ORAL HEALTH IN LOS ANGELES COUNTY

DISEASE BURDEN AND PREVENTION REPORT 2021

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH
ORAL HEALTH PROGRAM

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ORAL HEALTH IN LOS ANGELES COUNTY DISEASE BURDEN AND PREVENTION 2021

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Oral Health in Los Angeles County: Disease Burden and Prevention 2021.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Oral Health in Los Angeles County: Disease Burden and Prevention 2021 is a review of the oral health data and disease burden in Los Angeles County (LA County). The purpose of this report is to inform policy decisions, improve programmatic activities, and support future research and surveillance priorities for the Los Angeles County Department of Public Health Oral Health Program (LAC DPH-OHP) and for local oral health stakeholders. In addition to summarizing the state of LA County's oral health, this report also describes risk, protective, and accessibility factors that affect oral health outcomes. This document serves as a cross-sectional progress report for LA County with a focus on the metrics outlined in the California Oral Health Plan 2018-2028, developed by the California Department of Public Health, Office of Oral Health (CDPH-OOH).

KEY HIGHLIGHTS:

- Tooth decay is a significant health problem for children in LA County.
  - — Over 45% of kindergartners and 65% of 3rd graders have a history of tooth decay.
  - — Tooth decay is more common among children from socioeconomically disadvantaged households, children from Spanish speaking households, and among Asian, Black/African American and Latino/Latinx children.
- Tooth loss due to tooth decay or gum disease is an important health issue among adults.
  - — 40% of adults in LA County have had permanent teeth removed (pulled) due to tooth decay or gum disease.
- Many people in LA County are not getting regular and preventive dental care.
  - — Approximately 50% of children and 75% of adults enrolled in Medi-Cal Dental, did not have an annual dental visit.
  - — Less than 40% of women in LA County visited a dentist while they were pregnant.
  - — Children aged 1-2 years and Black/African Americans are most likely to visit an emergency room for a non-traumatic dental problem (439 and 656 visits per 100,000 people, respectively)
- There are opportunities to integrate and coordinate oral health care with other health, social, and environmental services.
  - — There were 4,762 cases of oral cavity (mouth) and pharynx (throat) cancer (9 cases per 100,000 people) in LA County between 2012-2016. The proportion of oropharyngeal cancers detected at the earliest stage (Stage 1) was 17% in LA County.

— Over 65% of adults diagnosed with diabetes visited a dentist at least once in 2019.

— In 2017, almost 90% of adults screened for tobacco use at community clinics with dental services had received smoking cessation counseling within the last year.

— 62% of LA County's 88 incorporated cities have optimally fluoridated tap water.

LA County has met or exceeded several of the national Healthy People 2020 target goals for oral health status, set by the United States Department of Health and Human Services, but oral disease and access to dental care can still be improved. Examples of future strategies to pursue with the joint efforts of LAC DPH-OHP's community partners and stakeholders include:

— Increasing the amount of high-quality oral health awareness activities provided to children and adolescents in LA County schools.

— Implementing proactive messaging to Medi-Cal recipients and providers in LA County so they are aware of the dental benefits available to Medi-Cal recipients.

— Developing new and innovative oral health service access points, such as tele-dentistry resources or additional mobile dental clinics, to better reach underserved populations.

— Instituting best-practices to promote collaboration among providers of oral health care and other health and social services to improve the oral health of Angelenos.

— Providing policy leadership and support for optimally fluoridated, safe drinking water for all Angelenos.

LAC DPH-OHP also strives to improve the accessibility of current data to the public through oral health surveillance maps, data dashboards, and other user-friendly reporting tools, to continually report the status of LA County's oral health issues and indicators addressed in this report.

INTRODUCTION

Oral diseases can impact the teeth, gums, inside of the throat, and the surrounding areas including lips and the nasal area. Without preventive measures or treatment regimens, threats to oral health such as tooth decay, root infections, gum disease, and oral cancers can lead to severe health problems including serious pain and loss of teeth (U.S. Department of Health and Human Services, 2000, 2016). The most common forms of oral disease are: dental caries (tooth decay), periodontitis (gum disease), and cancer of the mouth, lips, tongue, or throat.

Good oral health is more than just having healthy teeth in the mouth. Good oral health means being free of acute or chronic oral-facial pain, oral and pharyngeal (throat) cancers, and scores of other diseases and disorders that affect the oral, dental, and craniofacial tissues. A growing body of evidence demonstrates associations between oral health and overall health throughout life. Diabetes, cardiovascular diseases, and pregnancy-related complications are associated with oral diseases and infections (Kane, 2017). In the United States, the two most common oral diseases are dental caries (tooth decay) and periodontitis (gum disease). Although less common, cancers of the oral cavity and pharynx, and other oral health problems can severely affect general health and quality of life. Poor oral health impacts the person's ability to chew, speak and learn, and affects how we look and interact with others, sometimes creating low self-esteem or making it difficult to find jobs where public interaction is important. This report notes that oral health is integral to general health and stresses the importance of good oral health at both the individual and population level.

In 2000, the Surgeon General released *Oral Health in America* to encourage the development of national and state-level oral health plans and to highlight the association between oral health, general health and the well-being of all communities. Primary highlights of the report included the promotion of safe and effective measures to prevent common dental problems such as dental caries (tooth decay) and periodontitis (gum disease), and the issue of the profound and consequential oral health disparities among Americans (U.S. Department of Health and Human Services, 2000).

In 2010, the U.S. Department of Health and Human Services released the fourth generation of the *Healthy People* initiative, *Healthy People 2020*, emphasizing oral healthcare as a major objective for federal, state, and community agendas, as well as public and private-sector stakeholders, to strategically manage. As this decade's goals focused on themes of health equity that address social determinants of public health, it was stressed that the burden of oral diseases is heavily correlated with access and use of dental care (U.S. Department of Health and Human Services, 2018).

In 2017, California Department of Public Health, Office of Oral Health (CDPH-OOH) released *Status of Oral Health in California: Oral Disease Burden and Prevention 2017*. The report summarizes information available on the burden of oral disease in California and serves as a foundation for the development of the state oral health plan by describing the burden of oral disease in California, accessibility of dental services and California's oral health surveillance capacity.

In 2018, Los Angeles County Department of Public Health Oral Health Program (LAC DPH-OHP) received funding from California Tax Proposition 56, the California Healthcare, Research and Prevention Tobacco Tax Act of 2016, for the purpose and goal of educating about, preventing, and treating dental diseases, including oral diseases caused by using cigarettes and other tobacco products. Funded program activities include, but are not limited to education, disease prevention, treatment, surveillance, and case management. Using this funding, the LAC DPH-OHP established a Data Dashboard at their website, completed *Smile Survey 2020*, finalized the *LAC Water Fluoridation Status* and *LAC Dental Deserts* maps and completed many other surveillance activities. This report is another of LAC DPH-OHP's efforts in making oral health data more accessible to all oral health stakeholders.

The information in this report will present a comprehensive landscape of how prevention, treatment, and access to dental care affect the spread of oral diseases beyond the mouth. There are consequences to systemic health and health equity when oral diseases are not addressed in the communities and cities of LA County.

DATA RESOURCES AND DATA COLLECTION APPROACH

The California Department of Public Health, Office of Oral Health (CDPH-OOH), distributed the California Oral Health Plan in 2018, outlining the key goals, objectives, and strategies to achieve optimal oral health across the state. This report summarizes data that is pertinent to the vital strategies listed under the plan's objectives to inform baseline facts about each oral health indicator for LA County that CDPH-OOH is prioritizing over the next ten years. Indicators addressed in this report will also reference the key objectives and preliminary strategies of the Los Angeles County Community Oral Health Improvement Plan (COHIP). All indicators correlate with Objective 6 of the LA County COHIP, which is to track oral health determinants in LA County, and disseminate data to the public for further research and analysis. At the beginning of each section is a table presenting the Healthy People 2020 objectives, the California Oral Health Plan objectives, and the LA County COHIP relevant objectives and strategies.

Applicable metrics in this report are compared across Healthy People 2020 Oral Health target goals with national, state, and LA County data, when available. Primary sources of data are the Behavioral Risk Factor Surveillance System (BRFSS), the California Health Interview Survey (CHIS), the California Cancer Registry (CCR), Office of Statewide Health Planning and Development (OSHPD), the LA County Health Survey, the California Smile Survey, and the Centers for Disease Control and Prevention (CDC). Some of the comparative conclusions from this report are derived from varied data sources, and occasionally from different years, so the oral health indicator reported may not be comparable between national, state, and local data levels. Furthermore, the most recent, available data for a few of the oral health metrics reported may be more than ten years old, which serves as an additional limitation to this report. There was no actual or potential conflict of interest in relation to this report.

Since this is a comprehensive data report, an online Burden of Disease and Prevention Chartbook has been developed to present all of the available data found within this report. Data sections of the chartbook will be updated whenever more recent data becomes available. The chartbook is located on OHP's website at: http://publichealth.lacounty.gov/ohp/.

At the time of publishing this report, the U.S. Department of Health and Human Services released *Healthy People 2030 (HP2030)*, the nation's new 10-year roadmap for addressing our most critical public health priorities and challenges. *HP2030* combines age groups such that, in most cases, data from LA County cannot be directly compared to the *HP2030* national objectives. For this reason, we have included the *Healthy People 2020* objectives in this report.

ORAL HEALTH OF CHILDREN

I. DENTAL CARIES (TOOTH DECAY) EXPERIENCE

Table 1. Dental caries experience: national, state, and local objectives and strategies.

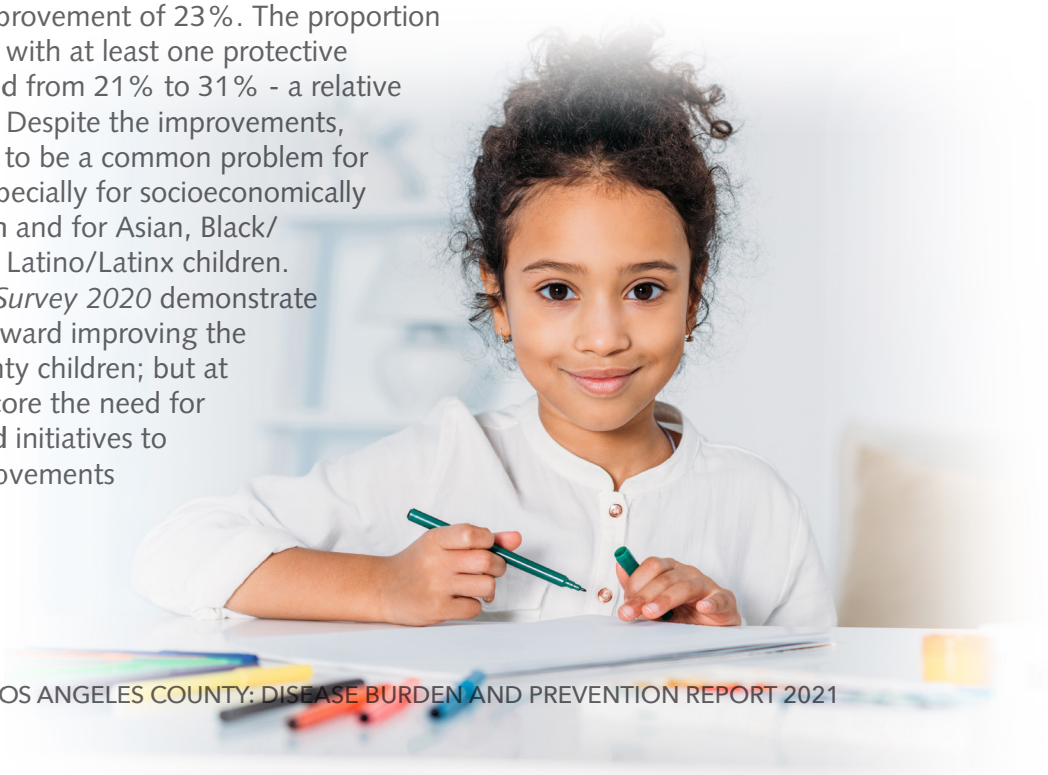
Healthy People 2020 Objective	• Reduce the proportion of children and adolescents who have dental caries experience in their primary or permanent teeth.
California Oral Health Plan Objective	• Reduce the proportion of children with dental caries experience and untreated caries.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Improved Access to Care: Improve access to oral health care by increasing providers' cultural and technical capacities, fostering trust between patients and providers, and reducing logistical barriers to care. • Coordination of Care: Strengthen systems of care by effectively integrating and coordinating oral health care with other health and social services.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Implement proactive messaging to Medi-Cal recipients and providers in LA County so they are aware of the dental benefits available to Medi-Cal recipients. • Increase awareness among other health and social service professionals of the importance of oral health to overall health and the ways they can address the oral health needs of their patients. • Develop new and innovative oral health service access points to better reach underserved populations. • Pilot innovative approaches to oral health care coordination and services and expand the use of evidence-based efforts. • Support the development and use of improved oral health referral systems.

Dental caries (tooth decay) is one of the most common oral diseases in the United States (U.S. Department of Health and Human Services, 2000). The American Academy of Pediatric Dentistry (AAPD) considers childhood dental caries to be a major public health challenge affecting the overall health and development of young children (American Academy of Pediatric Dentistry, 2020). People are vulnerable to dental caries throughout life, with 90 percent of adults aged 20-64 years affected (Centers for Disease Control and Prevention, 2019).

Dental caries is caused by a breakdown, of the tooth enamel by acids produced by bacteria located in dental plaque. This especially occurs along the gumline and in small spaces on the chewing surfaces of the teeth. Foods and drinks high in carbohydrates cause these bacteria to produce the acids that can cause the outer coating of the tooth (enamel) or root surface to break down (U.S. Department of Health & Human Services, 2016). Children with untreated tooth decay can experience unnecessary pain, difficulty chewing, and difficulty speaking, which can impair a child's development and cause missed days at school (Pourat, 2009). Untreated tooth decay can lead to severe infections which can spread to the face and other parts of the body and have serious and painful results (U.S. Department of Health & Human Services, 2016).

Table 2 shows dental caries rates among children for specific age groups. Untreated dental caries rates among all children are similar across the nation, the state, and LA County, where roughly one out of four children are reported to have untreated tooth decay. The first comprehensive assessment of California children's oral health was conducted in 2005, with a report published in 2006. The first assessment of children's oral health in LA County, the *Smile Survey 2020*, was conducted during 2018-2019 on over 10,000 children in 72 schools. The percentage of LA County kindergarteners and third graders with evidence of current or previous tooth decay decreased from 66% to 55% - a relative improvement of 17%.

Similarly, the percentage of children with untreated decay decreased from 26% to 20% - a relative improvement of 23%. The proportion of third grade children with at least one protective dental sealant increased from 21% to 31% - a relative improvement of 48%. Despite the improvements, tooth decay continues to be a common problem for LA County children especially for socioeconomically disadvantaged children and for Asian, Black/ African American, and Latino/Latinx children. The findings of *Smile Survey 2020* demonstrate substantial progress toward improving the oral health of LA County children; but at the same time underscore the need for new strategic, targeted initiatives to accelerate future improvements and reduce disparities.



Studies have shown that tooth brushing with fluoride-containing toothpastes reduces the formation of cavities by about 24% when compared to brushing with non-fluoridated toothpastes. In 2019, a review of approximately 62,000 children brushing with toothpaste, showed that toothpaste containing 1000 to 1250 ppm fluoride reduces the amount of new decay when compared with using non-fluoridated toothpaste (Walsh, Worthington, Glenny, Marinho, & Jeroncic, 2019). Community water fluoridation, discussed later in this report, is also a safe and effective method for preventing dental caries. Water fluoridation benefits all residents served by community water supplies regardless of their social or economic status. Lastly, the use of fluoride mouth rinses, gels, and varnishes, plus the application of dental sealants, are additional means of preventing dental caries (U.S. Department of Health and Human Services, 2000).

Table 2. Prevalence of dental caries experience and untreated tooth decay across the U.S., California, and Los Angeles County.

