The Oral Health of Massachusetts' Children

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transforming oral health

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For more information about this study, please visit our website at www.catalystinstitute.org

About the Catalyst Institute

The Catalyst Institute is committed to improving the effectiveness, efficiency, and quality of oral health care through direct research, demonstration projects, education and training.

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Executive Summary

Dental caries is the most common chronic childhood disease, five times more common than asthma.[1] If left untreated, dental caries results in cavities, pain, infection and, in some instances, devastating consequences for a child's overall health, including sickness and mortality. Untreated dental caries can inhibit learning, speech, and eating, leading to problems in school and poor nutrition. Dental caries and oral disease are almost entirely preventable.

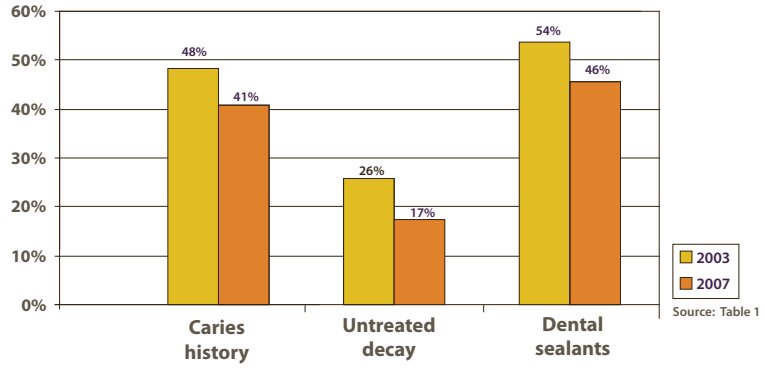
The objective of this study was to assess the oral health status of Massachusetts' school children by gathering reliable estimates of caries experience and other oral health indicators. These findings establish a baseline from which to plan and evaluate future prevention and treatment efforts.

Oral Disease is a Significant Health Issue for Children

A significant proportion of Massachusetts' children suffer from dental caries, and many of our youngest children start school with dental disease. More than one-in-four kindergarten children – about 19,130 students – had evidence of dental decay, with nearly 10,000 of those children having untreated dental decay. More than 40% of 3rd grade children – about 29,110 students – had evidence of dental decay, and about 12,400 of those children had untreated decay. About one-third of 6th grade adolescents – about 24,575 students – had been affected by dental caries, and nearly 8,000 of those adolescents had untreated decay.

Overall, the Commonwealth has made progress toward reducing the burden of dental disease in school children. In 2003 – the year the most recent oral health survey of Massachusetts' 3rd grade school children was completed – 48.2% of children had evidence of past dental caries compared to 40.7% in 2007, a 15.6% reduction in caries experience. The proportion of 3rd grade children with untreated decay declined by almost one-third between 2003 and 2007, from 25.8% to 17.3%.

Comparison of Selected Oral Health Variables from the 2003 and 2007 Oral Health Surveys of Massachusetts' 3rd Grade Children



Source: Table 1

In addition, Massachusetts has done well in achieving several Healthy People 2010[2] goals ahead of schedule by:

1) reducing the proportion of children aged 6 to 8 years with dental caries experience in their primary and permanent teeth to 40.7% (target=42%);

2) reducing the proportion of children aged 6 to 8 years with untreated dental decay in their primary and permanent teeth to 17.3% (target=21%); and

3) increasing the proportion of adolescents aged 14 years who have received dental sealants on their molar teeth to 52% (target=50%).

However, the proportion of 3rd grade children with dental sealants declined, from 53.8% in 2003 to 45.5% in 2007, a 15.4% drop, placing the Commonwealth below the Healthy People 2010 target of 50% of all children aged 8 years having received dental sealants on their molar teeth.

Significant Disparities Found Among Racial, Ethnic and Socioeconomic Groups

Caries Experience

This report demonstrates significant disparities in the status of children's oral health among racial, ethnic and socioeconomic groups.

Kindergarten

- 39.4% of non-Hispanic Black kindergarten children have been affected by dental caries, 1.7 times higher than non-Hispanic white kindergarten children;
- 40.9% of Hispanic kindergarten children have been affected by dental caries, 1.8 times higher than non-Hispanic white kindergarten children; and
- 41.5% of kindergarten children from low-income families have been affected by dental caries, 1.9 times higher than kindergarten children from families with higher incomes.

3rd Grade

- 8.2% of Hispanic 3rd grade children have been affected by dental caries, 1.6 times higher than non-Hispanic white 3rd grade children; and
- 60.8% of 3rd grade children from low-income families have been affected by dental caries, 1.9 times higher than 3rd grade children from families with higher incomes.

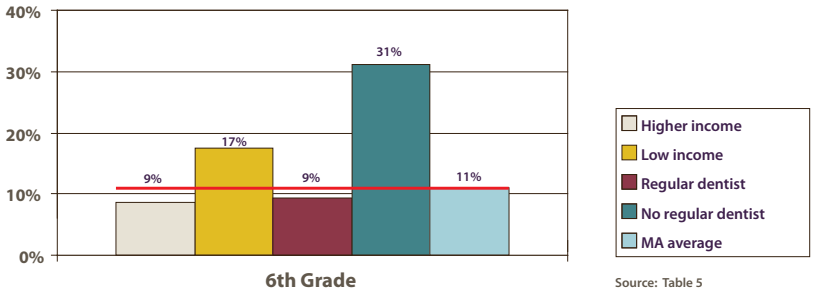
6th Grade

- 49.2% of Hispanic 6th grade adolescents have been affected by dental caries, 1.6 times higher than non-Hispanic white 6th grade adolescents; and
- 48.4% of 6th grade adolescents from low-income families have been affected by dental caries, 1.7 times higher than 6th grade adolescents from families with higher incomes.

Untreated Decay

Children from low-income families and children from certain racial/ethnic groups not only have a much higher prevalence of oral disease but are also less likely to have had their dental caries treated. Among kindergarten children, the proportion of Hispanic children with untreated decay (23.5%) and the proportion of children from low-income families with untreated decay (25.7%) were at least double that of comparable groups.

Disparities in the Prevalence of Untreated Decay Among Massachusetts' 6th Grade Adolescents



Source: Table 5

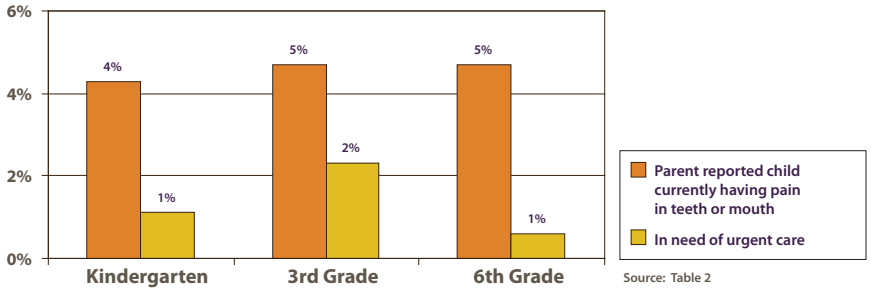
Among 3rd grade children, the proportion of non-Hispanic Black children (36.0%), Hispanic children (26.2%), and children from low-income families (32.2%) were significantly higher than comparable groups.

Among 6th grade adolescents, the proportion from low-income families with untreated disease (17.4%) was double that of adolescents from families with higher incomes.

Pain

Among kindergarten children, a higher proportion of Hispanic children (7.9%) and children from low-income families (8.1%) were at school with pain in their teeth or mouth, more than double that for comparable groups.

Prevalence of Pain and Treatment Urgency Among Massachusetts' Children and Adolescents



Source: Table 2

Among 3rd grade children, a higher proportion of non-Hispanic Black children (10.8%), Hispanic children (10.5%), and children from low-income families (9.7%) reported pain in their teeth or mouth, more than three times higher than comparable groups.

Dental Sealants

Overall, about 46% of 3rd grade children and 52% of 6th grade adolescents had received dental sealants, an effective treatment for preventing dental decay, especially in the pits and fissures on the biting surfaces of back teeth. Similar to other indicators, oral health disparities were found. Among 3rd grade children, the proportions of non-Hispanic Black children with dental sealants (29.0%), children from low-income families with dental sealants (37.4%), and children without a regular dentist (18.0%) were significantly lower than comparable groups. Among 6th grade adolescents, the proportions of non-Hispanic Black adolescents with dental sealants (20.0%), non-Hispanic adolescents of other races with dental sealants (42.7%), adolescents from low-income families with dental sealants (41.1%), and adolescents without a regular dentist with dental sealants (28.1%) were significantly lower than comparable groups.

Children in Some of the State's Counties Fare Worse

Serious geographic oral health disparities were found among Massachusetts' 14 counties. The overall proportion of kindergarten children with untreated dental decay was 14.5% and ranged from 7.5% in Norfolk County to 30.9% in Hampshire County. For 3rd grade children, the overall proportion with untreated dental decay was 17.3% and ranged from 12.8% in Middlesex and Plymouth Counties to 30.9% in Suffolk County. Among 6th grade adolescents, the overall proportion with untreated dental decay was 10.9% and ranged from 9.0% in Middlesex and Norfolk Counties to 23.3% in Hampden County.

County-level disparities were also found in the proportion of 3rd grade children and 6th grade adolescents who had received dental sealants. The overall proportion of 3rd grade children who had received dental sealants was 45.5% and ranged from 33.5% in Suffolk County to 75.0% in Dukes County. Among 6th grade adolescents, the overall proportion who had received dental sealants was 52.0% and ranged from 34.8% in Suffolk County to 64.5% in Berkshire County.

Conclusions

Dental caries is a significant health issue for children and adolescents in Massachusetts. While preventable, this chronic infection affects a quarter of kindergarten children, 40% of 3rd grade children and one-third of sixth-grade adolescents. In addition, many young children start school with dental disease and are at school in pain, potentially impacting their ability to learn.

Some progress has been made in preventing dental caries and reducing untreated decay. Since 2003, the prevalence of dental caries and untreated tooth decay among 3rd grade children declined. Massachusetts has also achieved several Healthy People 2010 oral health goals ahead of schedule.

Significant racial, ethnic and socioeconomic disparities exist within all oral health indicators, at each grade level, and among the state's 14 counties. In addition, children with the most oral disease are the least likely to have received dental sealants, a safe and effective yet underutilized preventive measure. These findings indicate that more needs to be done to prevent oral disease, reduce untreated disease and pain, and eliminate oral health disparities. This study's findings bring to light great opportunities for positive change in the oral health status of the children in this state.

[1] http://www.surgeongeneral.gov/library/oralhealth/"

[2] www.healthypeople.gov/Document/HTML/Volume2/21Oral.htm

Background

Dental caries is an infection that result in a tooth cavity if left untreated. Dental caries and resulting cavities can be prevented and easily treated with access to timely dental care and preventive information. For many children, however, dental caries continue to be a significant health problem. Dental caries is the single most common chronic childhood disease – five times more common than asthma and seven times more common than hay fever. In 2000, the Surgeon General's Report on Oral Health[1] brought public attention to the extent of oral health disparities faced by disadvantaged groups and the effects of those disparities on their oral and overall health. Oral health problems lead to difficulty eating, speaking and paying attention at school. Poor children suffer twice as many dental cavities as their more affluent peers, and their disease is more likely to be untreated. A complex web of factors, including socioeconomic status, transportation problems and the lack of resources to pay for care, are thought to contribute to the disparities in oral health. Many children, especially those from lower socioeconomic groups, have limited access to dental services and thus suffer unnecessarily from the consequences of untreated dental disease, which include pain, infection, and tooth loss.[2]

In Massachusetts, there has been a concern that children from lower socioeconomic groups and children who receive dental benefits through the Commonwealth's Medicaid program, MassHealth, have not had access to timely dental care. In 2004, the Massachusetts Oral Health Report[3] provided information from a statewide representative sample of 3,439 3rd grade public school children. The report included the following key findings:

1. **Although overall dental decay rates have declined, tooth decay remains a significant childhood health problem in Massachusetts.**
2. **The burden of dental problems rested most heavily upon Massachusetts' children who didn't have access to dental care.**
3. **Poor children in Massachusetts had the most difficulty accessing dental care.**
4. **Poor children in Massachusetts suffered the burden of dental decay; yet received less preventive dental services than their more affluent peers.**
5. **Massachusetts' children who were poor and those with MassHealth had poorer oral health.**

The larger sample of this survey allows reporting of statewide and representative county-level data about the oral health status and demographics of school children in Massachusetts. The assessment gives some insight into the oral health status of Massachusetts' school children three years after the initial survey, but more importantly this survey also provides important county level information at key developmental periods in the lifespan and serves as a baseline to evaluate our progress moving forward to improve the oral health of Massachusetts' children. Children in kindergarten will establish a baseline of information at entry into the school system that includes early childhood experience of dental disease and dental need. Children in the third grade are experiencing eruption of their permanent first molars, when access to professional dental preventive care (sealants) is critical. Adolescents in the sixth grade are experiencing eruption of their permanent second molars (when sealants are again important), and along with a mixed primary and permanent dentition, their permanent teeth have been at risk for decay for a longer period. Assessment of their oral health status at this age will provide important information about the history of their caries experience.

This assessment provides a framework to monitor progress toward Healthy People 2010[4] oral health goals. Healthy People 2010 presents a comprehensive, nationwide health promotion and disease prevention agenda. It is designed to serve as a roadmap for improving the health of all people in the United States during the first decade of the 21st century. Healthy People 2010 is designed to achieve the two overarching goals of increasing quality and years of healthy life and eliminating health disparities. These two goals are supported by specific oral health objectives, developed with targets to be achieved by 2010.

[1] http://www.surgeongeneral.gov/library/oralhealth/

[2] Beltrán-Aguilar ED, Barker LK, Canto MT, Dye BA, Gooch BF, Griffin SO, Hyman J, Jaramillo F, Kingman A, Nowjack-Raymer R, Selwitz RH, Wu T; Centers for Disease Control and Prevention. Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis – United States, 1988–1994 and 1999–2002 MMWR Surveill Summ 2005 Aug 26;54(3):1–43.

[3] The Massachusetts Oral Health Report, a Report of the Massachusetts Oral Health Collaborative, May 2004.

[4] http://www.healthypeople.gov/Document/HTML/Volume2/21Oral.htm

Methods

This study incorporated complex survey sampling methods to select a representative sample of children in kindergarten and grades 3 and 6 in Massachusetts. We selected our sample to provide reliable estimates of caries experience and other oral health indicators for the Commonwealth overall as well as for each of the 14 counties within the Commonwealth.[5]

Screenings were conducted by trained and calibrated dentists and dental hygienists from Boston University School of Dental Medicine using a standard protocol for school-age children. Parental consent was obtained prior to all examinations.

A modified version of the Basic Screening Survey developed by the Association of State and Territorial Dental Directors (2003) was used.[6] Measures included:

- number of primary/permanent teeth,
- caries experience (past or present decay),
- number of teeth with untreated caries,
- number of primary/permanent teeth with dental sealants,
- self-reported orofacial/dental pain,
- self-reported frequency of brushing on day prior to screening,
- assessment of oral hygiene (good, fair, poor), and
- assessment of urgency of treatment need

Additional measures collected from the parent/guardian were:

- current orofacial/dental pain as an indicator of severity and need for care,
- frequency of brushing and flossing as an indicator of preventive oral health care,
- whether the child had a regular dentist, and
- whether the child had dental insurance

Finally, the following sociodemographic information was obtained from the parent/guardian at consent:

- age,
- gender,
- race and Hispanic origin,
- town/county of residence,
- school/grade, and
- participation in the National School Lunch Program as an indicator of socioeconomic status

The complex sample survey design was incorporated into all analyses. All percentages and means were computed as weighted averages. All estimates reflect the weighted average for each grade over the entire state.

[5] For a more complete description of survey methods, visit www.catalytinstitute.org

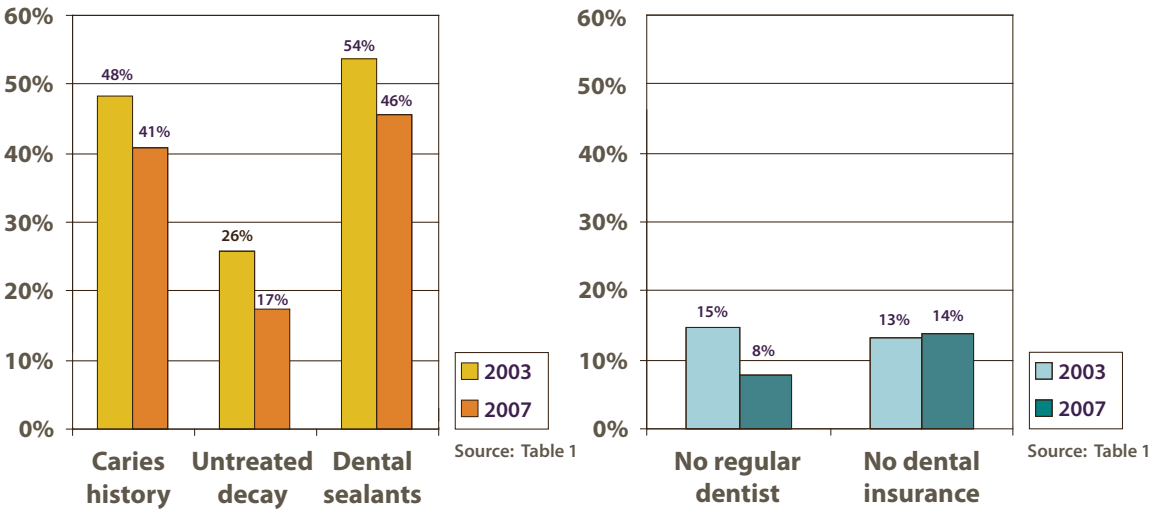
[6] http://www.astdd.org

Statewide Findings

Comparison of 2003–2007

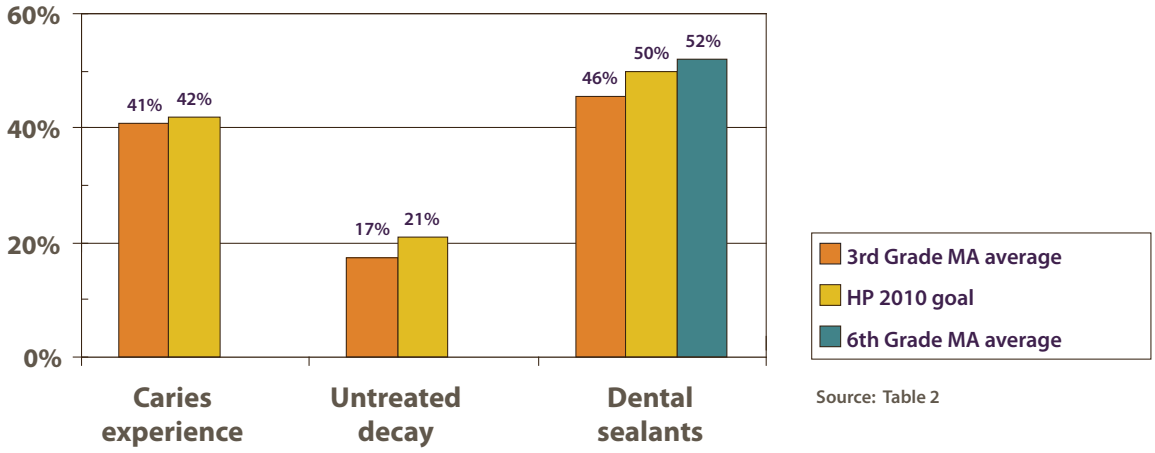
Overall, we have made progress toward reducing the burden of dental disease among Massachusetts' school children. In 2003 – the year the most recent oral health survey of Massachusetts' 3rd grade children was completed – 48.2% of children had evidence of dental caries compared to 40.7% in 2007, a 15.6% reduction in caries experience. The proportion of 3rd grade children with untreated decay declined by almost one-third between 2003 and 2007, from 25.8% to 17.3%. While there has been no appreciable change in the proportion of children with dental insurance, the proportion of children without a regular dentist has declined. The proportion of 3rd grade children with dental sealants, however, declined by 15.4% between 2003 and 2007.

Figure 1. Comparison of Selected Oral Health Variables from the 2003 and 2007 Oral Health Surveys of Massachusetts' Third Grade Children



Healthy People 2010

Figure 2. Progress Toward *Healthy People 2010* Oral Health Goals Among Massachusetts' 3rd Grade Children and 6th Grade Adolescents



Source: Table 2

Massachusetts has done well in reaching or exceeding several of the Healthy People 2010 oral health goals ahead of schedule by:

1) reducing the proportion of children aged 6 to 8 years with dental caries experience in their primary and permanent teeth to 40.7% (target = 42%);

2) reducing the proportion of children aged 6 to 8 years with untreated dental decay in their primary and permanent teeth to 17.3% (target = 21%); and

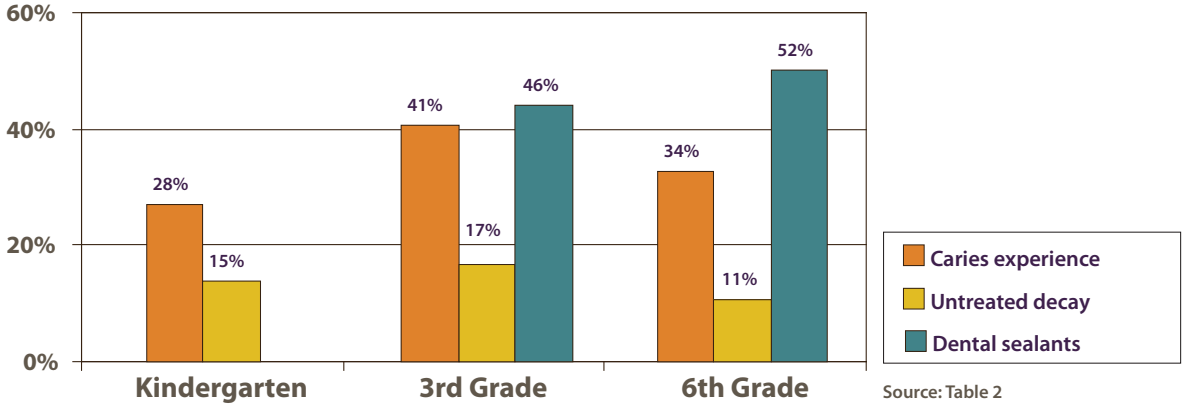
3) increasing the proportion of adolescents aged 14 years who have received dental sealants on their molar teeth to 52% (target = 50%).

