MINNESOTA ADULT TOBACCO SURVEY

Tobacco Use in Minnesota: 1999 to 2010

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2010 Update

February 2011

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1. The Minnesota Adult Tobacco Survey 2010: Methodology

The Minnesota Adult Tobacco Survey (MATS) 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 2010 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

Scientific samples were drawn that are representative of the Minnesota adult population in 2010. 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 another of mobile (cell) telephone numbers. MATS 2010 is the first in the MATS series to include a cell phone frame as part of the RDD survey. There are two main reasons for adding the cell phone sample. First, in the last few years, the trend has rapidly accelerated for households to abandon their traditional landline telephones in favor of cell phones, by using cell phones exclusively or by keeping a landline in place but largely ignoring it except for emergencies or other specific circumstances.[1] This means that many individuals would have no chance of being included in an RDD survey that used only a landline sample frame. Second, there are demographic and other differences between the population who are exclusively or largely cell phone users and those who have landlines or use a mix of landlines and cell phones. From the perspective of MATS, important differences include the high proportion of young adults who are predominantly cell phone users and the higher prevalence of smokers among predominantly cell phone users.[2] Young adults aged 18 to 24 are a critical

population in the context of tobacco control, since this is the age is when smoking becomes established and they are a target group for the tobacco industry.

For the above and associated efficiency reasons, the MATS cell phone interview 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 2010, 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 7,000 adults, 5,950 from the landline sample and 1,050 from the cell phone sample.

Questionnaire Development

The MATS 2010 questionnaire covered general physical and mental health, alcohol use, cigarette smoking and other tobacco use, smoking cessation, experience with health care provider smoking interventions, attitudes toward smoking, exposure to secondhand smoke in various settings, the effects of public and private policies and rules on smoking behaviors and perceptions and demographic information. Most survey questions were derived from MATS 2007, 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.

The MATS 2010 included new questions to address emergent tobacco and public health issues, and eliminated 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 100 test respondents drawn from both landline and cell telephone sample frames, resulting in only minor changes.

Data Collection

Data collection took place in 2010, between February 19 and May 30. 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 person for the MATS interview. Operational procedures to support the administration of the questionnaire included telephone contacting rules and procedures that met or exceeded the standard requirements for the CDC Behavioral Risk Factor Surveillance System surveys (BRFSS). At least 15 call attempts were made to contact households and individuals identified and selected through the RDD survey (unless each sampled case resulted in a completed interview or reached another final resolution in fewer attempts). Supporting measures included an informational website, advance notification letters and letters sent to those who initially declined to respond to the survey to encourage them to participate. According to BRFSS protocol, telephone interviewers recontacted anyone who initially declined participation, to make a second attempt to secure their cooperation.

The final sample size of 7,057 interviews slightly exceeded the sample plan of 7,000. The 5,555 landline interviews were less than the 5,950 originally planned and the 1,502 cell phone interviews were more than the 1,050 originally planned. As described in the *Minnesota Adult Tobacco Survey 2010 Methodology Report*, this larger proportion of cell phone interviews in the combined landline-cell sample used for the analyses presented in this report offers an improvement in reducing the sampling variance in the final sample.

The American Association for Public Opinion Research (AAPOR) methodology was used to calculate the weighted landline sample and cell phone sample response rates of 45.0 and 44.5% percent, respectively, which reflect net response rates across both the screener questionnaire and the MATS questionnaire.

Every effort was made 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 2010 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 adjustments to combine the overlapping cell-mostly landline* and cell phone samples, and 4) post-stratify to estimated population totals through a calibration process to adjust for remaining non-response and coverage error. MATS 2010 incorporated the demographic characteristics of gender, age, race, location, and education from the 2008 American Community Survey (ACS) into the calibration characteristics dimensions.

This merged, weighted data set is used in producing the statewide estimates presented in this report for the entire adult Minnesota population and subgroups of that population.

* 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.

The MATS 2010 survey methodology is fully described in the *Minnesota Adult Tobacco Survey 2010 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 2010 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. 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 Advisory Panel and Westat 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 2010, based on the MATS 2010 data; second, to describe tobacco-related trends in Minnesota from 1999 to 2010, with the main focus on changes from 2007 to 2010.

The tabulations have the following features.

MATS 2010 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 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). Additional subgroup estimates were generated for the young adult analysis for 30-day smoking status, smoking frequency and college status. All estimates are also presented with 95 percent confidence interval half-widths.

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.

MATS Trend Analysis

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

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 in figures, tables and text. 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 2007 and MATS 2010.

MATS 2010 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 two years (mainly 2007 and 2010). 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 2007 and 2010 (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 2007 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 2010

uses a two-tailed test in a small number of analyses, where the one-tailed test failed because the observed direction of change between 2007 and 2010 was in the opposite direction of the hypothesis, and where the size of the change was large (for example, see section 3.6 which describes the change in smokeless tobacco use between 2007 and 2010).

Because these analyses always compare one thing to one other thing, rather than one thing to multiple other things as with the MATS 2010 analyses (for example, a 2007 estimate and a 2010 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 2010 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 workplace smoke-free policies, one might test for the strength of association between the two distributions. This differs from the MATS 2010 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 all four MATS with a focus on results from MATS 2010. Chapter 2 discusses the prevalence of cigarette smoking among

Minnesota adults, and perceptions of tobacco use and the social environment of smoking. Chapter 3 examines the use of various forms of tobacco other than cigarettes. Chapter 4 addresses quitting smoking, assistance from health care providers in quitting, and the effects that the price of cigarettes and smoke-free policies have on tobacco use and quitting. Chapter 5 focuses on Minnesotans' exposure to secondhand smoke, describing where these exposures occur, how awareness of secondhand smoke risk has changed, the relationship between smoke-free policies and these exposures, and attitudes towards various smoke-free policies.

