers who can make a change will be essential.
- Policies are associated with reimbursement. Value-based payment models are coming in the future, and the future guidelines must reflect that.

Workforce, Education, and Projections

- A strategy to increase workforce diversity in Florida was to follow a holistic process to evaluate dental school applicants at the state university instead of following the traditional application scoring.

- Efforts to increase workforce diversity should start at junior high and high school to build a career pathway program for minority students going into dental careers. The investment can take about 10 years to see a return.
- Identify earlier students with an aptitude for science, and work with other health career partners to expose those students to different pathways (medicine, nursing, dentistry).
- Building the career pathway for postdoctoral programs is very important as well.
- Looking at efforts such as the Building Our Leaders in Dentistry (BOLD) program, learning from successful pipeline programs, and looking at states doing current workforce studies could be some next steps.
- Increasing diversity in dental hygiene programs is critical, as is modifying the current GPA-based acceptance, because it poses more difficulties for a minority student to get in there.
- Cultural competency requirements at dental schools are nebulous. The HDA can lead in successfully developing or recommending programs to train culturally competent dentists.
- Develop a strategic action plan to increase diversity in the workforce, including partners such as Dentist for Health Equity, National Dental Association, ADEA, ADA, and others.
- There should be special emphasis on increasing faculty diversity at dental school so diverse faculty mentors can support minority students.
- There is a need for enhancements and consistency in cultural competence education for oral health professionals.
- Some state boards throughout the country require cultural competency CE credits, but there is wide latitude in the content of the courses. Developing a unifying cultural competency course that could be made available to practitioners nationwide could be a great way to start aligning important concepts and expectations. The course could be offered for free if grant funds could support this work (e.g., from HRSA).
- The increasing trend of first-year Hispanic dental students must continue to elevate the proportion of Hispanic practitioners in the future. Some possible interventions will be increasing private-public partnerships to provide scholarship funds to prospective students or increased advertising for National Health Service Corps opportunities (scholarship and loan forgiveness).
- Existing service delivery models (solo and group private practice, community health centers, school-based, and others) should be reviewed to assess the service utilization and workforce demographics for each model.
- In order to increase dental workforce diversity, businesses, foundations, and other private organizations should be encouraged to support health professions' schools and programs to increase the financial resources needed to implement the recommendations of the Sullivan Commission on Diversity in the Healthcare Workforce. The HDA BOLD program is an important example of these efforts.
- The existing configuration of oral health worker categories should be assessed to consider the potential for modifying current types to improve service efficiency and the quality of care (e.g., expanded-function auxiliaries).

- Also important for health professions is identifying innovative academic education and training programs (domestic and international) that operate through interdisciplinary academic-practitioner-community partnerships to graduate providers capable of delivering patient/family-centric, culturally competent primary care.
- To ensure the collection of representative data from all demographic groups, the development of consistent quality measures by state boards should be promoted.
- In states with high Hispanic populations, state boards should consider licensure pathways for foreign-trained dentists to increase a culturally competent dental workforce.

Allied Dental and Midlevel Oral Health Providers

- **Expand scopes of practice:** Establishment of scope of practice laws are politically driven and result in unnecessary limitations on professional practice. It has been shown that too many dentists are reluctant to allow dental hygienists and dental assistants to operate to the top of their license. These actions directly affect the quantity and quality of oral health care services provided, the impact of which is felt most by minority populations.
- **Regulate the dental hygiene profession:** There is a huge conflict of interest in the regulatory oversight of one profession by another. The HDART has identified an advance made by California in 2009 on this issue, and this could be adopted by other states. In 2009, California allowed self-regulation of the dental hygiene profession by the Dental Hygiene Committee of California (DHCC), regulating all dental hygiene licensees. DHCC is an example of a profession regulated by its own members and not by members of another profession.
- **Expand research opportunities:** The HDART identified limited research on the dental hygiene workforce, including aspirations, knowledge base, ethnicity, and professional efficacy. There are no general standards for the assessment of quality-of-care delivery, and very little data related to the delivery and use of oral health services is available. Increasing funding sources and amounts for research would provide the data necessary to make public health decisions. Funders should give priority to research proposals that focus on dental hygiene, dental therapy, and dental assistants.
- **Recruit and mentor minority students in allied dental programs:** Recruitment of URM students has historically been poor. There are many faculty and administrators who still do not understand the necessity of promoting racial and ethnic diversity. The Commission on Dental Accreditation (CODA) Standard 1-2 requires that each dental hygiene "program must have a stated commitment to a humanistic culture and learning environment," which includes "fostering diversity of faculty, students, and staff" (CODA, 2021).
- **Promote understanding of midlevel and expanded function providers among dentists:** The American Dental Association, with all its resources and talent, can do a great deal to educate dentists in all the states about the many allied dental workforce models to increase access and quality of services to minority populations.

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