

4.1 Nutrition

The Centers for Disease Control and Prevention have found that nationally, the majority of Americans are not getting the recommended five servings of fruits and vegetables a day. Fruits and vegetables contain essential vitamins, minerals, and fiber that may help protect people from chronic diseases.¹

Compared with people who consume a diet with only small amounts of fruits and vegetables, those who eat more generous amounts as part of a healthful diet are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovascular diseases, and certain cancers.² In addition, because fruits and vegetables have low energy density (i.e., few calories relative to volume), eating them as part of a reduced-calorie diet can be beneficial for weight management.³

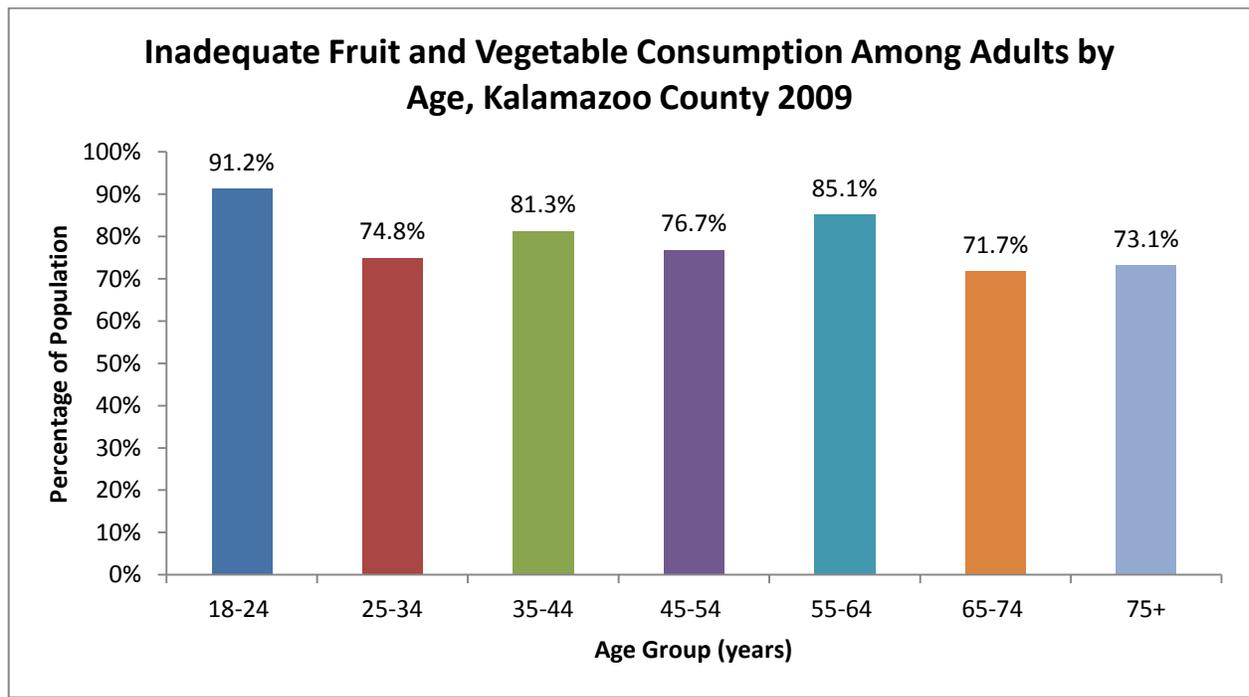
¹ Fruit and Vegetable Benefits, 2012, Centers for Disease Control and Prevention, accessed on the web at <http://www.fruitsandvegetablesmorematters.org>.

² Fruit and Vegetable Benefits, 2012, Centers for Disease Control and Prevention, accessed on the web at <http://www.fruitsandvegetablesmorematters.org>.

³ Rolls BJ, Ello-Martin JA, Tohill BC. What can intervention studies tell us about the relationship between fruit and vegetable consumption and weight management? *Nutr Rev* 2008;62:1--17.