	Healthy People 2020 Objective U.S. Target (%)	United States 2013-2016 (%)[a]	California 2018-2019 (%)[b]	Los Angeles County 2020 (%)[c]
History of dental caries in children, aged 3-5 (primary teeth)	30.0	27.9	NA	46.8
History of dental caries in children, aged 6-9 (primary and permanent teeth)	49.0	51.6	60.9	64.7
Untreated dental caries in children, aged 3-5 (primary teeth)	21.4	11.9	NA	18.8
Untreated dental caries in children, aged 6-9 (primary and permanent teeth)	25.9	15.5	21.9	20.7

a National Health and Nutrition Examination Survey 2013-2016, https://www.healthypeople.gov/2020/data-search/
b California Smile Survey, 2018-2019, 3rd grade when compared to children aged 6-9 years
c Los Angeles County Smile Survey 2020, kindergarten when compared to children aged 3-5 years and 3rd grade when compared to children aged 6-9 years

II. DENTAL SEALANTS

Table 3. Dental sealants: national, state, and local objectives and strategies.

Healthy People 2020 Objective	• Increase the proportion of children and adolescents who have received dental sealants on their molar teeth.
California Oral Health Plan Objective	• Increase the percentage of children, ages six to nine years, who have received dental sealants on one or more of their permanent first molar teeth.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Improved Access to Care: Improve access to oral health care by increasing providers' cultural and technical capacities, fostering trust between patients and providers, and reducing logistical barriers to care. • Coordination of Care: Strengthen systems of care by effectively integrating and coordinating oral health care with other health and social services.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Increase the amount of high-quality oral health awareness activities provided to students from pre-K to high school in LA County schools. • Implement proactive messaging to Medi-Cal recipients and providers in LA County so they are aware of the dental benefits available to Medi-Cal recipients. • Develop new and innovative oral health service access points to better reach underserved populations. • Design, develop, and promote resources that will assist dental teams to provide care that is culturally and linguistically sensitive and that will promote trust and transparency with the communities they serve. • Pilot innovative approaches to oral health care coordination and services and expand the use of evidence-based efforts.

Dental sealants are dental materials that are applied to the top surfaces (pits and fissures) of the back teeth. Penetrating the pits and fissures and then hardening, dental sealants act as physical barriers to inhibit the spread of bacteria. Researchers conducted the first clinical trials in the late 1960s and early 1970s using a variety of materials, and today there are multiple commercially available and safe sealant products to prevent tooth decay in children and some adults (Wright, 2016). Placing sealants on permanent molars shortly after they appear in the mouth (usually around ages 6 and 12) protects these teeth from the development of caries in areas of the teeth where food and bacteria build up.

The results of 23 research studies on dental sealants suggest that children and adolescents who receive sealants, compared with control groups without sealants, experience over a 75% reduction in the risk of developing cavities after two years of follow-up (Wright, 2016). After seven or more years of follow-up, children and adolescents with sealants had a dental caries rate of 29%, whereas those without sealants had a caries rate of 74% (Wright, 2016).

As Table 4 indicates, for children ages 6-9 years, the current national prevalence of sealants exceeds the HP2020 objective. The prevalence of sealants in LA County is below that of California (both 2018-2019) as well as the national prevalence (2013-2016), which indicates there is a need for increasing awareness on the benefits of dental sealants for this age group.

Table 4. Prevalence of dental sealants on permanent molars across the U.S., California, and Los Angeles County.

	Healthy People 2020 Objective U.S. Target (%)	United States 2013-2016 (%)[a]	California 2018-2019 (%)[b]	Los Angeles County 2020 (%)[c]
Dental sealants in children, aged 6-9 (permanent first molars)	28.1	38.2	37.0	30.5

a National Health and Nutrition Examination Survey 2013-2016, https://www.healthypeople.gov/2020/data-search/
b California Smile Survey, 2018-2019, 3rd grade when compared to children aged 6-9 years
c Los Angeles County Smile Survey 2020, 3rd grade when compared to children aged 6-9 years

ORAL HEALTH OF ADULTS

III. TOOTH LOSS

Table 5. Tooth loss in adults: national, state, and local objectives and strategies.

Healthy People 2020 Objective	• Reduce the proportion of adults who have ever had a permanent tooth extracted because of dental caries or periodontal disease.
California Oral Health Plan Objective	• Reduce the proportion of adults who have ever had a permanent tooth extracted because of dental caries or periodontal disease.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Improved Access to Care: Improve access to oral health care by increasing providers' cultural and technical capacities, fostering trust between patients and providers, and reducing logistical barriers to care. • Coordination of Care: Strengthen systems of care by effectively integrating and coordinating oral health care with other health and social services.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Implement proactive messaging to Medi-Cal recipients and providers in LA County so they are aware of the dental benefits available to Medi-Cal recipients. • Foster collaborative community partnerships among public, private, and nonprofit organizations to raise the oral health awareness of County residents of all ages. • Develop new and innovative oral health service access points to better reach underserved populations. • Design, develop, and promote resources that will assist dental teams to provide care that is culturally and linguistically sensitive and that will promote trust and transparency with the communities they serve. • Support the development and use of improved oral health referral systems.

For adults, treating gum disease and tooth decay, earlier rather than later, can prevent tooth loss. Eating and speaking abilities decrease significantly as teeth are lost, which can interfere with having a satisfactory quality of life. In addition, people with multiple missing teeth may have limited food choices because of chewing problems, making it difficult to make healthy food choices.

Periodontal disease, or periodontitis, is an infection and inflammation affecting the tissues and bone that support teeth, also known as gum disease (American Dental Association, 2017). Bacterial infection from approximately 800 species of bacteria inside the mouth that live in plaque, modified by behavioral factors such as smoking and hygiene practices, can cause periodontal disease (Nazir, 2017). As gum disease and the infection progresses, tissues and bones that support the teeth are damaged and gums pull away from the teeth (American Dental Association, 2017).

Indicators of gum disease include gums that bleed when brushing or flossing, gums that are red, swollen, puffy or tender, and gums that no longer tightly hug the teeth (American Dental Association, 2017). Modifiable risk factors for periodontal disease include smoking, poor oral hygiene, hormonal changes in females, diabetes mellitus, diminished salivary flow due to certain medications, and stress (Nazir, 2017). Periodontitis has also been associated with coronary heart disease, stroke, peripheral artery disease, and rheumatoid arthritis, in addition to tooth loss (Nazir, 2017) (Sen, 2018). As Table 6 shows, adults across California and LA County had lower rates of tooth loss due to dental diseases than the nation.

Table 6. Prevalence of tooth loss across the U.S., California, and Los Angeles County.

	Healthy People 2020 Objective U.S. Target (%)	United States 2018 (%)[a,b]	California 2018 (%)[a,c]	Los Angeles County 2018 (%)[a,c,d]
Adults aged 45 to 64 years who have had any permanent teeth extracted due to tooth decay or gum disease	68.8	41.1	38.4	40.2
Adults aged 65 to 74 years who have lost all of their natural teeth	21.6	13.6	7.7	5.8

a Behavioral Risk Factor Surveillance System, 2018, 18+ years when compared to adults aged 45-64 years, 65+ years when compared to adults aged 65-74 years
b Crude prevalence
c Age-adjusted prevalence
d Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area

IV. DIABETES AND ORAL HEALTH BEHAVIORS

Table 7. Diabetes and dental examinations: national, state, and local objectives and strategies.

Healthy People 2020 Objective	• Increase the proportion of persons with diagnosed diabetes who have at least an annual dental examination.
California Oral Health Plan Objective	• Increase the proportion of persons with diagnosed diabetes who have at least an annual dental examination.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Coordination of Care: Strengthen systems of care by effectively integrating and coordinating oral health care with other health and social services.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Increase awareness among other health and social service professionals of the importance of oral health to overall health and the ways they can address the oral health needs of their patients. • Implement best-practices to promote collaboration among providers of oral health care and other health and social services to improve the oral health of Angelenos. • Pilot innovative approaches to oral health care coordination and services and expand the use of evidence-based efforts. • Support the development and use of improved oral health referral systems. • Institute a "no wrong door" approach to addressing oral health among county residents presenting with oral health needs in any public service setting

Diabetes mellitus (DM) is a group of metabolic disorders that leads to high blood sugar levels (hyperglycemia) and is commonly classified into three categories: type 1, type 2, and gestational diabetes. The current science indicates that there is a direct relationship between the processes of gum tissue destruction and elevated blood sugar levels, which is an important process to address in diabetes treatment (Taylor, 2013).

Monitoring oral health behaviors and indicators for those with diabetes is vital because those with diabetes are more susceptible to changes in the oral cavity. Diabetes can lead to gum- related problems like gingival hyperplasia (overgrowth of gums) and periodontitis

(gum disease). Other diabetes-related oral conditions include increased risk for tooth decay, candidiasis (fungal infection), and glossodynia (burning mouth syndrome) (Llambes, Arias-Herrera, & Caffesse, 2015). Most people with diabetes are unaware of the link between diabetes and periodontal disease and may have limited knowledge of their risks for oral health problems. Only half of those with diabetes report having dental visits in the last 12 months (Poudel, 2018). Table 8 displays the prevalence of dental visits among adults diagnosed with diabetes, showing that just under two-thirds of those surveyed in California and LA County had an annual dental visit.

Table 8. Annual dental visit prevalence among adults aged >=18 years with diabetes across the U.S., California, and Los Angeles County.

	Healthy People 2020 Objective U.S. Target (%)	United States 2018 (%)[a]	California 2019 (%)[b]	Los Angeles County 2019 (%)[b]
Annual dental visit prevalence among adults aged >= 18 years diagnosed with diabetes	61.2	60.6	64.4	65.1

a Behavioral Risk Factor Surveillance System, 2018, https://www.cdc.gov/cdi/
b California Health Interview Survey, 2019

RISK AND PROTECTIVE FACTORS FOR ORAL DISEASES

V. OROPHARYNGEAL CANCER PREVALENCE AND HPV VACCINATION RATES

Table 9. Oropharyngeal cancer and HPV vaccination: national, state, and local objectives and strategies.

Healthy People 2020 Objectives	• Increase the proportion of oral and pharyngeal cancers detected at the earliest stage (stage 1). • Increase the percentage of female adolescents aged 13 through 15 years who receive 2 or 3 doses of human papillomavirus (HPV) vaccine as recommended. • Increase the percentage of male adolescents aged 13 through 15 years who receive 2 or 3 doses of human papillomavirus (HPV) vaccine as recommended.
California Oral Health Plan Objective	• Increase the engagement of dental providers in helping patients to quit using cigarettes and other tobacco products.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Coordination of Care: Strengthen systems of care by effectively integrating and coordinating oral health care with other health and social services.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Foster collaborative community partnerships among public, private, and nonprofit organizations to raise the oral health awareness of County residents of all ages. • Increase awareness among other health and social service professionals of the importance of oral health to overall health and the ways they can address the oral health needs of their patients. • Implement best-practices to promote collaboration among providers of oral health care and other health and social services to improve the oral health of Angelenos. • Support the development and use of improved oral health referral systems. • Institute a "no wrong door" approach to addressing oral health among county residents presenting with oral health needs in any public service setting.

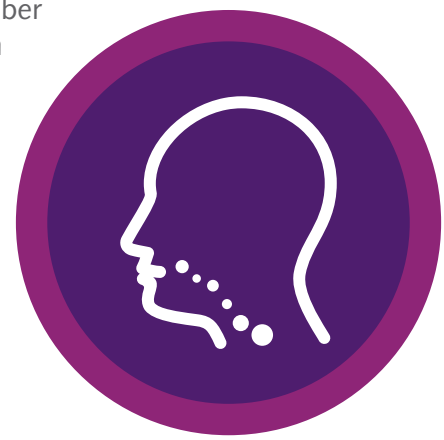
The oropharynx is compromised of the back and roof of the mouth, side and back walls of the throat, tonsils, and back one-third of the tongue. Oropharyngeal cancer are mostly defined as squamous cell carcinoma, which are thin, flat cells that grow rapidly through these areas (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2018). Symptoms of this type of cancer commonly consist of:

- Lump in the neck, throat, back of mouth
- Persistent sore throat
- Weight loss for no known reason
- Ear pain
- Tongue pain
- Difficult or painful chewing/swallowing
- Persistent white patch on tongue or lining of the mouth
- Coughing up blood

Risk factors for oropharyngeal cancer include Human Papillomavirus (HPV), specifically HPV Type 16, a history of tobacco use for more than 10 pack-years, personal history of head and neck cancer, heavy alcohol use, weakened immune system, and chewing betel nut (a custom originating in South and Southeast Asia) (National Cancer Institute, 2018). In the United States, the lifetime risk of diagnosis for oropharyngeal cancer is 1% (National Cancer Institute, Surveillance, Epidemiology, and End Results Program, 2018). The proportion of oropharyngeal cancers detected at the earliest stage is approximately 18% in California and LA County (California Cancer Registry, 2019). There were 4,762 cases of oral cavity and pharynx cancer in LA County during 2012-2016 (California Cancer Registry, 2019).

More than 70% of the approximately 18,000 oropharyngeal cancers diagnosed annually in the United States are caused by HPV (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2018). About 90% of HPV-positive oropharyngeal cancers are caused by HPV Type 16, and the remainder are caused by other oncogenic HPV types (U.S. Department of Health and Human Services, 2018).

Each HPV virus in this group of over 200 types is given a number which is called its HPV type. Approximately 40 HPV types can spread through direct sexual contact or skin and mucous membrane contact. Most people clear HPV within 1 to 2 years of infection, but HPV is also responsible for more than 90% of anal and cervical cancers (U.S. Department of Health and Human Services, 2018). Cancers in the oral area of the body are primarily caused by other factors such as tobacco and alcohol, but recent data shows a growing number of oropharyngeal cancers may be caused by HPV (Division of Cancer Prevention and Control, Centers for Disease Control and Prevention, 2018).



HPV vaccination of three doses is currently recommended for females and males, aged 9 to 45 years (Petrosky, Bocchini, & Jr Hariri, 2015; Food and Drug Administration, 2018). The vaccine is indicated for the prevention of genital warts (caused by HPV types 6 and 11) and cervical, anal, vulvar, and vaginal precancers and cancers in females and genital warts, anal precancer and cancer in males (caused by HPV types 16, 18, 31, 33, 45, 52, and 58). Oral HPV infections are caused by HPV types 6, 11, 16, and 18. On June 12, 2020, the U.S. Food and Drug administration added oral HPV infection, oropharyngeal and other head and neck cancers as part of listed indications for HPV vaccine.

Table 10 shows that HPV vaccination rates in LA County are low. Therefore, actionable awareness measures need to be put into place to educate medical providers, oral health providers, parents, and teens about the various cancer prevention benefits of the HPV vaccine. It will be crucial to identify and address barriers to vaccination.

Table 10. Prevalence of oropharyngeal cancer and HPV vaccination rates across the U.S., California, and Los Angeles County.

	Healthy People 2020 Objective U.S. Target (%)	United States (%)	California (%)	Los Angeles County (%)
Percentage of adults aged 20 years and older diagnosed with oral cavity and pharynx cancer, detected at AJCC Stage 1	35.8	29.5[a] (2016)	17.9[b] (2009-2013)	17.1[c] (2012-2016)
Human Papillomavirus (HPV) vaccination coverage level of 2 or 3 doses of HPV vaccine for females by age 13 to 15 Years	80.0	56.8[d] (2019)	61.5[d] (2019)	23.0[e] (2018)
Human Papillomavirus (HPV) vaccination coverage level of 2 or 3 doses of HPV vaccine for males by age 13 to 15 Years	80.0	51.8[d] (2019)	51.4[d] (2019)	15.4[e] (2018)

a National Program of Cancer Registries (NPCR), CDC/NCCDPHP; Surveillance, Epidemiology, and End Results Program (SEER), NIH/NCI, 2016

b 2009-2013. California Cancer Registry, California Department of Public Health. SEER*Stat Database: Incidence - California, Dec 2018. Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program, Institute for Population Health Improvement, UC Davis Health.

c 2012-2016. California Cancer Registry, California Department of Public Health. SEER*Stat Database: Incidence - California, Dec 2018. Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program, Institute for Population Health Improvement, UC Davis Health. There were 4,762 cases of oral cavity (mouth) and pharynx (throat) cancer (9 cases per 100,000 people) in Los Angeles County between 2012-2016.

d National Immunization Survey-Teen (NIS-Teen), 2019, https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/data-reports/

e 2018. Percent of children (ages 11-17 years) who have completed the required doses of the Human Papillomavirus (HPV) vaccine. Los Angeles County Health Survey; Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. Estimates are based on data collected from a random sample of 4,986 Los Angeles County children, representative of the child population in Los Angeles County. Data were reported by an adult sufficiently knowledgeable about the health and daily routines of the child. Completion is defined as taking 3 or more doses of the HPV vaccine for children ages 11-17 years or taking 2 doses of the HPV vaccine 6 months apart for children ages 11-14 years.