However, the proportion of 3rd grade children with dental sealants also declined, from 53.8% in 2003 to 45.5% in 2007, a 15.4% drop, placing the Commonwealth below the Healthy People 2010 target of 50% of all children aged 8 years having received dental sealants on their molar teeth.

Oral Disease is Still a Significant Health Issue for Children

Caries Experience, Untreated Decay, and Dental Sealants

Figure 3. Prevalence of Caries Experience, Untreated Decay, and Dental Sealants Among Massachusetts' Children and Adolescents



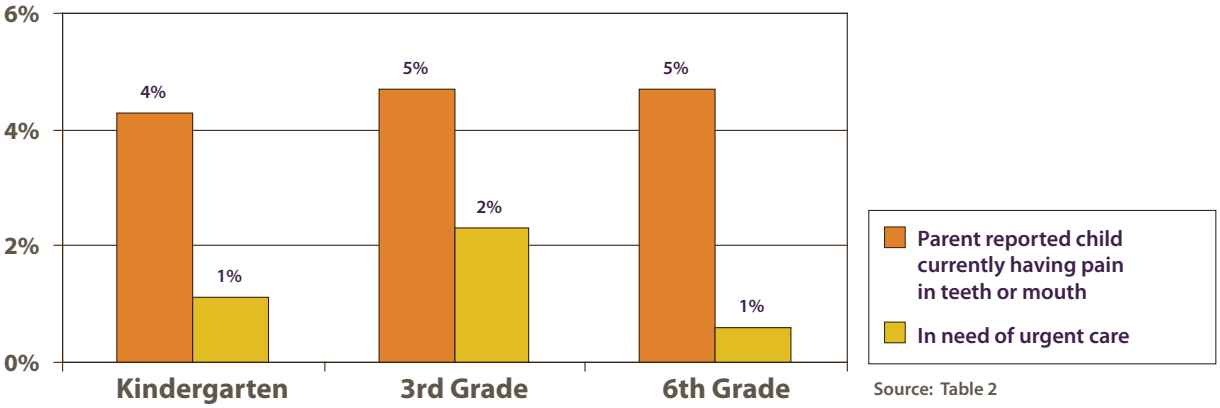
Source: Table 2

Key Findings

- More than one-in-four kindergarten children – about 19,130 students – had evidence of dental decay.
  - Nearly 10,000 kindergarten children, or more than half of those with any caries history, had untreated decay.
- More than 40% of 3rd grade children – about 29,110 students – had evidence of dental decay.
  - Nearly 12,400 3rd grade children, or more than 42% of those with any caries history, had untreated decay.
- About 46% of 3rd grade children – about 32,550 students – had dental sealants.
- About one-third of 6th grade adolescents – about 24,575 students – had been affected by dental caries.
  - Nearly 8,000 6th grade adolescents, or about one-third of those with any caries history, had untreated decay.
- About 52% of 6th grade adolescents – about 37,920 students – had dental sealants.

Pain and Treatment Urgency

Figure 4. Prevalence of Pain and Treatment Urgency Among Massachusetts' Children and Adolescents



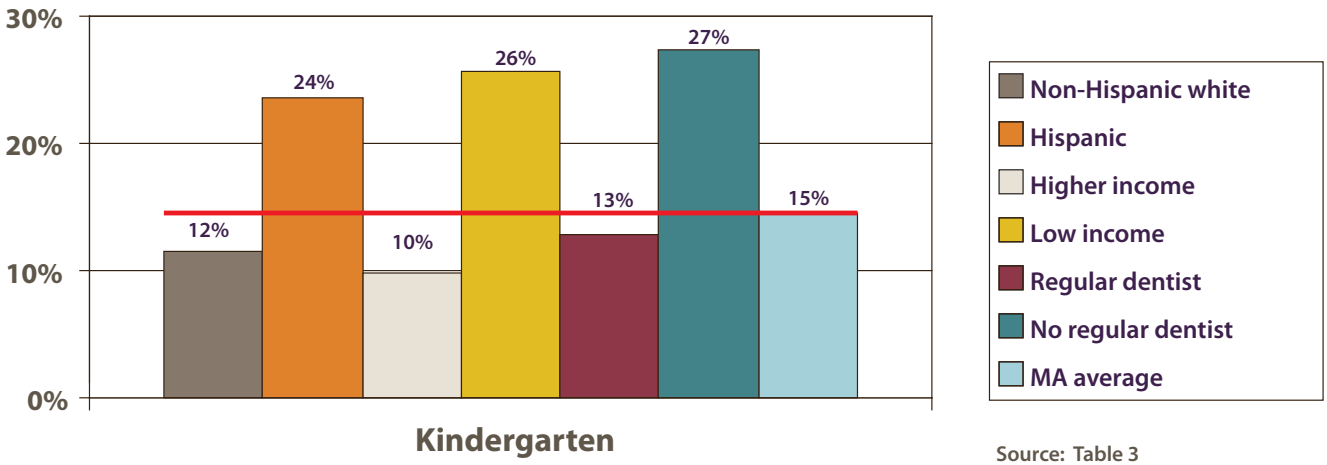
Source: Table 2

Key Findings

- About 1 out of 25 parents reported that their child was currently having pain in his or her teeth or mouth.
  - This represents about 2,950 kindergarten children, 3,360 3rd grade children and 3,425 6th grade adolescents.
- Between one and two percent of Massachusetts' kindergarten and 3rd grade children and 6th grade adolescents were in need of urgent dental care due to signs or symptoms that included pain, infection, swelling, or soft tissue ulceration of more than two weeks duration.
  - This represented about 750 kindergarten children, 1,715 3rd grade children, and 438 6th grade adolescents who needed to see a dentist as soon as possible.

Untreated Decay – Kindergarten

Figure 5. Disparities in the Prevalence of Untreated Decay Among Massachusetts' Kindergarten Children



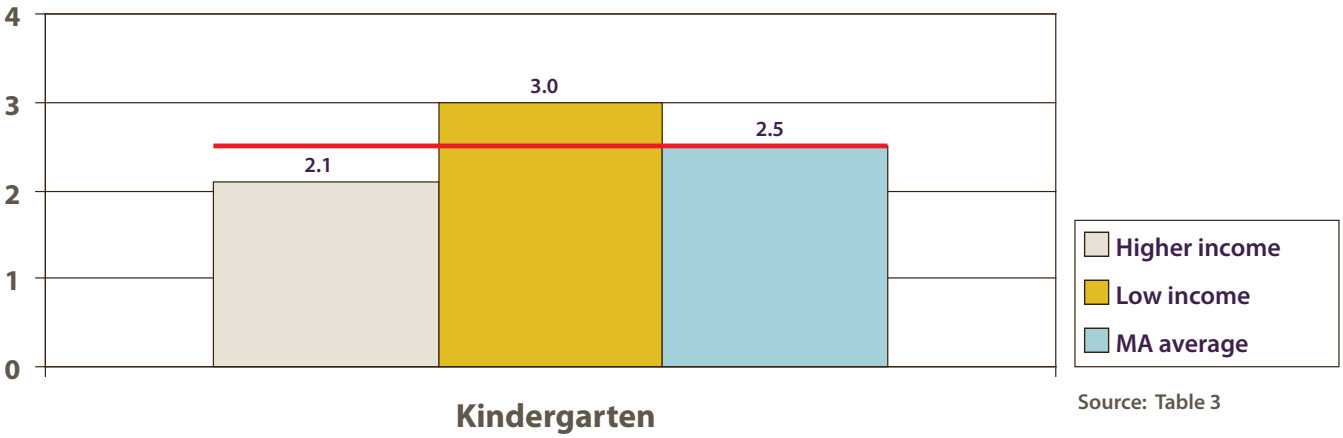
Source: Table 3

Key Findings

- About 14.5% of all kindergarten children had untreated decay. Based on 2006–2007 enrollment numbers, nearly 10,000 kindergarten children (9,942), or more than half of those with any caries history, had untreated decay.
- Many kindergarten children had significant levels of untreated dental decay.
  - Nearly one of every four Hispanic kindergarten children had untreated decay while more than one of every four kindergarten children from low-income families and kindergarten children without a regular dentist had untreated decay.
- Disparities were found in the proportion with untreated decay among Hispanic kindergarten children, kindergarten children from low-income families, and kindergarten children without a regular dentist.
  - 23.5% of Hispanic kindergarten children have untreated decay.
    - 2.0 times higher among Hispanic kindergarten children than non-Hispanic white kindergarten children.
  - 25.7% of kindergarten children from low-income families have untreated decay.
    - 2.6 times higher among kindergarten children from low-income families than kindergarten children from families with higher incomes.
  - 27.3% of kindergarten children with no regular dentist have untreated decay.
    - 2.1 times higher among kindergarten children without a regular dentist than kindergarten children with a regular dentist.

Untreated Decay – Kindergarten

Figure 6. Disparities in the Mean Number of Teeth with Untreated Dental Decay Among Massachusetts' Kindergarten Children



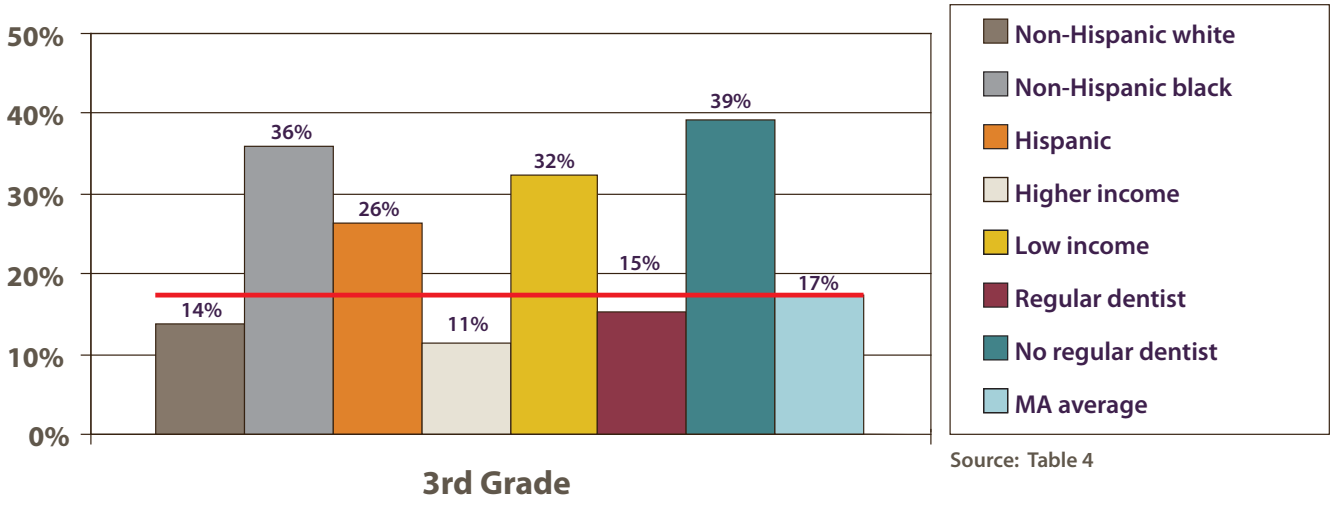
Source: Table 3

Key Findings

- Among kindergarten children with untreated decay, on average, each child had 2.5 decayed teeth.
- Oral health disparities were found between kindergarten children from low-income families and kindergarten children from higher-income families.
- Average number of teeth with untreated decay among kindergarten children with untreated decay was higher among children from low-income families.
  - 3.0 decayed teeth among children from low-income families compared with 2.1 decayed teeth among children from higher income families.
    - 1.4 times higher among kindergarten children from low-income families than kindergarten children from higher income families.

Untreated Decay – 3rd Grade

Figure 7. Disparities in the Prevalence of Untreated Decay Among Massachusetts' 3rd Grade Children



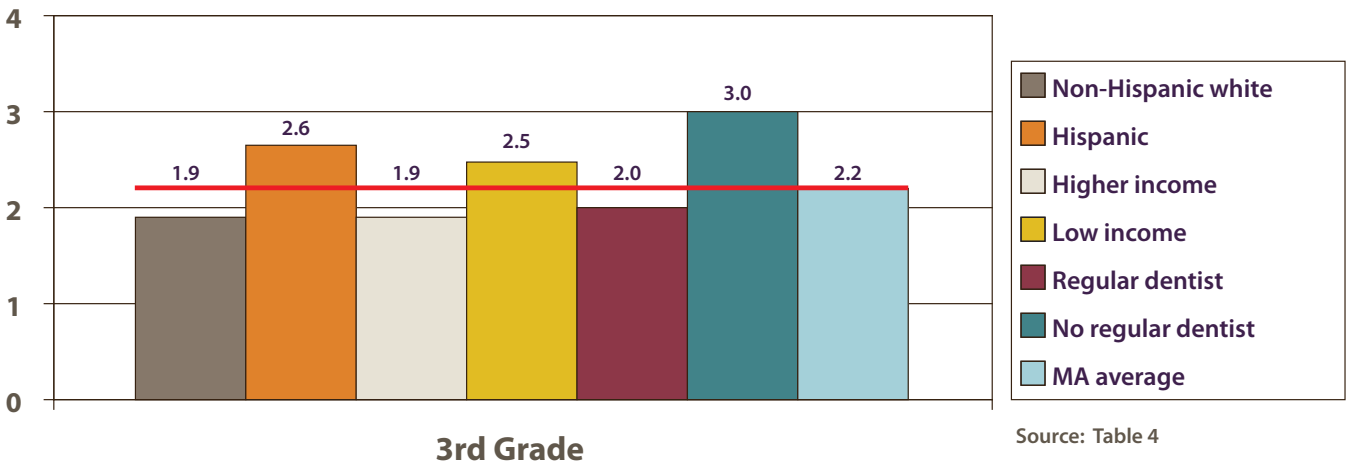
Source: Table 4

Key Findings

- About 17.3% of children in 3rd grade had untreated decay. Based on enrollment data for 2006–2007, nearly 12,400 3rd grade children had untreated decay.
- Among 3rd grade children who have been affected by dental caries, oral health disparities persist.
  - 36.0% of non-Hispanic Black 3rd grade children had untreated decay.
    - 2.6 times higher among non-Hispanic Black 3rd grade children than non-Hispanic white 3rd grade children.
  - 26.2% of Hispanic 3rd grade children had untreated decay.
    - 1.9 times higher among Hispanic 3rd grade children than non-Hispanic white 3rd grade children.
  - 32.2% of 3rd grade children from low-income families had untreated decay.
    - 2.9 times higher among 3rd grade children from low-income families than 3rd grade children from families with higher incomes.
  - 39.1% of 3rd grade children without a regular dentist had untreated decay.
    - 2.5 times higher among 3rd grade children with no regular dentist than 3rd grade children with a regular dentist.

Untreated Decay – 3rd Grade

Figure 8. Disparities in the Mean Number of Teeth with Untreated Dental Decay Among Massachusetts' 3rd Grade Children



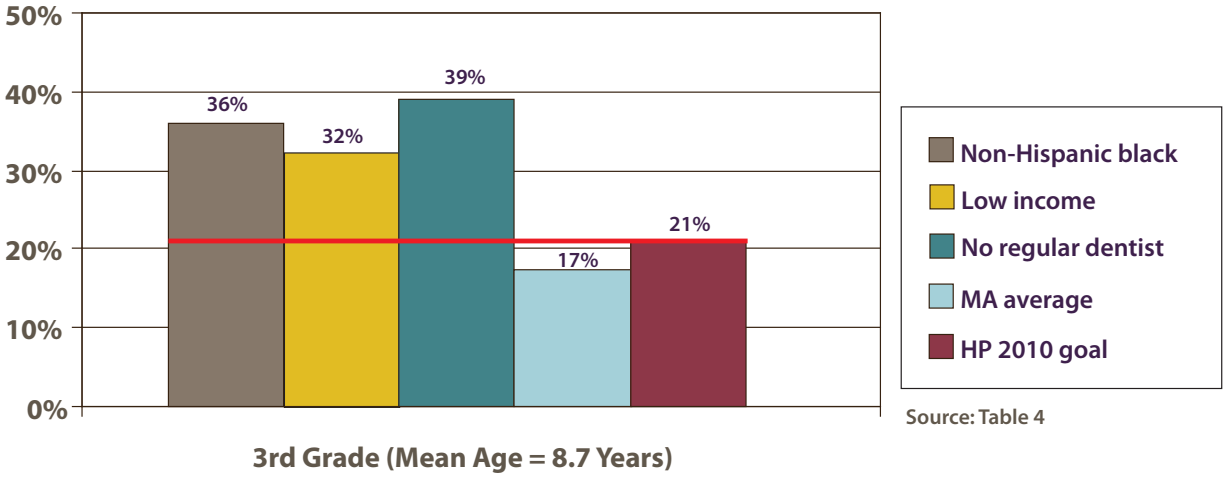
Source: Table 4

Key Findings

- Among 3rd grade children with untreated decay, on average, each child had 2.2 decayed teeth.
- Mean number of decayed teeth among 3rd grade children with any untreated dental decay was higher among Hispanic 3rd grade children, 3rd grade children from low-income families, and 3rd grade children without a regular dentist.
  - 2.6 decayed teeth among Hispanic 3rd grade children compared with 1.9 decayed teeth among non-Hispanic white 3rd grade children.
    - 1.4 times higher among Hispanic 3rd grade children than non-Hispanic white 3rd grade children.
  - 2.5 decayed teeth among 3rd grade children from low-income families compared with 1.9 decayed teeth among 3rd grade children from higher income families.
    - 1.3 times higher among 3rd grade children from low-income families than 3rd grade children from higher income families.
  - 3.0 decayed teeth among 3rd grade children without a regular dentist compared with 2.0 decayed teeth among 3rd grade children with a regular dentist.
    - 1.5 times higher among 3rd grade children without a regular dentist than 3rd grade children with a regular dentist.

Untreated Decay – 3rd Grade

Figure 9. Progress Toward *Healthy People 2010* Goal 21-2b of Reducing the Proportion of Children Aged 6-to-8 Years with Untreated Dental Decay



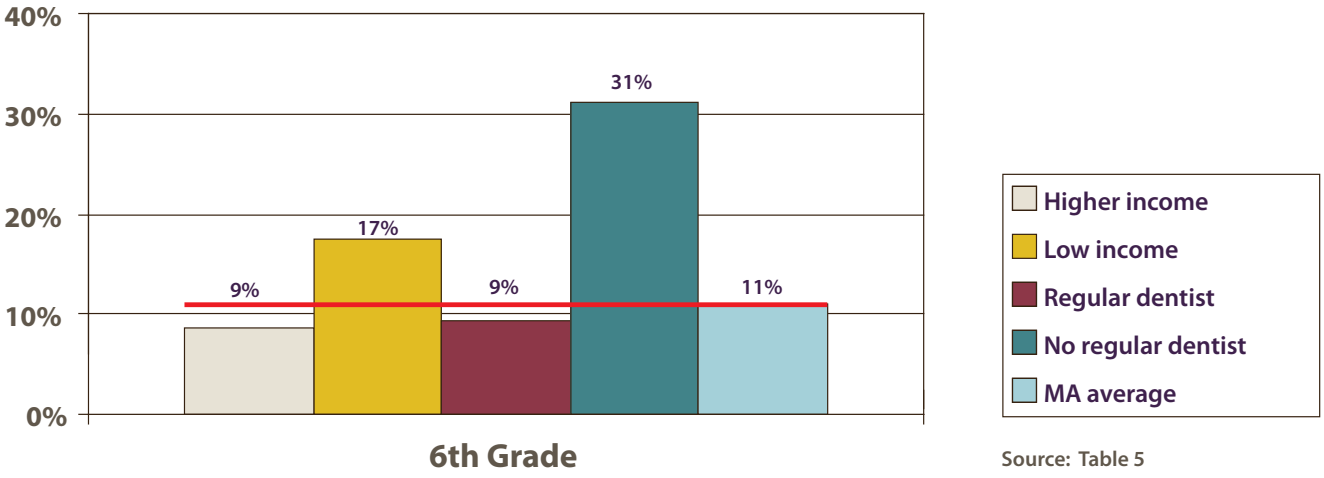
Source: Table 4

Key Findings

- Statewide average of 17.3% better than target national goal of 21%.
- However, to reach the Healthy People 2010 goal of 21% for all 3rd grade children in the next three years, efforts must be focused on three subgroups with the highest level of oral health disparities:
  - Non-Hispanic Black 3rd grade children (mean = 36%; 95% confidence interval = 24.3% – 47.7%)
  - Children from low-income families (mean = 32%; 95% confidence interval = 28.0% – 36.5%)
  - Children without a regular dentist (mean = 39%; 95% confidence interval = 32.5% – 45.7%)
    - The Healthy People 2010 goal of 21.0% is lower than and outside the 95% confidence intervals for these groups.