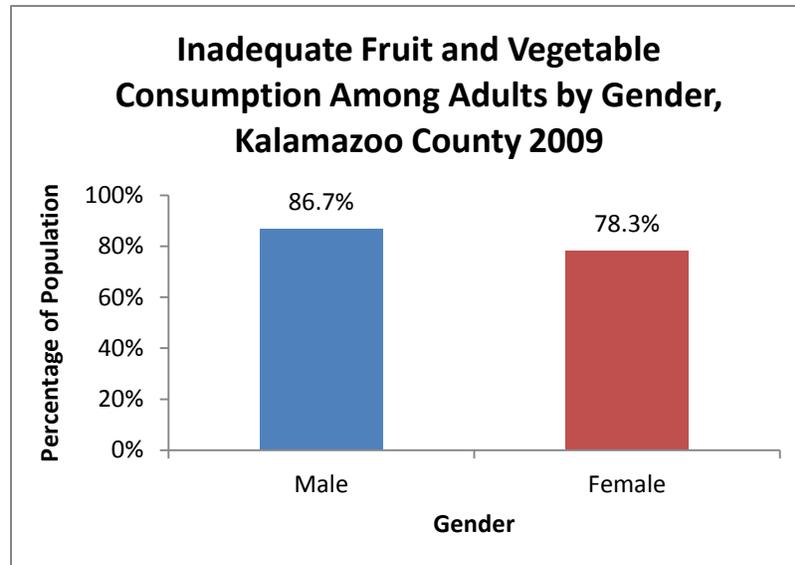
4.1.1 Fruit and Vegetable Consumption

In Kalamazoo County in 2009, 82.2% of residents ate fewer than five servings of fruits and vegetables a day. Fruit and vegetable consumption was similar across age groups, although among older adults (age 65-74 years and age 75 years and older) the percentage with inadequate consumption of fruits and vegetables was lower (better) than among younger age groups. This means that a larger proportion of older adults had adequate fruit and vegetable consumption than younger adults did (28.3% of adults 65-74 years of age and 26.9% of adults 75 years of age and older ate five servings of fruit and vegetables daily).



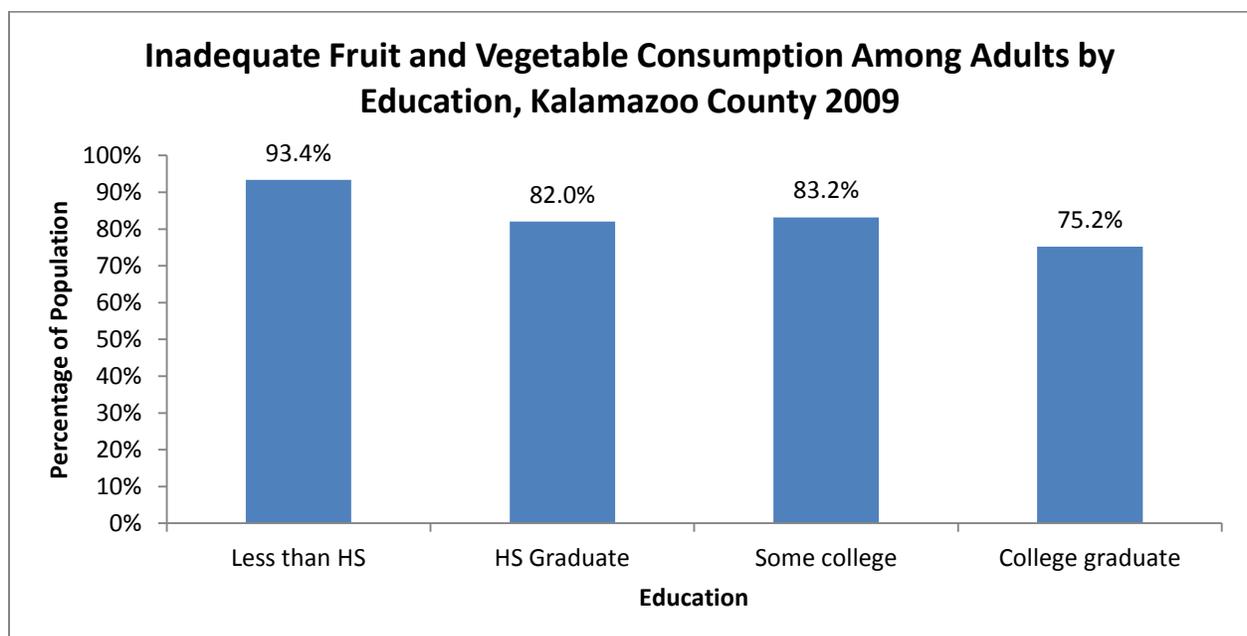
Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

Inadequate fruit and vegetable consumption among adult males was slightly higher at 86.7% than adult females at 78.3%. Although females as a group may be more likely to eat the recommended five servings a day of fruits and vegetables than males, the majority of both females and males do not get an adequate intake of fruits and vegetables daily.



