



# The Oral Health of Hawaii's Low-Income Head Start Children

Data Report and Key Findings

## Executive Summary

The Hawaii State Department of Health looked at the oral health status of preschool children ages 3-5 years in Hawaii's Head Start program. Head Start is a federally funded program that provides comprehensive early childhood education, health, nutrition, and parent involvement services to low-income children and their families. Most Head Start children are from families that earn less than 100% of the federal poverty level and qualify for other services, including Medicaid. During the 2017-2018 school year, dental screenings were conducted at all Head Start sites in Hawaii, and a total of 1,818 children were screened.

Head Start children are often screened to generate oral health data for state preschool populations. This state data is collected and reported to the National Oral Health Surveillance System. The findings presented in this report document the need to provide comprehensive dental services starting in infancy through preschool.

Survey results confirm Hawaii's low-income preschool children have the highest prevalence of tooth decay in the United States. The results also demonstrate that the burden of oral disease is significantly greater in certain segments of the population. There are oral health disparities based on race/ethnicity with Native Hawaiian and Pacific Islander children having the highest prevalence of untreated tooth decay. About 46% of Native Hawaiian and Pacific Islander children have untreated decay – almost two times higher than the prevalence among White children (25%). The race/ethnicity disparities gap is more pronounced when we look at the need for urgent dental care. Twelve percent (12%) of Native Hawaiian and Pacific Islander children have dental pain and/or infection compared to only 1% of White children.

Everyone has a role in improving and promoting the oral health of Hawaii's children. Collective action on the part of policymakers, preschool program staff, dental professionals, health advocates, and families to make oral health a priority is needed.

## Key Findings:

1. Tooth decay is a significant public health problem for Hawaii's low-income preschool children. More than 6 out of 10 Hawaii Head Start children aged 3-5 years (61%) have already experienced tooth decay, the highest prevalence for the 14 states with similar data.
2. Almost 4 out of 10 Head Start children (39%) in Hawaii have untreated tooth decay, demonstrating that many children are not getting the dental care they need. Compared to 3-5-year-old, low-income children throughout the United States, Head Start children in Hawaii are twice as likely to have untreated tooth decay.
3. About 8% of Hawaii's Head Start children need urgent dental care because of pain or infection. If applied to the number of 3-5-year-olds in Hawaii on Medicaid, more than 2,200 children aged 3-5 years experience pain or infection due to dental disease on any given day.
4. To prevent dental disease in Hawaii's low-income children, prevention activities must start early. By 3 years of age, almost half (49%) of all Head Start children have already experienced tooth decay. Prevention efforts should start in infancy.
5. There are significant oral health disparities among Hawaii's Head Start children. Native Hawaiian and Pacific Islander children have the highest prevalence of decay experience, severe tooth decay, untreated decay, and urgent treatment needs.
6. Compared to low-income children throughout the United States, Hawaii's low-income Head Start children have a significantly higher prevalence of decay experience and untreated decay.
7. Among Hawaii's Head Start children, the prevalence of tooth decay is highest for those living in Kauai County while the prevalence of untreated decay is highest in Honolulu and Kauai counties.

## Quick Facts

### Tooth Decay:

- Sixty-one percent (61%) of Hawaii's Head Start children have at least one tooth with decay.
- Thirty-nine percent (39%) of Hawaii's Head Start children have severe tooth decay, meaning they have decay on four or more teeth.
- Eleven percent (11%) of Hawaii's Head Start children have tooth decay on 10 or more teeth; at least half of their 20 primary (baby) teeth.
- On average, Hawaii's Head Start children have 3.5 teeth with decay.

### Untreated Tooth Decay:

- Thirty-nine percent (39%) of Hawaii's Head Start children have untreated tooth decay.

### Need for Urgent Dental Care:

- Eight percent (8%) of Hawaii's Head Start children need urgent dental care because of pain or infection.

### Oral Health Disparities:

- Compared to low-income U.S. children aged 3-5 years, Hawaii's low-income Head Start children have a substantially higher prevalence of tooth decay, including untreated decay.
- Among Hawaii's Head Start children, Native Hawaiian and Pacific Islander children have the highest prevalence of tooth decay, severe tooth decay, untreated decay, and urgent treatment needs.

### Early Prevention:

- To prevent oral disease in Hawaii's low-income population, prevention activities must start early. By 3 years of age, almost half (49%) of all Head Start children have already experienced tooth decay. Good oral hygiene and dietary habits should start at birth and children should have regular preventive dental visits starting at 1 year of age.