Website

This technical report and a briefing are available at:
www.mnadulttobaccosurvey.org

Sources

1. Blumberg, SJ and Luke, JV. Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July–December 2009. Division of Health Interview Statistics, National Center for Health Statistics. May 2010.

2. Blumberg, S.J., and Luke, J.V. (2007). Coverage bias in traditional telephone surveys of low-income and young adults. *Public Opinion Quarterly* 71, 734-49; Blumberg, S.J., Luke, J.V., and Cynamon, M.L. (2006). Telephone coverage and health survey estimates: Evaluating the need for concern about wireless substitution. *Am J Public Health* 96, 926-31.

2. Smoking among Minnesota Adults

2.1 Introduction

This chapter examines cigarette use in Minnesota, the characteristics of cigarette smokers, and attitudes towards tobacco. 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.

This chapter first describes the environment in 2010 and then changes between 2007 and 2010. 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 Cigarette Use in Minnesota

This report looks at tobacco use in Minnesota from several perspectives. The initial focus is on cigarette smoking because the overwhelming majority of tobacco users are cigarette smokers.

2.2.1 Use of Cigarettes

This section presents a general profile of cigarette smoking 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 all 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?

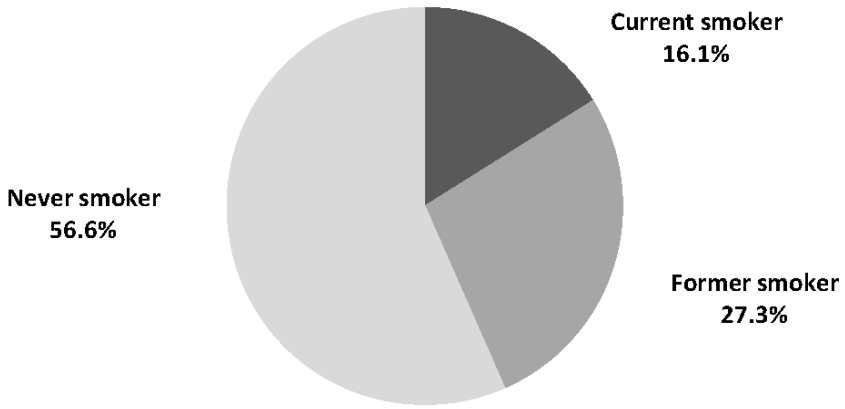
Among all adult Minnesotans, 16.1±1.2 percent are current smokers, 27.3±1.3 percent are former smokers and 56.6±1.5 percent are never smokers (Figure 2-1). Detailed statistics for the following discussions of these three groups appear in Table 2-1.

Current Smokers

Overall, 16.1±1.2 percent of adult Minnesotans (about 625,000 people) are current smokers (Table 2-1). This prevalence compares favorably with the 20.6 percent smoking prevalence for all states as of 2009, as reported in the National Health Interview Survey.[2]

Current 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.

Figure 2-1. Smoking status of Minnesota adults, 2010



Source: Minnesota Adult Tobacco Survey, 2010

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

Characteristics	Current smoker	Former smoker	Never smoker	Row Total
	%	%	%	%
Overall	**16.1** ± 1.2	**27.3** ± 1.3	**56.6** ± 1.5	**100**
Age				
18 to 24	**21.8** ± 4.0	**6.3** ± 2.3	**72.0** ± 4.4	**100**
25 to 44	**19.7** ± 2.3	**21.9** ± 2.2	**58.4** ± 2.7	**100**
45 to 64	**14.9** ± 1.7	**33.4** ± 2.2	**51.7** ± 2.3	**100**
65 or older	**5.4** ± 1.2	**44.0** ± 2.8	**50.6** ± 2.8	**100**
Gender				
Female	**14.5** ± 1.6	**25.0** ± 1.7	**60.6** ± 2.0	**100**
Male	**17.7** ± 1.8	**29.7** ± 1.9	**52.6** ± 2.2	**100**
Education				
Less than high school	**21.1** ± 5.3	**29.4** ± 5.6	**49.5** ± 6.4	**100**
High school graduate/GED	**21.7** ± 2.7	**29.9** ± 2.8	**48.4** ± 3.1	**100**
Some college or technical school	**20.0** ± 2.1	**27.9** ± 2.1	**52.1** ± 2.5	**100**
College graduate or beyond	**4.8** ± 1.0	**23.5** ± 1.9	**71.7** ± 2.0	**100**
Household income				
$35,000 or less	**26.1** ± 2.8	**24.8** ± 2.5	**49.0** ± 3.1	**100**
$35,001 to $50,000	**17.4** ± 3.3	**31.2** ± 3.7	**51.4** ± 4.0	**100**
$50,001 to $75,000	**14.7** ± 2.6	**30.9** ± 3.2	**54.4** ± 3.5	**100**
$75,001 or more	**9.6** ± 1.7	**26.2** ± 2.2	**64.3** ± 2.5	**100**

Source: Minnesota Adult Tobacco Survey, 2010

Smoking rates decline as age increases. Young adults (18-24-year-olds) in Minnesota have the highest current smoking rate among all age groups, at 21.8±4.0 percent. The smoking rates consistently decline across the age groups, with only 5.4±1.2 percent of those 65 or older being smokers. Statistically significant differences occur between this oldest group and each of the other three age groups, and between the 45-64-year-olds and each of the two younger age groups.