Untreated Decay – 6th Grade

Figure 10. Disparities in the Prevalence of Untreated Decay Among Massachusetts' 6th Grade Adolescents



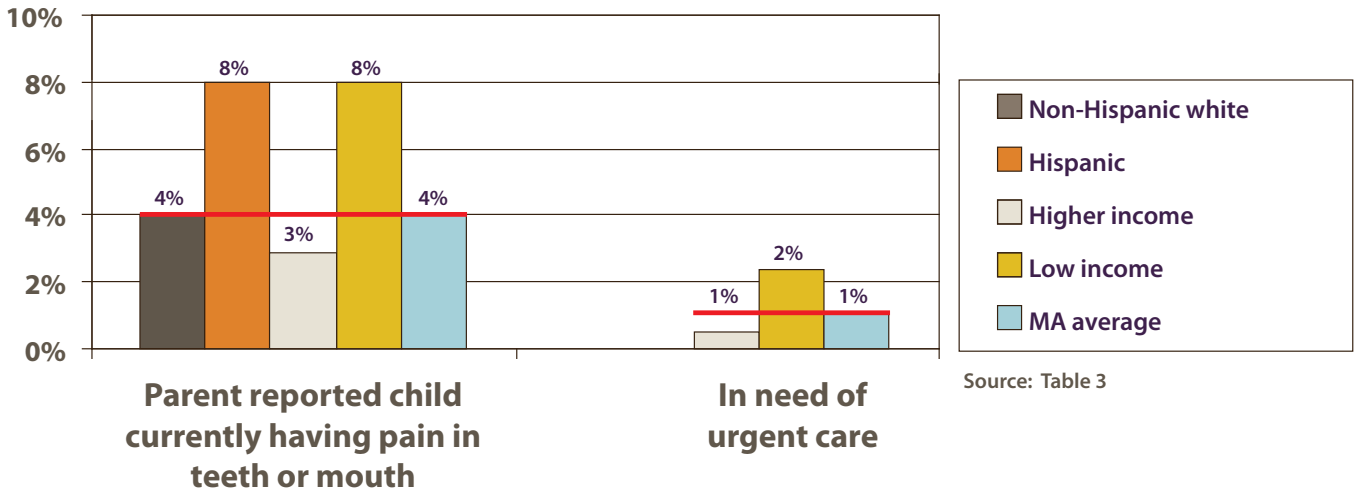
Source: Table 5

Key Findings

- About 11% of 6th grade adolescents had untreated decay. Based on enrollment data for 2006–2007, nearly 8,000 6th grade adolescents, or about one-third of those with any caries history, had untreated decay.
- Among 6th grade adolescents with untreated decay, oral health disparities persist.
- 6th grade adolescents from low-income families and 6th grade adolescents without a regular dentist have higher levels of untreated decay.
  - 17.4% of 6th grade adolescents from low-income families had untreated decay.
    - 2.0 times higher among 6th grade adolescents from low-income families than 6th grade adolescents from higher income families
  - 31.1% of 6th grade adolescents without a regular dentist had untreated decay.
    - 3.3 times higher among 6th grade adolescents with no regular dentist than 6th grade adolescents with a regular dentist.

Pain and Treatment Urgency – Kindergarten

Figure 11. Disparities in the Prevalence of Pain and Treatment Urgency Among Massachusetts' Kindergarten Children



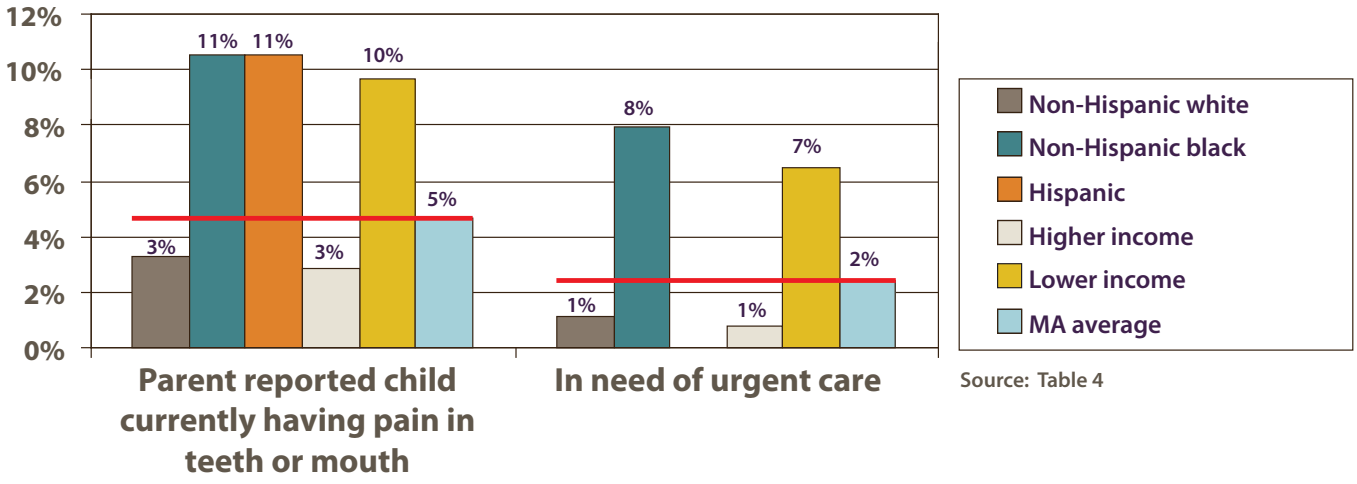
Source: Table 3

Key Findings

- About 4% of parents – or about 1 out of 25 parents – reported that their kindergarten child was currently having pain in his or her teeth or mouth.
  - This represents about 2,950 kindergarten children.
- Higher proportion of Hispanic kindergarten children and kindergarten children from low-income families reported to have pain in teeth or mouth.
  - 7.9% of Hispanic kindergarten children reported to have pain in teeth or mouth.
    - 2.0 times higher among Hispanic kindergarten children than non-Hispanic white kindergarten children.
  - 8.1% of kindergarten children from low-income families reported to have pain in teeth or mouth.
    - 2.8 times higher among kindergarten children from low-income families than kindergarten children from families with higher incomes.
- About 1% of kindergarten children were in need of urgent dental care.
  - This represents about 750 kindergarten children.
- Higher proportion of kindergarten children from low-income families in need of urgent care.
  - 2.3% of kindergarten children from low-income families in need of urgent care.
    - 4.4 times higher among kindergarten children from low-income families than kindergarten children from families with higher incomes.

Pain and Treatment Urgency – 3rd Grade

Figure 12. Disparities in the Prevalence of Pain and Treatment Urgency Among Massachusetts' 3rd Grade Children



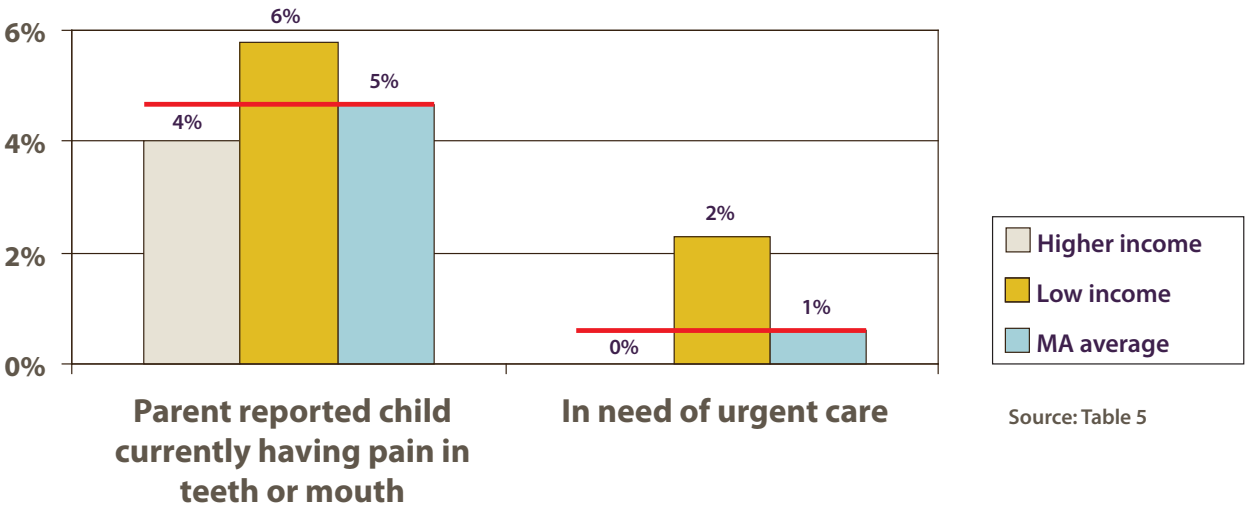
Source: Table 4

Key Findings

- About 5% of parents – or about 1 out of 20 parents – reported that their 3rd grade child was currently having pain in his or her teeth or mouth, representing about 3,360 children.
- Higher proportion of non-Hispanic Black 3rd grade children, Hispanic 3rd grade children, and 3rd grade children from low-income families reported to have pain in teeth or mouth.
  - 10.8% of non-Hispanic Black 3rd grade children reported to have pain in teeth or mouth.
    - 3.3 times higher among non-Hispanic Black than non-Hispanic white 3rd grade children.
  - 10.5% of Hispanic 3rd grade children reported to have pain in teeth or mouth.
    - 3.2 times higher among Hispanic than non-Hispanic white 3rd grade children.
  - 9.7% of 3rd grade children from low-income families reported to have pain in teeth or mouth.
    - 3.4 times higher among 3rd grade children from low-income families than 3rd grade children from families with higher incomes.
- About 2% of 3rd grade children were in need of urgent dental care.
  - This represents about 1,645 3rd grade children who needed to see a dentist as soon as possible.
- Higher proportion of non-Hispanic Black 3rd grade children, third grade children from low-income families, and 3rd grade children without a regular dentist were in need of urgent care.
  - 7.9% of non-Hispanic Black 3rd grade children were in need of urgent care.
    - 7.0 times higher among non-Hispanic Black 3rd grade children than non-Hispanic white 3rd grade children.
  - 6.5% of 3rd grade children from low-income families in need of urgent care.
    - 8.6 times higher among 3rd grade children from low-income families than 3rd grade children from families with higher incomes.

Pain and Treatment Urgency – 6th Grade

Figure 13. Prevalence of Pain Prevalence and Treatment Urgency Among Massachusetts' 6th Grade Adolescents



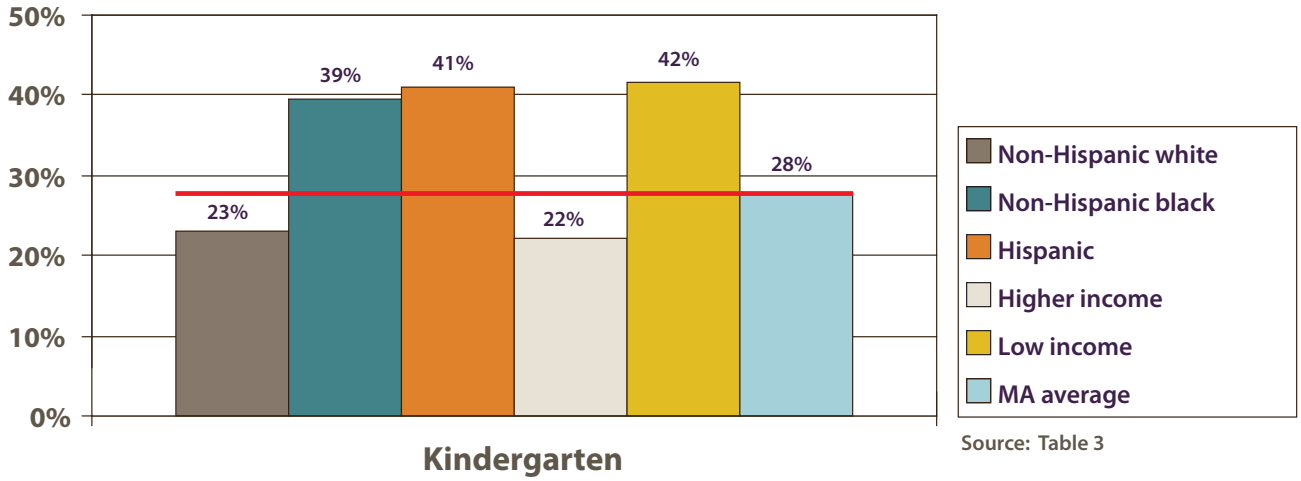
Source: Table 5

Key Findings

- About 5% of parents – or about 1 out of 20 parents – reported that their 6th grade adolescent was currently having pain in his or her teeth or mouth.
  - This represents about 3,425 6th grade adolescents.
- Higher proportion of 6th grade adolescents from low-income families reported to have pain in teeth or mouth.
  - 5.8% of 6th grade adolescents from low-income families reported to have pain in teeth or mouth.
    - 1.4 times higher among 6th grade adolescents from low-income families than 6th grade adolescents from families with higher incomes.
- About 1% of 6th grade adolescents were in need of urgent dental care.
  - This represents about 435 6th grade adolescents who needed to see a dentist as soon as possible.
- Higher proportion of 6th grade adolescents from low-income families in need of urgent care.
  - 2.3% of 6th grade adolescents from low-income families in need of urgent care.

Caries Experience – Kindergarten

Figure 14. Disparities in the Proportion of Massachusetts' Kindergarten Children with Caries Experience



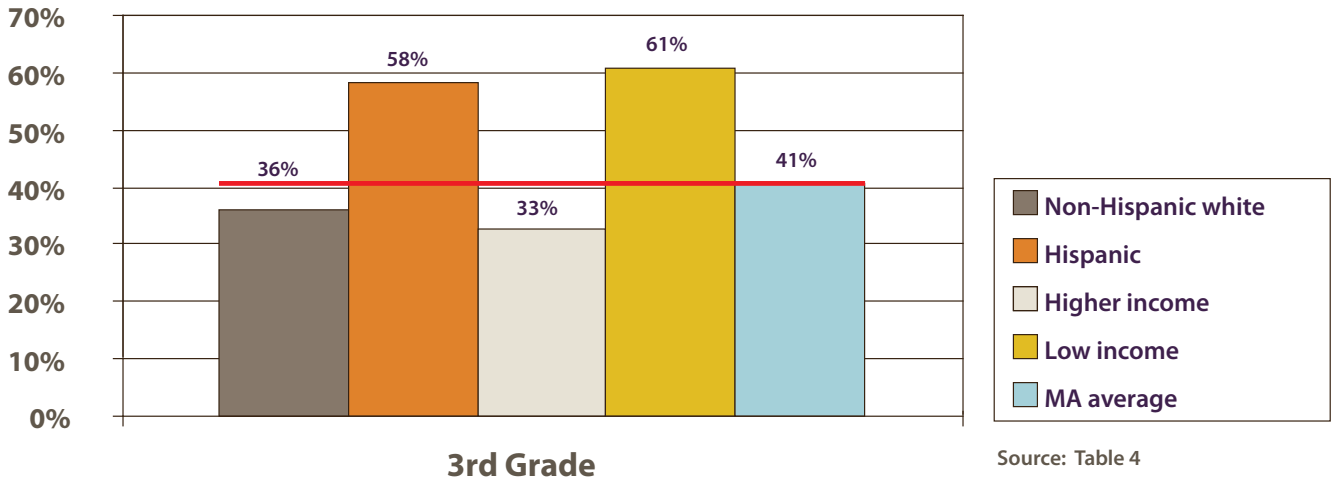
Source: Table 3

Key Findings

- About 28%, or more than one-in-four, kindergarten children had evidence of dental decay. Based on 2006-2007 enrollment numbers, evidence of dental disease was found in about 19,130 kindergarten students.
- Non-Hispanic Black kindergarten children, Hispanic kindergarten children, and kindergarten children from low-income families were disproportionately affected by dental caries.
  - 39.4% of non-Hispanic Black kindergarten children have been affected by dental caries.
    - 1.7 times higher among non-Hispanic Black kindergarten children than non-Hispanic white kindergarten children.
  - 40.9% of Hispanic kindergarten children have been affected by dental caries.
    - 1.8 times higher among Hispanic kindergarten children than non-Hispanic white kindergarten children.
  - 41.5% of kindergarten children from low-income families have been affected by dental caries.
    - 1.9 times higher among kindergarten children from low-income families than kindergarten children from families with higher incomes.

Caries Experience – 3rd Grade

Figure 15. Disparities in the Proportion of Massachusetts' 3rd Grade Children with Caries Experience



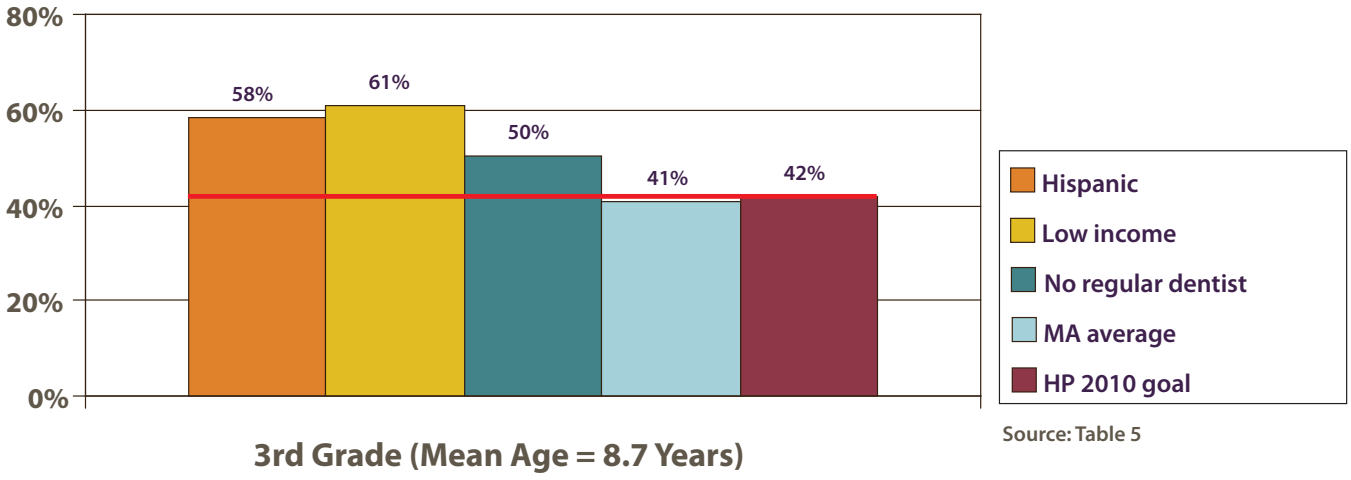
Source: Table 4

Key Findings

- More than 40% of 3rd grade children – about 29,110 students – had evidence of dental decay.
- Hispanic 3rd grade children and 3rd grade children from low-income families were disproportionately affected by dental caries.
  - 58.2% of Hispanic 3rd grade children have been affected by dental caries.
    - 1.6 times higher among Hispanic 3rd grade children than non-Hispanic white 3rd grade children.
  - 60.8% of 3rd grade children from low-income families have been affected by dental caries.
    - 1.9 times higher among 3rd grade children from low-income families than 3rd grade children from families with higher incomes.

Caries Experience – 3rd Grade

Figure 16. Progress Toward *Healthy People 2010* Goal 21-1b Reducing the Proportion of Children Aged 6-to-8 Years with Dental Caries Experience



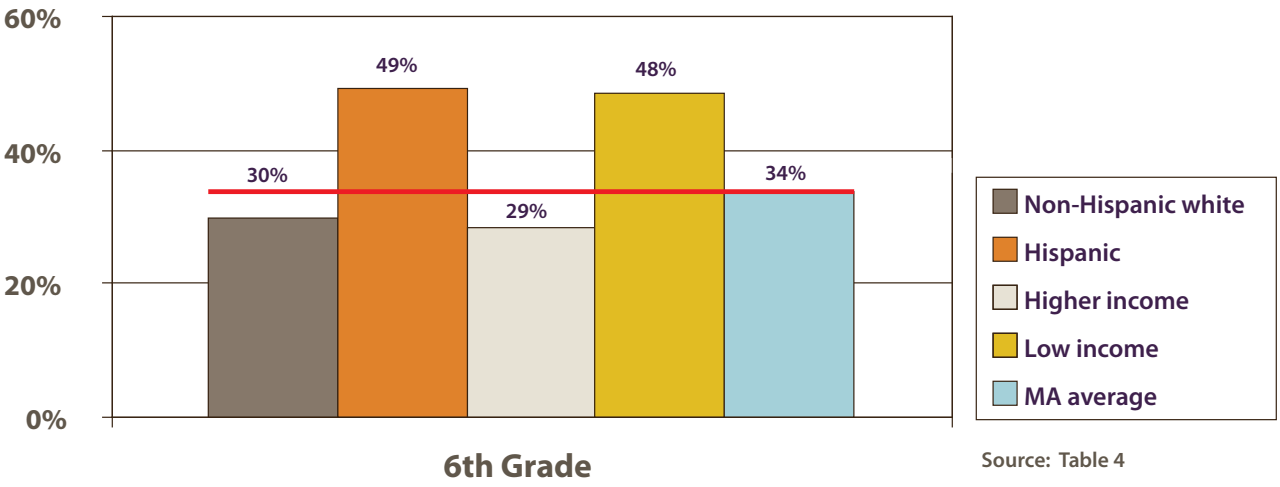
Source: Table 5

Key Findings

- Statewide average of 40.7% slightly better than target of national goal of 42%.
- To reach the Healthy People 2010 goal of 42% for all 3rd grade children in the next three years, efforts must be focused on three subgroups with the highest level of oral health disparities:
  - Hispanic 3rd grade children (mean = 58%; 95% confidence interval = 48.6% – 67.8%)
  - Children from low-income families (mean = 61%; 95% confidence interval = 55.3% – 66.2%)
  - Children without a regular dentist (mean = 50%; 95% confidence interval = 43.1% – 57.3%)
    - The Healthy People 2010 goal of 42.0% is lower than and outside of the 95% confidence intervals for these groups.

