

7.5 Oral Health

Mouth and throat diseases, which range from cavities to cancer, cause pain and disability for millions of Americans.¹ This fact is disturbing because almost all oral diseases can be prevented.²

For children, cavities are a common problem that begins at an early age. More than half of U.S. children aged five to nine years have had at least one filling, and 78% of seventeen year olds have experienced tooth decay.³ Low-income children are hardest hit: children and adolescents living in poverty are about twice as likely to suffer from tooth decay than those with higher income, and their disease is more likely to go untreated.⁴ Untreated cavities may cause pain, dysfunction, absence from school, underweight, and poor appearance—problems that can greatly reduce a child’s capacity to succeed in life.⁵

Tooth decay is also a problem for U.S. adults, especially for the increasing number of older adults who have retained most of their teeth.⁶ Despite this increase in tooth retention, tooth loss remains a problem among older adults.⁷ One fourth of adults over age 60 years have lost all of their teeth—primarily because of tooth decay, which affects more than 90% of adults over age 40 years, and advanced gum disease, which affects 5%–15% of adults.⁸ Tooth loss can affect self-esteem, and it may contribute to nutrition problems by limiting the types of food that a person can eat.⁹

For statistics on access to dental care, please refer to *Section 2: Community Issues and Assets* of the Kalamazoo County Health Surveillance Data Book.¹⁰

¹ Chronic Disease Oral Health at-a-Glance, 2006, Centers for Disease Control, accessed at <http://www.cdc.gov/nccdphp/publications/aag/oh.htm>

² Chronic Disease Oral Health at-a-Glance, 2006, Centers for Disease Control, accessed at <http://www.cdc.gov/nccdphp/publications/aag/oh.htm>

³ Centers for Disease Control and Prevention, Children’s Oral Health Fact Sheet from the Surgeon General. Accessed at http://www.cdc.gov/OralHealth/publications/factsheets/sgr2000_fs3.htm

⁴ Centers for Disease Control and Prevention, Children’s Oral Health Fact Sheet from the Surgeon General. Accessed at http://www.cdc.gov/OralHealth/publications/factsheets/sgr2000_fs3.htm

⁵ Chronic Disease Oral Health at-a-Glance, 2006, Centers for Disease Control, accessed at <http://www.cdc.gov/nccdphp/publications/aag/oh.htm>

⁶ Chronic Disease Oral Health at-a-Glance, 2006, Centers for Disease Control, accessed at <http://www.cdc.gov/nccdphp/publications/aag/oh.htm>

⁷ Chronic Disease Oral Health at-a-Glance, 2006, Centers for Disease Control, accessed at <http://www.cdc.gov/nccdphp/publications/aag/oh.htm>

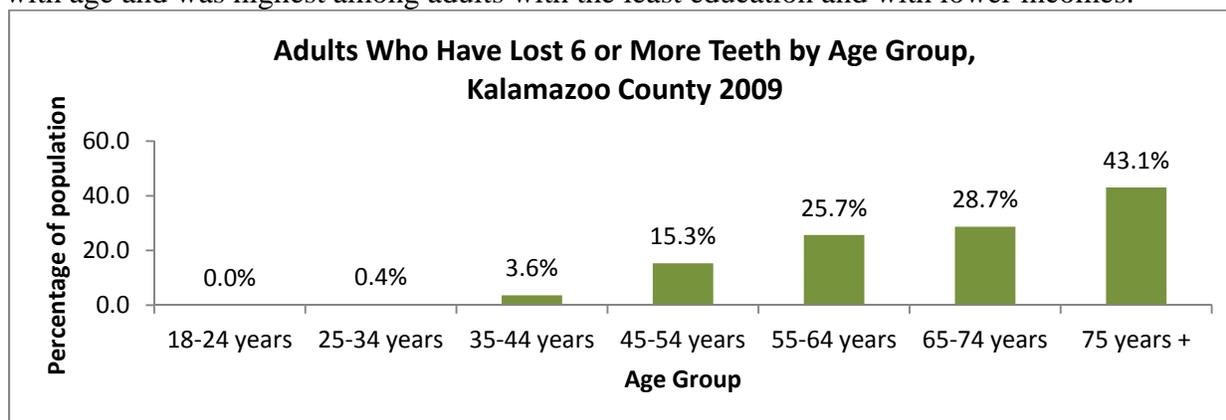
⁸ Chronic Disease Oral Health at-a-Glance, 2006, Centers for Disease Control, accessed at <http://www.cdc.gov/nccdphp/publications/aag/oh.htm>