Smoking rates tend to decline as education increases; however, the pattern is more or less flat across all the education status groups with less than a college degree, ranging between 20.0 percent and 21.7 percent. Those with a college degree differ from each of the other three educational status groups in a statistically significant way, with 4.8±1.0 percent of those who have a college degree being smokers.

Smoking rates decline as income increases. Among Minnesotans with annual household incomes of $35,000 or less, 26.1±2.8 percent are current smokers, steadily declining to 9.6±1.7 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.

Young Adult Smokers

As noted above, 21.8±4.0 percent of young adults are current smokers according to the standard adult definition. Nearly all of these (21.6±4.0 percent) also smoked in the past 30 days (Figure 2-2). There are an additional 6.2±2.5 percent who smoked in the past 30 days but do not meet the standard adult criteria for being a current smoker. Adding this group of unrecognized smokers creates an overall smoking prevalence rate for young adults of 27.8±4.4 percent, using the 30-day definition that is described below in the Smoking Status for Young Adults definition box.

Smoking Status for Young Adults

Established Smokers

For young adults, an established smoker is a young adult who has smoked at least 100 cigarettes in his or her lifetime and now smokes every day or some days.

This is identical to a current smoker as defined above in the Smoking Status definition box. This is the same definition used by the CDC and by most adult smoking studies to define current smokers.[4]

Unrecognized Smokers

An unrecognized smoker has smoked a cigarette in the past 30 days, but is not counted as a current smoker by the established smoker definition described above. The great majority of unrecognized smokers identified by MATS report that they have smoked fewer than 100 cigarettes in their lifetime. In much smaller numbers, unrecognized smokers also include those who have smoked 100 or more cigarettes, who said they now smoke "not at all," but who *also* said they have smoked in the past 30 days.

Using the criterion of any smoking in the previous 30 days reveals a group of 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. This group is often understudied; therefore MATS describes these young adults as unrecognized smokers.

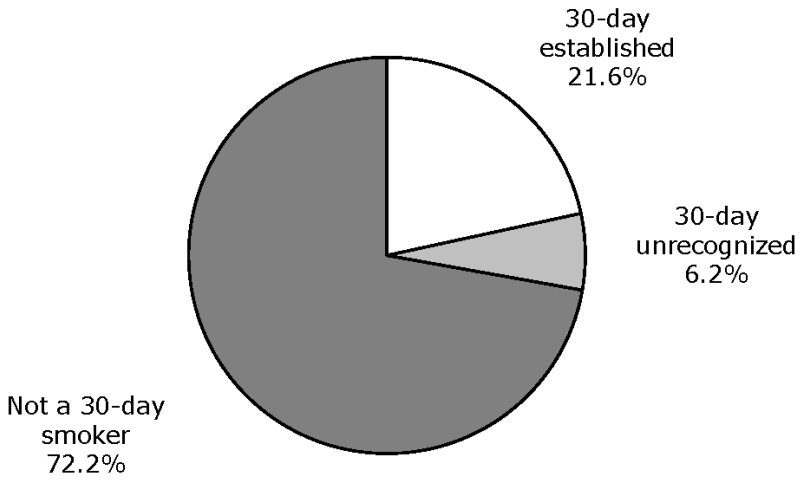
Thirty-day Smokers

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. All unrecognized smokers are 30-day smokers. Most (but not all) established smokers are also 30-day smokers.

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?
- During the past 30 days, on how many days did you smoke cigarettes?

Figure 2-2. Thirty-day smoking status of young adults, 2010



Source: Minnesota Adult Tobacco Survey, 2010

As Table 2-2 shows, the existence of substantial numbers of unrecognized smokers is primarily an issue for young adults and not for older age groups: while over 6 percent of young adults can be classified as unrecognized smokers, 1.5 percent or less of every other age group falls into this designation. This further demonstrates the rationale for applying this broader definition specifically to young adults.

Table 2-2. Age distribution of 30-day established and unrecognized smokers

Age groups	30-day established	30-day unrecognized	Total
	%	%	%
18 to 24	**21.6** ± 4.0	**6.2** ± 2.5	**27.8** ± 4.4
25 to 44	**19.3** ± 2.3	**1.5** ± 0.7	**20.8** ± 2.3
45 to 64	**14.6** ± 1.7	**0.5** ± 0.4	**15.1** ± 1.8
65 or older	**5.2** ± 1.2	**0.0** ± 0.1	**5.3** ± 1.2

Source: Minnesota Adult Tobacco Survey, 2010

Former Smokers

Due to the addictive nature of tobacco and many factors in the social environment, those attempting to quit smoking have varying degrees of success. 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, 27.3±1.3 percent of adult Minnesotans (about 1,062,000 people) are former smokers (Table 2-1). This represents an increase of approximately 126,000 former smokers in the three years since MATS 2007, which reported 936,000 former smokers. There is a statistically significant difference in the percentages of men and women who are former smokers: 29.7±1.9 percent of men are former smokers, compared to 25.0±1.7 percent of women. As in the case of current smokers, there is a marked pattern across the age groups: 6.3±2.3 percent of 18-24-year-olds are former smokers, ranging up to 44.0±2.8 percent of those 65 or older as former smokers. All differences between age groups are statistically significant. There are no large differences among those with less than a college degree, ranging between 27.9 and 29.9 percent; the 23.5±1.9 percent of college graduates who are former smokers is statistically different from the other three educational status groups. Across the income groups, the lowest percentage of former smokers occurs among the lowest income group, at 24.8±2.5 percent. This is statistically significant from the middle-two income groups, in which approximately 31 percent are former smokers.