Caries Experience – 6th Grade

Figure 17. Disparities in the Proportion of Massachusetts' 6th Grade Adolescents with Caries Experience



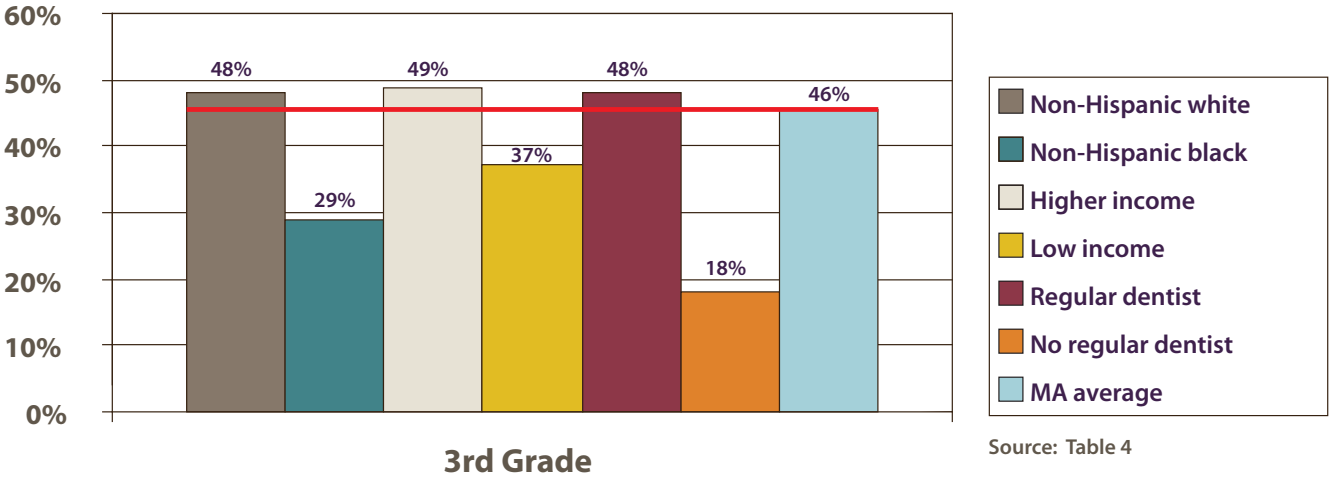
Source: Table 4

Key Findings

- About one-third of 6th grade adolescents – about 24,575 students – had evidence of dental decay.
- Hispanic 6th grade adolescents and 6th grade adolescents from low-income families are disproportionately affected by dental caries.
  - 49.2% of Hispanic 6th grade adolescents have been affected by dental caries
    - 1.6 times higher among Hispanic 6th grade adolescents than non-Hispanic white 6th grade adolescents.
  - 48.4% of 6th grade adolescents from low-income families have been affected by dental caries.
    - 1.7 times higher among 6th grade adolescents from low-income families than 6th grade adolescents from higher income families.

Dental Sealants – 3rd Grade

Figure 18. Disparities in the Proportion of Massachusetts' 3rd Grade Children with Dental Sealants



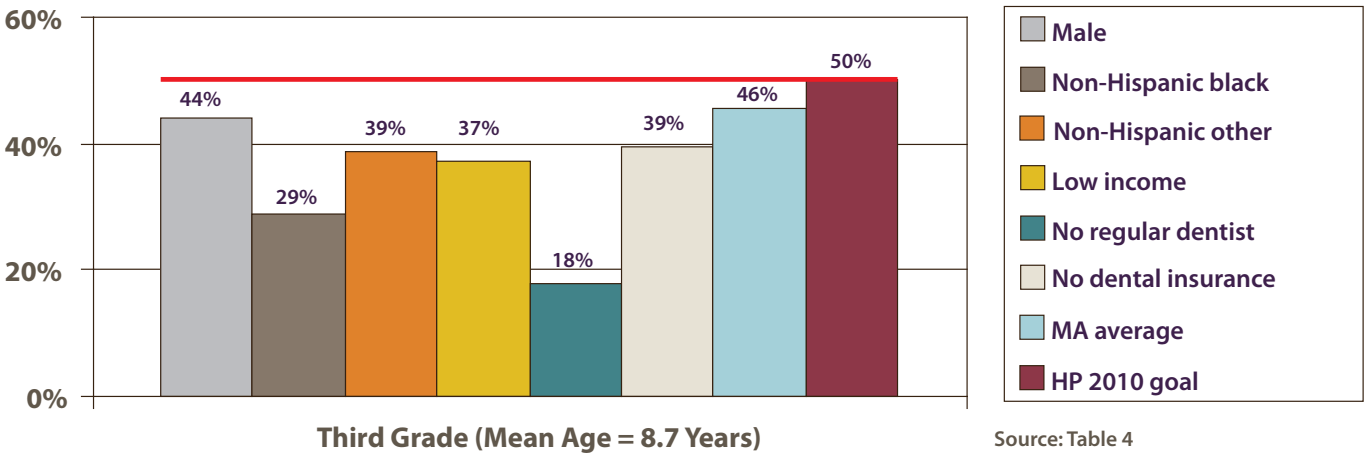
Source: Table 4

Key Findings

- Less than half (45.5%) of 3rd grade school children – about 32,550 students – had dental sealants.
- Non-Hispanic Black 3rd grade children, 3rd grade children from low-income families, and 3rd grade children without a regular dentist were less likely to have received dental sealants.
  - 29.0% of non-Hispanic Black 3rd grade children had received dental sealants.
    - 1.7 times higher among non-Hispanic white children than non-Hispanic Black children.
  - 37.4% of 3rd grade children from low-income families had received dental sealants.
    - 1.3 times higher among 3rd grade children from families with higher incomes than 3rd grade children from families with low-incomes.
  - 18.0% of 3rd grade children without a regular dentist had received dental sealants.
    - 2.7 times higher among 3rd grade children with a regular dentist than 3rd grade children without a regular dentist.

Dental Sealants – 3rd Grade

Figure 19. Progress Toward *Healthy People 2010* Goal 21-8a of Increasing the Proportion of Children Aged 8 Years Who Have Received Dental Sealants



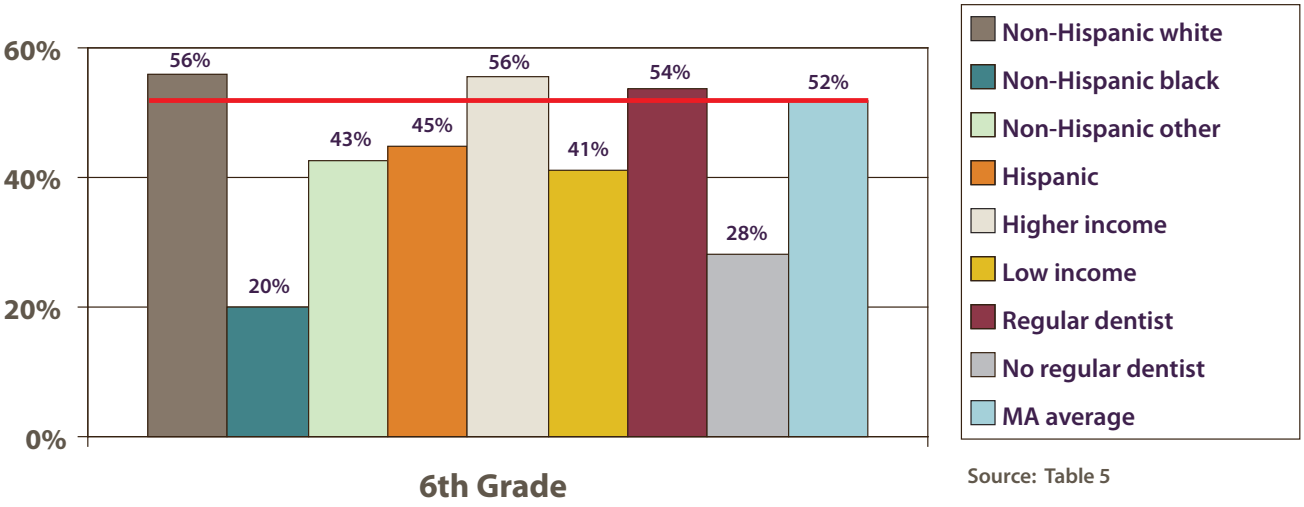
Source: Table 4

Key Findings

- Statewide average of 45.5% slightly lower than target of national goal of 50%.
- Based on enrollment for 2006–2007, to reach the goal of 50% statewide, an additional 3,200 3rd grade children would have needed dental sealants.
- To reach the Healthy People 2010 goal of 50% for all 3rd grade children in the next three years, efforts must be focused on several subgroups with the highest levels of oral health disparities:
  - Males (mean = 44%; 95% confidence interval = 38.8% – 49.0%)
  - Non-Hispanic Black 3rd grade children (mean = 29%; 95% confidence interval = 19.9% – 38.1%)
  - Non-Hispanic 3rd grade children of other races (mean = 39%; 95% confidence interval = 30.1% – 47.8%)
  - Children from low-income families (mean = 37%; 95% confidence interval = 32.1% – 42.7%)
  - Children without a regular dentist (mean = 18%; 95% confidence interval = 10.9% – 25.2%)
  - Children without dental insurance (mean = 39%; 95% confidence interval = 29.7% – 49.1%)
    - The Healthy People 2010 goal of 50.0% is higher than and outside the 95% confidence intervals for these groups.

Dental Sealants – 6th Grade

Figure 20. Disparities in the Proportion of Massachusetts' 6th Grade Adolescents with Dental Sealants



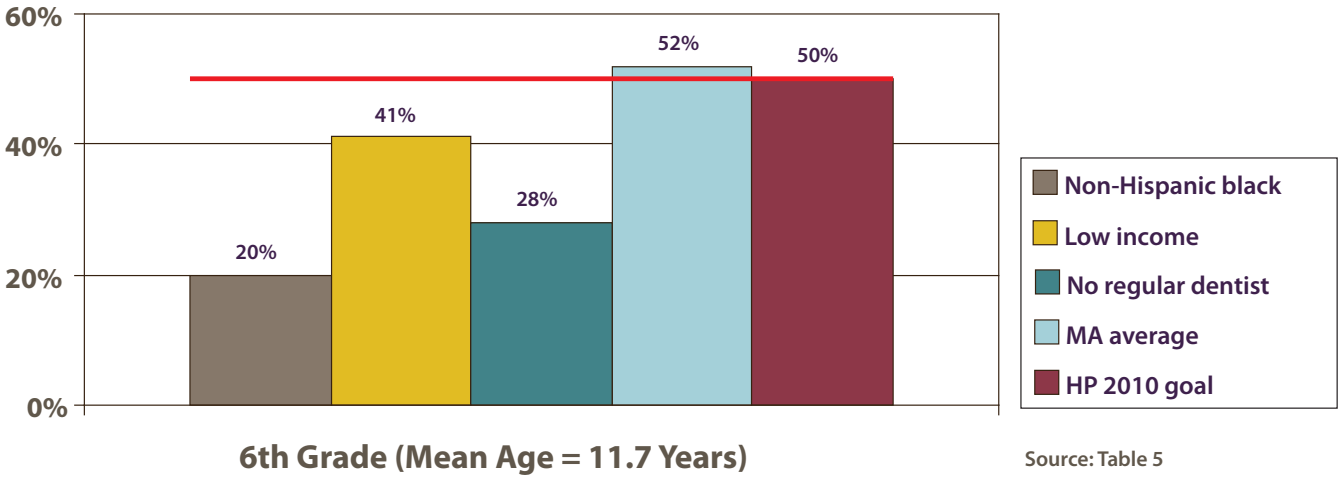
Source: Table 5

Key Findings

- Slightly more than half (52%) of 6th grade adolescents – about 37,920 students – had dental sealants.
- Non-Hispanic Black 6th grade adolescents, non-Hispanic 6th grade adolescents of other races, 6th grade adolescents from low-income families, and 6th grade adolescents without a regular dentist were less likely to have received dental sealants.
  - 20.0% of non-Hispanic Black 6th grade adolescents had received dental sealants.
    - 2.8 times higher among non-Hispanic white adolescents than non-Hispanic Black adolescents.
    - 2.1 times higher among non-Hispanic adolescents of other races than non-Hispanic Black adolescents.
    - 2.2 times higher among Hispanic adolescents than non-Hispanic Black adolescents.
  - 42.7% of non-Hispanic 6th grade adolescents of other races had received dental sealants.
    - 1.3 times higher among non-Hispanic white adolescents than non-Hispanic adolescents of other races.
  - 41.1% of 6th grade adolescents from low-income families had received dental sealants.
    - 1.4 times higher among adolescents higher income families than adolescents from low-income families.
  - 28.1% of 6th grade adolescents without a regular dentist had received dental sealants.
    - 1.9 times higher among adolescents with a regular dentist than adolescents without a regular dentist.

Dental Sealants – 6th Grade

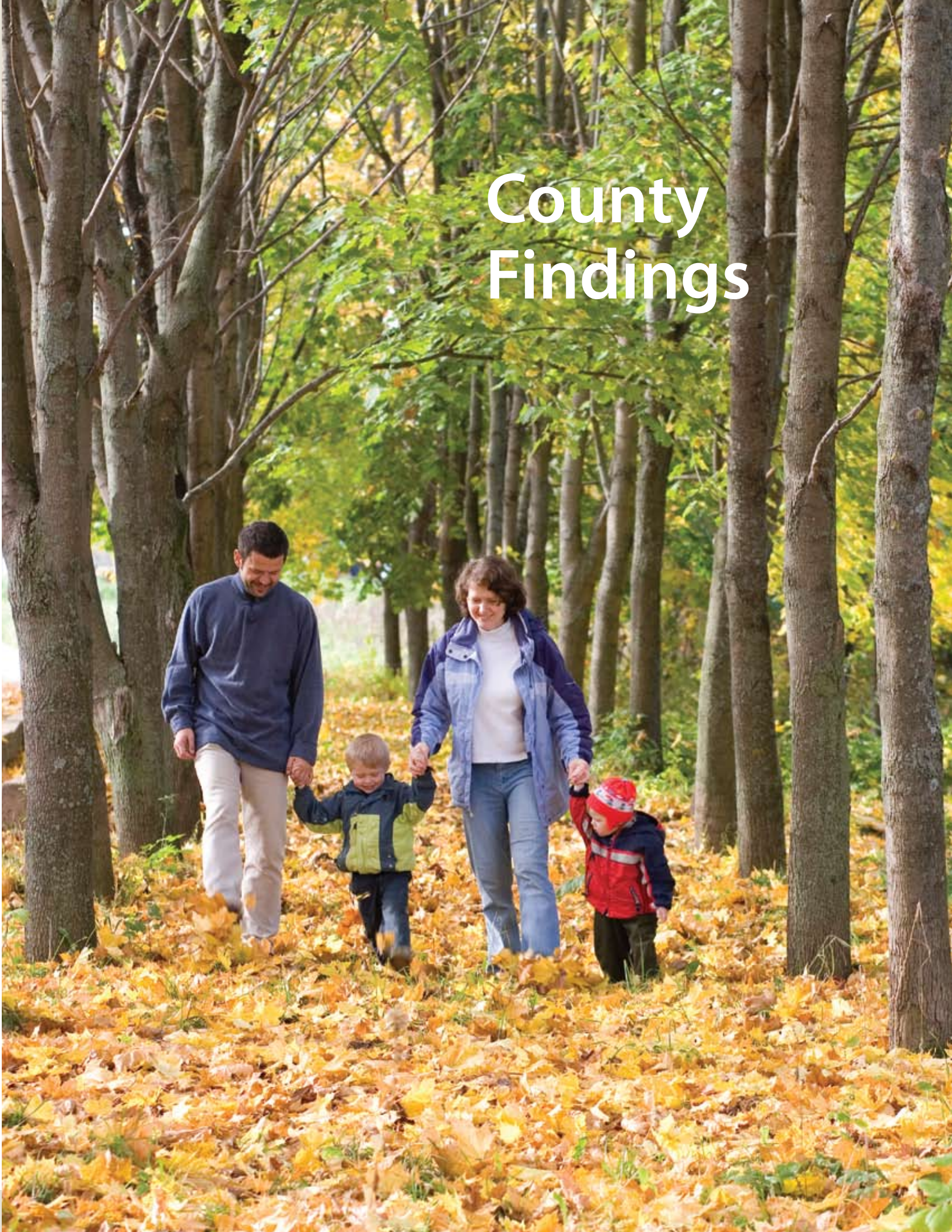
Figure 21. Progress Toward *Healthy People 2010* Goal 21-8b Increasing the Proportion of Adolescents Aged 14 Years Who Have Received Dental Sealants



Source: Table 5

Key Findings

- Statewide average of 52% slightly higher than target of national goal of 50%.
- Dental sealant placement in certain groups of 6th grade adolescents is significantly lower than the Healthy People 2010 goal.
- To reach the Healthy People 2010 goal of 50% for all 6th grade adolescents in the next three years, efforts must be focused on three subgroups:
  - Non-Hispanic Black 6th grade adolescents (mean = 20%; 95% confidence interval = 8.1% – 31.9%)
  - Adolescents from low-income families (mean = 41%; 95% confidence interval = 33.2% – 49.1%)
  - Adolescents without a regular dentist (mean = 28%; 95% confidence interval = 18.1% – 38.1%)
    - The Healthy People 2010 goal of 50.0% is higher than and outside the 95% confidence intervals for these groups.



County Findings

Barnstable County

Population: [1] 224,816

Land area: 396 square miles

Median household income: $50,334

Persons below poverty: 7.3%

Children characterized as low-income: 18.6%

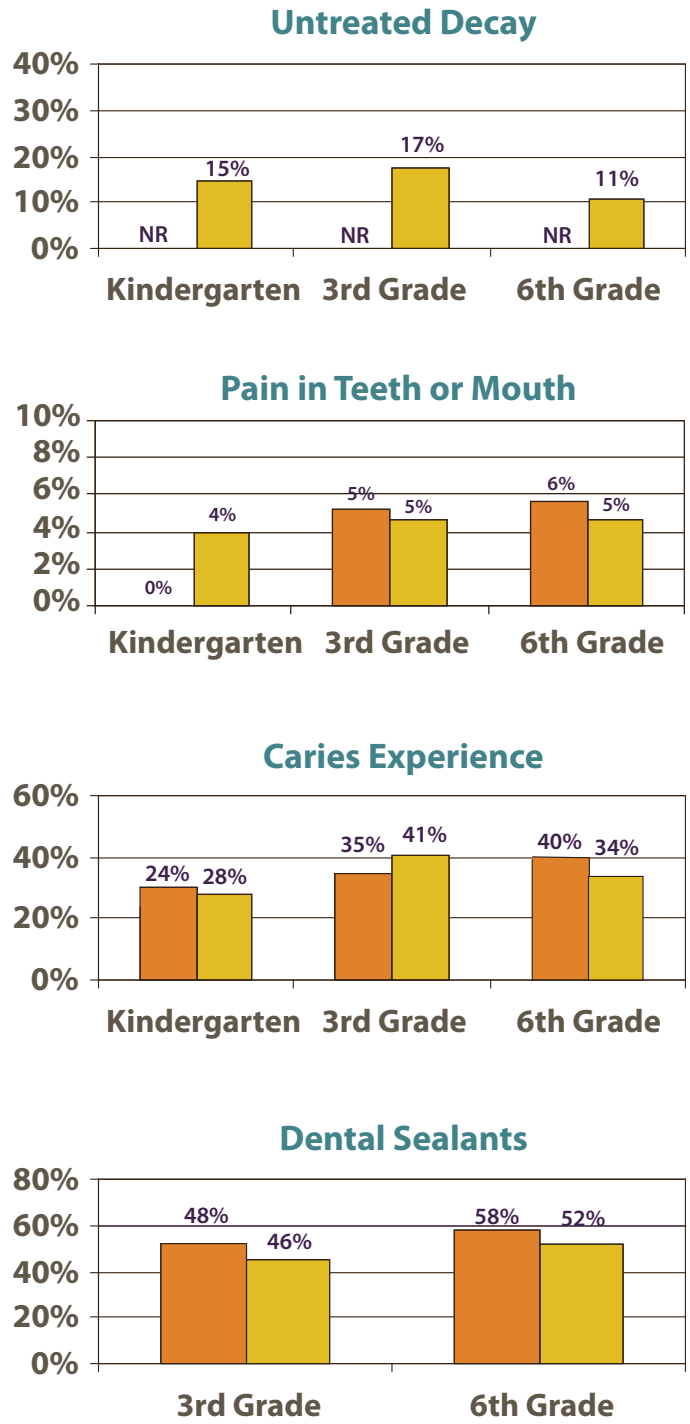
Cities/Towns in Barnstable County (Fluoridated communities in **bold**)		
Barnstable	Eastham	Provincetown
Bourne	Falmouth	Sandwich
Brewster	Harwich	Truro
Chatham	Mashpee	Wellfleet
Dennis	Orleans	Yarmouth

Key Findings

- On the key oral health indicators of caries experience, the proportions of children and adolescents affected by dental caries were about equal to the statewide average.