⁹ Chronic Disease Oral Health at-a-Glance, 2006, Centers for Disease Control, accessed at <http://www.cdc.gov/nccdphp/publications/aag/oh.htm>

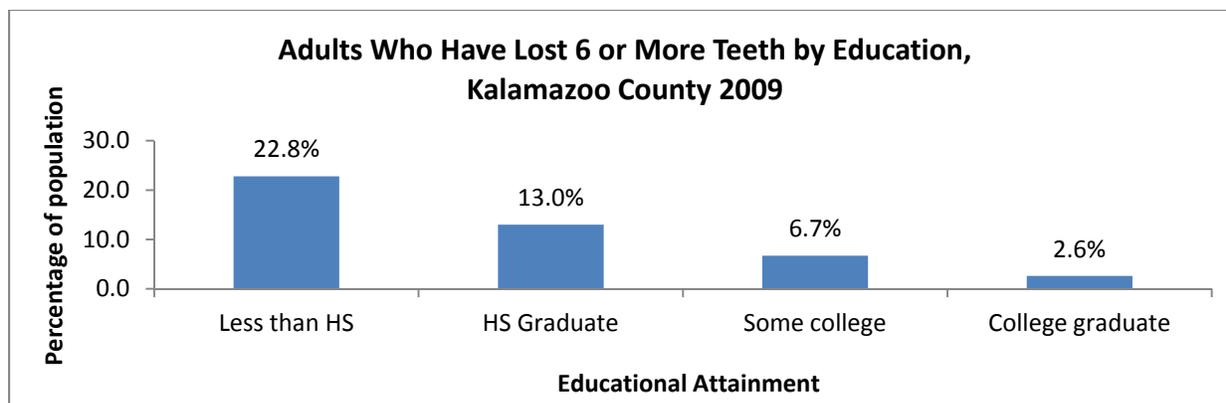
¹⁰ <http://www.kalamazoo.com/hcs/Section2Intro.htm>

7.5.1 Tooth Loss

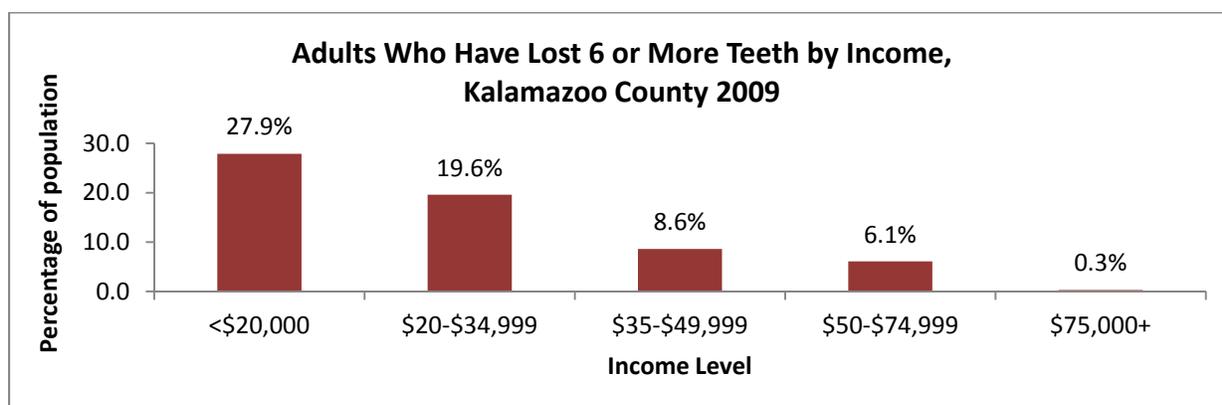
Tooth loss can have an impact on food choices, quality of life, and self-image.¹¹ A surveillance indicator for tooth loss among adults is having lost six or more teeth due to tooth decay or gum disease. Among adults in Kalamazoo County, in 2009 9.8% reported that they had lost six or more teeth, a lower percentage than reported in 2004 (15.8%).¹² The prevalence of tooth loss increased with age and was highest among adults with the least education and with lower incomes.



Source: Kalamazoo County 2009 Behavioral Risk Factor Survey



Source: Kalamazoo County 2009 Behavioral Risk Factor Survey



Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

¹¹ National Oral Health Surveillance System, accessed online at <http://www.cdc.gov/nohss/>.