Interpreting the Data about Former Smokers: the Quit Ratio. Drawing conclusions about quitting behaviors within demographics 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.

Under the MATS definition, the group of former smokers includes those who have been quit for a short time—even one day—as well as those who have been quit for decades, and all those in between. Four-fifths of the former smokers who are 65 or older have gone at least 10 years without smoking regularly, and less than 3 percent have smoked regularly within the past 12 months. However, over 50 percent of former smokers in the 18-24-year-old group have smoked regularly within the past 12 months.[†]

Overall, the quit ratio for ever smokers in Minnesota is 62.9±2.2 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. It ranges from 22.4±7.6 percent for 18-24-year-olds to 89.0±2.3 percent for those 65 or over, from 58.1±8.6 percent for those with less than a high school degree to 82.9±3.1 percent for college graduates, and from 48.7±4.2 percent for those with household incomes of $35,000 or less to 73.2±4.0 percent for incomes above $75,000.

[†] MATS 2010 did not determine the length of time without any smoking at all, but the regular smoking measure is a reasonable indicator of the relative duration of how long someone has been quit.

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

Characteristics	Quit ratio %
Overall	**62.9** ± 2.2
Age	
18 to 24	**22.4** ± 7.6
25 to 44	**52.6** ± 4.4
45 to 64	**69.1** ± 3.2
65 or older	**89.0** ± 2.3
Gender	
Female	**63.3** ± 3.2
Male	**62.6** ± 3.1
Education	
Less than high school	**58.1** ± 8.6
High school graduate/GED	**57.9** ± 4.3
Some college or technical school	**58.3** ± 3.5
College graduate or beyond	**82.9** ± 3.1
Household income	
$35,000 or less	**48.7** ± 4.2
$35,001 to $50,000	**64.3** ± 5.8
$50,001 to $75,000	**67.7** ± 5.0
$75,001 or more	**73.2** ± 4.0

Source: Minnesota Adult Tobacco Survey, 2010

Never Smokers

Overall, 56.6±1.5 percent of adult Minnesotans (about 2,201,000 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.[5]

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

A higher percentage of women (60.6±2.0 percent) are never smokers compared with men (52.6±2.2 percent), a statistically significant difference.

The prevalence of never smoking decreases as age increases. Young adults have the highest rate of never smoking among all age groups, at 72.0±4.4 percent. Among Minnesotans 65 or older, 50.6±2.8 percent have maintained their status as never

smokers. All differences between age groups for never smoking are statistically significant, except between the 45-64-year-old group and those 65 or older. Both current smoking and never smoking rates decline as age increases, while the percentage of former smokers increases, as discussed previously.

There are no large differences among those with less than a college degree, ranging between 48.4 and 52.1 percent; the 71.7± 2.0 percent of college graduates who are never smokers is statistically different from the other three educational status groups. The prevalence of never smoking increases as income increases. Among Minnesotans with annual household incomes of $35,000 or less, 49.0±3.1 percent are never smokers, and 64.3±2.5 percent of those with household incomes above $75,000 are never smokers. Only the differences between those with incomes greater than $75,000 and each of the other income levels are statistically significant.

