

Tobacco use and poor diet can lead to poor oral health and other chronic diseases. Poor oral health may also be associated with other chronic diseases. Therefore, it is important to consider the relationship between good oral health and good overall health. The effects of oral health extend beyond the mouth. Good oral health supports the ability to carry out basic human functions such as chewing, swallowing, and speaking. Vermonters who have been diagnosed with chronic diseases such as cardiovascular disease, diabetes, lung disease, and cancer have worse oral health, specifically more tooth loss because of tooth decay or gum disease, compared to those without such diseases.

Risky Behaviors are Associated with Poor Oral Health Tobacco Use is Significantly Associated with Tooth Loss

About 17% of adults and 11% of youth in Vermont indicated that they currently smoke.¹

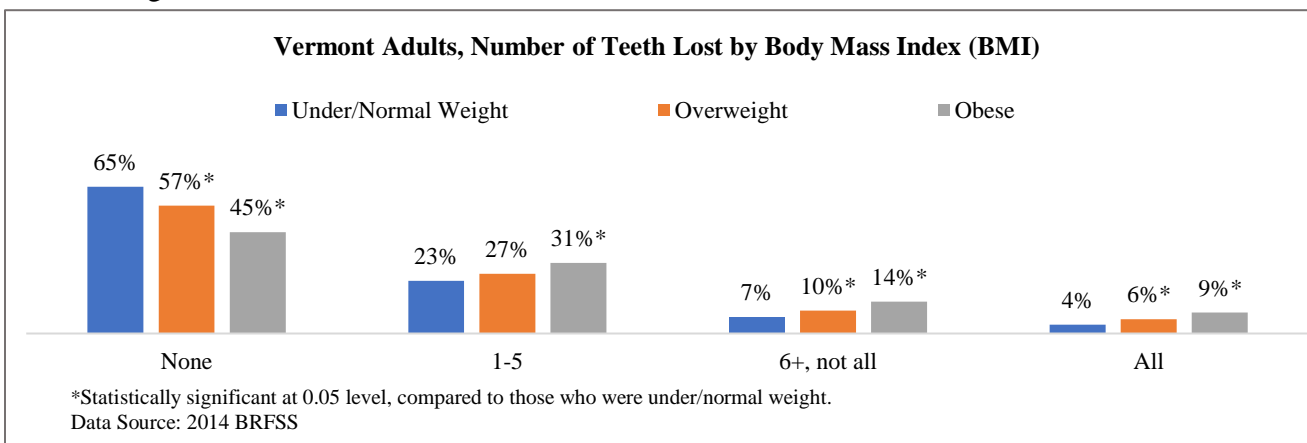
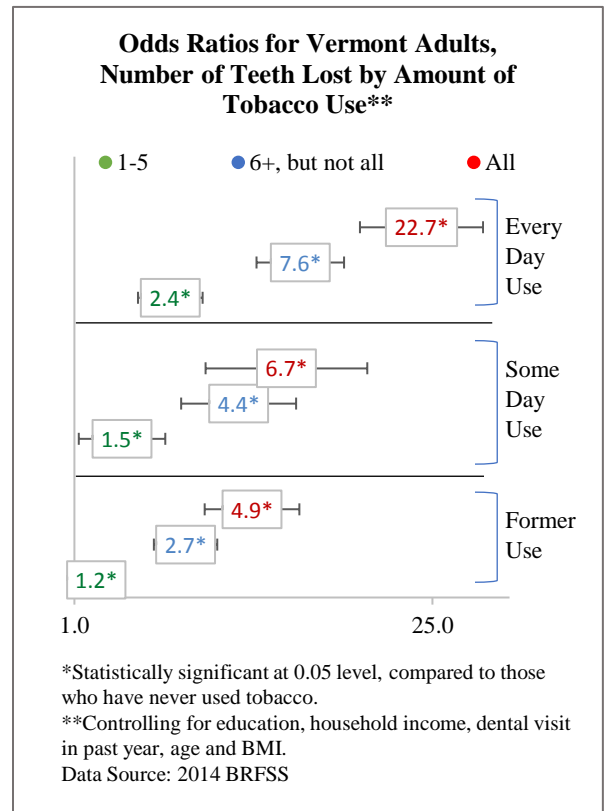
When compared with people who had never used tobacco:

- Vermont adults who reported that they use tobacco every day were 23 times more likely to lose all their teeth, 7 times more likely to lose six or more teeth (but not all) and over twice as likely to lose 1-5 teeth.
- Vermont adults who use tobacco some days were nearly 7 times more likely to lose all their teeth.
- Former tobacco users were about 5 times more likely to lose all their teeth.