Despite improvements nationally, profound oral health disparities and barriers to care remain in certain populations, including children enrolled in the Head Start (HS) program. As this report confirms, these children experience more tooth decay and resulting pain and suffering than children from families of higher incomes. To address poor oral health in children, birth to five, HS provides preventive health-promotion messages to children and parents about the benefits of proper oral health care early in life; tracks the provision of oral health care; and assists parents in obtaining dental examination and follow-up services.



## Importance of Oral Health in Early Childhood

Tooth decay is a disease affecting both children and adults. When exposed to sugars and other carbohydrates, some bacteria in the mouth produce acids that dissolve the minerals in the outer layer of the tooth that can advance to form a cavity. Tooth decay can occur at any age after teeth begin to appear in the mouth.



For most children, teeth begin to appear at about 6 months of age and by 3 years of age, they will have a full set of 20 primary (baby) teeth.

Particularly damaging forms of decay can begin in early childhood when primary teeth are especially vulnerable. This type of decay is called early

childhood caries (ECC). ECC is the most common chronic early childhood disease in the United States, making it five times more common than asthma in children younger than age 6.

Cavities can develop quickly and, if untreated, can infect the tooth's nerves and blood supply that can lead to an abscess; destruction of bone supporting the tooth; and spread of infection via the bloodstream, resulting in a medical and dental emergency that could require hospitalization. The longer ECC remains untreated, the worse the condition gets, making it more difficult to treat. Advanced ECC requires complicated dental procedures, such as extractions and crowns, often performed using general anesthesia. These complicated procedures are more expensive and must be performed by dentists with specialty training in treating children (pediatric dentists).

Oral health and general health are intertwined, so poor oral health can affect a child's overall health and well-being. Dental disease can result in pain, infection, the inability to chew foods well, and distraction from play and learning.

**Tooth decay in the primary teeth is of special importance because it increases the child's risk for future oral health problems.** Abscessed primary teeth can potentially damage the developing permanent teeth, and if baby teeth are lost early, the child's permanent teeth are more likely to be out of proper position, leaving them more susceptible to decay, gum disease, and the need for braces.

Other short- and long-term impacts of advanced tooth decay on the overall health of young children include:

- Increased vulnerability to infections in other parts of the body, such as the ears, sinuses, and brain
- Failure to thrive, impaired speech development, and reduced self-esteem
- Shyness, unhappiness, feelings of worthlessness, and reduced friendliness

The good news is that most tooth decay is preventable if children have access to evidence-based prevention strategies starting in infancy. To prevent tooth decay, the American Academy of Pediatrics recommends several strategies for enhancing the oral health of young children, including:

- Parent/caregiver education on oral health (particularly eating nutritious foods)
- Limiting sugars
- Brushing teeth with a toothpaste containing fluoride)
- First preventive visit to a dentist within six months of the first tooth erupting and no later than age 1, with preventive check-ups thereafter
- Series of topical fluoride applications to children's teeth
- Drinking fluoridated water

Oral health prevention can be supported by pediatric providers as well as early childhood program providers, including WIC.