2.2.2 Cigarette Use in Minnesota, 1999 to 2010

Trends in Minnesota and the United States

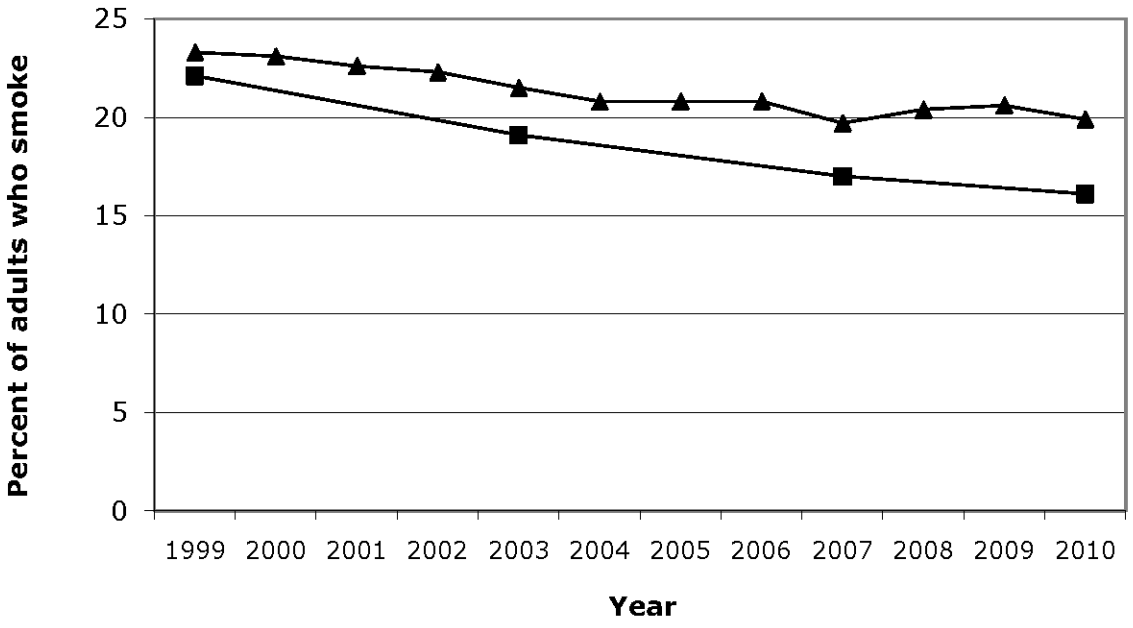
This section discusses the changes in smoking prevalence over time in the Minnesota adult population, using the MATS data. Measurements were taken at 1999, 2003, 2007, and 2010. As noted in chapter 1, these are four repeated cross-sections, or snapshots, of the population at each time point, rather than 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 four time points, but the discussions in this section will focus only on the changes from 2007 to 2010. Consistent with this approach, significance tests are performed only for the changes from 2007 and 2010. An exception to this is the change in the overall smoking prevalence rate from 1999 to 2010, which is also presented and tested for significance. Readers interested in intermediate changes between 1999, 2003, and 2007 can find them presented and discussed in the 2007 MATS report.

As illustrated in Figure 2-3, both national and Minnesota prevalence rates are declining over time. The National Health Interview Survey data show a downward trend that appears to have leveled off at about 20 percent from 2004 through 2010.[6]

Minnesota's rate, however, has declined significantly from 1999 through 2010 from 22.1±1.7 percent to 16.1±1.2 percent, a change of 6.0 percentage points. This significant decline in Minnesota has occurred even as the national rate has stalled. Minnesota therefore has been able to make notable progress in reducing the prevalence of tobacco use at a time when the nation has shown only incremental reductions.

Figure 2-3. Smoking prevalence rates in U.S. and Minnesota surveillance studies, from 1999 to 2010



Survey	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
U.S.	23.3	23.1	22.6	22.3	21.5	20.8	20.8	20.8	19.7	20.4	20.6	19.9
Minnesota	22.1				19.1				17.0			16.1

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

Use of Cigarettes, 2007 to 2010

Between 2007 and 2010, the percentage of adults in Minnesota who are current smokers declined from 17.0±1.4 percent to 16.1±1.2 percent (Table 2-4); the total number of current smokers fell from 634,000 in 2007 to 625,000 in 2010. However, this reduction of 0.9 percentage point/9,000 smokers is not statistically significant. The percentage of Minnesotans who have never smoked decreased slightly, by 1.3 percentage points, from 57.9±1.6 percent in 2007 to 56.6±1.5 percent in 2010, but this change is not statistically significant. There was a somewhat larger change in the percentage of Minnesotans who are former smokers, rising by a statistically significant 2.2 percentage points from 25.1±1.3 percent to 27.3±1.3 percent. 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 men and women showed about the same decline between 2007 and 2010 as the general adult population (Table 2-4), and, as in the case of the overall population, these changes are not statistically significant.

Table 2-4. Current smokers among all Minnesota adults from 1999 to 2010, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	Change from 2007 to 2010
	%	%	%	%	%
Overall	**22.1** ± 1.7	**19.1** ± 1.5	**17.0** ± 1.4	**16.1** ± 1.2	**-0.9**
Age					
18 to 24	**34.2** ± 6.5	**29.3** ± 4.0	**21.5** ± 4.4	**21.8** ± 4.0	**0.3**
25 to 44	**25.7** ± 2.7	**22.0** ± 2.9	**19.5** ± 2.7	**19.7** ± 2.3	**0.3**
45 to 64	**20.1** ± 2.9	**17.7** ± 2.4	**17.6** ± 2.0	**14.9** ± 1.7	**-2.7** *
65 or older	**6.9** ± 2.5	**6.5** ± 1.6	**6.0** ± 1.3	**5.4** ± 1.2	**-0.6**
Gender					
Female	**20.3** ± 2.2	**16.9** ± 2.0	**15.5** ± 1.8	**14.5** ± 1.6	**-1.0**
Male	**24.0** ± 2.6	**21.5** ± 2.3	**18.6** ± 2.1	**17.7** ± 1.8	**-0.9**
Education					
Less than high school	**24.0** ± 5.5	**20.4** ± 4.8	**26.3** ± 7.0	**21.1** ± 5.3	**-5.1**
High school graduate/GED	**28.0** ± 3.3	**26.1** ± 3.1	**24.3** ± 3.1	**21.7** ± 2.7	**-2.6**
Some college or technical school	**24.8** ± 3.3	**20.5** ± 3.0	**17.7** ± 2.2	**20.0** ± 2.1	**2.3**
College graduate or beyond	**10.4** ± 2.2	**9.4** ± 1.6	**5.9** ± 1.2	**4.8** ± 1.0	**-1.1**

Hypothesis: The percentage of current smokers will decline from 2007 to 2010.