VI. COMMUNITY WATER FLUORIDATION

Table 11. Community water fluoridation: national, state, and local objectives and strategies.

Healthy People 2020 Objective	• Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water.
California Oral Health Plan Objective	• Increase the proportion of the California population served by community water systems with optimally fluoridated water.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Policy Leadership: Develop and influence federal, state, and local policies and resources that will promote equitable access to oral health services as integral to overall health.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Implement a broad, multifaceted oral health branding campaign that especially focuses on outreach to underserved and vulnerable communities. • Foster collaborative community partnerships among public, private, and nonprofit organizations to raise the oral health awareness of County residents of all ages. • Serve as a voice for health equity in Los Angeles. • Build support for optimally fluoridated, safe drinking water for all Angelenos.

Community water fluoridation was first studied in the 1930's and 1940's as a method for preventing dental caries (Centers for Disease Control and Prevention, 2000). The hypothesis that dental caries could be prevented by adjusting the fluoride level of the community water supplies from negligible levels to 1.0-1.2ppm was studied in four areas of North America, and rates of tooth decay were reduced 50-70% among children in the communities with fluoridated water (Centers for Disease Control and Prevention, 2000).

Water fluoridation has been a major factor resulting in lower rates of tooth decay in the United States. As of 2014, more than 211 million people or approximately 3 out of 4 Americans who use public water supplies drank water with enough fluoride to prevent tooth decay (Centers for Disease Control and Prevention, 2016). The American Dental Association estimates that the lifetime cost per person to fluoridate a water system is less

than the cost of one dental filling, thus every $1 spent on community water fluoridation saves approximately $32 in avoided dental bills (O'Connell JM, 2016). The Cochrane Oral Health Group published a comprehensive report in 2015 reporting that water fluoridation resulted in fewer teeth affected by cavities for children (about 2 primary teeth and 1 permanent tooth), compared to communities that did not have water fluoridation (Eiheozor-Ejiofor, 2015). Furthermore, the initiation of water fluoridation resulted in estimated decreases of approximately 35% in cavities in children and resulted in higher percentages of children without any cavities (Eiheozor-Ejiofor, 2015). Community water fluoridation is supported by the American Dental Association, American Medical Association, American Academy of Pediatric Dentistry, U.S. Centers for Disease Control and Prevention, and the World Health Organization. Currently, the recommended range of concentration of fluoride in public drinking water systems is 0.6 ppm to 1.2 ppm (California Water Boards, 2018).

During tooth growth, tooth enamel is constantly exposed to elements to break down, and there are important minerals responsible for building the permanent tooth enamel after the development of the teeth is finished (Kanduti, 2016). Bacteria causes the mouth to become acidic to the point where the breakdown of enamel occurs and caries are formed.

The presence of fluoride helps to keep the vital minerals in the mouth by combating bacteria in the plaque fluid, as the fluoride ions absorb themselves into the enamel, leading to remineralization of the teeth (Kanduti, 2016). Ingesting fluoridated water throughout the day maintains a low level of fluoride in saliva and plaque that promotes stronger tooth surfaces; consuming food and exposure to fluoride in toothpaste offers the additional

benefit of slowing the activity of bacteria that causes decay and combines with enamel to better resist decay (Centers for Disease Control and Prevention, 2016). Community water fluoridation is an equitable and cost-effective way to deliver fluoride to people of all ages, education levels, and income levels.

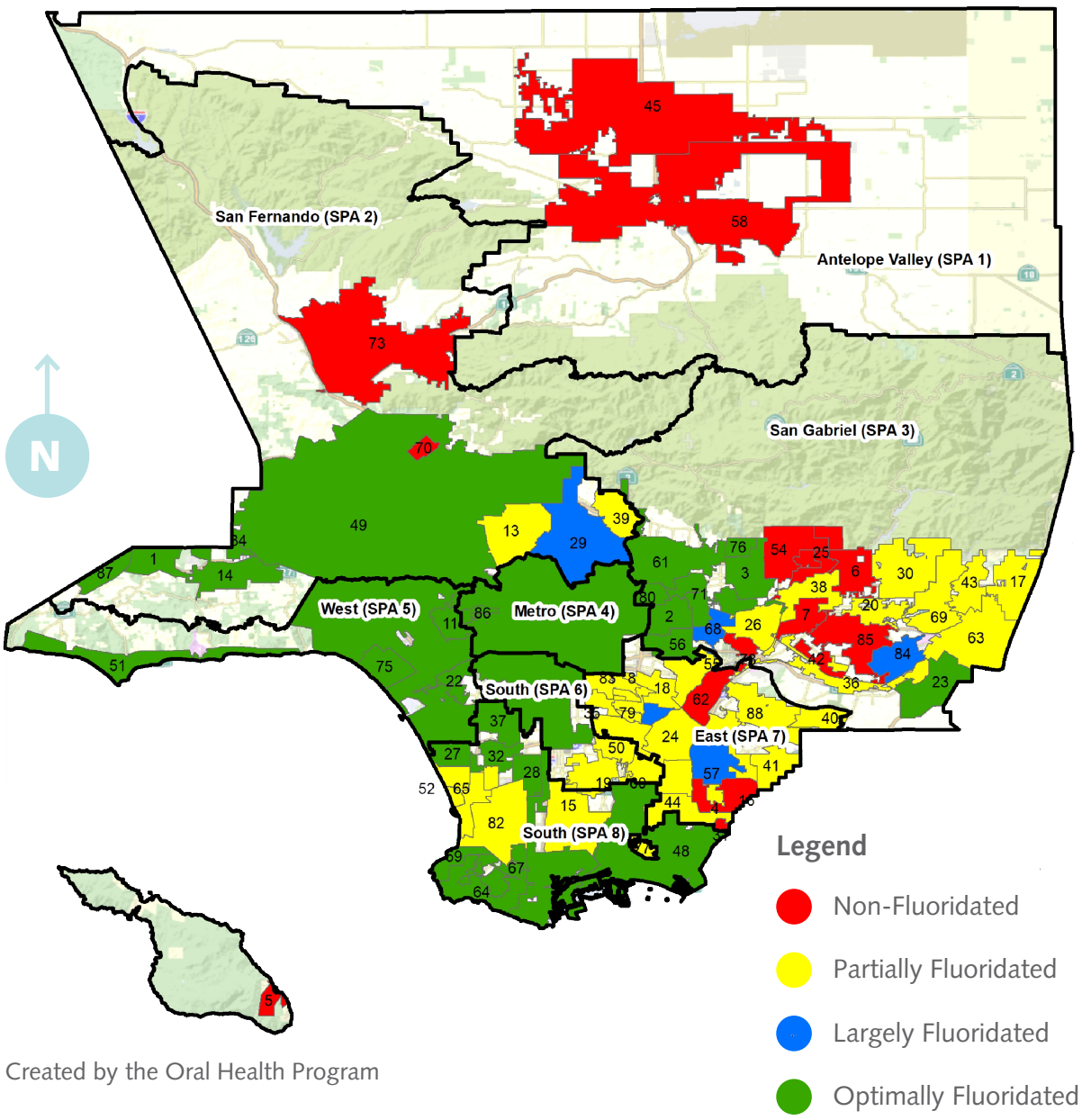
As shown in Table 12, the prevalence of water fluoridation in the US is near the HP2020 target, while in California and LA County there is room for improvement. More information regarding water fluoridation are shown from the results of analyses by the Los Angeles County Department of Public Health's Oral Health Program using 2017 data sourced from publicly available Consumer Confidence Reports (CCRs) and direct contacts with engineers from Metropolitan Water District and the California Water Resources Control Board, highlighted in the LA County Drinking Water Fluoridation Status map (Figure 1, Appendices 1-2).

Table 12. Percentage of population served by optimally fluoridated water systems across the U.S., California, and Los Angeles County.

	Healthy People 2020 Objective U.S. Target (%)	United States 2018 (%)	California 2018 (%)	Los Angeles County 2019 (%)
Percentage of population served by optimally fluoridated water systems	79.6	73.0[a]	59.3[a]	61.9[b]

a CDC, 2018 water fluoridation statistics, https://www.cdc.gov/fluoridation/statistics/2018stats.htm
b Los Angeles County Community Water Fluoridation Map, 2019. Los Angeles County Department of Public Health, Oral Health Program.

FIGURE 1. FLUORIDATION STATUS OF COMMUNITY WATER SYSTEMS IN LOS ANGELES COUNTY, 2019



Created by the Oral Health Program

WATER FLUORIDATION MAP KEY

KEY	CITY	STATUS	POPULATION (COUNT)
1	Agoura Hills	Optimally Fluoridated	20692
2	Alhambra	Optimally Fluoridated	85396
3	Arcadia	Optimally Fluoridated	58799
4	Artesia	Partially Fluoridated	16904
5	Avalon	Non-Fluoridated	3764
6	Azusa	Non-Fluoridated	49864
7	Baldwin Park	Non-Fluoridated	76402
8	Bell	Partially Fluoridated	35811
9	Bell Gardens	Largely Fluoridated	42747
10	Bellflower	Partially Fluoridated	77772
11	Beverly Hills	Optimally Fluoridated	34484
12	Bradbury	Non-Fluoridated	1093
13	Burbank	Partially Fluoridated	104834
14	Calabasas	Optimally Fluoridated	24202
15	Carson	Partially Fluoridated	92735
16	Cerritos	Non-Fluoridated	51020
17	Claremont	Partially Fluoridated	36015
18	Commerce	Partially Fluoridated	12947
19	Compton	Partially Fluoridated	97612
20	Covina	Partially Fluoridated	48462
21	Cudahy	Partially Fluoridated	24076
22	Culver City	Optimally Fluoridated	39283
23	Diamond Bar	Optimally Fluoridated	56665
24	Downey	Partially Fluoridated	113092
25	Duarte	Non-Fluoridated	21757
26	El Monte	Partially Fluoridated	116109
27	El Segundo	Optimally Fluoridated	16853
28	Gardena	Optimally Fluoridated	60224
29	Glendale	Largely Fluoridated	203054
30	Glendora	Partially Fluoridated	52445
31	Hawaiian Gardens	Non-Fluoridated	14450
32	Hawthorne	Optimally Fluoridated	87854
33	Hermosa Beach	Partially Fluoridated	19708
34	Hidden Hills	Optimally Fluoridated	1921
35	Huntington Park	Partially Fluoridated	58822
36	Industry	Partially Fluoridated	204
37	Inglewood	Optimally Fluoridated	110598
38	Irwindale	Partially Fluoridated	1461
39	La Canada Flintridge	Partially Fluoridated	20413
40	La Habra Heights	Partially Fluoridated	5403
41	La Mirada	Partially Fluoridated	49095
42	La Puente	Non-Fluoridated	40322
43	La Verne	Partially Fluoridated	32461
44	Lakewood	Partially Fluoridated	80967
45	Lancaster	Non-Fluoridated	160316
46	Lawndale	Partially Fluoridated	33078
47	Lomita	Optimally Fluoridated	20707
48	Long Beach	Optimally Fluoridated	469450
49	Los Angeles	Optimally Fluoridated	3999759
50	Lynwood	Partially Fluoridated	71099
51	Malibu	Optimally Fluoridated	12877
52	Manhattan Beach	Partially Fluoridated	35924
53	Maywood	Partially Fluoridated	27586
54	Monrovia	Non-Fluoridated	37061
55	Montebello	Partially Fluoridated	63192
56	Monterey Park	Optimally Fluoridated	61044
57	Norwalk	Largely Fluoridated	106084
58	Palmdale	Non-Fluoridated	157519
59	Palos Verdes Estates	Optimally Fluoridated	13544
60	Paramount	Partially Fluoridated	54909
61	Pasadena	Optimally Fluoridated	142647
62	Pico Rivera	Non-Fluoridated	63522
63	Pomona	Partially Fluoridated	152939
64	Rancho Palos Verdes	Optimally Fluoridated	42364
65	Redondo Beach	Partially Fluoridated	67908
66	Rolling Hills	Optimally Fluoridated	1882
67	Rolling Hills Estates	Optimally Fluoridated	8226
68	Rosemead	Largely Fluoridated	54554
69	San Dimas	Partially Fluoridated	34326
70	San Fernando	Non-Fluoridated	24714
71	San Gabriel	Optimally Fluoridated	40514
72	San Marino	Optimally Fluoridated	13327
73	Santa Clarita	Non-Fluoridated	210888
74	Santa Fe Springs	Partially Fluoridated	17980
75	Santa Monica	Optimally Fluoridated	92306
76	Sierra Madre	Optimally Fluoridated	11038
77	Signal Hill	Partially Fluoridated	11622
78	South El Monte	Non-Fluoridated	20987
79	South Gate	Partially Fluoridated	95430
80	South Pasadena	Optimally Fluoridated	25888
81	Temple City	Optimally Fluoridated	36367
82	Torrance	Partially Fluoridated	146758
83	Vernon	Partially Fluoridated	113
84	Walnut	Largely Fluoridated	30199
85	West Covina	Non-Fluoridated	107598
86	West Hollywood	Optimally Fluoridated	37080
87	Westlake Village	Optimally Fluoridated	8440
88	Whittier	Partially Fluoridated	86838

VII. TOBACCO CESSATION COUNSELING IN DENTAL OFFICES

Table 13. Tobacco cessation and dental services: national, state, and local objectives and strategies.

Healthy People 2020 Objective	• Increase the proportion of adults who received information from a dentist or dental hygienist focusing on reducing tobacco use or on smoking cessation in the past year.
California Oral Health Plan Objectives	• Increase the percentage of patients who receive evidence-based tobacco cessation counseling and other cessation aids in dental care settings. • Increase the engagement of dental providers in helping patients to quit using cigarettes and other tobacco products.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Coordinated Care: Strengthen systems to care by effectively integrating and coordinating oral health care with other health and social services. • Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Implement best-practices to promote collaboration among providers of oral health care and other health and social services to improve the oral health of Angelenos. • Pilot innovative approaches to oral health care coordination and services and expand the use of evidence-based efforts. • Support the development and use of improved oral health referral systems. • Institute a "no wrong door" approach to addressing oral health among county residents presenting with oral health needs in any public service setting.

Tobacco products are known to cause the following oral health problems:

- Bad breath
- Stained teeth and tongue
- Dulled sense of taste and smell
- Slow healing after a tooth extraction or other surgery
- Difficulties in correcting cosmetic dental problems
- Gum disease
- Oral cancer (American Dental Association, 2019)

Tobacco cessation counseling in the dental office is an efficient outlet for education and patient resources. The American Journal of Public Health reported that medications were the most frequently recommended tobacco cessation aid by both dentists and physicians, which may be attributable to patients' perception of medications as being more effective

or requiring less time commitment than class or program-based interventions (Agaku, 2014). Dentists were most likely to advise patients aged 25 to 44 years to quit smoking, potentially because this age group had the highest smoking prevalence among US adults (22% in 2011) (Agaku, 2014). Furthermore, integration of cessation counseling into electronic dental records has already been piloted and practiced in the United States, and some systems automatically use information collected to generate a script for personalized quitting advice from dental clinic staff (Shelley, 2012). Through advanced technology in electronic dental record keeping, patients' nicotine dependency can also be computed, which may help dental professionals determine the best strategies to assist patients (Shelley, 2012). This method of data organization and streamlining also aids in improved follow-up practices for tobacco cessation counseling interventions.

The prevalence of adults receiving smoking cessation information can be found in Table 14. While the first indicator evaluates whether patients received smoking cessation information or intervention directly from a dental clinical staff member, the second indicator reports the percentage of patients screened for tobacco use and received an intervention at a community clinic that also provides dental services. In the second indicator, it is not explicit whether the patient received the smoking cessation intervention or information from the medical clinical staff or the dental clinical staff. More data is needed to further evaluate the status of tobacco cessation interventions by dentists and dental hygienists.

Table 14. Adults receiving smoking cessation information or intervention within the year in dental clinical settings.