[1] Based on 2006 population estimates http://quickfacts.census.gov/qfd/states/25/25001.html

Figure 22. Oral Health Indicators Among Massachusetts' Children and Adolescents in Barnstable County by Grade



NR Not reported due to small numbers

Berkshire County

Population:
131,117

Land area:
932 square miles

Median household income: $41,589

Persons below poverty: 10.5%

Children characterized as low-income: 30.2%

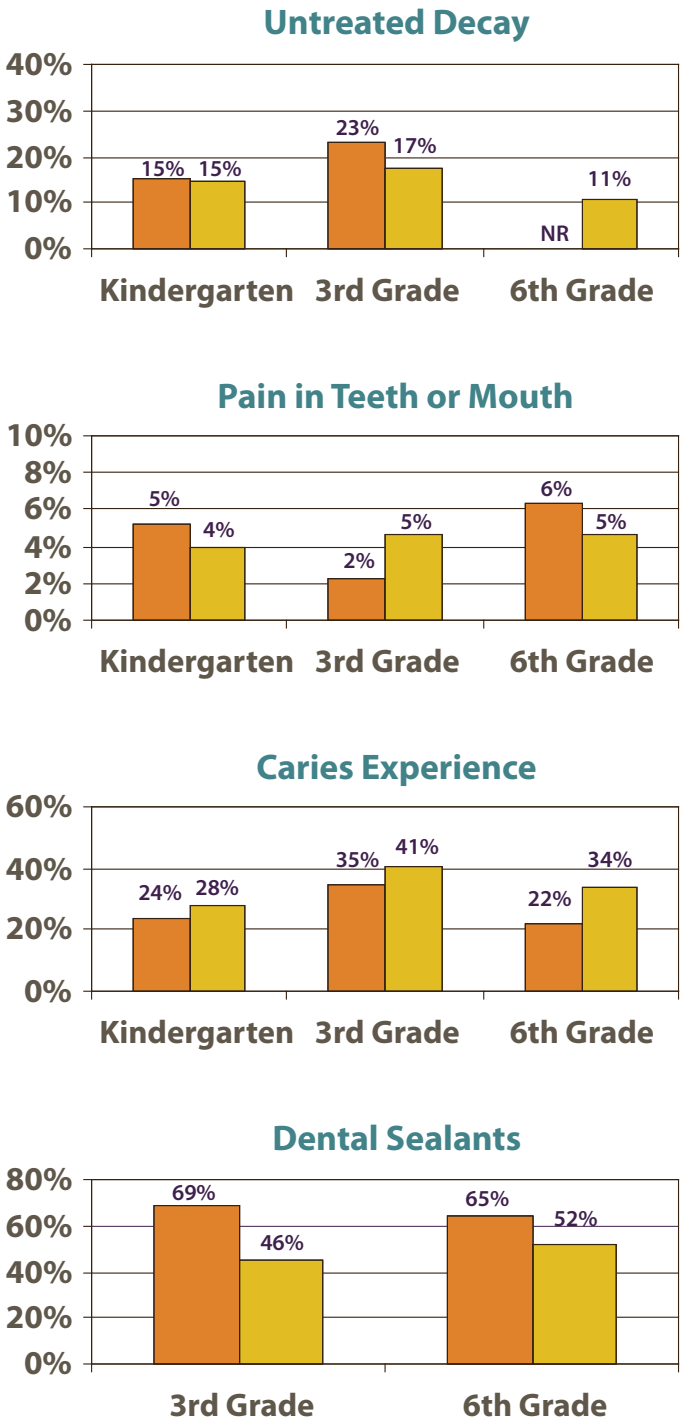
Cities/Towns in Berkshire County (Fluoridated communities in **bold**)		
Adams	Lanesborough	Richmond
Alford	Lee	Sandisfield
Becket	Lenox	Savoy
Cheshire	Monterey	Sheffield
Clarksburg	Mount Washington	Stockbridge
Dalton	New Ashford	Tyringham
Egremont	New Marlborough	Washington
Florida	North Adams	West Stockbridge
Great Barrington	Otis	Williamstown
Hancock	Peru	Windsor
Hinsdale	Pittsfield	

Key Findings

- Among 6th grade adolescents, the proportion affected by dental caries was significantly less than the statewide average.
- The proportions of 3rd grade children and 6th grade adolescents who had dental sealants were greater than the statewide average.[1]

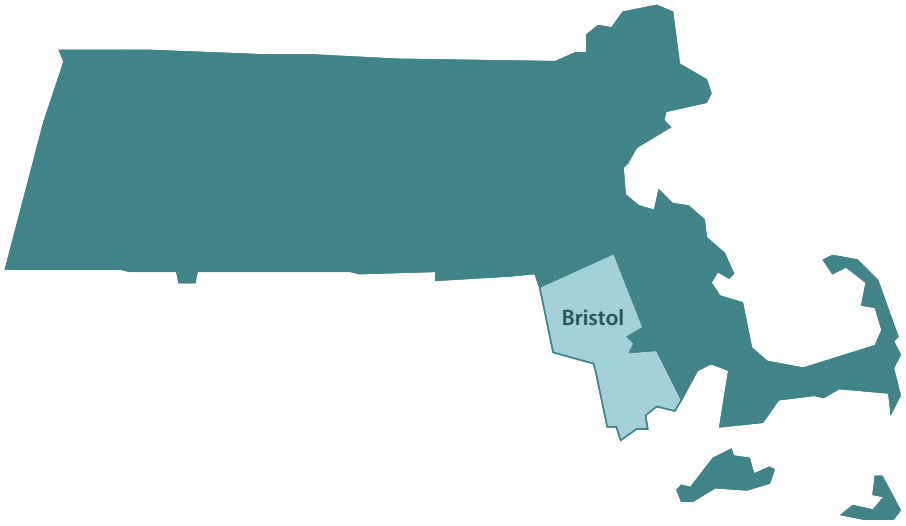
[1]Not statistically different.

Figure 23. Oral Health Indicators Among Massachusetts' Children and Adolescents in Berkshire County by Grade



NR Not reported due to small numbers

Bristol County



Population: 546,331

Land area: 556 square miles

Median household income: $46,986

Persons below poverty: 10.6%

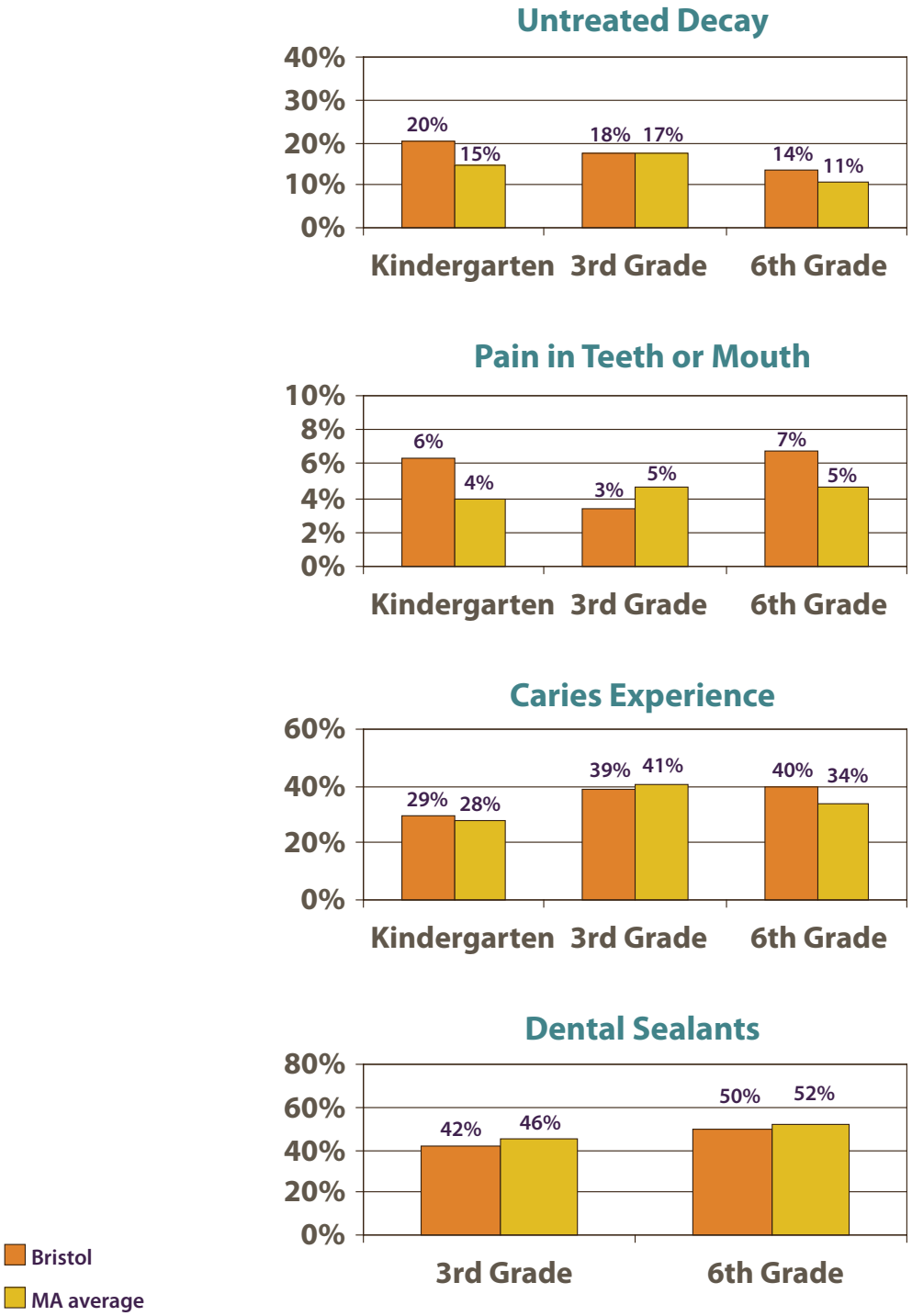
Children characterized as low-income: 29.2%

Cities/Towns in Bristol County (Fluoridated communities in **bold**)		
Acushnet	**Fall River**	Rehoboth
Attleboro	**Freetown**	**Seekonk**
Berkley	**Mansfield**	**Somerset**
Dartmouth	**New Bedford**	**Swansea**
Dighton	**North Attleboro**	**Taunton**
Easton	Norton	Westport
Fairhaven	Raynham	

Key Findings

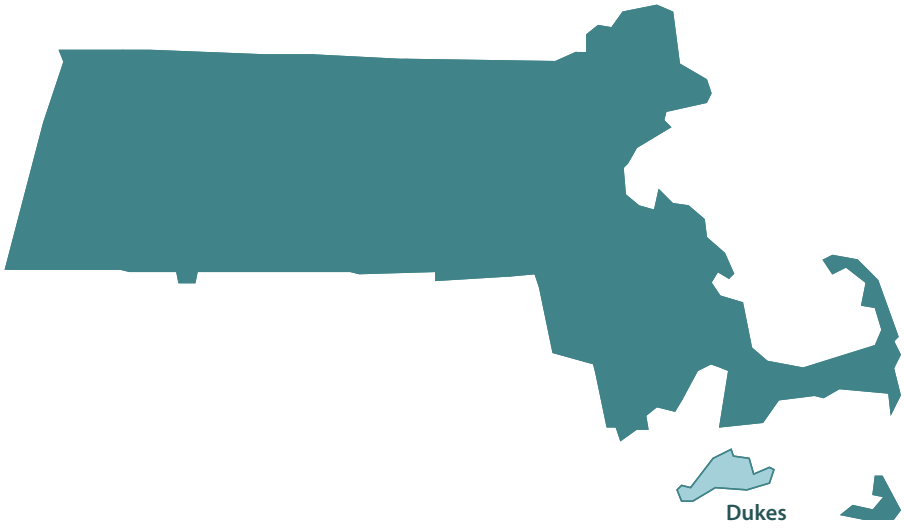
- The proportions of 3rd grade children and 6th grade adolescents who had dental sealants were about equal to the statewide average.

Figure 24. Oral Health Indicators Among Massachusetts' Children and Adolescents in Bristol County by Grade



NR Not reported due to small numbers

Dukes County



Population: 15,515

Land area: 104 square miles

Median household income: $51,490

Persons below poverty: 6.2%

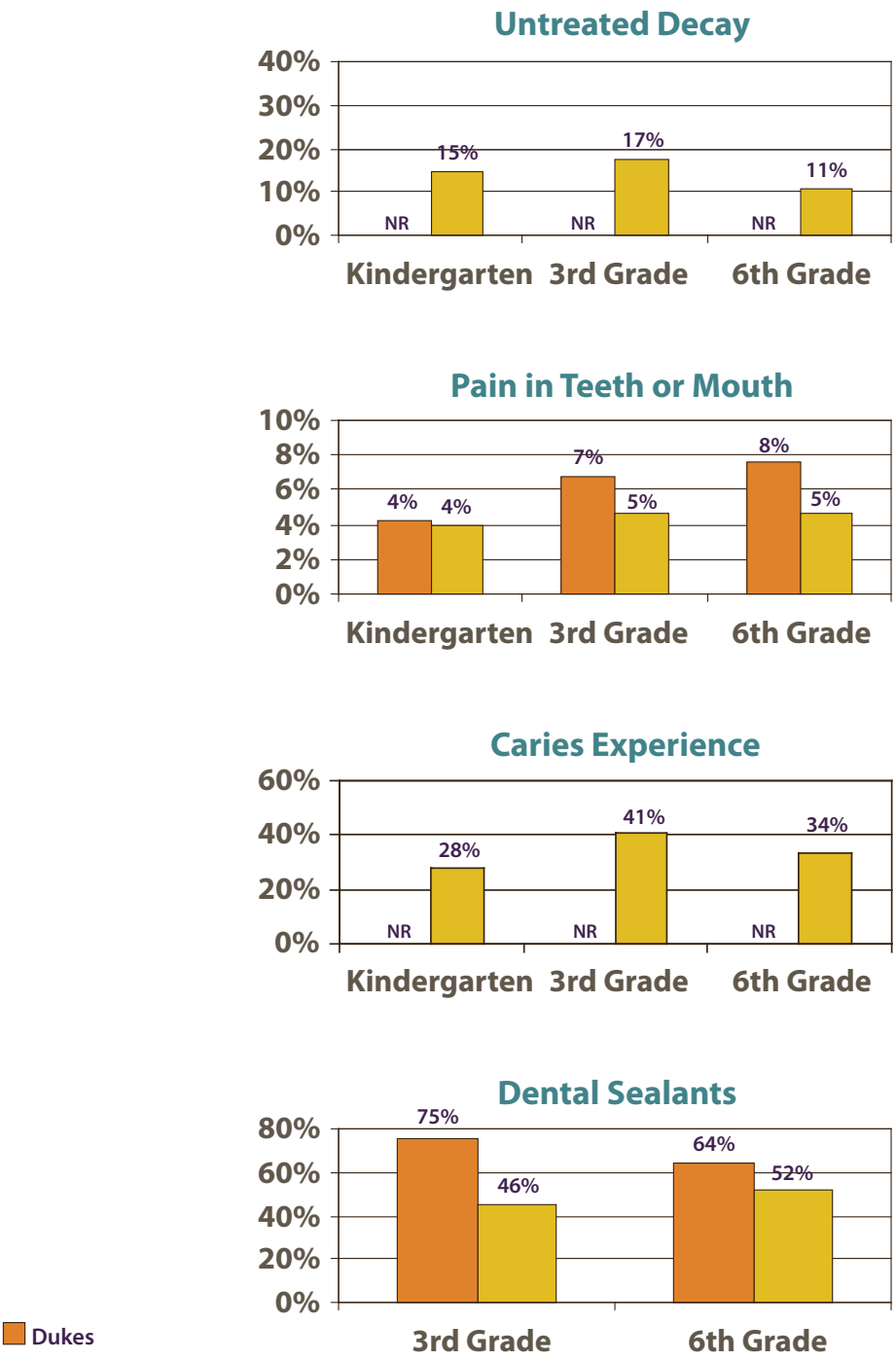
Children characterized as low-income: 10.4%

Cities/Towns in Dukes County (Fluoridated communities in **bold**)		
Aquinnah	Gosnold	West Tisbury
Chilmark	**Oak Bluffs**	
Edgartown	Tisbury	

Key Findings

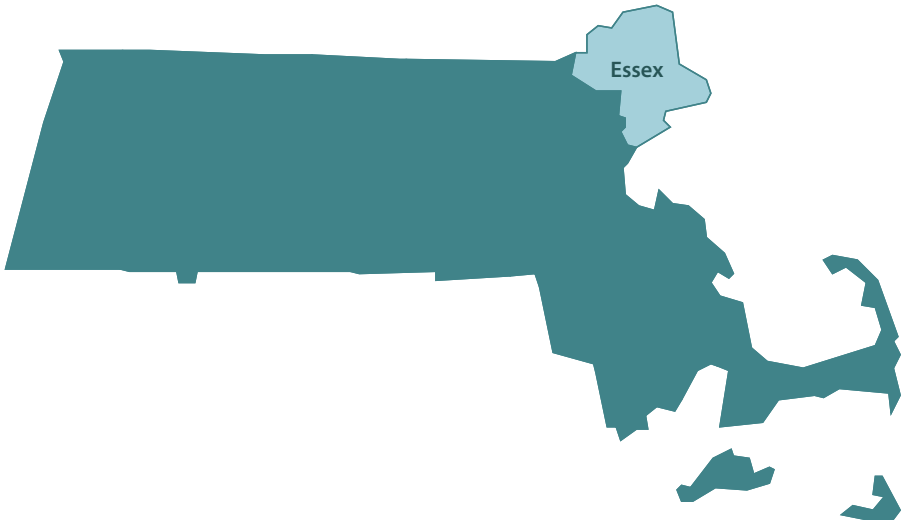
- The proportion of 3rd grade children who had dental sealants was significantly higher than the statewide average. For 6th grade adolescents, the proportion that had dental sealants equaled the statewide average.

Figure 25. Oral Health Indicators Among Massachusetts' Children and Adolescents in Dukes County by Grade



NR Not reported due to small numbers

Essex County



Population: 735,958

Land area: 501 square miles

Median household income: 52,050

Persons below poverty: 10.3%

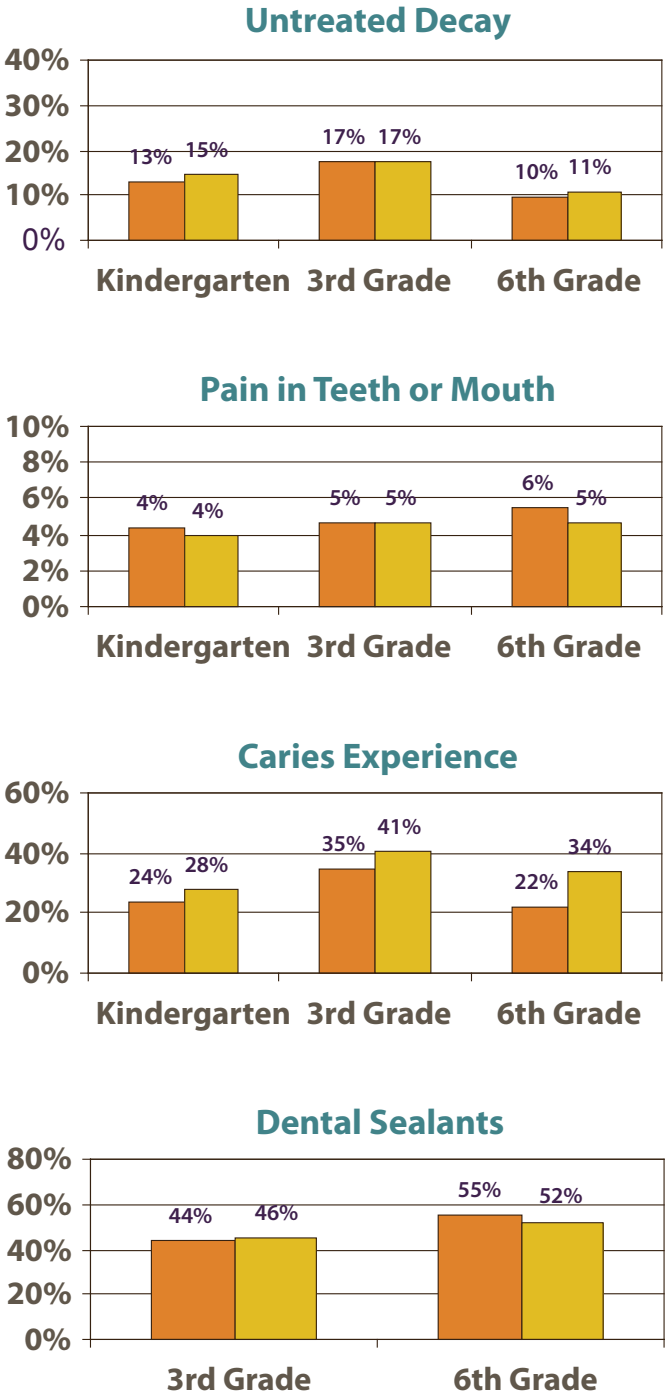
Children characterized as low-income: 31.5%

Cities/Towns in Essex County (Fluoridated communities in **bold**)		
Amesbury	Ipswich	North Andover
Andover	**Lawrence**	**Peabody**
Beverly	**Lynn**	**Rockport**
Boxford	**Lynnfield**	Rowley
Bradford	**Manchester-by-the-Sea**	**Salem**
Danvers	**Marblehead**	Salisbury
Essex	Merrimac	**Saugus**
Georgetown	Methuen	**Swampscott**
Gloucester	**Middleton**	**Topsfield**
Groveland	**Nahant**	**Wenham**
Hamilton	**Newbury**	**West Newbury**
Haverhill	**Newburyport**	

Key Findings

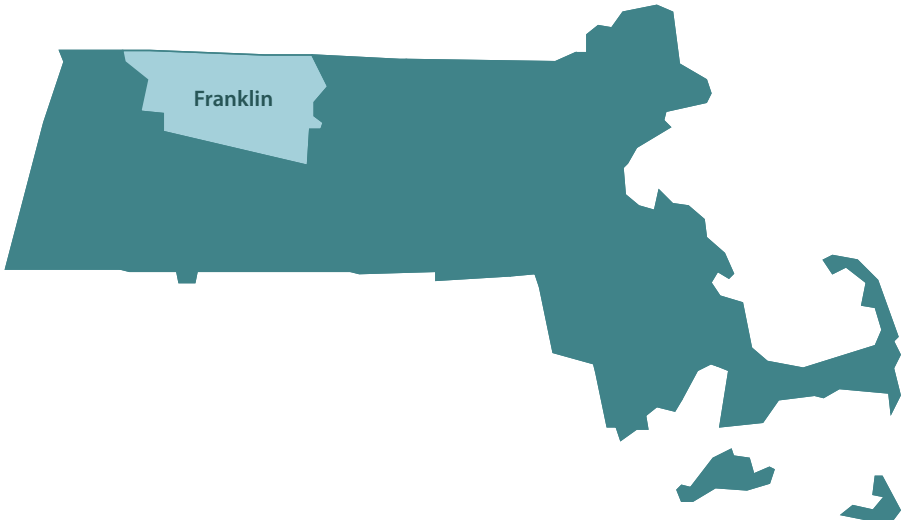
- On the key oral health indicators of caries experience, the proportion of 6th grade adolescents affected by dental caries was significantly less than the statewide average.