*Statistically significant at the 95% confidence level

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

Over the three-year time period from 2007 to 2010, younger adults showed very small (and statistically insignificant) increases in smoking prevalence, on the order of 0.3 percent for each of the two younger age groups. In contrast, the 45-64-year-olds had a relatively large decrease in smoking prevalence, declining by a statistically significant 2.7 percentage points. The slight decrease of 0.6 percentage points for the oldest age group is not statistically significant.

Among educational groups, none of the changes in smoking prevalence from 2007 to 2010 are statistically significant. The largest decline, 5.1 percentage points, occurred among those who had less than a high school education. Only those with some college or technical school show an increase in prevalence (2.3 percentage points), but, as noted, this is not statistically significant.

Former Smokers. There are several significant changes between 2007 and 2010 in the percentages of former smokers in the overall Minnesota population or in gender, age and education subgroups (Table 2-5). The overall increase of 2.2

percentage points, from 25.1±1.3 percent to 27.3±1.3 percent is statistically significant. Every demographic subgroup presented in Table 2-5 shows an increase in the percentage of the population who are former smokers, with statistically significant increases occurring among males (3.0 percentage points), 25-44-year-olds (3.9 percentage points), and those with some college or technical school (3.8 percentage points).

Table 2-5. Former smokers among all Minnesota adults from 1999 to 2010, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	Change from 2007 to 2010
	%	%	%	%	%
Overall	**25.8** ± 1.8	**25.5** ± 1.4	**25.1** ± 1.3	**27.3** ± 1.3	**2.2** *
Age					
18 to 24	**10.8** ± 5.0	**8.6** ± 2.3	**5.5** ± 2.4	**6.3** ± 2.3	**0.8**
25 to 44	**17.6** ± 2.3	**16.5** ± 2.0	**17.9** ± 2.2	**21.9** ± 2.2	**3.9** *
45 to 64	**36.7** ± 3.6	**35.1** ± 2.8	**31.8** ± 2.1	**33.4** ± 2.2	**1.6**
65 or older	**38.6** ± 4.8	**42.5** ± 3.3	**43.9** ± 2.4	**44.0** ± 2.8	**0.0**
Gender					
Female	**22.7** ± 2.3	**22.4** ± 1.8	**23.6** ± 1.6	**25.0** ± 1.7	**1.4**
Male	**29.0** ± 2.8	**28.7** ± 2.2	**26.7** ± 2.0	**29.7** ± 1.9	**3.0** *
Education					
Less than high school	**29.6** ± 5.7	**26.3** ± 5.7	**26.1** ± 4.8	**29.4** ± 5.6	**3.3**
High school graduate/GED	**26.8** ± 3.2	**27.5** ± 2.7	**27.9** ± 2.7	**29.9** ± 2.8	**2.0**
Some college or technical school	**23.9** ± 3.1	**24.5** ± 2.4	**24.1** ± 2.2	**27.9** ± 2.1	**3.8** *
College graduate or beyond	**25.5** ± 3.5	**24.2** ± 2.3	**23.2** ± 1.9	**23.5** ± 1.9	**0.3**

Hypothesis: The percentage of former smokers will increase from 2007 to 2010.

*Statistically significant at the 95% confidence level

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

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 2007 to 2010, the quit ratio increased by a statistically significant 3.3 percentage points, from 59.6±2.6 percent to 62.9±2.2 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 significant higher percentage of people who have ever smoked are currently no longer smoking in 2010 than in 2007.

Consistent with the positive change in the percentage of former smokers among all the demographic subgroups analyzed for this report, the quit ratios for all these groups also show a positive change from 2007 to 2010 across all subgroups, although only a few changes are statistically significant. Men had a greater increase in the quit ratio than women, 3.7 versus 2.9 percentage points, but neither change is statistically significant. The middle two age groups showed relatively large increases (between 4 and 5 percentage points), but only the 4.7 percentage point increase for the 45-64-year-olds is significant. The lower two educational levels had relatively large increases, especially the 8.3 percentage point increase for those with less than a high school education, but none of the increases for the educational groups is statistically significant.

Table 2-6. Quit ratios from 1999 to 2010 among ever smokers, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	Change from 2007 to 2010
	%	%	%	%	%
Overall	**53.9** ± 2.9	**57.1** ± 2.6	**59.6** ± 2.6	**62.9** ± 2.2	**3.3** *
Age					
18 to 24	**24.0** ± 10.1	**22.7** ± 5.6	**20.4** ± 8.3	**22.4** ± 7.6	**2.0**
25 to 44	**40.7** ± 4.4	**42.8** ± 4.8	**48.0** ± 5.3	**52.6** ± 4.4	**4.6**
45 to 64	**64.6** ± 4.7	**66.6** ± 3.9	**64.4** ± 3.5	**69.1** ± 3.2	**4.7** *
65 or older	**84.9** ± 5.2	**86.7** ± 3.1	**88.0** ± 2.5	**89.0** ± 2.3	**1.0**
Gender					
Female	**52.8** ± 4.2	**57.1** ± 3.8	**60.4** ± 3.7	**63.3** ± 3.2	**2.9**
Male	**54.8** ± 4.1	**57.2** ± 3.5	**58.9** ± 3.6	**62.6** ± 3.1	**3.7**
Education					
Less than high school	**55.2** ± 8.3	**56.4** ± 8.1	**49.8** ± 9.6	**58.1** ± 8.6	**8.3**
High school graduate/GED	**48.9** ± 4.8	**51.3** ± 4.4	**53.5** ± 4.6	**57.9** ± 4.3	**4.4**
Some college or technical school	**49.1** ± 5.3	**54.4** ± 4.8	**57.7** ± 4.0	**58.3** ± 3.5	**0.6**
College graduate or beyond	**71.0** ± 5.7	**72.1** ± 4.2	**79.7** ± 3.7	**82.9** ± 3.1	**3.2**

Hypothesis: The quit ratio will increase from 2007 to 2010

*Statistically significant at the 95% confidence level

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

Never Smokers. Increases over time in the percentages of Minnesotans who have never smoked are 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 Minnesotans who are never smokers decreased slightly from 2007 to 2010 (Table 2-7), this 1.3 percentage point decrease is not statistically significant.