¹² Kalamazoo County 2009 Behavioral Risk Factor Survey; Kalamazoo County 2004 Behavioral Risk Factor Survey

Tooth Loss among Adults, Kalamazoo County 2009

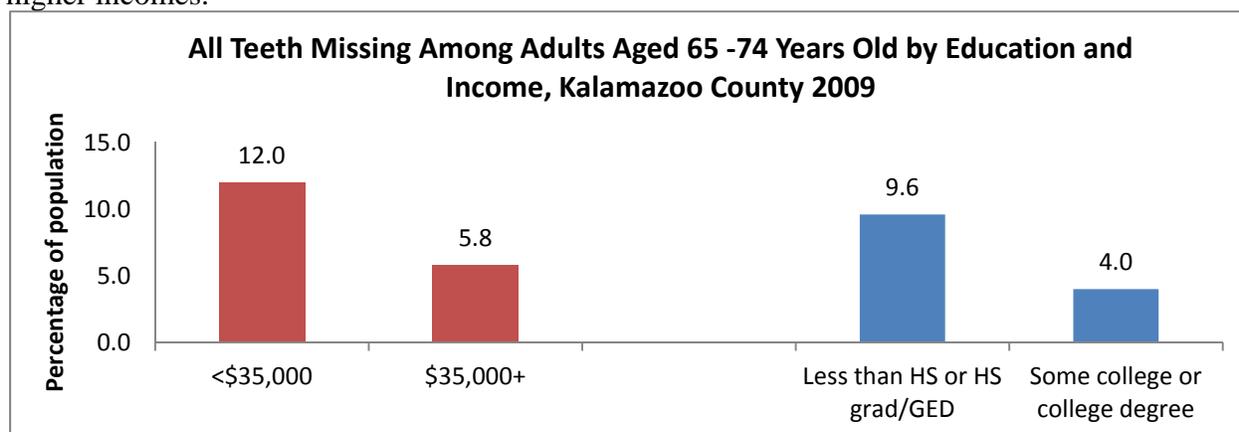
	6+ Teeth Missing ^a	
	%	95% C.I.
Total	9.8	(6.6 - 14.4)
Age		
18-24 years	0.0	(0.0 - 0.0)
25-34 years	0.4	(0.1 - 1.1)
35-44 years	3.6	(1.1 - 10.8)
45-54 years	15.3	(8.0 - 27.5)
55-64 years	25.7	(13.8 - 42.8)
65-74 years	28.7	(19.8 - 39.6)
75 years +	43.1	(28.2 - 59.3)
Gender		
Male	9.2	(5.2 - 15.7)
Female	10.3	(5.9 - 17.4)
Race		
White non-Hispanic	9.2	(5.8 - 14.5)
Black non-Hispanic	16.6	(8.0 - 31.3)
Education		
Less than HS	22.8	(6.9 - 54.0)
HS Graduate	13.0	(7.9 - 20.7)
Some college	6.7	(3.0 - 14.2)
College graduate	2.6	(1.2 - 5.6)
Income		
<\$20,000	27.9	(14.5 - 46.7)
\$20-34,999	19.6	(9.9 - 35.2)
\$35-49,999	8.6	(3.1 - 21.4)
\$50-74,999	6.1	(2.1 - 16.3)
\$75,000+	0.3	(0.1 - 1.2)
City/Out-County		
City of Kalamazoo	13.3	(8.0 - 21.3)
Rest of County	8.3	(4.7 - 14.2)
Within City of Kalamazoo		
White in City	13.1	(6.5 - 24.5)
Black in City	13.4	(6.1 - 27.1)
Dental Insurance		
Have Dental Insurance	5.6	(3.5 - 8.8)
No Dental Insurance	19.8	(11.6 - 31.9)
^a The proportion who reported that they were missing 6 or more teeth due to tooth decay or gum disease. This excludes teeth lost for other reasons such as injury or orthodontics.		

Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

Loss of all natural permanent teeth (complete tooth loss) may substantially impair a person's quality of life, self-image, and daily functioning.¹³ In Kalamazoo County in 2009, 6.5% of adults aged 65-74 years old reported they had lost all of their natural teeth.¹⁴ During this same time period in Kalamazoo County 11.7% of adults aged 65 years and older had lost all their teeth. This was similar to the prevalence in Michigan and the United States in 2008 among adults aged 65 years and older (15.6% in Michigan and 18.1% in the United States reported they had lost all of their permanent teeth).¹⁵

Healthy People 2020 Goal
Reduce the proportion of older adults (65-74 years) who have had all their natural teeth extracted to 21.6%.