Figure 26. Oral Health Indicators Among Massachusetts' Children and Adolescents in Essex County by Grade



NR Not reported due to small numbers

Franklin County



Population: 72,183

Land area: 702 square miles

Median household income: $44,393

Persons below poverty: 9.2%

Children characterized as low-income: 33.5%

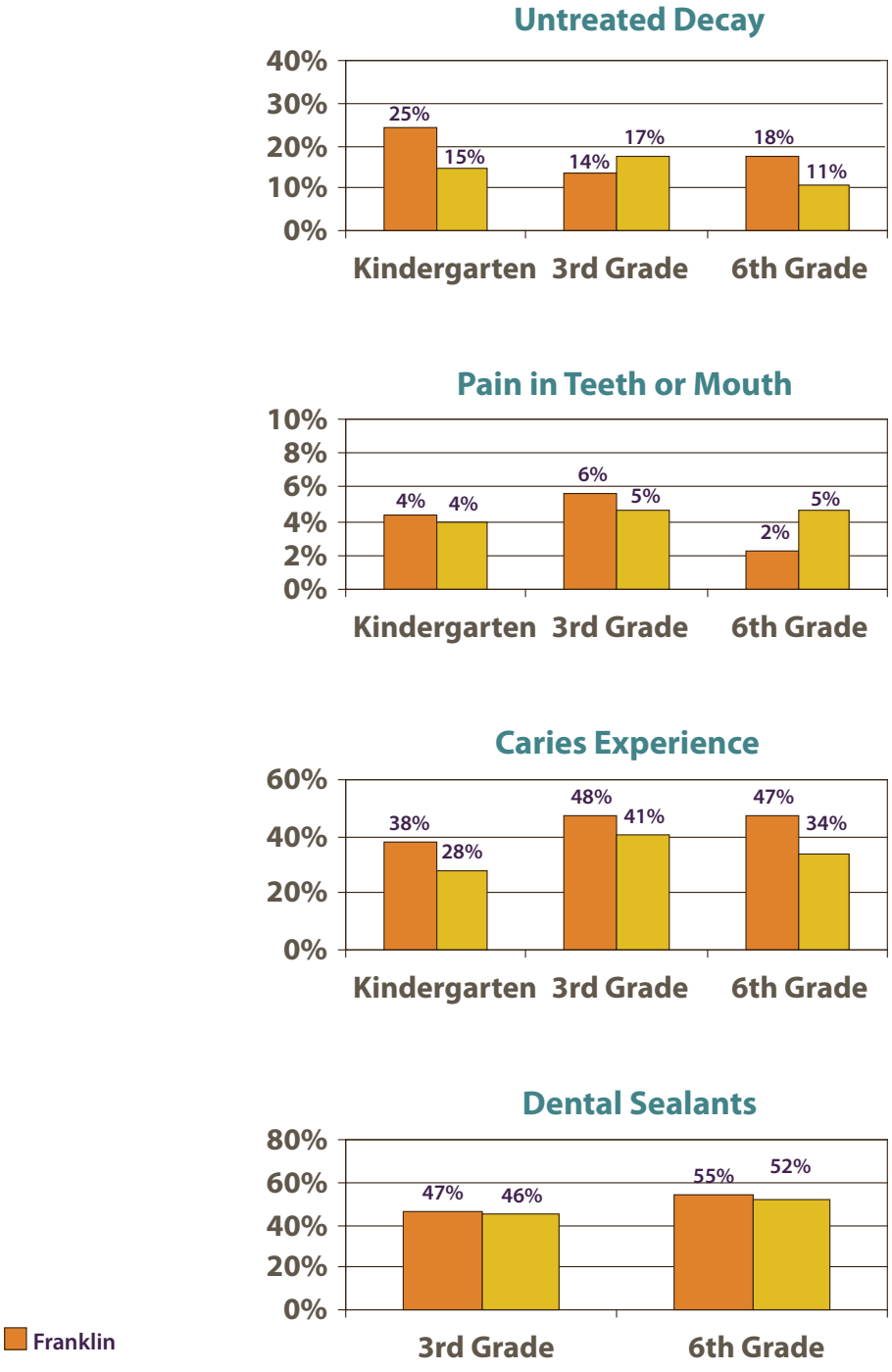
Cities/Towns in Franklin County (Fluoridated communities in **bold**)		
Ashfield	Greenfield	Orange
Bernardston	Hawley	Rowe
Buckland	Heath	Shelburne
Charlemont	Leverett	Shutesbury
Colrain	Leyden	Sunderland
Conway	Monroe	Warwick
Deerfield	Montague	Wendell
Erving	New Salem	Whately
Gill	Northfield	

Key Findings

- The proportion of kindergarten children with untreated decay was significantly greater than the statewide average.
- On the key oral health indicators of caries experience, the proportions of kindergarten and 3rd grade children and 6th grade adolescents affected by dental caries were higher than the statewide average.[1]

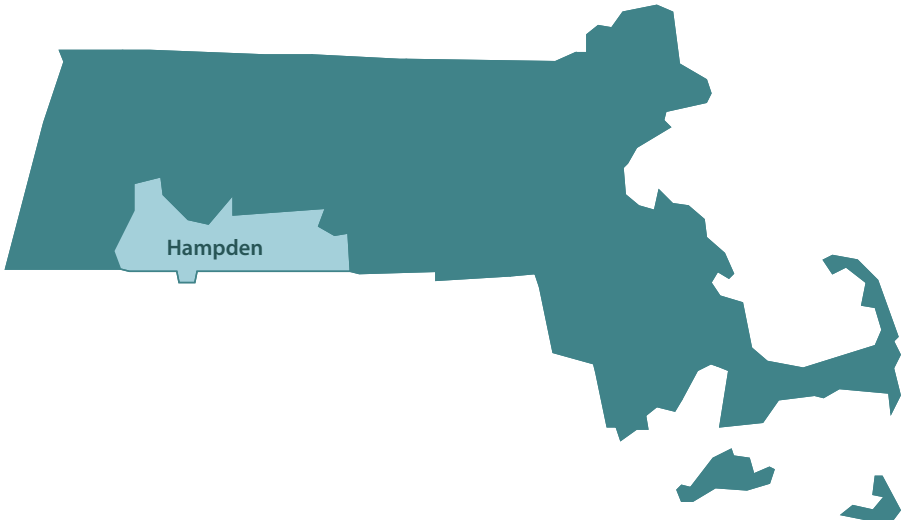
[1]Not statistically different.

Figure 27. Oral Health Indicators Among Massachusetts' Children and Adolescents in Franklin County by Grade



NR Not reported due to small numbers

Hampden County



Population: 460,520

Land area: 618 square miles

Median household income: $40,595

Persons below poverty: 15.1%

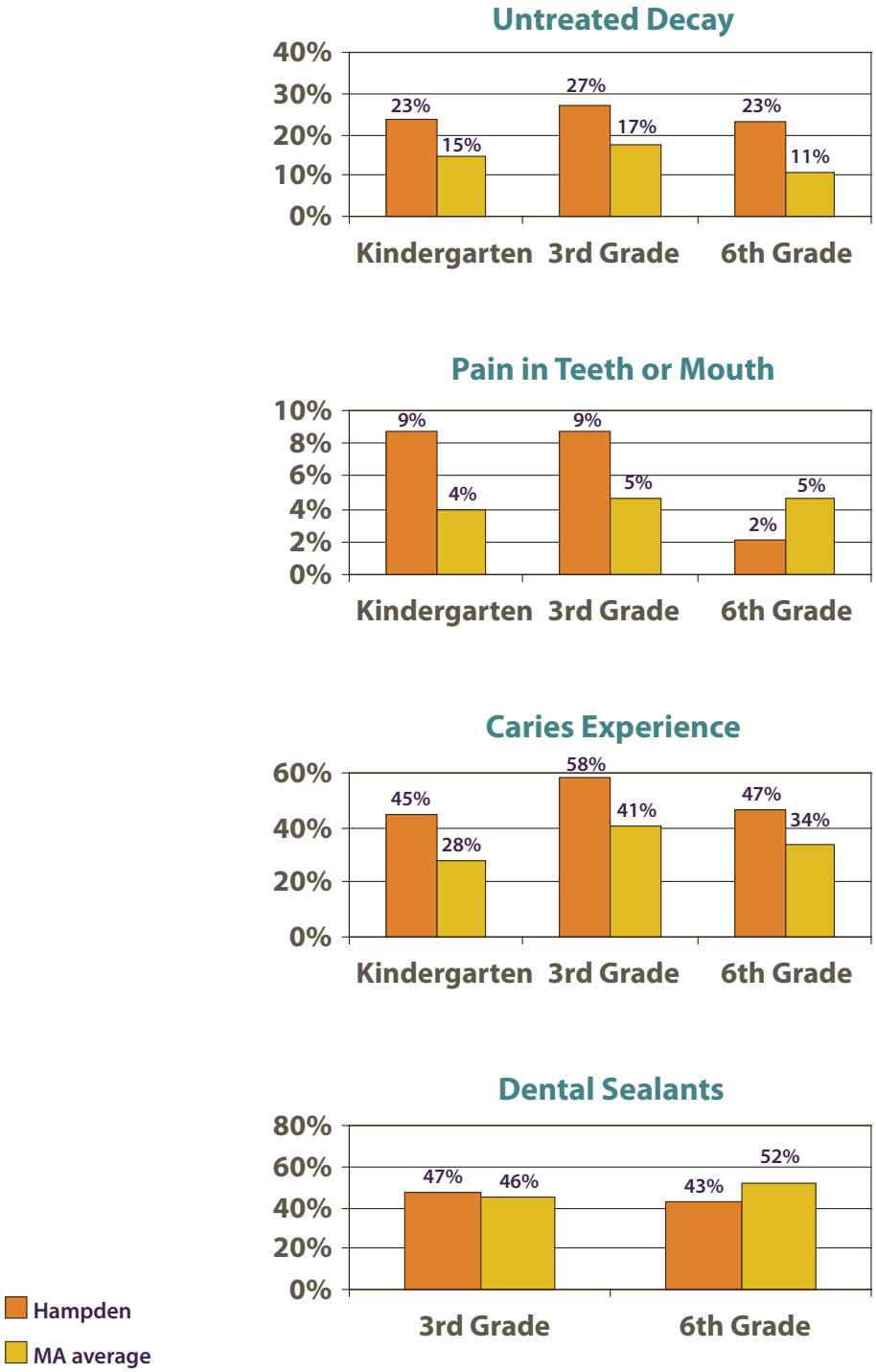
Children characterized as low-income: 47.8%

Cities/Towns in Hampden County (Fluoridated communities in **bold**)		
Agawam	Holland	Southwick
Blandford	**Holyoke**	Springfield
Brimfield	**Longmeadow**	Tolland
Chester	Ludlow	Wales
Chicopee	Monson	West Springfield
East Longmeadow	Montgomery	**Westfield**
Granville	Palmer	Wilbraham
Hampden	Russell	

Key Findings

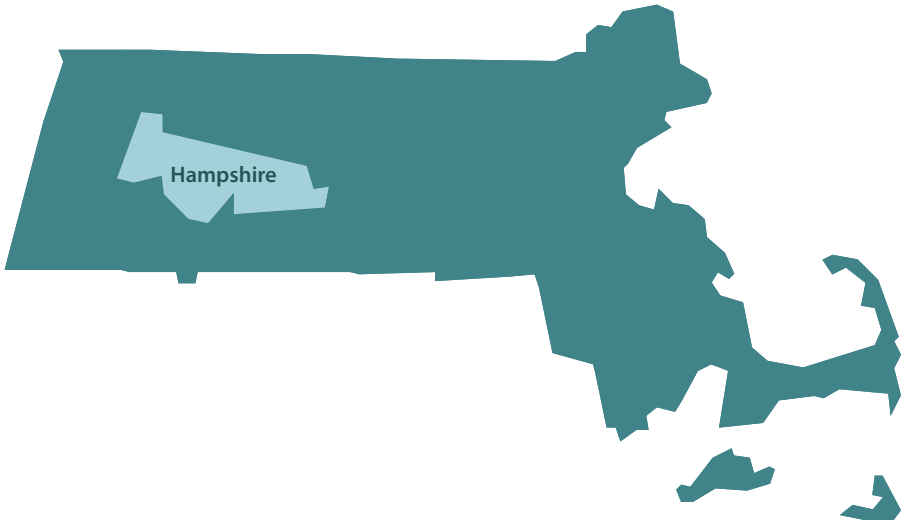
- On the key oral health indicators of caries experience, the proportions of kindergarten and 3rd grade children and 6th grade adolescents affected by dental caries were significantly higher than the statewide average.
- The proportion of 6th grade adolescents with untreated decay was significantly greater than the statewide average.

Figure 28. Oral Health Indicators Among Massachusetts' Children and Adolescents in Hampden County by Grade



NR Not reported due to small numbers

Hampshire County



Population: 153,471

Land area: 529 square miles

Median household income: $48,359

Persons below poverty: 9.7%

Children characterized as low-income: 20.2%

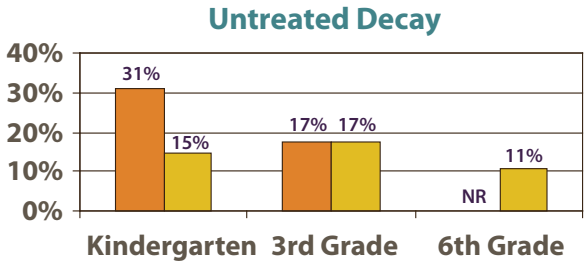
Cities/Towns in Hampshire County (Fluoridated communities in **bold**)		
Amherst	Hadley	South Hadley
Belchertown	Hatfield	Southampton
Chesterfield	Huntington	Ware
Cummington	Middlefield	Westhampton
Easthampton	Northampton	Williamsburg
Goshen	Pelham	Worthington
Granby	Plainfield	

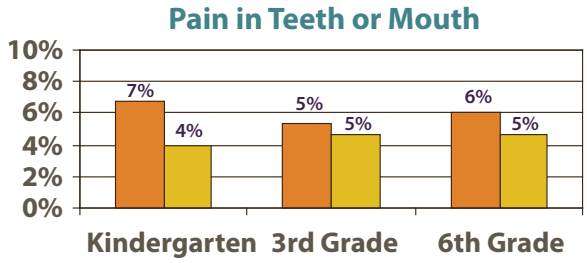
Key Findings

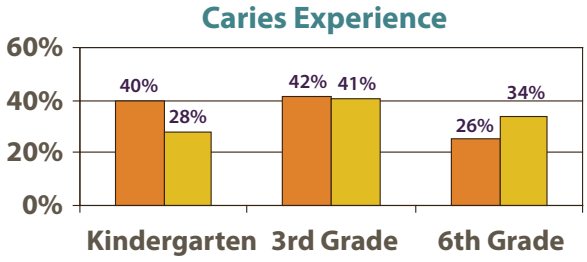
- On the key oral health indicators of caries experience, the proportion of 6th grade adolescents affected by dental caries was significantly lower than the statewide average. Among kindergarten and 3rd grade children, the proportions affected by dental caries equaled the statewide average.
- The proportions of 3rd grade children and 6th grade adolescents who had dental sealants were greater than the statewide average. [1]

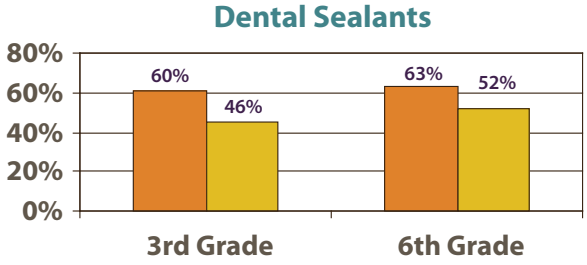
[1]Not statistically different.

Figure 29. Oral Health Indicators Among Massachusetts' Children and Adolescents in Hampshire County by Grade







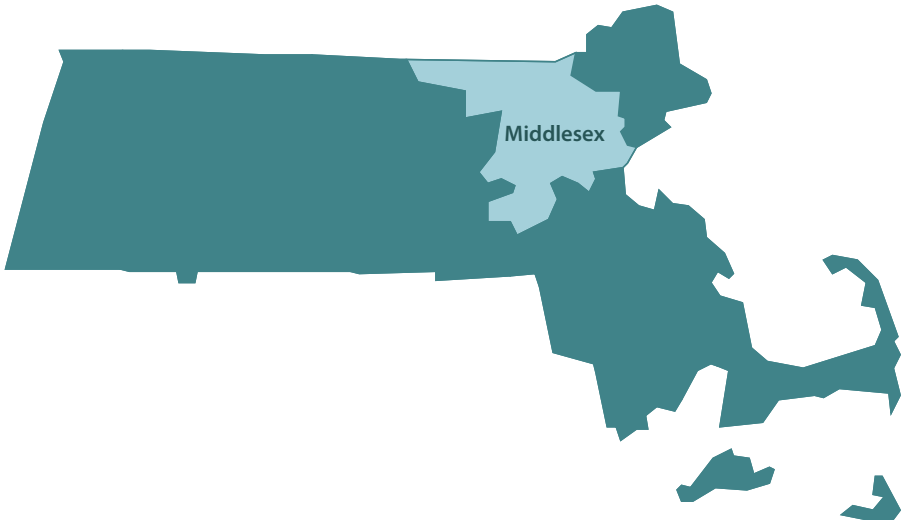


Hampshire

MA average

NR Not reported due to small numbers

Middlesex County



Population: 1,467,016

Land area: 823 square miles

Median household income: $62,854

Persons below poverty: 8.1%

Children characterized as low-income: 19.2%

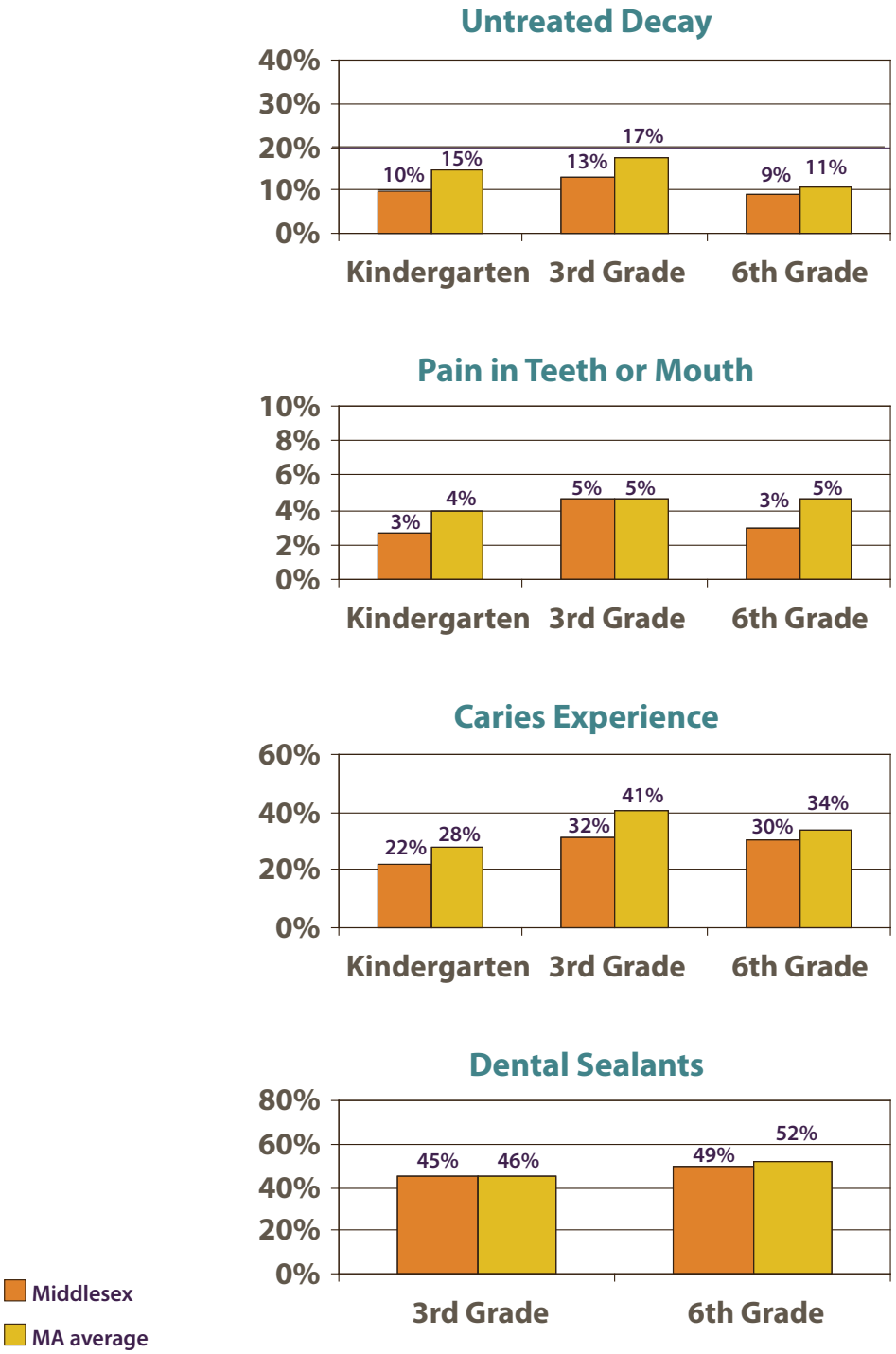
Cities/Towns in Middlesex County (Fluoridated communities in **bold**)				
Acton	Carlisle	**Lexington**	**North Reading**	**Tyngsborough**
Arlington	Chelmsford	**Lincoln**	Pepperell	**Wakefield**
Ashby	**Concord**	Littleton	**Reading**	**Waltham**
Ashland	**Dracut**	**Lowell**	Sherborn	**Watertown**
Ayer	Dunstable	**Malden**	Shirley	**Wayland**
Bedford	**Everett**	**Marlborough**	**Somerville**	**Westford**
Belmont	**Framingham**	Maynard	**Stoneham**	**Weston**
Billerica	Groton	**Medford**	Stow	Wilmington
Boxborough	**Holliston**	**Melrose**	**Sudbury**	**Winchester**
Burlington	Hopkinton	**Natick**	**Tewksbury**	**Woburn**
Cambridge	**Hudson**	**Newton**	Townsend	

Key Findings

- The proportions of children and adolescents with untreated decay were less than the statewide average. [1]
- The proportions of 3rd grade children and 6th grade adolescents who had dental sealants were equal to the statewide average.