Table 2-7. Never smokers among all Minnesota adults from 1999 to 2010, by selected demographic characteristics

Characteristics	1999	2003	2007	2010	Change from 2007 to 2010
	%	%	%	%	%
Overall	**52.1** ± 2.1	**55.4** ± 1.8	**57.9** ± 1.6	**56.6** ± 1.5	**-1.3**
Age					
18 to 24	**55.0** ± 7.0	**62.1** ± 4.3	**73.0** ± 4.7	**72.0** ± 4.4	**-1.1**
25 to 44	**56.7** ± 3.1	**61.6** ± 3.2	**62.6** ± 3.0	**58.4** ± 2.7	**-4.2**
45 to 64	**43.1** ± 3.6	**47.2** ± 3.2	**50.6** ± 2.3	**51.7** ± 2.3	**1.1**
65 or older	**54.5** ± 5.0	**51.0** ± 3.4	**50.0** ± 2.4	**50.6** ± 2.8	**0.6**
Gender					
Female	**57.0** ± 2.7	**60.7** ± 2.4	**61.0** ± 2.0	**60.6** ± 2.0	**-0.4**
Male	**47.0** ± 3.2	**49.8** ± 2.8	**54.7** ± 2.5	**52.6** ± 2.2	**-2.1**
Education					
Less than high school	**46.5** ± 6.8	**53.3** ± 7.2	**47.6** ± 6.4	**49.5** ± 6.4	**1.9**
High school graduate/GED	**45.2** ± 3.8	**46.4** ± 3.5	**47.8** ± 3.3	**48.4** ± 3.1	**0.6**
Some college or technical school	**51.3** ± 3.8	**55.0** ± 3.5	**58.2** ± 2.8	**52.1** ± 2.5	**-6.0**
College graduate or beyond	**64.1** ± 3.7	**66.4** ± 2.6	**70.9** ± 2.1	**71.7** ± 2.0	**0.7**

Hypothesis: The percentage of never smokers will increase from 2007 to 2010.

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

Across the demographic groups, there are positive and negative changes across the age and education subgroups, but none is statistically significant. Likewise, the decreases in never smoking rates for men and women are not statistically significant. With two exceptions, the changes across the demographic subgroups

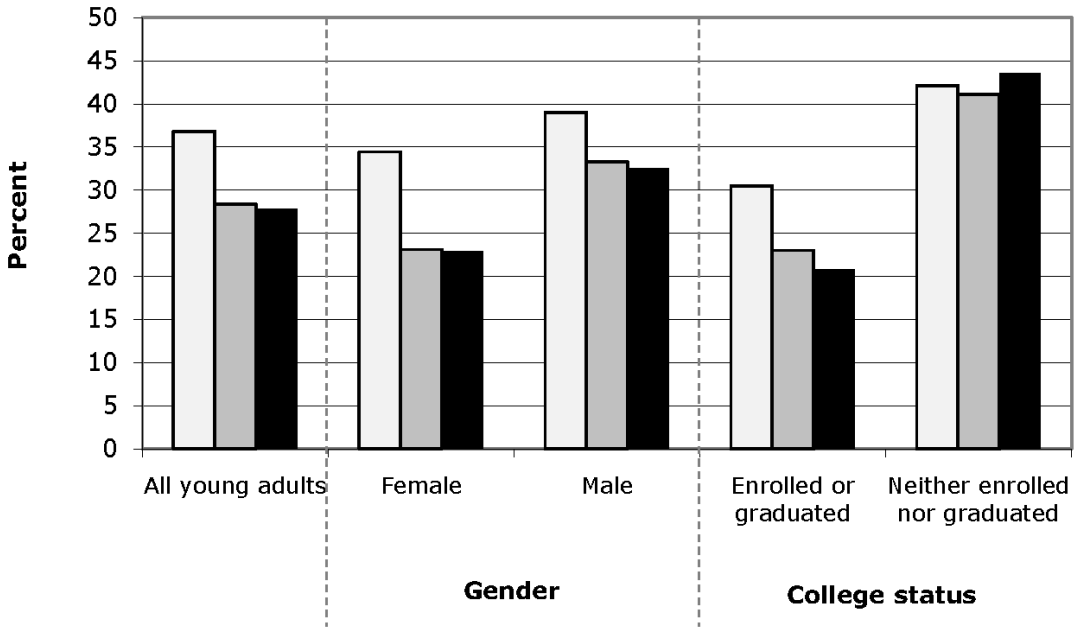
are relatively small in either direction. It is encouraging that the never smoking rate among 18-24-year olds, while declining slightly, did not show a statistically significant decline. This means that the large and statistically significant increase in never smoking among young adults that occurred from 1999 to 2007, as reported in the MATS 2007 report, was effectively maintained in the subsequent three years.