	Healthy People 2020 Objective U.S. Target (%)	United States 2015-2016 (%)	California 2017 (%)	Los Angeles County 2017 (%)
Adults who have received information from the dentist or dental hygienist focusing on reducing tobacco use or on smoking cessation	13.2	9.7[a]	NA	NA
Adults screened for tobacco use and received smoking cessation intervention within the year in free and community clinics offering dental services	NA	NA	88.5[b]	89.2[b]

a National Health and Nutrition Examination Survey, 2015-2016, https://www.healthypeople.gov/2020/data-search/
b Health Resources & Services Administration. 2017. Percentage calculated using number of patients who received services and total patients served. Weighted average with population served per clinic.

ACCESS TO DENTAL CARE AND SERVICES

VIII. DENTAL SERVICES UTILIZATION AMONG MEDI-CAL ENROLLEES

Table 15. Dental services utilization among Medi-Cal patients: national, state, and local objectives and strategies.

Healthy People 2020 Objective	Not Applicable
California Oral Health Plan Objectives	• Increase the percentage of Medi-Cal enrolled children ages 1 to 20 who receive a preventive dental service. • Increase the number of Medi-Cal beneficiaries under six years of age receiving in any 12-month period a dental disease prevention protocol by primary care medical providers that includes an oral health assessment, fluoride varnish application, and dental referral or assurance the patient has received examination by a dentist in the last 12 months.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Improved Access to Care: Improve access to oral health care by increasing providers' cultural and technical capacities, fostering trust between patients and providers, and reducing logistical barriers to care. • Coordinated Care: Strengthen systems to care by effectively integrating and coordinating oral health care with other health and social services. • Workforce Development and Capacity: Increase the number of oral health sector workers at multiple levels of service to meet the needs of LA County's economically and culturally diverse communities. • Policy Leadership: Develop and influence federal, state, and local policies and resources that will promote equitable access to oral health services as integral to overall health.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Implement proactive messaging to Medi-Cal recipients and providers in LA County so they are aware of the dental benefits available to Medi-Cal recipients. • Develop new and innovative oral health service access points to better reach underserved populations. • Pilot innovative approaches to oral health care coordination and services and expand the use of evidence-based efforts. • Encourage and facilitate increased participation of dental professionals in dental deserts and other community-oriented settings. • Provide policy leadership on improving Medi-Cal and other coverage systems as related to oral health.

The Medi-Cal Dental Program covers a variety of dental services for Medi-Cal beneficiaries, such as:

- Diagnostic and preventive dental services (e.g. examinations, x-rays, and teeth cleanings)
- Emergency services for pain control
- Tooth extractions
- Fillings
- Root canal treatments (anterior/posterior)
- Crowns (prefabricated/laboratory)
- Scaling and root planning
- Periodontal maintenance
- Complete and partial dentures
- Orthodontics for children who qualify (Medi-Cal Dental Program, 2018)

Beneficiaries can access dental services through Medi-Cal Dental enrolled providers, who will advise beneficiaries on the best course of treatment, and under the specific conditions for which some of these services are allowable (Medi-Cal Dental Program, 2018).

California state-wide trends in annual dental visits and preventive dental visits in 2016 among Medi-Cal Dental enrolled participants were similar to LA County trends (Table 16). In comparing LA County 2016 annual dental visit and preventive visits by race/ethnicity and age groups, a few trends were notable. First, young children on Medi-Cal were more likely to see a dentist annually as they reach age 5, and the utilization of both annual dental and preventive services were highest in the Medi-Cal population aged 6 to 9 and among Latino/Latinx and Asian youth (Appendices 3-4). Service utilization trends generally decreased with increasing age, among all racial/ethnic groups (Appendices 3-4). Less than one-third of Medi-Cal adults 21 years and older saw a dentist annually, with an increasing annual visit trend in the Asian and White older adult population (Appendix 3). Asian adults 21 years and older had the highest rate of preventive dental visits, but overall, under one-fifth of Medi-Cal adults saw a dentist for preventive reasons (Appendix 4).

Between July 2009 and May 2014, the dental benefit for adults enrolled in Medi-Cal was limited to only emergency related services (Wides, 2014). In May 2014, Medi-Cal restored some preventive and restorative dental benefits to adults, and beginning in January

of 2018, Senate Bill 97 (Chapter 52, Statutes of 2017) restored additional adult dental benefits that were not restored in 2014 (Medi-Cal Dental Program, 2018). Restored benefits include but are not limited to: laboratory processed crowns, posterior root canal therapy, periodontal services, and partial dentures, including denture adjustments, repairs, and relines. More information is also available on the DHCS Medi-Cal Dental Program website (Medi-Cal Dental Program, 2018).

Adult dental benefits that remained in place and did not change because of the 2014 or 2018 restorations were: pregnancy-related services, emergency services, services provided to residents of an Intermediate Care Facility/Skilled Nursing Facility, and services provided to consumers of the Department of Developmental Services (Medi-Cal Dental Program, 2018).

It will be imperative to examine similar indicators beyond 2018 for Medi-Cal enrollees to ensure that dental services utilization rates have improved since Senate Bill 97 went into effect. While preventive and restorative services were covered for adults after 2014, the data presented in 2019 illustrates that awareness and education of the resources available to adult Medi-Cal enrollees may need improvement to increase utilization rates in LA County.

Table 16. Annual dental visits and preventive dental visits among Medi-Cal Dental populations in California and Los Angeles County

	California, 2019 (%)[a]	Los Angeles County 2018 (%)[b]
Annual dental visits among Medi-Cal Dental population (Children, Age 0-20)	49.7	50.7
Annual preventive dental visits among Medi-Cal Dental population (Children, Age 0-20)	46.3	47.1
Annual dental visits among Medi-Cal Dental population (Adults, Age 21+)	25.0	23.9
Annual preventive dental visits among Medi-Cal Dental population (Adults, Age 21+)	14.7	13.2

a High level Dental Performance Measures, CY2019, https://www.dhcs.ca.gov/services/Pages/Dental_Performance_Measures-High_Level.aspx

b Dental Utilization Measures and Sealant Data by County and Age, CY2018, https://data.chhs.ca.gov/dataset/test-dhcs-utilization-measures-and-sealant-data-by-county-calendar-year-2013-to-2015

IX. FEDERALLY QUALIFIED HEALTH CENTERS (FQHCS) PROVIDING DENTAL SERVICES

Table 17. FQHCs providing dental services: national, state, and local objectives and strategies.

Healthy People 2020 Objective	• Increase the proportion of patients who receive oral health services at Federally Qualified Health Centers (FQHCs) each year.
California Oral Health Plan Objective	• Increase the number and capacity of FQHCs that provide dental services.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Improved Access to Care: Improve access to oral health care by increasing providers' cultural and technical capacities, fostering trust between patients and providers, and reducing logistical barriers to care. • Coordinated Care: Strengthen systems to care by effectively integrating and coordinating oral health care with other health and social services. • Workforce Development and Capacity: Increase the number of oral health sector workers at multiple levels of service to meet the needs of LA County's economically and culturally diverse communities. • Policy Leadership: Develop and influence federal, state, and local policies and resources that will promote equitable access to oral health services as integral to overall health.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Increase the number of dental providers equipped to serve people with specialized health care needs. • Develop new and innovative oral health service access points to better reach underserved populations. • Implement best-practices to promote collaboration among providers of oral health care and other health and social services to improve the health of Angelenos. • Encourage and facilitate increased participation of dental professionals in dental deserts and other community-oriented settings.

Federally Qualified Health Centers (FQHCs) are safety net clinics that provide services typically delivered in an outpatient clinic. Nationally, over 10,000 FQHCs served 25 million people in the United States, and statewide, over 800 licensed FQHCs (out of 1,305 Community Health Centers [CHCs]) served an estimated 60,000 of California's population (National Association of Community Health Centers, 2018).

As of 2016, there are over 200 FQHC sites in LA County, out of 358 total CHCs, to serve approximately 10.2 million residents (California Primary Care Association, 2017). CHCs include FQHCs, FQHC look-alikes, Migrant Health Centers, Rural and Frontier Health Centers, and Free Clinics. There were approximately 180 dentist and registered dental hygienist full-time employees (FTE) staffed within CHCs, which comprised only 9% of the provider FTE allocation (California Primary Care Association, 2017). During 2016, there were over 53,000 visits to dental providers in CHCs, which accounted for 10% of the total CHC services utilized (California Primary Care Association, 2017). Out of the population that seek medical services from FQHCs, utilization of FQHCs for dental services nationwide, statewide, and countywide can be improved with increased education, awareness, and accessibility (Table 18).

Table 18. Percentage of Federally Qualified Health Center (FQHC) patients receiving oral health services across the U.S., California, and Los Angeles County.

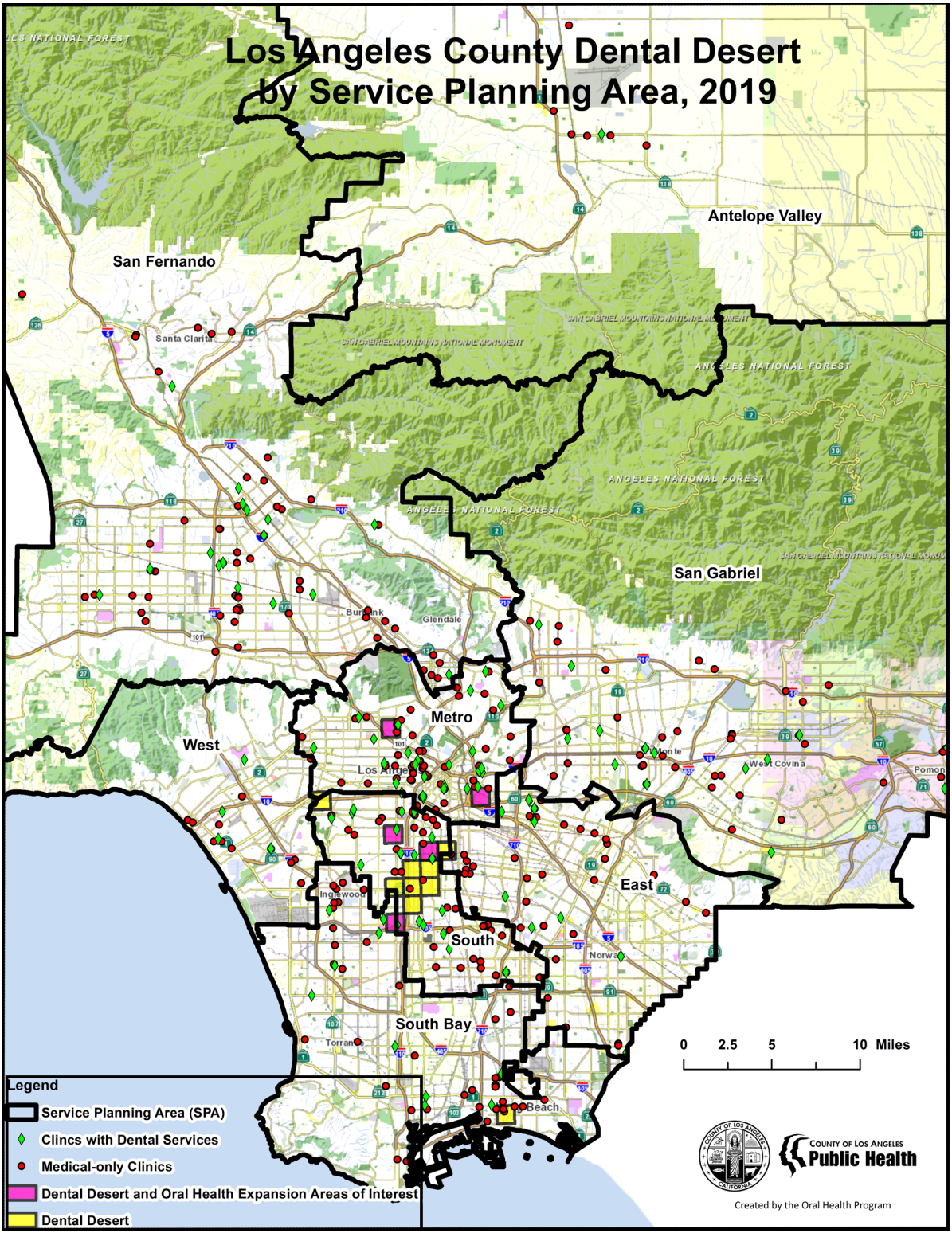
	Healthy People 2020 Objective U.S. Target (%)	United States 2019 (%)[a]	California 2019 (%)[a]	Los Angeles County 2019 (%)[a]
Percentage of FQHC patients receiving oral health services out of total patients served	33.3	22.5	24.9	19.4

a Uniform Data System, Health Resources and Service Administration, 2019, https://data.hrsa.gov/tools/data-reporting/

X. FEDERALLY QUALIFIED HEALTH CENTERS (FQHCS) AND THE MEDI-CAL POPULATION

Nationwide, FQHCs including community health centers, free clinics, and health center program "look-alikes," are a core source of primary care in the U.S., particularly for Medicaid and Medi-Cal beneficiaries and uninsured people. By assessing areas with high population density, low median household income, and no or insufficient dental services (See Appendix 5 for full definition), the Los Angeles County Department of Public Health, Oral Health Program (LAC DPH-OHP) created a "Dental Desert" resource to identify areas within LA County that could benefit from oral health workforce expansion at existing dental clinics as well as dental services expansion at medical-only community clinics that serve Medi-Cal enrolled patients. Figure 2 illustrates the most current Dental Desert areas across LA County, showing a cluster of potential areas and clinics along the 110-freeway corridor to increase the availability of oral health services for Medi-Cal patients.

FIGURE 2. LOS ANGELES COUNTY DENTAL DESERTS, 2019.



XI. DENTAL VISITS AND PREGNANCY

Table 19. Pregnant women and dental visits: national, state, and local objectives and strategies.

Healthy People 2020 Objective	Not Applicable
California Oral Health Plan Objective	• Increase the proportion of pregnant women who report having been seen by a dentist.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Improved Access to Care: Improve access to oral health care by increasing providers' cultural and technical capacities, fostering trust between patients and providers, and reducing logistical barriers to care. • Coordinated Care: Strengthen systems to care by effectively integrating and coordinating oral health care with other health and social services.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Foster collaborative community partnerships among public, private, and nonprofit organizations to raise the oral health awareness of County residents of all ages. • Develop new and innovative oral health service access points to better reach underserved populations. • Implement best-practices to promote collaboration among providers of oral health care and other health and social services to improve the oral health of Angelenos. • Pilot innovative approaches to oral health care coordination and services and expand the use of evidence-based efforts.

Control of oral disease and good oral health protects a woman's health and quality of life before and during pregnancy, and additionally has the potential to reduce the transmission of pathogenic bacteria from mothers to their children (California Dental Association Foundation, 2010). Due to hormones or changes in diet, pregnant women's oral health may change and affect their quality of life. Psychological distress, physical and social disability, and oral pain may be a few of the experiences that pregnant women may encounter (Rocha, 2018). In recent studies, gum disease rates were higher in pregnant women compared to women who were not pregnant (Lu, 2015) (Kumar, 2017). Additionally, high prevalence of tooth decay is reported among pregnant women due to behavioral changes that occur in pregnancy, such as diet and hormonal changes (Rocha,

2018). While each woman and pregnancy vary, these factors highlight the potential importance of pregnant women having an annual dental visit (Rocha, 2018).

The Presumptive Eligibility for Pregnant Women (PE4PW) program grants immediate, temporary Medi-Cal coverage for most prenatal medical and dental care and prescription drugs for conditions related to pregnancy to low-income, pregnant patients, pending their formal Medi-Cal application. More information can be found at: https://www.dhcs.ca.gov/ services/medi-cal/eligibility/Pages/PE.aspx and https://www.coveredca.com/health/medi-cal/pregnant-women/. The California Dental Association's (CDA) evidence-based guidelines regarding oral health during pregnancy is to:

- Determine and document in the prenatal record whether the patient is already under the care of an oral health professional; if a referral is needed, make a referral and document this in the prenatal record; and
- Encourage all women at the first prenatal visit to schedule a dental examination if one has not been performed in the past six months, or if a new condition has developed or is suspected (California Dental Association Foundation, 2010).

In 2016, the ADA reported that approximately 60% of Delta Dental recipients who were pregnant used dental services in the nation (Manchir, 2016). Furthermore, an assessment comparing national estimates on self-reported oral health conditions and dental visits among pregnant women and nonpregnant women (of childbearing age) showed that more nonpregnant women visited a dentist than pregnant women (Azofeifa, 2014).

