MINNESOTA ADULT TOBACCO SURVEY

Tobacco Use in Minnesota: 1999 to 2014

TOBACCO USE IN MINNESOTA

2014 Update

January 2015

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ClearWay Minnesota℠

Minnesota Department of Health

Westat

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1. The Minnesota Adult Tobacco Survey 2014: Methodology

The Minnesota Adult Tobacco Survey (MATS) project collects and analyzes data to monitor the effects of tobacco-related policies and programs and to support the planning and design of future interventions. Researchers, public health officials, policy makers, health care providers and others can use this information to evaluate the progress made by tobacco control interventions in changing health behavior on a statewide basis.

1.1 Study Design

MATS 2014 is a telephone survey designed to collect public health and tobacco-related data about the general adult population of Minnesota. The survey design incorporated the following principal components.

Survey Sample

Based on requirements specified by ClearWay Minnesota, Westat designed and drew scientific samples that are representative of the Minnesota adult population in 2013. The sample design called for a random-digit dialing (RDD) sample of the adult Minnesota population, drawn from two telephone sample frames, one of landline telephone numbers and the other of cell phone telephone numbers.

While the dual-frame design was previously used for MATS 2010, the sampling for MATS 2014 differed in that it sampled differentially by geographic region. This disproportionate sampling by region allowed larger sample sizes for less populous regions than would have been obtained by a geographically proportionate sample. More populous regions (especially the Metropolitan region) were under-sampled, but still maintained a relatively large sample size. Table 1-1 below shows the 8 regions of the state used for the sampling and the counties that comprise each region. Table 1-2 below shows the actual number of completes from each region compared with the target for each region as well as the estimated completes that would have come from a proportional sample.

Table 1-1. Geographic regions of Minnesota used for MATS 2014

Northeast	**Northwest**	**Central**	**West Central**
Aitkin Carlton Cook Itasca Koochiching Lake St. Louis	Becker Beltrami Clearwater Hubbard Kittson Lake of the Woods Mahnomen Marshall Norman Pennington Polk Red lake Roseau	Benton Cass Chisago Crow Wing Isanti Kanabec Mille Lacs Morrison Pine Sherburne Stearns Todd Wadena Wright	Clay Douglas Grant Otter Tail Pope Stevens Traverse Wilkin
Southwest	**South Central**	**Southeast**	**Twin Cities Metro**
Big Stone Chippewa Cottonwood Jackson Kandiyohi Lac Qui Parle Lincoln Lyon Murray Nobles Pipestone Redwood Renville Rock Swift Yellow Medicine	Blue Earth Brown Faribault LeSueur McLeod Martin Meeker Nicollet Sibley Waseca Watonwan	Dodge Fillmore Freeborn Goodhue Houston Mower Olmsted Rice Steele Wabasha Winona	Anoka Carver Dakota Hennepin Ramsey Scott Washington

Table 1-2. Disproportionate regional sampling for MATS 2014

Region	Expected completes with proportional sampling	MATS 2014 target completes	MATS 2014 actual completes
Central	1210	1,070	1,078
Metro (Twin Cities)	4960	3,660	3,656
Northeast	610	740	747
Northwest	360	740	744
South Central	510	740	761
Southeast	860	820	817
Southwest	400	740	747
West Central	340	740	754
Total	9260*	9,260*	9,304

*The sum of regional goals only totals to 9,250 due to rounding, but 9,260 completed surveys was the actual goal for MATS 2014.

As in MATS 2010, the MATS 2014 cell phone telephone screener asked questions to identify cell phone sample cases that did not rely exclusively or mostly on their cell phones for voice communication; such cases were not pursued further once this had been determined in the screening process.

The precision of the survey estimates is largely dependent on the size of the sample. When a survey sample is more complex than a simple random sample, as in the case of MATS 2014, larger sample sizes are needed to achieve the same overall precision than would be needed from a simple random sample. To meet the survey's precision goals, the sample design targeted 9,260 adults, 5,371 from the landline sample and 3,889 from the cell phone sample.

Questionnaire Development

With ClearWay Minnesota and the Minnesota Department of Health, Westat developed a questionnaire that would obtain all the data items needed to support the planned analyses for MATS 2014 and to compare key statistics from MATS 2014 with the previous MATS surveys. The questionnaire covered general physical health, cigarette smoking and other tobacco use, e-cigarette use, smoking cessation, attitudes and beliefs related to smoking, experience with health care provider smoking interventions, exposure to secondhand smoke in various settings, the effects of public and private policies and rules on smoking behaviors and perceptions, risk perceptions and social influences, and demographic information. Most survey questions were derived from

previous MATS questionnaires, from standard questions developed by the CDC, and from questions tested and used in other tobacco surveillance surveys. The same questionnaire was administered to both landline and cell phone respondents.

ClearWay Minnesota and Westat sought to strike a balance between maintaining continuity with previous MATS questionnaires and making two types of changes that would improve the data for current and future analyses. These two types of changes were the addition of new questions to address emergent tobacco and public health issues, and the elimination of questions that were no longer relevant or were of less interest from policy and research standpoints compared to newer issues and research questions.

Before implementing data collection, a live pilot test of the instrument was conducted with a survey of 116 test respondents drawn from both landline and cell telephone sample frames, resulting in only minor changes.

Data Collection

Data collection took place in 2014, between February 15 and July 10. The questionnaire was administered using a computer-assisted telephone interviewing (CATI) system. The sample was identified and selected using standard RDD survey procedures, which include conducting a screener interview to identify residential phone numbers and then selecting one adult at that number for the MATS interview. Most sample records were worked using a protocol requiring a minimum of 7 call attempts (unless each sampled case resulted in a completed interview or reached another final resolution in fewer attempts). Some sample records released late in the survey field period did not receive the full protocol. All non-hostile refusals (except refusals incurred during the last few days of data collection) were re-attempted for refusal conversion by specially trained data collectors. Supporting measures included an informational website, a toll-free number, and letters sent to those who initially declined to respond to the survey and those who were not contacted during the first 5 call attempts (in both situations, letters were only sent to landline cases where the phone number was matched to an address). Additionally, Westat sent informational letters to respondents who requested written information about the study.

The final sample size of 9,304 interviews slightly exceeded the sample plan of 9,260. The 5,300 landline interviews were slightly less than the 5,371 originally planned and the 4,004 cell phone interviews were slightly more than the 3,889 originally planned. The American Association for Public Opinion Research (AAPOR) methodology was used to calculate the weighted landline sample and cell phone sample response rates of 25.2 percent and 18.8 percent, respectively, which reflect net response rates across both the screener questionnaire and the MATS questionnaire.

ClearWay Minnesota and Westat made every effort to ensure the confidentiality of respondents and to inform them of the features of the survey, its voluntary nature and the confidentiality of their responses. RDD phone numbers were not retained in the analytical data files. Reports cite only aggregate data.

The MATS 2014 questionnaire, data collection and data security plan were reviewed and approved by the Minnesota Department of Health Institutional Review Board and by the Westat Institutional Review Board. An institutional review board (IRB) is a specially constituted review body established to protect the welfare of human subjects recruited to participate in biomedical and behavioral research. Westat's IRB's responsibilities are detailed in the regulations concerning human subject protection and the Multiple Project Assurance granted to Westat by the U.S. Department of Health and Human Services, Office for Protection from Research Risks, Division of Human Subject Protection.

Sample Weighting

Sample weights are created so that unbiased population estimates can be calculated using the results of a survey from a sample of a finite population. The sample weighting process included four major steps: 1) adjust for the probability of selection due to the sampling plan, 2) apply screener and extended non-response adjustments, 3) compute dual-frame composite weighting adjustment to combine the overlapping cell-mostly landline[1] and cell phone samples, and 4) post-stratify to estimated population totals through calibration process to adjust for remaining non-response and coverage error.

[1] There is a possibility that members of the landline sample were cell-mostly phone users who did happen to answer their landline phone when the MATS interviewers called that phone number. Thus, it was possible that a given cell-mostly phone user could have been sampled through either the cell phone or the landline sample. Because of this, combining the two samples into a single weighted file for analysis required weighting adjustments for this "overlap" group, to adjust for the dual probability of selection.

MATS 2014 incorporated the demographic characteristics of gender, age, race, location, and education as well as the geographic characteristic of region from the 2013 American Community Survey (ACS) into the calibration characteristics dimensions.

The goal of the MATS 2014 weighting was to yield unbiased state-level and regional estimates without significantly inflating the variance of the estimates at either state or region level. Due to the strong interest in trend analysis, Westat attempted to keep the 2014 methodology as consistent as possible to the 2010 methodology unless the regional differentials played an important role. For example:

- Extended nonresponse adjustment does not account for the regional information because the response rates across different geographic regions are similar.
- A single compositing factor is used to combine the cell-mostly cases from the landline sample and cell phone sample regardless of the regional information because choosing different compositing factors by region would introduce more variance without reducing bias significantly, due to the very small sample sizes associated with the cell mostly population in some regions.

All the changes from the MATS 2010 weighting methodology are due to the regional-based sample design for 2014 and the interest in obtaining regional estimates. For example:

- Region sampling strata is used to form nonresponse adjustment cells because there are noticeable differences in the screener response rates across different strata.
- A new raking dimension "region" is added to improve the face value of the survey without introducing any significant changes on the state-level estimate, either overall, by region, or by demographic characteristics such as age, education, and race/ethnicity.
- The weighting process included the region dimension along with other dimensions, such as race, education and age.

The merged, weighted data set is used in producing the Minnesota statewide estimates and region estimates presented in this report. The combined data can be used to produce estimates for the entire adult Minnesota population and subgroups of that population.

The MATS 2014 survey methodology is fully described in the *Minnesota Adult Tobacco Survey 2014 Methodology Report,* available at www.mnadulttobaccosurvey.org.

Potential Limitations of the Data

All of the MATS yield data that provide highly accurate and detailed representations of the smoking-related attitudes, beliefs and behaviors of Minnesota's adult residents at various points in time. Statistics produced from a sample are referred to as "estimates" because they estimate what the actual statistics are for the entire population or for any subgroup in the population. Because there may be some difference between the survey statistic and the actual value for the entire population that the sample survey is meant to represent, statistics produced from sample surveys are subject to two general types of error, technically referred to as "sampling error" and "nonsampling error."

Sampling error is a purely statistical phenomenon. Data are collected from a sample that represents the entire population, rather than from everyone in the population, resulting in an estimate that has some uncertainty associated with it. The uncertainty of an estimate produced from the survey sample data can be quantified. Common measures of uncertainty include standard errors and confidence intervals. See section 1.2 for additional information.

Other sources of error, which are typically not possible to quantify, are potential nonsampling errors. One type of nonsampling error to which MATS 2014 was subject is coverage error: the extent to which the frame used to draw the sample does not fully include every member of the population. While the combination of the landline and cell phone frames substantially reduces coverage error, there are still a small percentage of Minnesota adults who would not be found through these two frames, e.g., those who have no telephone at all and those who have telephones but do not speak English well enough. The weighting process—especially the benchmarking process—partially corrects for bias due to minor discrepancies in the representativeness of the sample. During the weighting process, extensive diagnostic examination of the effects of the weighting design and of draft weights on the weighted estimates of demographics, smoking prevalence, and other characteristics further supported the calibration of the sample to more closely conform to the overall Minnesota population. Biases also may be present when people who are missed in the survey differ from those interviewed in ways other than the categories used in weighting. As with most surveys that rely on

telephone interviewing, some subgroups, such as specific racial or ethnic minority communities, are likely to be under-represented.

Other nonsampling errors may result from the survey design, how respondents interpreted questions, how able and willing respondents were to provide accurate answers, and how accurately the answers were recorded and processed. The MATS design process took several steps to minimize these types of errors, including careful questionnaire design, use of existing validated questions, and having multiple individuals review new questions; use of a CATI system to administer the questionnaire and record responses; internal testing of the CATI questionnaire; pilot testing of the instrument and survey procedures; monitoring of the sample and of the collected data throughout data collection; and thorough review of the data file to finalize it for analysis.

1.2 Analysis Methodology

There are two main goals of the analysis: first, to describe Minnesota in 2014, based on the MATS 2014 data; second, to describe tobacco-related trends in Minnesota from 1999 to 2014, with the main focus on changes from 2010 to 2014.

The tabulations have the following features.

MATS 2014 Analysis
The analysis generated frequencies of all key study outcomes, principally in the form of percentage distributions. In a few instances, means have been calculated for continuous variables, such as the number of cigarettes smoked per day in the past 30 days.

Bivariate analyses generated tables displaying the major outcomes by demographic subgroups. Subgroup estimates are presented for age groups, gender, education, income and smoking status (when appropriate). All estimates are also presented with 95 percent confidence interval half-widths.

The 2014 MATS sample design supports analyses at the regional level, and allows comparisons between each region and the state as a whole, as well as each region with every other region. As above, bivariate analyses generated tables displaying the major outcomes by region.

Other bivariate analysis tested the relationship between intermediate outcomes, such as a policy exposure and a key outcome of interest, such as smoking prevalence, quitting behavior or exposure to secondhand smoke. Most of these associations have been previously established in the literature. The purpose of the analysis is not to re-establish these associations but to show their existence in Minnesota. For this reason, the associations presented in this report were not adjusted for demographics or other confounders.

Every estimate has a 95 percent confidence interval half-width, a standard measure of statistical precision that captures the degree of statistical uncertainty associated with various forms of sampling error. A 95 percent confidence interval is likely to contain the real population value 95 percent of the time.

In a few instances, the report refers to numbers of people who fall into a specific group (such as the total number of smokers in Minnesota or all smokers who made a quit attempt) rather than percentages. These counts use the sample weights. The weighting process produces weights that add up to totals for the Minnesota adult population and for the various combinations of gender, age, race and educational level to which the weights were benchmarked. When analyzing any group, it is valid to add up the weights for the survey respondents who fall into the group, to produce a total of all those in the entire state of Minnesota who belong to that group. As in the case of any statistic produced from a sample survey, these weighted counts are survey estimates with associated sampling error.

In some cases, data are suppressed because of small sample size to prevent overanalysis of statistics. Any estimate based on a sample of less than 10 is suppressed. Data suppression is indicated as "S" in some tables.

MATS Trend Analysis

For selected measures, estimates from earlier MATS (1999, 2003, 2007, and 2010) are presented along with estimates from 2014. The amount of change between 2010 and 2014 is presented for all such estimates. In a few instances, means have been calculated for continuous variables, such as the number of cigarettes smoked per day in the past 30 days.

When appropriate, subgroup estimates are presented for age groups, gender, education, income and smoking status for some trend analyses. Subgroups are only presented where the importance of the question warrants or where subgroups are particularly salient. All such subgroup estimates include estimates of change between 2010 and 2014. There are no region analyses for trend data, since the region sample design was introduced in 2014.

Interpretation of Trend Results

MATS is a series of repeated cross-sectional surveys. This means that every MATS survey draws a new sample of the Minnesota population. Repeated cross-sectional surveys are an efficient and useful way to describe characteristics of a population over time, especially for planning population-level programs and policies. Care is needed, however, when interpreting the results of such surveys. For example, people can and will move in or out of the state, will die and will be born. A repeated cross-sectional survey does not account for the possibility that the changes observed over time could be due to differences in the composition of the population between the survey administrations.

Testing of Differences

A key feature of this report is that statistically significant differences are clearly indicated. A difference between two groups or two time points is statistically significant when it is unlikely to have occurred by chance. The differences are always between two groups, for example, men and women, or people with a high school degree and people with a college degree.

A significance test provides a threshold of confidence, a level at which researchers commonly agree that the population values represented by the survey estimates are reliably different from one another. In this report, that threshold is always the 95 percent confidence level.

This report uses two different significance tests. The first test is for examining differences between different subgroups (for example, between men and women). The second test is for examining differences between different survey years; for example, between MATS 2010 and MATS 2014.

MATS 2014 Significance Testing. In the analysis, estimates are compared from independent subgroups within the sample. As described above, one group is always compared with one other group (for example, men compared with women) or multiple series of groups (for example, less than high school education with high school education; less than high school education with some college; less than high school education with college graduates). If the confidence intervals around the two estimates do not overlap, then the difference between the two is statistically significant at the 95 percent level. Significance is not indicated on the table, because there are too many possible comparisons in any given table (as in the education example above). It would be difficult to note all significant differences among all possible pairs in a straightforward way. Significant differences therefore are mentioned in the text only. This is a conservative test, which may miss a few statistically significant results that could be detected by tests that focus on specific predicted relationships, such as pairwise t-tests.

Results that meet the 95 percent confidence level are the focus of this report.

MATS Trend Significance Testing. In the trend analysis, MATS compares the results from 2010 and 2014. To assess whether the difference between years is significant, an estimate of the amount of change between the two years is calculated and is expressed in the same units as the two estimates (e.g., percentage points in most instances; counts of the analytical unit, such as mean days smoked, in a few instances).

To test the statistical significance of the amount of change between two years, this report uses a one-tailed t-test. A one-tailed t-test is a standard statistical test that is appropriately used when there is only one direction of interest (either positive or negative) for the test. For all the MATS trend analyses, it is possible to hypothesize a direction of change between 2010 and 2014 (for example, that cigarette smoking will decline or that quitting attempts will increase). These hypotheses were made before the data was analyzed, to prevent any bias, and were based on the known trends in Minnesota tobacco use as published in the MATS 2010 report. The individual hypothesis for each comparison – positive or negative – is explicitly stated on each table in this report that presents trend data.

A one-tailed test can be used only to test in the hypothesized direction. Changing the direction of the test after the data is analyzed violates the key assumption that the test is based on – that the direction of the change is known. However, there is nothing to preclude conducting a two-tailed test after a one-tailed test. MATS 2014 uses a two-tailed test in a small number of analyses, where the one-tailed test failed because the observed direction of change between 2010 and 2014 was in the opposite direction of the hypothesis, and where the size of the change was large.

Because these analyses always compare one thing to one other thing, rather than one thing to multiple other things as with the MATS 2014 analyses (for example, a 2010 estimate and a 2014 estimate), it is straightforward and useful to denote statistically significant changes, based on one-tailed tests of the trend analyses, with an asterisk on the table. Statistically significant results of two-tailed tests are not shown on the tables but are discussed in the text.

Strength of Association

There are some tests of association presented for MATS 2014 results. These tests are designed to determine the extent to which the distribution of one factor is associated with the distribution of another. For example, to test the hypothesis that the distribution of quit attempts is associated with the distribution of home smoke-free policies, one might test for the strength of association between the two distributions. This differs from the MATS 2014 significance tests, which examine whether two groups (defined by their characteristics) differ from one another on some common measure (such as quit attempts). The test that is used in MATS to test the strength of association is the Pearson chi-square goodness-of-fit test. When this test is significant, it means that the two distributions under discussion are associated. It does not mean that there is any causal relationship between them; it simply means that they vary together in a predictable way. Significance of these tests is indicated in the text with a statement in parentheses ($p<0.05$) that indicates that the test was significant at the 95 percent confidence level.

1.3 How This Report Is Organized

Technical Report

This report presents findings from MATS with a focus on results from MATS 2014. Chapter 2 discusses the prevalence of cigarette smoking among Minnesota adults, and

perceptions of tobacco use and characteristics of smokers. Chapter 3 examines the use of various forms of tobacco other than cigarettes. Chapter 4 addresses quitting smoking. Chapter 5 focuses on Minnesotans' exposure to secondhand smoke, describing where these exposures occur and attitudes towards various smoke-free policies. Chapter 6 highlights economic influences on quitting and smoking behaviors. Finally, chapter 7 describes regional differences in tobacco use among Minnesota adults.

Website

This technical report and other related materials are available at:
www.mnadulttobaccosurvey.org

2. Cigarette Smoking Among Minnesota Adults

2.1 Introduction

This chapter examines cigarette use in Minnesota, the characteristics of cigarette smokers, and individual level influences on smoking behavior. The next chapter looks at the various forms of tobacco other than cigarettes. In this report, the terms "smoking" and "smoker" apply to cigarette smoking unless otherwise noted.

2.2 Cigarette Use in Minnesota

This report looks at tobacco use by adults in Minnesota from several perspectives. The initial focus is on cigarette smoking because the overwhelming majority of tobacco users are cigarette smokers. This chapter first describes cigarette use by adults in Minnesota in 2014 and then discusses changes between 2010 and 2014. Changes are not discussed if the comparisons are not feasible (e.g., the same data were not collected at the different time points) or if the comparisons are not particularly important or interesting.

2.2.1 Use of Cigarettes

This section presents a general profile of cigarette smoking by adults in Minnesota by comparing current smokers, former smokers and never smokers.

Smoking Status

In this report, adult smoking status is defined according to the standard definition used by the CDC[1] and most smoking studies:

- A **current smoker** has smoked at least 100 cigarettes in his or her lifetime and now smokes every day or some days.
- A **former smoker** has smoked at least 100 cigarettes in his or her lifetime but now does not smoke at all.
- A **never smoker** has not smoked at least 100 cigarettes in his or her lifetime.

Never smokers and former smokers are sometimes collectively referred to as **nonsmokers** in this report.

Survey Questions

- Have you smoked at least 100 cigarettes in your entire life?
- Do you now smoke cigarettes every day, some days or not at all?

Past 30-day Smokers

A 30-day smoker smokes every day or has smoked on at least one day out of the past 30 days. No accounting is made of how many cigarettes a person has smoked in his or her lifetime.

Survey Questions

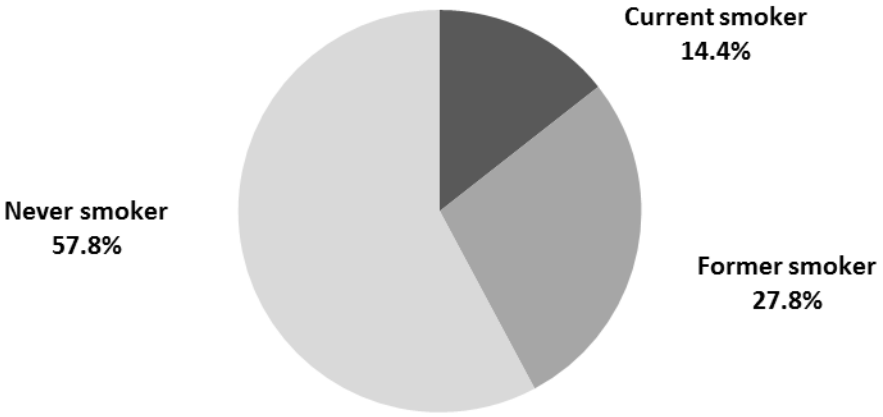
- Do you now smoke cigarettes every day, some days or not at all?
- During the past 30 days, on how many days did you smoke cigarettes?

Among all adult Minnesotans, 14.4±1.0 percent are current smokers, 27.8±1.2 percent are former smokers and 57.8±1.4 percent are never smokers (Figure 2-1). Detailed statistics for the following discussions of these three groups appear in Table 2-1.

Current Smokers

Overall, 14.4±1.0 percent of adult Minnesotans (about 580,000 adults) are current smokers (Table 2-1). This prevalence compares favorably with the 17.3 percent smoking prevalence for all states as of the first quarter of 2014, as reported by the National Health Interview Survey.[2]

Figure 2-1. Smoking status of Minnesota adults, 2014



Source: Minnesota Adult Tobacco Survey, 2014

Table 2-1. Smoking status of Minnesota adults, by selected demographic characteristics

Characteristics	Current smoker	Former smoker	Never smoker	Row Total
	%	%	%	%
Overall	**14.4** ± 1.0	**27.8** ± 1.2	**57.8** ± 1.4	**100**
Age				
18 to 24	**15.3** ± 3.3	**6.4** ± 2.1	**78.3** ± 3.7	**100**
25 to 44	**18.7** ± 2.0	**22.0** ± 2.0	**59.2** ± 2.4	**100**
45 to 64	**14.2** ± 1.5	**31.0** ± 2.1	**54.8** ± 2.3	**100**
65 or older	**5.4** ± 1.1	**48.0** ± 2.7	**46.6** ± 2.6	**100**
Gender				
Female	**12.4** ± 1.3	**23.9** ± 1.6	**63.7** ± 1.8	**100**
Male	**16.5** ± 1.5	**31.9** ± 1.8	**51.6** ± 2.0	**100**
Education				
Less than high school	**28.6** ± 5.6	**28.0** ± 5.5	**43.4** ± 6.4	**100**
High school graduate/GED	**20.1** ± 2.2	**33.1** ± 2.6	**46.8** ± 2.8	**100**
Some college or technical school	**15.6** ± 1.7	**27.8** ± 2.0	**56.6** ± 2.3	**100**
College graduate or beyond	**5.1** ± 0.9	**23.1** ± 1.8	**71.6** ± 1.9	**100**
Household income				
$35,000 or less	**24.4** ± 2.5	**24.1** ± 2.3	**51.4** ± 2.9	**100**
$35,001 to $50,000	**15.9** ± 2.9	**32.3** ± 3.5	**51.8** ± 3.9	**100**
$50,001 to $75,000	**14.7** ± 2.5	**32.8** ± 3.1	**52.5** ± 3.3	**100**
$75,001 or more	**8.7** ± 1.4	**26.5** ± 2.0	**64.8** ± 2.2	**100**

Source: Minnesota Adult Tobacco Survey, 2014

Current adult smokers in Minnesota display the commonly observed demographic patterns as consistently noted in the literature.[3] Higher smoking rates occur among those who are male, younger, less well educated and have lower incomes.

In Minnesota, 25-44 year olds have the highest current smoking rate among all age groups, at 18.7±2.0 percent. Smoking rates generally decline across the age groups, with the exception that 25-44 year olds have a slightly higher rate than 18-24 year olds (15.3±3.3 percent). Only 5.4±1.1 percent of those 65 or older are smokers. Statistically significant differences occur between this oldest group and each of the other three age groups.

Smoking rates decline distinctly as education increases, ranging from 28.6±5.6 percent for those with less than a high school education to 5.1±0.9 percent for those with at least a college degree. All of the differences between educational levels are statistically significant.

Smoking rates also decline as income increases. Among Minnesota adults with annual household incomes of $35,000 or less, 24.4±2.5 percent are current smokers, steadily declining to 8.7±1.4 percent of those with household incomes above $75,000. The differences between the lowest income group and each of the other three income groups are statistically significant; likewise, the differences between the highest income group and each of the other three income groups are statistically significant.

While this report generally employs the standard definition of current smoking as described in the Smoking Status box at the beginning of this section, another useful measure of current smoking activity is past 30-day smoking, defined as having smoked a cigarette on at least one day out of the past 30 days. Using the criterion of any smoking in the previous 30 days is especially relevant to young adults who are smoking and may be on the path to established smoking but who remain unseen when using the traditional definition of a current adult smoker. As noted above, 15.3±3.3 percent of young adults are current smokers according to the standard adult definition; however, 19.9±3.6 percent of young adults smoked in the past 30 days (Table 2-2), although the difference between the two percentages is not statistically significant. The percentage of next higher age group, 25-44 year olds, who are 30-day smokers (20.0±2.0 percent) is nearly identical to the youngest group. Among the two older groups, there is virtually

Table 2-2. Age distribution of 30-day smokers

Age groups	Past 30-day smoker
	%
18 to 24	**19.9** ± 3.6
25 to 44	**20.0** ± 2.0
45 to 64	**14.6** ± 1.6
65 or older	**5.4** ± 1.1

Source: Minnesota Adult Tobacco Survey, 2014

no difference between the percentages who are current smokers and those who are 30-day smokers: 14.6±1.6 percent of 45-64 year olds are 30-day smokers vs. 14.2±1.5 percent who are current smokers; 5.4±1.1 percent of those 65 years old or older who are 30-day smokers vs. an identical 5.4±1.1 percent who are current smokers.

Former Smokers

Surveillance studies such as MATS use the term "former smoker" to describe someone who has smoked at least 100 cigarettes in his or her lifetime but who is not currently smoking. This definition does not consider the length of time that the person has gone without smoking a cigarette. The term also ignores the psychological, physical, behavioral and environmental factors that may weaken or support maintenance of the quit status, which will be discussed in chapter 3. The present section focuses on the demographic characteristics of former smokers.

Overall, 27.8±1.2 percent of adult Minnesotans (about 1,119,000 adults) are former smokers (Table 2-1). This represents an increase of approximately 57,000 former smokers in the four years since MATS 2010, which reported 1,062,000 former smokers. There is a statistically significant difference between the percentages of men and women who are former smokers: 31.9±18 percent of men are former smokers, compared to 23.9±1.6 percent of women. As in the case of current smokers, there is a marked pattern across the age groups: 6.4±2.1 percent of 18-24 year olds are former smokers, ranging up to 48.0±2.7 percent of those 65 or older as former smokers. All differences between age groups are statistically significant. The percentage of those with only a high-school degree who are former smokers (33.1±2.6 percent) is higher than for any of the other educational levels. The differences between this group and both of the groups

with higher educational levels are statistically significant. The lowest percentage of former smokers occurs among those with at least a college degree (23.1±1.8 percent). Across the income groups, the lowest percentage of former smokers occurs among the lowest income group, at 24.1±2.3 percent. This is statistically significantly different from the middle two income groups, in which approximately 32 percent are former smokers.

Interpreting the Data about Former Smokers: the Quit Ratio. Drawing conclusions about quitting behaviors within demographic subgroups based on the prevalence of former smokers poses challenges. To be a former smoker, it is necessary to have once been a smoker. Thus, the percentage of former smokers in any group is partly a function of the number of people in the group who have ever been smokers. Viewed in isolation, relative percentages of former smokers across groups can be misleading. A smaller percentage in one group compared with another may be due to a smaller percentage of individuals who have ever been smokers and not to a lower quit rate. For example, those with the highest income have the lowest smoking rates and highest rates of never smoking, yet the rate of former smokers among this group is lower than those with incomes between $35,000 and $75,000. These findings alone cannot be interpreted to mean that those with higher incomes quit smoking at a lower rate than the other groups. Since fewer smokers exist among the highest income group, fewer can become former smokers.

Unless the lifetime incidence of ever smoking is consistent across the groups being compared, the better comparison is the quit ratio.

Ever Smoker and Quit Ratio

Ever smokers are defined as the sum total of current smokers and former smokers.

Quit ratio is defined as the proportion (expressed as a percentage) of ever smokers who are former smokers at a given time. This ratio can be calculated for the entire population or for any subgroup.

The quit ratio is calculated as:

The total number of former smokers, divided by the sum of the total number of current smokers plus the total number of former smokers.

The quit ratio is a snapshot of whether those who have ever smoked are currently smoking or not. When compared over different points in time, the quit ratio characterizes the smoking or former smoking status of the total ever-smoking population and provides better information to monitor cessation trends.

The quit ratio is a simple concept, but is somewhat confounded by survivor bias in the case of age groups. Smokers die at younger ages than nonsmokers, an effect realized mainly in later years. Younger people are less likely to be successful quitters than older smokers, in part because successful quitting usually requires repeated quit attempts. Consequently, the pool of smokers (and therefore of ever smokers) will tend to diminish faster in older age groups than in younger age groups. Therefore, former smokers tend to dominate in the pool of ever smokers as an age cohort grows older.

Overall, the quit ratio for adult ever smokers in Minnesota is 65.9±2.0 percent (Table 2-3). Men and women do not differ. Predictably, the quit ratio increases consistently with age, education and income, consistent with the decreasing smoking rates associated with these characteristics.

Never Smokers

Overall, 57.8±1.4 percent of adult Minnesotans (about 2,324,000 people) have not smoked at least 100 cigarettes in their lifetime and are defined as never smokers (Table 2-1). Few people take up smoking after the years of young adulthood.[4]

With the exception of age, never smoking rates mirror those for current smoking when examined within various groups, in the following way: the lower the current smoking rate, the higher the rate of never smoking.

A higher percentage of women (63.7±1.8 percent) are never smokers compared with men (51.6±2.0 percent), a statistically significant difference.

Table 2-3. Quit ratios of ever smokers, by selected demographic characteristics

Characteristics	Quit ratio %
Overall	**65.9** ± 2.0
Age	
18 to 24	**29.5** ± 8.4
25 to 44	**54.1** ± 3.9
45 to 64	**68.6** ± 3.1
65 or older	**89.9** ± 2.1
Gender	
Female	**65.8** ± 3.0
Male	**66.0** ± 2.7
Education	
Less than high school	**49.5** ± 7.9
High school graduate/GED	**62.2** ± 3.6
Some college or technical school	**64.1** ± 3.3
College graduate or beyond	**82.0** ± 3.0
Household income	
$35,000 or less	**49.8** ± 3.9
$35,001 to $50,000	**66.9** ± 5.2
$50,001 to $75,000	**69.0** ± 4.7
$75,001 or more	**75.3** ± 3.5

Source: Minnesota Adult Tobacco Survey, 2014

The prevalence of never smoking decreases as age increases. Young adults have the highest rate of never smoking among all age groups, at 78.3±3.7 percent. Among Minnesotans 65 or older, 46.6±2.6 percent have maintained their status as never smokers. All differences between age groups for never smoking are statistically significant, except between the 25-44 year old group and the 45-64 year old group. Never smoking rates decline as age increases, while the percentage of former smokers increases, as discussed previously.

There is little difference in the rates of never smoking between those with less than a high school degree and those with a high school degree (43.4±6.4 and 46.8±2.8 percent, respectively. The percentage of college graduates who are never smokers is by far the highest, at 71.6±1.9 percent. Except for the difference between those with less than a high school degree and those with a high school degree, all the differences between the educational levels are statistically significant.

2.2.2 Cigarette Use in Minnesota, 1999 to 2014

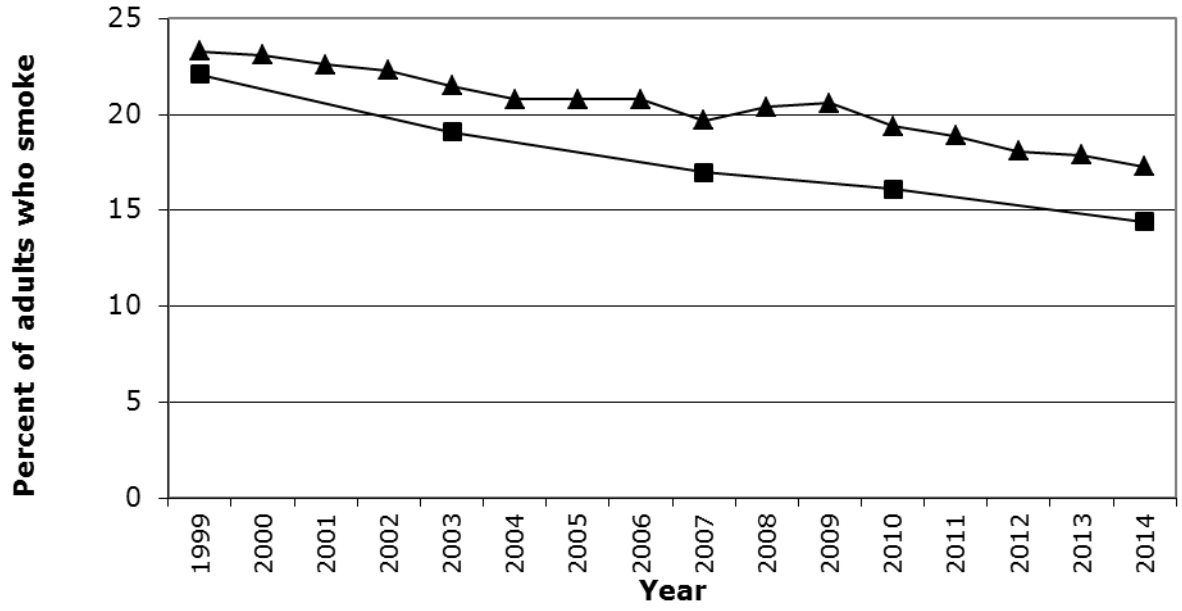
Trends in Minnesota and the United States

This section discusses the changes in smoking prevalence over time in the Minnesota adult population, using the MATS data. Measurements were taken at 1999, 2003, 2007, 2010, and 2014. As noted in chapter 1, these are five repeated cross-sections, or snapshots, of the population at each time point, rather than a longitudinal cohort following the same people over time. Comparisons between an age subgroup, for example, will include a different group of respondents of the same age during each year.

In general, tables and figures in this section will present statistics from all five time points, but the discussions in this section will focus only on the changes from 2010 to 2014. Consistent with this approach, significance tests are performed only for the changes from 2010 to 2014. Readers interested in intermediate changes between 1999, 2003, 2007, and 2010 can find them presented and discussed in the 2007 and 2010 MATS reports.

As illustrated in Figure 2-2, both national and Minnesota prevalence rates are declining over time. Minnesota's rate has declined significantly from 1999 through 2014, from 22.1±1.7 percent to 14.4±1.0 percent, a change of 7.7 percentage points.

Figure 2-2. Smoking prevalence rates in U.S. and Minnesota surveillance studies from 1999 to 2014



Source: National Health Interview Surveys, 1999 to 2014; Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010, and 2014

Use of Cigarettes, 2010 to 2014

Between 2010 and 2014, the percentage of adults in Minnesota who are current smokers declined from 16.1±1.2 percent to 14.4±1.0 percent (Table 2-4); the total number of current smokers fell from 625,000 in 2010 to 596,000 in 2014. This reduction of 1.7 percentage points, or about 29,000 smokers, is statistically significant. The percentage of Minnesota adults who have never smoked increased slightly, by 1.2 percentage points, from 56.6±1.5 percent in 2010 to 57.8±1.4 percent in 2014, but this change is not statistically significant (Table 2-7). There was a smaller change in the percentage of Minnesota adults who are former smokers, rising by 0.5 percentage point from 27.3±1.3 percent to 27.8±1.2 percent, although the change is not statistically significant (Table 2-5). As discussed previously, this statistic is better interpreted by use of the quit ratio in the overall population, rather than as an isolated number. Detailed statistics for the following discussions of these three groups appear in Tables 2-4, 2-5, and 2-7.

Current Smokers. Smoking rates for women showed a somewhat larger decline than for men between 2010 and 2014, a decline of 2.1 percentage points vs. 1.3 percentage points (Table 2-4). The change for women was statistically significant.

Table 2-4. Current smokers among all Minnesota adults from 1999 to 2014, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	2014	Change from 2010 to 2014
	%	%	%	%	%	
Overall	**22.1** ± 1.7	**19.1** ± 1.5	**17.0** ± 1.4	**16.1** ± 1.2	**14.4** ± 1.0	**-1.7** *
Age						
18 to 24	**34.2** ± 6.5	**29.3** ± 4.0	**21.5** ± 4.4	**21.8** ± 4.0	**15.3** ± 3.3	**-6.4** *
25 to 44	**25.7** ± 2.7	**22.0** ± 2.9	**19.5** ± 2.7	**19.7** ± 2.3	**18.7** ± 2.0	**-1.0**
45 to 64	**20.1** ± 2.9	**17.7** ± 2.4	**17.6** ± 2.0	**14.9** ± 1.7	**14.2** ± 1.5	**-0.7**
65 or older	**6.9** ± 2.5	**6.5** ± 1.6	**6.0** ± 1.3	**5.4** ± 1.2	**5.4** ± 1.1	**0.0**
Gender						
Female	**20.3** ± 2.2	**16.9** ± 2.0	**15.5** ± 1.8	**14.5** ± 1.6	**12.4** ± 1.3	**-2.1** *
Male	**24.0** ± 2.6	**21.5** ± 2.3	**18.6** ± 2.1	**17.7** ± 1.8	**16.5** ± 1.5	**-1.3**
Education						
Less than high school	**24.0** ± 5.5	**20.4** ± 4.8	**26.3** ± 7.0	**21.1** ± 5.3	**28.6** ± 5.6	**7.4**
High school graduate/GED	**28.0** ± 3.3	**26.1** ± 3.1	**24.3** ± 3.1	**21.7** ± 2.7	**20.1** ± 2.2	**-1.6**
Some college or technical school	**24.8** ± 3.3	**20.5** ± 3.0	**17.7** ± 2.2	**20.0** ± 2.1	**15.6** ± 1.7	**-4.4** *
College graduate or beyond	**10.4** ± 2.2	**9.4** ± 1.6	**5.9** ± 1.2	**4.8** ± 1.0	**5.1** ± 0.9	**0.2**

Hypothesis: The percentage of current smokers will decline from 2010 to 2014.

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010 and 2014

Over the four-year time period from 2010 to 2014, the youngest adults showed a large, statistically significant decrease of 6.4 percentage points in smoking prevalence. All of the other age groups had smaller declines, none statistically significant.