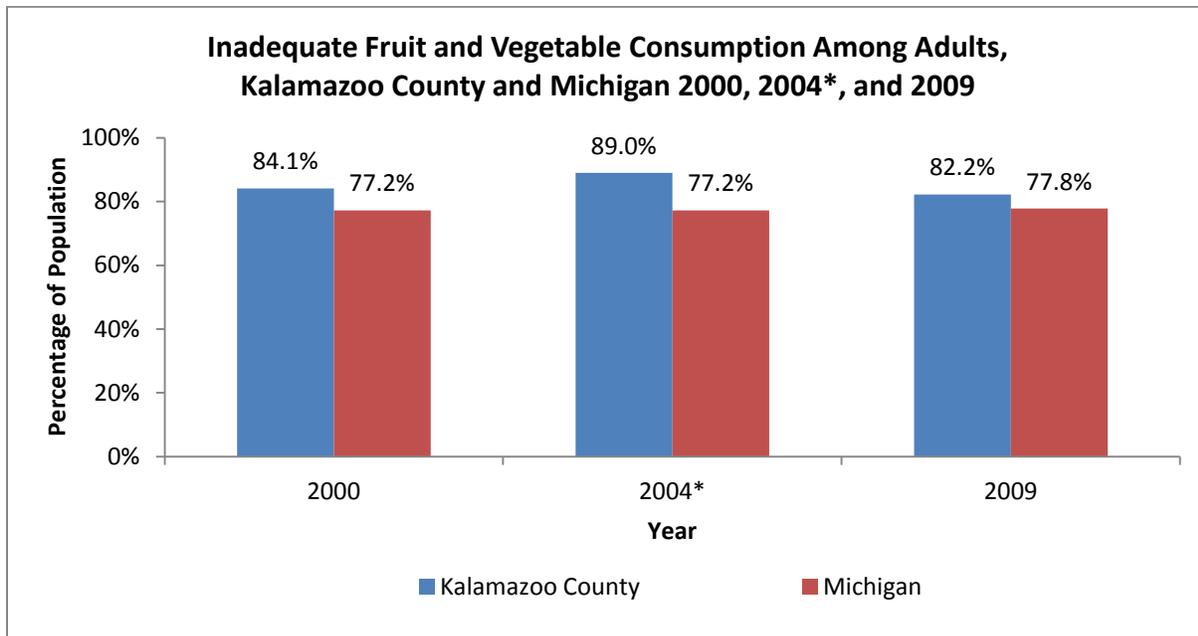
Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

Consumption of fruits and vegetables did not differ by race or income; however it varied across education groups. As education increased, the percentage of the population who were not consuming five fruits and vegetables per day generally decreased. Inadequate fruit and vegetable consumption among adults was most common among the population with less than a high school education.



Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

The percentage of the population that had inadequate fruit and vegetable consumption was higher in Kalamazoo County than in Michigan in 2000, 2004, and 2009. The percentage of the population with inadequate fruit and vegetable consumption remained relatively constant over time in Kalamazoo County (with a slight increase in 2004) and in Michigan.



Source: Behavioral Risk Factor Survey, Kalamazoo County (2000, 2004, 2009) and Michigan (2000, 2005, 2009)

*Data not available for Michigan in 2004 (question not asked), 2005 data used for comparison with Kalamazoo County 2004 data.

**Inadequate Fruit and Vegetable Consumption Among
Adults Aged 18 and Older, Kalamazoo County 2009**

Demographic Characteristics	Less than 5 Servings of Fruits & Vegetables Consumed per Day ^a	
	%	95% C.I.
Total	82.2	(76.6 - 86.7)
Age		
18-24 years	91.2	(70.4 - 97.8)
25-34 years	74.8	(59.4 - 85.7)
35-44 years	81.3	(70.8 - 88.6)
45-54 years	76.7	(67.2 - 84.1)
55-64 years	85.1	(78.2 - 90.1)
65-74 years	71.7	(61.1 - 80.3)
75 years +	73.1	(62.2 - 81.9)
Gender		
Male	86.7	(79.5 - 91.7)
Female	78.3	(69.5 - 85.2)
Race		
White non-Hispanic	82.6	(76.4 - 87.5)
Black non-Hispanic	84.8	(68.4 - 93.5)
Education		
Less than HS	93.4	(81.4 - 97.9)
HS Graduate	82.0	(71.5 - 89.2)
Some college	83.2	(70.9 - 90.9)
College graduate	75.2	(67.7 - 81.5)
Income		
Less than \$20,000	87.8	(78.5 - 93.4)
\$20,000-34,999	74.0	(58.3 - 85.3)
\$35,000-49,999	88.5	(78.2 - 94.2)
\$50,000-74,999	67.1	(46.9 - 82.5)
\$75,000+	82.8	(73.1 - 89.5)
City/Out-County		
City of Kalamazoo	78.0	(68.5 - 85.3)
Rest of County	83.2	(74.2 - 89.5)
Within City of Kalamazoo		
White in City	78.2	(65.9 - 86.9)
Black in City	80.3	(60.2 - 91.7)
^a The proportion whose total reported consumption of fruits (including juice) and vegetables was less than 5 times per day.		