The CDA reported that among mothers reporting a dental problem in California, insurance through public funding and late prenatal care entry were significantly associated with not getting dental care (California Dental Association Foundation, 2010). Additionally, the CDA reported that receiving no counseling on oral health care, obesity, and smoking were risk factors for not receiving dental care during pregnancy.

The California Maternal and Infant Health Assessment and the LA

County Department of Public Health, Maternal Child & Adolescent Health Division in 2016 surveyed women across the state and the county, respectively, to see if they visited a dentist during pregnancy. Examining various subgroups of LA County, it was observed that pregnant women had a higher prevalence of having had a dental visit if they were over the age of 35, White, had prenatal private health insurance, had higher family income, and were college graduates (Appendices 6-10). These findings highlight the need for improved education of both providers and expectant families on the importance of dental care during pregnancy.

Access to care and other barriers for low-income women such as competing priorities (caring for other children, jobs, other commitments), financial challenges (out-of-pocket costs), and transportation issues must be improved and addressed to achieve oral health equity for pregnant women.

Table 20. Prevalence of receipt of dental visit during pregnancy across the U.S., California, and Los Angeles County.

	Healthy People 2020 Objective U.S. Target (%)	United States (%)	California 2017 (%)[a]	Los Angeles County 2016 (%)[b]
Prevalence of receipt of dental visit during pregnancy	NA	NA	24.9	19.4

a California Department of Public Health. Status of Oral Health in California: Oral Disease Burden and Prevention 2017, Sacramento, 2017.

b Health Indicators for Mothers and Babies in Los Angeles County, 2016. Los Angeles County Department of Public Health, Maternal Child & Adolescent Health Division, Research Evaluation and Planning Unit. Los Angeles Mommy and Baby Project.

XII. EMERGENCY DEPARTMENT NON-TRAUMATIC DENTAL VISITS

Table 21. Emergency department non-traumatic dental visits: national, state, and local objectives and strategies.

Healthy People 2020 Objective	Not Applicable
California Oral Health Plan Objective	• Decrease repeat emergency room visits for dental problems.
Los Angeles County Community Oral Health Improvement Plan: Objectives	• Awareness & Health Literacy: Increase awareness of the importance and contribution of optimal oral health to overall health and wellbeing across the lifespan. • Improved Access to Care: Improve access to oral health care by increasing providers' cultural and technical capacities, fostering trust between patients and providers, and reducing logistical barriers to care.
Los Angeles County Community Oral Health Improvement Plan: Strategies	• Implement a broad, multifaceted oral health branding campaign that especially focuses on outreach to underserved and vulnerable communities. • Implement proactive messaging to Medi-Cal recipients and providers in LA County so they are aware of the dental benefits available to Medi-Cal recipients. • Increase awareness among other health professionals of the importance of oral health to overall health and the ways they can address the oral health needs of their patients. • Develop new and innovative oral health service access points to better reach underserved populations. • Implement best-practices to promote collaboration among providers of oral health care and other health and social services to improve the oral health of Angelenos. • Pilot innovative approaches to oral health care coordination and services and expand the use of evidence-based efforts. • Support the development and use of improved oral health Referral Systems. • Encourage and facilitate increased participation of dental professionals in dental deserts and other community-oriented settings.

Dental visits to emergency departments (ED) across the United States for non-traumatic (unrelated to an accident or traumatic injury) dental conditions (NTDC) have increased over the past decade. It is estimated that in 2012, ED dental visits cost the national health care system $1.6 billion, with an average cost of $749 per visit (Wall & Vujicic, 2015). Approximately 2 million annual dental-related ED visits in the United States represent 1.5% of all ED visits (Sun, 2015). In most cases, patients receive prescriptions for pain or antibiotics for infections, and may be better served in a dental office setting due to the availability of establishing a reliable dental home.

The largest burden of potentially preventable, NTDC ED care for the LA County population was characterized by those who were between 1-2 years of age and Black/African American patients (Appendices 11-14). Gender was not a predictor for this indicator. The significance of the first dental visit for children at age 1 or when the first teeth are visible is highlighted with these findings; establishing a dental home for the young child prevents the need for their emergency dental care.

There are opportunities to reduce ED visits for dental care through referral programs and enhanced awareness and education of dental coverage for young children and adults through Medi-Cal. Routine and timely preventive care would reduce the need for emergency department visits for dental conditions.

CONCLUSION

The LA County specific burden of oral health data conveys the importance of identifying sociodemographic factors contributing to oral health disparities, the need for integration of oral health education advocacy in existing centers, and the demand to increase the number of dental care access points serving the populations identified. With the collaboration of community stakeholders, partners, and the greater oral health and public health networks in LA County and California through the LAC COHIP, strategies and activities will be created and carried out to increase and integrate dental care locally. Indicators addressed in this report will continue to be monitored through the LAC DPH-OHP to transparently communicate the contribution of optimal oral health to overall health and wellbeing across the lifespan of LA County residents.

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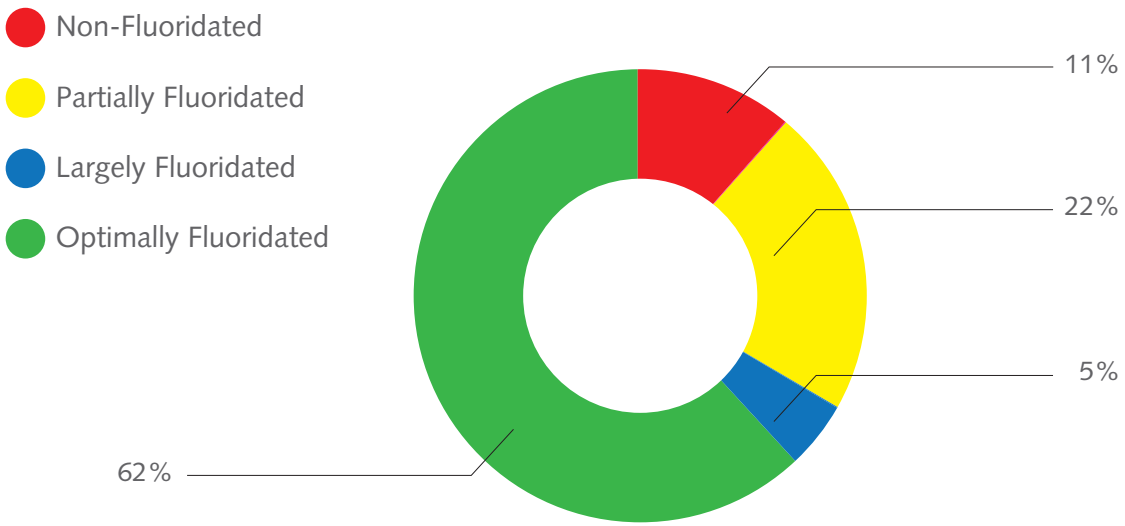
APPENDIX – TABLES AND FIGURES

APPENDIX 1. LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, ORAL HEALTH PROGRAM FLUORIDATION STATUS DEFINITIONS, 2019.

STATUS	DEFINITION - PERCENTAGES REFLECT SYSTEM DISTRIBUTION
Optimally Fluoridated	Receiving 80% to 100% optimally fluoridated or treated water by water systems
Largely Fluoridated	Cities receiving less than 80% and more than 60% optimally fluoridated or treated water by water systems or if within 0.05 ppm of optimally fluoridated levels
Partially Fluoridated	Cities receiving less than or equal to 60% and more than or equal to 30% optimally fluoridated or treated water by water systems
Non-Fluoridated	Receiving less than 30% optimally fluoridated or treated water by water systems

APPENDIX 2. DISTRIBUTION OF FLUORIDATION STATUS IN LOS ANGELES COUNTY IN 2019.

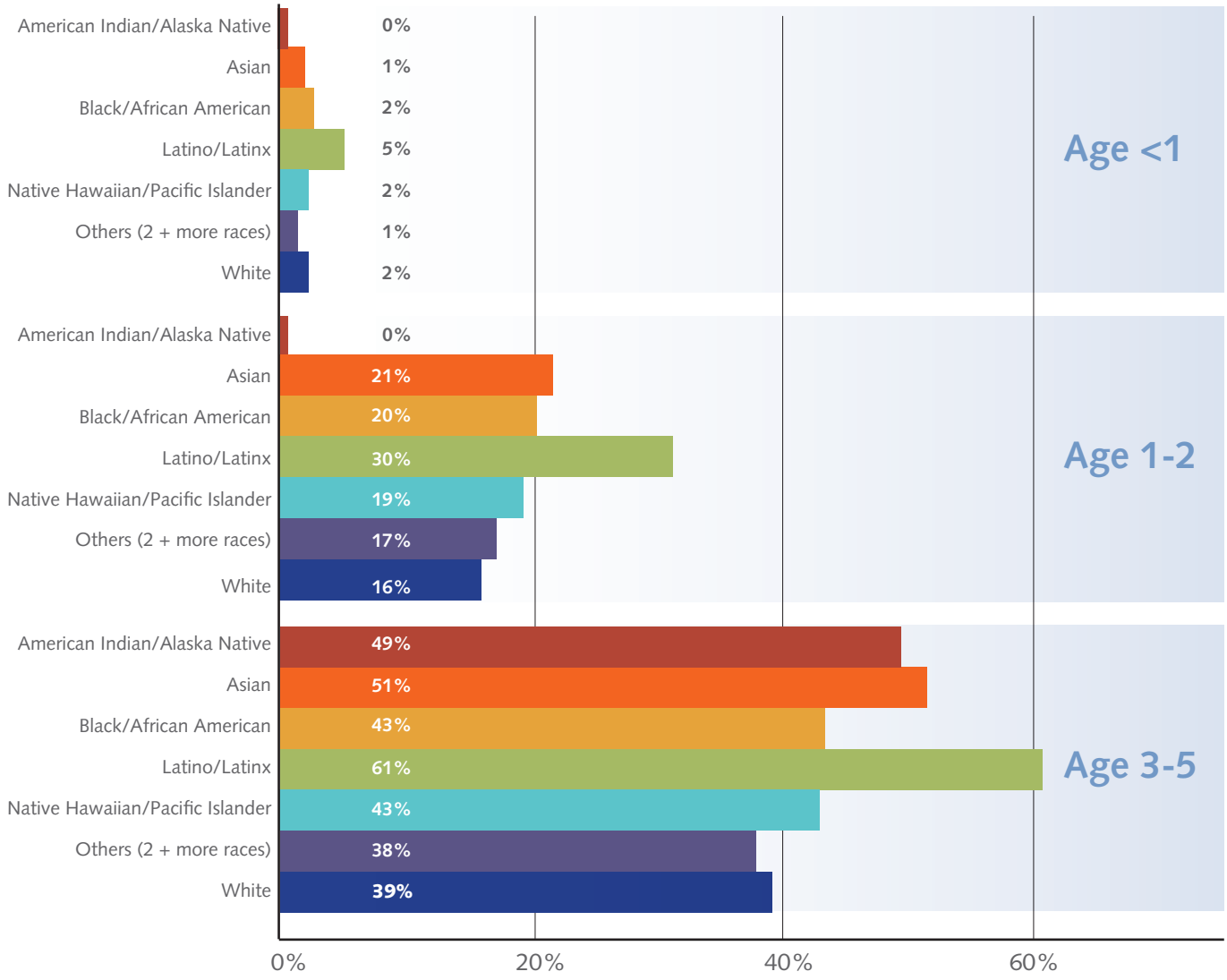
Percentage of LA County Population on Community Water Systems Receiving Fluoridated Water (88 cities) in 2019



APPENDIX 3. 2016 ANNUAL DENTAL VISITS BY RACE/ETHNICITY AND AGE AMONG THE MEDI-CAL POPULATION IN LOS ANGELES COUNTY.

2016 ANNUAL DENTAL VISITS AMONG MEDI-CAL POPULATION BY RACE, AGES 1-5

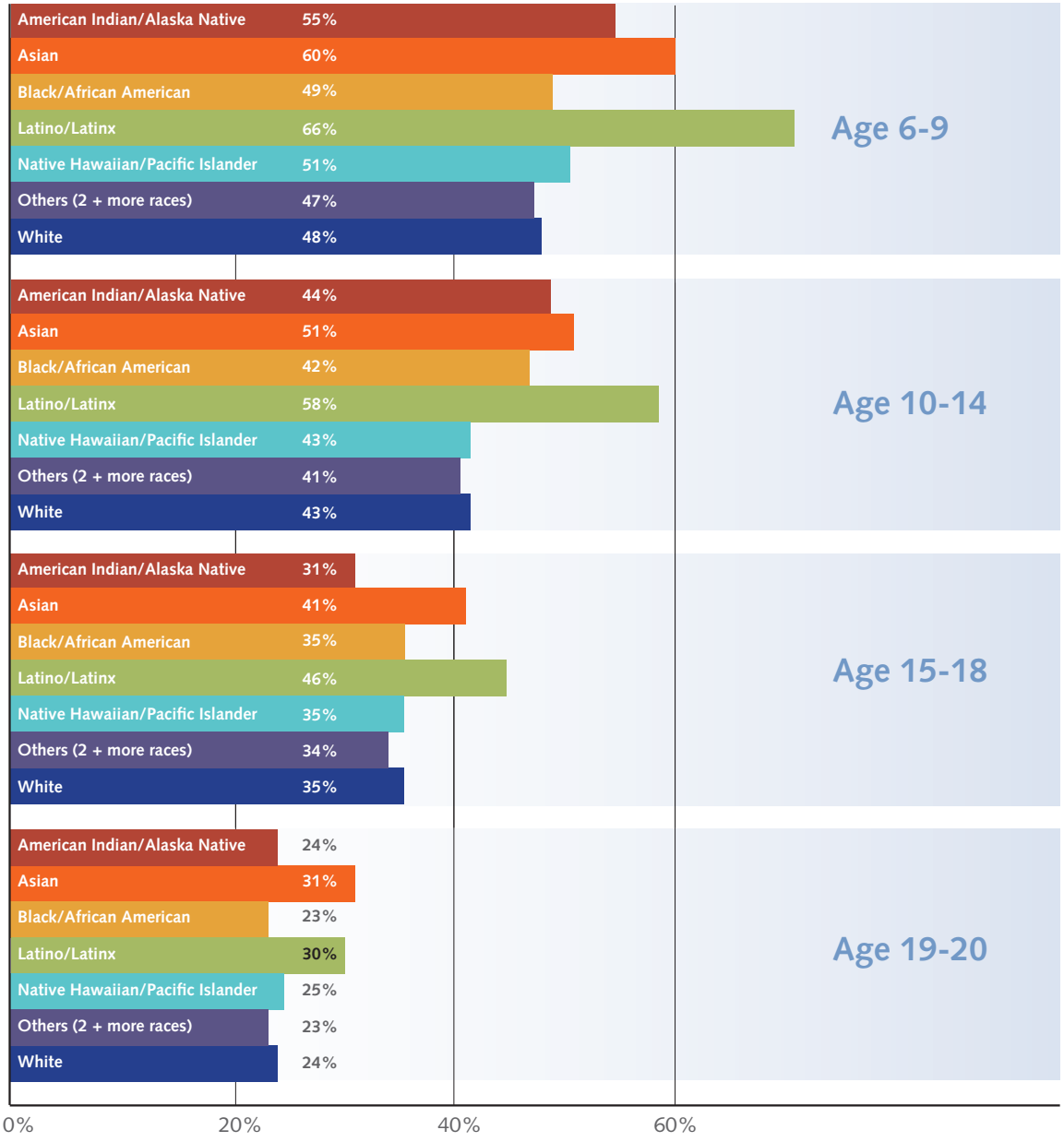
Young children on Medi-Cal were more likely to see a dentist annually as they reach age 5, and Latino/Latinx children had the highest rate of an annual visit.



Source: Prepared by California Department of Public Health – Office of Oral Health. All measures are for full-scope beneficiaries with no share of cost (SOC) with at least 3 months of continuous eligibility in the same plan. Annual Dental Visit: Percentage of beneficiaries who had at least one (1) dental visit during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any dental procedure (D0100-D9999) or dental encounter at a Safety Net Clinic (SNC) (e.g., Federally Qualified Health Centers (FQHCs); Rural Health Clinics (RHCs); and Indian Health Services/Memorandum of Agreement Clinics (community health centers)) during the period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.] Preventive Dental Visit: Percentage of beneficiaries who received any preventive dental service during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any preventive dental service (D1000-D1999 or ICD 10: K023 K0251 K0261 K036 K0500 K0501 K051 K0510 K0511 Z012 Z0120 Z0121 Z293 Z299 Z98810) in the measurement period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.]