Among educational groups, there is some dispersion of the trend from 2010 to 2014. Among those who had less than a high school education, there was a noticeable increase of 7.4 percentage points; while this is relatively large, it is not statistically significant. Those with only a high school degree and those with some college both evidenced decreases of 1.6 and 4.4 percentage points respectively, with the latter being a statistically significant change.

Former Smokers. There are several significant changes between 2010 and 2014 in the percentages of former smokers in certain gender, age and education subgroups, but not in the overall population (Table 2-5). The overall increase of 0.5 percentage point, from

27.3±1.3 percent to 27.8±1.2 percent is not statistically significant. The demographic subgroups presented in Table 2-5 show both increases and decreases in the percentage of the group who are former smokers, with statistically significant increases occurring among the oldest age group (4.0 percentage points), and those with only a high school degree (3.3 percentage points).

Table 2-5. Former smokers among all Minnesota adults from 1999 to 2014, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	2014	Change from 2010 to 2014
	%	%	%	%	%	
Overall	**25.8** ± 1.8	**25.5** ± 1.4	**25.1** ± 1.3	**23.7** ± 1.3	**27.8** ± 1.2	**0.5**
Age						
18 to 24	**10.8** ± 5.0	**8.6** ± 2.3	**5.5** ± 2.4	**6.3** ± 2.3	**6.4** ± 2.1	**0.1**
25 to 44	**17.6** ± 2.3	**16.5** ± 2.0	**17.9** ± 2.2	**21.9** ± 2.2	**22.0** ± 2.0	**0.2**
45 to 64	**36.7** ± 3.6	**35.1** ± 2.8	**31.8** ± 2.1	**33.4** ± 2.2	**31.0** ± 2.1	**-2.3**
65 or older	**38.6** ± 4.8	**42.5** ± 3.3	**43.9** ± 2.4	**44.0** ± 2.8	**48.0** ± 2.7	**4.0** *
Gender						
Female	**22.7** ± 2.3	**22.4** ± 1.8	**23.6** ± 1.6	**25.0** ± 1.7	**23.9** ± 1.6	**-1.1**
Male	**29.0** ± 2.8	**28.7** ± 2.2	**26.7** ± 2.0	**29.7** ± 1.9	**31.9** ± 1.8	**2.2**
Education						
Less than high school	**29.6** ± 5.7	**26.3** ± 5.7	**26.1** ± 4.8	**29.4** ± 5.6	**28.0** ± 5.5	**-1.3**
High school graduate/GED	**26.8** ± 3.2	**27.5** ± 2.7	**27.9** ± 2.7	**29.9** ± 2.8	**33.1** ± 2.6	**3.3** *
Some college or technical school	**23.9** ± 3.1	**24.5** ± 2.4	**24.1** ± 2.2	**27.9** ± 2.1	**27.8** ± 2.0	**-0.1**
College graduate or beyond	**25.5** ± 3.5	**24.2** ± 2.3	**23.2** ± 1.9	**23.5** ± 1.9	**23.1** ± 1.8	**-0.4**

Hypothesis: The percentage of former smokers will increase from 2010 to 2014.

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010 and 2014

Quit Ratio**.** As noted in section 2.2.1, the quit ratio characterizes the smoking or former smoking status of the total ever smoking population and provides some information to monitor trends in cessation.

From 2010 to 2014, the quit ratio increased by a statistically significant 2.9 percentage points, from 62.9±2.2 percent to 65.9±2.0 percent (Table 2-6). As previously discussed, numerous complex factors affect the quit ratio and, even more, its change over time. Changes in both individuals' smoking behavior and the population composition over time may affect the ratio. Still, at the population level, a statistically significantly higher percentage of people who have ever smoked are currently no longer smoking in 2014 than in 2010.

Table 2-6. Quit ratios from 1999 to 2014 among ever smokers, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	2014	Change from 2010 to 2014
	%	%	%	%	%	
Overall	**53.9** ± 2.9	**57.1** ± 2.6	**59.6** ± 2.6	**62.9** ± 2.2	**65.9** ± 2.0	**2.9** *
Age						
18 to 24	**24.0** ± 10.1	**22.7** ± 5.6	**20.4** ± 8.3	**22.4** ± 7.6	**29.5** ± 8.4	**7.1**
25 to 44	**40.7** ± 4.4	**42.8** ± 4.8	**48.0** ± 5.3	**52.6** ± 4.4	**54.1** ± 3.9	**1.5**
45 to 64	**64.6** ± 4.7	**66.6** ± 3.9	**64.4** ± 3.5	**69.1** ± 3.2	**69** ± 3.1	**-0.5**
65 or older	**84.9** ± 5.2	**86.7** ± 3.1	**88.0** ± 2.5	**89.0** ± 2.3	**89.9** ± 2.1	**0.9**
Gender						
Female	**52.8** ± 4.2	**57.1** ± 3.8	**60.4** ± 3.7	**63.3** ± 3.2	**65.8** ± 3.0	**2.5**
Male	**54.8** ± 4.1	**57.2** ± 3.5	**58.9** ± 3.6	**62.6** ± 3.1	**66.0** ± 2.7	**3.4**
Education						
Less than high school	**55.2** ± 8.3	**56.4** ± 8.1	**49.8** ± 9.6	**58.1** ± 8.6	**49.5** ± 7.9	**-8.6**
High school graduate/GED	**48.9** ± 4.8	**51.3** ± 4.4	**53.5** ± 4.6	**57.9** ± 4.3	**62.2** ± 3.6	**4.3**
Some college or technical school	**49.1** ± 5.3	**54.4** ± 4.8	**57.7** ± 4.0	**58.3** ± 3.5	**64.1** ± 3.3	**5.8** *
College graduate or beyond	**71.0** ± 5.7	**72.1** ± 4.2	**79.7** ± 3.7	**82.9** ± 3.1	**82.0** ± 3.0	**-0.9**

Hypothesis: The quit ratio will increase from 2010 to 2014

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010 and 2014

The quit ratios for most of the demographic subgroups also show a positive change from 2010 to 2014 across all subgroups, although only a few changes are statistically significant. Men had a greater increase in the quit ratio than women, 3.4 versus 2.5 percentage points, but neither change is statistically significant. The youngest age group showed a relatively large increase (7.1 percentage points), but this is also not statistically significant.

Never Smokers. An increase over time in the percentage of Minnesota adults who have never smoked is inherently desirable because smoking-related morbidity and mortality in the population as a whole, along with associated social and economic impacts, decrease as the percentage of never smokers increases. Minnesota's programmatic efforts that affect the prevalence of never smoking include maintaining adult never smokers as never smokers and encouraging young people not to start smoking.

While the percentage of Minnesota adults who are never smokers increased slightly from 56.6±1.2 percent to 57.8±1.4 percent between 2010 and 2014 (Table 2-7), this 1.2 percentage point increase is not statistically significant.

Table 2-7. Never smokers among all Minnesota adults from 1999 to 2014, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	2014	Change from 2010 to 2014
	%	%	%	%	%	
Overall	**52.1** ± 2.1	**55.4** ± 1.8	**57.9** ± 1.6	**56.6** ± 1.5	**57.8** ± 1.4	**1.2**
Age						
18 to 24	**55.0** ± 7.0	**62.1** ± 4.3	**73.0** ± 4.7	**72.0** ± 4.4	**78.3** ± 3.7	**6.3** *
25 to 44	**56.7** ± 3.1	**61.6** ± 3.2	**62.6** ± 3.0	**58.4** ± 2.7	**59.2** ± 2.4	**0.8**
45 to 64	**43.1** ± 3.6	**47.2** ± 3.2	**50.6** ± 2.3	**51.7** ± 2.3	**54.8** ± 2.3	**3.1** *
65 or older	**54.5** ± 5.0	**51.0** ± 3.4	**50.0** ± 2.4	**50.6** ± 2.8	**46.6** ± 2.6	**-4.0**
Gender						
Female	**57.0** ± 2.7	**60.1** ± 2.4	**61.0** ± 2.0	**60.6** ± 2.0	**63.7** ± 1.8	**3.2** *
Male	**47.0** ± 3.2	**49.8** ± 2.8	**54.7** ± 2.5	**52.6** ± 2.2	**51.6** ± 2.0	**-1.0**
Education						
Less than high school	**46.5** ± 6.8	**53.3** ± 7.2	**47.6** ± 6.4	**49.5** ± 6.4	**43.4** ± 6.4	**-6.1**
High school graduate/GED	**45.2** ± 3.8	**46.4** ± 3.5	**47.8** ± 3.3	**48.4** ± 3.1	**46.8** ± 2.8	**-1.7**
Some college or technical school	**51.3** ± 3.8	**55.0** ± 3.5	**58.2** ± 2.8	**52.1** ± 2.5	**56.6** ± 2.3	**4.5** *
College graduate or beyond	**64.1** ± 3.7	**66.4** ± 2.6	**70.9** ± 2.1	**71.7** ± 2.0	**71.9** ± 1.9	**0.2**

Hypothesis: The percentage of never smokers will increase from 2010 to 2014.

*Statistically significant at the 95% confidence level

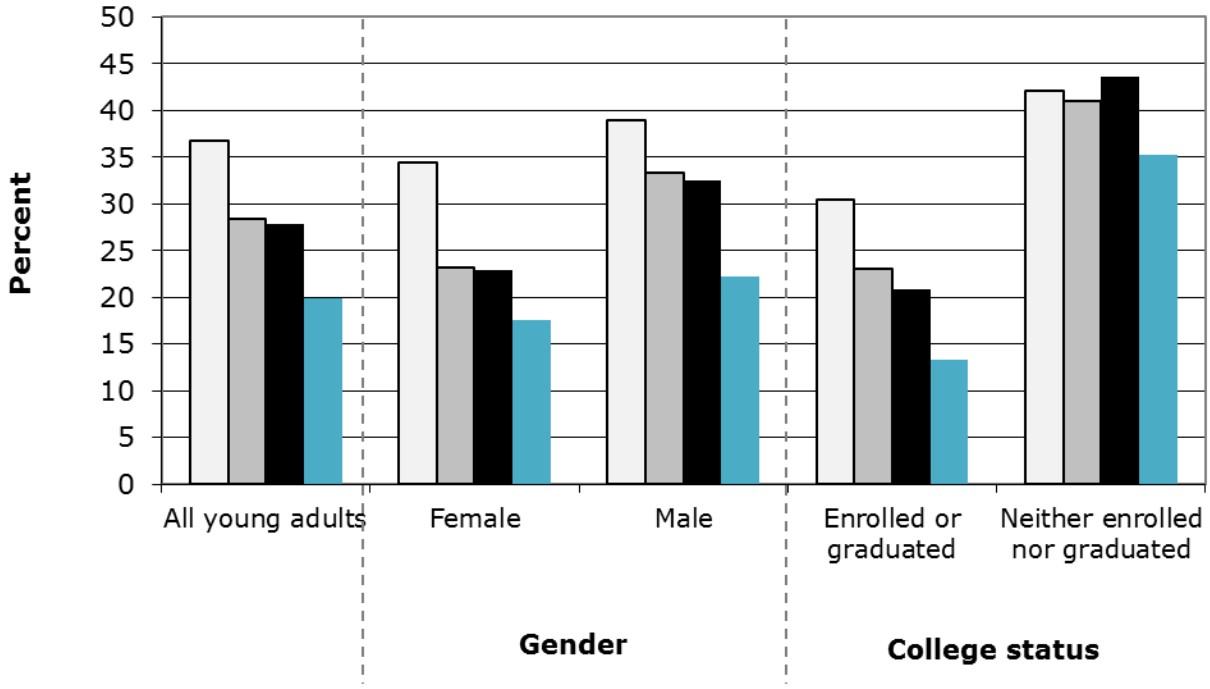
Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010 and 2014

Across the demographic groups, there are positive and negative changes across the age and education subgroups. For the one-tailed significance tests, all changes in the prevalence of never smokers were hypothesized to be positive (increases). Among the observed increases, the statistically significant changes were the 6.3 percentage point change among 18-24 year olds, the 3.1 percentage point change among 45-64 year olds, the 3.2 percentage point change among women and the 4.5 percentage point change among those with some college or technical school education. It is encouraging that the never smoking rate among 18-24 year olds showed such a large and statistically significant increase, to the level that 78.3±3.7 percent are never smokers. Noticeable decreases occurred among those 65 or older (4.0 percentage points) and those with less than a high school degree (6.1 percentage points).

Young Adult Smokers. Overall, young adult smoking (defined as 30-day smokers, as described in section 2.2.1) declined by 8.0 percentage points, from 27.8±4.4 percent in 2010 to 19.9±3.6 percent in 2014 (Figure 2-3). This decline is both large and statistically significant. Declines occurred among both men and women, but the large 10.3 percentage point decline among men is statistically significant and nearly double the 5.3

percentage point non-significant decline for women. There were nearly equal declines for those with and without college experience, with the 7.4 percentage point decline among those with college experience being statistically significant.

Figure 2-3. Prevalence of young adult 30-day smoking, by selected demographic characteristics, from 2003 to 2014



Year	All young adults	Female	Male	Enrolled or graduated	Neither enrolled nor graduated
2003	36.8 ± 4.3	34.4 ± 5.6	39.0 ± 6.6	30.5 ± 5.7	42.1 ± 7.7
2007	28.4 ± 4.8	23.1 ± 6.1	33.3 ± 7.2	23.0 ± 6.1	41.1 ± 9.6
2010	27.8 ± 4.4	22.9 ± 5.9	32.5 ± 6.4	20.8 ± 4.8	43.6 ± 9.4
2014	19.9 ± 3.6	17.5 ± 5.0	22.2 ± 5.3	13.3 ± 3.7	35.3 ± 8.5
Change from 2010 to 2014	-8.0*	-5.3	-10.3*	-7.4*	-8.3

Hypothesis: The 30-day smoking prevalence will decline from 2010 to 2014 for all groups

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 2003, 2007. 2010, and 2014

2.3 Characteristics of Smokers

This section focuses on the characteristics of smokers in terms of their demographic characteristics, health status, and physiological aspects such as addiction level and smoking intensity, with some comparisons to former smokers and never smokers. The term "nonsmokers" refers to former and never smokers combined. This section first describes the characteristics of smokers in 2014, and then explores changes in smoking intensity from 2010 to 2014.

2.3.1 Demographic Characteristics of Smokers

Minnesota's adult smokers tend to have lower educational levels and lower household incomes than former smokers or never smokers (Table 2-8). About 11 percent (10.7±1.9 percent) of smokers have a college degree, compared with 25.4±2.0 percent of former smokers and 38.2±1.7 percent of never smokers. The differences in college graduation among the smoking status groups are all statistically significant. At the other extreme, 12.9±2.8 percent of smokers have not completed high school, compared with 6.5±1.4 percent of former smokers and only 4.9±1.0 percent of never smokers; the differences between current smokers and both the former and never smokers are statistically significant. Current smokers are more likely to have a high school degree as their highest level of education and less likely to be college graduates than never smokers; these differences are statistically significant.

Minnesota's adult smokers tend to have lower household incomes than former smokers or never smokers: 41.2±3.8 percent of smokers have incomes of $35,000 or less, compared to approximately 22 percent of both former and never smokers, while 23.8±3.5 percent of smokers have incomes greater than $75,000, compared to 38.6±2.6 percent of former smokers and 46.2±1.9 percent of never smokers. All of these income differences between smokers and each of the other two smoking status groups are statistically significant.

Table 2-8. Selected demographic characteristics, by smoking status

Characteristics	Current smoker	Former smoker	Never smoker
	%	%	%
Education			
Less than high school	**12.9** ± 2.8	**6.5** ± 1.4	**4.9** ± 1.0
High school graduate/GED	**38.2** ± 3.7	**32.6** ± 2.5	**22.2** ± 1.6
Some college or technical school	**38.2** ± 3.7	**35.5** ± 2.4	**34.8** ± 1.8
College graduate or beyond	**10.7** ± 1.9	**25.4** ± 2.0	**38.2** ± 1.7
Total	**100**	**100**	**100**
Household income			
$35,000 or less	**41.2** ± 3.8	**21.6** ± 2.1	**22.5** ± 1.6
$35,001 to $50,000	**14.6** ± 2.7	**15.6** ± 1.9	**12.3** ± 1.3
$50,001 to $75,000	**20.5** ± 3.3	**24.2** ± 2.4	**19.0** ± 1.5
$75,001 or more	**23.8** ± 3.5	**38.6** ± 2.6	**46.2** ± 1.9
Total	**100**	**100**	**100**
Marital status			
Married	**37.7** ± 3.6	**67.0** ± 2.3	**60.5** ± 1.8
A member of an unmarried couple	**13.4** ± 2.7	**5.3** ± 1.2	**4.6** ± 0.8
Divorced	**15.3** ± 2.4	**9.9** ± 1.4	**5.6** ± 0.8
Widowed	**2.8** ± 0.9	**6.8** ± 1.0	**3.8** ± 0.5
Separated	**2.5** ± 1.2	**0.9** ± 0.4	**0.9** ± 0.3
Never married	**28.4** ± 3.5	**10.1** ± 1.5	**24.6** ± 1.7
Total	**100**	**100**	**100**

Source: Minnesota Adult Tobacco Survey, 2014

2.3.2 Individual Health and Behavioral Characteristics of Smokers

Health Status of Smokers

Health Status Indicator

MATS used one simple, standard measure of physical health status that is well documented as correlating with clinically determined health status.

Survey Question

- In general, would you say your health is excellent, very good, good, fair or poor?

On average, smokers are in poorer health than nonsmokers (Table 2-9). Only one-third as many smokers consider their health to be excellent as do never smokers (9.8±2.2 percent vs. 28.2±1.7 percent, respectively), with former smokers falling in the middle (19.2±2.0 percent). All of these differences are statistically significant. The complementary pattern occurs at the other extreme: those who consider their health to be poor comprise 6.0±1.8 percent of smokers, 3.8±0.9 percent of former smokers, and only 1.5±0.4 percent of never smokers, with all differences being statistically significant.

Table 2-9. Selected health status indicators, by smoking status

Health status indicator	Current smoker	Former smoker	Never smoker
	%	%	%
Health rating			
Excellent	**9.8** ± 2.2	**19.2** ± 2.0	**28.2** ± 1.7
Very good	**35.9** ± 3.7	**37.6** ± 2.4	**41.8** ± 1.8
Good	**34.5** ± 3.7	**28.0** ± 2.3	**22.5** ± 1.6
Fair	**13.9** ± 2.5	**11.4** ± 1.7	**6.1** ± 0.9
Poor	**6.0** ± 1.8	**3.8** ± 0.9	**1.5** ± 0.4
Total	**100**	**100**	**100**

Source: Minnesota Adult Tobacco Survey, 2014

Smoking Onset: Ages of Initiation and Regular Smoking

Age of Initiation and Age of Regular Smoking

Age of smoking initiation has a clear-cut definition that is easily communicated to survey respondents: the age when they first tried a cigarette. Not only is this a simple concept, it represents a salient event that individuals are likely to recall even after many years.

In contrast, the transition between the stage of "trying cigarettes" and the stage of "being a smoker" is more difficult to identify, although the average smoker can more easily report when he or she became a "regular smoker" than when he or she smoked the 100th cigarette. The concept of regular smoker used in this section is subjective and differs from the objective definition of "smoker" used elsewhere in this report (having smoked 100 or more cigarettes in one's lifetime) but provides a plausible approximation of the age of transition.

Survey Questions

- How old were you the first time you smoked a cigarette, even one or two puffs?

How old were you when you first started smoking cigarettes regularly?

Age of Initiation

Nearly four-fifths (78.3 percent) of current smokers tried their first cigarette before age 18, with 13.7±2.6 percent having tried their first cigarette by the time they were 11 years old, and another 31.4±3.6 percent between the ages of 12 and 14 (Table 2-10). Only 5.2±1.6 percent first tried smoking after reaching the age of 21.

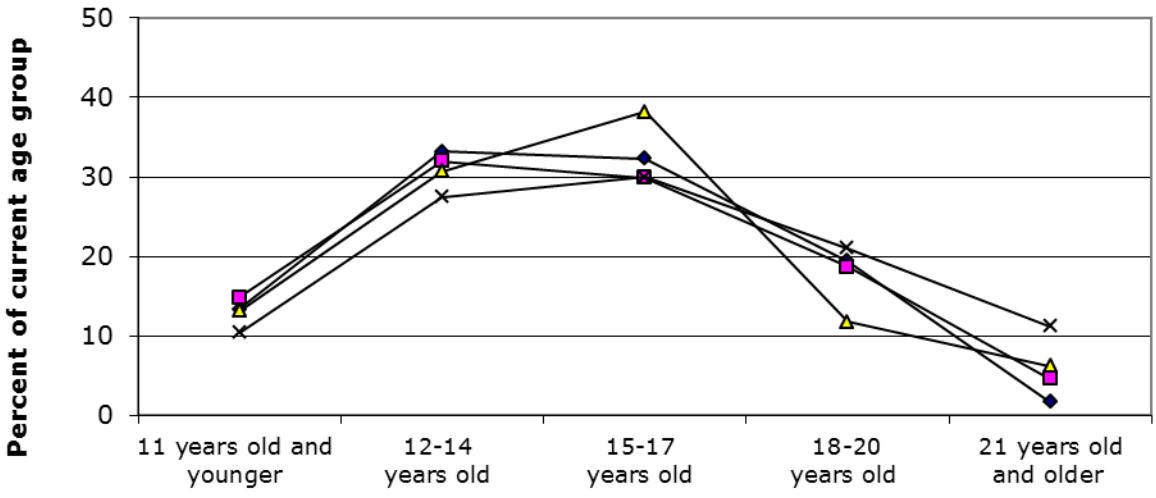
Table 2-10. Age of smoking initiation among current smokers, by selected demographic characteristics

Characteristics	Age of initiation					
	11 years old and younger	12-14 years old	15-17 years old	18-20 years old	21 years and older	Row total
	%	%	%	%	%	%
Overall	**13.7** ± 2.6	**31.4** ± 3.6	**33.2** ± 3.6	**16.5** ± 2.9	**5.2** ± 1.6	**100**
Age						
18 to 24	**13.4** ± 7.5	**33.2** ± 11.8	**32.3** ± 10.5	**19.4** ± 9.1	**1.7** ± 3.2	**100**
25 to 44	**14.8** ± 4.1	**32.0** ± 5.5	**29.9** ± 5.5	**18.7** ± 4.9	**4.6** ± 2.5	**100**
45 to 64	**13.1** ± 4.1	**30.7** ± 5.5	**38.2** ± 5.8	**11.8** ± 3.6	**6.2** ± 2.7	**100**
65 or older	**10.4** ± 6.8	**27.5** ± 9.8	**30.0** ± 10.4	**21.0** ± 8.6	**11.2** ± 5.9	**100**
Gender						
Female	**13.4** ± 3.7	**29.0** ± 5.0	**34.8** ± 5.4	**15.7** ± 4.2	**7.2** ± 2.9	**100**
Male	**14.0** ± 3.5	**33.4** ± 5.0	**31.8** ± 4.8	**17.1** ± 4.0	**3.7** ± 1.6	**100**
Education						
Less than high school	**18.2** ± 8.5	**41.5** ± 11.5	**29.1** ± 11.2	**8.6** ± 6.9	**2.7** ± 2.6	**100**
High school graduate/GED	**15.1** ± 4.5	**32.7** ± 6.0	**31.9** ± 5.9	**15.7** ± 4.8	**4.6** ± 2.5	**100**
Some college or technical school	**12.5** ± 3.8	**28.0** ± 5.4	**35.8** ± 5.9	**18.5** ± 4.9	**5.2** ± 2.8	**100**
College graduate or beyond	**8.1** ± 4.9	**27.4** ± 8.2	**32.2** ± 8.5	**22.1** ± 8.6	**10.2** ± 5.5	**100**
Household income						
$35,000 or less	**16.9** ± 4.3	**32.8** ± 5.7	**29.7** ± 5.4	**15.3** ± 4.3	**5.4** ± 2.4	**100**
$35,001 to $50,000	**13.8** ± 7.4	**31.1** ± 9.3	**36.1** ± 10.0	**12.5** ± 6.7	**6.6** ± 4.6	**100**
$50,001 to $75,000	**11.1** ± 5.8	**33.9** ± 8.7	**34.5** ± 8.6	**16.1** ± 7.2	**4.5** ± 4.1	**100**
$75,001 or more	**10.1** ± 4.7	**29.4** ± 7.8	**31.3** ± 7.9	**22.8** ± 7.6	**6.4** ± 3.8	**100**

Source: Minnesota Adult Tobacco Survey, 2014

There are no notable patterns in the age of initiation based on the age cohorts (Figure 2-4). A slightly lower percentage of the oldest group (65 years old or older) initiated at the age of 11 or younger (10.4±6.8 percent) compared to 13-15 percent for the other age groups, but the differences are not statistically significant. Similarly, a greater percentage of this oldest group did not initiate smoking until they were 21 years old, compared to 4 to 6 percent of those between the ages of 25 and 44 (18-24 year olds cannot be validly compared, since the 18-20 year olds in this group who have not yet tried a cigarette may still do so after they reach their 21 birthday.) While generally indicative of historical trends, the differences in age of smoking initiation among the various age groups may not support fine distinctions, especially since recall of the precise age when they smoked their first cigarette may diminish as time passes.

Figure 2-4. Age of smoking initiation for current smokers, by current age group



Current age group	11 years old and younger	12-14 years old	15-17 years old	18-20 years old	21 years old and older
18 to 24	13.4 ± 7.5	33.2 ± 11.8	32.3 ± 10.5	19.4 ± 9.1	1.7 ± 3.2
25 to 44	14.8 ± 4.7	32.0 ± 5.5	29.8 ± 5.5	18.7 ± 4.9	4.6 ± 2.5
45 to 64	13.1 ± 4.1	30.7 ± 5.5	38.2 ± 5.8	11.8 ± 3.6	6.2 ± 2.7
65 or older	10.4 ± 6.8	27.5 ± 9.8	30.0 ± 10.4	21.0 ± 8.6	11.2 ± 5.9

Source: Minnesota Adult Tobacco Survey, 2014

Higher educational levels appear to be associated with later ages of smoking initiation, as shown in Table 2-10. The relationships, however, are not statistically significant. In addition, there are no significant differences in age of initiation for gender or for income.

Age of Regular Smoking

More than half (51.6 percent) of current smokers became regular smokers before age 18 (Table 2-11). Overall, 12.8±2.5 percent of current smokers became regular smokers between the ages of 12 and 14, and 13.3±2.5 percent became regular smokers after reaching the age of 21. Slightly more than 2 percent (2.1±1.1 percent) have never smoked regularly.

Table 2-11. Age of becoming a regular smoker among current smokers, by selected demographic characteristics

Characteristics	Age of regular smoking						
	11 years old and younger	12-14 years old	15-17 years old	18-20 years old	21 years and older	Never smoked regularly	Row total
	%	%	%	%	%	%	%
Overall	**3.3** ± 1.4	**12.8** ± 2.5	**35.5** ± 3.7	**33.0** ± 3.6	**13.3** ± 2.5	**2.1** ± 1.1	**100**
Age							
18 to 24	**7.3** ± 6.6	**13.7** ± 8.3	**32.1** ± 11.3	**34.9** ± 11.3	**7.2** ± 6.1	**4.7** ± 5.5	**100**
25 to 44	**2.8** ± 1.9	**12.6** ± 3.9	**36.8** ± 5.8	**33.5** ± 5.7	**12.6** ± 3.8	**1.8** ± 1.4	**100**
45 to 64	**2.3** ± 1.7	**13.7** ± 4.0	**37.0** ± 5.8	**30.1** ± 5.3	**15.0** ± 4.2	**2.0** ± 1.7	**100**
65 or older	**3.9** ± 5.4	**7.9** ± 6.8	**24.5** ± 9.6	**42.0** ± 10.6	**21.3** ± 8.0	**0.3** ± 0.6	**100**
Gender							
Female	**3.9** ± 2.3	**12.5** ± 3.6	**35.1** ± 5.5	**32.3** ± 5.2	**14.8** ± 3.9	**1.5** ± 1.2	**100**
Male	**2.9** ± 1.7	**13.0** ± 3.6	**35.8** ± 4.9	**33.6** ± 4.8	**12.1** ± 3.2	**2.7** ± 1.8	**100**
Education							
Less than high school	**8.0** ± 5.9	**19.5** ± 9.0	**38.7** ± 11.3	**26.2** ± 10.2	**5.1** ± 3.6	**2.6** ± 5.0	**100**
High school graduate/GED	**2.5** ± 2.0	**15.6** ± 4.7	**39.8** ± 6.3	**29.1** ± 5.6	**12.2** ± 4.0	**0.8** ± 1.2	**100**
Some college or technical school	**2.4** ± 2.0	**9.2** ± 3.3	**34.4** ± 5.8	**39.0** ± 6.0	**12.3** ± 3.9	**2.6** ± 1.9	**100**
College graduate or beyond	**3.9** ± 3.7	**7.3** ± 3.8	**18.8** ± 6.5	**34.4** ± 9.0	**31.0** ± 9.3	**4.7** ± 3.7	**100**
Household income							
$35,000 or less	**3.3** ± 2.1	**16.1** ± 4.4	**35.0** ± 5.8	**28.8** ± 5.3	**14.9** ± 4.0	**1.9** ± 2.2	**100**
$35,001 to $50,000	**4.9** ± 4.3	**9.3** ± 6.6	**37.4** ± 9.8	**33.9** ± 9.1	**11.5** ± 5.8	**3.0** ± 3.8	**100**
$50,001 to $75,000	**4.3** ± 4.0	**8.2** ± 4.6	**42.1** ± 9.4	**34.4** ± 8.7	**11.0** ± 5.7	**0.1** ± 0.2	**100**
$75,001 or more	**2.2** ± 2.8	**10.5** ± 5.5	**27.5** ± 7.5	**38.5** ± 8.3	**17.1** ± 6.4	**4.2** ± 2.8	**100**

Source: Minnesota Adult Tobacco Survey, 2014

Generally, individuals spend a few years advancing from trying their first cigarette to regular use. While the age at which individuals became regular smokers shows the various demographic patterns similar to those present when they first tried a cigarette, these patterns manifest themselves later for the age of becoming a regular smoker.

Comparing Table 2-10 to Table 2-11, the distributions across the various demographic subgroups shift to the right by one age group.

Lower educational attainment is associated with younger age of regular smoking, as was noted above for the age of smoking initiation. The percentage of those who became regular smokers at earlier ages is higher for the less educated and decreases as educational level rises.

There are no statistically significant differences in age of becoming a regular smoker for age, gender or income. A noticeably higher percentage of those with at least a college degree became a regular smoker at age 21 or older (31.0±9.3 percent) than did the other educational groups; the difference between the college graduates and each of the other educational groups is statistically significant.

Smoking Intensity

MATS assessed two of the principal measures of the degree of addiction that may hinder smokers' chances of quitting: the number of cigarettes smoked per day, and the amount of time between waking and smoking the first cigarette.

Cigarettes per Day and Smoking Intensity

When using self-reported smoking data, calculating the number of cigarettes that a person smokes per day examines smoking behavior in the 30 days immediately preceding the date the person completed the survey. The typical approach is to ask the respondent to estimate the average number of cigarettes smoked each day. If the person smoked every day, then it is simply necessary to ask how many cigarettes he or she smoked on average. However, if the person smoked only some days, it is unfeasible to ask for an average number smoked, considering all 30 days in the period. The standard way of handling these two scenarios is to ask the questions differently.

Survey Questions

- Do you now smoke cigarettes every day, some days or not at all?

  For everyday smokers, ask:

  - On average, about how may cigarettes per day do you smoke?

For some day smokers, ask:

- During the past 30 days, on how many days did you smoke cigarettes?
- During the past 30 days, on the days when you smoked, about how many cigarettes did you smoke on average?

Cigarettes per Day

The average across all 30 days is calculated as: the number of days smoked multiplied by the number of cigarettes smoked on days smoked divided by 30. This measure captures smoking intensity as a standardized daily exposure to inhaled cigarette smoke.

Smoking Intensity

MATS employs the measure of cigarettes per day in two ways.

In the first way, MATS classifies each smoker by the number of cigarettes smoked per day into one of five-categories: 1 cigarette or less, 2 to 5 cigarettes, 6 to 10, 11 to 20, and 21 or more. This allows calculating the percentages of smokers who fall into each of these categories, whether for smokers overall or for subgroups, such as age and gender subgroups.

In the second way, MATS calculates the average (mean) number of cigarettes per day smoked for any group of interest, again for smokers overall or for subgroups, such as age and gender subgroups.

Overall, adult Minnesota cigarette smokers smoke an average of 11.5±0.6 cigarettes per day, averaged across the past 30 days (Table 2-12). The average number of cigarettes smoked increases steadily with increasing age, from 7.6±1.6 cigarettes for 18-24 year olds to 14.2±2.0 cigarettes for those 65 years old or older. The differences between each pair of age groups are statistically significant, except for that between the two oldest age groups. The average number of cigarettes smoked decreases steadily with increasing education, from 13.0±2.2 cigarettes for those with less than a high school degree to 8.5±1.4 cigarettes for those with a college degree. None of the differences between each pair of educational levels is significant, except that number of cigarettes per day smoked by those with a college degree is significantly different from each of the other educational levels. Men smoke slightly more cigarettes per day than do women, 12.5±0.9 vs. 10.2±0.7 cigarettes, a statistically significant difference.

Table 2-12. Mean cigarettes per day (averaged across 30 days) for current smokers, by selected demographic characteristics

Characteristics	Mean cigarettes per day
Overall	**11.5** ± 0.6
Age	
18 to 24	**7.6** ± 1.6
25 to 44	**10.6** ± 0.9
45 to 64	**13.6** ± 1.0
65 or older	**14.2** ± 2.0
Gender	
Female	**10.2** ± 0.7
Male	**12.5** ± 0.9
Education	
Less than high school	**13.0** ± 2.2
High school graduate/GED	**12.5** ± 1.0
Some college or technical school	**10.7** ± 0.9
College graduate or beyond	**8.5** ± 1.4

Source: Minnesota Adult Tobacco Survey, 2014

For the MATS analyses, smokers are grouped by the number of cigarettes they smoke per day. Most cigarette smokers consume between one-half and one full pack of cigarettes every day (a pack usually contains 20 cigarettes), falling into either the 6-10 cigarettes per day category (29.2±3.5 percent) or the 11-20 cigarettes per day category (36.2±3.7 percent). Slightly less than one-third smoke fewer cigarettes than that, with 11.8±2.6 percent smoking 1 cigarette or less per day, and 17.1±3.0 smoking 2-5 cigarettes per day. Overall, only 5.7±1.6 percent smoke 21 or more cigarettes per day (Table 2-13).

There are many statistically significant differences among the age groups. Young adults smoke less intensely than any other group, with 27.0±10.6 percent of 18-24 year olds smoking 1 cigarette or less per day, a rate that is higher than the rates for each of the other age groups and statistically significantly higher than the rate for the two oldest age groups. The 65 years and older age group tends to smoke the most cigarettes, with 51.0±11.1 percent smoking between 11 and 20 cigarettes per day.

Table 2-13. Smoking intensity (averaged across past 30 days), for current smokers

Characteristics	Smoking Intensity					
	1 cig or less	2-5 cigs	6-10 cigs	11-20 cigs	21+ cigs	Row total
	%	%	%	%	%	%
Overall	**11.8** ± 2.6	**17.1** ± 3.0	**29.2** ± 3.5	**36.2** ± 3.7	**5.7** ± 1.6	**100**
Age						
18 to 24	**27.0** ± 10.6	**23.3** ± 9.7	**27.9** ± 11.0	**19.5** ± 9.3	**2.3** ± 2.2	**100**
25 to 44	**12.7** ± 4.0	**17.6** ± 4.6	**32.9** ± 5.7	**33.1** ± 5.7	**3.7** ± 2.0	**100**
45 to 64	**5.9** ± 2.7	**14.9** ± 4.2	**26.2** ± 5.1	**43.7** ± 6.0	**9.3** ± 3.3	**100**
65 or older	**6.0** ± 4.9	**12.9** ± 7.5	**22.5** ± 9.5	**51.0** ± 11.1	**7.7** ± 6.1	**100**
Gender						
Female	**9.9** ± 3.6	**20.7** ± 4.7	**36.2** ± 5.6	**30.1** ± 5.0	**3.1** ± 1.4	**100**
Male	**13.2** ± 3.7	**14.3** ± 3.6	**23.8** ± 4.4	**41.0** ± 5.2	**7.8** ± 2.6	**100**
Education						
Less than high school	**11.2** ± 8.8	**12.9** ± 8.3	**28.1** ± 10.8	**40.6** ± 12.0	**7.2** ± 4.8	**100**
High school graduate/GED	**6.8** ± 3.4	**13.7** ± 4.4	**34.3** ± 6.1	**38.3** ± 6.2	**6.8** ± 3.1	**100**
Some college or technical school	**13.3** ± 4.4	**20.5** ± 4.9	**26.2** ± 5.4	**35.3** ± 5.8	**4.8** ± 2.0	**100**
College graduate or beyond	**24.6** ± 8.6	**22.1** ± 8.3	**23.4** ± 8.0	**27.6** ± 7.9	**2.3** ± 1.8	**100**
Household income						
$35,000 or less	**7.0** ± 3.1	**14.1** ± 3.9	**37.0** ± 5.8	**35.7** ± 5.8	**6.2** ± 2.6	**100**
$35,001 to $50,000	**11.6** ± 6.5	**25.1** ± 9.1	**22.5** ± 8.8	**37.5** ± 10.0	**3.3** ± 3.5	**100**
$50,001 to $75,000	**15.0** ± 7.3	**18.6** ± 7.5	**27.4** ± 8.3	**34.0** ± 8.6	**5.0** ± 3.2	**100**
$75,001 or more	**18.6** ± 6.9	**16.6** ± 6.5	**22.8** ± 7.4	**35.4** ± 8.4	**6.6** ± 4.2	**100**

Source: Minnesota Adult Tobacco Survey, 2014

Smokers with a college degree smoke fewer cigarettes per day, with 24.6±8.6 percent smoking 1 cigarette or less per day, compared to 13.3±4.4 percent of those with some college, 6.8±3.4 percent of those with a high school education, and 11.2±8.8 percent of those with less than a high school education. The difference between the college graduate group and the high school graduate group is statistically significant. Almost none of the college graduates smoke 21 or more cigarettes per day (2.3±1.8 percent). Generally speaking, smoking intensity appears to be inversely related to educational level.

Time to First Cigarette after Waking

MATS measures the typical length of time between waking and smoking the first cigarette, a strong indicator of nicotine addiction.

Level of Addiction

Among various measures, smoking within 30 minutes of waking is indicative of strong addiction.

Survey Question

- How soon after you wake up do you smoke your first cigarette? Would you say within 5 minutes, 6-30 minutes, 31-60 minutes or after 60 minutes?

Nearly half (48.2±3.8 percent) of Minnesota adult smokers smoke their first cigarette of the day within 30 minutes of waking (Table 2-14). As age increases, this addiction measure tends to increase. The percentage of each of the two older age groups who smoke within 30 minutes of waking (56.8±5.8 percent of 45-64 year olds and 60.6±10.5 percent of those 65 years old or older) is higher in a statistically significant way than the percentage for each of the two younger age groups (37.8±11.7 percent of 18-24 year olds and 42.7±6.0 percent of 25-44 year olds). Similar to smoking prevalence, smokers with the highest educational and income levels are least likely to light up within 30 minutes of waking, at 26.0±7.2 percent and 34.4±8.0 percent, respectively. Education shows a pattern in relation to this indicator: immediate smoking after waking declines steadily as education rises. The 64.7±11.7 percent of those with less than a high school degree who smoke within 30 minutes of waking is higher than for the other age groups, and the differences from the two highest groups are statistically significant. At the other end, the percentage of college graduates who smoke within 30 minutes of waking (26.0±7.2 percent) is much lower than for the other educational groups, and the differences from all the other groups are statistically significant.