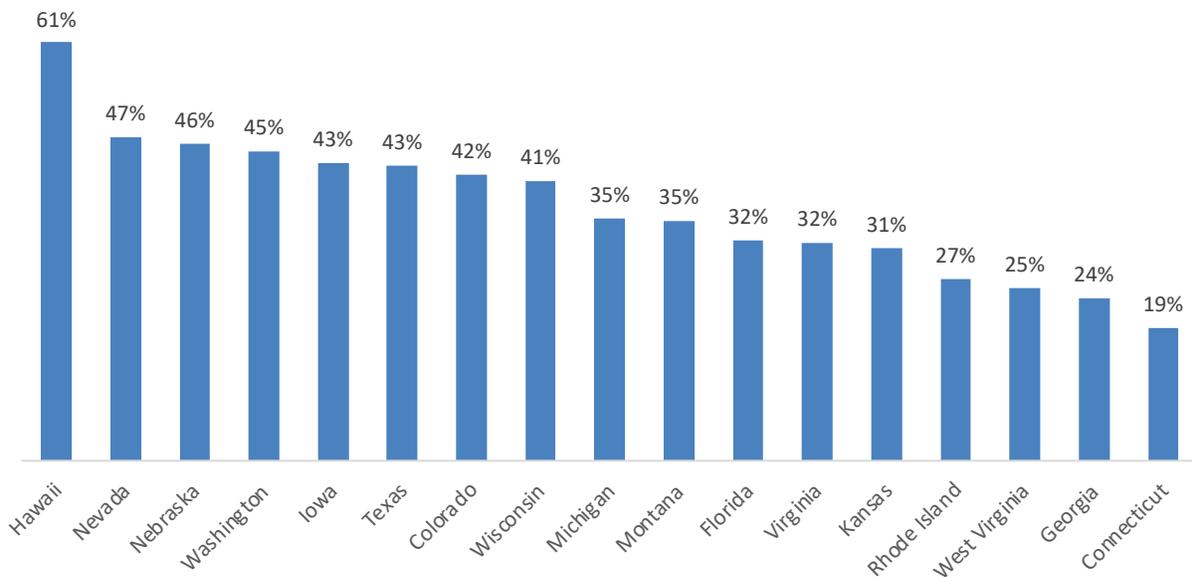
## Key Finding #1

*Tooth decay is a significant public health problem for Hawaii's low-income preschool children. More than 6 out of 10 Hawaii Head Start children aged 3-5 years (61%) have already experienced tooth decay, the highest prevalence for any state that has collected similar data.*



# 6 out of 10 children

Percentage of Head Start children aged 3-5 years with tooth decay.  
Hawaii compared to other states with similar data.



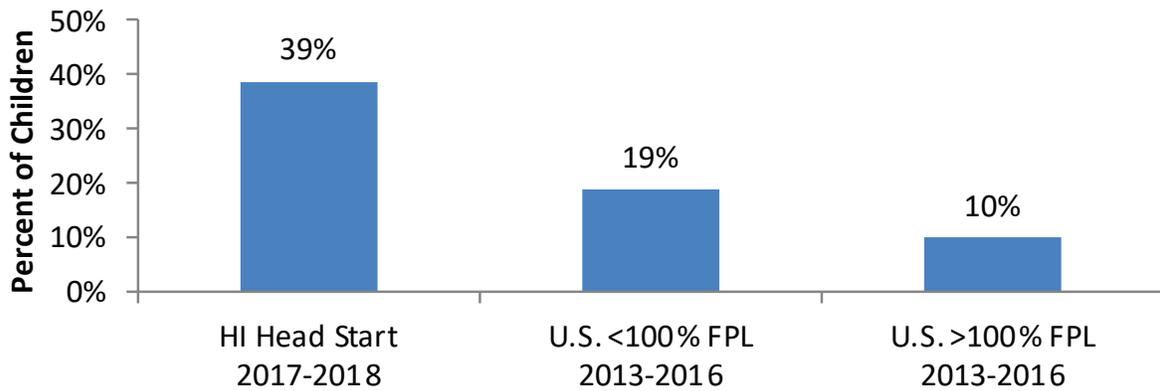
Evidence that a child has had tooth decay includes untreated tooth decay or treated decay (indicated by fillings, crowns, or teeth that have been extracted). Among Hawaii's low-income Head Start children, 61% have experienced tooth decay, the highest prevalence for any state that has collected similar data. This suggests that Hawaii needs more primary prevention programs. Primary prevention programs may include parent and caregiver education, topical fluoride applications, preschool and home tooth brushing programs, and dental sealants. Hawaii is the state with the lowest percent of its population served by fluoridated water (9% vs. 73% nationally). Because of this, Hawaii's children must access fluoride from other, more costly sources if they are to receive the tooth decay prevention benefits of fluoride.

With early prevention efforts, tooth decay can be averted. Medical, dental, and public health professionals must focus dental disease prevention efforts on families with children younger than 2 years of age because **2 is too late**. The American Dental Association, American Academy of Pediatric Dentistry, and American Academy of Pediatrics all recommend preventive dental care and parent education by age 1.

## Key Finding #2

*Almost 4 out of 10 Head Start children (39%) in Hawaii have untreated tooth decay, demonstrating that many children are not getting the dental care they need. Compared to 3-5-year-old, low-income children throughout the United States, Head Start children in Hawaii are twice as likely to have untreated tooth decay.*

Children aged 3-5 Years with Untreated Decay; Hawaii Head Start Compared to U.S. Low- Income (<100% FPL) and U.S. Higher-Income (>100% FPL) similar data.



FPL = Federal poverty level

Having untreated decay means that a child has tooth decay or a cavity that has not received appropriate treatment. Tooth decay in children destroys more than just a smile. Untreated decay compromises the child's ability to eat well, sleep well, and function well at home and at school. In addition, the unpleasant appearance of untreated decay can compromise a child's self-esteem and social development. Untreated tooth decay in children can be painful and, without appropriate treatment, can lead to serious infection of the teeth and gums. Although rare, infections due to untreated tooth decay can lead to severe illness and even death.