There is an established causal relationship between smoking and both periodontitis and oral cancer.²

Poor Diet – Obesity is Significantly Associated with Tooth Loss

- 17% of Vermont adults said they have at least one sugar-sweetened beverage per day.³
- About 80% of adults and 76% of youth said they do not eat at least five servings of fruits and vegetables per day.¹
- Vermont adults who were obese⁴ had higher tooth loss at all three levels (1-5, 6+ [but not all], and all) than those who were under or normal weight.



¹ Adult data are from 2015 Behavioral Risk Factor Surveillance System (BRFSS) and youth data are from 2015 Youth Risk Behavior Survey (YRBS).

² US Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General-- Executive Summary. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.

³ 2013 Behavioral Risk Factor Surveillance System (BRFSS)

⁴ Questions about diet and tooth loss are not asked in the same year. Therefore, BMI is used as a proxy for diet, while recognizing many factors are associated with BMI. Poor diet and consumption of sugar-sweetened beverages have been linked to instances of tooth decay and are known risk factors for high BMI.

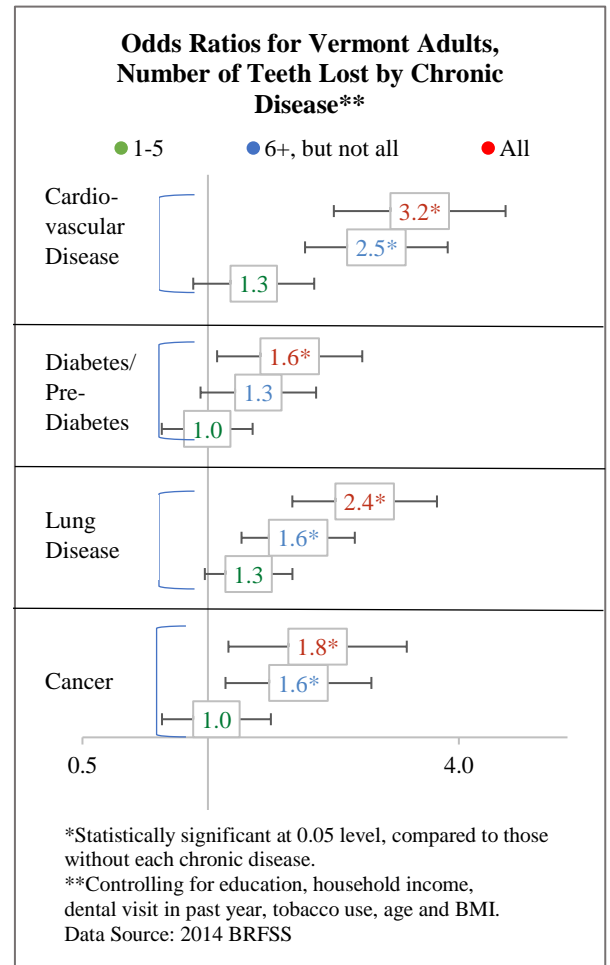
Chronic Diseases are Associated with Poor Oral Health

These data are from one point in time so it is impossible to know if tooth loss or the chronic disease occurred first. An association between the two does not mean one causes the other.

When compared with adults who did not have each chronic disease:

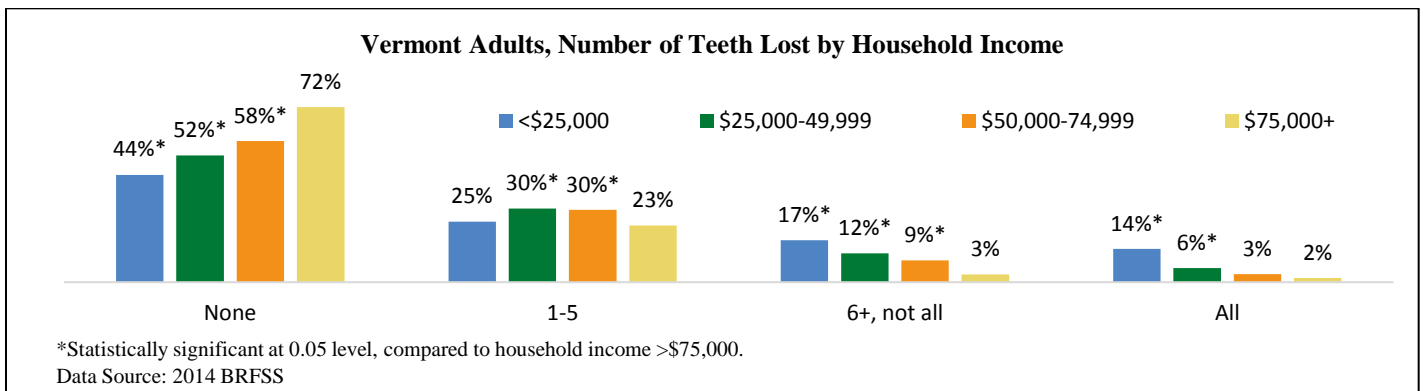
- Vermonters with **cardiovascular disease** were over 3 times more likely to have no teeth and more than twice as likely to be missing 6 or more (but not all) teeth.
- Vermonters with **diabetes or pre-diabetes** were 1.6 times more likely to have no teeth.
- Those with **lung disease** were over 2 times more likely to have lost all their teeth and 1.6 times more likely to have lost 6 or more (but not all).
- Individuals ever diagnosed with **cancer**⁵ were nearly twice as likely to have lost all their teeth and 1.6 times more likely to have lost 6 or more (but not all) of their teeth than those without cancer.

Key finding: The association between chronic diseases and tooth loss exists even after considering other possible explanations, including education, household income, dental visit in past year, tobacco use, age and body mass index.



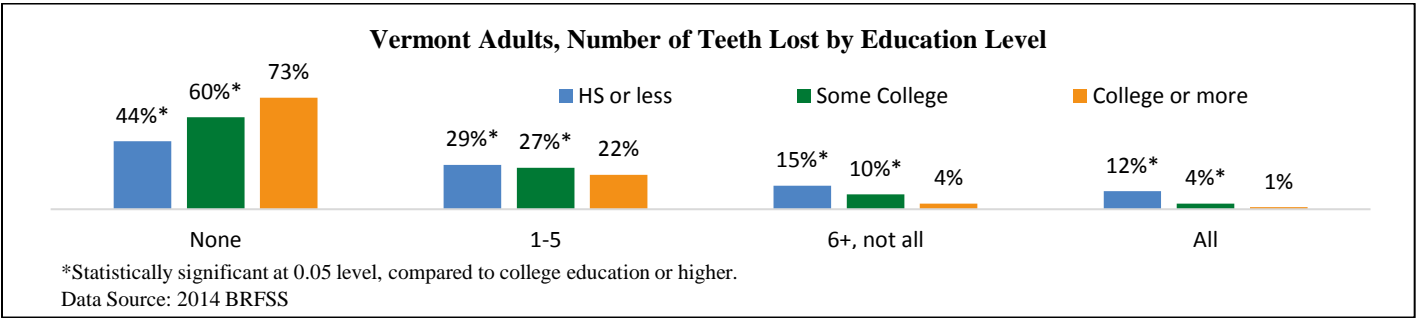
Social Determinants of Health are Associated with Poor Oral Health

Vermonters of lower socioeconomic status reported more tooth loss than those of higher socioeconomic status.



- 14% of individuals in the lowest income category had lost all their teeth, compared to 2% of those in the highest income category.
- Less than half of Vermonters earning less than \$25,000 per year reported no tooth loss at all. This proportion is significantly lower than individuals with a household income larger than \$75,000 (72%).

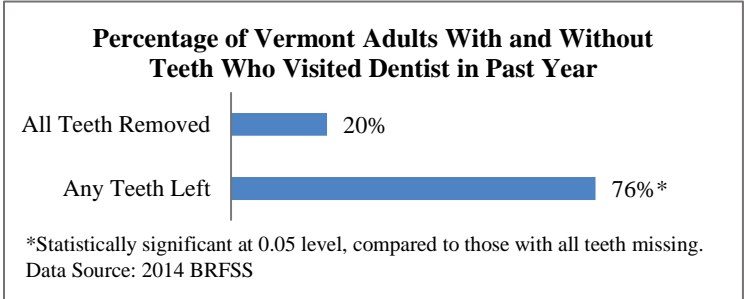
⁵ The BRFSS survey asks if the respondent was ever diagnosed with any type of cancer other than skin cancer. Because the question does not refer to a specific time frame, severity and past treatment are not considered. Thus, it is difficult to distinguish a clear relationship between cancer and tooth loss in this dataset.



- 12% of those with a high school education or less have lost all their teeth, while those with some college education or a college degree or more lost all their teeth at rates of about four and one percent, respectively.