Table 2-14. Time to first cigarette after waking, for current smokers

Characteristics	Time to first cigarette		
	30 minutes or less	More than 30 minutes	Row Total
	%	%	%
Overall	**48.2** ± 3.8	**51.8** ± 3.8	**100**
Age			
18 to 24	**37.8** ± 11.7	**62.2** ± 11.7	**100**
25 to 44	**42.7** ± 6.0	**57.3** ± 6.0	**100**
45 to 64	**56.8** ± 5.8	**43.2** ± 5.8	**100**
65 or older	**60.6** ± 10.5	**39.4** ± 10.5	**100**
Gender			
Female	**47.2** ± 5.6	**52.8** ± 5.6	**100**
Male	**49.1** ± 5.2	**50.9** ± 5.2	**100**
Education			
Less than high school	**64.7** ± 11.7	**35.3** ± 11.7	**100**
High school graduate/GED	**56.4** ± 6.4	**43.6** ± 6.4	**100**
Some college or technical school	**40.7** ± 5.9	**59.4** ± 5.9	**100**
College graduate or beyond	**26.0** ± 7.2	**74.0** ± 7.2	**100**
Household income			
$35,000 or less	**59.6** ± 5.8	**40.4** ± 5.8	**100**
$35,001 to $50,000	**41.2** ± 10.0	**58.8** ± 10.0	**100**
$50,001 to $75,000	**43.9** ± 9.0	**56.1** ± 9.0	**100**
$75,001 or more	**34.4** ± 8.0	**65.6** ± 8.0	**100**

Source: Minnesota Adult Tobacco Survey, 2014

Usual Cigarette Brand is Menthol or Non-menthol

In 2010, MATS began to measure menthol cigarette use by Minnesota adult smokers. This section of the report characterizes menthol cigarette use by current smokers. Section 4.5 examines the possible reactions of current menthol cigarette smokers to a hypothetical ban on menthol cigarettes.

Menthol Cigarette Use

A chemical compound extracted from the peppermint plant, menthol is thought to help mask the harshness of cigarette smoke due to its characteristic cooling effects on the mouth and throat. Some cigarettes use menthol in greater quantities as a flavoring additive and market and advertise these brands as "menthol" cigarettes.

MATS 2010 introduced a broad and simple measure of menthol cigarette use. It did not seek to quantify the amount or frequency of menthol cigarette use, or to characterize smokers' mixed use of menthol and non-menthol cigarettes. Rather, it sought to identify each smoker's usual cigarette brand as menthol or non-menthol. MATS 2014 continues this measure.

Survey Question

- Is your usual cigarette brand menthol or non-menthol?

Table 2-15 shows the percentage of smokers whose regular brand is menthol, overall and for the standard demographic subgroups. Overall, 25.1±3.4 percent of smokers usually smoke menthol cigarettes. The highest use by age is 31.6±11.4 percent of the 18-24 year olds, closely followed by the 29.2±5.5 percent of the 25-44 year olds. A greater percentage of women than men regularly smoke menthol cigarettes (29.2±5.2 percent vs. 21.9±4.3 percent, respectively). The highest use by educational level is 27.2±5.5 percent of those with some college, with nearly the same percentage among those whose highest level of education is a high school degree (26.1±5.5 percent). The highest use by income level is 30.1±5.6 percent among the lowest income group. Across all the subgroups, the only statistically significant difference occurs between 25-44 year olds and those 65 years old or older (29.2±5.5 percent vs. 15.0±7.2 percent, respectively).

Table 2-15. Usual cigarette brand is menthol or non-menthol among current smokers, by selected demographic characteristics

Characteristics	Menthol	Non-menthol	No usual brand	Row Total
	%	%	%	%
Overall	**25.1** ± 3.4	**74.5** ± 3.4	**0.5** ± 0.4	**100**
Age				
18 to 24	**31.6** ± 11.4	**68.2** ± 11.4	**0.2** ± 0.3	**100**
25 to 44	**29.2** ± 5.5	**70.5** ± 5.5	**0.3** ± 0.3	**100**
45 to 64	**19.3** ± 4.5	**79.9** ± 4.6	**0.8** ± 1.0	**100**
65 or older	**15.0** ± 7.2	**84.6** ± 7.2	**0.4** ± 0.5	**100**
Gender				
Female	**29.2** ± 5.2	**70.4** ± 5.2	**0.4** ± 0.5	**100**
Male	**21.9** ± 4.3	**77.6** ± 4.4	**0.5** ± 0.6	**100**
Education				
Less than high school	**23.7** ± 10.0	**76.3** ± 10.1	**0.1** ± 0.2	**100**
High school graduate/GED	**26.1** ± 5.5	**72.9** ± 5.6	**1.0** ± 1.0	**100**
Some college or technical school	**27.2** ± 5.6	**72.6** ± 5.6	**0.2** ± 0.3	**100**
College graduate or beyond	**16.0** ± 6.3	**83.8** ± 6.3	**0.2** ± 0.4	**100**
Household income				
$35,000 or less	**30.1** ± 5.6	**69.2** ± 5.6	**0.7** ± 0.9	**100**
$35,001 to $50,000	**23.1** ± 8.7	**76.9** ± 8.7	**0.0** ± 0.0	**100**
$50,001 to $75,000	**21.2** ± 8.2	**78.3** ± 8.2	**0.5** ± 0.8	**100**
$75,001 or more	**21.5** ± 7.0	**78.4** ± 7.0	**0.1** ± 0.2	**100**

Source: Minnesota Adult Tobacco Survey, 2014

2.3.3 Individual Behavioral Characteristics of Smokers 2010 to 2014

Smoking Intensity

As noted in section 2.3.2, a key measure of smoking intensity is the number of cigarettes smoked per day. As shown in Table 2-16, there was little change from 2010 to 2014 in the average number of cigarettes per day smoked by Minnesota adult smokers. The overall average went down very slightly, from 11.7±07 cigarettes to 11.5±0.6 cigarettes, but the difference is not statistically significant. For the various demographic subgroups, there were small decreases or increases in the average number of cigarettes smoked per day, but there is no discernable pattern in the changes, and none of the differences from 2010 to 2014 are significant for any of the subgroups.

Table 2-16. Mean cigarettes smoked per day (averaged across past 30 days) for current smokers, from 2010 to 2014, by selected demographic characteristics

Characteristics	2010	2014	Change from 2010 to 2014
Overall	**11.7** ± 0.7	**11.5** ± 0.6	**-0.3**
Age			
18 to 24	**8.7** ± 1.4	**7.6** ± 1.6	**-1.1**
25 to 44	**11.5** ± 1.1	**10.6** ± 0.9	**-0.9**
45 to 64	**13.5** ± 1.2	**13.6** ± 1.0	**0.1**
65 or older	**13.6** ± 1.8	**14.2** ± 2.0	**0.6**
Gender			
Female	**10.7** ± 0.9	**10.2** ± 0.7	**-0.5**
Male	**12.6** ± 1.0	**12.5** ± 0.9	**-0.1**
Education			
Less than high school	**14.6** ± 2.1	**13.0** ± 2.2	**-1.6**
High school graduate/GED	**12.0** ± 1.3	**12.5** ± 1.0	**0.5**
Some college or technical school	**11.8** ± 0.9	**10.7** ± 0.9	**-1.0**
College graduate or beyond	**7.4** ± 1.2	**8.5** ± 1.4	**1.1**

Hypothesis: The mean of cigarettes smoked per day will decline from 2010 to 2014.

Source: Minnesota Adult Tobacco Surveys, 2010 and 2014

From 2010 to 2014, there was little change in the percentages of smokers falling into the five categories of cigarettes smoked per day (Table 2-17), all within the range of one percentage point or smaller. The two lower categories (1 cigarette or less, 2-5 cigarettes) both increased slightly and the three higher categories all decreased slightly. Taken as a whole, this pattern supports the slightly downward trend observed in the mean number of cigarettes smoked per day in the overall adult smoking population, a desirable phenomenon.

Table 2-17. Smoking intensity and time to first cigarette after waking, among smokers from 1999 to 2014

Characteristics	1999	2003	2007	2010	2014	Change from 2010 to 2014
	%	%	%	%	%	
Smoking intensity						
1 cig or less	**10.8** ± 2.6	**10.9** ± 2.4	**8.4** ± 2.0	**11.1** ± 2.4	**11.8** ± 2.6	**0.6**
2-5 cigs	**16.3** ± 3.4	**13.3** ± 2.7	**14.4** ± 3.1	**16.1** ± 3.2	**17.1** ± 2.9	**1.0**
6-10 cigs	**23.8** ± 4.1	**22.8** ± 4.0	**26.3** ± 4.1	**29.8** ± 3.8	**29.2** ± 3.5	**-0.5**
11-20 cigs	**34.8** ± 4.0	**40.8** ± 4.4	**40.0** ± 4.7	**36.3** ± 4.0	**36.2** ± 3.7	**-0.1**
21+ cigs	**14.5** ± 3.1	**12.4** ± 3.1	**11.0** ± 2.8	**6.8** ± 2.0	**5.7** ± 1.6	**-1.1**
Time to first cigarette						
30 minutes or less	**46.8** ± 4.4	**47.5** ± 4.5	**46.2** ± 4.7	**44.8** ± 4.1	**48.2** ± 3.8	**3.4**
More than 30 minutes	**53.2** ± 4.4	**52.5** ± 4.5	**53.8** ± 4.7	**55.2** ± 4.1	**51.8** ± 3.8	**-3.4**

Hypotheses: Smoking Intensity will decline from 2010 to 2014; the percentage of smokers smoking their first cigarette 30 minutes or less after waking will decline from 2010 to 2014; the percentage of smokers smoking their first cigarette more than 30 minutes after waking will increase from 2010 to 2014.

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010 and 2014

Time to First Cigarette after Waking

The percentage of smokers who smoke their first cigarette within 30 minutes of waking increased by 3.4 percentage points between 2010 and 2014, but this is not statistically significant (Table 2-17). However, it is statistically significant when applying a two-tailed test. The trend for this measure of addiction in Minnesota's adult smokers has been quite stable since 1999, with small changes up and down over the years. The percentages ranged between a low of 44.8±4.1 percent and a high of 48.2±3.8 percent; interestingly, these two extremes were found in the two most recent MATS.

Menthol Cigarette Smoking

The percentage of current cigarette smokers whose usual cigarette brand is menthol has been stable between 2010 and 2014. In 2010, the usual brand of 22.0±3.6 percent of Minnesotan adult current smokers was menthol, compared to 25.1±3.4 percent in 2014, a difference that is not statistically significant.

2.4 Influences of Social Environment on Smoking Behavior

This section explores personal social environment and its possible influence on smoking behavior.

Living with Smokers

Living with a smoker lends social support for one's own smoking behaviors by supporting the idea that smoking is normal and by creating a context where smoking is acceptable. Living with a smoker is a predictor of one's own smoking status, motivation for quitting and potential success in quitting.[5]

Living with a Smoker

Survey Question

- Not including yourself, how many of the adults who live in your household smoke cigarettes, cigars or pipes?

Nearly 18 percent (17.8±1.1 percent) of Minnesota adults live with a smoker (Table 2-18). Current smokers (46.3±3.8 percent) are far more likely to live with a smoker than never smokers (12.1±1.3 percent) or former smokers (15.3±2.0 percent). This statistically significant relationship demonstrates the likely role of the home environment in supporting smoking behavior.

Young adults (25.7±4.0 percent) are also more likely to live with a smoker than 25-44 year olds (19.0±2.0 percent), 45-64 year olds (18.2±1.8 percent) and those 65 or older (9.1±1.7 percent). All of the differences between the youngest adults and all other age groups, and between the oldest adults and all other age groups are statistically significant.

Those with college degrees are less likely to live with a smoker (9.8±1.4 percent) than those with less than a high school degree (21.5±5.2 percent), those with only a high school degree (22.9±2.4 percent), and those with some college (20.2±2.0 percent). All of these differences between college graduates and the other educational levels are statistically significant. A similar pattern emerges for the income level subgroups: Those with household incomes above $75,000 are less likely to live with a smoker (14.1±1.7 percent) than those with incomes of $35,000 or less (22.2±2.5 percent), $35,001 to $50,000 (21.4±3.4 percent) and $50,001to $75,000 (18.8±2.8 percent). All of these differences between the highest income group and the other income levels are statistically significant.

Table 2-18. Living with a smoker, by selected demographic characteristics and smoking status

Characteristics	Lives with a smoker
	%
Overall	**17.8** ± 1.1
Age	
18 to 24	**25.7** ± 4.0
25 to 44	**19.0** ± 2.0
45 to 64	**18.2** ± 1.8
65 or older	**9.1** ± 1.7
Gender	
Female	**18.0** ± 1.6
Male	**17.6** ± 1.6
Education	
Less than high school	**21.5** ± 5.2
High school graduate/GED	**22.9** ± 2.4
Some college or technical school	**20.2** ± 2.0
College graduate or beyond	**9.8** ± 1.4
Household income	
$35,000 or less	**22.2** ± 2.5
$35,001 to $50,000	**21.4** ± 3.4
$50,001 to $75,000	**18.8** ± 2.8
$75,001 or more	**14.1** ± 1.7
Smoking Status	
Never smokers	**12.1** ± 1.3
Current Smokers	**46.3** ± 3.8
Former Smokers	**15.3** ± 2.0

Source: Minnesota Adult Tobacco Survey, 2014

2.5 Influences of Social Environment on Smoking Behavior, 1999-2014

Living with a Smoker

MATS also examined the trends from 1999 to 2014 in living with a smoker. There was no change from 2010 to 2014, with the percentage of adults who live with a smoker holding steady at 17.8±1.1 percent in 2014, compared to 17.8±1.3 percent in 2010.

2.6 Key Findings

Some of the most important findings from this chapter are summarized below. All differences presented in this summary are statistically significant at the 0.05 confidence level unless otherwise noted.

Key Smoking Prevalence Findings for 2014

- About 580,000 adult Minnesotans, or 14.4±1.0 percent, are current smokers. Adults under the age of 45, those with lower educational levels and those with lower household income levels are more likely to be smokers.
- Overall, 19.9±3.6 percent of young adults 18-24 years old have smoked in the past 30 days.
- About 1,119,000 adult Minnesotans, or 27.8±1.2 percent, are former smokers, and the quit ratio among those who have ever smoked is 65.9±2.0 percent.
- About 2,324,000 adult Minnesotans, or 57.8±1.4 percent, have not smoked 100 cigarettes in their lifetime and are considered never smokers. Younger people, women, those with higher educational levels, and those with higher household income levels are more likely to be never smokers.
- Minnesota adult smokers tend to have lower educational levels and lower household incomes than former smokers or never smokers.
- Compared with nonsmokers, smokers are in poorer health.
- Minnesota's adult smokers smoked an average of 11.5±0.6 cigarettes per day over the past 30 days.
- Overall, 25.1±3.4 percent of smokers usually smoke menthol cigarettes.
- Slightly less than 18 percent (17.8±1.1 percent) of Minnesotans live with a smoker. Current smokers (46.3±3.8 percent) are far more likely to live with a smoker than never smokers (12.1±1.3 percent) or former smokers (15.3±2.0 percent).

Key Smoking Prevalence Findings Over Time

- Between 2010 and 2014, the percentage of adults in Minnesota who are current smokers declined from 16.1±1.2 percent to 14.4±1.0 percent, a statistically significant change.

- Between 2010 and 2014, the percentage of never smokers increased slightly by 1.2 percentage points, from 56.6±1.5 percent to 57.8±1.4 percent. It is encouraging that the never smoking rate among 18-24 year olds showed a large and statistically significant increase of 6.3 percentage points, to 78.3±3.7 percent.

- Between 2010 and 2014 there was a small increase of 0.5 percentage point in the percentage of Minnesota adults who are former smokers, from 27.3±1.3 percent to 27.8±1.2 percent, but the change is not statistically significant. Further, the quit ratio among those who have ever smoked increased by 2.9 percentage points, from 62.9±2.2 percent to 65.9±2.0 percent.

- From 2010 to 2014, young adult smoking (defined as smoking during the past 30 days) showed a large and statistically significant decline of 8.0 percentage points, from 27.8±4.4 percent to 19.9±3.6 percent.

- There was little change from 2010 to 2014 in the average number of cigarettes per day smoked by Minnesota adult smokers. The overall average went down very slightly, from 11.7±07 cigarettes to 11.5±0.6 cigarettes, but the difference is not statistically significant.

- The percentage of current cigarette smokers whose usual cigarette brand is menthol has been stable between 2010 and 2014, at approximately one quarter of adult smokers.

Sources

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4. U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Young People: A Report of the Surgeon General.* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 1994.

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3. Use of Non-Cigarette Products

3.1 Introduction

MATS monitors the use of all commonly available tobacco products in Minnesota. Chapter 2 focused on cigarettes. This chapter examines the use of tobacco in general and of specific forms of tobacco other than cigarettes.

3.2 Use of Cigarette and Non-Cigarette Products

Another way to look at the prevalence of tobacco use is to consider how many adults use tobacco in *any* form. This measure provides a clear picture of the full extent of tobacco use among adult Minnesotans. In this analysis, e-cigarettes are not counted as tobacco product.

Current Use of Tobacco

For MATS, current use of tobacco is defined as current use of any tobacco product including cigarettes, pipes, cigars/cigarillos/little filtered cigars, hookah, and smokeless tobacco including chewing tobacco, snuff or snus.

- **For pipes, cigars (including cigarillos, little filtered cigars) and smokeless tobacco (chewing tobacco, snuff or snus):** A **current user** has used the product at least 20 times in his or her life and has also used it at least one day in the past 30 days.
- **For hookah:** A **current user** has used a hookah at least once in the past 30 days.

Current Use of Non-cigarette Tobacco

For MATS, current use of non-cigarette tobacco is defined as current use of pipe, cigars/cigarillos/little filtered cigars, hookah or smokeless tobacco including chewing tobacco, snuff or snus

Current Use of Combustible Tobacco
For MATS, current use of combustible tobacco is defined as current use of cigarettes, pipes, cigars or hookah.

Overall, 19.2±1.1 percent of Minnesota adults currently use some form of tobacco, including cigarettes, pipes, cigars, hookah, and any form of smokeless tobacco, and 20.7±1.1 percent currently use some form of tobacco or e-cigarettes (Table 3-1). As previously mentioned in Chapter 2, 14.4±1.0 percent of Minnesota adults are current cigarette smokers. Further, 7.6±0.7 percent of all Minnesota adults use non-cigarette tobacco products. Table 3-1 shows that 7.8±1.4 percent of former smokers and 4.4±0.7 percent of never smokers currently use some form of tobacco other than cigarettes.

Table 3-1. Current use of cigarette and non-cigarette products, by selected demographic characteristics

Characteristics	Current use of any tobacco product or e-cigarettes	Current use of any tobacco product	Current use of cigarettes	Current use of non-cigarette tobacco products
	%	%	%	%
Overall	**20.7** ± 1.1	**19.2** ± 1.1	**14.4** ± 1.0	**7.6** ± 0.7
Age				
18 to 24	**28.4** ± 4.0	**24.9** ± 3.8	**15.3** ± 3.3	**15.8** ± 3.1
25 to 44	**26.7** ± 2.2	**24.7** ± 2.2	**18.7** ± 2.0	**10.1** ± 1.5
45 to 64	**18.6** ± 1.7	**17.6** ± 1.7	**14.2** ± 1.5	**5.0** ± 1.0
65 or older	**7.4** ± 1.3	**7.2** ± 1.3	**5.4** ± 1.1	**2.1** ± 0.7
Gender				
Female	**14.4** ± 1.4	**13.2** ± 1.3	**12.4** ± 1.3	**1.6** ± 0.5
Male	**27.3** ± 1.8	**25.5** ± 1.7	**16.5** ± 1.5	**13.8** ± 1.4
Education				
Less than high school	**34.6** ± 5.9	**33.2** ± 5.8	**28.6** ± 5.6	**10.1** ± 3.8
High school graduate/GED	**26.4** ± 2.4	**24.8** ± 2.4	**20.1** ± 2.2	**8.9** ± 1.6
Some college or technical school	**23.4** ± 2.0	**21.3** ± 1.9	**15.6** ± 1.7	**8.6** ± 1.3
College graduate or beyond	**9.8** ± 1.3	**9.0** ± 1.2	**5.1** ± 0.9	**4.7** ± 0.9
Household income				
$35,000 or less	**30.1** ± 2.7	**28.5** ± 2.6	**24.4** ± 2.5	**7.9** ± 1.7
$35,001 to $50,000	**24.4** ± 3.3	**21.9** ± 3.2	**15.9** ± 2.9	**10.0** ± 2.3
$50,001 to $75,000	**22.2** ± 2.8	**20.3** ± 2.7	**14.7** ± 2.5	**8.6** ± 1.8
$75,001 or more	**14.9** ± 1.7	**13.8** ± 1.6	**8.7** ± 1.4	**6.7** ± 1.2
Cigarette Smoking Status				
Never smokers	**5.1** ± 0.8	**4.4** ± 0.7	**NA**	**4.4** ± 0.7
Current Smokers	**100.0** ± 0.0	**100.0** ± 0.0	**100.0** ± 0.0	**19.9** ± 3.2
Former Smokers	**11.8** ± 1.7	**7.8** ± 1.4	**NA**	**7.8** ± 1.4

Source: Minnesota Adult Tobacco Survey, 2014

Current use of any tobacco or e-cigarettes declines significantly with age, from 28.4±4.0 percent of the 18-24 year olds to 7.4±1.3 percent of those 65 or older. Men are significantly more likely to use any tobacco product or e-cigarettes compared to women (27.3±1.8 percent for men versus 14.4±1.4 percent for women). Among any tobacco or e-cigarettes users, those with a college degree or more are less likely to be current users (9.8±1.3 percent) compared to those with some college (23.4±2.0 percent), high school (26.4±2.4 percent) or less than high school degrees (34.6±5.9 percent). These differences are statistically significant. Similar to education, those in the highest income category

($75,001 or more) are significantly less likely to be current users of any tobacco product or e-cigarettes compared to all other income levels.

The demographic patterns for use of any tobacco product are similar to those for current cigarette smoking because cigarette smokers constitute the largest percentage of all tobacco users. Use of any tobacco product declines across the age groups, from 24.9±3.8 percent of the 18-24 year olds to 7.2±1.3 percent of those 65 or older. The oldest age group is the least likely to use any tobacco product compared to any other age group and the differences are statistically significant. Similar trends are observed for current use of cigarettes and non-cigarette products. Young adults (18-24 years old) use cigarettes (15.3±3.3 percent) and non-cigarette tobacco products (15.8±3.1 percent) at higher rates compared to those 65 or older (5.4±1.1 for cigarettes and 2.1±0.7 for non-cigarette tobacco products).

Compared to women, men are more likely to use any tobacco product (25.5±1.7 percent for men versus 13.2±1.3 percent for women). The difference in percentages of men and women who are cigarette smokers (16.5±1.5 percent and 12.4±1.3 percent) becomes much wider for use of non-cigarette tobacco (13.8±1.4 percent and 1.6±0.5 percent). These differences are statistically significant in all four user groups, as shown in Table 3-1.

Tobacco use rates tend to decline as education level increases. Among tobacco users of any form, the differences are more prominent among those with college degrees compared to other educational groups. Those with a college degree or more are less likely to be current tobacco users (9.0±1.2 percent) compared to those with some college (21.3±1.9 percent), high school (24.8±2.4 percent) or less than high school degrees (33.2±5.8 percent) and these results are statistically significant. Similarly, those with college degrees or more are likely to use non-cigarette tobacco at lower rates (4.7±0.9 percent) compared to those with some college (8.6±1.3 percent), high school (8.9±1.6 percent) or less than high school degree (10.1±3.8 percent); these differences are statistically significant. Similar to education, those within the highest income range ($75,001 or more) are less likely to be current users of any tobacco product compared to all other income levels. These differences are statistically significant.

Table 3-2 presents statistics for current use of combusted tobacco, e-cigarettes, and smokeless tobacco by all Minnesota adults. Overall, 16.9±1.1 percent of adult Minnesotans are current smokers of combustible tobacco products such as cigarettes, pipes, cigars or hookah. Similar to current tobacco use, current use of combustible tobacco products steadily declines across age groups, from 22.5±3.7 percent of the 18-24 year olds to 6.6±1.2 percent of those 65 or older. The differences between the oldest age group and all the other age groups are statistically significant. There is also a significant difference in the percentages of men and women who are current users of combustible tobacco, 20.8±1.7 percent of men compared to 13.1±1.3 percent of women.

Current use of combustible tobacco products also gradually decreases with education level, ranging from 7.3±1.1 percent of those with college degrees up to 31.2±5.7 percent of those with less than high school degrees being current users. All differences between education levels are statistically significant. Across the income groups, the lowest percentage of current combustible tobacco use occurs among the highest income group at 11.1±1.5 percent. Conversely, the highest percentage of current combustible tobacco use occurs among the lowest income category at 27.0±2.6 percent. Both are statistically significantly different from all other income groups.

Current use of e-cigarettes is reported by 5.9±0.7 percent of Minnesota adults. Young adults 18-24 years old (12.8±3.0 percent) use e-cigarettes at higher rates than those 25 and older, a statistically significant difference. Use of e-cigarettes is more common among current cigarette smokers than nonsmokers.

Current use of smokeless tobacco among Minnesota adults is lower than current e-cigarette use (3.6±0.5 percent compared to 5.9±0.7 percent). Adults 25-44 years old (6.2±1.2 percent) use smokeless tobacco at higher rates compared to 45-64 year olds and 65 or older age groups, and smokeless tobacco is almost exclusively used by men (7.2±1.0 percent compared to 0.2±0.1 among women). These differences are statistically significant.

Table 3-2. Current use of combusted tobacco, e-cigarettes, and smokeless tobacco, by selected demographic characteristics

Characteristics	Current use of any combusted tobacco product	Current use of e-cigarettes	Current use of smokeless tobacco
	%	%	%
Overall	**16.9** ± 1.1	**5.9** ± 0.7	**3.6** ± 0.5
Age			
18 to 24	**22.5** ± 3.7	**12.8** ± 3.0	**4.9** ± 1.7
25 to 44	**20.7** ± 2.0	**7.8** ± 1.4	**6.2** ± 1.2
45 to 64	**16.2** ± 1.7	**4.3** ± 1.0	**2.1** ± 0.6
65 or older	**6.6** ± 1.2	**0.8** ± 0.4	**0.7** ± 0.4
Gender			
Female	**13.1** ± 1.3	**5.0** ± 0.9	**0.2** ± 0.1
Male	**20.8** ± 1.7	**7.0** ± 1.1	**7.2** ± 1.0
Education			
Less than high school	**31.2** ± 5.7	**9.6** ± 3.9	**4.1** ± 2.4
High school graduate/GED	**22.0** ± 2.3	**7.1** ± 1.4	**4.7** ± 1.2
Some college or technical school	**18.7** ± 1.9	**7.3** ± 1.3	**4.0** ± 0.9
College graduate or beyond	**7.3** ± 1.1	**2.5** ± 0.7	**2.1** ± 0.6
Household income			
$35,000 or less	**27.0** ± 2.6	**7.8** ± 1.6	**3.2** ± 1.1
$35,001 to $50,000	**19.3** ± 3.1	**8.3** ± 2.3	**4.7** ± 1.5
$50,001 to $75,000	**17.1** ± 2.6	**6.2** ± 1.8	**4.2** ± 1.2
$75,001 or more	**11.1** ± 1.5	**4.2** ± 1.0	**3.6** ± 0.9
Cigarette Smoking Status			
Never smokers	**2.6** ± 0.6	**1.2** ± 0.4	**2.0** ± 0.5
Current Smokers	**100.0** ± 0.0	**27.3** ± 3.5	**7.4** ± 2.0
Former Smokers	**3.2** ± 0.9	**4.8** ± 1.2	**5.0** ± 1.1

Source: Minnesota Adult Tobacco Survey, 2014

3.3 Use of Non-Cigarette Tobacco Products

In 2014, 7.6±0.8 percent of Minnesota adults were current users of one or more non-cigarette tobacco products (Table 3-3). This includes adults who use only non-cigarette products and cigarette smokers who also use other tobacco products. MATS has changed its survey questions over time to reflect changes in current tobacco products.

Non-Cigarette Tobacco Use Status

Survey Questions

- Have you [smoked tobacco in a pipe / smoked cigars, cigarillos or little filtered cigars that look like cigarettes/ used any kind of smokeless tobacco] at least 20 times in your life?
- Have you ever used a hookah water pipe?
- During the past 30 days, how many days did you [smoke tobacco in a pipe / smoke cigars, cigarillos or little filtered cigars that look like cigarettes / use a hookah water pipe / use any kind of smokeless tobacco]?

MATS 2014 continued to obtain data about pipes, cigars, hookah and smokeless tobacco.

Table 3-3 presents statistics for the use of non-cigarette tobacco, by all adult Minnesotans and by current smokers. The only important variation in the use of these forms of tobacco occurs among the age groups and between men and women; accordingly, Table 3-3 breaks out the statistics for all Minnesota adults by age and gender. Use of non-cigarette tobacco declines steadily across the age groups, from 15.8±3.1 percent of the 18-24 year olds to 2.2±0.7 percent of those 65 or older. This appears to be a strong age trend, since the differences between all age groups are statistically significant. Notably, the percentage of young adults under 25 who are current users of non-cigarette tobacco is more than 3 times that of the 45-64 and 65 or older age groups. Use of non-cigarette tobacco occurs almost exclusively among men, 13.8±1.4 percent of whom use some such form of tobacco, compared to 1.6±0.5 percent of women.

Minnesota adults use pipes, cigars, hookah and smokeless tobacco at very low rates, and these are nearly exclusively used by men, except hookah. Hookah use varies little by gender and age, except for distinctly higher usage by young adults. The 7.9±2.4 percent of young adults who are current hookah users represents nearly all such users.

Use of Non-Cigarette Tobacco Products Among Current Cigarette Smokers

Typically, the use of non-cigarette tobacco products is more common among cigarette smokers than nonsmokers (Table 3-3). Possible explanations for this tendency include using smokeless tobacco when smoking is not possible or using the alternative forms in hopes of reducing or quitting cigarettes. Caution is advised in using the statistics for current smokers' use of the individual non-cigarette tobacco products in Table 3-3, since the sample size is small, prevalence rates are low, and the confidence intervals are large relative to the percentages.

Table 3-3. Current use of smokeless tobacco, pipe, cigars or hookah, by all Minnesota adults and by current smokers, by age and gender

Population	Any non-cigarette tobacco use	Smokeless tobacco use	Pipe use	Cigar use	Hookah use
	%	%	%	%	%
Minnesota adults					
Overall	**7.6** ± 0.8 ☐	**3.6** ± 0.5 ☐	**0.7** ± 0.2	**3.0** ± 0.5	**1.4** ± 0.4
Age					
18 to 24	**15.8** ± 3.1 ☐	**4.9** ± 1.7 ☐	**1.6** ± 1.1	**6.7** ± 2.7	**7.9** ± 2.4
25 to 44	**10.1** ± 1.5 ☐	**6.2** ± 1.2 ☐	**0.6** ± 0.3	**3.1** ± 0.9	**1.3** ± 0.6
45 to 64	**5.0** ± 1.0 ☐	**2.1** ± 0.6	**0.7** ± 0.4	**2.5** ± 0.8 ☐	**0.0** ± 0.1
65 or older	**2.2** ± 0.7 ☐	**0.7** ± 0.4 ☐	**0.5** ± 0.3	**1.1** ± 0.5	**0.0** ± 0.1
Gender					
Female	**1.6** ± 0.5 ☐	**0.2** ± 0.1 ☐	**0.2** ± 0.1	**0.5** ± 0.3	**1.0** ± 0.5
Male	**13.8** ± 1.4 ☐	**7.2** ± 1.0 ☐	**1.3** ± 0.5	**5.5** ± 0.9	**1.9** ± 0.6
Current smokers					
Overall	**19.9** ± 3.2	**7.4** ± 2.0	**2.6** ± 1.2	**9.5** ± 2.3	**4.6** ± 1.9
Age					
18 to 24	**41.2** ± 11.7	**12.3** ± 6.9	**8.3** ± 6.5	**22.9** ± 9.7	**20.8** ± 10.4
25 to 44	**22.1** ± 5.0	**10.0** ± 3.6	**1.7** ± 1.3	**8.5** ± 3.4	**4.2** ± 2.6
45 to 64	**11.7** ± 4.1	**3.5** ± 2.0	**2.1** ± 1.8	**6.7** ± 3.3	**0.0** ± 0.0
65 or older	**7.2** ± 5.6	**1.3** ± 1.8	**0.6** ± 1.2	**5.4** ± 5.2	**0.5** ± 0.9
Gender					
Female	**7.3** ± 3.2	**0.5** ± 0.4	**1.0** ± 1.1	**3.1** ± 1.9	**3.3** ± 2.5
Male	**29.8** ± 4.9	**12.9** ± 3.5	**3.8** ± 2.0	**14.5** ± 3.8	**5.6** ± 2.7

Source: Minnesota Adult Tobacco Survey, 2014

Overall, almost 20 percent of cigarette smokers also use some other form of tobacco, which is more than double the prevalence among all Minnesota adults (7.6±0.8 percent). Statistically significant differences among the demographic groups occur between men and women and among various age groups. While 29.8±4.9 percent of male smokers use some other form of tobacco, just 7.3±3.2 percent of female smokers do so. The youngest age group is considerably more likely to use non-cigarette tobacco than any other age group, and the oldest age group is less likely to use it than those younger than 45 years of age; all of these differences are statistically significant. Aside from demographic differences, the high absolute percentage of the 18-to-24 year old smokers who are users of non-cigarette tobacco stands out, at 41.2±11.7 percent.

Among current cigarette smokers, 2.6±1.2 percent also smoke pipes. Smokers use cigars at a rate approximately three times that of the overall population, 9.5±2.3 percent vs. 3.0±0.5 percent, a statistically significant difference. The 7.4±2.0 percent of cigarette smokers who use smokeless tobacco is about double the 3.6±0.5 percent prevalence for all Minnesota adults, also a statistically significant difference. As with other tobacco forms, hookah use is higher among cigarette smokers (4.6±1.9 percent) than in the general population (1.4±0.4); this difference is also statistically significant (Table 3-3).

Among smokers, the same age and gender patterns appear as in the general population. The higher use of smokeless tobacco and cigars among male smokers compared to female smokers is consistent with earlier reported results. The youngest age group is considerably more likely to use cigars and hookah than any other age group.

Minnesota Adults' Use of E-cigarettes

Electronic cigarettes:

An electronic cigarette (or e-cigarette) is a battery-powered device that provides inhaled doses of a vaporized nicotine solution. In addition to nicotine delivery, this vapor may also provide a flavor and physical sensation similar to that of inhaled tobacco smoke, although no smoke or combustion is actually involved in its operation. An e-cigarette typically takes the form of an elongated tube, typically designed to resemble a real smoking product, most often a cigarette.

E-cigarettes can be considered an alternative nicotine product. Because they do not contain tobacco, MATS does not count their use when determining overall tobacco use, non-cigarette tobacco use, or smokeless tobacco use.

- An ever user of an e-cigarette has used it at least once in their lifetime.

A **current user** of an e-cigarette has used it at least one day in the past 30 days.

Survey Questions

- Have you ever used an electronic cigarette even just one time in your entire life?
- During the past 30 days, on how many days did you use e-cigarettes?

Reasons to use e-cigarettes: MATS 2014 examined reasons to use e-cigarettes among Minnesotans who have ever used an e-cigarette.

Survey Questions

For each, please tell me whether or not it's a reason {you have used/you use} e-cigarettes.

- {You have used/You use} e-cigarettes to quit other tobacco products
- {You have used/You use} e-cigarettes to cut down on other tobacco products
- {You have used/You use} them because they are affordable
- {You have used/You use} them because they come in menthol flavor
- {You have used/You use} them because they come in flavors other than menthol
- {You have used/You use} them in places other tobacco products are not allowed
- {You have used/You use} them because you were curious about e-cigarettes
- {You have used/You use} them because you think they might be less harmful than other tobacco products
- {You have used/You use} e-cigarettes for some other reason

Use of flavored e-cigarettes: E-cigarettes are sold in a variety of flavors. MATS 2014 introduced two broad measures of flavor use, one regarding use of flavor while using e-cigarette for the first time and other related to regular use of flavored e-cigarettes.

Survey Question

- When you first used e-cigarettes, did you use e-cigarettes flavored to taste like menthol, spice, candy, fruit, alcohol, or any other flavor?
- Which of the following describes your usual e-cigarette? Is it….
- Regular flavor
- Menthol
- Some other flavor, or
- You don't have a usual flavor?

Table 3-4 shows statistics for ever use and past 30-day use of e-cigarettes by all Minnesota adults and by current smokers. Ever use of e-cigarettes is reported by 17.8±1.1 percent of Minnesota adults and appears to decline uniformly across age groups. Young adults 18-24 years old (33.1±4.1 percent) and males (21.1±1.7 percent) have ever used e-cigarettes at higher rates than their complement groups (those 25 and older and females, respectively), differences that are statistically significant.

Past 30-day or current use of e-cigarettes is reported by 5.9±0.7 percent of Minnesota adults. Similar to ever use, young adults 18-24 years old (12.8±3.0 percent) have higher rates of past 30-day use than those 25 and older, the difference being statistically significant. Among past 30-day users, mean number of days of e-cigarette use in the past 30 days is 10.1±1.3 days. In addition, daily use of e-cigarettes is reported by 18.0±4.5 percent of all current e-cigarette users and 3.4±1.5 percent of the current cigarette smokers.

Ever use of e-cigarettes is more common among current cigarette smokers than the general population, 70.0±3.3 percent vs. 17.8±1.1 percent, a statistically significant difference. Ever use of e-cigarettes among current cigarette smokers declines across the age groups, from 89.8±6.2 percent of the 18-24 year old smokers to 39.3±10.9 percent of those 65 or older. The differences across all the age groups are statistically significant. As with ever use, past 30-day e-cigarette use among current cigarette smokers is more than four times the prevalence among all adult Minnesotans (27.3±3.5 percent vs. 5.9±0.7 percent), a difference that is statistically significant. A statistically significant difference in past 30-day use among current cigarette smokers occurs between the youngest (41.2±12.2 percent) and the oldest age groups (10.1±6.6 percent). On average,

cigarette smokers who are also past 30-day e-cigarette users have used e-cigarettes on 9.1±1.5 of the past 30 days.

Table 3-4. Ever use and past 30-day use of e-cigarettes, by all Minnesota adults and by current smokers, by age and gender

Population	E-cigarette Ever Use	E-cigarette past 30-day use
	%	%
Minnesota adults		
Overall	**17.8** ± 1.1	**5.9** ± 0.7
Age		
18 to 24	**33.1** ± 4.2	**12.8** ± 3.0
25 to 44	**24.3** ± 2.1	**7.8** ± 1.4
45 to 64	**12.7** ± 1.5	**4.3** ± 1.0
65 or older	**4.1** ± 1.1	**0.8** ± 0.4
Gender		
Female	**14.5** ± 1.4	**5.0** ± 0.9
Male	**21.1** ± 1.7	**7.0** ± 1.1
Current smokers		
Overall	**70.0** ± 3.3	**27.3** ± 3.5
Age		
18 to 24	**89.8** ± 6.2	**41.2** ± 12.2
25 to 44	**76.0** ± 5.0	**28.8** ± 5.5
45 to 64	**60.8** ± 5.8	**23.4** ± 5.1
65 or older	**39.3** ± 10.9	**10.1** ± 6.6
Gender		
Female	**70.6** ± 4.8	**27.7** ± 5.3
Male	**69.6** ± 4.6	**26.9** ± 4.6

Source: Minnesota Adult Tobacco Survey, 2014

Overall, among past 30-day e-cigarette users, 65.8±5.7 percent are current cigarette smokers, 22.5±5.1 percent are former cigarette smokers and 11.7±3.5 percent are never cigarette smokers (Table 3-5). Among past 30-day e-cigarette users, current cigarette smokers are significantly less likely to be 65 or older in age (2.4±1.6 percent) compared to other age groups. A similar pattern is observed among former and never cigarette smokers, all differences being statistically significant.