Due to their young age and sometimes limited ability to sit in a dental chair for long appointments, treatment of preschool children with severe decay is occasionally provided in a hospital-based operating room or surgical center under general anesthesia. Because of this, the cost of treatment can be enormous and the risk to the child can be substantial. On average, the total cost of treating a child's dental disease at a surgery center under general anesthesia in New York during 2004-2008 was \$4,800-\$6,300 per child. Anecdotal information suggests that the current cost of treating a child's dental disease in a hospital or surgery center setting ranges from \$6,000-\$12,000 per child.



### Key Finding #3

*About 8% of Hawaii's Head Start children need urgent dental care because of pain or infection. If applied to the number of 3-5-year-olds in Hawaii on Medicaid, more than 2,200 children aged 3-5 years experience pain or infection due to dental disease on any given day.*

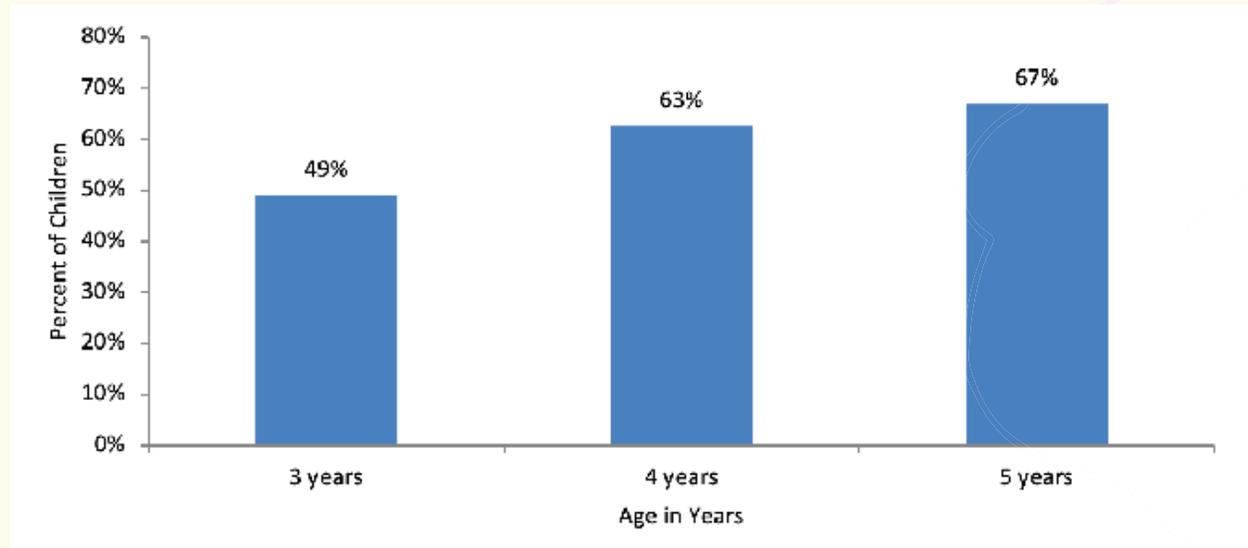
About 39% of Hawaii's Head Start children have untreated tooth decay – with 8% needing urgent dental care because of pain or infection. Head Start targets low-income children, and most Head Start children are eligible for Medicaid. In fiscal year 2019, there were 27,692 Medicaid beneficiaries in Hawaii between 3-5 years of age. If 39% have untreated decay, this means that more than 10,700 low-income preschool children have a cavity and about 2,200 of them have pain or an oral infection, both of which can affect their ability to concentrate and learn.

The Head Start survey did not include complete diagnostic dental examinations. Instead, dental screenings were performed. This is a quick look inside the mouth with a dental mirror without x-rays and the more advanced diagnostic tools. Because of this, some problems were likely missed. It is reasonable to assume that these findings underestimate the number of children needing dental care. Dental care can be costly, and without dental insurance, many families cannot afford comprehensive dental care. Even dental insurance coverage alone, especially publicly funded coverage such as Medicaid, does not guarantee access to dental care. Many dentists are reluctant to participate in Medicaid because of several factors such as low reimbursement rates, which are about one-half of what they would receive from private insurance companies. Also, many dentists may not have the necessary training or experience to provide care to very young children.