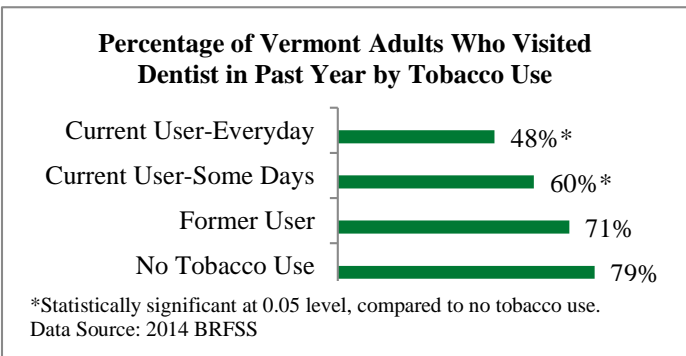
Dental Visits and Poor Oral Health

Of Vermonters who had any number of teeth, 76% reported that they had visited the dentist in the past year compared to 20% of Vermonters without any teeth. Taking care of one’s teeth is only a part of maintaining good oral health. It is important to keep gums healthy as well, and visiting the dentist is a significant way to achieve that goal.

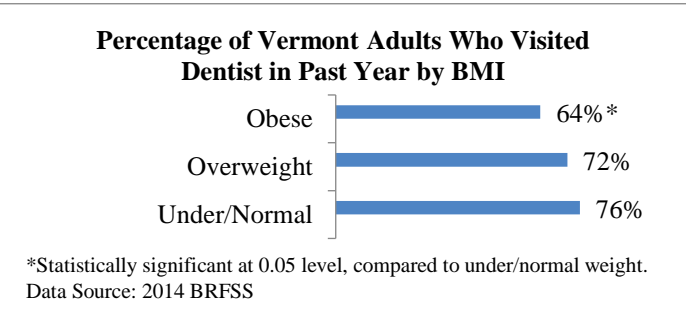


Those who participate in unhealthy behaviors or have chronic disease may be less likely to visit the dentist. Dental visits may lead to early detection of decay, periodontal disease, and oral cancer which can reduce the need for more expensive dental procedures, in addition to improving overall health.

Risky Behaviors are Associated with Fewer Dental Visits



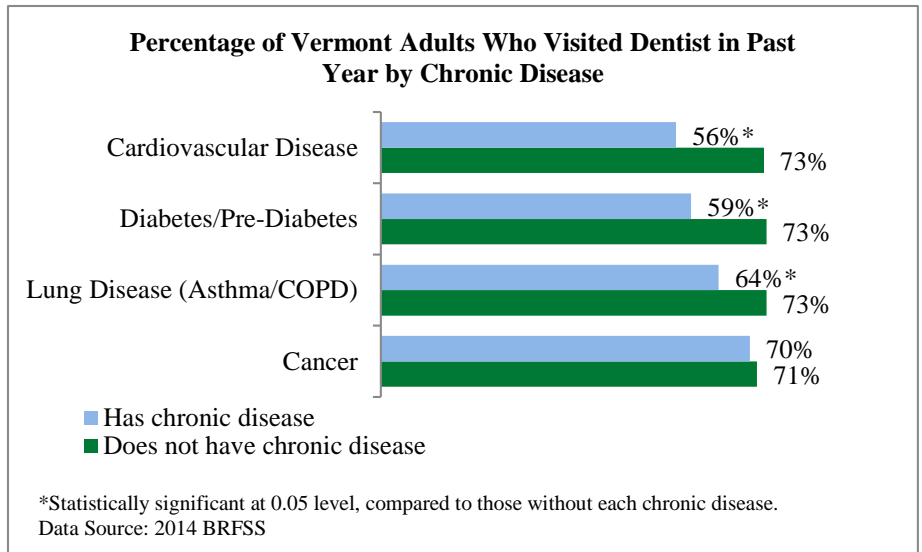
Current smokers were less likely to have visited the dentist in the past year than those who have not used tobacco.



Vermonters who were obese were less likely than those who were underweight or normal weight to have visited the dentist in the last year.