Table 3-5. Selected demographic characteristics by cigarette smoking status, among past 30-day e-cigarette users

Characteristics	Current cigarette smoker	Former cigarette smoker	Never cigarette smoker
	%	%	%
Overall	**65.8** ± 5.7	**22.5** ± 5.1	**11.7** ± 3.5
Age			
18 to 24	**19.5** ± 6.6	**23.5** ± 11.4	**67.7** ± 15.4
25 to 44	**47.8** ± 7.6	**48.9** ± 12.5	**26.0** ± 14.5
45 to 64	**30.4** ± 6.6	**24.6** ± 10.3	**5.9** ± 7.1
65 or older	**2.4** ± 1.6	**3.1** ± 2.6	**0.4** ± 0.1
Total	**100**	**100**	**100**
Gender			
Female	**44.6** ± 7.6	**64.9** ± 11.9	**61.1** ± 16.4
Male	**55.4** ± 7.6	**35.1** ± 11.9	**39.0** ± 16.4
Total	**100**	**100**	**100**
Education			
Less than high school	**12.7** ± 5.8	**9.0** ± 8.2	**1.8** ± 2.7
High school graduate/GED	**35.1** ± 7.2	**25.8** ± 11.0	**34.1** ± 14.9
Some college or technical school	**41.0** ± 7.4	**50.6** ± 12.4	**45.7** ± 16.4
College graduate or beyond	**11.1** ± 4.1	**15.0** ± 7.5	**18.4** ± 11.3
Total	**100**	**100**	**100**
Household income			
$35,000 or less	**35.6** ± 7.6	**23.0** ± 10.8	**31.3** ± 11.4
$35,001 to $50,000	**16.3** ± 5.6	**21.6** ± 10.1	**24.6** ± 14.0
$50,001 to $75,000	**19.5** ± 6.6	**30.5** ± 13.3	**11.7** ± 8.0
$75,001 or more	**28.6** ± 7.5	**25.0** ± 10.7	**32.5** ± 14.8
Total	**100**	**100**	**100**

Source: Minnesota Adult Tobacco Survey, 2014

Among all e-cigarette users, curiosity is the most common reason given (78.2±2.9 percent) for using e-cigarettes and this is true across all age groups (Table 3-6). Adult Minnesotans who have ever used e-cigarettes also use them because of the perception of less harm associated with e-cigarettes compared to other tobacco products (51.2±3.5 percent), to cut down on other tobacco products (50.1±3.5 percent), to quit other tobacco products (45.7±3.5 percent), because they can be used in places where other tobacco products are prohibited (39.2±3.4 percent), because they come in various flavors other than menthol (33.2±3.4 percent), because they are affordable (31.0±3.2 percent), for some

other reason (22.0±3.0 percent) and because they come in menthol flavor (12.7±2.4 percent). Notably, a majority of 18-24 year old young adults (51.4±7.8 percent) use e-cigarettes because they come in flavors other than menthol.

Table 3-6. Reasons to use e-cigarettes, by all ever e-cigarette users and specific age groups

Reason	All e-cigarette users	18-24 year old e-cigarette users	25-44 year old e-cigarette users	45-64 year old e-cigarette users	65 year old and older e-cigarette users	25 year old and older e-cigarette users
	%	%	%	%	%	%
Curiosity	**78.2** ± 2.9	**80.3** ± 6.1	**79.8** ± 4.2	**74.0** ± 5.5	**73.4** ± 12.7	**77.5** ± 3.2
Because they might be less harmful than other tobacco products	**51.2** ± 3.5	**49.9** ± 7.9	**45.0** ± 5.1	**63.2** ± 6.4	**55.3** ± 14.8	**51.5** ± 3.9
To cut down on other tobacco products	**50.1** ± 3.5	**32.6** ± 7.3	**52.4** ± 5.2	**61.4** ± 6.3	**49.6** ± 14.5	**55.2** ± 3.9
To quit other tobacco products	**45.7** ± 3.5	**29.4** ± 7.2	**46.2** ± 5.1	**58.1** ± 6.4	**52.4** ± 14.5	**50.4** ± 3.9
Because they can be used in places other tobacco products are not allowed	**39.2** ± 3.4	**34.6** ± 7.3	**42.9** ± 5.1	**40.6** ± 6.3	**11.2** ± 7.2	**40.6** ± 3.9
Because they come in flavors other than menthol	**33.2** ± 3.4	**51.4** ± 7.8	**29.4** ± 4.7	**27.1** ± 6.2	**13.0** ± 8.6	**27.9** ± 3.6
Because they are affordable	**31.0** ± 3.2	**28.2** ± 7.1	**30.2** ± 4.8	**35.1** ± 6.2	**29.3** ± 12.9	**31.8** ± 3.7
Some other reason	**22.0** ± 3.0	**30.2** ± 7.1	**17.9** ± 4.1	**22.7** ± 5.6	**19.8** ± 10.9	**19.6** ± 3.2
Because they come in menthol flavor	**12.7** ± 2.4	**12.4** ± 5.0	**11.3** ± 3.3	**16.3** ± 4.8	**7.8** ± 5.9	**12.8** ± 2.6

Source: Minnesota Adult Tobacco Survey, 2014

Two thirds of past 30-day e-cigarette users (66.6±6.6 percent) report that their first e-cigarettes were flavored (Table 3-7). This is significantly higher among young adults compared to all other age groups. It is noteworthy that the percentage of 18-24 year old young adults who reported this is almost double (86.0±8.0 percent) the percentage of the oldest age group (43.3±26.0 percent).

The use of regular flavored e-cigarettes increases across age groups among past 30-day users. Adults 45-64 years old and those 65 or older are significantly more likely (39.5±10.9 percent and 52.0±25.2 percent respectively) to use regular flavored e-cigarettes compared to 18-24 year old young adults (7.8±6.3 percent). The trend is reversed in the case of having no usual flavor. Young adults 18-24 years old (56.8±11.3 percent) are significantly more likely to not have a usual flavor of e-cigarettes compared to adults 45-64 year old (28.6±11.0 percent) and those 65 or older (10.9±14.0 percent). There are no distinct differences in the use of flavored e-cigarettes by gender.

Table 3-7. Flavored e-cigarette use among past 30-day e-cigarette users, by age and gender

Population	First e-cigarettes were flavored	Usual e-cigarette flavor is			
		Regular flavor	Menthol flavor	Some other flavor	No usual flavor
	%	%	%	%	%
Overall	**66.6** ± 6.6	**22.0** ± 4.6	**10.0** ± 3.3	**28.2** ± 5.6	**39.9** ± 5.98
Age					
18 to 24	**86.0** ± 8.0	**7.8** ± 6.3	**6.5** ± 6.8	**28.9** ± 11.4	**56.8** ± 11.3
25 to 44	**66.3** ± 8.7	**18.5** ± 6.6	**10.1** ± 5.1	**33.2** ± 8.8	**38.3** ± 9.1
45 to 64	**49.8** ± 11.6	**39.5** ± 10.9	**12.9** ± 6.4	**19.1** ± 8.9	**28.6** ± 11.0
65 or older	**43.3** ± 26.0	**52.0** ± 25.2	**14.5** ± 11.0	**22.7** ± 30.8	**10.9** ± 14.0
Gender					
Female	**71.6** ± 7.7	**19.1** ± 5.8	**12.1** ± 5.1	**29.3** ± 9.0	**39.6** ± 9.4
Male	**62.9** ± 7.8	**24.0** ± 6.7	**8.5** ± 4.4	**27.4** ± 7.3	**40.1** ± 7.8

Source: Minnesota Adult Tobacco Survey, 2014

Among current cigarette smokers who have attempted to quit and former smokers who successfully quit in the past year, 45.3±5.4 percent used e-cigarettes as an aid in the quitting process (Table 3-8). The oldest adults (age 65 or older) are significantly less likely to use e-cigarettes to quit smoking cigarettes compared to all other age groups. There is no significant difference by gender. Among only current smokers with a quit attempt in the past 12 months, 45.4±6.2 percent used e-cigarettes to assist in quitting smoking.

Table 3-8. Use of e-cigarettes to assist in quitting cigarette smoking among smokers who attempted to quit and former smokers who successfully quit in the past year, by age and gender

Population	Used e-cigarettes to assist in quitting cigarette smoking %
Overall	**45.3** ± 5.4
Age	
18 to 24	**43.1** ± 14.0
25 to 44	**43.6** ± 7.8
45 to 64	**52.3** ± 9.3
65 or older	**7.4** ± 8.9
Gender	
Female	**45.7** ± 8.4
Male	**45.1** ± 7.1

Source: Minnesota Adult Tobacco Survey, 2014

3.4 Perceptions of Harm

3.4.1 Perceptions of Harm

Harm of Occasional Cigarette Use

Survey Question

- Do you believe there is any harm in having an occasional cigarette?

Three-quarters of all Minnesotans (74.8±1.2 percent) agree that smoking an occasional cigarette is harmful (Table 3-9). The perceived harmfulness of occasional smoking is higher among never smokers (80.7 percent) than among former smokers (73.3±2.3 percent), and higher among former smokers than current smokers (54.2±3.8 percent). All of these differences are statistically significant.

Table 3-9. Perceived harmfulness of smoking an occasional cigarette, by selected demographic characteristics and smoking status

Characteristics	Perceived harmful %
Overall	**74.8** ± 1.2
Age	
18 to 24	**74.6** ± 3.9
25 to 44	**72.9** ± 2.3
45 to 64	**75.4** ± 2.0
65 or older	**77.8** ± 2.3
Gender	
Female	**78.7** ± 1.6
Male	**70.9** ± 1.9
Education	
Less than high school	**64.1** ± 6.3
High school graduate/GED	**71.8** ± 2.6
Some college or technical school	**74.1** ± 2.1
College graduate or beyond	**80.7** ± 1.7
Household income	
$35,000 or less	**69.9** ± 2.7
$35,001 to $50,000	**74.5** ± 3.5
$50,001 to $75,000	**77.8** ± 2.8
$75,001 or more	**76.3** ± 2.0
Smoking Status	
Never smokers	**80.7** ± 1.5
Current Smokers	**54.2** ± 3.8
Former Smokers	**73.3** ± 2.3

Source: Minnesota Adult Tobacco Survey, 2014

Perceptions of the harm in occasional smoking differ by gender, education and income in statistically significant ways. Women (78.7±1.6 percent) are more likely than men (70.9±1.9 percent) to think occasional smoking is harmful. Those with higher levels of education (80.7±1.7 percent of those with a college degree) are more likely than those with lower levels of education (64.1±6.3 percent of those without a high school diploma) to think occasional smoking is harmful. Similarly, people in the two highest income categories (77.8±2.8 percent of those with incomes of $50,001 to $75,000 and 76.3±2.0 percent of those with incomes greater than $75,000) are more likely than those in the lowest income category (69.9±2.7 percent) to think occasional smoking is harmful.

Perceptions of Tobacco Products

Survey Question

- In your opinion, are any of the following products less harmful, more harmful or just as harmful as smoking cigarettes?
  - Smoking tobacco in a hookah water pipe?
  - Little filtered cigars that look like cigarettes?
  - "Natural" cigarettes like Native Spirit cigarettes?
  - Roll-your-own cigarettes?
  - Electronic or e-cigarettes?
  - Other smokeless tobacco, such as snuff and chewing tobacco?

Only 5 percent to 13 percent of Minnesotans overall perceive other tobacco products as less harmful than cigarettes, depending on the tobacco product in question (Table 3-10). The highest percentage is those who believe natural cigarettes are less harmful (13.3±1.0 percent) and the lowest percentage is those who believe little filtered cigars are less harmful (5.5±0.7 percent).

With the exception of smokeless tobacco and little filtered cigars, current smokers are more likely than former and never smokers to think of the various tobacco products as less harmful than cigarettes. The differences are fairly large and statistically significant in the case of natural cigarettes and roll-your-own cigarettes (compared to both former and never smokers). Even so, no more than about one-quarter of smokers perceive lower harm for any of these tobacco products, ranging from 4.6±1.9 percent for little filtered cigars to 7.5±2.1 percent for smokeless tobacco, to 20.2±3.6 percent for hookah, and jumping up to 22.8±3.9 percent for natural cigarettes.

For these tobacco products, there appears to be a consistent trend across the age groups: the younger the person, the more likely they are to agree that the product is less harmful than cigarettes. While many of the differences by age group are not statistically significant, the 18-24 year olds show significantly higher percentages who subscribe to the belief in less harm for hookah (27.4±4.0 percent), little filtered cigars (12.2±3.0

percent), natural cigarettes (20.4±3.8 percent), and roll-your-own cigarettes (15.3±3.2 percent), as compared to all or most of the other age groups.

Table 3-10. Perception of other tobacco and nicotine products as less harmful than cigarettes, by selected demographic characteristics and smoking status

Characteristics	Smoked Tobacco				Smokeless Tobacco	Electronic Cigarettes
	Hookah	Little filtered cigars	Natural Cigarettes	Roll-your-own Cigarettes	Snuff and chewing tobacco	
	%	%	%	%	%	%
Overall	**12.3** ± 1.0	**5.5** ± 0.7	**13.3** ± 1.0	**6.8** ± 0.7	**8.2** ± 0.8	**47.5** ± 1.6
Age						
18 to 24	**27.4** ± 4.0	**12.2** ± 3.0	**20.4** ± 3.8	**15.3** ± 3.2	**7.0** ± 2.2	**61.3** ± 4.5
25 to 44	**14.4** ± 1.9	**5.3** ± 1.2	**17.1** ± 2.0	**8.3** ± 1.4	**10.0** ± 1.6	**51.5** ± 2.7
45 to 64	**7.4** ± 1.3	**4.1** ± 1.0	**10.2** ± 1.5	**4.2** ± 0.9	**8.3** ± 1.2	**47.7** ± 2.7
65 or older	**4.4** ± 1.4	**3.9** ± 1.2	**4.8** ± 1.3	**3.1** ± 1.1	**5.1** ± 1.2	**23.6** ± 2.7
Gender						
Female	**10.8** ± 1.4	**4.2** ± 0.9	**11.3** ± 1.4	**5.2** ± 0.9	**4.4** ± 0.8	**40.2** ± 2.1
Male	**13.9** ± 1.5	**6.8** ± 1.1	**15.3** ± 1.6	**8.6** ± 1.2	**12.2** ± 1.4	**55.5** ± 2.3
Education						
Less than high school	**14.8** ± 5.7	**9.9** ± 4.4	**21.0** ± 6.0	**13.7** ± 4.6	**9.8** ± 4.1	**48.4** ± 7.4
High school graduate/GED	**11.2** ± 2.0	**6.2** ± 1.5	**12.8** ± 2.0	**6.8** ± 1.4	**7.3** ± 1.5	**45.0** ± 3.2
Some college or technical school	**12.7** ± 1.8	**4.9** ± 1.1	**14.8** ± 1.8	**6.9** ± 1.2	**7.6** ± 1.3	**49.3** ± 2.7
College graduate or beyond	**12.5** ± 1.7	**4.8** ± 1.0	**10.4** ± 1.5	**5.4** ± 1.1	**9.5** ± 1.3	**47.7** ± 2.5
Household income						
$35,000 or less	**14.7** ± 2.4	**6.5** ± 1.7	**19.2** ± 2.6	**9.7** ± 1.8	**8.5** ± 1.8	**46.3** ± 3.3
$35,001 to $50,000	**12.5** ± 2.8	**7.0** ± 2.3	**15.5** ± 3.3	**8.8** ± 2.5	**7.6** ± 2.1	**45.5** ± 4.4
$50,001 to $75,000	**13.9** ± 2.6	**4.6** ± 1.5	**13.0** ± 2.4	**6.2** ± 1.6	**8.3** ± 1.8	**50.1** ± 3.7
$75,001 or more	**11.0** ± 1.6	**5.2** ± 1.1	**10.3** ± 1.6	**5.2** ± 1.1	**8.8** ± 1.3	**50.6** ± 2.6
Smoking Status						
Never smokers	**11.7** ± 1.3	**6.5** ± 1.0	**10.8** ± 1.3	**5.8** ± 0.9	**7.7** ± 1.0	**42.9** ± 2.1
Current Smokers	**20.2** ± 3.6	**4.6** ± 1.8	**27.1** ± 3.7	**14.1** ± 2.8	**7.5** ± 2.1	**63.2** ± 4.2
Former Smokers	**9.8** ± 1.7	**4.1** ± 1.0	**11.1** ± 1.7	**5.3** ± 1.1	**9.5** ± 1.5	**49.2** ± 3.0

Source: Minnesota Adult Tobacco Survey, 2014

Men are consistently more likely than women to view these products as less harmful than cigarettes. These differences are all statistically significant.

There is little variation in the perception of lower harm for the various tobacco products across the educational and income levels, although those with the lowest educational and income levels generally believe all of the products are less harmful, compared to the other subgroups.

Nearly half of Minnesotans (47.5±1.6 percent) deem electronic cigarettes (which do not contain tobacco but do contain nicotine) as less harmful than cigarettes. Smokers are much more likely to consider them less harmful than cigarettes, with 63.2±4.2 percent of them endorsing this view, compared to 49.2±3.0 percent of former smokers and 42.9±2.1 percent of never smokers. Among the various demographic groups, 18-24 year olds have the highest percentage (61.3±4.5 percent) and those 65 years old or older have the lowest percentage (23.6±2.7 percent) who believe electronic cigarettes are less harmful than cigarettes. The percentages for each of these two age groups are statistically significant in the differences from every other age group. Men are the demographic group with the second-highest percentage perceiving electronic cigarettes as less harmful than cigarettes (55.5±2.3 percent, and differ significantly in that regard from women who have that perception (40.2±2.1percent).

3.5 Tobacco Use, 2010 to 2014

Between 2010 and 2014, there was a small but statistically significant change in the percentage of Minnesota adults who were current users of some form of tobacco, including cigarettes, pipes, cigars, hookah, and smokeless tobacco. In 2010, 21.0±1.3 percent of Minnesota adults were current tobacco users, while in 2014 this figure dropped to 19.2±1.1 percent (Table 3-11). Similarly, the percentage of adult Minnesotans who were current users of any tobacco products or e-cigarettes decreased from 21.1±1.3 percent in 2010 to 20.7±1.1 percent in 2014. This decline, however, was not statistically significant.

3.6 Use of Non-Cigarette Tobacco Products, 2010 to 2014

Use of Non-Cigarette Tobacco Products among all Minnesota Adults. Between 2010 and 2014, among adult Minnesotans there were marginal changes in the current use of any non-cigarette tobacco products, including pipes, cigars, hookah and smokeless tobacco, and these changes are not statistically significant. However, there was a significant increase in current e-cigarette use among adult Minnesotans that rose from 0.7±0.3 percent in 2010 to 5.9±0.7 percent in 2014 (Table 3-11), a statistically significant change.

Table 3-11. Tobacco use among Minnesota adults and current smokers from 1999 to 2014, by tobacco product

Current toacco use	1999	2003	2007	2010	2014	Change from 2010 to 2014
	%	%	%	%	%	
Minnesota adults						
Any product or e-cigarettes[a]	**N/A**	**N/A**	**N/A**	**21.1** ± 1.3	**20.7** ± 1.1	**-0.4**
Any product[a]	**27.0** ± 1.9	**22.9** ± 1.6	**21.1** ± 1.5	**21.0** ± 1.3	**19.2** ± 1.1	**-1.8** *
Any non-cigarette tobacco[a]	**7.9** ± 1.2	**5.9** ± 0.9	**6.1** ± 0.8	**7.5** ± 0.8	**7.6** ± 0.7	**0.0**
Pipe[a]	**0.9** ± 0.4	**0.5** ± 0.2	**0.5** ± 0.3	**0.6** ± 0.3	**0.7** ± 0.2	**0.1**
Cigar[a]	**4.5** ± 1.0	**2.5** ± 0.6	**2.8** ± 0.6	**3.2** ± 0.6	**2.9** ± 0.5	**-0.3**
E-cigarettes[b]	**N/A**	**N/A**	**N/A**	**0.7** ± 0.3	**5.9** ± 0.7	**5.2** *
Hookah[a]	**N/A**	**N/A**	**0.4** ± 0.2	**0.7** ± 0.3	**1.4** ± 0.4	**0.7**
Smokeless tobacco[b]	**3.4** ± 0.7	**3.2** ± 0.7	**3.1** ± 0.6	**4.3** ± 0.7	**3.6** ± 0.5	**-0.7**
Current smokers						
Any non-cigarette tobacco[b]	**14.9** ± 3.2	**10.7** ± 2.8	**11.9** ± 2.8	**17.6** ± 3.2	**19.9** ± 3.2	**2.3**
Pipe[a]	**2.0** ± 1.2	**1.1** ± 0.7	**0.9** ± 0.1	**1.8** ± 1.2	**2.6** ± 1.2	**0.8**
Cigar[b]	**10.9** ± 3.0	**5.4** ± 2.2	**7.5** ± 2.4	**9.4** ± 2.5	**9.5** ± 2.3	**0.1**
E-cigarettes[b]	**N/A**	**N/A**	**N/A**	**3.6** ± 1.8	**27.3** ± 3.5	**23.7** *
Hookah[a]	**N/A**	**N/A**	**1.5** ± 1.2	**2.2** ± 1.2	**4.6** ± 1.9	**2.4**
Smokeless tobacco[b]	**5.2** ± 2.0	**5.0** ± 2.0	**4.4** ± 1.6	**9.6** ± 2.7	**7.4** ± 2.0	**-2.2**

[a] These items are hypothesized to decline from 2010 to 2014

[b] These items are hypothesized to increase from 2010 to 2014

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010 and 2014

Use of Non-Cigarette Tobacco Products among Current Cigarette Smokers. There was a statistically significant increase in current use of e-cigarettes among smokers from 2010 to 2014. In 2010, 3.6±1.8 percent of smokers were current users of e-cigarettes; this increased to 27.3±3.5 percent in 2014. This change may be a function of the increase in popularity and availability of several brands of e-cigarettes in recent years. The 23.7 percentage point increase in current use of e-cigarettes by smokers is particularly large and is statistically significant.

The percentage of smokers who use hookah increased 2.4 percentage points between 2010 and 2014. This change, however, was not statistically significant because the hypothesis for the one-tailed test was that this percentage would decline. On the other hand, the percentage of current smokers who also use smokeless tobacco decreased 2.2 percentage points. But again, since the hypothesis for the one-tailed test for the change

in the percentage of smokeless tobacco use among cigarette smokers was specified as positive, the negative change does not test as statistically significant.

Similar to current use, there was a statistically significant increase in ever use of e-cigarettes among Minnesota adults from 2010 to 2014 (Table 3-12), from 2.1±0.5 percent in 2010 to 17.8±1.1 percent in 2014. There was a statistically significant increase in ever use of e-cigarettes among cigarette smokers from 2010 to 2014. In 2010, 9.1±2.6 percent of smokers were ever users of e-cigarettes; that increased to 70.0±3.3 percent in 2014, a 61.0 percentage point increase.

Table 3-12. Ever use of e-cigarettes among Minnesota adults and current smokers, from 2010 to 2014

Ever e-cigarette use	2010	2014	Change from 2010 to 2014
	%	%	
Minnesota adults[b]	**2.1** ± 0.5	**17.8** ± 1.1	**15.6** *
Current smokers[b]	**9.1** ± 2.6	**70.0** ± 3.3	**61.0** *

[b] Ever use is hypothesized to increase from 2010 to 2014

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010 and 2014

3.7 Individual-level Influences on Smoking Behavior, 2003 to 2014

This section examines Minnesota smokers in terms of changes over time in selected smoking-related behaviors and attitudes.

Harm of Occasional Cigarette Use

As discussed in section 3.4.1, perception of harm is an important indicator of potential experimentation with tobacco, motivation to quit and support for tobacco control policies. This section examines the trend in the perceived harmfulness of smoking an occasional cigarette. Between 2010 and 2014, there was essentially no change in the percentage of Minnesotans who regard smoking an occasional cigarette as harmful (Table 3-13). Perhaps the most telling development is the relatively large and

statistically significant increase in the percentage of young adults who consider occasional cigarette use harmful, rising by 6.7 percentage points from 2010 to 2014.

Table 3-13. Perceived harmfulness of smoking an occasional cigarette, by selected demographic characteristics and smoking status, among all Minnesota adults from 2003 to 2014

Smoking characteristics	2003	2007	2010	2014	Change from 2010 to 2014
	%	%	%	%	
Overall	**72.5** ± 4.4	**78.3** ± 1.5	**75.1** ± 1.4	**74.8** ± 1.2	**-0.3**
Age					
18 to 24	**70.4** ± 4.3	**71.8** ± 4.8	**67.9** ± 4.7	**74.6** ± 3.9	**6.7** *
25 to 44	**S**	**79.9** ± 2.9	**74.3** ± 2.5	**72.9** ± 2.3	**-1.4**
45 to 64	**NA**	**78.8** ± 2.0	**78.1** ± 2.0	**75.4** ± 2.0	**-2.7**
65 or older	**NA**	**78.2** ± 2.1	**76.4** ± 2.4	**77.8** ± 2.3	**1.4**
Gender					
Female	**73.5** ± 5.7	**81.1** ± 1.9	**79.3** ± 1.8	**78.7** ± 1.6	**-0.6**
Male	**71.5** ± 6.8	**75.4** ± 2.2	**70.9** ± 2.1	**70.9** ± 1.9	**0.0**
Education					
Less than high school	**59.2** ± 13.0	**68.9** ± 6.7	**65.1** ± 6.4	**64.1** ± 6.3	**-1.0**
High school graduate/GED	**70.0** ± 6.6	**74.7** ± 3.0	**72.0** ± 3.0	**71.8** ± 2.6	**-0.3**
Some college or technical school	**77.5** ± 6.5	**78.8** ± 2.5	**74.7** ± 2.3	**74.1** ± 2.1	**-0.7**
College graduate or beyond	**79.9** ± 10.6	**84.3** ± 1.9	**81.0** ± 1.8	**80.7** ± 1.7	**-0.3**
Smoking Status					
Never smokers	**79.3** ± 5.4	**84.0** ± 1.8	**81.0** ± 1.7	**80.7** ± 1.5	**-0.3**
Current Smokers	**60.3** ± 8.3	**61.1** ± 4.5	**55.2** ± 4.1	**54.2** ± 3.8	**-1.0**
Former Smokers	**64.6** ± 13.8	**77.0** ± 2.5	**75.0** ± 2.4	**73.3** ± 2.3	**-1.7**

Hypothesis: Perceived harmfulness of smoking an occasional cigarette will increase from 2010 to 2014.

*Statistically significant at the 95% confidence level

Note: "S" in the table indicates data suppression because of small sample size. In 2003, perceived harmfulness was only measured among young adults.

Source: Minnesota Adult Tobacco Surveys, 2003, 2007, 2010, and 2014

3.8 Key Findings

Some of the most important findings from this chapter are summarized below. All differences presented in this summary are statistically significant at the 0.05 confidence level unless otherwise noted.

Key Tobacco Prevalence Findings for 2014

- Overall, 19.2±1.1 percent of Minnesota adults currently use some form of tobacco, including cigarettes, pipes, cigars, hookah, and any form of smokeless tobacco, and 20.7±1.1 percent currently use some form of tobacco or e-cigarettes.

- Current use of any tobacco or e-cigarettes declines significantly with age from 28.4±4.0 percent of the 18-24 year olds to 7.4±1.3 percent of those 65 or older. Men are significantly more likely to use any tobacco product or e-cigarettes compared to women (27.3±1.8 percent for men versus 14.4±1.4 percent for women).

- Use of any tobacco product declines across the age groups, from 24.9±3.8 percent of the 18-24 year olds to 7.2±1.3 percent of those 65 or older.

- Young adults (18-24 years old) use cigarettes (15.3±3.3 percent) and non-cigarette tobacco products (15.8±3.1 percent) at higher rates compared to those 65 or older (5.4±1.1 for cigarettes and 2.1±0.7 for non-cigarette tobacco products).

- Compared to women, men are more likely to use any tobacco product (25.5±1.7 percent for men versus 13.2±1.3 percent for women.

- Current use of smokeless tobacco among Minnesota adults is lower than current e-cigarette use (3.6±0.5 percent compared to 5.9±0.7 percent). Adults 25-44 years old (6.2±1.2 percent) use smokeless tobacco at higher rates compared to 45-64 year olds and 65 or older age groups. Smokeless tobacco is almost exclusively used by men (7.2±1.0 percent compared to 0.2±0.1 among women).

- In 2014, 7.6±0.8 percent of Minnesota adults were current users of one or more non-cigarette tobacco products.

- Use of non-cigarette tobacco declines steadily across the age groups, from 15.7±3.1 percent of the 18-24 year olds to 2.2±0.7 percent of those 65 or older. Use of non-cigarette tobacco occurs almost exclusively among men, 13.8±1.4 percent of whom use some such form of tobacco, compared to 1.6±0.5 percent of women.

- Hookah use varies little by gender and age, except for distinctly higher usage by young adults. The 7.9±2.4 percent of young adults who are current hookah users represent nearly all such users.

- Overall, almost 20 percent of cigarette smokers also use some other form of tobacco, which is more than double the prevalence among all Minnesota adults (7.6±0.8 percent).

- The youngest age group is considerably more likely to use non-cigarette tobacco than any other age group. The high absolute percentage of the 18-24 year old smokers who are users of non-cigarette tobacco stands out, at 41.2±11.7 percent.

- Ever use of e-cigarettes is more common among current cigarette smokers than the general population, 70.0±3.3 percent vs. 17.8±1.1 percent, a statistically significant difference. Young adults 18-24 years old (33.1±4.1 percent) and males (21.1±1.7 percent) have ever used e-cigarettes at higher rates than their complement groups.

- Current use of e-cigarettes is reported by 5.9 percent of Minnesota adults. Young adults 18-24 years old (12.8±3.0 percent) use e-cigarettes at higher rates than those 25 and older, a statistically significant difference.

- Daily use of e-cigarettes is reported by 18.0±4.5 percent of the past 30-day users and by 12.3±5.1 percent of the past 30-day users who are also current cigarette smokers.

- Overall, among past 30-day e-cigarette users, 65.8±5.7 percent are current cigarette smokers, 22.5±5.1 percent are former cigarette smokers and 11.7±3.5 percent are never cigarette smokers.

- Among all e-cigarette users, curiosity is the most common reason given (78.2±2.9 percent) for using e-cigarettes, and this is true across all age groups.

- Two thirds of past 30-day e-cigarette users (66.6±6.6 percent) report that their first e-cigarettes were flavored. The percentage of 18-24 years old young adults who reported this is almost double (86.0±8.0 percent) the percentage of the oldest age group (43.3±26.0 percent).

- Among current cigarette smokers who have attempted to quit and former smokers who successfully quit in the past year, 45.3±5.4 percent used e-cigarettes as an aid in the quitting process. The oldest adults (age 65 or older) are significantly less likely to use e-cigarettes to quit smoking cigarettes compared to all other age groups.

- Over three quarters (74.8±1.2 percent) of Minnesotans think that smoking an occasional cigarette is harmful. This perception declines in a significant way from never smokers to former smokers to current smokers, with current smokers considerably less likely to think so, at 54.2±3.8 percent.

- Only between 5 percent and 13 percent of Minnesotans perceive selected tobacco products as less harmful than cigarettes. The 18-24 year olds show significantly higher percentages who subscribe to the belief in less harm for hookah, little filtered cigars, natural cigarettes, and roll-your-own cigarettes as compared to all or most of the other age groups. Men are consistently more likely than women to view these products as less harmful.

- Nearly half of Minnesotans (47.5±1.6 percent) deem electronic cigarettes as less harmful than cigarettes. Smokers are much more likely to consider e-cigarettes less harmful than cigarettes, with 63.2±4.2 percent of them endorsing this view.

Key Tobacco Prevalence Findings for 2010 to 2014

- In 2010, 21.0±1.3 percent of Minnesota adults were current tobacco users, while in 2014 this figure dropped to 19.2±1.1 percent. This was a small but statistically significant change.

- There was a significant increase in current e-cigarette use among adult Minnesotans, from 0.7±0.3 percent in 2010 to 5.9±0.7 percent in 2014, a statistically significant change.

- There was a sharp increase in current use of e-cigarettes among smokers from 2010 to 2014. In 2010, 3.6±1.8 percent of smokers were current users of e-cigarettes; this increased to 27.3±3.5 percent in 2014.

- There was a statistically significant increase in ever use of e-cigarettes among Minnesota adults, from 2.1±0.5 percent in 2010 to 17.8±1.1 percent in 2014. There was also a statistically significant increase in ever use of e-cigarettes among cigarette smokers from 2010 to 2014. In 2010, 9.1±2.6 percent of smokers were ever users of e-cigarettes; this increased to 70.0±3.3 percent in 2014, a 61.0 percentage point change.

- Between 2010 and 2014, there was essentially no change in the percentage of Minnesotans who regard smoking an occasional cigarette as harmful. Perhaps the most telling development is the relatively large and statistically significant increase in the percentage of young adults who consider occasional cigarette use harmful, rising by 6.7 percentage points from 2010 to 2014.

4. Quitting Behaviors Among Minnesota Smokers

4.1 Introduction

This chapter describes quitting behaviors among Minnesota's adult smokers. The results presented here examine quit attempts, successful quitting, the use of quitting programs and medications, assistance for quitting from health care providers, and the impact of smoke-free policies on quitting.

4.2 Quitting Smoking and Use of Assistance to Quit

This section examines the prevalence of quitting attempts and successful quitting, and the use of quitting programs and medications in quit attempts.

4.2.1 Past-year Smoking and Successful Quitting

Past-year Smoking and Successful Quitting

Past-year smokers include individuals who have smoked at any time during the past year, that is, all current smokers as of the date of interview, and former smokers *if* they last smoked regularly any time in the 12 months immediately preceding the interview. To examine the prevalence of past-year quitting, MATS considers quit attempts and quits among this denominator population of past-year smokers.

Past-year successful quitters include all those past-year smokers who are former smokers at the time of their interview, that is, those who were smoking at some point in the past 12 months but are no longer smoking.

Survey Questions

- During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking?
- How many times in the past 12 months did you try to quit smoking?
- About how long has it been since you last smoked cigarettes regularly?

Note: Given the focus on the past 12 months in this analysis, caution must be used in interpreting the prevalence of past-year successful quitters. Some current smokers may have been quit for many of the past 12 months and recently relapsed. Conversely, some former smokers may have been smoking for much of the past 12 months and only recently quit. Therefore, the finding does not describe sustained abstinence.

Quitting Among Past-year Smokers

Past-year Smokers**.** In the 12 months preceding MATS 2014, 17.3±1.1 percent of Minnesota adults (687,000 adults) smoked cigarettes (Table 4-1); these past-year smokers combine current smokers and former smokers who last smoked regularly less than a year ago.

Successful Quitters. Among all past-year smokers, 15.6±2.4 percent (107,000 adults) quit in the past year (Table 4-1). Among this group of successful quitters, there is a statistically significant difference between college graduates (25.0±7.0 percent) and those with less than a high school education (11.0±6.3). There are no statistically significant differences by age, gender, or income.

Table 4-1. Past-year smoking and quitting, by selected demographic characteristics

Characteristics	Past year smokers (among all Minnesota adults)	Successful past-year quitters (among past-year smokers)
	%	%
Overall	**17.3** ± 1.1	**15.6** ± 2.4
Age		
18 to 24	**18.3** ± 3.5	**16.1** ± 7.2
25 to 44	**22.4** ± 2.1	**15.4** ± 3.7
45 to 64	**16.8** ± 1.7	**14.4** ± 3.7
65 or older	**7.1** ± 1.4	**22.0** ± 9.6
25 or older	**17.1** ± 1.1	**15.5** ± 2.5
Gender		
Female	**14.6** ± 1.4	**14.1** ± 3.4
Male	**20.0** ± 1.6	**16.8** ± 3.3
Education		
Less than high school	**32.9** ± 5.9	**11.0** ± 6.3
High school graduate/GED	**23.9** ± 2.4	**14.6** ± 4.1
Some college or technical school	**18.5** ± 1.8	**15.1** ± 3.8
College graduate or beyond	**6.8** ± 1.1	**25.0** ± 7.0
Household income		
$35,000 or less	**28.4** ± 2.6	**13.2** ± 3.5
$35,001 to $50,000	**19.8** ± 3.2	**18.2** ± 6.9
$50,001 to $75,000	**17.8** ± 2.7	**16.3** ± 6.2
$75,001 or more	**10.7** ± 1.5	**18.5** ± 5.2

Source: Minnesota Adult Tobacco Survey, 2014

Tobacco control programs in Minnesota are trying to help former smokers maintain longer periods without smoking, so MATS monitors the length of time since former smokers smoked regularly. Among all former smokers, 16.4±2.0 percent last smoked regularly between one and five years ago, 14.3±1.9 percent last smoked regularly between five and ten years ago, and 53.1±2.5 percent last smoked more than ten years ago. Thus, a high percentage of former smokers have been able to sustain their quit beyond the one-year mark.

Quitting Among Current Smokers

In the past year, 53.4±3.8 percent of adult current smokers in Minnesota attempted to quit (defined as not smoking for one day or longer in the 12 months before the survey because they were trying to quit smoking) (Table 4-2). This equates to approximately 307,000 current smokers who tried to quit in the past 12 months. Younger smokers are more likely than older smokers to have made a quit attempt. Among 18-24 year olds, 61.1±12.0 percent have tried to quit in the past year, compared to 35.7±10.6 of those aged 65 and older, a statistically significant difference. There are no statistically significant differences by gender, education or income.

Table 4-2. Current smokers with a quit attempt in the past 12 months, by selected demographic characteristics

Characteristics	Made a quit attempt
	%
Overall	**53.4** ± 3.8
Age	
18 to 24	**61.1** ± 12.0
25 to 44	**57.7** ± 5.9
45 to 64	**48.5** ± 6.0
65 or older	**35.7** ± 10.6
25 or older	**52.3** ± 4.0
Gender	
Female	**55.1** ± 5.5
Male	**52.1** ± 5.2
Education	
Less than high school	**50.7** ± 11.9
High school graduate/GED	**45.8** ± 6.2
Some college or technical school	**61.1** ± 5.8
College graduate or beyond	**57.0** ± 9.0
Household income	
$35,000 or less	**49.0** ± 5.9
$35,001 to $50,000	**52.8** ± 10.2
$50,001 to $75,000	**51.3** ± 9.0
$75,001 or more	**60.6** ± 8.2

Source: Minnesota Adult Tobacco Survey, 2014

Among current smokers with a quit attempt in the past 12 months, over half made more than one attempt: 22.2±4.4 percent made two attempts, 13.9±4.4 percent made three attempts, and 20.5±4.4 percent made four or more attempts (Table 4-3).

Table 4-3. Number of quit attempts in the past 12 months among current smokers with at least one quit attempt, by selected demographic characteristics

Characteristics	1 attempt	2 attempts	3 attempts	4 or more attempts	Row total
	%	%	%	%	%
Overall	**43.4** ± 5.4	**22.2** ± 4.4	**13.9** ± 3.7	**20.5** ± 4.4	**100**
Age					
18 to 24	**17.3** ± 9.5	**30.3** ± 13.7	**15.7** ± 8.8	**36.6** ± 15.5	**100**
25 to 44	**47.9** ± 8.2	**22.0** ± 6.6	**14.9** ± 5.8	**15.3** ± 5.6	**100**
45 to 64	**46.4** ± 8.8	**19.3** ± 6.5	**11.7** ± 5.8	**22.6** ± 7.5	**100**
65 or older	**56.6** ± 17.3	**20.1** ± 11.6	**12.9** ± 10.0	**10.4** ± 8.5	**100**
Gender					
Female	**41.2** ± 7.9	**24.5** ± 6.8	**15.6** ± 5.8	**18.7** ± 6.2	**100**
Male	**45.2** ± 7.4	**20.3** ± 5.7	**12.6** ± 4.7	**22.0** ± 6.1	**100**
Education					
Less than high school	**52.2** ± 17.8	**16.5** ± 12.8	**7.5** ± 8.0	**23.8** ± 15.8	**100**
High school graduate/GED	**50.3** ± 9.9	**15.0** ± 6.4	**13.8** ± 6.1	**20.9** ± 8.0	**100**
Some college or technical school	**36.0** ± 7.8	**26.5** ± 7.2	**16.8** ± 6.3	**20.7** ± 6.5	**100**
College graduate or beyond	**42.6** ± 12.2	**33.2** ± 12.6	**9.2** ± 6.9	**15.1** ± 7.9	**100**
Household income					
$35,000 or less	**51.0** ± 8.7	**15.3** ± 5.9	**14.7** ± 5.9	**19.0** ± 6.7	**100**
$35,001 to $50,000	**38.8** ± 13.3	**28.4** ± 13.6	**8.7** ± 6.8	**24.1** ± 13.1	**100**
$50,001 to $75,000	**35.1** ± 13.4	**20.0** ± 9.4	**19.8** ± 11.7	**25.0** ± 12.0	**100**
$75,001 or more	**42.5** ± 11.2	**29.9** ± 10.5	**11.0** ± 6.8	**16.6** ± 7.8	**100**

Source: Minnesota Adult Tobacco Survey, 2014

4.2.2 Perceptions and Use of Quitting Programs and Medications

Perceptions of Quitting Assistance

Perceptions of quitting assistance may affect smokers' interest in or willingness to use assistance. Since successful quitters have usually made multiple quit attempts before being successful, this section and the following section about the use of assistance focus on current smokers who have tried to quit in the past year.

Stop-smoking Medications

Survey Questions

- Next I'm going to read a list of statements about stop-smoking medications. Please tell me if you agree or disagree with each statement.
  - If you decided you wanted to quit, you would be able to quit without stop-smoking medications.
  - Stop-smoking medications are too expensive.
  - You don't know enough about how to use stop-smoking medications properly.
  - Stop-smoking medications are too hard to get.
  - Stop-smoking medications might harm your health.
  - Stop-smoking medications don't work.