Source: Kalamazoo County 2009 Behavioral Risk Factor Survey

4.1.2 Youth Nutrition Status

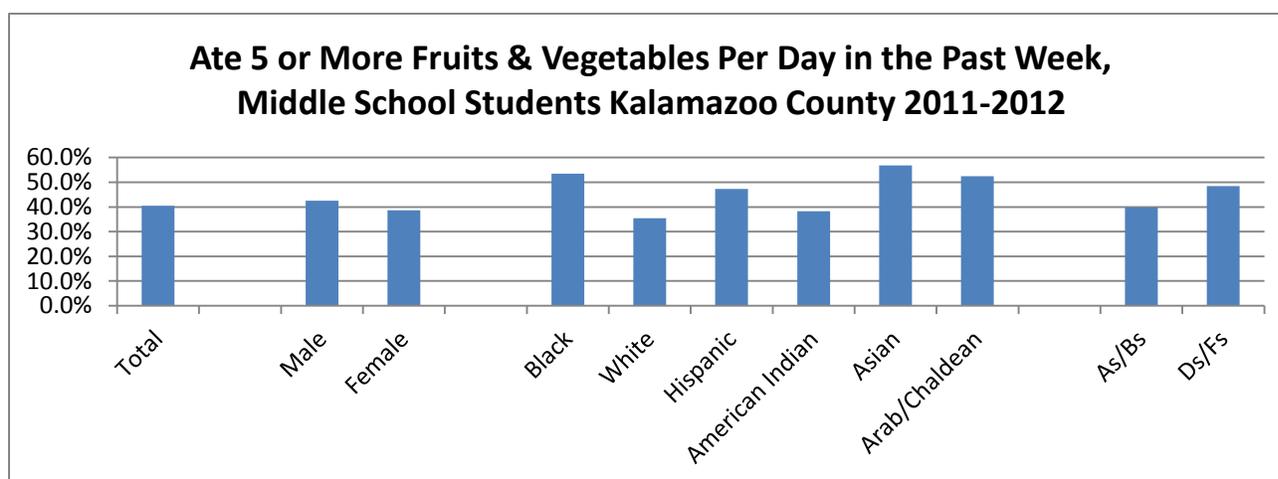
Middle school and high schools in Kalamazoo County participated in a Michigan Department of Education Survey during the 2011-2012 school year called the Michigan Profile for Healthy Youth (MIPHY) survey.⁴ This is an online survey conducted in grades 7, 9, and 11 every other year, and collects information on health risk behaviors including substance use, violence, physical activity, nutrition, sexual behavior, and emotional health. The survey also measures risk and protective factors most predictive of alcohol, tobacco, and other drug use and violence.

This report summarizes MIPHY results for Kalamazoo County in the area of nutrition. Results are presented for demographic subgroups: sex, race and ethnicity, and academics (students who receive mostly As and Bs compared with students who receive mostly Ds and Fs). Although American Indian, Arab/Chaldean, and Asian student results are included in tables, these populations were relatively small compared with other race and ethnicity groups and so results are less reliable than for larger subpopulations.

Data for Kalamazoo County students is available over two school year survey cycles (2009-2010 school year and 2011-2012 school year).