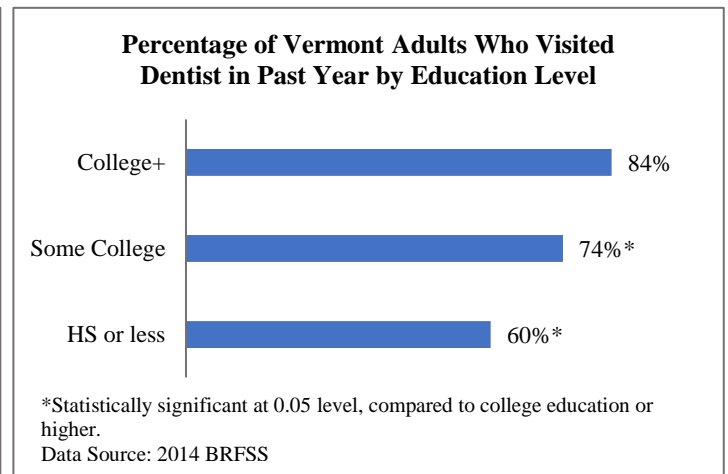
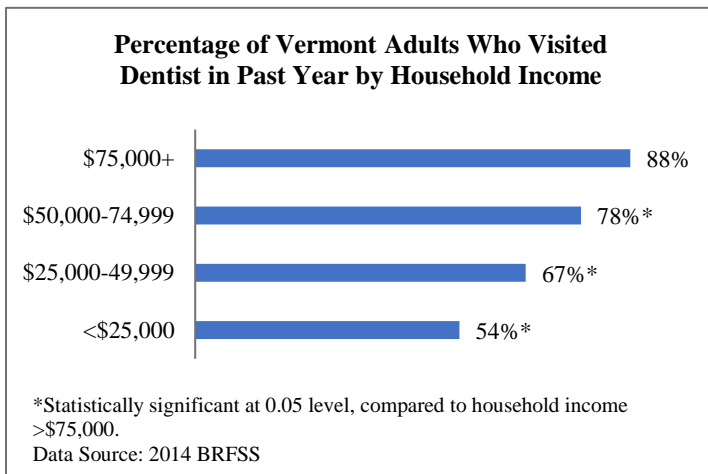
Chronic Disease and Dental Visits

Vermonters who had been diagnosed with certain chronic diseases visited the dentist less frequently than those who had not been diagnosed. About 73% of those without cardiovascular disease, diabetes or pre-diabetes, or lung disease visited the dentist in the past year, rates which were all significantly higher than those who had any of those three chronic diseases. There was no difference between those with and without cancer.



Social Determinants of Health and Dental Visits

Socio-economic status is strongly associated with oral and overall health. As household income and education levels increase, dental care utilization increases. There are significant differences in the use of dental care between all levels of income and education.



- 54% of individuals whose household income was reported as less than \$25,000 per year visited a dentist in the past year, compared to 88% of individuals whose household income was reported as at least \$75,000 per year.
- Of the Vermonters whose household incomes were \$25,000-49,999 and \$50,000-74,999, 67% and 78% said that they had visited the dentist in the past year, respectively.
- Vermonters who said that they had a high school education or less visited the dentist at a rate of 60% in the last year.
- Of those with some college education, 74% visited the dentist in the past year while 84% of individuals with at least a college education had visited the dentist in the past year.

Conclusion

Vermonters who used tobacco, were obese, had a chronic disease, or had lower socioeconomic status lost more teeth and visited the dentist less frequently than other Vermonters.

Data Notes:

Each year, more than 6,000 adult Vermonters are randomly and anonymously selected and interviewed as part of the Behavioral Risk Factor Surveillance Survey (BRFSS). All respondents are asked a uniform set of questions and results are weighted to represent the adult population of the state. Additional information can be found [here](#).

The following 2014 BRFSS questions were used for analyses in this data brief:

What is your age?	Have you ever been told you had a stroke?
What is your household income?	Has a doctor ever told you that you had COPD?
What is your education level?	Have you ever been told by a doctor you had asthma?
Do you smoke everyday, some days, or not at all?	Have you ever been told by a doctor you have diabetes?
Currently use chew every day, some days or not at all?	Have you ever been told by a doctor that you have pre-diabetes?
Calculated: Body Mass Index	Have you ever been told by doctor that you have cancer?
Have you ever been told you had a heart attack, also called a myocardial infarction?	How long has it been since you visited the dentist for any reason?
Have you ever been told you had angina or coronary heart disease?	Number of permanent teeth removed because of tooth decay or gum disease?

Dental visits are age-adjusted based on the proportional age breakdowns of the U.S. population in 2000. In U.S. data, age adjustment is used for comparison of regions with varying age breakdowns. In order to remain consistent with the methods of comparison at a national level, statistics in Vermont were age adjusted. For more detailed information on age adjustment visit <http://www.cdc.gov/nchs/data/statnt/statnt20.pdf>.