In Kalamazoo County in 2009, seniors, 65-74 years old with less education and lower incomes were more likely to have lost all of their natural teeth than seniors with higher educational attainment or higher incomes.



Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

Additionally, white non-Hispanic adults within Kalamazoo County in 2009 were more likely to have had all their natural teeth extracted than black non-Hispanics (7.1% vs. 1.8%).

¹³ National Oral Health Surveillance System, accessed online at <http://www.cdc.gov/nohss/>.

¹⁴ Kalamazoo County 2009 Behavioral Risk Factor Survey

¹⁵ Michigan 2008 Behavioral Risk Factor Survey, United States 2008 Behavioral Risk Factor Survey, accessed online at <http://apps.nccd.cdc.gov/nohss/ListV.asp?qkey=8&DataSet=2>.

Tooth Loss among Adults, Kalamazoo County 2009

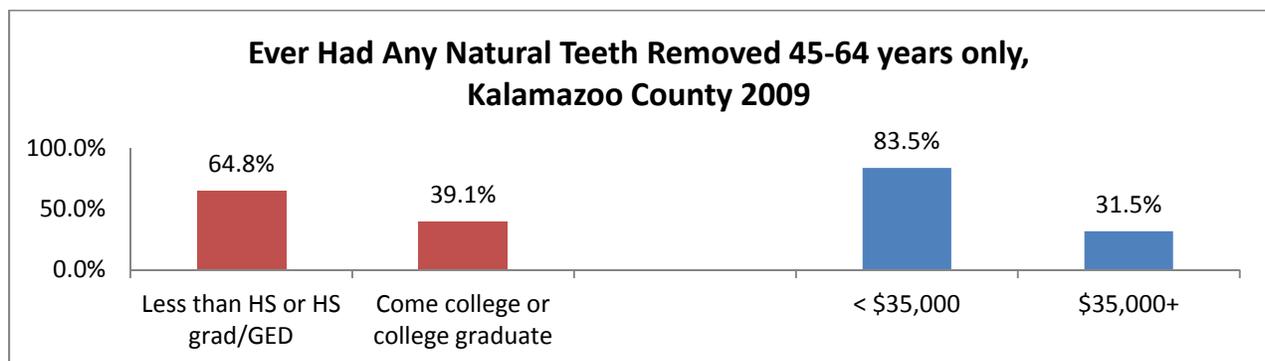
	All Teeth Missing, 65-74 Years Only ^a	
	%	95% C.I.
Total	6.5	(2.8 - 14.4)
Gender		
Male	4.5	(1.2 - 15.6)
Female	7.4	(2.7 - 18.5)
Race		
White non-Hispanic	7.1	(3.0 - 15.9)
Black non-Hispanic	1.8	(0.5 - 6.0)
Education		
Less than HS or HS grad/GED	9.6	(3.4 - 24.4)
Some college or college degree	4.0	(1.0 - 14.7)
Income		
<\$35,000	12.0	(3.9 - 31.2)
\$35,000+	5.8	(1.8 - 17.6)
City/Out-County		
City of Kalamazoo	13.5	(3.7 - 38.8)
Rest of County	4.5	(1.5 - 12.3)
Within City of Kalamazoo		
White in City	14.4	(3.6 - 43.1)
Black in City	4.2	(1.5 - 11.2)
Dental Insurance		
Have Dental Insurance	4.9	(1.1 - 19.0)
No Dental Insurance	6.1	(2.0 - 17.6)
^a The proportion of adults aged 65 years to 74 years who reported that they had lost all of their teeth		

Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

In Kalamazoo County in 2009, the percentage of adults aged 45 to 64 years old who had never had a permanent tooth removed due to dental caries or periodontal disease was 47.8%, which exceeded the Healthy People 2020 goal of 68.8%.¹⁶

Healthy People 2020 Goal
Reduce the proportion of adults aged 45-64 years who have ever had a permanent tooth extracted because of dental caries or periodontal disease to 68.8%.

Among adults aged 45 to 64 years in Kalamazoo County the proportion of adults who have had a tooth extracted because of dental caries or periodontal disease varied greatly between demographic groups. For individuals with an income less than \$35,000, 83.5% had a tooth extracted as compared to 31.5% for those who had incomes greater than 35,000. Additionally, individuals with less than a high school degree or a high school degree had higher levels of teeth removal than those with some college or a college degree in 2009 (64.8% vs. 39.1%).



Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

¹⁶ Kalamazoo County 2004 Behavioral Risk Factor Survey

Tooth Loss among Adults 45-64 Years Old, Kalamazoo County 2009

	Ever Had Any Natural Teeth Removed, 45-64 Years Only ^a	
	%	95% C.I.
Total	47.8	(39.0 - 56.9)
Race		
White non-Hispanic	43.5	(33.8 - 53.8)
Black non-Hispanic	71.5	(47.9 - 87.3)
Education		
Less than HS or HS grad/GED	64.8	(48.3 - 78.4)
Some college or college degree	39.1	(29.4 - 49.8)
Income		
<\$35,000	83.5	(71.7 - 91.0)
\$35,000+	31.5	(21.3 - 44.0)
Dental Insurance		
Have Dental Insurance	41.0	(31.0 - 51.9)
No Dental Insurance	60.6	(44.1 - 75.1)
^a The proportion of adults 45-64 years who reported that they had ever had any teeth removed due to tooth decay or gum disease. This excludes teeth lost for other reasons such as injury or orthodontics.		

Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

7.5.2 Hospitalizations Due to Dental Problems

All Hospitalizations

Hospitalizations are defined as inpatient hospital stays completed during a specified year. The number of hospitalizations is often greater than the number of persons hospitalized since some persons are hospitalized more than once during a year.¹⁷

In Kalamazoo County in 2009, 0.06% of all hospitalizations were due to dental problems (16). The rate of hospitalizations due to dental problems in Kalamazoo County was similar in 2009 to the average rate between 2004 and 2008, and the 2009 rate was slightly lower than the rate in Michigan.

Hospitalizations and Rates per 10,000 Population for Dental Problems and All Causes, Kalamazoo County and Michigan 2004-2008 vs. 2009

Disease	Area	Hospitalizations		Rate per 10,000	
		Average number 2004-2008	2009	Average annual rate 2004-2008 (+/- 95% CI)	2009 (+/- 95% CI)
Dental Problems	Kalamazoo County	14	16	0.6 ± 0.1	0.6 ± 0.3
	Michigan	854	1,003	0.8 ± 0.0	1.0 ± 0.1
All Hospitalizations	Kalamazoo County	28,422	28,528	1,171.3 ± 6.1	1,148.4 ± 13.3
	Michigan	1,326,194	1,318,741	1,315.6 ± 1.0	1,322.7 ± 2.3

Source: Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Inpatient Files

¹⁷ Michigan Department of Community Health, Division for Vital Records and Health Data Development accessed online at <http://www.mdch.state.mi.us/pha/osr/chi/hospdx/frame.html>

Ambulatory Care Sensitive Hospitalizations

The Michigan Department of Community Health defines ambulatory care sensitive (ACS) hospitalizations as those hospitalizations “for conditions where timely and effective ambulatory care can decrease hospitalizations by preventing the onset of an illness or condition, controlling an acute episode of an illness or managing a chronic disease or condition.” A hospitalization is further defined as a continuous stay of one or more days; therefore a patient who was hospitalized on more than one separate occasion during the time period would be counted as more than one hospitalization.¹⁸

Ambulatory care sensitive hospitalizations may reflect a lack of or failure of prevention efforts, a primary care resource shortage, poor performance of primary health care delivery systems, or other factors that create barriers to obtaining timely and effective care.¹⁹ In 2009, 18.6% of all hospitalizations in Kalamazoo County were categorized as ACS hospitalizations (20.5% of all hospitalizations in Michigan were ACS hospitalizations).²⁰

Ambulatory care sensitive hospitalizations due to dental problems are those related to any diseases of the hard tissues of the teeth, diseases of the pulp or periapical tissues, gingival or periodontal diseases and diseases of the oral soft tissues or supporting structures. Ambulatory care sensitive hospitalizations exclude any related to cancer of the oral soft tissues or supporting structures.²¹ In 2009, there were 16 ACS hospitalizations due to dental problems in Kalamazoo County, ranking it as the 18th most common cause of ACS hospitalization. In 2009, dental problems were the cause of 0.3% of ACS hospitalizations in Kalamazoo County and 0.4% of ACS hospitalizations in Michigan.²² Ambulatory care sensitive hospitalizations related to dental problems represented 8.9% of ACS hospitalizations for avoidable conditions in Kalamazoo County in 2009.²³