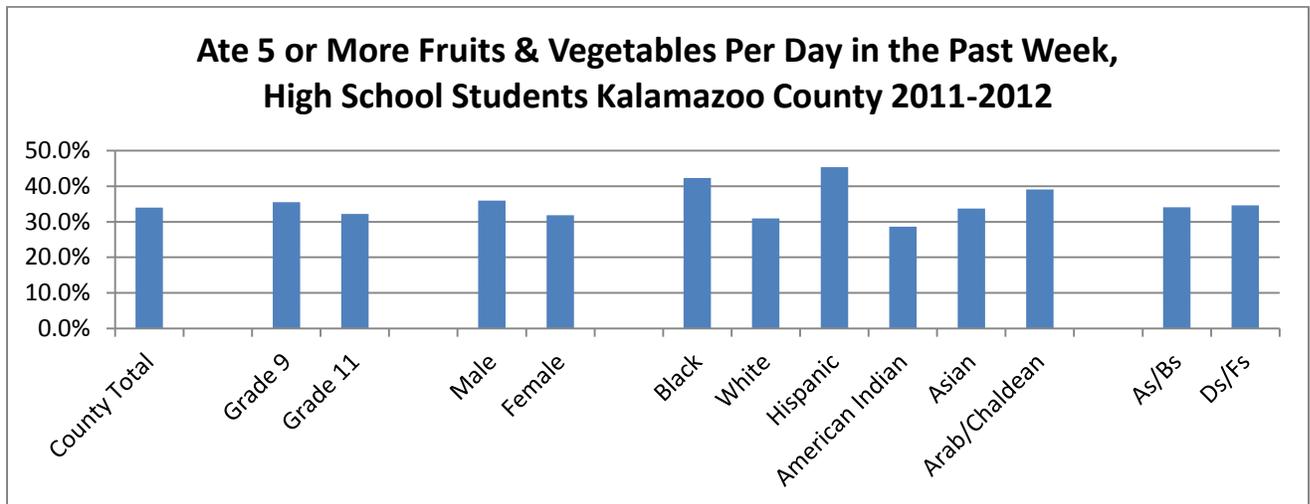
In Kalamazoo County during the 2011-2012, 40.5% of 7th graders and 34.0% of 9th-11th graders ate five or more servings of fruit and vegetables a day. Note that this indicator is the opposite of the adult indicator described previously in this report: the adult indicator is for inadequate fruit and vegetable consumption (did not eat at least five a day), while the indicator for youth is for adequate consumption (did eat five or more a day).

Groups reporting the most fruit and vegetable consumption among middle school students were male students, black students, Asian students, and those students receiving Ds/Fs for grades. Groups reporting the most fruit and vegetable consumption among high school students were males, black students and Hispanic students.



Source: Michigan Profile for Healthy Youth, Kalamazoo County 2011-2012

⁴ Results are publicly available for the county overall (not by individual districts or schools) here: <https://mdoe.state.mi.us/MIPHYADMIN/reports/CountyReport.aspx>.

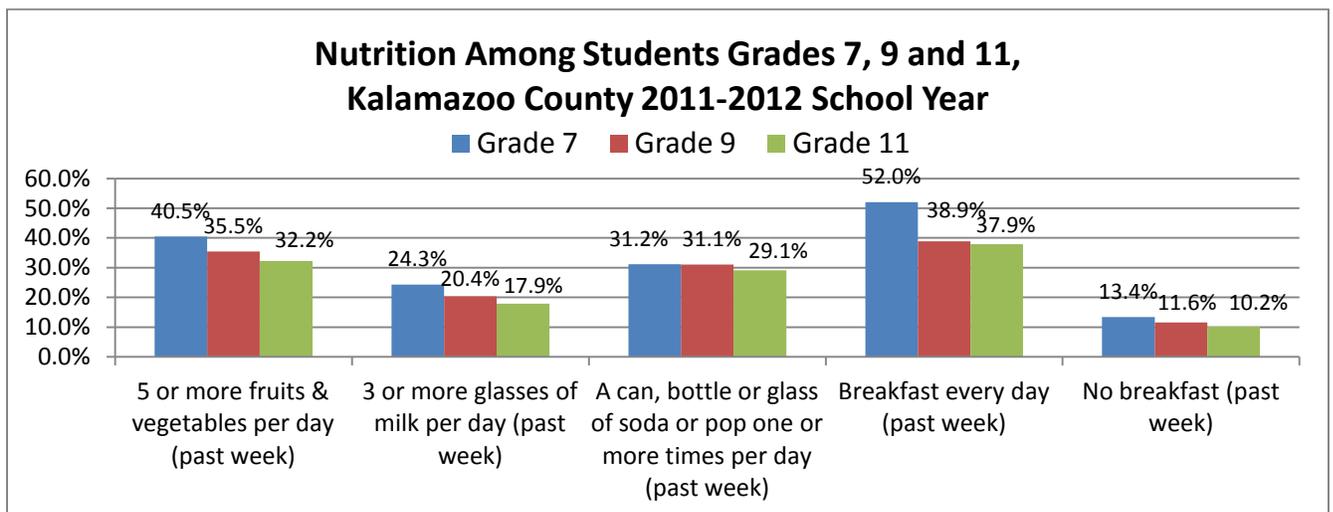


Source: Michigan Profile for Healthy Youth, Kalamazoo County 2011-2012

Other indicators of nutrition among youth as measured in the MIPHY were milk consumption (three or more glasses per day in the past week), soda or pop consumption (one or more servings per day in the past week), eating breakfast daily in the past week, and no breakfast in the past week.