Approximately two-thirds (66.0±5.0 percent) of current smokers who have tried to quit smoking in the past year believe that they could quit smoking without stop-smoking medications (Table 4-4). Among current smokers, 83.3±8.3 percent of 18-24 year olds believe they can quit smoking without stop-smoking medications, compared with 66.5±7.7 percent of 25-44-year-olds and 57.7±8.7 percent of 45-64-year-olds. These differences are statistically significant. Males (71.2±6.4 percent) were also statistically significantly more likely than females (59.4±7.9 percent) to believe they could quit without medications. There are no significant differences by education or income.

Table 4-4. Perceived ability to quit smoking without stop-smoking medications among current smokers who have tried to quit in the past 12 months by selected demographic characteristics

Characteristics	Could quit without medication
	%
Overall	**66.0** ± 5.0
Age	
18 to 24	**83.3** ± 8.3
25 to 44	**66.5** ± 7.7
45 to 64	**57.7** ± 8.7
65 or older	**63.6** ± 17.6
Gender	
Female	**59.4** ± 7.9
Male	**71.2** ± 6.4
Education	
Less than high school	**61.7** ± 17.0
High school graduate/GED	**73.2** ± 8.2
Some college or technical school	**60.2** ± 8.0
College graduate or beyond	**70.8** ± 10.7
Household income	
$35,000 or less	**60.5** ± 8.7
$35,001 to $50,000	**72.9** ± 11.1
$50,001 to $75,000	**73.4** ± 11.1
$75,001 or more	**65.8** ± 10.9

Source: Minnesota Adult Tobacco Survey, 2014

Use of Quitting Assistance

Types of Quitting Assistance

In the MATS, smokers could indicate the use of many types of quitting assistance, including the two major types, stop-smoking medications and behavioral counseling. MATS findings describe the results for each specific type of assistance, and some key summary measures of assistance:

- **Use of any medications:** use of at least one of the nicotine replacement therapy (NRT) medications (nicotine gum, patch, nasal spray, inhaler, or lozenge) or the non-NRT prescription medications (Zyban®/bupropion or Chantix® /varenicline)

- **Use of any nicotine replacement therapy**
- **Use of any prescription medications Use of e-cigarettes**
- **Use of any behavioral counseling:** use of a stop-smoking clinic or class, a telephone quitline, clinician counseling, or a web-based counseling service

Survey Questions

The last time you tried to quit smoking, did you use **any** of the following products – a nicotine patch or gum, a nicotine lozenge or a nicotine nasal spray or inhaler?

The last time you tried to quit smoking, did you use a prescription medication like Zyban, Wellbutrin, or Chantix to help you quit smoking?

The last time you tried to quit smoking, did you use a stop-smoking clinic or class, a quit-smoking telephone help line, a one-on-one counseling from any doctor, or other health professional, or an on-line or web-based counseling service?

The last time you tried to quit smoking} did you use e-cigarettes to help you quit?

All of the estimates appearing in the following discussion about the use of quitting assistance are based on current smokers' last quit attempt in the past 12 months and recent former smokers who quit in the past year.

Any Assistance. Of current smokers with a quit attempt in the past 12 months and recent former smokers, 30.0±4.6 percent used some form of quitting assistance. The remaining 70.0±4.6 percent did not use assistance as defined by MATS. They may have used techniques not based on evidence of what works, or nothing at all. No statistically significant differences exist in the use of assistance by age, gender, education or income.

Stop-smoking Medications. Of current smokers with a quit attempt in the past 12 months and recent former smokers, 28.1±4.5 percent used some kind of stop-smoking medication in their last quit attempt (Table 4-5). Although there is a pattern of increasing use of stop-smoking medication by older age groups, these differences are not statistically significant. No significant differences were found in the use of quit medications by gender, education or income.

Table 4-5. Use of any stop-smoking medication among current smokers who tried to quit in the past 12 months and former smokers who successfully quit in the past year, by selected demographic characteristics

Characteristics	Used medication
	%
Overall	**28.1** ± 4.5
Age	
18 to 24	**18.0** ± 11.6
25 to 44	**26.9** ± 6.8
45 to 64	**32.7** ± 7.3
65 or older	**42.1** ± 18.6
Gender	
Female	**28.7** ± 6.6
Male	**27.6** ± 6.1
Education	
Less than high school	**28.5** ± 15.2
High school graduate/GED	**28.3** ± 8.2
Some college or technical school	**28.6** ± 6.7
College graduate or beyond	**25.4** ± 9.7
Household income	
$35,000 or less	**32.1** ± 7.8
$35,001 to $50,000	**24.4** ± 11.2
$50,001 to $75,000	**22.2** ± 9.5
$75,001 or more	**25.1** ± 8.8

Source: Minnesota Adult Tobacco Survey, 2014

Some form of nicotine replacement therapy was used by 21.8±4.1 percent of current smokers with a quit attempt in the past 12 months and recent former smokers (Table 4-6). E-cigarettes were used to assist a quit attempt by 45.3±5.4 percent, a percentage more than double that of NRT and more than four times than the use of prescription medications (10.5±2.9 percent) and behavioral counseling (9.1±3.1 percent). Among only current smokers with a quit attempt in the past 12 months, 45.4±6.2 percent used e-cigarettes to assist in quitting smoking.

Table 4-6. Use of any assistance, nicotine replacement therapy, and prescription medications, e-cigarettes, or behavioral counseling among current smokers who tried to quit in the past 12 months and former smokers who successfully quit in the past year

Type	%
Use of any assistance	**30.0** ± 4.6
Use of any nicotine replacement therapy	**21.8** ± 4.1
Use of prescription medications	**10.5** ± 2.9
Use of e-cigarettes	**45.3** ± 5.4
Use of behavioral counseling	**9.1** ± 3.1

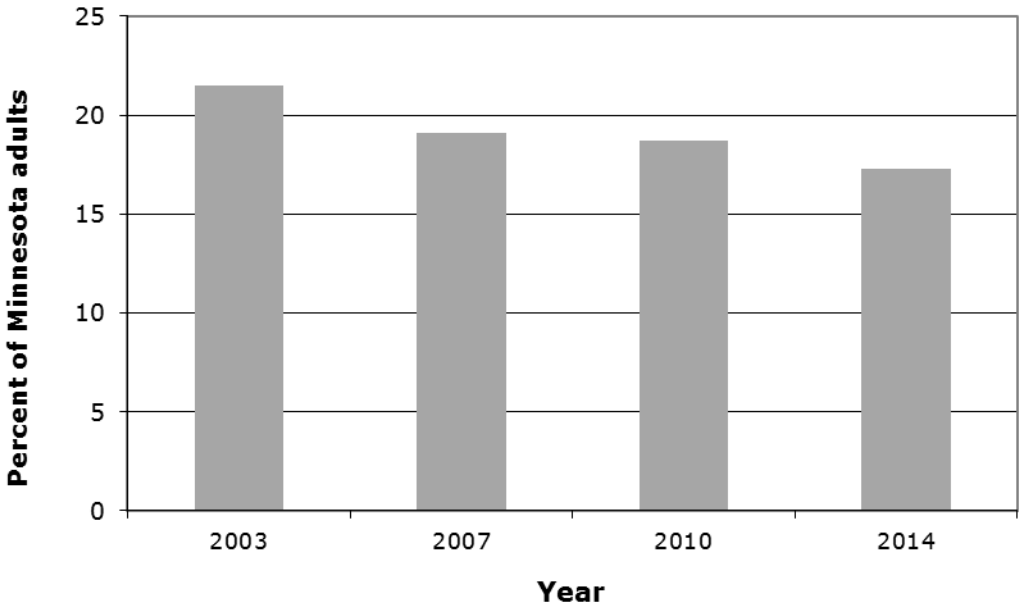
Source: Minnesota Adult Tobacco Survey, 2014

4.2.3 Past-year Smoking, Quit Attempts and Successful Quitting, 2010 to 2014

This section discusses the changes in quit attempts, successful quitting and perceptions and use of quitting assistance among Minnesota adults over time.

Past-year Smokers. In the 12 months before MATS 2014, 17.3±1.1 percent of Minnesota adults smoked cigarettes (Figure 4-1); these past-year smokers include both current smokers and former smokers who quit in the past year. This has essentially remained stable from 2010 (18.7±1.3 percent) and is not a statistically significant change.

Figure 4-1. Past year smokers, from 2003 to 2014



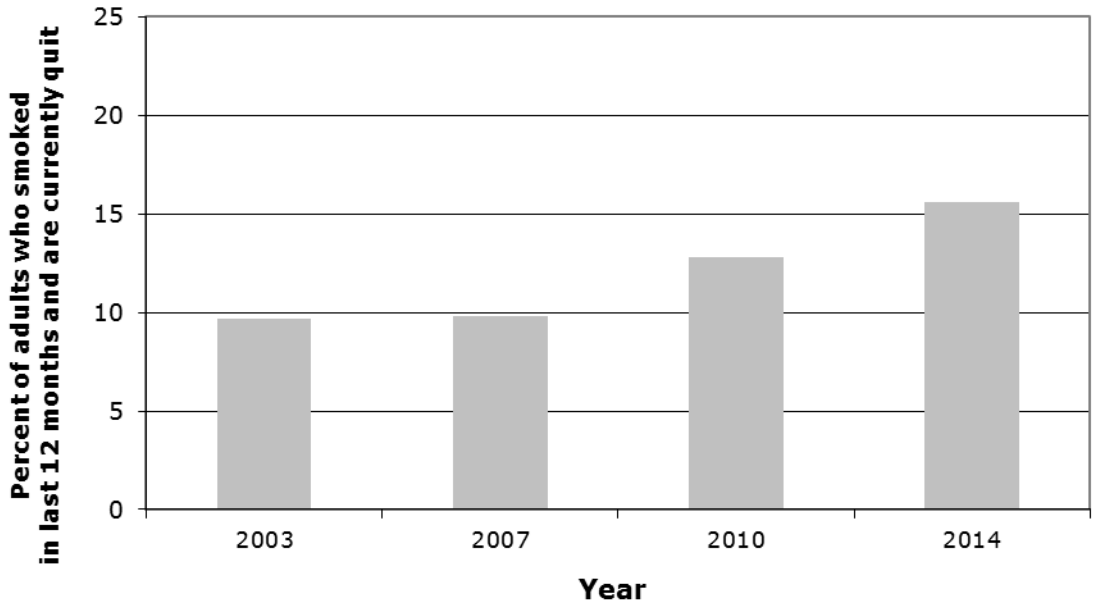
	2003	2007	2010	2014	Change from 2010 to 2014
Percent of Minnesota adults	21.5 ± 1.6	19.1 ± 1.4	18.7 ± 1.3	17.3 ± 1.1	-1.4

Hypothesis: The percentage who are past year smokers will decline from 2010 to 2014

Source: Minnesota Adult Tobacco Surveys, 2003, 2007, 2010, and 2014

Past-year Successful Quitters. Between 2010 and 2014, the percentage of past-year smokers who successfully quit increased from 12.8±2.5 percent to 15.6±2.4 percent (Figure 4-2). This is not a statistically significant change.

Figure 4-2. Past year successful quitters, from 2003 to 2014



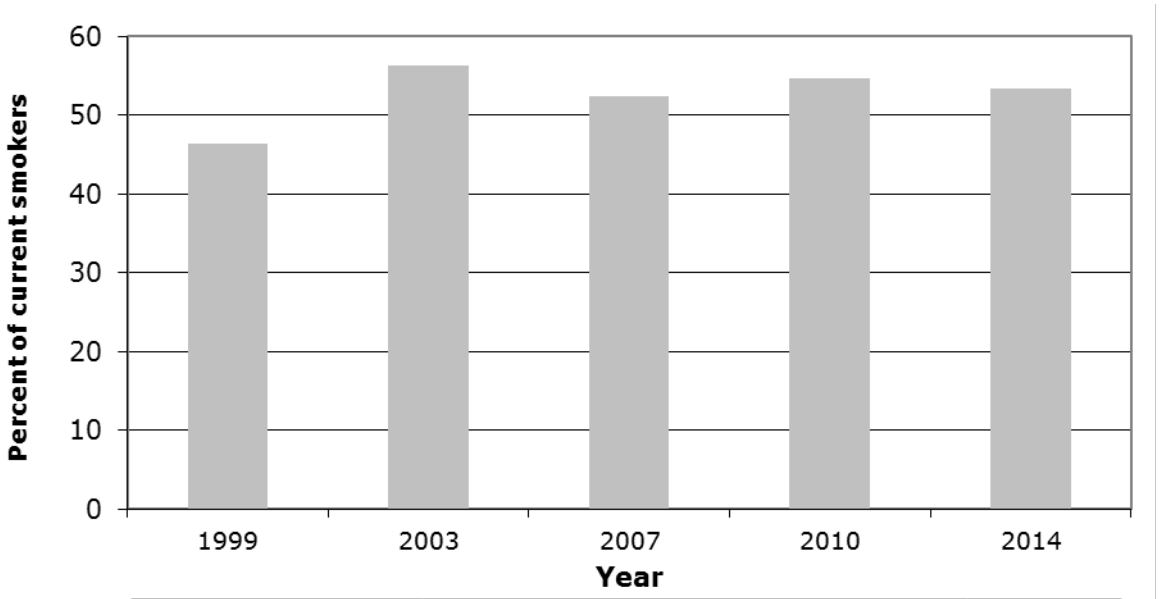
	2003	2007	2010	2014	Change from 2010 to 2014
Percent of adults who smoked in last 12 months and are currently quit	9.7 ± 1.8	9.8 ± 2.1	12.8 ± 2.5	15.6 ± 2.4	2.8

Hypothesis: The percentage who are past year successful quitters will increase from 2010 to 2014

Source: Minnesota Adult Tobacco Surveys, 2003, 2007, 2010, and 2014

Current Smokers with Quit Attempts. In 2014, 53.4±3.7 percent of adult current smokers in Minnesota attempted to quit for one day or longer in the 12 months before the survey because they were trying to quit (Figure 4-3). This represents no statistically significant change from 2010 (54.6±4.1 percent).

Figure 4-3. Current smokers who have tried to quit in the past 12 months, from 1999 to 2014



	1999	2003	2007	2010	2014	Change from 2010 to 2014
Percent of current smokers	46.3 ± 4.4	56.3 ± 4.5	52.4 ± 4.6	54.6 ± 4.1	53.4 ± 3.8	-1.2

Hypothesis: The percentage who have tried to quit in past 12 months will increase from 2010 to 2014

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010, and 2014

Perceived Ability to Quit Smoking Without Stop-Smoking Medications

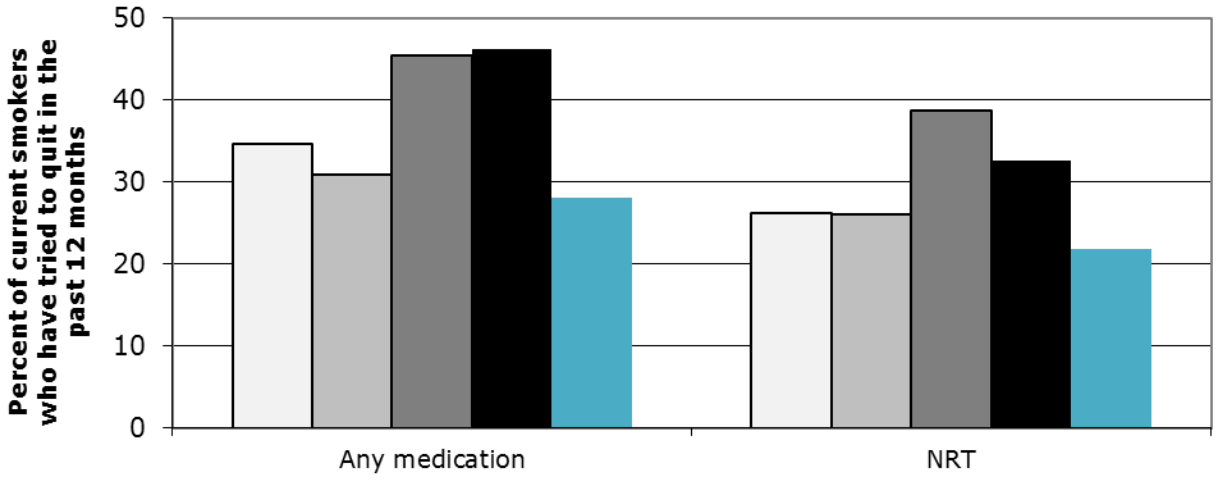
In 2014, approximately two thirds (66.0±5.0 percent) of current smokers who have tried to quit smoking in the past year believe that they could quit smoking without stop-smoking medications, compared to the 56.1±5.8 percent holding that belief in 2010. This change is not statistically significant. However, it is statistically significant when applying a two-tailed test. There are no statistically significant changes in the percentage that believe that stop-smoking medications are too expensive (73.0±5.1 percent in 2014 compared to 74.0±5.4 percent in 2010), that they don't know enough about stop-smoking medications (38.1±5.4 percent compared to 42.8±5.8 percent in 2010), that stop-smoking medications are hard to get (21.6±4.7 percent compared to 20.6±5.0 percent in 2010), and that stop-smoking medications might harm health (56.9±5.7 percent in 2014 compared to 51.7±6.2 percent in 2010).

Use of Any Stop-Smoking Medications and Counseling

Among current smokers with a quit attempt in the previous 12 months and recent former smokers, there is a decrease in the use of any stop-smoking assistance since 2010. In 2014, 30.0±4.6 percent used some form of assistance, compared to 49.2±5.6 percent in 2010. This is not a statistically significant change on a one-tailed test, but is significant on a two-tailed test.

Stop-smoking Medications and Nicotine Replacement Therapy. In 2014, 28.1±4.5 percent of current smokers with a quit attempt in the previous 12 months and recent former smokers used some kind of stop-smoking medication in their most recent quit attempt, compared to 46.3±5.6 percent in 2010.(Figure 4-4). This is not a statistically significant change on a one-tailed test, but is significant on a two-tailed test. The percentage that used nicotine replacement therapy in their most recent quit attempt also decreased significantly on a two-tailed test to 21.8±4.1 percent in 2014, from 32.6±5.4 percent in 2010.

Figure 4-4. Use of any stop-smoking medication and of NRT among current smokers who have tried to quit in the past 12 months, from 1999 to 2014



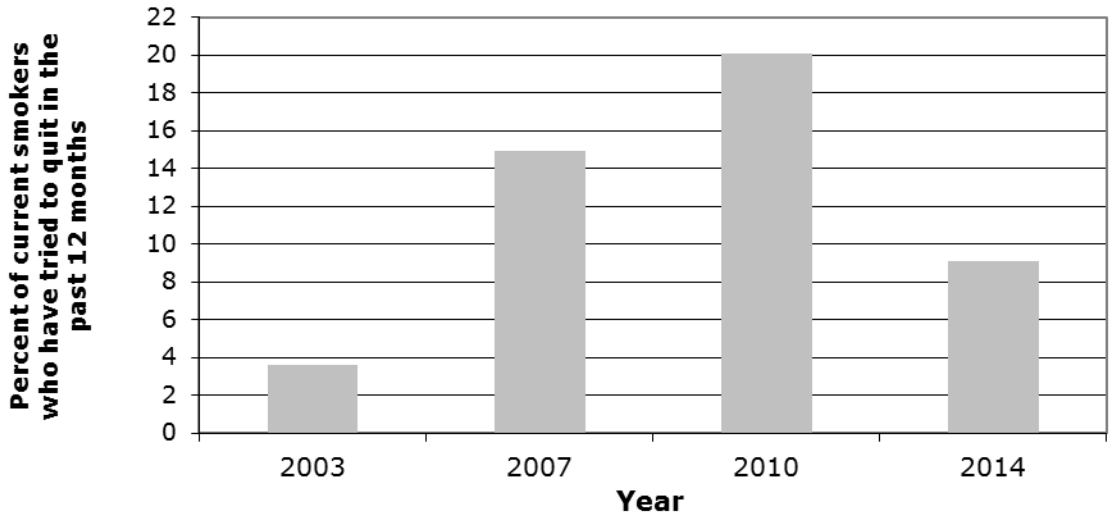
Year	Any medication	NRT
1999	34.6 ± 6.7	26.2 ± 6.0
2003	30.9 ± 4.8	26.0 ± 4.4
2007	45.5 ± 6.1	38.7 ± 5.8
2010	46.3 ± 5.6	32.6 ± 5.4
2014	28.1 ± 4.5	21.8 ± 4.1
Change from 2010 to 2014	-18.2	-10.8

Hypothesis: The percentages who used any medication or used NRT will increase between 2010 and 2014

Source: Minnesota Adult Tobacco Surveys, 1999, 2003, 2007, 2010, and 2014

Behavioral Therapy. In 2014, 9.1±3.0 percent of current smokers with a quit attempt and recent former smokers in the previous 12 months used behavioral therapy (Figure 4-5), a decrease from 2010 (20.1±4.6 percent). This is not a statistically significant change on a one-tailed test, but is significant on a two-tailed test.

Figure 4-5. Use of behavioral therapy by current smokers who have tried to quit in the past 12 months, from 2003 to 2014



	2003	2007	2010	2014	Change from 2010 to 2014
Percent of current smokers who have tried to quit in the past 12 months	3.6 ± 1.8	14.9 ± 4.0	20.1 ± 4.6	9.1 ± 3.0	-11.0

Hypothesis: The percentage who used behavioral therapy will increase from 2010 to 2014

Source: Minnesota Adult Tobacco Surveys, 2003, 2007, 2010, and 2014

4.3 Assistance from Health Care Providers

This section examines the smoker's path to quitting through treatment received from a health care provider, specifically whether patients recall being asked if they smoke, advised to quit, or referred to an appropriate cessation counseling program. Section 4.3.1 examines the adult Minnesota smokers who have seen health care providers and their demographic characteristics. Section 4.3.2 describes how well adult Minnesota smokers are being identified and encouraged to quit by their providers. Section 4.3.3 describes whether smokers are being connected by their providers to the effective treatments available in Minnesota.

4.3.1 Visits to Providers

Visits to Any Health Care Providers

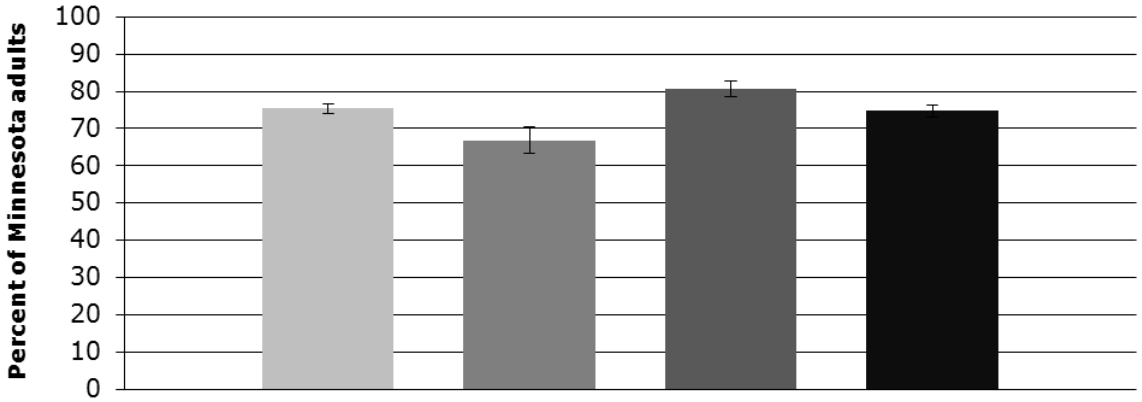
Survey Question

In the past 12 months, did you visit any doctor or other health care provider about your own health?

Visits to Any Provider by All Minnesota Adults

Visit to Any Provider. Over 75.4±1.2 percent of all adult Minnesotans visited a health care provider in the last 12 months, while 66.8±3.6 percent of smokers saw a provider (Figure 4-6). In comparison, 74.8±1.6 percent of never smokers and 80.8±2.1 percent of former smokers saw a provider in the last 12 months. These differences are all statistically significant.

Figure 4-6. Minnesota adults who visited a health care provider in the last 12 months, by smoking status



Smoking status	Visited one or more providers
Overall	75.4 ± 1.2
Current smokers	66.8 ± 3.6
Former smokers	80.8 ± 2.1
Never smokers	74.8 ± 1.6

Source: Minnesota Adult Tobacco Survey, 2014

Visits to Providers by Smokers

The statistics about Minnesota adults seeing health care providers are most useful as points of comparison with smokers' use of health care providers. The rest of this section focuses on smokers' visits with health care providers.

As previously noted, 66.8±3.6 percent of current smokers—about 390,000 smokers—saw a provider in the last 12 months. Since this section focuses on the supportive effect of health care providers on quitting, it is worthwhile to examine the smokers who saw a provider by age, gender, education and income.

Table 4-7 presents the percentage of each demographic group of smokers who saw a provider in the last 12 months. The likelihood that a smoker visited any health care provider in the past year increases with the age of the smoker. Smokers 65 or older are more likely to visit any health care provider (82.7±9.0 percent) than smokers aged 25-44 (61.5±5.6 percent) and young adult smokers aged 18-24 (61.5±11.9 percent). These differences are statistically significant.

Female smokers saw a healthcare provider at a considerably higher rate than male smokers, 73.6±5.1 percent as compared to 61.5±5.0 percent, a statistically significant difference. Smokers with at least some college education are more likely to have seen a healthcare provider than those with a high school degree or less, at a rate of 73-76 percent compared to 59-61 percent. The percentages for the two higher educational levels are significantly different from those for smokers with only a high school degree. There are no significant differences by household income level.

Table 4-7. Health care provider visits in the last 12 months among current smokers, by selected demographic characteristics

Characteristics	Any provider
	%
Overall	**66.8** ± 3.6
Age	
18 to 24	**61.5** ± 11.9
25 to 44	**61.5** ± 5.6
45 to 64	**72.7** ± 5.2
65 or older	**82.7** ± 9.0
Gender	
Female	**73.6** ± 5.1
Male	**61.5** ± 5.0
Education	
Less than high school	**59.4** ± 11.9
High school graduate/GED	**60.5** ± 6.1
Some college or technical school	**73.2** ± 5.4
College graduate or beyond	**76.3** ± 8.4
Household income	
$35,000 or less	**65.2** ± 5.8
$35,001 to $50,000	**64.4** ± 9.5
$50,001 to $75,000	**72.8** ± 8.1
$75,001 or more	**67.5** ± 8.1

Source: Minnesota Adult Tobacco Survey, 2014

4.3.2 Interventions With Smokers: The Ask, Advise and Refer Model

The 2008 U.S. Public Health Service (PHS) Guideline strongly recommends that physicians and other providers implement five evidence-based strategies to help smokers quit, sometimes referred to as the 5As[2]. The MATS 2014 questions capture the outcomes of the more streamlined three-step health care provider tobacco treatment model (Ask, Advise and Refer). The rest of this section examines implementation of this model.

[2] Fiore MC, et al. *Treating Tobacco Use and Dependence: 2008 Update*. Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service. May 2008.

The Ask, Advise and Refer Model in MATS

MATS assesses the three-step Ask, Advise and Refer model. This streamlined model encourages providers to ask their patients if they smoke and then to advise them to stop smoking if they do. "Refer" describes how providers should encourage patients to use behavioral counseling and stop-smoking medications. MATS measured the Ask, Advise and Refer model using the following questions.

Survey Questions

Ask

- During the past 12 months, did a doctor or any other health care provider ask if you smoke?

Advise

- During the past 12 months, did a doctor or any other health care provider advise you to quit smoking?

Refer

- In the past 12 months, was medication recommended or discussed by a doctor or health care provider to help you quit? Examples of medication are: nicotine gum, patch, lozenge, or prescription medication.

  If Yes to the above:

- In the past 12 months, how often was medication recommended or discussed by a doctor or health care provider to help you quit? Would you say never, rarely, sometimes or always?
- In the past 12 months, did your doctor or other health care provider discuss or offer services other than medication to help you quit? Examples are: telephone helplines, individual or group counseling or cessation programs.
- If Yes to the above:
- In the past 12 months, how often did your doctor or health care provider discuss or offer services other than medication to help you quit?? Would you say never, rarely, sometimes or always?

Implementation of Ask, Advise and Refer Model in Minnesota

The next sections look at the extent to which Minnesota adult smokers experienced each of the steps in the Ask, Advise and Refer model.

Ideally, all patients would report that their health care providers implement the clinical practice guideline. The analysis of smokers' experience with the Ask, Advise and Refer model is limited to those smokers who actually saw a health care provider. The results appear in Table 4-8. The percentages are smokers who received the activity (indicated in each table column) from at least one provider they saw in the last 12 months, as a percentage of those *smokers who saw any provider* in the last 12 months.

Table 4-8. Ask, Advise and Refer model services received from health care providers among smokers who visited any provider in the last 12 months, by selected demographic characteristics

Characteristics	Asked	Advised	Referred
	%	%	%
Overall	**97.5** ± 1.3	**78.9** ± 3.8	**52.6** ± 4.6
Age			
18 to 24	**95.8** ± 5.0	**61.7** ± 13.9	**19.6** ± 11.3
25 to 44	**98.6** ± 2.1	**77.9** ± 6.3	**56.7** ± 7.5
45 to 64	**97.2** ± 1.7	**85.5** ± 5.0	**55.7** ± 7.0
65 or older	**95.0** ± 4.2	**78.3** ± 8.6	**65.5** ± 10.5
Gender			
Female	**97.1** ± 2.0	**81.4** ± 5.3	**52.4** ± 6.5
Male	**97.8** ± 1.6	**76.5** ± 5.3	**52.9** ± 6.6
Education			
Less than high school	**97.1** ± 3.9	**78.5** ± 11.8	**48.2** ± 15.6
High school graduate/GED	**98.5** ± 1.2	**78.0** ± 6.6	**52.6** ± 8.1
Some college or technical school	**96.8** ± 2.6	**81.0** ± 5.6	**57.3** ± 7.0
College graduate or beyond	**97.0** ± 2.5	**74.3** ± 10.0	**40.8** ± 9.9
Household income			
$35,000 or less	**97.7** ± 1.6	**80.8** ± 5.6	**56.1** ± 7.1
$35,001 to $50,000	**95.7** ± 4.7	**72.6** ± 11.7	**48.9** ± 12.6
$50,001 to $75,000	**95.5** ± 4.6	**75.1** ± 9.8	**49.2** ± 11.0
$75,001 or more	**99.0** ± 1.0	**83.4** ± 7.1	**52.3** ± 10.1

Source: Minnesota Adult Tobacco Survey, 2014

Getting the Ask, Advise and Refer Model from Any Provider. Among smokers who saw any provider in the last 12 months, 97.5±1.3 percent of them reported being asked if they smoke and 78.9±3.8 percent were advised not to smoke. More than half (52.6±4.6 percent) of current smokers received a referral for assistance to quit smoking.

In 2014, nearly all smokers reported being asked by a provider if they smoke. The percentage of patients who report that providers advise could still be improved. The

lower rate for referral suggests that more providers need to implement this portion of the guideline consistently.

In terms of being asked by providers if they smoke or being advised not to smoke, there are no statistically significant differences by age, gender, education or income.

In terms of receiving referrals for assistance, there is no apparent demographic trend and few apparent differences. Young adults 18-24 received referrals the least of all the age groups (19.6±11.3 percent), the differences being statistically significant. There are no statistically significant differences by gender, education or income.

4.3.3 Referral Received by Smokers from Providers

As noted, MATS identified three ways that providers could refer their patients who smoke to assist with quitting: providing any referral, recommending stop-smoking medications, and recommending behavioral counseling.

Table 4-9 presents the percentage of smokers who received any form of referral from a health care provider. The first row, *Any Referral*, is identical to the *Referred* column in Table 4-8 and is included here for convenient reference. A provider may furnish more than one form of referral.

Table 4-9. Stop-smoking referrals received by smokers who visited a provider in last 12 months, among all smokers who visited a provider

Form of referral	Any provider
	%
Any referral	**52.6** ± 4.6
Recommended medication	**41.3** ± 4.5
Suggested quit smoking program	**32.1** ± 4.4

Source: Minnesota Adult Tobacco Survey, 2014

Overall, 41.3±4.5 percent of smokers who saw a provider received a recommendation for stop-smoking medication from a provider in the last 12 months and nearly one-third (32.1±4.4 percent) received a recommendation for a quit-smoking program.

Frequency of Referrals

Table 4-10 reports the frequency of receiving recommendations for medications and behavioral interventions among smokers who visited a provider in the last 12 months by demographic characteristics. Nearly half of smokers reported always receiving recommendations (46.0±7.1 percent for medications and 49.8±8.4 for behavioral interventions). For medication interventions, there is a statistically significant difference between the lowest (38.1±11.4 percent) and highest (64.8±14.6 percent) income groups for adults indicating they always received recommendations for medication. There are no other significant differences among age, gender, education, or household income.

Table 4-10. Frequency of receiving recommendations for medications and behavioral interventions among smokers who visited a provider in the last 12 months, by selected demographic characteristics

Characteristics	Medications			Behavorial Interventions		
	Rarely	Sometimes	Always	Rarely	Sometimes	Always
	%	%	%	%	%	%
Overall	**29.2** ± 6.4	**24.7** ± 5.9	**46.0** ± 7.1	**25.2** ± 7.2	**25.1** ± 7.0	**49.8** ± 8.4
Age						
18 to 24	**39.9** ± 33.0	**24.3** ± 19.4	**35.7** ± 36.5	**S**	**S**	**S**
25 to 44	**22.5** ± 9.7	**31.4** ± 10.5	**46.1** ± 11.5	**23.5** ± 11.5	**30.1** ± 12.0	**46.4** ± 13.8
45 to 64	**33.3** ± 10.8	**20.6** ± 7.7	**46.1** ± 10.9	**23.0** ± 10.2	**17.7** ± 7.4	**59.2** ± 11.2
65 or older	**36.2** ± 14.3	**13.9** ± 8.4	**49.9** ± 15.1	**26.9** ± 17.8	**44.6** ± 21.5	**28.6** ± 17.4
Gender						
Female	**24.7** ± 8.3	**25.6** ± 8.6	**49.8** ± 10.0	**25.3** ± 10.0	**31.3** ± 10.1	**43.4** ± 11.2
Male	**33.5** ± 9.6	**24.0** ± 8.0	**42.6** ± 10.1	**25.1** ± 10.6	**18.1** ± 8.9	**56.8** ± 12.3
Education						
Less than high school	**42.1** ± 24.9	**21.9** ± 14.1	**36.0** ± 25.3	**31.9** ± 22.4	**16.7** ± 11.4	**51.4** ± 26.3
High school graduate/GED	**21.4** ± 9.3	**33.6** ± 12.7	**45.0** ± 13.0	**31.7** ± 13.2	**23.1** ± 12.1	**45.2** ± 14.8
Some college or technical school	**31.1** ± 9.9	**19.8** ± 7.1	**49.1** ± 10.3	**18.2** ± 9.6	**28.5** ± 10.1	**53.4** ± 12.2
College graduate or beyond	**32.1** ± 14.9	**19.5** ± 12.8	**48.4** ± 15.7	**27.3** ± 16.6	**23.6** ± 13.4	**49.1** ± 18.1
Household income						
$35,000 or less	**30.6** ± 10.5	**31.3** ± 10.3	**38.1** ± 11.4	**22.6** ± 11.2	**27.4** ± 11.0	**50.0** ± 13.5
$35,001 to $50,000	**40.4** ± 19.0	**17.0** ± 14.3	**42.6** ± 19.0	**45.9** ± 21.4	**19.9** ± 14.9	**34.2** ± 16.6
$50,001 to $75,000	**31.8** ± 14.9	**31.5** ± 14.6	**36.8** ± 15.5	**15.7** ± 19.0	**45.3** ± 21.9	**39.0** ± 20.1
$75,001 or more	**21.4** ± 12.5	**13.9** ± 9.6	**64.8** ± 14.6	**16.3** ± 10.3	**17.0** ± 10.9	**66.7** ± 14.3

Source: Minnesota Adult Tobacco Survey, 2014

Note: "S" in the table indicates data suppression because of small sample size

4.4 Smoke-free Policies and Quitting

This section examines associations of smoke-free -policies at home and in vehicles with quitting attempts.

4.4.1 Home Smoke-free Rules and Quitting

Home Smoke-free Rules

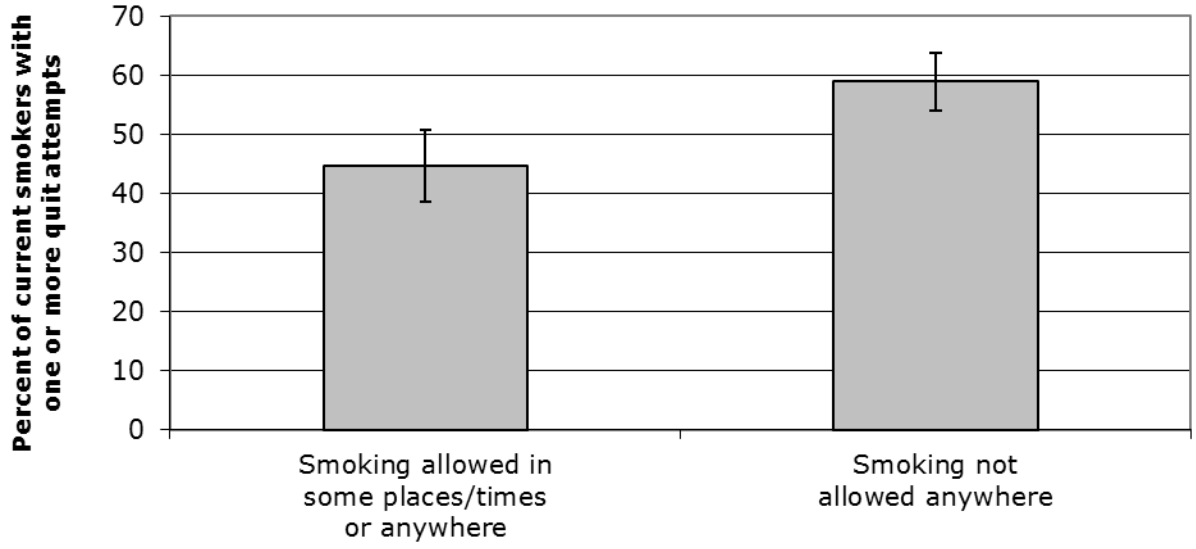
Survey Question

- Which statement best describes the rules about smoking inside your home? Do not include decks, garages or porches. Smoking is not allowed anywhere inside your home, smoking is allowed in some places or at some times, or smoking is allowed anywhere inside the home?

Almost 90 percent (89.3±0.9 percent) of Minnesota adults live in homes where smoking is not allowed anywhere. Not unexpectedly, never smokers (95.5±0.8 percent) are the most likely to live in homes with smoke-free policies, followed by former smokers (90.8±1.5 percent) and current smokers (61.4±3.7 percent). These differences among smoking status groups are statistically significant. Notably, a majority of all smokers live in homes where smoking is not allowed. Smoke-free policies at home are discussed in more detail in Chapter 5.

Nearly 60 percent (58.9±4.8 percent) of smokers with smoke-free policies in their home tried to quit smoking in the past year, compared with 44.6±6.1 percent of those who do not have smoke-free policies at home (Figure 4-7). This difference is statistically significant ($p<0.05$).