## Key Finding #4

*To prevent dental disease in Hawaii's low-income children, prevention activities must start early. By 3 years of age, almost half (49%) of all Head Start children have already experienced tooth decay. Prevention efforts should start in infancy.*

Hawaii's Head Start Children with Tooth Decay by Age



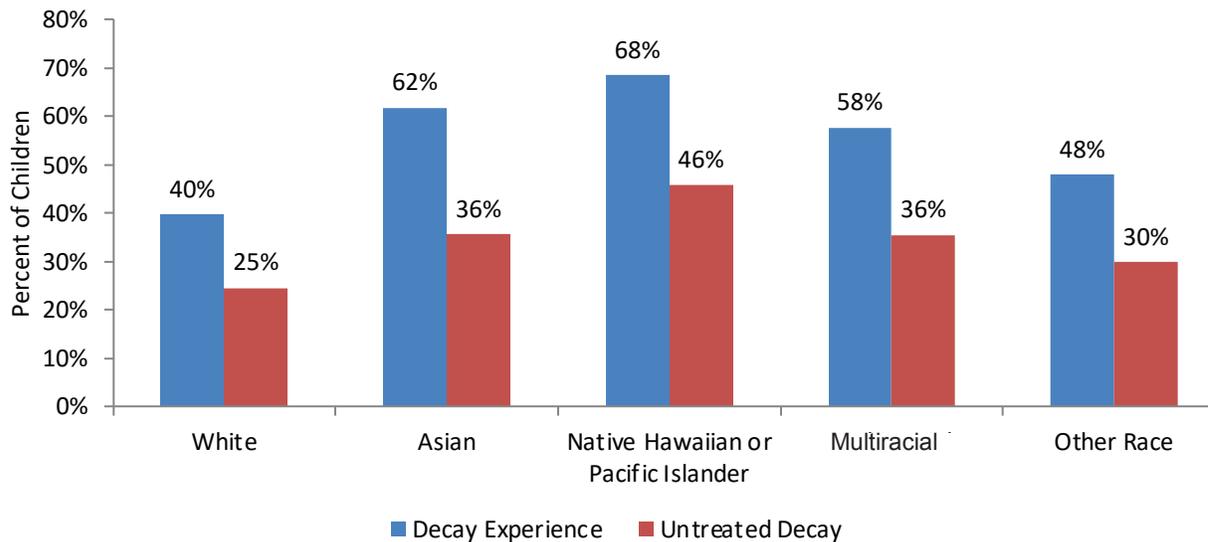
Early prevention efforts are critical for the eradication of dental disease in Hawaii's low-income children. By 3 years of age, almost half of Hawaii's Head Start children (49%) already have decayed teeth, and the percentage with decay rises dramatically with age. To prevent this bacterial disease from occurring and spreading, it is important to start preventive oral health efforts in infancy.

The American Dental Association, American Academy of Pediatric Dentistry, and American Academy of Pediatrics all recommend early preventive dental care and parent/caregiver education. Good oral hygiene and dietary habits should start at birth and children should have regular preventive dental visits starting at 1 year of age. The American Academy of Pediatric Dentistry recommends several opportunities to educate the parent (or the primary caregiver) and the infant. Parents and caregivers need to learn about: risk factors and causes of disease; use of fluoride in water and toothpaste; oral hygiene starting in infancy; proper diet; treatment of decay; and how cavity-causing bacteria may be transmitted from primary caregiver to child. For high-risk children, dental decay prevention strategies should be an integral part of healthcare messages given by medical, nursing, public health, and allied health professionals.

### Key Finding #5

*There are significant oral health disparities among Hawaii's Head Start children. Native Hawaiian and Pacific Islander children have the highest prevalence of tooth decay, severe decay, untreated decay, and urgent treatment needs.*

Hawaii's Head Start Children Aged 3-5 Years With Tooth Decay and Untreated Decay by Race