2016 ANNUAL DENTAL VISITS AMONG MEDI-CAL POPULATION BY RACE, AGES 6-20

Annual dental visit rates declined in Medi-Cal youth after the ages of 6-9, and Latino/Latinx and Asian youth had the highest rates of an annual visit.



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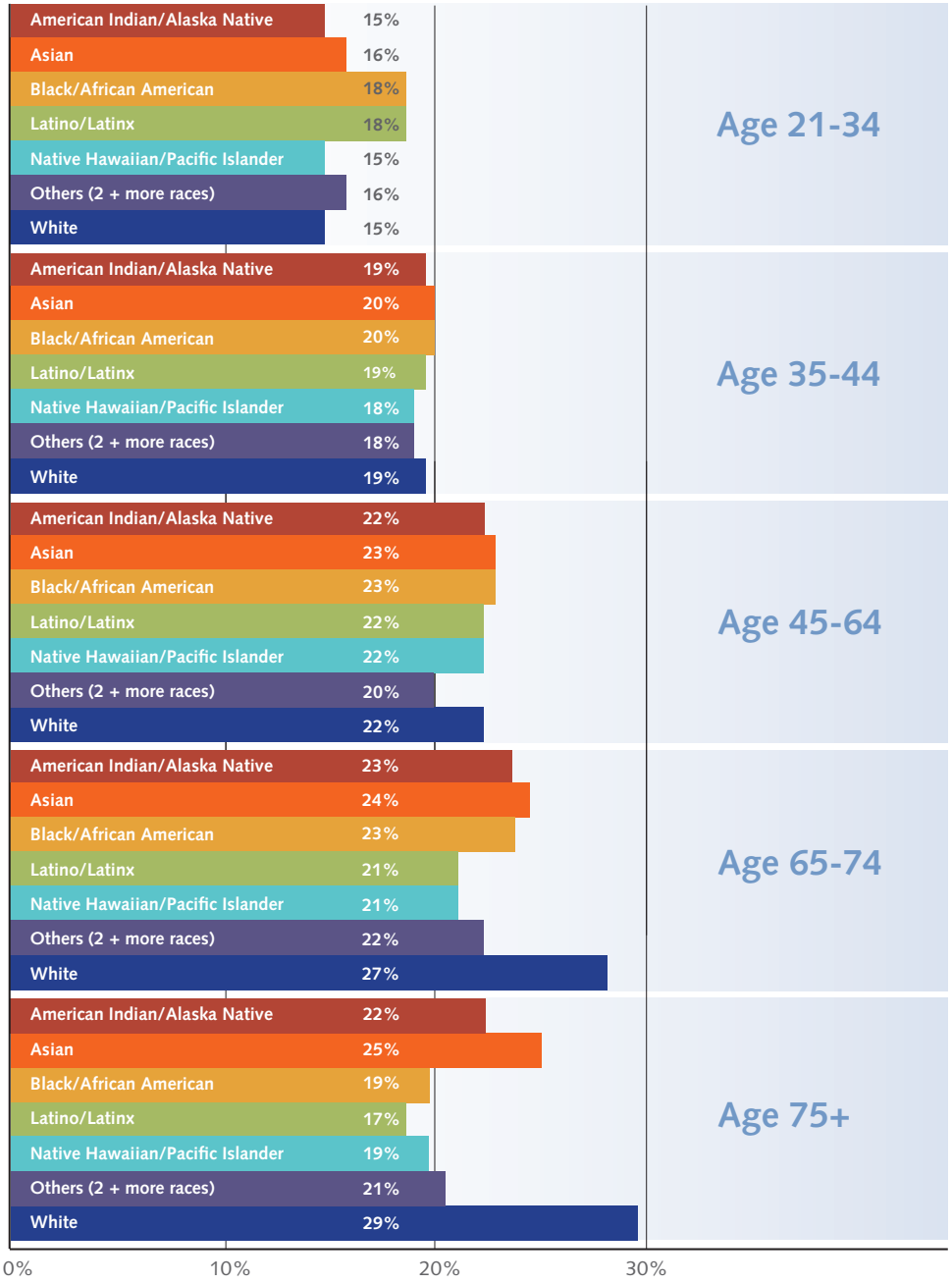
2016 ANNUAL DENTAL VISITS AMONG MEDI-CAL POPULATION BY RACE, AGES 21+

Under one-third of Medi-Cal adults saw a dentist annually, with an increasing annual visit trend in the Asian and White older adult population.

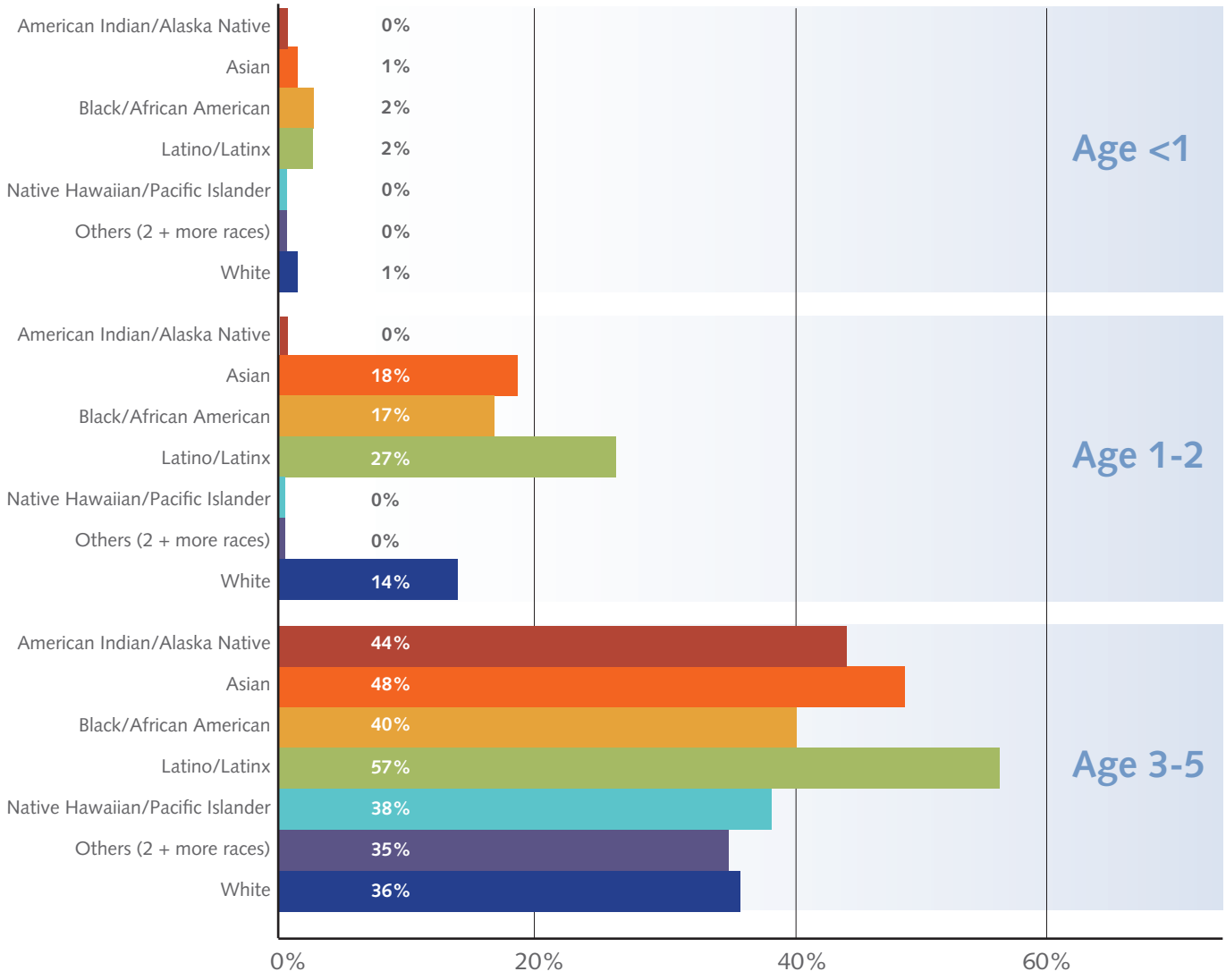


Source: Prepared by California Department of Public Health – Office of Oral Health. All measures are for full-scope beneficiaries with no share of cost (SOC) with at least 3 months of continuous eligibility in the same plan. Annual Dental Visit: Percentage of beneficiaries who had at least one (1) dental visit during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any dental procedure (D0100-D9999) or dental encounter at a Safety Net Clinic (SNC) (e.g., Federally Qualified Health Centers (FQHCs); Rural Health Clinics (RHCs); and Indian Health Services/Memorandum of Agreement Clinics (community health centers)) during the period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.] Preventive Dental Visit: Percentage of beneficiaries who received any preventive dental service during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any preventive dental service (D1000-D1999 or ICD 10: K023 K0251 K0261 K036 K0500 K0501 K051 K0510 K0511 Z012 Z0120 Z0121 Z293 Z299 Z98810) in the measurement period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.]

APPENDIX 4. 2016 ANNUAL PREVENTIVE DENTAL VISITS BY RACE/ ETHNICITY AND AGE AMONG THE MEDI-CAL POPULATION IN LOS ANGELES COUNTY.

2016 PREVENTIVE DENTAL VISITS AMONG MEDI-CAL POPULATION BY RACE, AGES 1-5

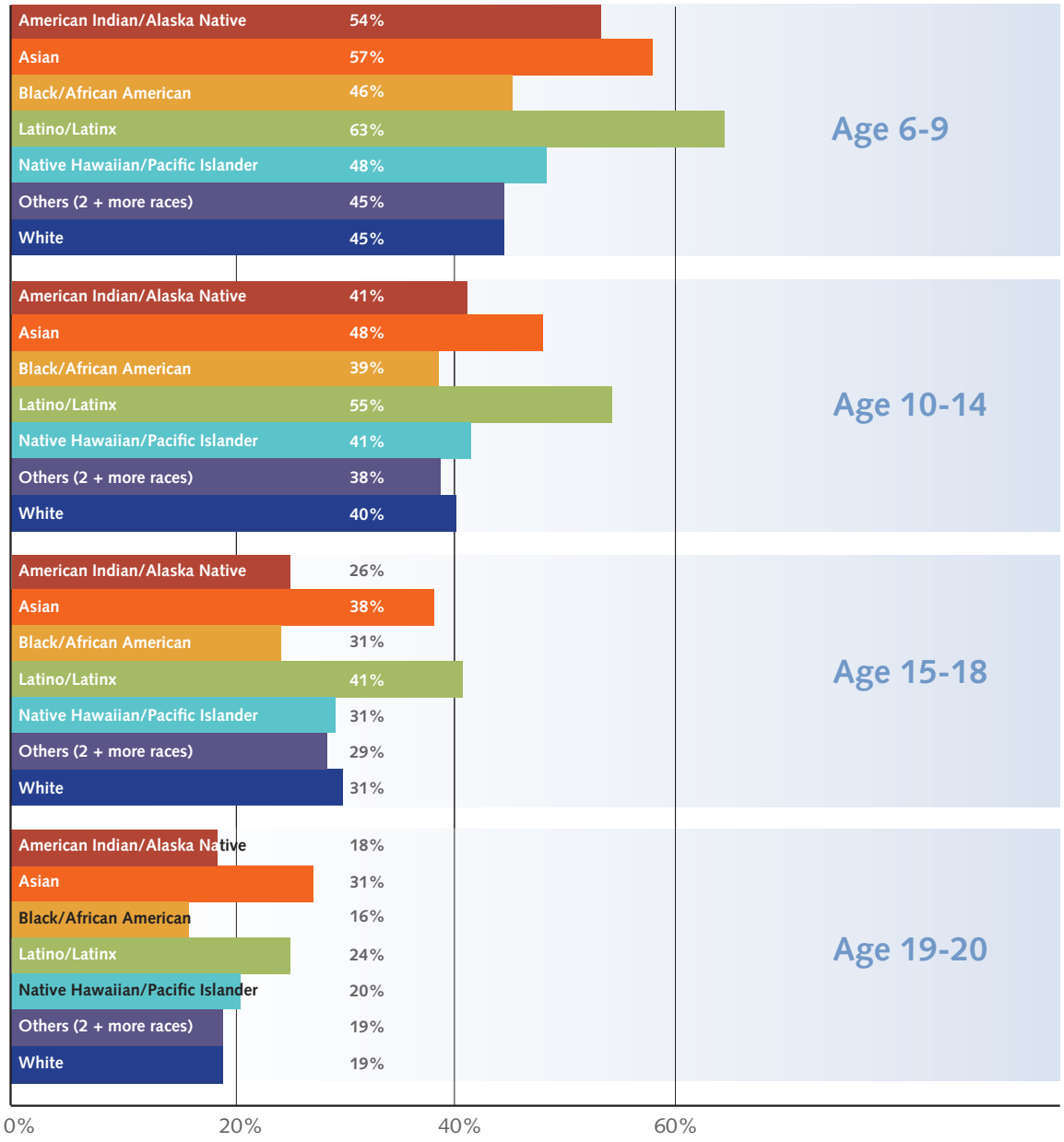
Young children on Medi-Cal were more likely to see a dentist for preventive services as they reach age 5, and Latino/Latinx children had the highest rate of a preventive dental visit.



Source: Prepared by California Department of Public Health – Office of Oral Health. All measures are for full-scope beneficiaries with no share of cost (SOC) with at least 3 months of continuous eligibility in the same plan. Annual Dental Visit: Percentage of beneficiaries who had at least one (1) dental visit during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any dental procedure (D0100-D9999) or dental encounter at a Safety Net Clinic (SNC) (e.g., Federally Qualified Health Centers (FQHCs); Rural Health Clinics (RHCs); and Indian Health Services/Memorandum of Agreement Clinics (community health centers)) during the period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.] Preventive Dental Visit: Percentage of beneficiaries who received any preventive dental service during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any preventive dental service (D1000-D1999 or ICD 10: K023 K0251 K0261 K036 K0500 K0501 K051 K0510 K0511 Z012 Z0120 Z0121 Z293 Z299 Z98810) in the measurement period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.]

2016 PREVENTIVE DENTAL VISITS AMONG MEDI-CAL POPULATION BY RACE, AGES 6-20

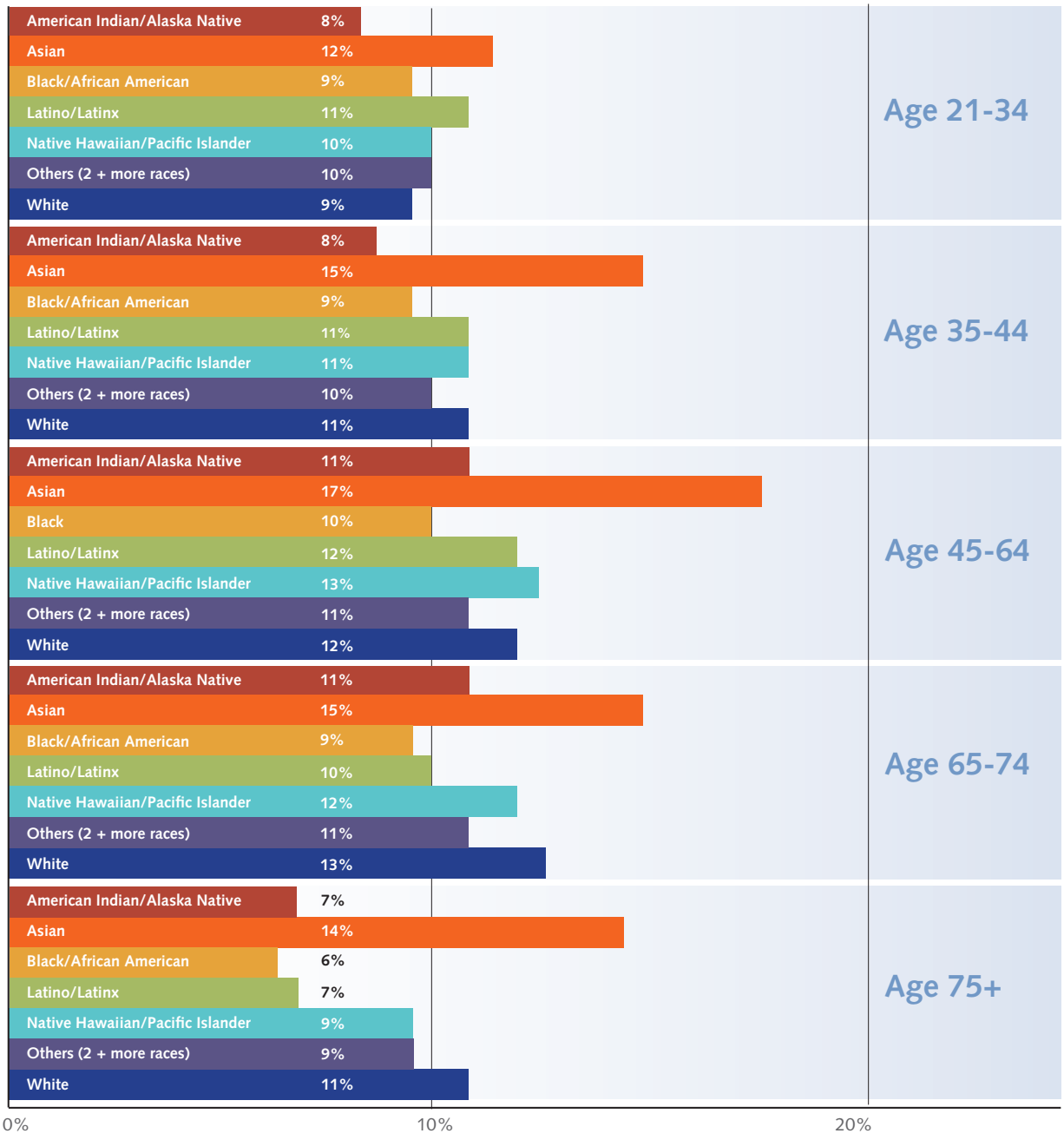
Preventive dental visit rates declined in Medi-Cal youth after the ages of 6-9, and Latino/Latinx youth had the highest rate of a preventive dental visit.