Figure 4-7. Current smokers with one or more quit attempts in the past 12 months, by smoking policy inside the home



	Smoking allowed in some places/times or anywhere	Smoking not allowed anywhere
Percent of current smokers with one or more quit attempts	44.6 ± 6.1	58.9 ± 4.8

Source: Minnesota Adult Tobacco Survey, 2014

4.4.2 Vehicle Smoke-free Rules and Quitting

Vehicle Smoke-free Rules

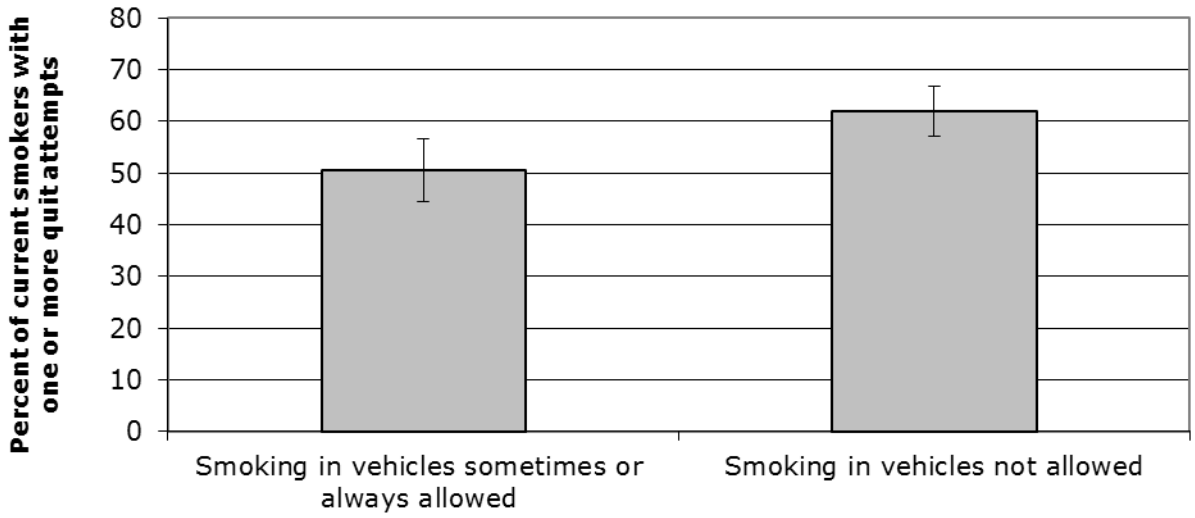
Survey Question

- Not counting motorcycles, in the vehicles that you or family members who live with you own or lease, is smoking…
  - Always allowed in vehicles,
  - Sometimes allowed in at least one vehicle,
  - Never allowed in any vehicle?
  - NO ONE IN FAMILY OWNS A VEHICLE

More than three quarters (77.6±1.2 percent) of Minnesota adults who have a vehicle or whose household members have a vehicle report that smoking is not allowed in the non-motorcycle vehicles owned or leased by themselves or by family members with which they live. Similar to smoke-free home policies, never smokers (88.6±1.2 percent) are the most likely to not allow smoking in vehicles, followed by former smokers (81.7±2.0 percent) and current smokers (25.0±3.3 percent). These differences among smoking status groups are statistically significant. Smoke-free policies in vehicles are discussed in more detail in chapter 5.

More than 60 percent (60.2±7.5 percent) of smokers with smoke-free policies in their vehicles tried to quit smoking in the past year, compared with 50.6±4.4 percent of those who do not have smoke-free policies in vehicles (Figure 4-8). This association is statistically significant ($p<0.05$).

Figure 4-8. Current smokers with one or more quit attempts in the past 12 months, by smoking policy in vehicles



	Smoking in vehicles sometimes or always allowed	Smoking in vehicles not allowed
Percent of current smokers with one or more quit attempts	50.6 ± 4.4	62.0 ± 7.5

Source: Minnesota Adult Tobacco Survey, 2014

4.5 Menthol Cigarette Users' Reaction to a Potential Menthol Ban

Hypothetical behaviors of menthol smokers in the face of a menthol ban

Survey Questions

- If menthol cigarettes were no longer sold in U.S. stores, would you quit smoking?
- Which of the following would you be most likely to do if menthol cigarettes were no longer sold in U.S. stores? Would you…
  - Switch to non-menthol cigarettes
  - Switch to some other non-menthol tobacco product
  - Switch to menthol electronic cigarettes
  - Switch to some other menthol tobacco product
  - Buy menthol cigarettes online
  - Buy menthol cigarettes from another country

Nearly 50 percent (49.8±8.1 percent) of menthol cigarette smokers indicated that they would quit smoking if menthol cigarettes were no longer sold in the United States (Table 4-11). Differences between age groups, genders, and education levels are not statistically significant. There is little difference between menthol smokers in the middle household income categories: 40.4±20.4 percent of households in the $35,000 to $50,000 group and 39.6±22.0 percent of households in the $50,000 to $75,000 group indicated that they would quit in response to a ban. However, a statistically significant difference occurs between household incomes in the lowest and highest income categories. The percentage of menthol smokers in the $35,000 or less income category indicating they would quit smoking (62.5±11.5 percent) was more than double that of menthol smokers in the $75,000 or more income category (25.8±13.8 percent).

The majority (51.6±11.9 percent) of menthol smokers who would not quit in response to a ban stated that they would switch to non-menthol cigarettes. Nearly a quarter (23.5±10.4 percent) indicated they would likely switch to menthol e-cigarettes. There is a statistically significant difference between those in the $75,000 or more income group (0.2±0.3 percent) and the other income groups in the likelihood of switching to menthol

e-cigarettes. Buying menthol cigarettes online was only chosen as a likely reaction by 10.8±7.1 percent of menthol smokers. The remaining three options were selected by around 5 percent or less of menthol smokers.

Table 4-11. Reactions to Menthol Cigarettes no longer being sold in the United States among menthol cigarette smokers, by selected demographic characteristics

Characteristics	Quit smoking	Most likely reaction among menthol cigarette smokers who would not quit					
		Switch to non-menthol cigarettes	Switch to other non-menthol tobacco product	Switch to menthol E-cigarettes	Switch to other menthol tobacco product	Buy menthol cigarettes online	Buy menthol cigarettes from another country
	%	%	%	%	%	%	%
Overall	**49.8** ± 8.1	**51.6** ± 11.9	**3.6** ± 4.7	**23.5** ± 10.4	**5.2** ± 4.5	**10.8** ± 7.1	**5.1** ± 6.0
Age							
18 to 24	**48.4** ± 20.4	**51.5** ± 22.0	**0.0** ± 0	**12.8** ± 20.2	**9.0** ± 11.9	**13.5** ± 18.0	**13.3** ± 2.8
25 to 44	**51.6** ± 11.9	**44.5** ± 19.5	**7.3** ± 10.2	**35.4** ± 19.4	**4.8** ± 7.0	**6.5** ± 7.3	**1.7** ± 3.3
45 to 64	**47.3** ± 14.0	**67.7** ± 18.0	**0.0** ± 0.0	**12.3** ± 11.4	**0.0** ± 0.0	**16.0** ± 15.9	**4.1** ± 3.5
65 or older	**53.7** ± 23.9	**S**	**S**	**S**	**S**	**S**	**S**
Gender							
Female	**57.5** ± 11.2	**50.6** ± 17.0	**8.0** ± 10.7	**23.9** ± 15.3	**1.6** ± 3.1	**12.7** ± 11.3	**3.1** ± 3.0
Male	**42.0** ± 11.1	**52.9** ± 17.2	**0.2** ± 0.3	**23.1** ± 15.2	**7.9** ± 7.5	**9.3** ± 9.5	**6.6** ± 10.4
Education							
Less than high school	**64.3** ± 22.5	**40.5** ± 39.6	**0.0** ± 0.0	**24.1** ± 45.2	**0.0** ± 0.0	**35.4** ± 41.5	**0.0** ± 0.0
High school graduate/GED	**37.9** ± 12.9	**48.5** ± 19.0	**5.8** ± 10.1	**19.2** ± 15.7	**11.2** ± 9.9	**7.6** ± 9.6	**7.8** ± 12.8
Some college or technical school	**56.3** ± 12.0	**55.3** ± 18.4	**2.9** ± 4.6	**29.9** ± 17.5	**0.7** ± 1.3	**9.3** ± 9.4	**2.0** ± 2.5
College graduate or beyond	**39.2** ± 19.5	**68.4** ± 27.3	**0.0** ± 0.0	**16.0** ± 22.7	**1.2** ± 0.5	**2.6** ± 2.9	**11.9** ± 17.6
Household income							
$35,000 or less	**62.5** ± 11.5	**45.3** ± 19.4	**0.3** ± 0.5	**33.7** ± 20.0	**4.3** ± 4.9	**13.4** ± 12.9	**3.1** ± 5.0
$35,001 to $50,000	**40.4** ± 20.4	**52.7** ± 26.7	**1.5** ± 3.1	**30.7** ± 26.2	**0.0** ± 0.0	**14.0** ± 25.8	**1.1** ± 2.2
$50,001 to $75,000	**39.6** ± 22.0	**39.9** ± 23.2	**10.9** ± 20.8	**33.7** ± 22.5	**7.6** ± 15.1	**6.2** ± 1.3	**1.8** ± 0.4
$75,001 or more	**25.8** ± 13.8	**65.9** ± 25.2	**3.3** ± 6.4	**0.2** ± 0.3	**8.5** ± 11.3	**8.5** ± 12.4	**13.8** ± 21.1

Source: Minnesota Adult Tobacco Survey, 2014

Note: S in the table indicates data suppression because of low values

4.6 Key Findings

Some of the most important findings from this chapter are summarized below. All differences presented in this summary are statistically significant at the 0.05 confidence level unless otherwise noted.

Key Quitting Behavior Findings for 2014

- In the 12 months preceding MATS 2014, 17.3±1.1 percent of Minnesota adults smoked cigarettes. This represents current smokers and former smokers who last smoked regularly less than a year ago and total about 687,000 adults.
- Among current smokers with a quit attempt in the past 12 months, over half made more than one attempt: 22.2±4.4 percent made two attempts, 13.9±4.4 percent made three attempts, and 20.5±4.4 percent made four or more attempts.
- Approximately two-thirds (66.0±5.0 percent) of current smokers who have tried to quit smoking in the past year believe that they could quit smoking without stop-smoking medications.
- Young adult smokers (83.3±8.3 percent) are more likely than current smokers in the 25-44 (66.5±7.7) or 45-64 (57.7±8.7) year old age groups to believe they can quit smoking without stop-smoking medications. Males are more likely than females to believe they can quit smoking without stop-smoking medications.
- Of current smokers with a quit attempt in the past 12 months, 30±4.6 percent used some form of quitting assistance.
- Nearly 30 percent (28.1±4.5 percent) of current smokers with a quit attempt in the past 12 months used some kind of stop-smoking medication in their last quit attempt.
- Some form of nicotine replacement therapy was used by 21.8±4.1 percent of current smokers with a quit attempt in the past 12 months.
- Around 10 percent of current smokers with a quit attempt in the past 12 months used prescription medications in the quit attempt.
- E-cigarettes were used as part of a quit attempt by 45.3±5.4 percent of current smokers with a quit attempt in the past 12 months.
- Behavioral counseling was used by less than 10 percent (9.1±3.1) of current smokers with a quit attempt in the past 12 months.
- Approximately two-thirds (66.8±3.6 percent) of current smokers visited a health care provider in the past 12 months.

- Among smokers who saw any provider in the past 12 months, 97.5±1.3 percent reported being asked if they smoke and 78.9±3.8 percent were advised not to smoke. More than half (52.6±4.6 percent) of current smokers received a referral for assistance to quit smoking.

- Overall, 41.3±4.5 percent of smokers who saw a provider in the past 12 months received a recommendation for stop-smoking medication and nearly one-third (32.1±4.4 percent) received a recommendation for a quit-smoking program.

- Almost 90 percent (89.3±0.9 percent) of Minnesota adults live in homes where smoking is not allowed anywhere. Never smokers (95.5±0.8 percent) are the most likely to live in homes with smoke-free policies, followed by former smokers (90.8±1.5 percent) and current smokers (61.4±3.7 percent). These differences among smoking status groups are statistically significant.

- Nearly 60 percent (58.9±4.8 percent) of smokers with smoke-free policies in their home tried to quit smoking in the past year, compared with 44.6±6.1 percent of those who do not have smoke-free policies at home. This difference is statistically significant.

- More than three quarters (77.6±1.2 percent) of Minnesota adults who or whose household members have a vehicle report that smoking is not allowed in the vehicles. Similar to smoke-free home policies, never smokers (88.6±1.2 percent) are the most likely to not allow smoking in vehicles, followed by former smokers (81.7±2.0 percent) and current smokers (25.0±3.3 percent). These differences among smoking status groups are statistically significant.

- More than 60 percent (60.2±7.5 percent) of smokers with smoke-free policies in their vehicles tried to quit smoking in the past year, compared with 50.6±4.4 percent of those who do not have smoke-free policies in vehicles. This association is statistically significant.

- Nearly 50 percent (49.8±8.1 percent) of menthol cigarette smokers indicated that they would quit smoking if menthol cigarettes were no longer sold in the United States.

- The majority (51.6±11.9 percent) of menthol smokers who would not quit in response to a ban stated that they would switch to non-menthol cigarettes.

- Nearly a quarter (23.5±10.4 percent) of menthol smokers who would not quit in response to a ban indicated they would likely switch to menthol e-cigarettes.

Those in the highest level income group (0.2±0.3 percent) were less likely to switch to menthol e-cigarettes compared to the other income groups. This difference is statistically significant.

Key Quitting Behavior Findings for 2010 to 2014

- Between 2010 and 2014, the percentage of past-year smokers who successfully quit increased from 12.8±2.5 percent to 15.6±2.4 percent. This is not a statistically significant change.

- The percentage of smokers with a quit attempt in the past 12 months who used some form of assistance decreased from 49.2±5.6 percent in 2010 to 30.0±4.6 percent in 2014. This is statistically significant on a two-tailed test.

- Between 2010 and 2014, the percentage of smokers with a quit attempt in the past 12 months who used some kind of stop-smoking medication decreased from 46.3±5.6 percent to 28.1±4.5 percent. This is statistically significant on a two-tailed test.

- The percentage of smokers with a quit attempt in the past 12 months who used nicotine replacement therapy decreased from 32.6±5.4 percent in 2010 to 21.8±4.61percent in 2014. This is statistically significant on a two-tailed test.

- In 2014, 9.1±3.0 percent of current smokers with a quit attempt in the previous 12 months used behavioral therapy, a decrease from 2010 (20.1±4.6 percent). This is statistically significant on a two-tailed test.

5. Secondhand Smoke Exposure and Smoke-Free Policies Among Minnesota Adults

5.1 Introduction

This chapter examines exposure to secondhand smoke as well as Minnesotan's perceptions and social norms regarding secondhand smoke exposure. The MATS 2014 results presented here examine the prevalence of exposure to secondhand smoke among nonsmoking Minnesota adults in the community, in the home and in vehicles. This chapter also presents the percentage of Minnesota adults protected by smoke-free policies in homes and vehicles.

5.2 Secondhand Smoke Exposure Among Nonsmoking Adults

This section focuses on secondhand smoke exposure among nonsmoking adults in any setting, and then examines exposure in the community, in a car and at home. Nonsmoking Minnesota adults include those who are not current smokers of cigarettes, pipes or cigars, as defined in chapters 2 and 3.

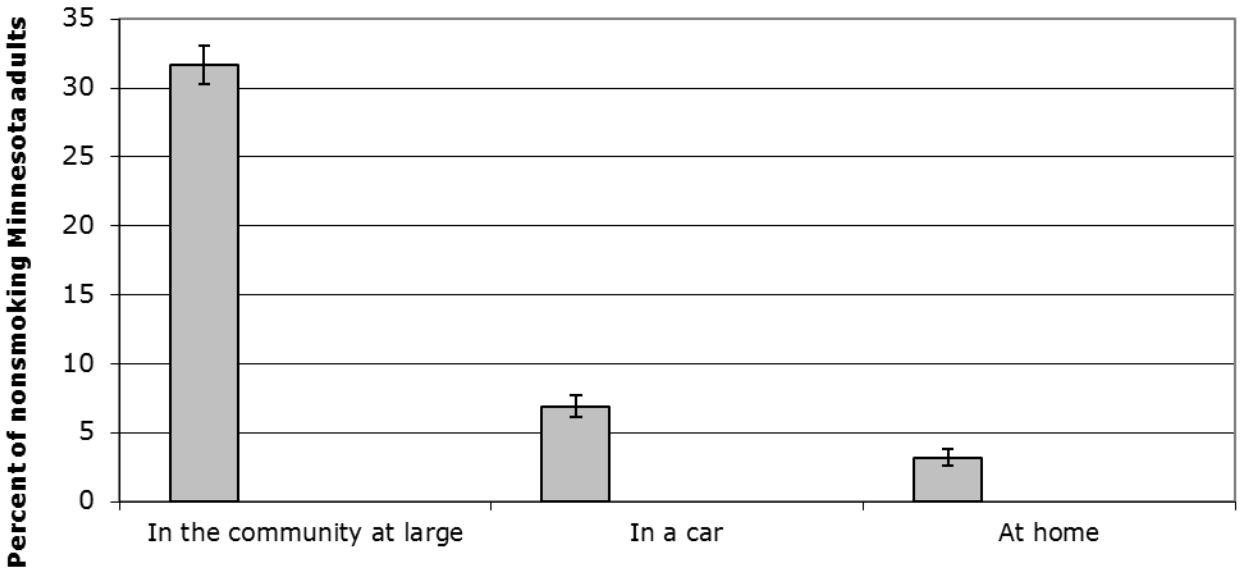
5.2.1 Any Exposure to Secondhand Smoke

Exposure to Secondhand Smoke in Any Setting

Exposure to secondhand smoke in any setting is exposure in any one or more of the following settings: in the community at large, in a car or at home. Questions and definitions for each individual exposure setting (community, car and home) can be found in the sections below.

Exposure to secondhand smoke varies by setting. Nonsmoking Minnesota adults are more likely to be exposed to secondhand smoke in the community at large (31.7±1.4 percent) than in a car (7.6±0.8 percent) and least likely to be exposed at home (3.4±0.6 percent) than in either of the two locations (Figure 5-1). These differences are statistically significant.

Figure 5-1. Exposure of Nonsmoking Minnesota adults to secondhand smoke in the past 7 days, in selected settings



	In the community at large	In a car	At home
Percent of nonsmoking Minnesota adults	31.7 ± 1.4	6.9 ± 0.8	3.2 ± 0.6

Source: Minnesota Adult Tobacco Survey, 2014

There are statistically significant differences in the exposure of nonsmoking Minnesota adults to secondhand smoke by age, gender, education and income level (Table 5-1). Exposure in the community, at home and in a car are described in sections 5.2.2, 5.2.3 and 5.2.4.

Table 5-1. Exposure of nonsmoking Minnesota adults to secondhand smoke in the past seven days in various settings, by selected demographic characteristics

Characteristics	In the community at large	At home	In a car
	%	%	%
Overall	**31.7** ± 1.4	**3.2** ± 0.6	**6.9** ± 0.8
Age			
18 to 24	**45.7** ± 5.2	**6.9** ± 2.7	**14.4** ± 3.6
25 to 44	**37.6** ± 2.7	**1.6** ± 0.7	**6.9** ± 1.4
45 to 64	**29.0** ± 2.3	**3.8** ± 1.0	**6.3** ± 1.2
65 or older	**18.5** ± 2.3	**2.7** ± 1.1	**3.9** ± 1.3
Gender			
Female	**26.8** ± 1.8	**3.1** ± 0.7	**6.4** ± 1.1
Male	**37.3** ± 2.2	**3.3** ± 0.9	**7.5** ± 1.2
Education			
Less than high school	**27.6** ± 7.1	**6.5** ± 3.8	**10.8** ± 4.6
High school graduate/GED	**32.6** ± 3.0	**5.1** ± 1.4	**10.2** ± 1.9
Some college or technical school	**34.2** ± 2.5	**3.1** ± 0.9	**8.5** ± 1.6
College graduate or beyond	**29.2** ± 2.1	**1.3** ± 0.5	**2.4** ± 0.7
Household income			
$35,000 or less	**32.2** ± 3.2	**5.3** ± 1.6	**13.3** ± 2.4
$35,001 to $50,000	**33.0** ± 4.1	**4.3** ± 1.8	**8.0** ± 2.5
$50,001 to $75,000	**33.4** ± 3.5	**3.0** ± 1.2	**6.1** ± 1.9
$75,001 or more	**31.6** ± 2.3	**2.0** ± 0.8	**4.4** ± 1.1

Source: Minnesota Adult Tobacco Survey, 2014

Table 5-2 presents statistics for duration of exposure to secondhand smoke in all locations among nonsmoking adult Minnesotans. Overall, the median duration of exposure to secondhand smoke in the past 7 days, is 6.2±1.8 minutes. Adults aged 45-64 years old are exposed to secondhand smoke for less time than other age groups. Men (4.9±1.1 minutes) are exposed to secondhand smoke for less time than women (8.3±2.0 minutes), a statistically significant difference. Minnesota adults with a college degree are exposed to secondhand hand smoke for the shortest duration (4.5±0.1 minutes) compared to other education levels, the differences being statistically significant. Similarly, adults at the highest level of income are exposed for a shorter duration (4.7±1.1 minutes) compared to those who make $35,000 or less (9.7±2.3 minutes) and $35,000 to $50,000 (8.9±2.2 minutes), the differences being statistically significant.

Table 5-2. Secondhand smoke exposure in the past week among nonsmoking Minnesota adults (in minutes), by selected demographic characteristics

Characteristics	Minutes of exposure (median)
Overall	**6.2** ± 1.8
Age	
18 to 24	**8.2** ± 2.7
25 to 44	**6.5** ± 1.5
45 to 64	**4.7** ± 1.2
65 or older	**9.7** ± 3.1
Gender	
Female	**8.3** ± 2.0
Male	**4.9** ± 1.1
Education	
Less than high school	**12.3** ± 13.0
High school graduate/GED	**8.6** ± 2.0
Some college or technical school	**8.1** ± 1.8
College graduate or beyond	**4.5** ± 0.1
Household income	
$35,000 or less	**9.7** ± 2.3
$35,001 to $50,000	**8.9** ± 2.2
$50,001 to $75,000	**4.9** ± 1.1
$75,001 or more	**4.7** ± 1.1

Source: Minnesota Adult Tobacco Survey, 2014

5.2.2 Secondhand Smoke Exposure in the Community

Exposure to Secondhand Smoke in the Community

Exposure in the community at large includes exposure in any setting other than car or home.

Survey Question

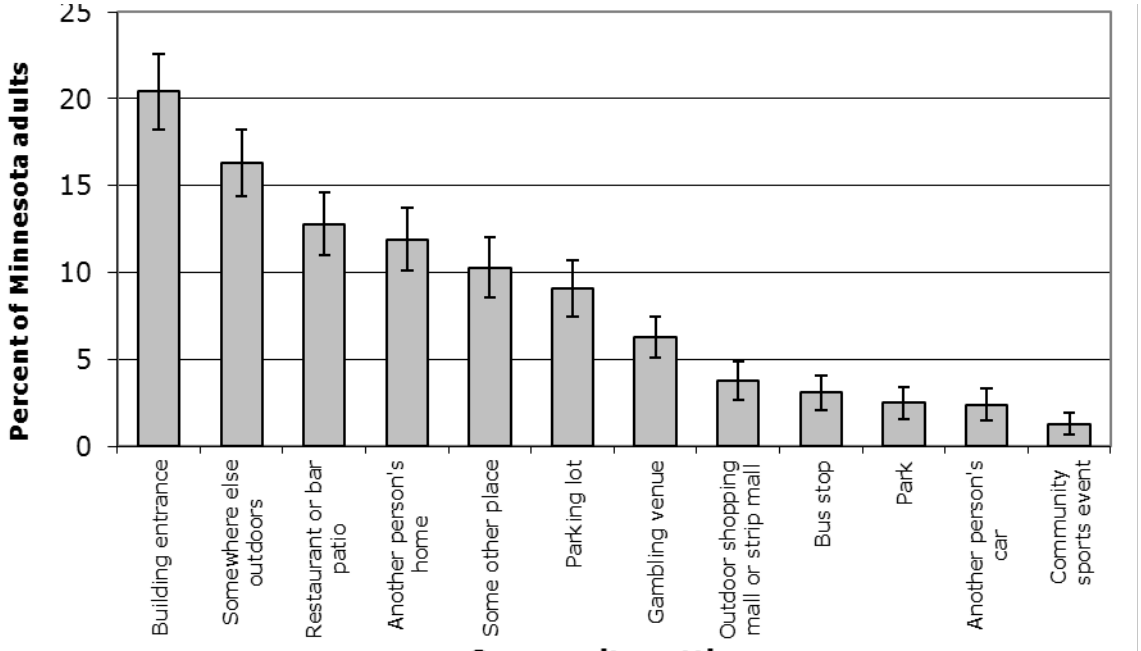
- In Minnesota, in the past seven days, has anyone smoked near you at any place besides your home or car?
  If Yes:

The last time this happened, in Minnesota, where were you? Were you at... a restaurant or bar outdoor patio, a building entrance, an outdoor shopping mall or strip mall, a community sports event, a gambling venue, a park, a bus stop, a parking lot, another person's home, another person's car, somewhere else outdoors, or some other place?

Almost one-third (31.7±1.4 percent) of nonsmoking adult Minnesotans have been exposed to secondhand smoke in their community in the past seven days (Table 5-1). Young adults 18-24 years old (45.7±5.2 percent) are more likely to be exposed to secondhand smoke in the community than any other age group. Similarly, men (37.3±2.2 percent) are more likely to be exposed to secondhand smoke in the community than women (26.8±1.8 percent). These differences are statistically significant.

The most commonly reported location for recent community exposure to secondhand smoke among nonsmokers is a building entrance (20.4±2.2 percent), followed by somewhere outdoors (16.3±2.0 percent) and the outdoor patio of a restaurant or a bar (12.8±1.8 percent) (Figure 5-2).

Figure 5-2. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke in community settings, by type of setting



	Building entrance	Somewhere else outdoors	Restaurant or bar patio	Another person's home	Some other place	Parking lot	Gambling venue	Outdoor shopping mall or strip mall	Bus stop	Park	Another person's car	Community sports event
Percent of Minnesota adults	20.4 ± 2.2	16.3 ± 1.9	12.8 ± 1.8	11.9 ± 1.8	10.3 ± 1.7	9.1 ± 1.6	6.3 ± 1.2	3.8 ± 1.1	3.1 ± 1.0	2.5 ± 0.9	2.4 ± 0.9	1.3 ± 0.6

Source: Minnesota Adult Tobacco Survey, 2014

5.2.3 Secondhand Smoke Exposure at Home

Presence of children under 18 in the Home and Exposure to Secondhand Smoke

Survey Questions

- Are there any children under age 18 living in this household?
- During the past seven days, how many days did anyone smoke cigarettes, cigars, or pipes anywhere inside your home?
- Do you live in an apartment building, condo, townhome, or other building with shared walls?
- During the past 7 days, have you smelled smoke from cigarettes, cigars or pipes anywhere inside the building, including your own apartment?

Overall, 3.2±0.6 percent of nonsmoking Minnesota adults report exposure to secondhand smoke inside their home in the past seven days (Table 5-1). There are statistically significant differences in smoking in the home by age, education, and income. Young adults 18-24 years old (6.9±2.7 percent) are more likely to report that someone has smoked in their home than adults 25-44 years old (1.6±0.7 percent) or adults 65 and older (2.7±1.1 percent). Exposure in the home appears to decrease steadily as education and income level increase. Adults with less than a high school degree (6.5±3.8 percent), adults with a high school degree (5.1±1.4 percent), and adults with some college or technical school (3.1±0.9 percent) are more likely to say that someone has smoked in their home than adults with a college degree (1.3±0.5 percent). Similarly, adults at the lowest income level are more likely to say that someone has smoked in their home (5.3±1.6 percent) than adults at the highest income group (2.0±0.8 percent). There are no statistically significant differences in smoking in the home by gender.

A large number of Minnesota's children live in homes where secondhand smoke is sometimes present. Among nonsmoking adults with children living in their households, 6.5±1.2 percent report that someone has smoked in their home in the past seven days. This means that, in a given week, someone smoked in the homes of around 95,000 adults who have one or more children in the home.

Among all nonsmokers who live in multi-unit housing, 17.1±2.7 have smelled smoke from cigarettes, cigars or pipes anywhere inside their home in the past seven days (Table 5-3). Among adults 65 or older, only 7.8±3.3 percent have smelled smoke in the past seven days inside their home. This percentage is significantly lower compared to any other age group. There are no statistically significant differences in smelling smoke inside the home among nonsmoking Minnesota adults by gender, education and income level.

Table 5-3. Smelling cigarette, cigar or pipe smoke inside the home, among non-smoking Minnesota adults who live in multi-unit housing, by selected demographic characteristics

Characteristics	Smelled cigarette, cigar or pipe smoke inside the home
	%
Overall	**17.1** ± 2.7
Age	
18 to 24	**19.1** ± 6.6
25 to 44	**18.8** ± 4.9
45 to 64	**21.7** ± 6.0
65 or older	**7.8** ± 3.3
Gender	
Female	**18.7** ± 3.7
Male	**15.1** ± 3.8
Education	
Less than high school	**12.0** ± 8.1
High school graduate/GED	**18.7** ± 5.4
Some college or technical school	**18.6** ± 4.8
College graduate or beyond	**14.7** ± 4.2
Household income	
$35,000 or less	**21.9** ± 4.5
$35,001 to $50,000	**17.9** ± 7.1
$50,001 to $75,000	**14.1** ± 6.4
$75,001 or more	**12.8** ± 5.9

Source: Minnesota Adult Tobacco Survey, 2014

5.2.4 Secondhand Smoke Exposure in a Car

Exposure to Secondhand Smoke in Cars

Survey Question

- In the past seven days, have you been in a car with someone who was smoking?

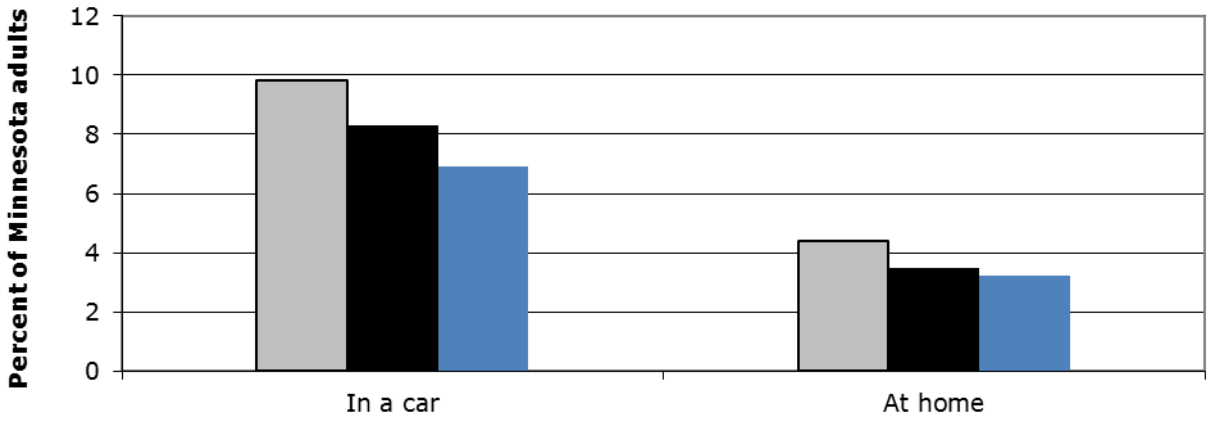
Overall, 6.9±0.8 percent of nonsmoking Minnesota adults were exposed to secondhand smoke in a car in the past seven days (Table 5-1). There are significant differences in exposure to secondhand smoke in a car by age, education and income. Young adults 18-24 years old (14.4±3.6 percent) are about twice as likely to be exposed to secondhand smoke in a car as adults who are 25-44 years old or 45-64 years old (6.9±1.4 percent and 6.3±1.2 percent respectively) and three times more likely to be exposed to secondhand smoke than those 65 years or older (3.9±1.3 percent). There is a sharp, statistically significant drop-off in exposure to secondhand smoke in a car as education level increases. Among those adults who do not have a college degree, between 9 and 11 percent were exposed to secondhand smoke in a car, while among those who have a college degree, only 2.4±0.7 percent were exposed. Similarly, exposure to secondhand smoke in a car decreases as income level increases. Nonsmokers at the lowest income level are more likely to be exposed to secondhand smoke in a car (13.3±2.4 percent) than nonsmokers at the highest income group (4.4±1.1 percent).

5.2.5 Secondhand Smoke Exposure, 2010 to 2014

The wording of questions about secondhand smoke exposure in the community was changed between the 2010 and 2014 MATS. In addition, due to policy changes in the state of Minnesota, including the Freedom to Breathe Act that went into effect in 2007, secondhand smoke exposure at work is no longer experienced by most Minnesota adults, and these questions were dropped from the survey. These changes mean that any exposure to secondhand smoke in the community can no longer be compared between the 2010 and 2014 MATS surveys. This section describes changes in exposure to secondhand smoke in a car and at home between 2010 and 2014.

Overall, there was a statistically significant decline in past seven-day exposure to secondhand smoke in vehicles among nonsmoking adult Minnesotans (Figure 5-3).

Figure 5-3. Exposure of nonsmoking Minnesota adults to secondhand smoke in the past 7 days in a car and at home, from 2007 to 2014



Year	In a car	At home
2007	9.8 ± 1.1	4.4 ± 0.7
2010	8.3 ± 1.0	3.5 ± 0.7
2014	6.9 ± 0.8	3.2 ± 0.6
Change from 2007 to 2014	- 1.3*	- 0.3

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys , 2007, 2010, and 2014

Between 2010 and 2014, although the percentage of Minnesota adults exposed to secondhand smoke at home declined slightly, this decline was not statistically significant (Figure 5-3). This decline is consistent across most age, gender and education groups. However, as with the overall decline, these changes are not statistically significant.

Table 5-4. Exposure of nonsmoking Minnesota adults to secondhand smoke in the past seven days at home, by selected demographic characteristics, from 2007 to 2014

Characteristics	2007	2010	2014	Change from 2010 to 2014
	%	%	%	
Overall	**4.4** ± 0.7	**3.5** ± 0.7	**3.2** ± 0.6	**-0.3**
Age				
18 to 24	**6.8** ± 2.7	**9.5** ± 3.7	**6.9** ± 2.7	**-2.6**
25 to 44	**3.2** ± 1.2	**2.3** ± 1.0	**1.6** ± .7	**-0.7**
45 to 64	**4.7** ± 1.3	**3.2** ± 0.9	**3.8** ± 1.0	**-0.6**
65 or older	**5.0** ± 1.3	**2.8** ± 1.1	**2.7** ± 1.1	**-0.1**
Gender				
Female	**3.8** ± 0.8	**3.6** ± 0.9	**3.1** ± 0.7	**-0.5**
Male	**5.1** ± 1.3	**3.5** ± 1.0	**3.3** ± 0.9	**-0.1**
Education				
Less than high school	**9.5** ± 4.5	**7.7** ± 4.1	**6.5** ± 3.8	**-1.2**
High school graduate/GED	**6.7** ± 1.8	**4.5** ± 1.5	**5.1** ± 1.4	**-0.6**
Some college or technical school	**3.8** ± 1.1	**4.3** ± 1.3	**3.1** ± 0.9	**-1.3**
College graduate or beyond	**2.0** ± 0.7	**1.1** ± 0.5	**1.3** ± 0.5	**0.1**

Hypothesis: The percentage of Minnesotans exposed to second hand smoke will decline from 2010 to 2014.

Source: Minnesota Adult Tobacco Surveys, 2010 and 2014

In 2010, 8.3±1.0 percent of nonsmoking adult Minnesotans reported being exposed to secondhand smoke in a car in the past seven days (Table 5-5). This estimate declined by 1.3 percentage points to 6.9±0.8 percent in 2014, a statistically significant difference. There were statistically significant declines for men (1.9 percentage points) and adults with some college education (2.3 percentage points). The largest decline was among young adults 18-24 years old (9.9 percentage points).

Table 5-5. Exposure of nonsmoking Minnesota adults to secondhand smoke in the past seven days in a car, by selected demographic characteristics and smoking status, from 2007 to 2014

Characteristics	2007	2010	2014	Change from 2010 to 2014
	%	%	%	
Overall	**9.8** ± 1.1	**8.3** ± 1.0	**6.9** ± 0.8	**-1.3***
Age				
18 to 24	**22.5** ± 4.7	**24.2** ± 5.2	**14.4** ± 3.6	**-9.9***
25 to 44	**9.5** ± 2.0	**7.6** ± 1.7	**6.9** ± 1.4	**-0.7**
45 to 64	**8.7** ± 1.5	**6.2** ± 1.3	**6.3** ± 1.2	**0.1**
65 or older	**5.1** ± 1.1	**3.5** ± 1.0	**3.9** ± 1.3	**0.4**
Gender				
Female	**8.7** ± 1.3	**7.2** ± 1.3	**6.4** ± 1.1	**-0.8**
Male	**11.0** ± 1.8	**9.4** ± 1.6	**7.5** ± 1.2	**-1.9***
Education				
Less than high school	**12.4** ± 4.8	**12.6** ± 5.1	**10.8** ± 4.6	**-1.8**
High school graduate/GED	**12.7** ± 2.3	**10.3** ± 2.2	**10.2** ± 1.9	**-0.2**
Some college or technical school	**10.6** ± 2.0	**10.7** ± 2.0	**8.5** ± 1.6	**-2.3***
College graduate or beyond	**6.0** ± 1.4	**3.2** ± 0.9	**2.4** ± 0.7	**-0.8**

Hypothesis: The percentage of Minnesotans exposed to second hand smoke will decline from 2010 to 2014.

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 2010 and 2014

5.3 Minnesota Adults Covered by Smoke-free Rules at Home and in the Car

5.3.1 Smoke-free Rules at Home

Secondhand smoke policies at home differ from secondhand smoke policies in the community because homes are private. Home policies are adopted voluntarily by individuals, and rules preventing secondhand smoke exposure in the home appear to be widespread.

Smoke-free Policy at Home

Survey Question

- Which statement best describes the rules about smoking inside your home? Do not include decks, garages or porches. Smoking is not allowed anywhere inside your home, smoking is allowed in some places or at some times, or smoking is allowed anywhere inside the home?

As shown in Table 5-6, 89.3±0.9 percent of Minnesota adults live in homes where smoking is not allowed anywhere. There are statistically significant differences in not allowing smoking at home by age, education, income and smoking status. Among adults 25-44 years old, 92.5±1.3 percent live in homes where smoking is not allowed. This percentage is significantly higher than other age groups, except young adults 18-24 years old. Those with higher levels of education are more likely to live in homes where smoking is not allowed. Whereas 95.7±0.8 percent of Minnesota adults with a college degree have smoke-free policies in their homes, 76.4±5.2 percent of those with less than a high school degree live in homes where smoking is not allowed. Those with higher incomes are more likely to have smoke-free policies in their homes than those with lower incomes: 94.7±1.1 percent of those with incomes over $75,000 per year live in a home with such a policy, while 79.5±2.3 percent of those with incomes of $35,000 per year or less live in a home with such a policy.

The trend for smoke-free policies in the home shows a consistent increase from the lowest to the highest educational and income categories, although some steps between successive levels are not statistically significant differences. Moreover, as might be expected, never cigarette smokers (95.5±0.8 percent) are the most likely to live in homes with smoke-free policies, followed by former smokers (90.8±1.5 percent) and current smokers (61.4±3.7 percent). These differences among smoking status groups are statistically significant. Similarly, current smokers of any combustible tobacco products are less likely to live in a home with such a policy (65.4±3.2 percent) compared to nonsmokers (94.3±0.7 percent), the difference being statistically significant.

Table 5-6. Minnesota adults living in homes with smoke-free policies, by selected demographic characteristics and smoking status

Characteristics	Smoking not allowed anywhere inside home
	%
Overall	**89.3** ± 0.9
Age	
18 to 24	**89.5** ± 2.8
25 to 44	**92.5** ± 1.3
45 to 64	**86.3** ± 1.6
65 or older	**89.2** ± 1.6
Gender	
Female	**90.2** ± 1.1
Male	**88.4** ± 1.3
Education	
Less than high school	**76.4** ± 5.2
High school graduate/GED	**84.8** ± 2.0
Some college or technical school	**89.7** ± 1.4
College graduate or beyond	**95.7** ± 0.8
Household income	
$35,000 or less	**79.5** ± 2.3
$35,001 to $50,000	**88.5** ± 2.4
$50,001 to $75,000	**90.5** ± 1.9
$75,001 or more	**94.7** ± 1.1
Cigarette Smoking Status (BRFSS)	
Never Smokers	**95.5** ± 0.8
Current Smokers	**61.4** ± 3.7
Former Smokers	**90.8** ± 1.5
Combusted Tobacco Use Status	
Current Smokers of combusted products	**65.4** ± 3.2
Non-Smokers of combusted products	**94.3** ± 0.7

Source: Minnesota Adult Tobacco Survey, 2014

Among adults with children aged 17 or younger living in their households, 93.1±1.3 percent live in homes with a rule against smoking in their homes. In contrast, among adults who do not have children living in their household, 87.1±1.1 percent have a rule against smoking in their homes (not shown in a table). The presence of children in the home is significantly associated with having a rule against smoking in the home ($p<0.05$). The difference, however, is small and nearly all adult Minnesotans in households with minor children live in homes with rules against smoking.

5.3.2 Smoke-free Rules in Family Vehicles

Smoke-free Policy in Vehicles

Survey Question

- Not counting motorcycles, in the vehicles that you or family members who live with you own or lease, is smoking… Always allowed in vehicles, Sometimes allowed in at least one vehicle, Never allowed in any vehicle, or No one in family owns a vehicle.