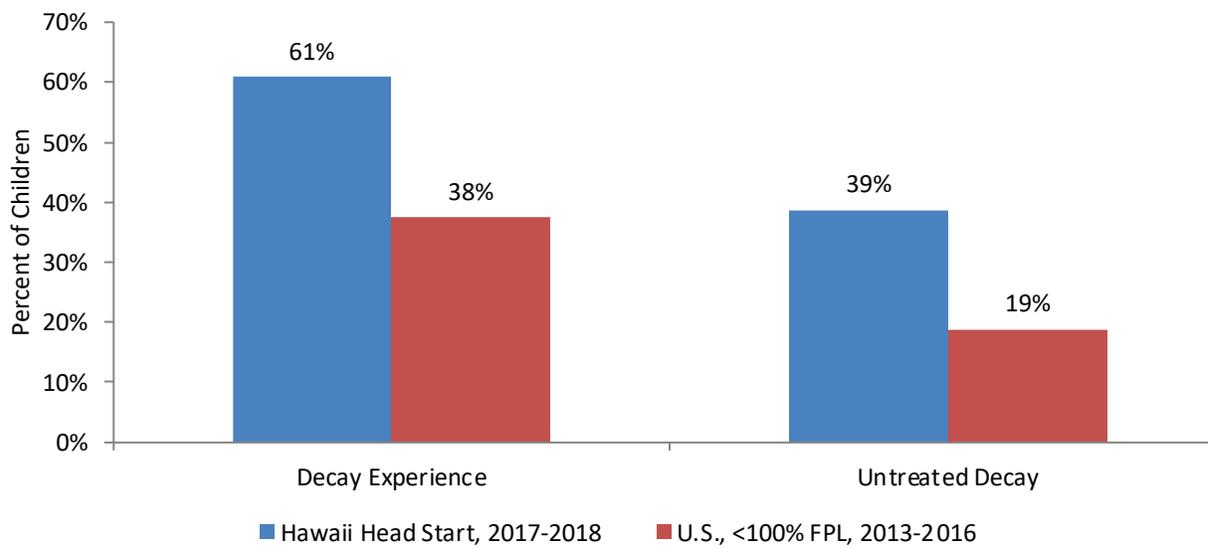


Among Hawaii's Head Start children, Native Hawaiian/Pacific Islander, Asian, and multiracial children are substantially more likely to have tooth decay and untreated decay than non-Hispanic White children. This suggests that racial/ethnic minorities are not receiving the benefit of early preventive services and are less likely to access a dentist for treatment. The prevalence of tooth decay among Native Hawaiian and Pacific Islander children is similar to that found in similarly aged American Indian and Alaska Native children enrolled in Head Start (68% vs. 71%).

## Key Finding #6

*Compared to low-income children throughout the U.S., Hawaii's low-income Head Start children have a significantly higher prevalence of tooth decay and untreated decay.*

**Hawaii's Head Start Children Aged 3-5 Years with Tooth Decay and Untreated Decay Compared to U.S. Low-Income (<100% FPL) Children Aged 3-5 Years**



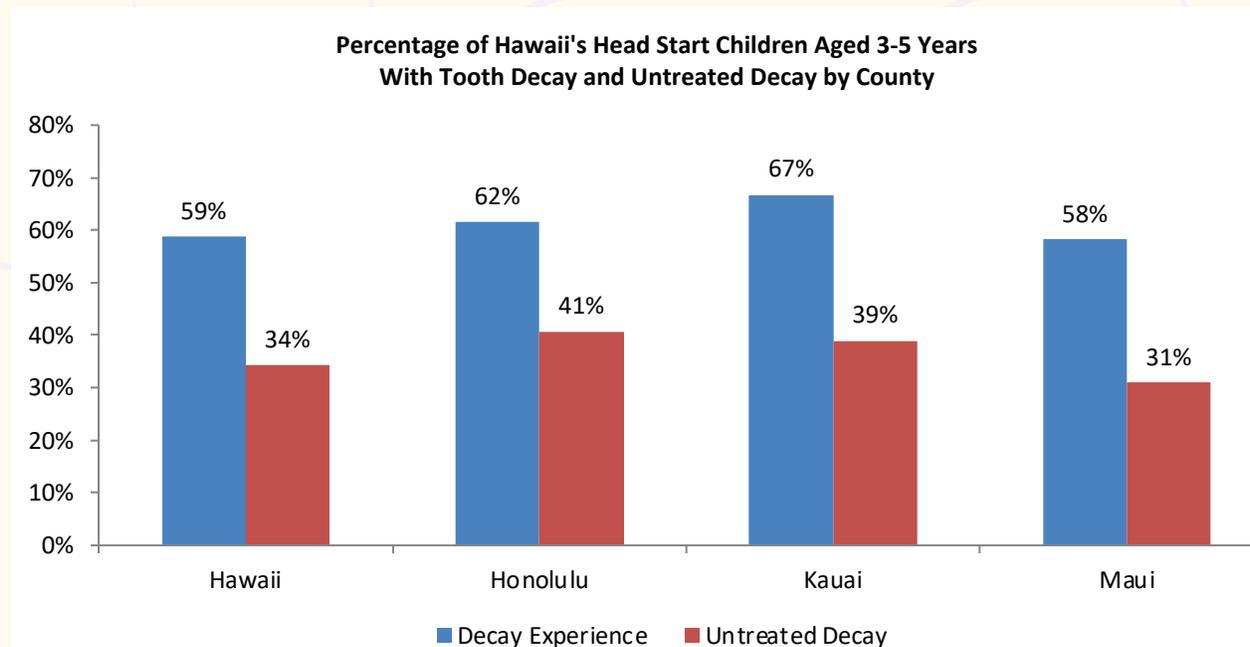
The most influential sociodemographic indicator for oral health disparities in the United States is income, with low-income children having significantly more decay than higher income children. The family income for most Head Start children is below the federal poverty level (FPL). The oral health of Hawaii's Head Start children was compared to similarly aged children throughout the U.S. from households with incomes below the FPL. Unfortunately, low-income Head Start children in Hawaii have substantially more tooth decay and untreated decay than the U.S. national averages for low-income children (61% vs. 38% and 39% vs. 19%, respectively).