Source: Prepared by California Department of Public Health – Office of Oral Health. All measures are for full-scope beneficiaries with no share of cost (SOC) with at least 3 months of continuous eligibility in the same plan. Annual Dental Visit: Percentage of beneficiaries who had at least one (1) dental visit during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any dental procedure (D0100-D9999) or dental encounter at a Safety Net Clinic (SNC) (e.g., Federally Qualified Health Centers (FQHCs); Rural Health Clinics (RHCs); and Indian Health Services/Memorandum of Agreement Clinics (community health centers)) during the period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.] Preventive Dental Visit: Percentage of beneficiaries who received any preventive dental service during the measurement period. [Numerator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year who received any preventive dental service (D1000-D1999 or ICD 10: K023 K0251 K0261 K036 K0500 K0501 K051 K0510 K0511 Z012 Z0120 Z0121 Z293 Z299 Z98810) in the measurement period. Denominator: Number of beneficiaries with at least 90 days continuous enrollment in the same plan within the measurement year.]

2016 PREVENTIVE DENTAL VISITS AMONG MEDI-CAL POPULATION BY RACE, AGES 21+

Under one-fifth of Medi-Cal adults saw a dentist for a preventive reason, and Asian adults had the highest rate of a preventive dental visit.



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APPENDIX 5. DENTAL DESERT CRITERIA.

The following parameters were used to define Dental Deserts and Oral Health Workforce Expansion Areas:

HIGH POPULATION DENSITY:

- 10,000 people per square mile:
  - Comparable to the previously completed 2014 Dental Desert map.
  - 10 most densely populated cities in the US have over an average population density of 10,000 people per square mile.

LOW MEDIAN HOUSEHOLD INCOME:

- < 138% of the Federal Poverty Level (FPL)
  - Medi-Cal eligible: Used family of 4 household size in estimate.

NO OR INSUFFICIENT DENTAL SERVICES:

- No publicly funded dental services available within 1 square mile of the high population density and low median household income areas of LA County.
  - Acceptable ratio of full-time equivalent (FTE) dentists to patients:
    - + California Office of Statewide Health Planning and Development defines a geographic area with unusually high needs if the ratio of 1 provider exceeds over 4,000 patients.
    - + Each dental clinic has an average of 2.5 providers, according to Centers for Medicare and Medicaid Services.
    - + Using definition for unusually high needs, each clinic's catchment area can serve 10,000 patients.

SOURCES OF DENTAL CLINIC LOCATIONS INCLUDED:

Federally-funded health centers that provide health services (2018):

- Health Resources & Services Administration (HRSA) dataset

Dental clinics and dental workforce data per clinic (2018):

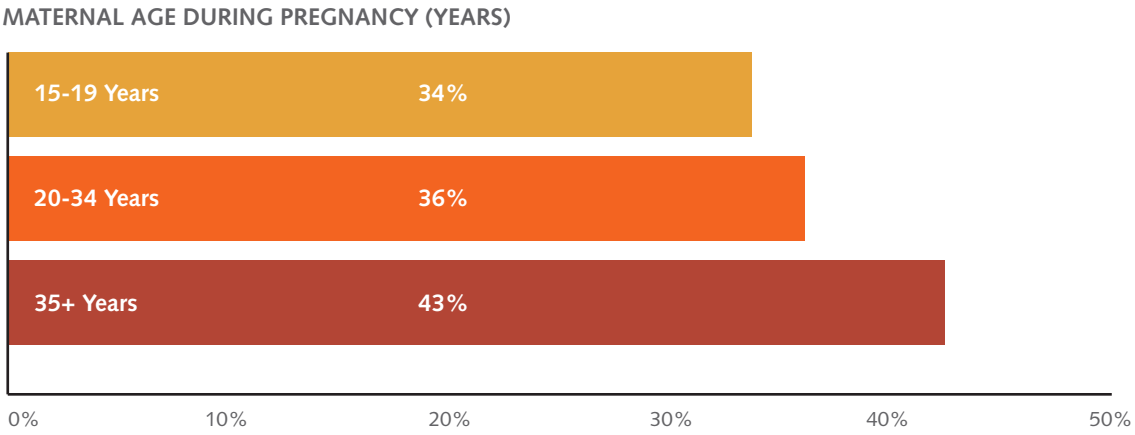
- Department of Health Services (DHS) Managed Care website
- LA County Hotline
- Community Clinic Association of Los Angeles County (CCALAC)
- My Health LA database
- Dental schools

Population data (2016):

- Los Angeles County eGIS geodatabase

APPENDIX 6. DENTAL VISITS AMONG PREGNANT WOMEN IN LOS ANGELES COUNTY BY AGE IN 2016.

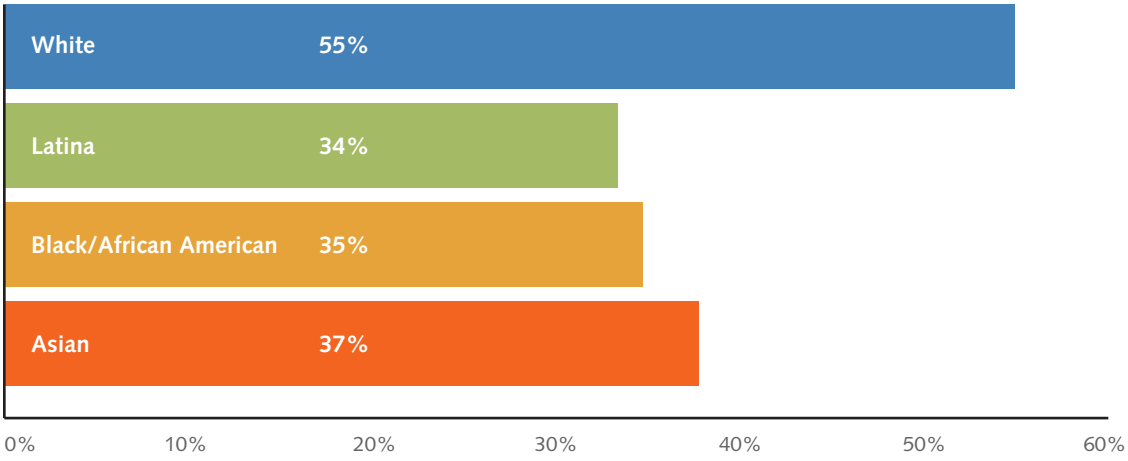
Dental Visits of Pregnant Women in Los Angeles County in 2016
Pregnant women aged 35 and over had a higher rate of an annual dental visit



Source: Prepared by the California Department of Public Health – Office of Oral Health. 2015-2016 MIHA Question: "During your most recent pregnancy, did you visit a dentist, dental clinic, or get dental care at any other health clinic?" Women could report Yes or No. 'Data source: MIHA is an annual population-based survey of California resident women with a live birth. Data from MIHA 2015-2016 were combined, resulting in a statewide sample size of 13,431. Prevalence (%), 95% confidence interval (95% CI), and estimated number of women in the population with the health indicator/characteristic (i.e., numerator of the percent rounded to the nearest hundred) are weighted to represent all women with a live birth who resided in California and the county/region in 2015-2016. Population estimates are a two-year average (2015-2016). County and regional comparisons indicate whether the health indicator in the county or region was statistically different from the rest of the state (p-value < 0.05, chi-square test). MIHA is a collaborative effort of the Maternal, Child and Adolescent Health Division and the Women, Infants and Children Division in the California Department of Public Health and the Center on Social Disparities in Health at the University of California, San Francisco. See the Technical Notes for information on weighting, comparability to prior years and technical definitions. Visit the MIHA website at www.cdph.ca.gov/MIHA. Prepared by: California Department of Public Health; Center for Family Health; Maternal, Child and Adolescent Health Program; Epidemiology, Surveillance and Federal Reporting Branch.

APPENDIX 7. DENTAL VISITS AMONG PREGNANT WOMEN IN LOS ANGELES COUNTY BY RACE/ETHNICITY IN 2016.

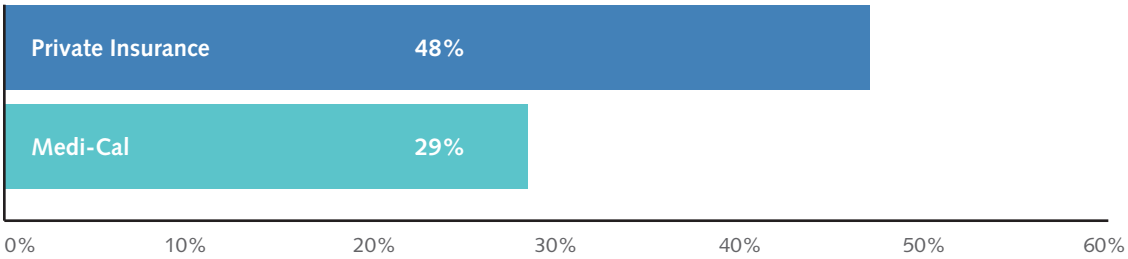
Dental Visits of Pregnant Women in Los Angeles County in 2016
Over half of pregnant women who are White had a dental visit



Source: Health Indicators for Mothers and Babies in Los Angeles County, 2016. Los Angeles County Department of Public Health, Maternal Child & Adolescent Health Division, Research Evaluation and Planning Unit. Los Angeles Mommy and Baby Project.

APPENDIX 8. DENTAL VISITS AMONG PREGNANT WOMEN IN LOS ANGELES COUNTY BY INSURANCE GROUP IN 2016.

Dental Visits of Pregnant Women in Los Angeles County in 2016
Less than one-third of pregnant women with Medi-Cal had a dental visit

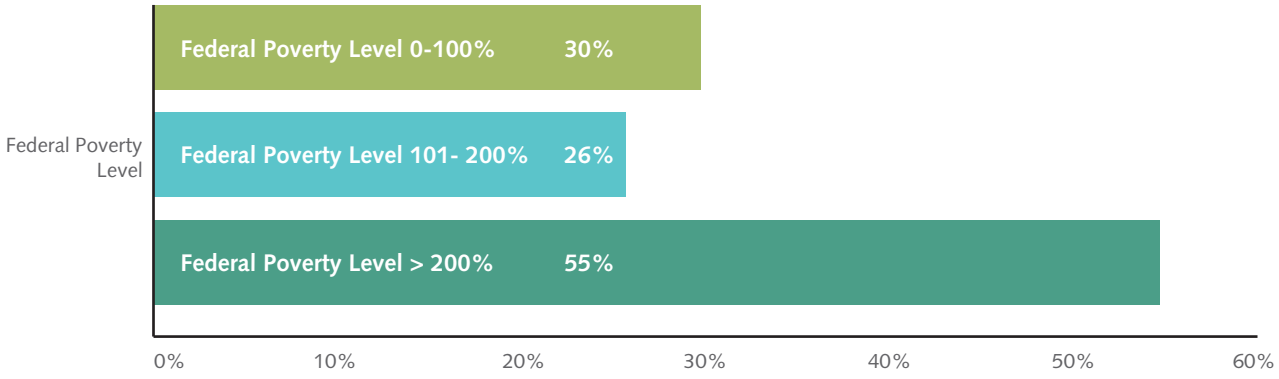


Source: Prepared by the California Department of Public Health – Office of Oral Health. 2015-2016 MIHA Question: "During your most recent pregnancy, did you visit a dentist, dental clinic, or get dental care at any other health clinic?" Women could report Yes or No. 'Data source: MIHA is an annual population-based survey of California resident women with a live birth. Data from MIHA 2015-2016 were combined, resulting in a statewide sample size of 13,431. Prevalence (%), 95% confidence interval (95% CI), and estimated number of women in the population with the health indicator/characteristic (i.e., numerator of the percent rounded to the nearest hundred) are weighted to represent all women with a live birth who resided in California and the county/region in 2015-2016. Population estimates are a two-year average (2015-2016). County and regional comparisons indicate whether the health indicator in the county or region was statistically different from the rest of the state (p-value < 0.05, chi-square test). MIHA is a collaborative effort of the Maternal, Child and Adolescent Health Division and the Women, Infants and Children Division in the California Department of Public Health and the Center on Social Disparities in Health at the University of California, San Francisco. See the Technical Notes for information on weighting, comparability to prior years and technical definitions. Visit the MIHA website at www.cdph.ca.gov/MIHA. Prepared by: California Department of Public Health; Center for Family Health; Maternal, Child and Adolescent Health Program; Epidemiology, Surveillance and Federal Reporting Branch.

APPENDIX 9. DENTAL VISITS AMONG PREGNANT WOMEN IN LOS ANGELES COUNTY BY FEDERAL POVERTY LEVEL (FPL) IN 2016.

Dental Visits of Pregnant Women in Los Angeles County in 2016

Less than one-third of lower income pregnant women visited the dentist



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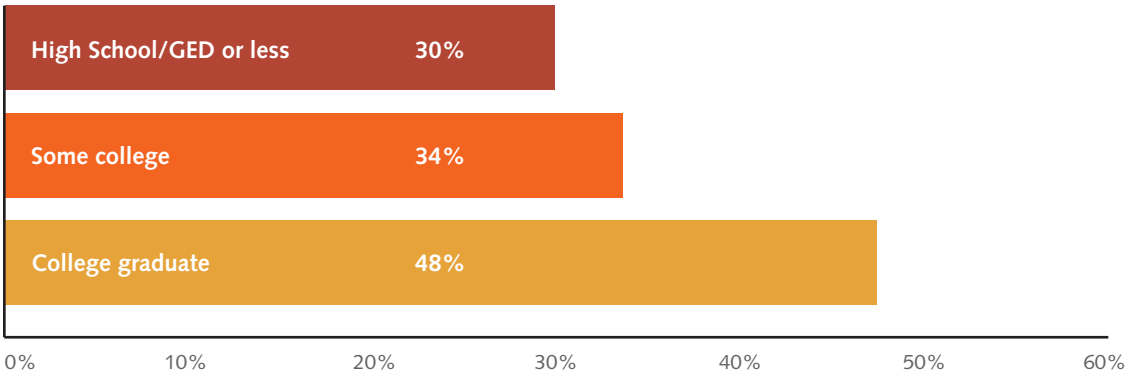
APPENDIX 10. DENTAL VISITS AMONG PREGNANT WOMEN IN LOS ANGELES COUNTY BY EDUCATION IN 2016.