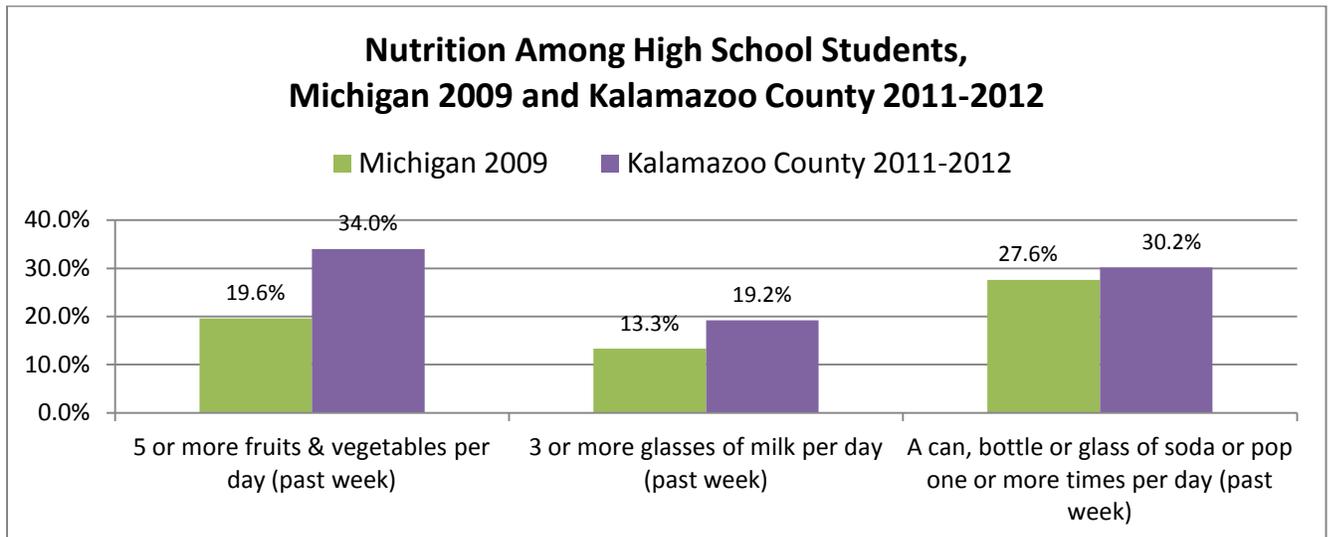
For some of these indicators, younger students (7th graders) reported better nutrition than older students (9th and 11th graders). Other indicators were similar across age groups.

In Kalamazoo County, 24.3% of 7th graders and 19.2% of 9th-11th graders drank three or more glasses of milk per day in the past week. Soda or pop consumption was similar across age groups, with 31.2% of 7th graders and 30.2% of 9th-11th graders reporting they drank one or more serving per day in the past week. More than half (52.0%) of 7th graders reported they ate breakfast every day in the past week, while closer to one third (38.4%) of 9th-11th graders reported this. Having no breakfast at all in the past week was reported with similar frequency by middle school and high school students; 13.4% of 7th graders reported no breakfast in the past week, and 11.0% of 9th-11th graders did not eat breakfast in the past week.