## Key Finding #7

*Among Hawaii's Head Start children, the prevalence of tooth decay is highest for those living in Kauai County, while the prevalence of untreated decay is highest in Honolulu and Kauai counties.*

Hawaii's Head Start Children Aged 3-5 Years With Tooth Decay and Untreated Decay by County



Head Start children living in Kauai County have the highest prevalence of tooth decay. While 58% of Head Start children in Maui County have a history of tooth decay, 67% of children living in Kauai County have evidence of decay. One reason for the higher prevalence of dental decay when comparing counties may be associated with lack of access to preventive oral healthcare. Due to the increased prevalence of disease demonstrated among children in Kauai County, additional primary prevention programs may be beneficial along with increased access to early treatment.

## Methods

Hawaii Smiles screened children enrolled in Head Start, the target preschool population for the National Oral Health Surveillance System. All Head Start programs in Hawaii participated, and all children at the site on the screening day received a dental screening, unless prevented by behavioral management issues. All screenings were completed during the 2017-2018 school year.

Trained dental professionals completed the screenings using gloves, penlights, and disposable mouth mirrors. The diagnostic criteria used is outlined in the Association of State and Territorial Dental Directors' publication, *Basic Screening Surveys: An Approach to Monitoring Community Oral Health*, were used. Parent-reported race, ethnicity, and primary language spoken at home were obtained from the Head Start center staff. Data was collected using paper forms and statistical analyses were performed using SAS software (Version 9.4; SAS Institute Inc., Cary, NC). Because the survey was a census of all children enrolled in Head Start, confidence limits were not generated.



**Table 1.** Demographic and Geographic Characteristics of Children Screened during the Hawaii Head Start Oral Health Survey, 2017-2018

Characteristic	Head Start (n=1,818)	
	Number of children	% Children
Age		
3 years	390	21.5
4 years	886	48.7
5 years	508	27.9
6 years	1	0.1
Missing/Unknown	33	1.8
Sex		
Female	831	45.7
Male	975	53.6
Missing/Unknown	12	0.7
Ethnicity		
Not Hispanic	1,327	73.0
Hispanic	188	10.3
Missing/Unknown	303	16.7
Race		
Asian	301	16.6
Native Hawaiian/Pacific Islander	733	40.3
White	151	8.3
Multiracial	375	20.6
Other	117	6.4
Missing/Unknown	141	7.8
Language Spoken at Home		
English only	1,631	89.7
Other language or English plus another language	14	0.8
Missing/Unknown	2	0.1
County		
Hawaii	254	14.0
Honolulu	1,316	72.4
Kauai	54	3.0
Maui	194	10.7

Note: Due to rounding, percentages may not equal 100.

**Table 2.** Percentage of Hawaii’s Head Start Children aged 3-5 years with Decay Experience and Untreated Decay by Selected Characteristics, 2017-2018

Characteristic	% Children with decay experience	% Children with untreated decay
ALL CHILDREN (n=1,818)	60.9	38.7
Age		
3 years	49.0	35.9
4 years	62.5	40.3
5 years	66.9	37.6
Sex		
Female	59.5	38.3
Male	62.2	39.1
Ethnicity		
Not Hispanic	61.6	38.4
Hispanic	50.0	28.7
Missing/Unknown	64.4	46.5
Race		
Asian	61.8	35.6
Native Hawaiian/Pacific Islander	68.4	45.7
White	39.7	24.5
Multiracial	57.6	35.5
Other	47.9	29.9
Missing/Unknown	62.4	40.4
Language Spoken at Home		
English only	60.4	37.7
Other language or English plus another language	66.4	48.3
Missing/Unknown	63.4	47.9
County		
Hawaii	58.7	34.3
Honolulu	61.5	40.7
Kauai	66.7	38.9
Maui	58.3	30.9

**Table 3.** Percentage of Hawaii's Head Start Children aged 3-5 Years with Severe Decay Experience (> 4 teeth) by Selected Characteristics, 2017-2018

Characteristic	% Children with severe decay experience (> 4 teeth)
ALL CHILDREN (n=1,817)*	39.3
Age	
3 years	27.7
4 years	41.0
5 years	45.3
Sex	
Female	40.4
Male	38.4
Ethnicity	
Not Hispanic	40.5
Hispanic	27.1
Missing/Unknown	41.6
Race	
Asian	40.5
Native Hawaiian/Pacific Islander	45.4
White	21.2
Multiracial	35.3
Other	27.4
Missing/Unknown	44.7
Language Spoken at Home	
English only	38.7
Other language or English plus another language	46.6
Missing/Unknown	42.3
County	
Hawaii	40.6
Honolulu	38.6
Kauai	50.0
Maui	39.2

\*Information on severe decay experience was missing for one child.