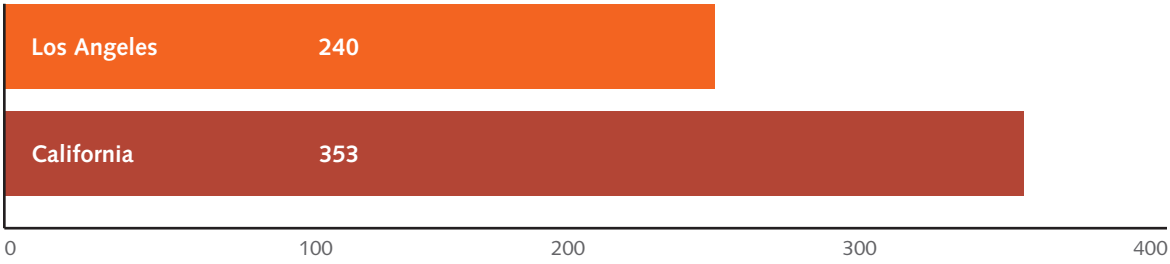
Dental Visits of Pregnant Women in Los Angeles County in 2016
Half of college graduated pregnant women had a dental visit



Source: Prepared by the California Department of Public Health – Office of Oral Health. 2015-2016 MIHA Question: "During your most recent pregnancy, did you visit a dentist, dental clinic, or get dental care at any other health clinic?" Women could report Yes or No. 'Data source: MIHA is an annual population-based survey of California resident women with a live birth. Data from MIHA 2015-2016 were combined, resulting in a statewide sample size of 13,431. Prevalence (%), 95% confidence interval (95% CI), and estimated number of women in the population with the health indicator/characteristic (i.e., numerator of the percent rounded to the nearest hundred) are weighted to represent all women with a live birth who resided in California and the county/region in 2015-2016. Population estimates are a two-year average (2015-2016). County and regional comparisons indicate whether the health indicator in the county or region was statistically different from the rest of the state (p-value < 0.05, chi-square test). MIHA is a collaborative effort of the Maternal, Child and Adolescent Health Division and the Women, Infants and Children Division in the California Department of Public Health and the Center on Social Disparities in Health at the University of California, San Francisco. See the Technical Notes for information on weighting, comparability to prior years and technical definitions. Visit the MIHA website at www.cdph.ca.gov/MIHA. Prepared by: California Department of Public Health; Center for Family Health; Maternal, Child and Adolescent Health Program; Epidemiology, Surveillance and Federal Reporting Branch.

APPENDIX 11. NON-TRAUMATIC DENTAL CONDITIONS (NTDC) EMERGENCY DEPARTMENT (ED) VISITS IN LOS ANGELES COUNTY AND CALIFORNIA FROM 2012-2016.

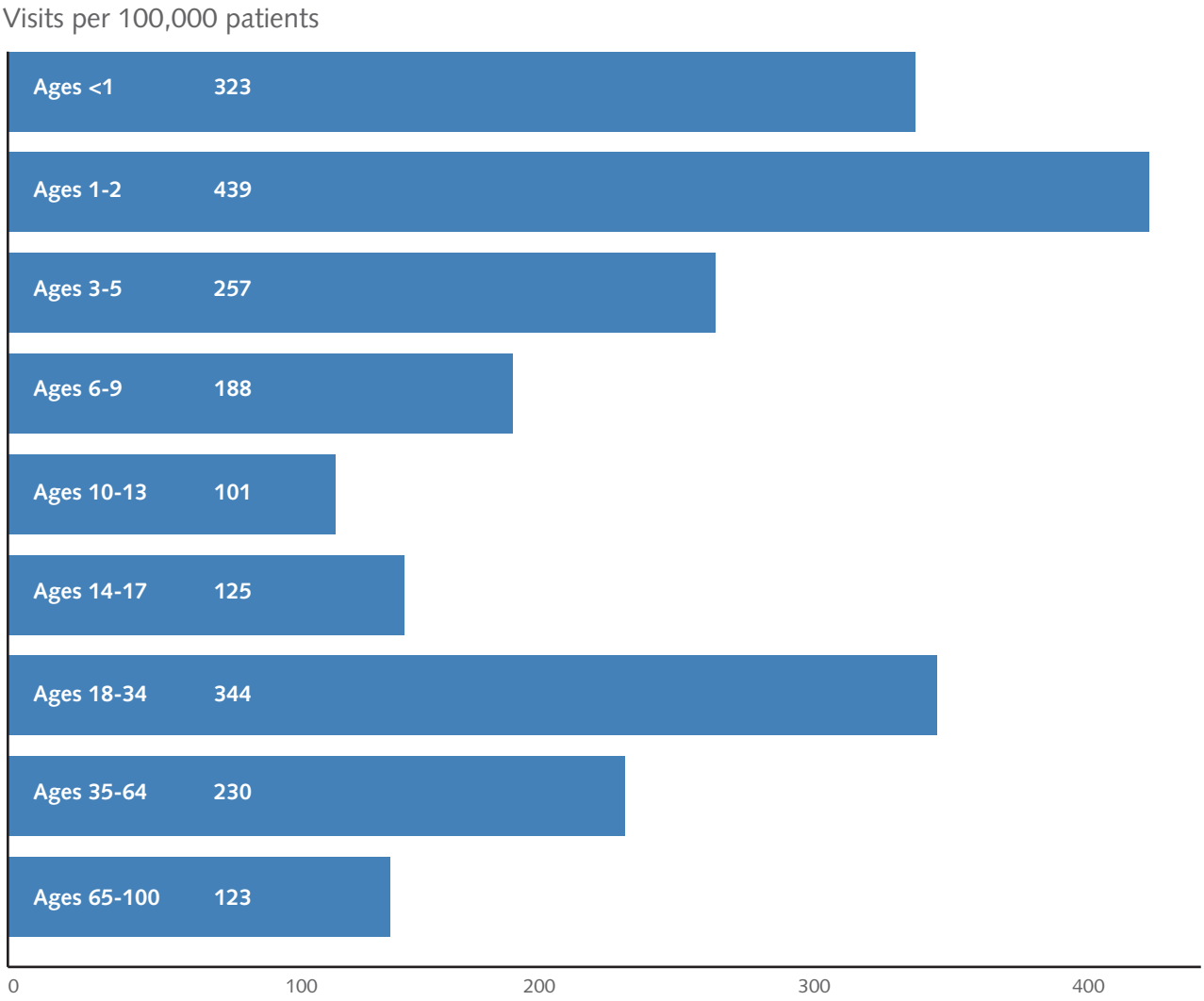
NTDC ED Visits in California and Los Angeles County from 2012-2016, number per 100,000 population



Source: Prepared by the California Department of Public Health – Office of Oral Health. The Office of Statewide Health Planning and Development (OSHPD) collect data about each emergency department (ED) visit from all hospitals in California. Each visit is given a code based on the International Classification of Diseases (ICD). These codes can be utilized to identify non-traumatic dental conditions (NTDC) that are seen in the emergency room. During 2015, hospitals in the United States switched from using the ninth edition of ICD (ICD-9) to the 10th edition (ICD-10). The ASTDD reference below consists of a list of codes and their associated descriptions used to define NTDCs. NTDCs range from caries, periodontal disease, erosion, cysts, impacted teeth and all other non-traumatic conditions in the mouth. Damage to the mouth that is deemed to be due to trauma is excluded from this list. Data come from the OSHPD 2012-2016 Emergency Department files. Population estimates for each county came from the California Department of Finance. The rate of NTDCs do not exclude visits from the same person coming multiple times. These rates are not age-adjusted.

APPENDIX 12. NON-TRAUMATIC DENTAL CONDITION (NTDC) EMERGENCY DEPARTMENT (ED) VISITS IN LOS ANGELES COUNTY FROM 2012-2016 BY AGE GROUP.

NTDC ED Visits in Los Angeles County from 2012-2016
The highest rate of NTDC ED visits was among 1-2 year-olds

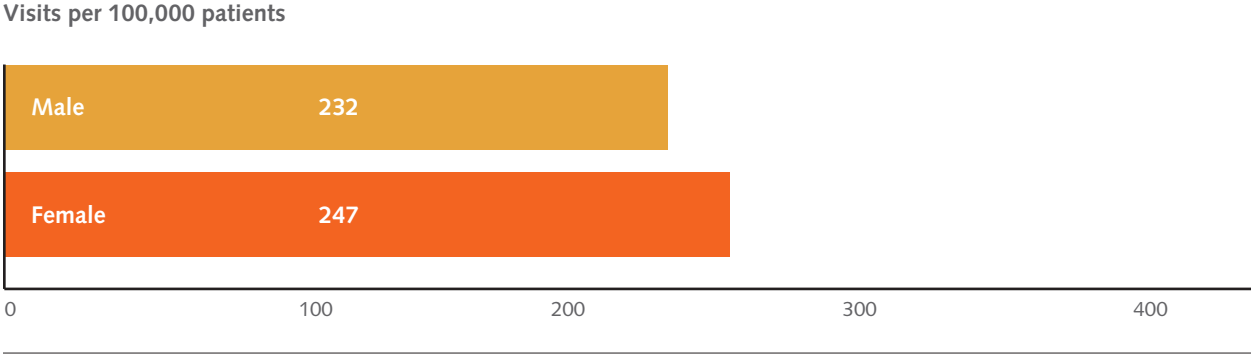


Source: Prepared by the California Department of Public Health – Office of Oral Health. The Office of Statewide Health Planning and Development (OSHPD) collect data about each emergency department (ED) visit from all hospitals in California. Each visit is given a code based on the International Classification of Diseases (ICD). These codes can be utilized to identify non-traumatic dental conditions (NTDC) that are seen in the emergency room. During 2015, hospitals in the United States switched from using the ninth edition of ICD (ICD-9) to the 10th edition (ICD-10). The ASTDD reference below consists of a list of codes and their associated descriptions used to define NTDCs. NTDCs range from caries, periodontal disease, erosion, cysts, impacted teeth and all other non-traumatic conditions in the mouth. Damage to the mouth that is deemed to be due to trauma is excluded from this list. Data come from the OSHPD 2012-2016 Emergency Department files. Population estimates for each county came from the California Department of Finance. The rate of NTDCs do not exclude visits from the same person coming multiple times. These rates are not age-adjusted.

APPENDIX 13. NON-TRAUMATIC DENTAL CONDITION (NTDC) EMERGENCY DEPARTMENT (ED) VISITS IN LOS ANGELES COUNTY FROM 2012-2016 BY GENDER.

NTDC ED Visits in Los Angeles County from 2012-2016

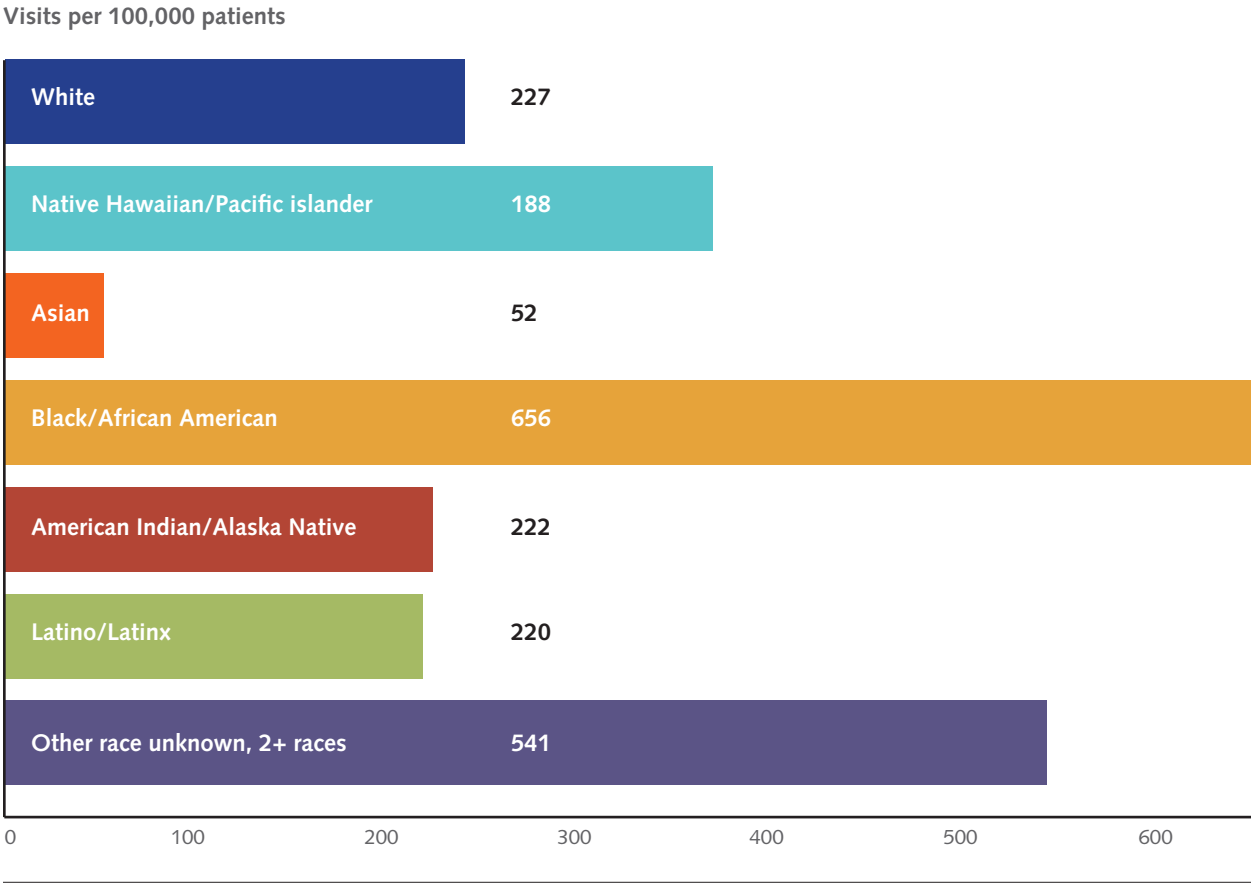
The rates of NTDC ED visits were about equal when comparing males and females



Source: Prepared by the California Department of Public Health – Office of Oral Health. The Office of Statewide Health Planning and Development (OSHPD) collect data about each emergency department (ED) visit from all hospitals in California. Each visit is given a code based on the International Classification of Diseases (ICD). These codes can be utilized to identify non-traumatic dental conditions (NTDC) that are seen in the emergency room. During 2015, hospitals in the United States switched from using the ninth edition of ICD (ICD-9) to the 10th edition (ICD-10). The ASTDD reference below consists of a list of codes and their associated descriptions used to define NTDCs. NTDCs range from caries, periodontal disease, erosion, cysts, impacted teeth and all other non-traumatic conditions in the mouth. Damage to the mouth that is deemed to be due to trauma is excluded from this list. Data come from the OSHPD 2012-2016 Emergency Department files. Population estimates for each county came from the California Department of Finance. The rate of NTDCs do not exclude visits from the same person coming multiple times. These rates are not age-adjusted.

APPENDIX 14. NON-TRAUMATIC DENTAL CONDITION (NTDC) EMERGENCY DEPARTMENT (ED) VISITS IN LOS ANGELES COUNTY FROM 2012-2016 BY RACE/ETHNICITY.

NTDC ED Visits in Los Angeles County from 2012-2016
The rate of NTDC ED visits was highest among Black/African American patients



Source: Prepared by the California Department of Public Health – Office of Oral Health. The Office of Statewide Health Planning and Development (OSHPD) collect data about each emergency department (ED) visit from all hospitals in California. Each visit is given a code based on the International Classification of Diseases (ICD). These codes can be utilized to identify non-traumatic dental conditions (NTDC) that are seen in the emergency room. During 2015, hospitals in the United States switched from using the ninth edition of ICD (ICD-9) to the 10th edition (ICD-10). The ASTDD reference below consists of a list of codes and their associated descriptions used to define NTDCs. NTDCs range from caries, periodontal disease, erosion, cysts, impacted teeth and all other non-traumatic conditions in the mouth. Damage to the mouth that is deemed to be due to trauma is excluded from this list. Data come from the OSHPD 2012-2016 Emergency Department files. Population estimates for each county came from the California Department of Finance. The rate of NTDCs do not exclude visits from the same person coming multiple times. These rates are not age-adjusted.

LIST OF FIGURES

LIST OF TABLES

NOTES

NOTES

Our Vision for Los Angeles County

A community where oral health is recognized as essential for overall health, and where everyone has the opportunity to achieve optimal health and well-being.

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