¹⁸ Michigan Department of Community Health, Division for Vital Records and Health Data Development, accessed online at <http://www.mdch.state.mi.us/pha/osr/chi/hosp/frame.html>

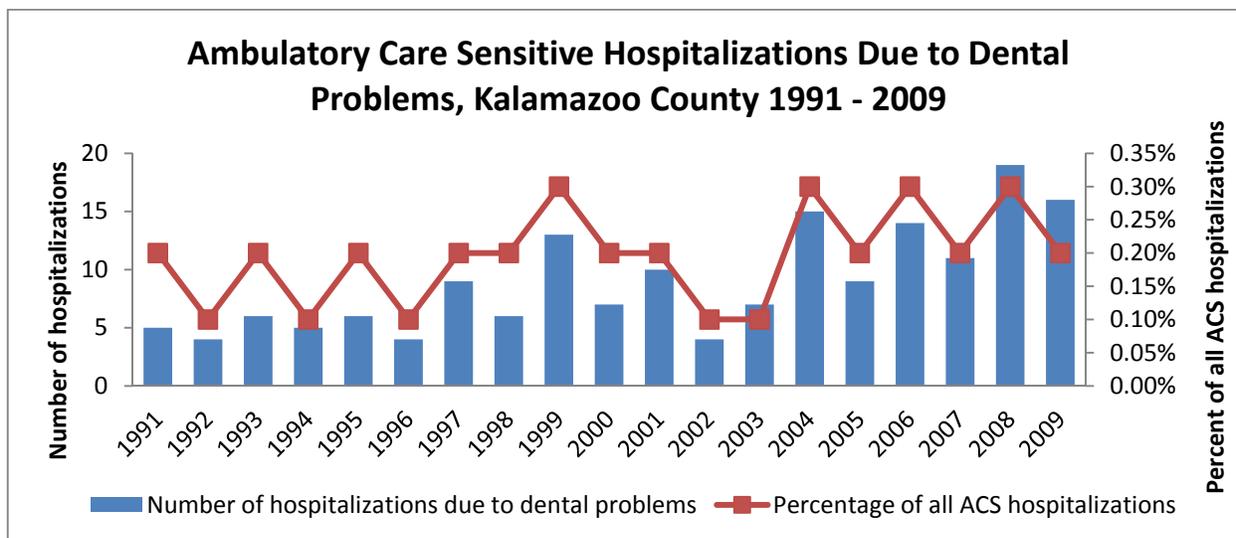
¹⁹ Michigan Department of Community Health, Division for Vital Records and Health Data Development, accessed online at <http://www.mdch.state.mi.us/pha/osr/chi/hosp/frame.html>

²⁰ Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Inpatient Files.

²¹ Total hospitalizations for dental problems additionally include disorder of tooth development and eruption, dentofacial anomalies including malocclusion, diseases of the jaws, diseases of the salivary glands, and diseases and other conditions of the tongue (these are not included in ACS hospitalizations).

²² Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Inpatient Files.

²³ Michigan Department of Community Health, Division for Vital Records and Health Data Development, Michigan Resident Inpatient Files. Avoidable conditions include congenital syphilis, failure to thrive (age < 1 year), dental problems, vaccine-preventable diseases, iron deficiency anemia (age 0-5) years, and nutritional deficiencies.



Source: Michigan Department of Community Health, Division for Vital Records and Health Statistics, Michigan Resident Inpatient Files

Ambulatory Care Sensitive (ACS) Hospitalizations due to Dental Problems in Kalamazoo County and Michigan

Year	Number	Percent of ACS hospitalizations	
	Kalamazoo County	Kalamazoo County	Percent in Michigan
1991	5	0.2%	0.3%
1992	4	0.1%	0.3%
1993	6	0.2%	0.3%
1994	5	0.1%	0.3%
1995	6	0.2%	0.3%
1996	4	0.1%	0.3%
1997	9	0.2%	0.3%
1998	6	0.2%	0.3%
1999	13	0.3%	0.3%
2000	7	0.2%	0.3%
2001	10	0.2%	0.3%
2002	4	0.1%	0.3%
2003	7	0.1%	0.3%
2004	15	0.3%	0.3%
2005	9	0.2%	0.3%
2006	14	0.3%	0.3%
2007	11	0.2%	0.3%
2008	19	0.3%	0.4%
2009	16	0.3%	0.4%

Source: Michigan Department of Community Health, Division for Vital Records and Health Statistics, Michigan Resident Inpatient Files