**Table 4.** Mean Number of Teeth with Untreated Decay, Arrested Decay, Treated Decay, and Total Teeth with a History of Decay (dmft) among Hawaii's Head Start Children aged 3-5 Years by Selected Characteristics, 2017-2018

Characteristic	Number of teeth with untreated decay	Number of teeth with arrested decay	Number of teeth with treated decay	Number of teeth with a history of decay (dmft)
ALL CHILDREN (n=1,817) *	1.1	0.2	2.2	3.5
Age				
3 years	1.1	0.1	1.2	2.4
4 years	1.2	0.1	2.4	3.8
5 years	0.9	0.2	2.7	3.8
Sex				
Female	1.1	0.2	2.2	3.5
Male	1.1	0.1	2.3	3.5
Ethnicity				
Not Hispanic	1.1	0.2	2.3	3.6
Hispanic	0.7	0.0	1.7	2.3
Missing/Unknown	1.3	0.2	2.3	3.8
Race				
Asian	0.9	0.2	2.3	3.4
Native Hawaiian/Pacific Islander	1.4	0.2	2.5	4.1
White	0.5	0.1	1.2	1.7
Multiracial	1.0	0.1	2.1	3.1
Other	0.8	0.1	1.5	2.4
Missing/Unknown	1.2	0.2	2.5	3.9
Language Spoken at Home				
English only	1.1	0.1	2.2	3.4
Other language or English plus another language	1.5	0.2	2.5	4.1
Missing/Unknown	1.5	0.3	2.1	4.0
County				
Hawaii	1.0	0.2	2.3	3.5
Honolulu	1.2	0.2	2.1	3.4
Kauai	1.1	0.2	3.0	4.4
Maui	0.8	0.2	2.6	3.6

\*Information on arrested decay and treated decay was missing for one child.

NOTE: Due to rounding, the total number of teeth with decay experience may not equal the sum of untreated, arrested, and treated teeth.

**Table 5.** Percentage of Hawaii's Head Start Children Aged 3-5 Years Needing Dental Treatment by Selected Characteristics, 2017-2018

Characteristic	Needs early or urgent treatment	Needs urgent treatment
ALL CHILDREN (n=1,802)*	36.3	7.8
Age		
3 years	33.3	7.0
4 years	38.7	9.1
5 years	34.8	6.5
Sex		
Female	36.1	7.6
Male	36.5	8.0
Ethnicity		
Not Hispanic	36.1	7.8
Hispanic	28.8	5.4
Missing/Unknown	42.0	9.4
Race		
Asian	33.2	3.7
Native Hawaiian/Pacific Islander	42.7	12.0
White	24.5	1.3
Multiracial	33.8	6.2
Other	30.2	3.5
Missing/Unknown	33.8	10.1
Language Spoken at Home		
English only	36.0	7.8
Other language or English plus another language	41.1	8.9
Missing/Unknown	34.8	7.3
County		
Hawaii	33.3	4.8
Honolulu	38.3	8.7
Kauai	32.1	7.6
Maui	27.6	3.6

\*Information on treatment urgency was missing for 16 children.

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### Department of Education

### Department of Health

- Family Health Services Division
- Medical Reserve Corps
- Office of Primary Care and Rural Health
- Public Health Nursing Branch

### Executive Office on Early Learning/Head Start Collaboration Office

### First Insurance Company

### Funders

- Hawaii Dental Service Foundation
- Kaiser Foundation
- G.N. Wilcox Trust
- DentaQuest Foundation

### Hawaii Children's Action Network

### Hawaii Dental Association (HDA)

### Hawaii Dental Hygiene Association

### Hawaii Head Start programs

- Child and Family Service
- Family Support Hawaii\*
- Honolulu Community Action Program
- Parents & Children Together-Oahu
- Parents & Children Together-Hawaii Island
- Maui Economic Opportunity Inc.
- Maui Family Support Services\*

### Hawaii Oral Health Coalition

### Hawaii Primary Care Association

### Maternal & Child Health LEND program

### New York University-Lutheran Pediatric Dental Residency

### State Head Start Collaboration Office

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\*Early Head Start children were also screened for this project; however, the numbers were too small for reporting publicly.

## **For more information:**

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