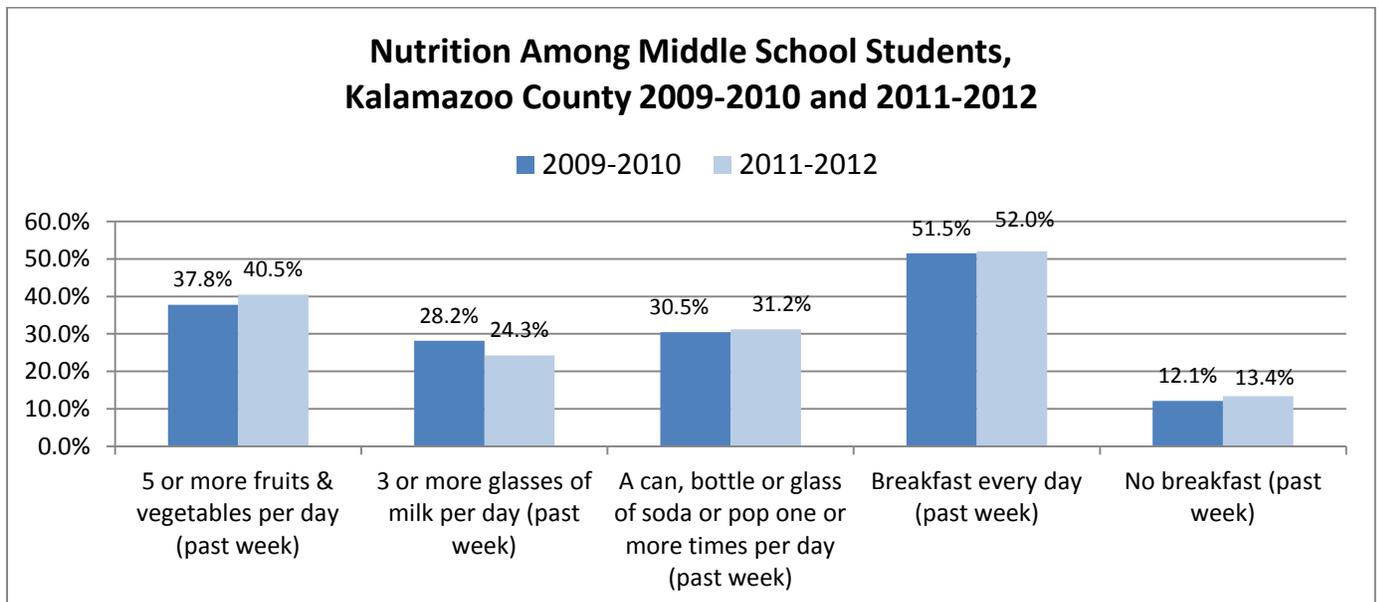
Source: Michigan Profile for Healthy Youth, Kalamazoo County 2011-2012

Statistics for Michigan high school students are available from the Youth Risk Behavior Survey (YRBS), conducted in 2009. Compared with Michigan students, Kalamazoo County had a higher percentage of high school students who had at least five servings of fruits and vegetables a day and three glasses of milk a day, but also had a higher proportion reporting they had one or more servings of pop or soda a day in the past week. Data on breakfast consumption was not collected in the YRBS.



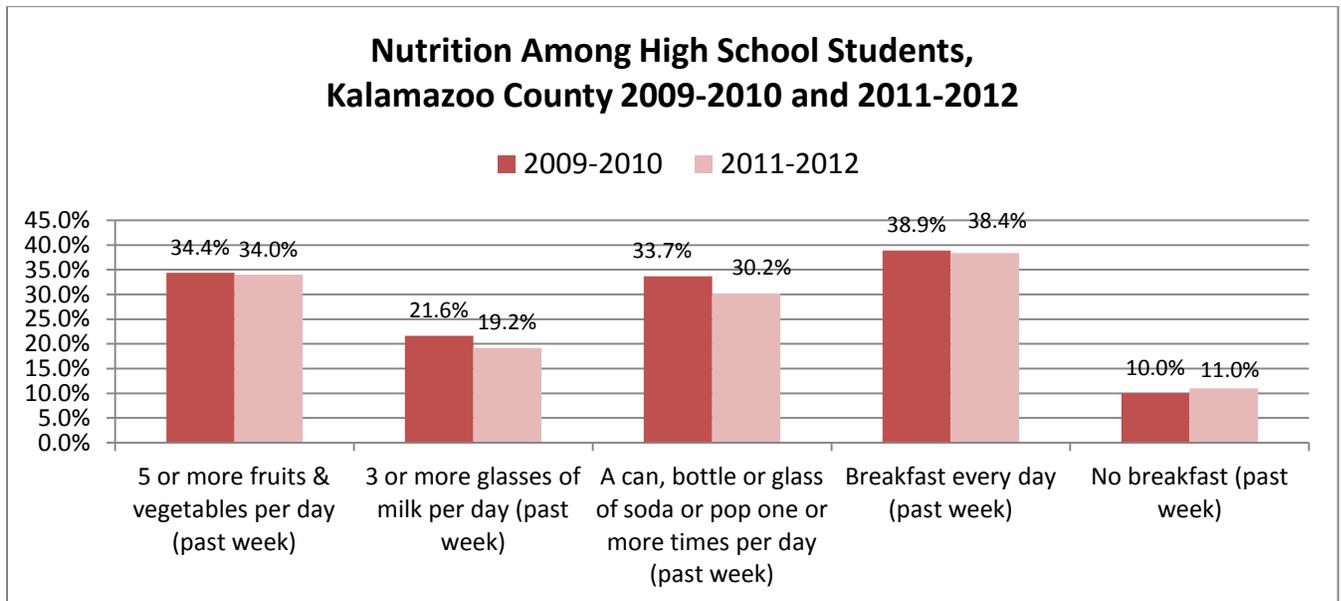
Source: Michigan Profile for Healthy Youth (MIPHY), Kalamazoo County 2011-2012 and Michigan Youth Risk Behavior Survey (YRBS) 2009