Overall, 77.6±1.2 percent of Minnesota adults do not allow smoking in vehicles owned or leased by them or their family members (Table 5-7). There are statistically significant differences in not allowing smoking in vehicles by age, gender, education, income and smoking status. Young adults 18-24 years old (67.0±4.2 percent) are less likely to forbid smoking in vehicles compared to other age groups. This percentage is significantly lower than other age groups. Women (80.2±1.6 percent) are more likely than men (74.9±1.8 percent) to not allow smoking in vehicles. Those with higher levels of education (89.7±1.3 percent) are more likely to not allow smoking in vehicles compared to those in all other education groups. Similarly, those with higher incomes are more likely to have smoke-free policies in their vehicles than those with lower incomes: 85.3±1.7 percent of those with incomes over $75,000 per year do not allow smoking in their vehicles, while 64.9±2.8 percent of those with incomes of $35,000 or less per year have such a policy. As expected, current cigarette smokers are less likely to not allow smoking in vehicles (25.0±3.3 percent) compared to never (88.6±1.2 percent) and former (81.7±2.0 percent) smokers. The trend is similar among smokers of any combustible products; almost 30 percent of combustible smokers have a smoke-free policy in their vehicle compared to nearly 88 percent of nonsmokers.

Table 5-7. Minnesota adults who do not allow smoking in vehicles owned by themselves or family members, by selected demographic characteristics and smoking status

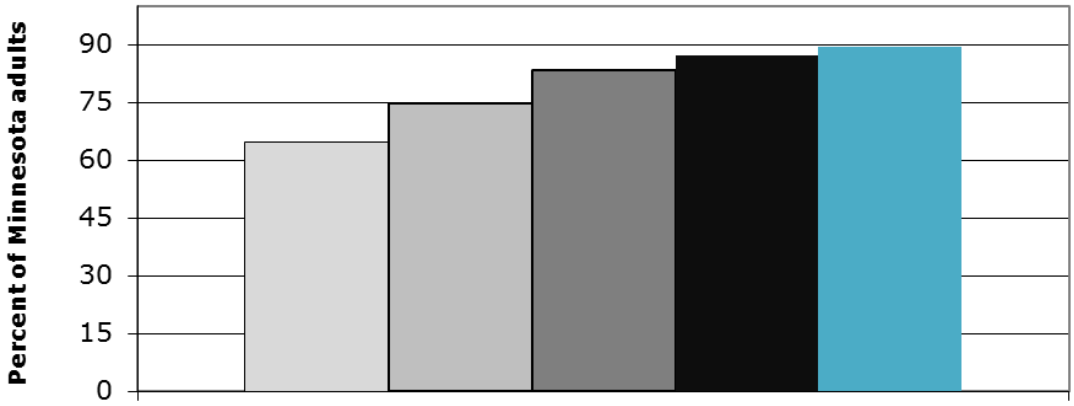
Characteristics	Do not allow smoking in vehicles
	%
Overall	**77.6** ± 1.2
Age	
18 to 24	**67.0** ± 4.2
25 to 44	**76.1** ± 2.1
45 to 64	**78.1** ± 1.9
65 or older	**86.8** ± 1.9
Gender	
Female	**80.2** ± 1.6
Male	**74.9** ± 1.8
Education	
Less than high school	**66.8** ± 5.8
High school graduate/GED	**70.7** ± 2.6
Some college or technical school	**74.4** ± 2.1
College graduate or beyond	**89.7** ± 1.3
Household income	
$35,000 or less	**64.9** ± 2.8
$35,001 to $50,000	**74.4** ± 3.5
$50,001 to $75,000	**77.2** ± 2.8
$75,001 or more	**85.3** ± 1.7
Cigarette Smoking Status (BRFSS)	
Never Smokers	**88.6** ± 1.2
Current Smokers	**25.0** ± 3.3
Former Smokers	**81.7** ± 2.0
Combusted Tobacco Use Status	
Current Smokers of combusted products	**29.6** ± 3.2
Non-Smokers of combusted products	**87.6** ± 1.0

Source: Minnesota Adult Tobacco Survey, 2014

5.3.3 Minnesota Adults Covered by Smoke-free Policies at Home, 2010 to 2014

In general, the trend for living in homes with smoke-free policies shows a consistent increase from 1999 to 2014. In 2014, 89.3±0.9 percent of Minnesota adults lived in homes where smoking was not permitted. This is a statistically significant increase of 2.1 percentage points over the 2010 estimate (Figure 5-4). In addition, among smokers, there is an increase in the trend for smoke-free homes from 2007 (49.6 percent) to 2014 (61.4 percent). It is also interesting to note that the rate of smoke-free homes among smokers doubled between 1999 (31.4 percent) and 2014 (61.4 percent). These differences are statistically significant.

Figure 5-4. Minnesota adults covered by a smoke-free policy at home from 1999 to 2014



Year	At home
1999	64.5 ± 2.0
2003	74.8 ± 1.6
2007	83.2 ± 1.3
2010	87.2 ± 1.0
2014	89.3 ± 0.9
Change from 2010 to 2014	2.1 *

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 2003, 2007, 2010, and 2014

5.4 Perceptions that Secondhand Smoke Is Harmful

MATS tracks Minnesotan adults' changing awareness and understanding of the harmfulness of secondhand smoke. This section examines the perceived harmfulness of secondhand smoke and the degree of perceived harmfulness from brief exposure to secondhand smoke among Minnesota adults.

Secondhand Smoke and Awareness of Its Effects

Secondhand smoke refers to the smoke generated from the burning end of a cigarette or other smoked tobacco product and from the exhaled smoke from the smoker.

Survey Questions

- Do you think that breathing smoke from other people's cigarettes is... very harmful to one's health, somewhat harmful to one's health, not very harmful to one's health, or not at all harmful to one's health?
- In your opinion, from 1 to 7, with 1 indicating "not at all harmful" and 7 indicating "extremely harmful," how harmful is breathing in secondhand smoke outside for a brief period of time, like at a building entrance as you walk in?

Nearly all Minnesotan adults agree that secondhand smoke is harmful; 92.6±0.7 percent of adult Minnesotans say that secondhand smoke is very or somewhat harmful to health (Table 5-8).

A vast majority of current cigarette smokers (84.1±2.7 percent) agree that exposure to secondhand smoke is harmful, although former smokers (95.4±0.8 percent) and never smokers (91.3±1.4 percent) are more likely to hold this view. Similarly, 94.3±0.7 percent of nonsmokers of any combustible tobacco products are of the same belief that exposure to secondhand smoke is harmful, compared to 85.0±2.4 percent current smokers of combustible tobacco. While all of these differences are statistically significant, it is noteworthy that smokers are not that different from the rest of adult Minnesotans regarding the perceived harmfulness of secondhand smoke.

Table 5-8. Agreement that secondhand smoke is harmful, by selected demographic characteristics

Characteristics	Secondhand smoke is very or somewhat harmful
	%
Overall	**92.6** ± 0.7
Age	
18 to 24	**93.9** ± 2.0
25 to 44	**93.3** ± 1.3
45 to 64	**91.7** ± 1.3
65 or older	**92.4** ± 1.3
Gender	
Female	**96.2** ± 0.7
Male	**88.9** ± 1.3
Education	
Less than high school	**88.3** ± 3.8
High school graduate/GED	**92.0** ± 1.6
Some college or technical school	**91.8** ± 1.3
College Graduate or beyond	**95.4** ± 0.9
Household income	
$35,000 or less	**91.3** ± 1.7
$35,001 to $50,000	**91.6** ± 2.2
$50,001 to $75,000	**93.1** ± 1.7
$75,001 or more	**94.1** ± 1.1
Cigarette Smoking Status (BRFSS)	
Never Smokers	**95.4** ± 0.8
Current Smokers	**84.1** ± 2.7
Former Smokers	**91.3** ± 1.4
Combusted Tobacco Use Status	
Current Smokers of combusted products	**85.0** ± 2.4
Non-Smokers of combusted products	**94.3** ± 0.7

Source: Minnesota Adult Tobacco Survey, 2014

Men (88.9±1.3 percent) are less likely to believe that secondhand smoke is harmful than women (96.2±0.7 percent). The group with the lowest level of educational attainment (88.3±3.8 percent) is less likely than those with college degree or more (95.4±0.9 percent) to agree that secondhand smoke is harmful.

Degree of Harm

Overall, the average harm perception from brief secondhand smoke exposure on a scale of 1 (not at all) to 7 (extremely harmful) among Minnesota adults is 4.3±0.1 (Table 5-9). Women are likely to believe that brief secondhand outdoor exposure is more harmful compared to men (4.7±0.1 among women versus 4.0±0.1 among men). Current cigarette smokers are likely to believe that brief secondhand outdoor exposure is less harmful (3.2±0.1) compared to never smokers (4.7±0.1) and former smokers (4.1±0.1), the differences being statistically significant. Similarly, current smokers of combustible products are likely to believe that brief secondhand outdoor exposure is less harmful (3.3±0.1) compared to non-smokers of combusted products (4.6±0.1), a statistically significant difference.

5.4.1 Perceptions that Secondhand Smoke is Harmful, 2010 to 2014

Between 2010 and 2014, the percentage of Minnesota adults who believe that secondhand smoke is very or somewhat harmful increased slightly from 92.3±0.8 to 92.6±0.7, but this difference is not statistically significant and thus represents a stable finding (Figure 5-5). This stability is noteworthy because the overall percentage is very high.

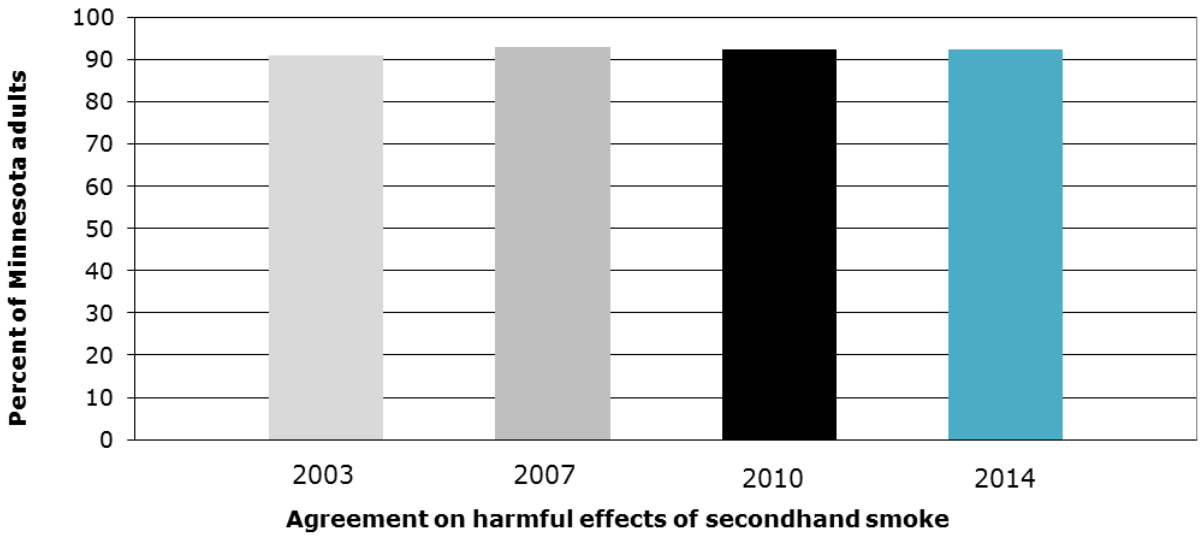
Table 5-9. Perceived level of harm from brief secondhand smoke exposure outdoors (rated on a scale of 1 to 7), by selected demographic characteristics and smoking status

Characteristics	Mean rating
Overall	**4.3** ± 0.1
Age	
18 to 24	**4.2** ± 1.5
25 to 44	**4.2** ± 0.1
45 to 64	**4.3** ± 0.1
65 or older	**4.8** ± 0.1
Gender	
Female	**4.7** ± 0.1
Male	**4.0** ± 0.1
Education	
Less than high school	**4.6** ± 0.2
High school graduate/GED	**4.4** ± 0.1
Some college or technical school	**4.3** ± 0.2
College Graduate or beyond	**4.3** ± 0.1
Household income	
$35,000 or less	**4.6** ± 0.1
$35,001 to $50,000	**4.3** ± 0.2
$50,001 to $75,000	**4.3** ± 0.1
$75,001 or more	**4.2** ± 0.1
Cigarette Smoking Status (BRFSS)	
Never Smokers	**4.7** ± 0.1
Current Smokers	**3.2** ± 0.1
Former Smokers	**4.1** ± 0.1
Combusted Tobacco Use Status	
Current Smokers of combusted products	**3.3** ± 0.1
Non-Smokers of combusted products	**4.6** ± 0.1

[a] 1= not at all harmful to 7= extremely harmful

Source: Minnesota Adult Tobacco Survey, 2014

Figure 5-5. Agreement that secondhand smoke is harmful, from 2003 to 2014



Year	Secondhand smoke is very or somewhat harmful
2003	90.9 ± 1.2
2007	93.0 ± 0.8
2010	92.3 ± 0.8
2014	92.6 ± 0.7
Change from 2010 to 2014	-0.4

Hypothesis: The percentage who agree that secondhand smoke is harmful will increase from 2010 to 2014

Source: Minnesota Adult Tobacco Survey, 2003, 2007, 2010, and 2014

5.5 Support for Smoke-free Policies in Cars, Outdoor Areas, and Casinos

MATS 2014 continued to ask questions about allowing smoking in various settings. These questions addressed smoking in cars when children are present, smoking in several types of outdoor areas, and smoking in Minnesota casinos.

Survey Questions

- Do you think smoking should be allowed in cars when children are in them?
- I am going to read a list of outdoor areas. Please tell me whether or not you think smoking should be allowed in each area.
  - Outdoor patios of restaurants, cafes, and bars?
  - Outdoor areas near building entrances and exits?
  - Outdoor areas of county fairs or community-sponsored gatherings?
  - Public sidewalks?
  - Public parks, playgrounds, and beaches?
- Do you think smoking should be allowed in Minnesota casinos…throughout the building, or not at all?

Smoking in Cars When Children Are Present

Overall, 95.4 percent of Minnesota adults think that smoking should not be allowed in cars when there are children in them (Table 5-10). This view is highly consistent across all the demographic groups (not shown in table). Current cigarette smokers are slightly less likely to subscribe to this view; their rate of 91.2±2.3 percent is significantly lower than 94.3±1.3 percent and 97.0±0.6 percent for former and never smokers respectively (not shown in table).

Table 5-10. Opinions about allowing smoking in various areas, among all Minnesota adults and current smokers

Areas	Should not be allowed	
	All Minnesota adults	Current smokers
	%	%
Cars when children are in them	**95.4** ± 0.6	**91.2** ± 2.3
Various Outdoor Areas		
Near building entrances and exits	**68.7** ± 1.3	**42.6** ± 3.8
Parks, playgrounds, and beaches	**58.7** ± 1.4	**33.9** ± 3.7
County fairs or community-sponsored gatherings	**60.2** ± 1.4	**34.4** ± 3.7
Patios of restaurants, cafes and bars	**50.6** ± 1.4	**14.4** ± 2.6
Sidewalks	**33.7** ± 1.3	**9.5** ± 2.0

Source: Minnesota Adult Tobacco Survey, 2014

Smoking in Various Outdoor Areas

Forbidding smoking near building entrances and exits received the highest support among all the public areas where smoking might be prohibited (Table 5-10): over two-thirds of Minnesota adults (68.7±1.3 percent) think that smoking should not be allowed in this location. A majority of Minnesota adults also say that smoking should not be allowed in outdoor public recreational areas or in the outdoor areas of county fairs and other community gatherings (58.7±1.4 percent and 60.2±1.4 percent, respectively). At least half (50.6±1.4 percent) would prohibit smoking in the outdoor patios of dining and drinking establishments, while only one-third (33.7±1.3 percent) would do so on public sidewalks.

Among smokers, the degree of support for prohibiting smoking in these outdoor spaces was significantly lower than the level of support expressed by Minnesota adults in general. Smokers did not offer majority support for smoking prohibitions in any of the outdoor areas, with the greatest support being for building entrances and exits at 42.6±3.8 percent. Few smokers favored prohibiting smoking on public sidewalks or outdoor patios of dining and drinking establishments, which received similar low support: 9.5±2.0 percent and 14.4±2.6 percent of smokers, respectively, were in favor of such policies.

Table 5-10 does not show difference across the demographic groups. There were few significant differences or trends in terms of demographics. Generally speaking, among all Minnesota adults, statistically significantly higher percentages of women thought that smoking should not be allowed in each of the five outdoor spaces. There is a distinct and statistically significant trend of support for prohibiting smoking on public sidewalks as age increases. Some of these patterns are also present among current cigarette smokers, but they are not statistically significant.

Smoking in Minnesota Casinos

Among all Minnesota adults, 74.9±1.3 percent think that smoking should not be allowed at all in Minnesota casinos (Table 5-11). Only 25.1±1.3 percent say it should be allowed throughout the building.

Table 5-11. Opinions about whether smoking should be allowed in Minnesota Casinos, among all Minnesota adults, by selected demographic characteristics and smoking status

Characteristics	Allowed throughout the building	Not allowed at all	Row Total
	%	%	%
Overall	**25.1** ± 1.3	**74.9** ± 1.3	**100**
Gender			
Female	**19.7** ± 1.6	**80.3** ± 1.6	**100**
Male	**30.8** ± 2.0	**69.2** ± 2.0	**100**
Smoking Status			
Never smokers	**15.3** ± 1.4	**84.7** ± 1.4	**100**
Current Smokers	**66.5** ± 3.8	**33.5** ± 3.8	**100**
Former Smokers	**25.0** ± 2.4	**75.0** ± 2.4	**100**

Source: Minnesota Adult Tobacco Survey, 2014

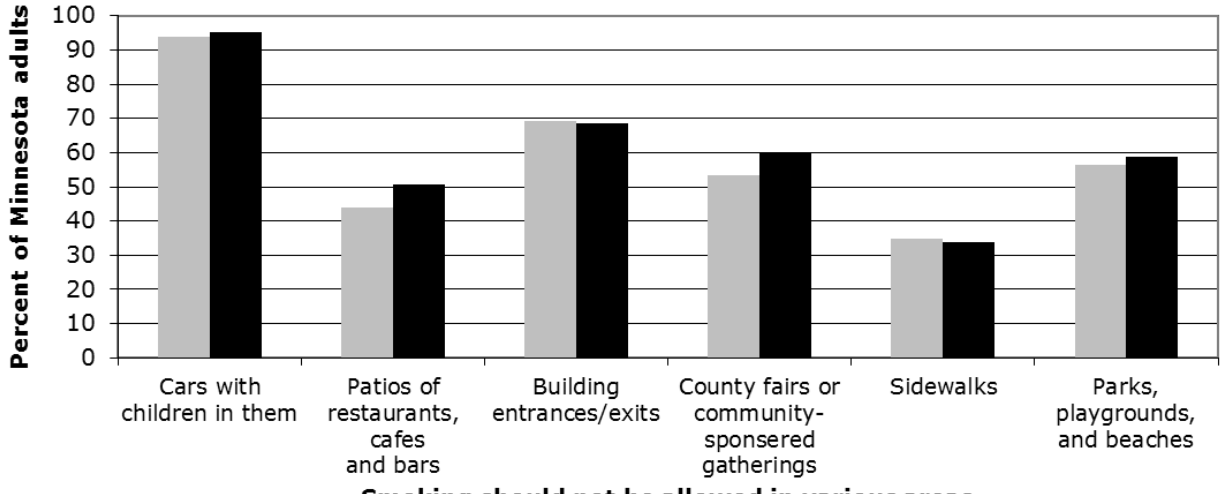
There are few differences by age, education or income. Women are more likely than men to say that smoking should not be allowed at all (80.3±1.6 percent vs. 69.2±2.0 percent); this difference is statistically significant.

As might be expected, fewer current cigarette smokers support prohibiting smoking anywhere in casinos (33.5±3.8 percent), compared to former smokers (75.0±2.4 percent) and never smokers (84.7±1.4 percent). All differences between current smokers and the other smoking groups are statistically significant.

5.5.1 Support for Smoke-free Policies in Cars, Outdoor Areas, 2010 to 2014

Between 2010 and 2014, the percentage of Minnesota adults who say that smoking should not be allowed in the outdoor patios of dining and drinking establishments increased significantly by 6.8 percentage points, from 43.8±1.5 percent to 50.6±1.4 percent (Figure 5-6). Similarly, in 2010, 53.5±1.5 percent of Minnesota adults said that smoking should not be allowed in community gatherings. In 2014, this figure increased to 60.2±1.4 percent. This increase of 6.7 percentage points is statistically significant.

Figure 5-6. Opinions about allowing smoking in various areas, 2010 to 2014



Year	Cars with children in them	Patios	Building entrances/ exits	Fairs, community-sponsered gatherings	Sidewalks	Parks, playgrounds, beaches
2010	94.0 ± 0.7	43.8 ± 1.5	69.4 ± 1.4	53.5 ± 1.5	34.9 ± 1.4	56.3 ± 1.5
2014	95.4 ± 0.6	50.6 ± 1.4	68.7 ± 1.3	60.2 ± 1.4	33.7 ± 1.3	58.7 ± 1.4
Change from 2010 to 2014	1.4	6.8*	- 0.7	6.7*	- 1.2	2.4

Source: Minnesota Adult Tobacco Surveys, 2010, 2014

5.6 Key Findings

Some of the most important findings from this chapter are summarized below. All differences presented in this summary are statistically significant at the 0.05 confidence level unless otherwise noted.

Key Secondhand Smoke Findings for 2014

- Nonsmoking Minnesota adults are significantly more likely to be exposed to secondhand smoke in the community at large (31.7±1.4 percent) than in a car (6.9±0.8 percent) or home (3.2±0.6 percent).

- The most commonly reported location for recent community exposure to secondhand smoke among nonsmokers is a building entrance (20.0±2.2 percent), followed by somewhere outdoors (16.5±2.0 percent) and the outdoor patio of a restaurant or a bar (12.7±1.8 percent).

- Young adults 18-24 years old (45.7±5.2 percent) are more likely to be exposed to secondhand smoke in the community than any other age group. Similarly, nonsmoking men (37.3±2.2 percent) are more likely to be exposed to secondhand smoke in the community than women (26.8±1.8 percent).

- Young adults 18-24 years old (6.9±2.7 percent) are more likely to report that someone has smoked in their home than adults 25-44 years old (1.6±0.7 percent) or adults 65 and older (2.7±1.1 percent). Adults with less than a high school degree (6.5±3.8 percent), a high school degree (5.1±1.4 percent), and some college or technical school (3.1±0.9 percent) are more likely to say that someone has smoked in their home than adults with a college degree (1.3±0.5 percent).

- Among nonsmoking adults with children living in their households, 6.5±1.2 percent report that someone has smoked in their home in the past seven days. This means that, in a given week, someone smoked in the homes of around 95,000 adults who have one or more children in the home.

- Among all nonsmokers who live in multi-unit housing, 17.1±2.7 have smelled smoke from cigarettes, cigars or pipes anywhere inside their home in the past seven days.

- Overall, 6.9±0.8 percent of nonsmoking Minnesota adults were exposed to secondhand smoke in a car in the past seven days.

- Young adults 18-24 years old (14.4±3.6 percent) are about twice as likely to be exposed to secondhand smoke in a car as 25-44 years old and 45-64 years old (6.9±1.4 percent and 6.3±1.2 percent respectively) and about three times more likely to be exposed to secondhand smoke than those 65 years or older (3.9±1.3 percent).

- Among adults who do not have a college degree, between 9 and 11 percent were exposed to secondhand smoke in a car, while among those who have a college degree, only 2.8±0.7 percent were exposed.

- Overall, 89.3±0.9 percent of Minnesota adults live in homes where smoking is not allowed anywhere.

- Never cigarette smokers (95.5±0.8 percent) are significantly most likely to live in homes with smoke-free policies, followed by former smokers (90.8±1.5 percent) and current smokers (61.4±3.7 percent).

- Current smokers of any combustible tobacco products are less likely to live in a home with smoke-free policies (65.4±3.2 percent) compared to nonsmokers (94.3±0.7 percent), the difference being statistically significant.

- Overall, 77.6±1.2 percent of Minnesota adults do not allow smoking in vehicles owned by them or their family members. Current cigarette smokers are less likely to not allow smoking in vehicles (25.0±3.3 percent) compared to never (88.6±1.2 percent) and former (81.7±2.0 percent) smokers.

- A majority of current cigarette smokers (84.1±2.7 percent) agree that exposure to secondhand smoke is harmful, although former smokers (95.4±0.8 percent) and never smokers (91.3±1.4 percent) are more likely to hold this view.

- Overall, 95.4 percent of Minnesota adults think that smoking should not be allowed in cars when there are children in them. Current cigarette smokers are slightly less likely to subscribe to this view (91.2±2.3 percent) compared to former (94.3±1.3 percent) and never smokers (97.0±0.6).

- Forbidding smoking near building entrances and exits received the highest support among all the public areas where smoking might be prohibited (68.7±1.3 percent), followed by outdoor public recreational areas or in the outdoor areas of county fairs and other community gatherings (58.7±1.4 percent and 60.2±1.4 percent, respectively).

- Among all Minnesota adults, 74.9±1.3 percent think that smoking should not be allowed at all in Minnesota casinos. Fewer current cigarette smokers support prohibiting smoking anywhere in casinos (33.5±3.8 percent) compared to former smokers (75.0±2.4 percent) and never smokers (84.7±1.4 percent). These differences are statistically significant.

Key Secondhand Smoke Findings for 2010 to 2014

- Overall, there was a statistically significant decline in past seven-day exposure to secondhand smoke in vehicles among nonsmoking Minnesota adults.
- In 2010, 8.3±1.0 percent of nonsmoking adult Minnesota adults reported being exposed to secondhand smoke in a car in the past seven days. This estimate declined by 1.3 percentage points to 6.9±0.8 percent in 2014, a statistically significant difference.
- In 2014, 89.3±0.9 percent of Minnesota adults lived in homes where smoking was not permitted. This is a statistically significant increase of 2.1 percentage points over 2010.
- Between 2010 and 2014, the percentage of Minnesota adults who say that smoking should not be allowed in the outdoor patios of dining and drinking establishments increased significantly by 6.8 percentage points, from 43.8±1.5 percent to 50.6±1.4 percent.
- In 2010, 53.5±1.5 percent of Minnesota adults said that smoking should not be allowed in community gatherings. In 2014, this figure increased to 60.2±1.4 percent. This increase of 6.7 percentage points is statistically significant.

6. Economic Influences on Cigarette Smoking and Quitting Behaviors

6.1 Price and Money Saving Behaviors

MATS 2014 includes questions about price and money saving behaviors, including the price paid per pack and the use of coupons.

Price Per Cigarette Pack and Coupon Use

MATS asks respondents if they last bought cigarettes for themselves by the pack or by the carton. If they last bought cigarettes by the pack, the cost of that pack is used as the price per cigarette pack. If they last bought cigarettes by the carton, the cost of the carton is divided by 10, and that result is used as the price per cigarette pack.

Survey Questions

- The last time you bought cigarettes for yourself, did you buy them by the pack or by the carton?
  - By the pack
  - By the carton
- What price did you pay for the last pack of cigarettes you bought?
- What price did you pay for the last carton of cigarettes you bought?

The last time you bought cigarettes, did you take advantage of coupons, rebates, buy 1 get 1 free, 2 for 1, or any other special promotions for cigarettes?

Overall, the mean price per cigarette pack paid by Minnesota adult smokers was $7.16±0.22 (Table 6-1). The price paid per pack decreases as age increases, with 18-24 year olds paying a mean price of $7.51±0.22 cents and those 65 and older paying a mean price of $6.10±0.48 per pack. The differences in mean price paid between the 18-24 year olds and two oldest age groups are statistically significant. There are no statistically significant differences in the mean price paid per pack across the education and smoking status groups, and somewhat surprisingly, also no differences across the household income groups.

Table 6-1. Mean price per cigarette pack among current and past 30-day smokers, by selected demographic characteristics and smoking status

Characteristics	Mean price per cigarette pack
Overall	**$7.16** ± 0.22
Age	
18 to 24	**$7.51** ± 0.22
25 to 44	**$7.29** ± 0.15
45 to 64	**$7.00** ± 0.20
65 or older	**$6.10** ± 0.48
Gender	
Female	**$7.21** ± 0.16
Male	**$7.09** ± 0.14
Education	
Less than high school	**$7.24** ± 0.31
High school graduate/GED	**$7.06** ± 0.18
Some college or technical school	**$7.21** ± 0.33
College graduate or beyond	**$7.22** ± 0.26
Household income	
$35,000 or less	**$7.22** ± 0.30
$35,001 to $50,000	**$7.05** ± 0.17
$50,001 to $75,000	**$6.88** ± 0.29
$75,001 or more	**$7.32** ± 0.20

Source: Minnesota Adult Tobacco Survey, 2014

Overall, 22.8±3.3 percent of Minnesota adult smokers took advantage of coupons and rebates the last time they bought cigarettes. There is little variation across age, education or income level groups in coupon and rebate use, and no statistically significant differences.

MATS 2014 includes a series of questions about strategies smokers may have used in the past year to save money on cigarettes.

Methods Used by Smokers to Save Money on Cigarettes

Survey Question

- In the past 12 months, how often have you done any of the following things to try and save money on cigarettes?
  - Bought a cheaper brand of cigarettes?
  - Rolled your own cigarettes?
  - Used another form of tobacco other than cigarettes?
  - Used coupons, rebates, buy 1 get 1 free, or any other special promotions?
  - Purchased cartons instead of individual packs?
  - Found less expensive places to buy cigarettes?
  - Smoked fewer cigarettes
  - Shared fewer cigarettes with others
  - Saved half a cigarette to finish smoking later

Of the various methods used by smokers to save money on cigarettes, four of them relate to shopping behavior (cheaper brand, use of coupons, buying cartons, cheaper outlets), two relate to using alternative products (roll-your-own, non-cigarette tobacco), and three relate to cigarette smoking behavior (smoked fewer, shared fewer, saved half a cigarette). For each of the shopping behaviors, between one-third and one-half of smokers made use of each option in the past year, ranging from 32.3±3.4 percent who purchased cartons to 55.6±3.8 percent who found less expensive places to buy cigarettes (Table 6-2). Fewer smokers resorted to alternative products: 23.3±3.3 percent used another form of tobacco and 30.1±3.5 percent rolled their own cigarettes.

The most commonly adopted strategies to save money on cigarettes were those related to smoking behaviors. Among current smokers, 70.3±3.5 percent smoked fewer cigarettes to save money, 49.9±3.8 percent shared fewer cigarettes with others, and 56.9±3.8 percent saved half a cigarette to finish smoking later. Finally, 19.0±3.0 percent said that they tried something else. For those who tried something else, the responses ranged from various strategies sometimes thought to be associated with quitting or cutting down on smoking, such as chewing gum, eating candy or exercising to supplementing with nicotine replacement therapy, thinking about quitting or trying to

Table 6-2. Strategies used to save money on cigarettes in the past year, among current smokers, by selected demographic characteristics

Characteristics	Cheaper Brand	Coupons & Rebates	Purchased Cartons	Less Expensive Places	Rolled Own Cigarettes
	%	%	%	%	%
Overall	**38.1** ± 3.7	**51.5** ± 3.8	**32.3** ± 3.4	**55.6** ± 3.8	**30.1** ± 3.5
Age					
18 to 24	**43.1** ± 12.0	**40.5** ± 10.7	**20.0** ± 9.2	**58.5** ± 11.9	**37.1** ± 11.4
25 to 44	**34.8** ± 5.8	**55.3** ± 6.0	**27.9** ± 5.3	**55.6** ± 6.0	**26.6** ± 5.2
45 to 64	**40.7** ± 5.8	**53.8** ± 5.9	**38.1** ± 5.6	**55.2** ± 6.0	**32.9** ± 5.7
65 or older	**37.1** ± 11.5	**33.7** ± 10.8	**57.5** ± 10.8	**51.1** ± 11.0	**24.6** ± 9.7
Gender					
Female	**42.6** ± 5.7	**56.0** ± 5.6	**36.9** ± 5.2	**62.6** ± 5.4	**28.0** ± 5.3
Male	**34.6** ± 4.9	**48.0** ± 5.2	**28.7** ± 4.5	**49.9** ± 5.3	**31.7** ± 4.8
Education					
Less than high school	**56.4** ± 11.9	**47.7** ± 12.0	**33.7** ± 10.9	**62.0** ± 11.4	**47.1** ± 12.1
High school graduate/GED	**39.2** ± 6.1	**57.0** ± 6.3	**34.2** ± 5.8	**57.4** ± 6.4	**30.4** ± 5.8
Some college or technical school	**33.9** ± 5.9	**49.2** ± 6.1	**30.4** ± 5.3	**55.4** ± 6.1	**27.8** ± 5.6
College graduate or beyond	**27.3** ± 8.1	**45.7** ± 9.5	**29.5** ± 7.7	**42.5** ± 9.2	**16.4** ± 7.2
Household income					
$35,000 or less	**51.1** ± 6.0	**56.9** ± 5.9	**32.0** ± 5.5	**62.0** ± 5.8	**40.1** ± 5.9
$35,001 to $50,000	**28.9** ± 9.0	**44.0** ± 10.4	**29.4** ± 8.7	**45.2** ± 9.6	**23.7** ± 8.7
$50,001 to $75,000	**25.7** ± 8.4	**52.7** ± 9.2	**36.5** ± 8.8	**51.7** ± 9.2	**24.0** ± 7.7
$75,001 or more	**26.6** ± 8.0	**46.0** ± 8.6	**31.5** ± 7.8	**50.6** ± 8.5	**21.1** ± 7.8

Table 6-2. Strategies used to save money on cigarettes in the past year, among current smokers, by selected demographic characteristics (continued)

Characteristics	Used Other Form of Tobacco	Smoked fewer cigarettes	Shared fewer cigarettes with others	Saved half a cigarette to finish smoking later	Anything else
	%	%	%	%	%
Overall	**23.3** ± 3.3	**70.3** ± 3.5	**49.9** ± 3.8	**56.9** ± 3.8	**19.0** ± 3.0
Age					
18 to 24	**43.1** ± 11.7	**78.5** ± 9.6	**67.0** ± 11.6	**56.6** ± 12.1	**20.6** ± 9.6
25 to 44	**22.4** ± 4.9	**68.2** ± 5.6	**54.7** ± 5.9	**54.1** ± 6.0	**20.7** ± 4.9
45 to 64	**19.3** ± 4.9	**70.9** ± 5.4	**40.7** ± 6.0	**59.4** ± 5.9	**16.5** ± 4.1
65 or older	**10.8** ± 8.0	**63.9** ± 10.6	**30.2** ± 11.1	**64.5** ± 10.5	**17.8** ± 7.9
Gender					
Female	**16.5** ± 4.3	**74.1** ± 4.8	**52.3** ± 5.6	**65.4** ± 5.4	**20.8** ± 4.7
Male	**28.6** ± 4.7	**67.2** ± 4.9	**48.0** ± 5.2	**50.2** ± 5.2	**17.6** ± 3.8
Education					
Less than high school	**28.0** ± 11.0	**77.0** ± 10.2	**49.6** ± 12.4	**73.5** ± 10.2	**18.2** ± 8.5
High school graduate/GED	**24.7** ± 5.5	**67.7** ± 6.0	**53.1** ± 6.3	**59.2** ± 6.3	**16.1** ± 4.5
Some college or technical school	**21.2** ± 5.0	**74.1** ± 5.2	**50.8** ± 6.1	**53.3** ± 6.1	**22.8** ± 5.2
College graduate or beyond	**20.1** ± 7.4	**58.9** ± 9.4	**36.3** ± 9.0	**43.1** ± 9.1	**17.2** ± 6.9
Household income					
$35,000 or less	**23.7** ± 5.3	**76.0** ± 5.1	**58.5** ± 5.9	**73.1** ± 5.3	**20.4** ± 4.9
$35,001 to $50,000	**28.3** ± 9.1	**75.9** ± 8.2	**47.6** ± 10.2	**46.8** ± 10.2	**23.2** ± 8.5
$50,001 to $75,000	**18.7** ± 7.3	**66.2** ± 8.6	**37.6** ± 8.5	**45.9** ± 9.3	**15.7** ± 6.6
$75,001 or more	**23.6** ± 7.6	**58.7** ± 8.5	**45.0** ± 8.8	**43.6** ± 8.7	**16.3** ± 6.1

Source: Minnesota Adult Tobacco Survey, 2014

quit, to stocking up on cigarettes before the tax increase went into effect or splitting cartons with friends or family members.

Since the thrust of these questions is economic, examining these cost-saving measures by income level is the analysis of primary interest. Across all the measures, there appears to be a pattern of declining adoption of the measures as income level increases. While the differences between each contiguous pair of income levels are almost never statistically significant, there are a number of significant differences between some of the lower and some of the higher income levels. For example, the 51.1±6.0 percent of the lowest income group who bought a cheaper brand is significantly different from the 26.6±8.0 percent of the highest income group who did so. Purchasing cartons is one exception that shows little difference across the income groups. It is also informative to look at the absolute numbers for some money-saving methods and income groups. For example, only one in five of the highest income group rolled their own cigarettes (21.1±7.8 percent), but nearly half of them used coupons (46.0±8.6percent).

Education tends to correlate with income, and the patterns across educational levels are similar to those across income levels. There is little difference between men and women, except that there is a statistically significant difference between the 28.6±4.7 percent of men and 16.5±4.3 percent of women who used another form of tobacco to save money. In addition, women were more likely than men to seek out less expensive places to buy cigarettes (62.6±5.4 percent compared to 49.9±5.3 percent) and to save half a cigarette to finish smoking later (65.4±5.4 percent compared to 50.2±5.2 percent).

The youngest age group tended to adopt the shopping options at the highest rate of all the age groups: this group reported the highest percentage for buying a cheaper brand, using coupons, and seeking out less expensive places to buy cigarettes. For purchasing cartons, the age pattern was reversed, with the oldest age group being the most likely to do so. The use of alternative tobacco products was the highest among the youngest age group and declined as age increased. As with income, the differences between each contiguous pair of age levels are almost never statistically significant, but there are a number of significant differences between some of the lower and some of the higher age groups for the various methods utilized.

While the ten cost-reduction methods asked about in MATS are far from exhaustive of all cost-saving possibilities, it is still worth noting how many smokers made use of multiple options during the past year. Table 6-3 shows the percentages of smokers who used varying numbers of the options, from none of the options to all ten. Only 6.2±1.8 percent of smokers did not employ any of the cost-saving measures. Over 85 percent used two or more options and over three-fourths used three or more. The pattern by income is as expected: In the lowest income group, about 97 percent used one or more cost-saving methods, compared to around 87 percent of the highest income group.