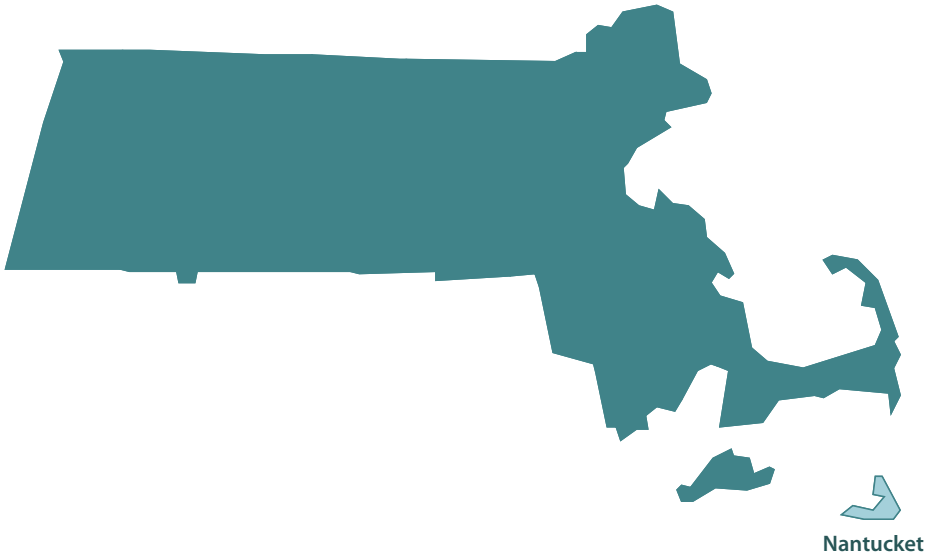
[1]Not statistically different.

Figure 30. Oral Health Indicators Among Massachusetts' Children and Adolescents in Middlesex County by Grade



NR Not reported due to small numbers

Nantucket County



Population: 10,240

Land area: 47 square miles

Median household income: $58,525

Persons below poverty: 4.5%

Children characterized as low-income: 7.5%

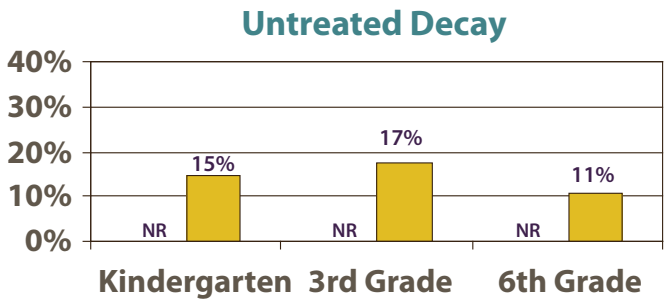
Cities/Towns in Nantucket County (Fluoridated communities in **bold**)		
Nantucket		

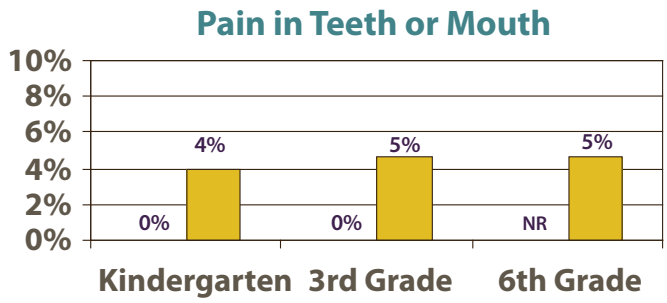
Key Findings

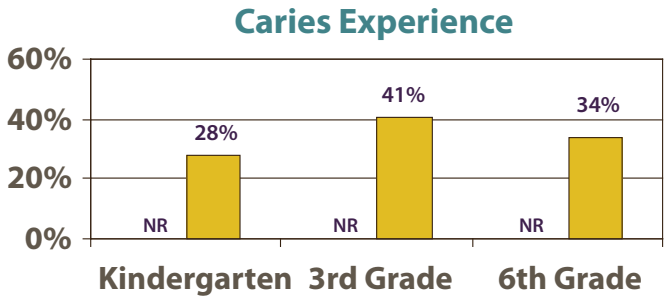
- The proportions of kindergarten and 3rd grade children who reported pain were less than the statewide average. [1]

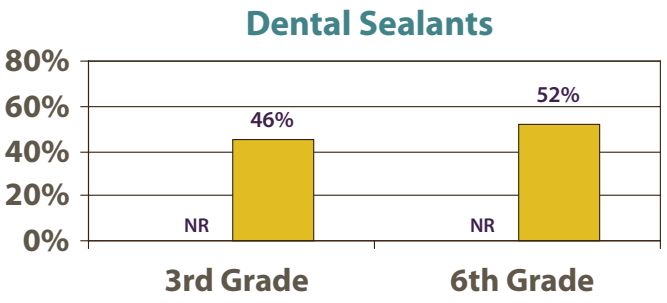
[1]Not statistically different.

Figure 31. Oral Health Indicators Among Massachusetts' Children and Adolescents in Nantucket County by Grade







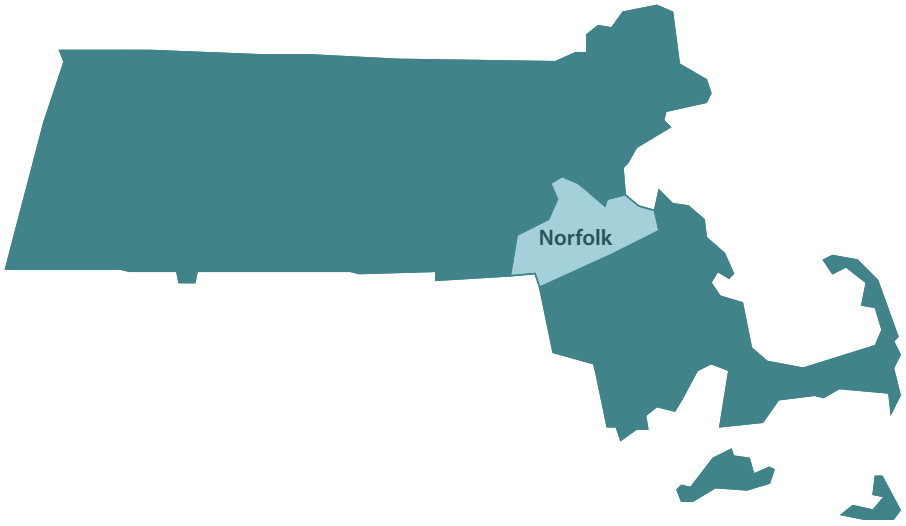


Nantucket

MA average

NR Not reported due to small numbers

Norfolk County



Population: 654,753

Land area: 400 square miles

Median household income: $67,066

Persons below poverty: 5.4%

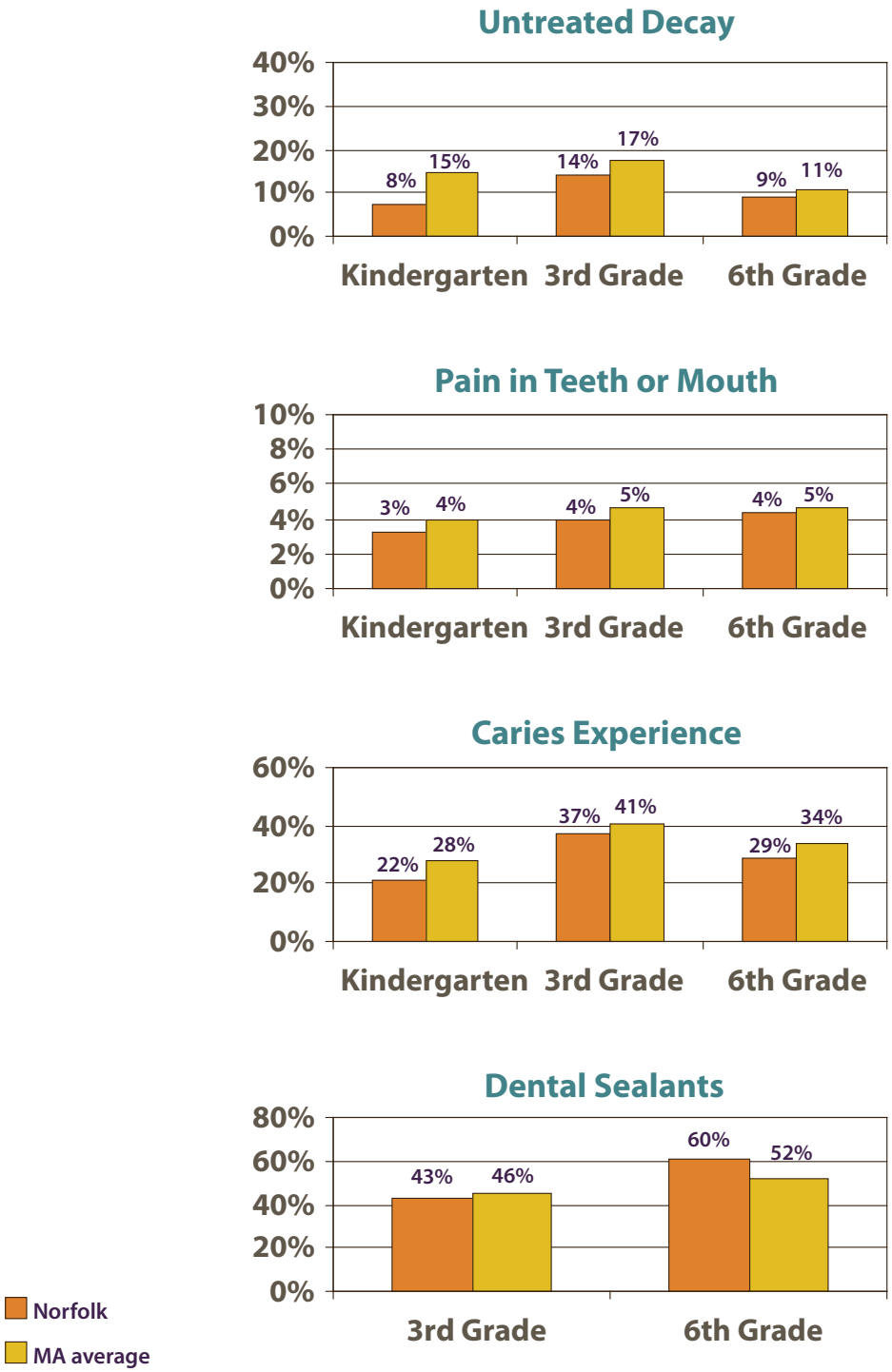
Children characterized as low-income: 12.8%

Cities/Towns in Norfolk County (Fluoridated communities in **bold**)		
Avon	Holbrook	Randolph
Bellingham	Medfield	**Sharon**
Braintree	**Medway**	Stoughton
Brookline	**Millis**	**Walpole**
Canton	**Milton**	**Wellesley**
Cohasset	**Needham**	**Westwood**
Dedham	Norfolk	**Weymouth**
Dover	**Norwood**	Wrentham
Foxborough	**Plainville**	
Franklin	**Quincy**	

Key Findings

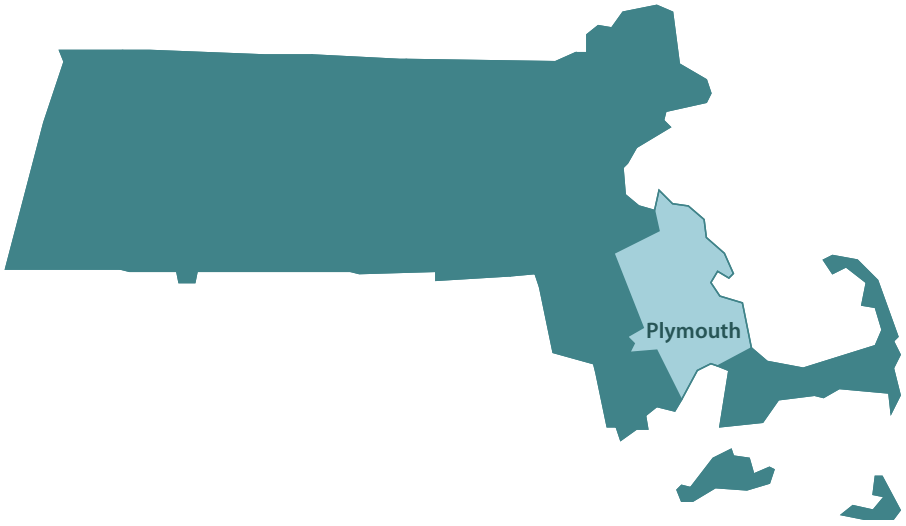
- The proportion of kindergarten children with untreated decay was significantly less than the statewide average. The proportions of 3rd grade children and 6th grade adolescents with untreated decay were about equal to the statewide average.
- The proportions of 3rd grade children and 6th grade adolescents who had dental sealants were about equal to the statewide average.

Figure 32. Oral Health Indicators Among Massachusetts' Children and Adolescents in Norfolk County by Grade



NR Not reported due to small numbers

Plymouth County



Population: 493,623

Land area: 661 square miles

Median household income: $60,359

Persons below poverty: 7.8%

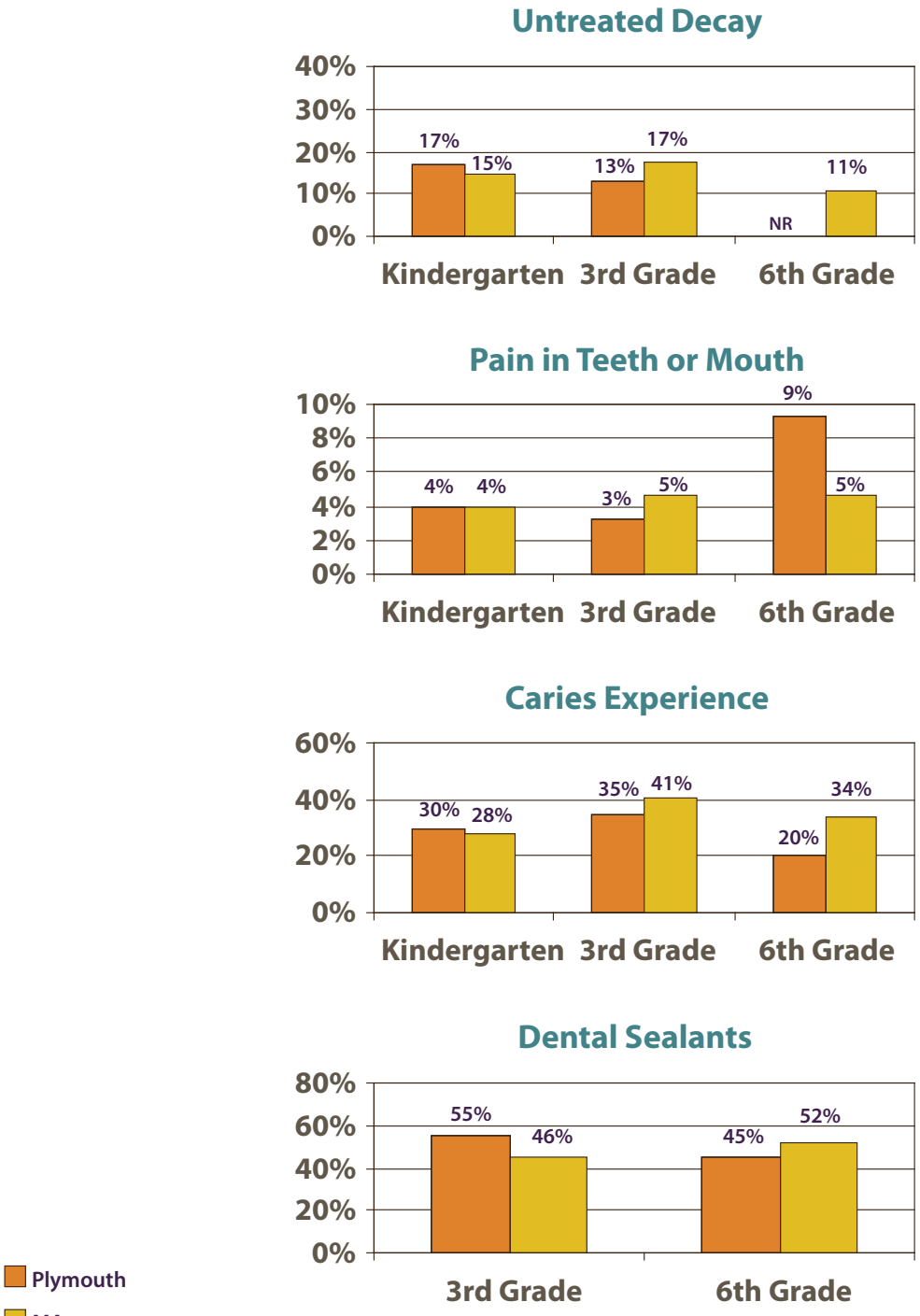
Children characterized as low-income: 23.1%

Cities/Towns in Plymouth (Fluoridated communities in **bold**)		
Abington	**Hingham**	**Pembroke**
Bridgewater	**Hull**	Plymouth
Brockton	Kingston	Plympton
Carver	Lakeville	Rochester
Duxbury	Marion	Rockland
East Bridgewater	Marshfield	**Scituate**
Halifax	Mattapoisett	Wareham
Hanover	Middleborough	West Bridgewater
Hanson	Norwell	Whitman

Key Findings

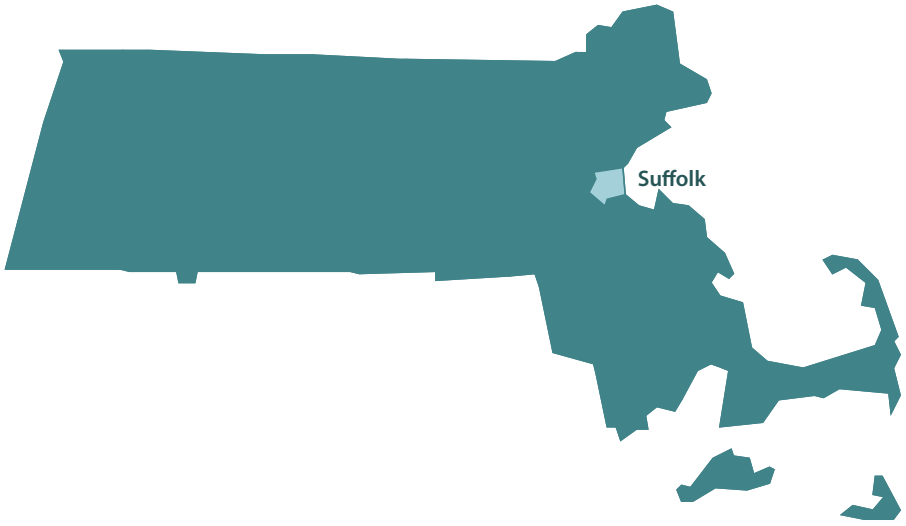
- On the key oral health indicators of caries experience, the proportion of 6th grade adolescents affected by dental caries was significantly less than the statewide average. Among kindergarten and 3rd grade children, the proportions affected by dental caries were about equal to the statewide average.
- The proportions of kindergarten and 3rd grade children with untreated decay were about equal to the statewide average.