The proportion of middle school students who had five servings of fruits and vegetables a day was slightly higher as reported in the 2011-2012 survey compared with the 2009-2010 survey. The proportion of middle school students who had three glasses of milk daily decreased between 2009-2010 and 2011-12.



Source: Michigan Profile for Healthy Youth, Kalamazoo County 2009-2010 and 2011-2012

Among high school students, surveyed nutrition indicators were similar between 2009-2010 and 2011-2012 surveys; the proportion that had three glasses of milk daily decreased slightly, as did the proportion who had a serving of soda or pop daily.



Source: Michigan Profile for Healthy Youth, Kalamazoo County 2009-2010 and 2011-2012

**Nutrition in the Past Seven Days Among Middle School Students,
Kalamazoo County 2011-2012**

Demographic Characteristic		Students who ate five or more servings per day of fruits and vegetables during the past seven days	Students who drank three or more glasses per day of milk during the past seven days	Students who drank a can, bottle or glass of soda or pop one or more times per day during the past seven days	Students who had breakfast every day in the past seven days	Students who did not eat breakfast in the past seven days
County Total		40.5%	24.3%	31.2%	52.0%	13.4%
Gender	Male	42.5%	29.9%	34.7%	60.8%	12.4%
	Female	38.6%	19.4%	27.9%	44.2%	13.8%
Race/Ethnicity	Black	53.5%	17.7%	48.8%	52.4%	14.3%
	White	35.4%	28.0%	24.8%	54.3%	10.4%
	Hispanic	47.3%	20.0%	40.4%	38.4%	26.5%
	American Indian	38.2%	27.8%	19.4%	55.6%	6.3%
	Asian	56.8%	26.3%	7.9%	61.5%	13.3%
	Arab/Chaldean	52.4%	15.0%	42.9%	42.9%	0.0%
Academics	As/Bs	39.8%	24.5%	27.2%	54.0%	12.0%
	Ds/Fs	48.4%	21.4%	42.6%	47.9%	16.2%

Source: Michigan Profile for Healthy Youth, Kalamazoo County 2011-2012

Nutrition in the Past Seven Days Among High School Students, Kalamazoo County 2011-2012

Demographic Characteristic		Students who ate five or more servings per day of fruits and vegetables during the past seven days	Students who drank three or more glasses per day of milk during the past seven days	Students who drank a can, bottle or glass of soda or pop one or more times per day during the past seven days	Students who had breakfast every day in the past seven days	Students who did not eat breakfast in the past seven days
Michigan 2009		19.6%	13.3%	27.6%	N/A	N/A
County Total		34.0%	19.2%	30.2%	38.4%	11.0%
Grade	Grade 9	35.5%	20.4%	31.1%	38.9%	11.6%
	Grade 11	32.2%	17.9%	29.1%	37.9%	10.2%
Gender	Male	36.0%	25.1%	34.7%	45.3%	9.5%
	Female	31.9%	13.4%	25.9%	31.6%	12.4%
Race/Ethnicity	Black	42.3%	11.1%	42.7%	33.9%	14.2%
	White	31.0%	20.6%	28.0%	40.7%	9.8%
	Hispanic	45.4%	20.4%	33.9%	30.2%	15.5%
	American Indian	28.6%	22.6%	40.6%	34.4%	9.4%
	Asian	33.7%	16.0%	15.1%	49.5%	11.4%
	Arab/Chaldean	39.1%	22.0%	31.3%	38.8%	8.2%
Academics	As/Bs	34.1%	20.7%	24.7%	43.1%	8.7%
	Ds/Fs	34.6%	16.2%	55.6%	21.9%	20.5%

*2009 Michigan Youth Risk Behavior Survey. For additional information on the YRBS results, please go to www.michigan.gov/yrbs.

Source: Michigan Profile for Healthy Youth, Kalamazoo County 2011-2012