Table 6-3. Number of measures used to save money on cigarettes in the past year, among current smokers, by selected demographic characteristics

Characteristics	0	1	2	3	4	5
	%	%	%	%	%	%
Overall	**6.2** ± 1.8	**7.2** ± 1.9	**10.6** ± 2.3	**14.8** ± 2.6	**16.5** ± 2.8	**15.3** ± 2.8
Age						
18 to 24	**1.6** ± 3.1	**2.7** ± 2.7	**12.3** ± 7.8	**15.2** ± 7.6	**15.5** ± 9.1	**14.8** ± 8.2
25 to 44	**6.3** ± 2.8	**8.2** ± 3.2	**10.5** ± 3.8	**14.5** ± 4.2	**15.0** ± 4.3	**16.7** ± 4.6
45 to 64	**7.7** ± 3.3	**7.5** ± 3.3	**8.2** ± 3.1	**15.5** ± 4.1	**18.2** ± 4.5	**13.1** ± 4.0
65 or older	**6.4** ± 4.9	**7.0** ± 4.6	**20.2** ± 8.6	**11.6** ± 6.6	**19.1** ± 7.5	**18.1** ± 9.7
Household income						
$35,000 or less	**2.4** ± 1.4	**4.5** ± 2.6	**8.5** ± 3.4	**9.7** ± 3.2	**17.1** ± 4.5	**16.6** ± 4.4
$35,001 to $50,000	**6.0** ± 4.6	**11.0** ± 7.0	**10.5** ± 5.6	**14.8** ± 7.0	**22.8** ± 8.4	**13.4** ± 7.0
$50,001 to $75,000	**5.4** ± 3.9	**9.7** ± 5.3	**15.0** ± 7.0	**18.3** ± 7.1	**16.1** ± 7.0	**14.4** ± 6.7
$75,001 or more	**13.1** ± 5.9	**8.3** ± 3.8	**9.6** ± 4.5	**21.7** ± 6.9	**13.9** ± 6.0	**14.6** ± 6.6

Characteristics	6	7	8	9	10	Row Total
	%	%	%	%	%	%
Overall	**12.1** ± 2.4	**10.9** ± 2.4	**5.3** ± 1.8	**1.0** ± 0.6	**0.3** ± 0.4	**100**
Age						
18 to 24	**18.7** ± 9.2	**11.9** ± 7.0	**4.9** ± 5.3	**2.4** ± 2.2	**0.0** ± 0.0	**100**
25 to 44	**10.9** ± 3.6	**11.5** ± 3.7	**5.6** ± 2.9	**0.5** ± 0.8	**0.2** ± 0.4	**100**
45 to 64	**12.4** ± 3.7	**9.9** ± 3.9	**5.7** ± 2.8	**1.3** ± 1.2	**0.6** ± 1.1	**100**
65 or older	**6.0** ± 5.5	**10.7** ± 7.2	**1.0** ± 2.0	**0.0** ± 0.0	**0.0** ± 0.0	**100**
Household income						
$35,000 or less	**18.2** ± 4.7	**14.2** ± 4.4	**7.0** ± 3.0	**1.9** ± 1.4	**0.0** ± 0.0	**100**
$35,001 to $50,000	**6.6** ± 4.6	**9.3** ± 6.1	**4.9** ± 4.1	**0.0** ± 0.0	**0.7** ± 1.3	**100**
$50,001 to $75,000	**10.6** ± 5.8	**8.1** ± 4.7	**2.5** ± 2.8	**0.0** ± 0.0	**0.0** ± 0.0	**100**
$75,001 or more	**7.4** ± 4.1	**7.1** ± 4.4	**3.2** ± 3.8	**0.2** ± 0.4	**0.9** ± 1.8	**100**

Source: Minnesota Adult Tobacco Survey, 2014

6.2 Economic Influences on Quitting Behavior: Responding to a Price Increase

Effect of Cost Increase on Quitting

Survey Questions

- Taxes on the purchase of tobacco products have increased in the past 12 months in Minnesota. What effects if any, did this price increase have on your smoking? Did it ….?
  - Help you think about quitting?
  - Help you to cut down on cigarettes?
  - Help you make a quit attempt?
  - Help you maintain a quit?

For MATS 2014, current smokers and former smokers who last smoked regularly within the past year are combined to examine the response to a Minnesota tobacco tax increase that more than doubled the combined cigarette excise and sales tax—from US$1.60 per pack ($1.23 in tobacco tax and $0.37 in sales tax) to $3.35 per pack ($2.83 in tobacco tax and $0.52 in sales tax).

As a result of the tax increase, 60.8±3.4 percent of current smokers and former smokers who have quit in the past year thought about quitting as a result of the increase, while 48.1±3.5 percent cut down on cigarettes and 44.2±3.5 percent attempted to quit as a result of the increase (Table 6-4). There was a statistically significant difference between current and former smokers, with 40.7±3.8 percent of current smokers making a quit attempt in response to the increase, compared to 62.8±8.1 percent of former smokers. There were no statistically significant differences in thinking about quitting or cutting down on cigarettes between current and former smokers.

Table 6-4. Smoking-related reactions to the Minnesota tax increase among current and former smokers (who quit within the last year), by selected demographic characteristics and smoking status

Characteristics	Reactions			
	Thought about quitting	Cut down on cigarettes	Made a quit attempt	Maintained a quit attempt
	%	%	%	%
Overall	**60.8** ± 3.4	**48.1** ± 3.5	**44.2** ± 3.5	**18.8** ± 2.7
Age				
18 to 24	**66.8** ± 9.8	**56.1** ± 10.8	**56.6** ± 10.6	**29.0** ± 9.7
25 to 44	**63.6** ± 5.2	**46.7** ± 5.4	**47.8** ± 5.5	**17.2** ± 4.0
45 to 64	**58.0** ± 5.4	**49.1** ± 5.5	**35.9** ± 5.1	**17.3** ± 4.1
65 or older	**45.8** ± 10.2	**37.8** ± 9.4	**39.1** ± 9.8	**18.7** ± 8.1
Gender				
Female	**65.1** ± 4.8	**55.2** ± 5.2	**47.9** ± 5.2	**18.0** ± 4.0
Male	**57.6** ± 4.6	**42.9** ± 4.6	**41.3** ± 4.6	**19.5** ± 3.6
Education				
Less than high school	**63.8** ± 10.6	**56.5** ± 11.0	**44.6** ± 11.0	**17.0** ± 8.3
High school graduate/GED	**61.3** ± 5.6	**48.2** ± 5.8	**42.4** ± 5.8	**19.1** ± 4.6
Some college or technical school	**61.9** ± 5.3	**47.8** ± 5.6	**47.0** ± 5.6	**19.1** ± 4.4
College graduate or beyond	**53.4** ± 8.1	**40.9** ± 7.7	**40.7** ± 7.7	**19.1** ± 5.9
Household income				
$35,000 or less	**62.3** ± 5.3	**55.6** ± 5.5	**46.3** ± 5.4	**18.4** ± 4.0
$35,001 to $50,000	**58.7** ± 9.2	**48.4** ± 9.0	**39.7** ± 8.9	**17.5** ± 6.7
$50,001 to $75,000	**58.0** ± 8.3	**38.2** ± 8.2	**42.9** ± 8.6	**22.6** ± 7.5
$75,001 or more	**63.2** ± 7.2	**45.8** ± 7.5	**46.7** ± 7.4	**18.8** ± 5.5
Smoking Status				
Current Smokers	**59.3** ± 3.7	**48.3** ± 3.8	**40.7** ± 3.8	**10.7** ± 2.4
Former Smokers	**69.3** ± 7.6	**47.0** ± 8.2	**62.8** ± 8.1	**62.7** ± 8.1

Source: Minnesota Adult Tobacco Survey, 2014

Nearly 19 percent (18.8±2.7 percent) of adult current and former smokers maintained a quit attempt as a result of the cost increase. There was a large and statistically significant difference between current and former smokers, with 10.7±2.4 percent of current smokers saying they maintained a quit attempt, and 62.7±8.1 percent of former smokers saying they maintained a quit attempt as a result of the cost increase. Because former smokers have quit and the current smokers have not, this finding is to be expected.

6.3 Key Findings

Some of the most important findings from this chapter are summarized below. All differences presented in this summary are statistically significant at the 0.05 confidence level unless otherwise noted.

Key Economic Influences Findings for 2014

- The mean price per cigarette pack paid by Minnesota adult smokers was $7.16±0.22.
- The price paid per pack decreases as age increases, with 18-24 year olds paying a mean price of $7.51±0.22 cents and those 65 and older paying a mean price of $6.10±0.48 per pack.
- Overall, 22.8±3.3 percent of Minnesota adult smokers took advantage of coupons and rebates the last time they bought cigarettes. There is little variation across age, education or income level groups in coupon and rebate use, and no statistically significant differences.
- Of the various methods used by smokers to save money on cigarettes during the past year, 70.3±3.5 percent smoked fewer cigarettes to save money, 49.9±3.8 percent shared fewer cigarettes with others, and 56.9±3.8 percent saved half a cigarette to finish smoking later.
- Between one-third and one-half of smokers used purchasing strategies to try and save money on cigarettes in the past year, ranging from 32.3±3.4 percent who purchased cartons to 55.6±3.8 percent who found less expensive places to buy cigarettes. Fewer smokers resorted to alternative products: 23.3±3.3 percent used another form of tobacco and 30.1±3.5 percent rolled their own cigarettes.
- Overall, as a result of the tax increase, 60.8±3.4 percent of current smokers and former smokers who have quit in the past year thought about quitting as a result of the increase, while 48.1±3.5 percent cut down on cigarettes and 44.2±3.5 percent attempted to quit as a result of the increase.

- There was a statistically significant difference between current and former smokers in trying to quit in response to the tax increase, with 40.7±3.8 percent of current smokers making a quit attempt in response to the increase, compared to 62.8±8.1 percent of former smokers. There were no statistically significant differences in thinking about quitting or cutting down on cigarettes between current and former smokers.

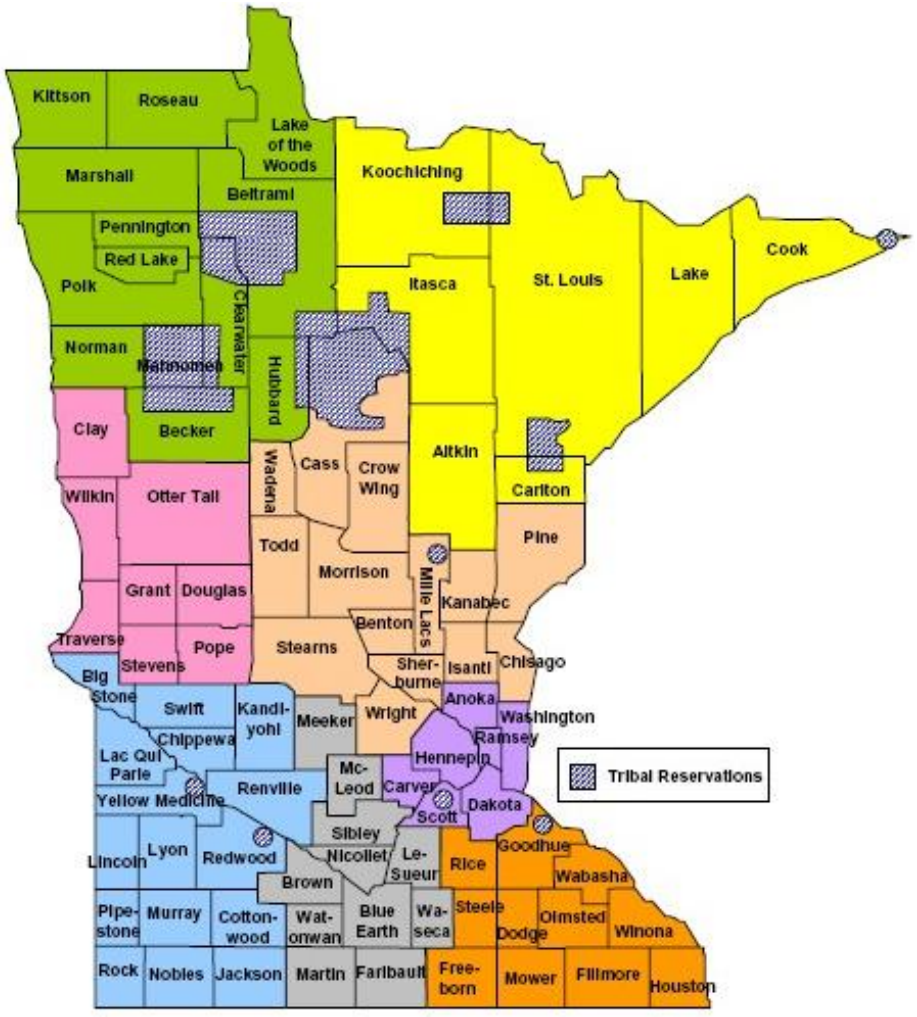
- Nearly 19 percent (18.8±2.7 percent) of adult current and former smokers maintained a quit attempt as a result of the cost increase. There was a large and statistically significant difference between current and former smokers, with 10.7±2.4 percent of current smokers saying they maintained a quit attempt, and 62.7±8.1 percent of former smokers saying they maintained a quit attempt as a result of the cost increase.

7. Regional Differences in Tobacco Use Among Minnesotans

7.1 Introduction

This chapter describes regional differences in tobacco use among Minnesota's adult population. The regions (groups of counties) are local public health emergency preparedness regions as defined by the Minnesota Department of Health for the administration of programs addressing a variety of public health and healthcare issues. The eight regions are: Northwest, Northeast, Central, Metropolitan, West Central, Southwest, South Central, and Southeast (Figure 7-1).

Figure 7-1. Map of Minnesota Public Health and Healthcare Regions



The results presented in this chapter examine selected topics from previous chapters, analyzed at the region level. For each analysis presented below, differences between each region and the state as a whole are presented first, followed by differences among the regions. Although all data are presented in the tables, only statistically significant results are described in the text.

7.2 Smoking Status of Minnesota Adults, by Region

This section examines the smoking status of Minnesota adults, by region. The definitions of smoking are the same as those in section 2.2.1.

Current smoking. Among Minnesota adults, there are no statistically significant differences in current smoking for any region compared to the state, or among any regions compared to each other.

Former smoking. Among Minnesota adults, there is a statistically significant difference in the percentage of former smokers in the Northeast region (35.8±4.4 percent) compared to the state as a whole (27.8±1.2 percent). In addition there is a statistically significant difference in the percentage of former smokers in the Northeast (35.8±4.4 percent) and West Central (25.8±3.9 percent) regions (Table 7-1).

Table 7-1. Smoking status of Minnesota adults, by region

Characteristics	Current smoker	Former smoker	Never smoker
	%	%	%
Overall	**14.4** ± 1.0	**27.8** ± 1.2	**57.8** ± 1.4
Region			
Northwest	**15.5** ± 3.3	**32.0** ± 4.6	**52.5** ± 4.8
Northeast	**18.3** ± 3.8	**35.8** ± 4.4	**45.9** ± 4.7
Central	**17.0** ± 3.0	**29.6** ± 3.4	**53.4** ± 3.8
Metropolitan	**13.6** ± 1.5	**26.0** ± 1.7	**60.4** ± 2.0
West Central	**16.7** ± 3.7	**25.8** ± 3.9	**57.4** ± 4.7
Southwest	**13.8** ± 3.4	**27.1** ± 4.1	**59.1** ± 4.6
South Central	**12.1** ± 3.0	**30.4** ± 4.3	**57.6** ± 4.6
Southeast	**13.0** ± 3.0	**28.7** ± 3.9	**58.4** ± 4.3

Source: Minnesota Adult Tobacco Survey, 2014

Never smoking. Among Minnesota adults, there are no statistically significant differences in never smoking for any region compared to the state as a whole. There are statistically significant differences among the following regions (Table 7-1):

- Northeast (45.9±4.7 percent) compared to Metropolitan (60.4±2.0 percent)
- Northeast (45.9±4.7 percent) compared to West Central (57.4±4.7 percent)
- Northeast (45.9±4.7 percent) compared to Southwest (59.1±4.6 percent)
- Northeast (45.9±4.7 percent) compared to South Central (57.6±4.6 percent)
- Northeast (45.9±4.7 percent) compared to Southeast (58.4±4.3 percent)

7.3 Mean Cigarettes Smoked per Day (Averaged Across Past 30 Days) for Current Smokers, by Region

This section examines the average cigarettes smoked per day by adult Minnesota current smokers, by region. The method used to calculate average cigarettes per day is the same as in section 2.3.2.

Among Minnesota adult current smokers, there are statistically significant differences when comparing the Southwest region (16.5±3.8 cigarettes) to the state as a whole (11.5±0.6 cigarettes). In addition, there are statistically significant differences among the following regions (Table 7-2):

- Metropolitan (10.1±0.9 cigarettes) compared to Southwest (16.5±3.8 cigarettes)
- Metropolitan (10.1±0.9 cigarettes) compared to Northwest (14.0±2.3 cigarettes)

Table 7-2. Mean cigarettes smoked per day (averaged across past 30 days) for current smokers, by region

Characteristics	Mean cigarettes per day
Overall	**11.5** ± 0.6
Region	
Northwest	**14.0** ± 2.3
Northeast	**13.1** ± 2.1
Central	**12.3** ± 1.5
Metropolitan	**10.1** ± 0.9
West Central	**12.1** ± 1.7
Southwest	**16.5** ± 3.8
South Central	**13.4** ± 2.6
Southeast	**12.1** ± 2.2

Source: Minnesota Adult Tobacco Survey, 2014

7.4 Usual Cigarette Brand is Menthol or Non-menthol, by Region

This section examines usual menthol or non-menthol brand use among adult Minnesota current smokers, by region. The definitions of menthol brand are the same as those in section 2.3.2.

Table 7-3. Usual cigarette brand is menthol among current smokers, by region

Characteristics	Usual brand is menthol %
Overall	**25.1** ± 3.4
Region	
Northwest	**20.5** ± 10.0
Northeast	**23.4** ± 9.8
Central	**26.7** ± 8.3
Metropolitan	**26.7** ± 5.3
West Central	**21.7** ± 9.4
Southwest	**18.8** ± 9.4
South Central	**23.4** ± 10.0
Southeast	**21.4** ± 11.0

Source: Minnesota Adult Tobacco Survey, 2014

Among Minnesota adult current smokers, there are no statistically significant differences in menthol brand use for any region compared to the state, or among any regions compared to each other.

7.5 Current Use of Non-cigarette Tobacco Products, by Region

This section examines current use of smokeless tobacco, cigars, hookahs, and e-cigarettes among Minnesota adults, by region. The definition of current use is the same as those in section 3.2.

Current Use of Smokeless Tobacco Among All Minnesota Adults, by Region

Among Minnesota adults, there is a statistically significant difference when comparing the Northeast region (7.0±2.6 percent) to the state as a whole (3.6±0.5 percent) in current use of smokeless tobacco. In addition, there is a statistically significant difference between the Metropolitan region (2.40±0.7 percent) and the Northeast region (7.0±2.6 percent) (Table 7-4).

Current Use of Cigars Among All Minnesota Adults, by Region

Among Minnesota adults, there are statistically significant differences when comparing the South Central region (1.1±0.7 percent) and the Southwest region (1.3±1.1 percent) to the state as a whole (3.0±0.5 percent) in current use of cigars. In addition, there are statistically significant differences among the following regions (Table 7-4):

- South Central (1.1±0.7 percent) compared to Metropolitan (3.4±0.8 percent)
- Southwest (1.3±1.1 percent) compared to Metropolitan (3.4±0.8 percent)

Current Use of a Hookah Among All Minnesota Adults, by Region

Among Minnesota adults, there is a statistically significant difference when comparing the Southwest region (0.3±0.4 percent) to the state as a whole (1.4±0.4 percent) in current use of a hookah. There are no statistically significant differences in the use of a hookah in the past 30 days when comparing regions to each other (Table 7-4).

Table 7-4. Current use of smokeless tobacco, cigars, and hookah among all Minnesota adults, by region

Characteristics	Smokeless tobacco use	Cigar use	Hookah use
Overall	**3.6** ± 0.5	**3.0** ± 0.5	**1.4** ± 0.4
Region			
Northwest	**6.0** ± 2.8	**3.1** ± 1.8	**0.9** ± 0.8
Northeast	**7.0** ± 2.6	**3.0** ± 1.5	**0.9** ± 1.1
Central	**3.8** ± 1.3	**2.9** ± 1.3	**0.9** ± 0.7
Metropolitan	**2.4** ± 0.7	**3.4** ± 0.8	**1.7** ± 0.6
West Central	**4.6** ± 1.8	**3.6** ± 1.8	**1.9** ± 1.5
Southwest	**5.1** ± 1.9	**1.3** ± 1.1	**0.3** ± 0.4
South Central	**5.0** ± 2.0	**1.1** ± 0.7	**1.9** ± 1.3
Southeast	**5.3** ± 2.2	**1.7** ± 1.1	**1.0** ± 1.1

Source: Minnesota Adult Tobacco Survey, 2014

Current Use of Electronic Cigarettes Among All Minnesota Adults, by Region

Table 7-5 examines current use of electronic cigarettes among Minnesota adults, by region. The definition of current use is the same as those in section 3.3.

Table 7-5. Current use of electronic cigarettes among all Minnesota adults, by region

Characteristics	Current e-cigarette use
Overall	**5.9** ± 0.7
Region	
Northwest	**4.2** ± 1.9
Northeast	**4.7** ± 2.0
Central	**6.5** ± 2.0
Metropolitan	**6.5** ± 1.1
West Central	**4.3** ± 1.8
Southwest	**6.6** ± 2.5
South Central	**4.2** ± 1.8
Southeast	**4.8** ± 2.0

Source: Minnesota Adult Tobacco Survey, 2014

There are no statistically significant differences in the use of electronic cigarettes by Minnesota adults in the past 30 days when comparing individual regions to the state as a whole or regions to each other.

7.6 Secondhand Smoke Exposure Among Nonsmoking Adults, by Region

This section examines exposure of nonsmoking Minnesota adults to secondhand smoke in the community at large, at home, and in a car in the past seven days, by region. Exposure in the community and the community setting of the most recent exposure is discussed in section 7.6.1. Exposure in the home and in a car is discussed in sections 7.6.2 and 7.6.3

7.6.1 Secondhand Smoke Exposure in the Community, by Region

This section examines exposure of nonsmoking Minnesota adults to secondhand smoke in the community at large, by region. The definition of exposure to secondhand smoke in the community is the same as section 5.2.2.

Among nonsmoking Minnesota adults, there is a statistically significant difference in exposure in the community at large in the past seven days when comparing the South Central region (24.5±4.2 percent) to the state as a whole (31.7±1.4 percent). In addition, there is a statistically significant difference between the South Central region (24.5±4.2 percent) and the Northeast region (34.8±5.0 percent) (Table 7-6).

Table 7-6. Exposure of nonsmoking Minnesota adults to secondhand smoke in the past seven days in the community at large, by region

Characteristics	In the community at large
Overall	**31.7** ± 1.4
Region	
Northwest	**34.6** ± 5.3
Northeast	**34.8** ± 5.0
Central	**33.0** ± 4.1
Metropolitan	**32.3** ± 2.1
West Central	**33.0** ± 5.2
Southwest	**27.4** ± 4.7
South Central	**24.5** ± 4.2
Southeast	**29.1** ± 4.4

Source: Minnesota Adult Tobacco Survey, 2014

7.6.1.1 Location of Most Recent Exposure of Nonsmoking Minnesota Adults to Secondhand Smoke in Community Settings, by Region

This subsection examines the location of the most recent exposure of nonsmoking Minnesota adults to secondhand smoke from a list of community settings. The settings are presented in the order they appear in Figure 5-2.

Building Entrance

Among nonsmoking Minnesota adults, there is a statistically significant difference in most recent exposure to secondhand smoke occurring at a building entrance when comparing the West Central region (9.6±4.3 percent) to the state as a whole (20.0±2.2 percent). In addition, there are statistically significant differences among the following regions (Table 7-7):

- West Central (9.6±4.3 percent) compared to Metropolitan (22.4±3.2 percent)
- Southeast (22.5±7.8 percent) compared to Metropolitan (22.4±3.2 percent)

Table 7-7. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at a building entrance, by region

Characteristics	Building entrance
Overall	**20.0** ± 2.2
Region	
Northwest	**15.4** ± 7.0
Northeast	**12.1** ± 5.1
Central	**17.0** ± 5.7
Metropolitan	**22.4** ± 3.2
West Central	**9.6** ± 4.3
Southwest	**16.4** ± 8.0
South Central	**19.9** ± 8.0
Southeast	**22.5** ± 7.8

Source: Minnesota Adult Tobacco Survey, 2014

Somewhere Else Outdoors

Table 7-8. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was somewhere else outdoors, by region

Characteristics	Somewhere else outdoors
Overall	**16.5** ± 2.0
Region	
Northwest	**18.3** ± 6.5
Northeast	**22.1** ± 8.1
Central	**18.3** ± 5.8
Metropolitan	**13.8** ± 2.7
West Central	**24.3** ± 8.5
Southwest	**18.3** ± 7.5
South Central	**16.3** ± 6.5
Southeast	**21.7** ± 7.3

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in somewhere else outdoors being the setting of their most recent exposure to secondhand smoke when comparing individual regions to the state as a whole or regions to each other.

Restaurant or Bar Outdoor Patio

Table 7-9. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at a restaurant or bar outdoor patio, by region

Characteristics	Restaurant or bar patio
Overall	**12.7** ± 1.8
Region	
Northwest	**13.8** ± 7.2
Northeast	**12.3** ± 6.6
Central	**13.9** ± 5.5
Metropolitan	**12.9** ± 2.6
West Central	**7.0** ± 4.7
Southwest	**10.0** ± 5.6
South Central	**14.1** ± 7.8
Southeast	**12.2** ± 6.1

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in a restaurant or bar patio being the setting of their most recent exposure to secondhand smoke when comparing individual regions to the state as a whole or regions to each other.

Another Person's Home

Table 7-10. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was in another person's home, by region

Characteristics	Another person's home
Overall	**12.0** ± 1.9
Region	
Northwest	**15.3** ± 6.6
Northeast	**9.6** ± 5.0
Central	**18.1** ± 6.2
Metropolitan	**10.8** ± 2.7
West Central	**15.6** ± 6.2
Southwest	**13.5** ± 6.0
South Central	**13.5** ± 7.4
Southeast	**8.0** ± 5.3

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in another person's home being the setting of their most recent exposure to secondhand smoke when comparing individual regions to the state as a whole or regions to each other.

Some Other Place

Table 7-11. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at some other place, by region

Characteristics	Some other place
Overall	**10.4** ± 1.7
Region	
Northwest	**13.2** ± 6.7
Northeast	**12.4** ± 7.4
Central	**8.2** ± 4.2
Metropolitan	**10.1** ± 2.5
West Central	**12.6** ± 6.2
Southwest	**14.8** ± 7.8
South Central	**10.4** ± 5.6
Southeast	**10.2** ± 5.7

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in some other place not included in the list of settings being the setting of their most recent exposure to secondhand smoke when comparing individual regions to the state as a whole or regions to each other.

Parking Lot

Table 7-12. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at a parking lot, by region

Characteristics	Parking lot
Overall	**9.2** ± 1.7
Region	
Northwest	**9.4** ± 5.2
Northeast	**5.7** ± 4.0
Central	**10.0** ± 4.9
Metropolitan	**9.1** ± 2.4
West Central	**16.1** ± 7.2
Southwest	**5.5** ± 2.4
South Central	**4.7** ± 4.4
Southeast	**11.7** ± 5.8

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in a parking lot being the setting of their most recent exposure to secondhand smoke when comparing individual regions to the state as a whole or regions to each other.

Gambling Venue

Among nonsmoking Minnesota adults, there is a statistically significant difference in most recent exposure to secondhand smoke occurring in a gambling venue when comparing the Northeast region (14.4±6.0 percent) to the state as a whole (6.3±1.2 percent). In addition, there is a statistically significant difference among the Northeast region (14.4±6.0 percent) and the Metropolitan region (5.1±1.7 percent) (Table 7-13).

Table 7-13. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was in a gambling venue, by region

Characteristics	Gambling venue
Overall	**6.3** ± 1.2
Region	
Northwest	**6.2** ± 3.4
Northeast	**14.4** ± 6.0
Central	**6.9** ± 3.4
Metropolitan	**5.1** ± 1.7
West Central	**5.1** ± 3.4
Southwest	**7.7** ± 4.3
South Central	**9.7** ± 5.0
Southeast	**5.5** ± 4.3

Source: Minnesota Adult Tobacco Survey, 2014

Outdoor Shopping Mall or Strip Mall

Table 7-14. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at an outdoor shopping mall or strip mall, by region

Characteristics	Outdoor shopping mall or strip mall
Overall	**3.8** ± 1.1
Region	
Northwest	**4.9** ± 4.7
Northeast	**3.2** ± 3.1
Central	**2.5** ± 2.4
Metropolitan	**4.4** ± 1.7
West Central	**4.7** ± 3.7
Southwest	**4.0** ± 4.2
South Central	**3.3** ± 3.5
Southeast	**1.8** ± 2.5

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in an outdoor shopping mall or strip mall being the setting of their most recent

exposure to secondhand smoke when comparing individual regions to the state as a whole regions to each other.

Bus Stop

Among nonsmoking Minnesota adults, there are no statistically significant differences in most recent exposure to secondhand smoke occurring at a bus stop when comparing individual regions to the state as whole. There are statistically significant differences among the following regions (Table 7-15):

- Southeast (1.0±1.3 percent) compared to Metropolitan (5.1±1.9 percent)
- Northeast (1.1±1.6 percent) compared to Metropolitan (5.1±1.9 percent)

Table 7-15. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at a bus stop, by region

Characteristics	Bus stop
Overall	**3.1** ± 1.1
Region	
Northwest	**S**
Northeast	**1.1** ± 1.6
Central	**S**
Metropolitan	**5.1** ± 1.9
West Central	**1.7** ± 2.6
Southwest	**S**
South Central	**S**
Southeast	**1.0** ± 1.3

Note: "S" in the table indicates data suppression because of small sample size. In 2003, perceived harmfulness was only measured among young adults.

Source: Minnesota Adult Tobacco Survey, 2014

Park

Table 7-16. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at a park, by region

Characteristics	Park
Overall	**2.5** ± 0.9
Region	
Northwest	**1.4** ± 1.6
Northeast	**1.8** ± 2.6
Central	**0.9** ± 1.1
Metropolitan	**3.0** ± 1.5
West Central	**S**
Southwest	4.4 ± 4.0
South Central	**2.2** ± 2.5
Southeast	**3.0** ± 2.2

Note: "S" in the table indicates data suppression because of small sample size. In 2003, perceived harmfulness was only measured among young adults.

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in a park being the setting of their most recent exposure to secondhand smoke when comparing regions to the state as a whole or individual regions to each other.

Another Person's Car

Table 7-17. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was in another person's car, by region

Characteristics	Another person's car
Overall	**2.3** ± 0.9
Region	
Northwest	**0.8** ± 1.0
Northeast	**2.9** ± 3.2
Central	**2.8** ± 2.0
Metropolitan	**2.3** ± 1.3
West Central	**2.6** ± 2.7
Southwest	**2.8** ± 3.0
South Central	**4.6** ± 4.0
Southeast	**0.2** ± 0.4

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there is a statistically significant difference in most recent exposure to secondhand smoke occurring in another person's car when comparing the Southeast region (0.2±0.4 percent) to the state as a whole (2.3±0.9 percent). There are no statistically significant differences when comparing individual regions to each other.

Community Sports Event

Table 7-18. Most recent exposure of nonsmoking Minnesota adults to secondhand smoke was at a community sports event, by region

Characteristics	Community sports event
Overall	**1.3** ± 0.6
Region	
Northwest	**1.4** ± 2.8
Northeast	**2.6** ± 2.5
Central	**1.4** ± 1.6
Metropolitan	**1.0** ± 0.8
West Central	**0.7** ± 1.1
Southwest	**2.6** ± 3.7
South Central	**1.2** ± 2.3
Southeast	**2.4** ± 2.8

Source: Minnesota Adult Tobacco Survey, 2014

Among nonsmoking Minnesota adults, there are no statistically significant differences in a community sports event being the setting of their most recent exposure to secondhand smoke when comparing regions to the state as a whole or individual regions to each other.

7.6.2 Secondhand Smoke Exposure in the Home, by Region

This subsection examines exposure of nonsmoking Minnesota adults to secondhand smoke in the home, by region. The definition of exposure to secondhand smoke is the same as in section 5.2.1.

Table 7-19. Exposure of nonsmoking Minnesota adults to secondhand smoke in the home in the past seven days, by region

Characteristics	Secondhand smoke exposure at home
Overall	**3.2** ± 0.6
Region	
Northwest	**5.4** ± 2.7
Northeast	**4.3** ± 2.4
Central	**3.5** ± 1.7
Metropolitan	**3.1** ± 0.8
West Central	**3.9** ± 2.2
Southwest	**2.4** ± 1.5
South Central	**2.9** ± 1.6
Southeast	**2.3** ± 1.7

Source: Minnesota Adult Tobacco Survey, 2014

There are no statistically significant differences in the percentage of Minnesota adults indicating exposure to secondhand smoke at home in the past seven days when comparing individual regions to the state as a whole or regions to each other.

7.6.3 Secondhand Smoke Exposure in a Car, by Region

This subsection examines exposure of nonsmoking Minnesota adults to secondhand smoke in a car, by region. The definition of exposure to secondhand smoke is the same as in section 5.2.1.

Table 7-20. Exposure of nonsmoking Minnesota adults to secondhand smoke in a car in the past seven days, by region

Characteristics	Secondhand smoke exposure in a car
Overall	**6.9** ± 0.8
Region	
Northwest	**9.6** ± 3.4
Northeast	**7.9** ± 3.1
Central	**8.7** ± 2.5
Metropolitan	**6.4** ± 1.2
West Central	**10.0** ± 3.6
Southwest	**5.8** ± 2.4
South Central	**8.0** ± 2.9
Southeast	**4.8** ± 2.1

Source: Minnesota Adult Tobacco Survey, 2014

There are no statistically significant differences in the percentage of Minnesota adults indicating exposure to secondhand smoke in a car in the past seven days when comparing regions to the state as a whole or individual regions to each other.

7.7 Smoke-free Rules at Home, by Region

This section examines the percentage of Minnesota adults responding that smoking is not allowed anywhere in the home, by region. The definition of a smoke-free policy at home is the same as in section 5.3.1.

Among Minnesota adults, there is a statistically significant difference when comparing the Northeast region to (84.9±3.4 percent) to the state as a whole (89.3±0.9 percent). In addition, there is a statistically significant difference when comparing the Southwest region (92.9±2.1 percent) to the state as a whole (89.3±0.9 percent). There are statistically significant differences among the following regions (Table 7-21):

- Southeast (92.9±2.1 percent) compared to Northeast (84.9±3.4 percent)
- Southeast (92.9±2.1 percent) compared to Northwest (85.2±3.4 percent)
- Southeast (92.9±2.1 percent) compared to West Central (86.1±3.5 percent)

Table 7-21. Minnesota adults living in homes with smoke-free policies, by region

Characteristics	Smoking not allowed anywhere inside home
Overall	**89.3** ± 0.9
Region	
Northwest	**85.2** ± 3.4
Northeast	**84.9** ± 3.4
Central	**89.2** ± 2.4
Metropolitan	**89.8** ± 1.3
West Central	**86.1** ± 3.5
Southwest	**90.5** ± 2.6
South Central	**88.0** ± 3.1
Southeast	**92.9** ± 2.1

Source: Minnesota Adult Tobacco Survey, 2014

7.8 Smoke-free Rules in Family Vehicles, by Region

This section examines the percentage of Minnesota adults responding that smoking is not allowed in vehicles owned or leased by themselves or by family members in the household, by region. The definition of a smoke-free policy in family vehicles is the same as in section 5.3.2.

Table 7-22. Minnesota adults who do not allow smoking in vehicles owned by themselves or family members, by region

Characteristics	Do not allow smoking in vehicles
Overall	**77.6** ± 1.2
Region	
Northwest	**73.0** ± 4.2
Northeast	**73.4** ± 4.2
Central	**73.9** ± 3.3
Metropolitan	**78.6** ± 1.7
West Central	**73.1** ± 4.4
Southwest	**79.9** ± 3.7
South Central	**80.5** ± 3.7
Southeast	**80.5** ± 3.6

Source: Minnesota Adult Tobacco Survey, 2014

There are no statistically significant differences in the percentage of Minnesota adults indicating that smoking is not allowed in family vehicles when comparing regions to the state as a whole or individual regions to each other.

7.9 Perceptions that Secondhand Smoke Is Harmful, by Region

This section examines Minnesota adults' agreement that secondhand smoke is very or somewhat harmful and the perceived level of harm from brief secondhand smoke exposure outdoors (rated on a scale of 1 to 7), by region. Definitions for agreement that secondhand smoke is harmful and the perceived level of harm from brief secondhand smoke exposure outdoors are the same as in section 5.4.

Table 7-23. Agreement among Minnesota adults that secondhand smoke is harmful, by region

Characteristics	Secondhand smoke is very or somewhat harmful
Overall	**92.6** ± 0.7
Region	
Northwest	**92.7** ± 2.7
Northeast	**93.7** ± 2.3
Central	**92.0** ± 2.0
Metropolitan	**92.2** ± 1.1
West Central	**93.4** ± 2.2
Southwest	**92.9** ± 2.7
South Central	**93.1** ± 2.3
Southeast	**94.8** ± 1.7

Source: Minnesota Adult Tobacco Survey, 2014

There are no statistically significant differences in the percentage of Minnesota adults agreeing that exposure to secondhand smoke is harmful when comparing regions to the state as a whole or individual regions to each other.

Table 7-24. Perceived level of harm from brief secondhand smoke exposure outdoors (rated on a scale of 1 to 7), by region

Characteristics	Mean rating
Overall	**4.3** ± 0.1
Region	
Northwest	**4.4** ± 0.2
Northeast	**4.3** ± 0.2
Central	**4.2** ± 0.2
Metropolitan	**4.3** ± 0.1
West Central	**4.5** ± 0.2
Southwest	**4.6** ± 0.2
South Central	**4.4** ± 0.2
Southeast	**4.5** ± 0.2

Source: Minnesota Adult Tobacco Survey, 2014

There are no statistically significant differences in the mean rating of Minnesota adults' perceived level of harm from brief secondhand smoke exposure outdoors when comparing regions to the state as a whole or individual regions to each other.

7.10 Support for Smoke-free Policies in Outdoor Areas and Casinos, by Region

This section examines Minnesota adults' opinion about whether smoking should not be allowed in various outdoor locations and in Minnesota casinos, by region. The definitions for this section are the same as in section 5.5.

Table 7-25. Opinions about allowing smoking in various areas, among all Minnesota adults, by region

Characteristics	Should not be allowed				
	Near building entrances and exits	Parks, playgrounds and beaches	County fairs or community-sponsored gatherings	Patios of restaurants, cafes and bars	Sidewalks
	%	%	%	%	%
Overall	**68.7** ± 1.3	**58.7** ± 1.4	**60.2** ± 1.4	**50.6** ± 1.4	**33.7** ± 1.3
Region					
Northwest	**68.6** ± 4.4	**60.1** ± 4.8	**63.0** ± 4.7	**50.2** ± 4.9	**40.6** ± 4.7
Northeast	**67.7** ± 4.5	**56.6** ± 4.7	**59.8** ± 4.8	**48.0** ± 4.8	**34.3** ± 4.5
Central	**67.7** ± 3.6	**57.7** ± 3.8	**58.6** ± 3.8	**46.2** ± 3.9	**34.0** ± 3.6
Metropolitan	**68.1** ± 1.9	**58.4** ± 2.0	**59.2** ± 2.0	**52.0** ± 2.1	**31.3** ± 1.9
West Central	**70.0** ± 4.3	**62.2** ± 4.7	**64.9** ± 4.7	**49.9** ± 4.9	**35.9** ± 4.5
Southwest	**70.7** ± 4.2	**63.3** ± 4.6	**65.6** ± 4.5	**51.1** ± 4.7	**41.7** ± 4.7
South Central	**69.9** ± 4.3	**60.1** ± 4.6	**63.4** ± 4.6	**45.9** ± 4.6	**41.1** ± 4.6
Southeast	**72.1** ± 4.1	**58.7** ± 4.4	**61.8** ± 4.4	**53.1** ± 4.4	**36.1** ± 4.1

Source: Minnesota Adult Tobacco Survey, 2014

Among Minnesota adults, there is a statistically significant difference in the opinion that smoking should not be allowed on sidewalks when comparing the Northwest (40.6±4.7 percent), South Central (41.1±4.6 percent), and Southwest regions (41.7±4.7 percent) to the state as a whole (33.7±1.3 percent). There are statistically significant differences in

the opinion that smoking should not be allowed on sidewalks among the following regions (Table 7-25):

- Metropolitan (31.3±1.9 percent) compared to Northwest (40.6±4.7 percent)
- Metropolitan (31.3±1.9 percent) compared to South Central (41.1±4.6 percent)
- Metropolitan (31.3±1.9 percent) compared to Southeast (41.7±4.7 percent)

There are no statistically significant differences in the opinion that smoking should not be allowed in the areas listed below when comparing regions to the state as a whole or individual regions to each other:

- Near building entrances and exits
- Parks, playgrounds and beaches
- County fairs or community-sponsored gatherings
- Patios of restaurants, cafes and bars

Among Minnesota adults, there are no statistically significant differences in opinion that smoking should not be allowed in casinos between any of the individual regions and the state as a whole. There is a statistically significant difference between the Northeast region (71.2±4.5 percent) and the Southeast region (79.6±3.6 percent) (Table 7-26).

Table 7-26. Opinions about whether smoking should be allowed in Minnesota Casinos, among all Minnesota adults, by region

Characteristics	Should not be allowed Casinos %
Overall	**74.9** ± 1.3
Region	
Northwest	**75.7** ± 4.4
Northeast	**71.2** ± 4.5
Central	**73.4** ± 3.5
Metropolitan	**74.3** ± 1.9
West Central	**76.0** ± 4.6
Southwest	**78.8** ± 4.1
South Central	**75.9** ± 4.3
Southeast	**79.6** ± 3.6

Source: Minnesota Adult Tobacco Survey, 2014

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