Figure 33. Oral Health Indicators Among Massachusetts' Children and Adolescents in Plymouth County by Grade



NR Not reported due to small numbers

Suffolk County



Population: 687,610

Land area: 59 square miles

Median household income: $41,517

Persons below poverty: 16.7%

Children characterized as low-income: 71.2%

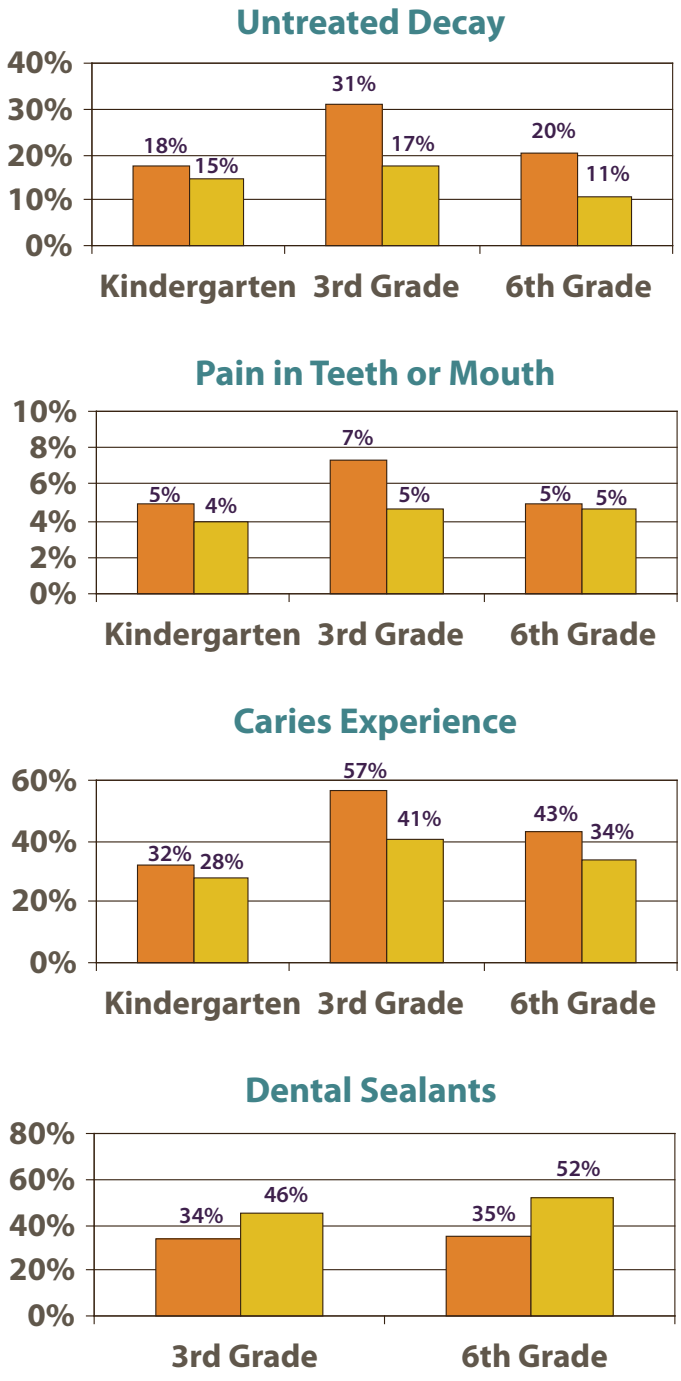
Cities/Towns in Suffolk County (Fluoridated communities in **bold**)		
Boston	**Revere**	**Winthrop**
Chelsea		

Key Findings

- The proportion of 3rd grade children with untreated decay was significantly greater than the statewide average.
- On the key oral health indicators of caries experience, the proportions of 3rd grade children and 6th grade adolescents affected by dental caries were significantly greater than the statewide average.
- The proportion of 6th grade adolescents who had dental sealants was significantly less than the statewide average. Among 3rd grade adolescents, the proportion who had dental sealants was less than the statewide average.[1]

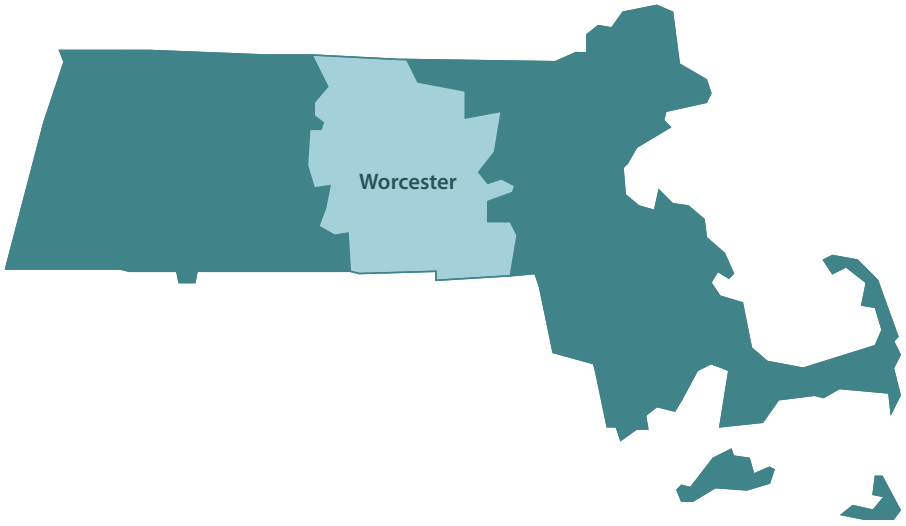
[1]Not statistically different.

Figure 34. Oral Health Indicators Among Massachusetts' Children and Adolescents in Suffolk County by Grade



NR Not reported due to small numbers

Worcester County



Population: 784,992

Land area: 1,513 square miles

Median household income: $51,351

Persons below poverty: 9.8%

Children characterized as low-income: 26.8%

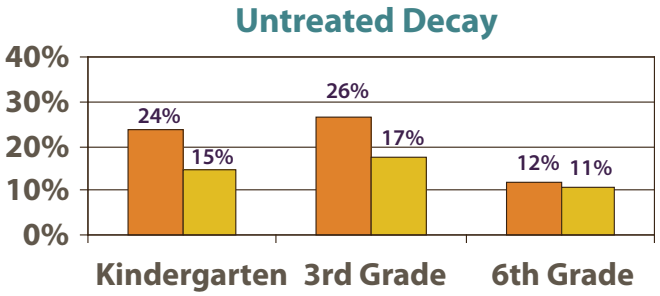
Cities/Towns in Worcester County (Fluoridated communities in **bold**)				
Ashburnham	Dudley	Leominster	Paxton	Sutton
Athol	East Brookfield	Lunenburg	Petersham	**Templeton**
Auburn	**Fitchburg**	Mendon	Phillipston	Upton
Barre	**Gardner**	Milford	Princeton	Uxbridge
Berlin	Grafton	Millbury	Royalston	Warren
Blackstone	Hardwick	Millville	Rutland	Webster
Bolton	Harvard	New Braintree	**Shrewsbury**	West Boylston
Boylston	**Holden**	North Brookfield	**Southborough**	West Brookfield
Brookfield	Hopedale	**Northborough**	**Southbridge**	**Westborough**
Charlton	Hubbardston	Northbridge	Spencer	**Westminster**
Clinton	Lancaster	Oakham	Sterling	Winchendon
Douglas	Leicester	**Oxford**	**Sturbridge**	Worcester

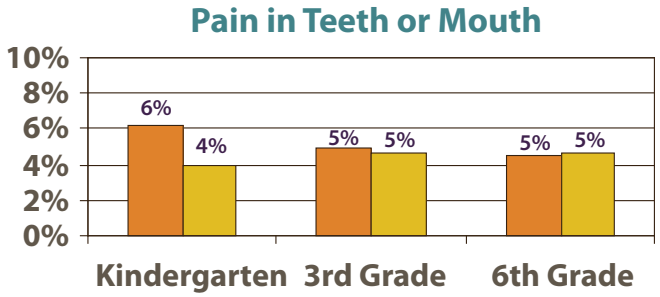
Key Findings

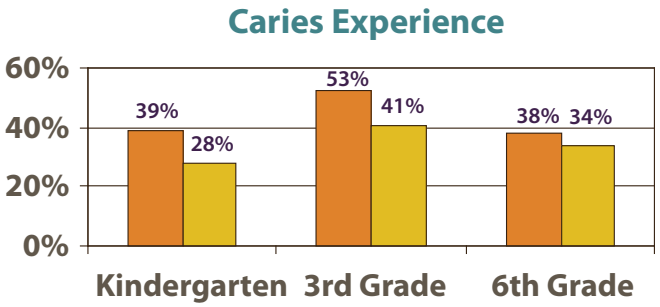
- On the key oral health indicators of caries experience, the proportions of kindergarten and 3rd grade children affected by dental caries were greater than the statewide average.[1]
- The proportions of 3rd grade children and 6th grade adolescents who had dental sealants were about equal to the statewide average.

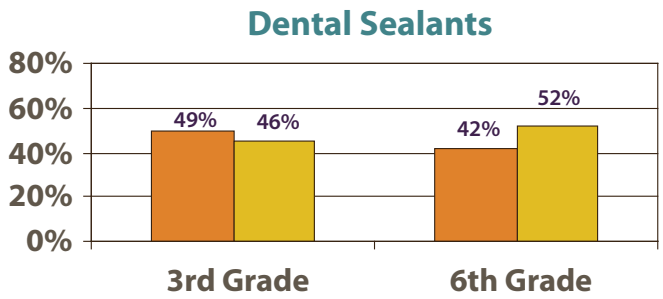
[1]Not statistically different.

Figure 35. Oral Health Indicators Among Massachusetts' Children and Adolescents in Worcester County by Grade









Worcester

MA average

NR Not reported due to small numbers

Glossary

Term	Definition
Caries experience, caries history	Presence of one or more teeth with untreated dental decay and/or dental fillings (used interchangeably in this report)
Complex survey sampling	The sampling plan involved stratification and two-stage cluster sampling within strata. We first identified all schools in the Commonwealth with an enrollment of at least 20 third graders. Schools were listed by county (n=14) and within county by percent of children eligible for free or reduced cost lunch, a proxy for socioeconomic status (SES). Within each county stratum, two-stage cluster sampling was used. Details of the sample selection and recruitment of schools and children are presented elsewhere. http://www.catalystinstitute.org
Dental disease, dental caries	An infectious disease caused by the interaction of bacteria – residing in plaque on the surface of the teeth – with certain foods especially carbohydrates. This interaction produces acids that attack the enamel of the teeth, resulting in demineralization. (all used interchangeably in this report)
Dental cavity, dental decay	Demineralization of enamel due to dental caries infection to an extent that the outer tooth structure collapses leading to the formation of a cavity. More simply stated, a hole in a tooth.
Dental filling	Materials placed in a tooth to repair decayed, missing, worn, or damaged, teeth. Among children, the three basic types of fillings that may be seen during a screening include amalgam, tooth-colored, and temporary fillings.
Dental sealants	Protective plastic coating applied to the biting surfaces of molar teeth.
Dental screening	Visual examination of the teeth (using lighting and mirrors) without the aid of dental explorers or radiographs.
Healthy People 2010	A set of health objectives for the Nation to achieve over the first decade of the new century. It can be used by many different people, States, communities, professional organizations, and others to help them develop programs to improve health. http://www.healthypeople.gov/
Low-income	Received free or reduced price meals through the National School Lunch Program during the 2006–2007 school year. Children from families with incomes at or below 130% of the poverty level ($26,000 for a family of four) were eligible for free meals. Those between 130% and 185% of the poverty level ($37,000 for a family of four) were eligible for reduced-price meals. http://www.fns.usda.gov/cnd/governance/notices/iegs/iegs.htm
Oral health disparities	The diminished health status of population subgroups defined by demographic factors such as age and socioeconomic status (SES), geography, disability status, and behavioral lifestyles.
Prevalence	The proportion of persons in a population group who have a particular disease at a given point in time.
Representative sample	A sample selected to stand for a given population group.
Urgent or emergency need for dental care	Signs or symptoms that include pain, infection, swelling, or soft tissue ulceration of more than two weeks duration (determined by questioning). Recommended next dental visit as soon as possible.

Table 1. Demographics, Access to Care Measures, and Oral Health Indicators Among 3rd Grade Children Participating in the 2003 and 2007 Oral Health Surveys.		
Variable	**2003**	**2007**
Number of children screened	3,439	2,211
Mean age [range] (years)	8.6 [7–12]	8.7 [7–12]
Female (%)	51.1	49.8
Reports not having a regular dentist (%)	14.7	7.8
Reports not having dental insurance (%)	13.1	13.9
In need of urgent care (%)	7.2	2.4
Caries free (%) (no fillings or untreated decay)	51.8	59.3
Caries history (%) (one or more teeth with a filling and/or untreated decay)	48.2	40.7
Untreated decay (%)	25.8	17.3
Filled teeth (%)	37.9	32.1
Dental sealants (% with≥ 1 sealant)	53.8	45.5

Table 2. Demographics, Access to Care Measures, and Oral Health Indicators Among Massachusetts' Children and Adolescents Participating in the 2007 Oral Health Survey.			
Variable	**Kindergarten**	**3rd Grade**	**6th Grade**
Number of children screened	2,163	2,211	1,543
Mean age [range] (years)	5.6 [4–7]	8.7 [7–12]	11.7 [10–14]
Female (%)	48.1	49.8	52.4
Non-Hispanic White (%)	68.3	70.7	74.4
Non-Hispanic Black (%)	4.4	4.3	3.4
Non-Hispanic Other (%)	11.5	11.0	9.5
Hispanic (%)	15.8	14.0	12.7
Low-income (%)	30.8	28.0	26.5
Reports not having a regular dentist (%)	10.5	7.8	6.6
Reports not having dental insurance (%)	13.8	13.9	15.1
Fair or poor oral hygiene assessment (%)	19.8	37.6	31.1
Parent reports child currently having pain in teeth or mouth (%)	4.3	4.7	4.7
In need of urgent care (%)	1.1	2.4	0.6
Caries free (%) (no fillings or untreated decay)	72.1	59.3	66.3
Caries history (%) (one or more teeth with a filling and/or untreated decay)	27.9	40.7	33.7
Untreated decay (%)	14.5	17.3	10.9
Mean number of teeth with untreated dental decay among children with one or more teeth with untreated dental decay	2.5	2.2	1.9
Filled teeth (%)	18.0	32.1	27.4
Mean number of filled teeth among children with one or more filled teeth	3.1	3.1	2.4
Dental sealants (% with ≥ 1 sealant)		45.5	52.0
Mean number of teeth with dental sealants among children with one or more teeth with dental sealants		3.4	3.8

Data Tables

Table 3. Oral Health Indicators and Access to Care Measures Among Massachusetts' Kindergarten Children Participating in the 2007 Oral Health Survey.

Variable	MA Average	Gender		Race/Ethnicity				Family Income		Child Had		Child Had	
				Non-Hispanic									
		Female	Male	White	Black	Other	Hispanic	Low-income	Higher Income	Regular Dentist	No regular dentist	Dental insurance	No dental insurance
Parent reports child currently having pain in teeth or mouth (%)	4.3	4.9	3.8	3.9	8.3	3.1	7.9*	8.1‡	2.9	4.2	4.7	4.3	3.9
In need of urgent care (%)	1.1	1.1	1.1	0.6	1.9	2.8	1.4	2.3‡	0.5	0.8	2.2	1.1	0.3
Caries history (%)	27.9	28.4	27.6	23.0	39.4*	32.6	40.9*	41.5‡	22.2	27.2	31.4	27.6	28.7
Untreated decay (%)	14.5	14.8	14.0	11.5	23.0	15.2	23.5*	25.7‡	9.8	12.8	27.3§	13.8	17.8
Mean number of teeth with untreated decay among children with one or more teeth with untreated decay	2.5	2.5	2.6	2.3	3.0	2.2	2.9	3.0‡	2.1	2.3	3.1	2.4	3.0
Filled Teeth (%)	18.0	18.4	17.8	14.8	23.5	22.5	26.2*	22.9‡	15.9	19.0	7.6§	18.4	14.2
Mean number of filled teeth among children with one or more filled teeth	3.1	2.9	3.3	2.8	4.4* ¶	3.0	3.6	3.8‡	2.6	3.1	3.7	3.1	3.2

Comparisons based on 95% confidence intervals:

* Significantly different than non-Hispanic white children/adolescents.

¶ Significantly different than non-Hispanic children/adolescents of other races.

‡ Significantly different than children/adolescents from higher income families.

§ Significantly different than children/adolescents whose parents reported they had a regular dentist.

Table 4. Oral Health Indicators and Access to Care Measures Among Massachusetts' 3rd Grade Children Participating in the 2007 Oral Health Survey.

Variable	MA Average	Gender		Race/Ethnicity				Family Income		Child Had		Child Had	
				Non-Hispanic									
		Female	Male	White	Black	Other	Hispanic	Low-income	Higher Income	Regular Dentist	No regular dentist	Dental insurance	No dental insurance
Parent reports child currently having pain in teeth or mouth (%)	4.7	6.0	3.3	3.3	10.8*	4.3	10.5*	9.7‡	2.8	4.3	10.0	4.4	6.6
In need of urgent care (%)	2.4	2.5	2.2	1.1	7.9*	4.5	5.0	6.5‡	0.8	1.8	10.0§	2.0	4.4
Caries history (%)	40.7	41.3	40.0	36.0	51.3	42.8	58.2*	60.8‡	32.6	39.7	50.2	40.8	39.2
Untreated decay (%)	17.3	17.4	17.4	13.7	36.0*	21.4	26.2*	32.2‡	11.3	15.4	39.1§	16.6	20.8
Mean number of teeth with untreated decay among children with one or more teeth with untreated decay	2.2	2.1	2.2	1.9	2.1	2.7	2.6*	2.5‡	1.9	2.0	3.0§	2.1	2.6
Filled Teeth (%)	32.1	32.9	30.9	29.5	25.9	29.7	47.7*	45.5‡	26.6	32.9	20.6§	33.3	24.0
Mean number of filled teeth among children with one or more filled teeth	3.1	3.1	3.1	3.0	2.8	3.1	3.5	3.7‡	2.8	3.1	3.4	3.1	2.8
Dental Sealants (%)	45.5	47.5	43.9	48.1	29.0*	38.9	43.8	37.4‡	48.8	47.9	18.0§	46.5	39.4
Mean number of dental sealants among children with one or more dental sealants	3.4	3.3	3.4	3.4	3.1	3.5	3.1*	3.1‡	3.5	3.4	2.9	3.4	3.6

Comparisons based on 95% confidence intervals:

* Significantly different than non-Hispanic white children/adolescents.

‡ Significantly different than children/adolescents from higher income families.

§ Significantly different than children/adolescents whose parents reported they had a regular dentist.

Data Tables

Table 5. Oral Health Indicators and Access to Care Measures Among Massachusetts' 6th Grade Adolescents Participating in the 2007 Oral Health Survey.

Variable	MA Average	Gender		Race/Ethnicity				Family Income		Child Had		Child Had	
				Non-Hispanic									
		Female	Male	White	Black	Other	Hispanic	Low-income	Higher Income	Regular Dentist	No regular dentist	Dental insurance	No dental insurance
Parent reports child currently having pain in teeth or mouth (%)	4.7	5.4	3.9	3.6	4.2	10.8	7.0	5.8‡	4.1	4.3	10.1	4.5	4.8
In need of urgent care (%)	0.6	0.7	0.6	0.2	5.1	1.0	1.7	2.3‡	0.0	0.4	3.2	0.6	0.5
Caries history (%)	33.7	35.4	31.8	30.0	40.2	37.9	49.2*	48.4‡	28.5	33.0	45.9	34.6	29.5
Untreated decay (%)	10.9	12.2	9.7	9.4	20.1	12.1	15.7	17.4‡	8.7	9.5	31.1§	11.2	9.7
Mean number of teeth with untreated decay among children with one or more teeth with untreated decay	1.9	2.0	1.8	1.8	3.0	2.1	1.8	2.3	1.6	1.7	2.7	1.9	1.9
Filled Teeth (%)	27.4	28.2	26.0	25.3	22.2	28.3	38.7*	37.6‡	23.8	28.1	19.2	28.3	22.5
Mean number of filled teeth among children with one or more filled teeth	2.4	2.4	2.4	2.3	3.5*	2.6	2.6	2.7	2.2	2.4	2.3	2.4	2.6
Dental Sealants (%)	52.0	51.3	52.2	56.0	20.0*¶†	42.7*	44.6	41.1‡	55.7	53.5	28.1§	53.0	45.7
Mean number of dental sealants among children with one or more dental sealants	3.8	3.8	3.7	3.9	4.2	3.1	3.2*	3.3‡	3.9	3.8	3.1	3.8	3.8

Comparisons based on 95% confidence intervals:

* Significantly different than non-Hispanic white children/adolescents.

¶ Significantly different than non-Hispanic children/adolescents of other races.

† Significantly different than Hispanic children/adolescents.

‡ Significantly different than children/adolescents from higher income families.

§ Significantly different than children/adolescents whose parents reported they had a regular dentist.

Table 6. Estimated Number Of Massachusetts' Children And Adolescents By Selected Characteristics And Oral Health Indices

	Kindergarten		3rd Grade		6th Grade	
Number of children enrolled in 2006 – 2007	68,566		71,534		72,924	
Variable	Percent	Estimated Number of Children	Percent	Estimated Number of Children	Percent	Estimated Number of Adolescents
Reports not having a regular dentist	10.5	7,199	7.8	5,580	6.6	4,813
Number of children enrolled	13.8	9,462	13.9	9,943	15.1	11,012
Fair or poor oral hygiene assessment	19.8	13,576	37.6	26,897	31.1	22,606
Parent reported child was currently having pain in teeth or mouth	4.3	2,948	4.7	3,362	4.7	3,427
In need of urgent care (definition)	1.1	754	2.4	1,717	0.6	438
Caries experience (one or more teeth with a filling and/or untreated decay)	27.9	19,130	40.7	29,114	33.7	24,575
Untreated decay (one or more teeth with untreated decay)	14.5	9,942	17.3	12,375	10.9	7,949
Filled teeth (one or more teeth with a filling)	18.0	12,342	32.1	22,962	27.4	19,981
Dental sealants (one or more teeth with a dental sealant)			45.5	32,548	52.0	37,920
Number of additional children required to reach goal of 50% of children with sealants			4.5	3,219		

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ASSESSMENT AND REPORT FUNDED BY:

Delta Dental of Massachusetts