Since the hypothesis for the one-tailed test for the change in the percentage of never smokers was specified as positive, two large negative changes do not test as statistically significant. These are the 4.2 percentage point decrease for 25-44-year-olds and the 6.0 percentage point decrease for those with some college or technical school. However, it is worth noting that both of these decreases are statistically significant if a two-tailed test is applied.

Young Adult Smoking, 2007 to 2010

Overall young adult smoking (defined as 30-day smokers, as described in section 2.2.1) declined slightly by 0.6 percentage points, from 28.4±4.8 percent in 2007 to 27.8±4.4 percent in 2010 (Figure 2-4). This decline is not statistically significant. Declines occurred among both men and women, but the decline is small for both genders and neither is statistically significant.

Figure 2-4. Prevalence of young adult 30-day smoking, by selected demographic characteristics, from 2003 to 2010



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
Change from 2007 to 2010	- 0.6	- 0.3	- 0.8	- 2.3	2.5

Hypothesis: The 30-day smoking prevalence will decline from 2007 to 2010 for all groups

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

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 2010, and then explores changes in the characteristics of smokers from 2007 to 2010.

2.3.1 Individual Demographic Characteristics of Smokers

Minnesota smokers tend to have lower educational levels and lower household incomes than former smokers or never smokers (Table 2-8). About 9 percent (8.8±1.8 percent) of smokers have a college degree, compared with 25.3±2.1 percent of former smokers and 37.2±1.8 percent of never smokers. The differences in college graduation among the smoking status groups are all statistically significant. At the other extreme, 10.1±2.7 percent of smokers have not completed high school, compared with 8.3±1.7 percent of former smokers and only 6.7±1.2 percent of never smokers, but none of these differences 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 either former smokers or never smokers; these differences are all statistically significant.

Minnesota smokers tend to have lower household incomes than former smokers or never smokers. All 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	**10.1** ± 2.7	**8.3** ± 1.7	**6.7** ± 1.2
High school graduate/GED	**38.1** ± 4.1	**30.9** ± 2.7	**24.2** ± 1.8
Some college or technical school	**43.0** ± 4.0	**35.5** ± 2.6	**31.9** ± 1.9
College graduate or beyond	**8.8** ± 1.8	**25.3** ± 2.1	**37.2** ± 1.8
Total	**100**	**100**	**100**
Household income			
$35,000 or less	**45.6** ± 4.2	**26.3** ± 2.6	**25.6** ± 2.0
$35,001 to $50,000	**16.2** ± 3.2	**17.6** ± 2.2	**14.4** ± 1.5
$50,001 to $75,000	**18.5** ± 3.3	**23.6** ± 2.5	**20.5** ± 1.7
$75,001 or more	**19.7** ± 3.3	**32.5** ± 2.6	**39.5** ± 2.0
Total	**100**	**100**	**100**
Marital status			
Married	**38.9** ± 3.8	**69.6** ± 2.4	**60.7** ± 1.9
A member of an unmarried couple	**14.1** ± 3.1	**6.0** ± 1.4	**4.7** ± 0.9
Divorced	**12.9** ± 2.6	**7.4** ± 1.3	**6.0** ± 0.9
Widowed	**1.7** ± 0.6	**6.3** ± 1.0	**4.0** ± 0.5
Separated	**2.5** ± 1.3	**0.8** ± 0.5	**0.8** ± 0.4
Never married	**29.9** ± 3.8	**9.9** ± 1.8	**23.9** ± 1.8
Total	**100**	**100**	**100**

Source: Minnesota Adult Tobacco Survey, 2010

2.3.2 Individual Health and Behavioral Characteristics of Smokers

Health Status of Smokers

Health Status Indicators

MATS used several simple, standard measures of physical and mental health status that are well documented as correlating with clinically determined health status.

Survey Questions

- In general, would you say your health is excellent, very good, good, fair or poor?
- Has a doctor or other healthcare provider ever told you that you had an anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, posttraumatic stress disorder, or social anxiety disorder?
- Has a doctor or other healthcare provider ever told you that you have a depressive disorder (including depression, major depression, dysthemia, or minor depression?

On average, smokers are in poorer health than others (Table 2-9). The difference between smokers and each of the other two groups is statistically significant.

The same pattern occurs in regard to mental health. The differences in the prevalence of anxiety and depressive disorders among all the smoking status groups are statistically significant.

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

Health status indicators	Current smoker	Former smoker	Never smoker
	%	%	%
Health rating			
Excellent	**14.0** ± 2.8	**20.4** ± 2.1	**28.7** ± 1.8
Very good	**36.3** ± 4.0	**39.3** ± 2.6	**43.7** ± 2.0
Good	**33.8** ± 3.9	**27.8** ± 2.4	**21.2** ± 1.6
Fair	**12.8** ± 2.8	**10.4** ± 1.7	**5.1** ± 0.9
Poor	**3.1** ± 1.2	**2.0** ± 0.7	**1.4** ± 0.5
Total	**100**	**100**	**100**
Anxiety Disorder			
Yes	**22.2** ± 3.4	**12.1** ± 1.7	**7.9** ± 1.0
No	**77.9** ± 3.4	**87.9** ± 1.7	**92.1** ± 1.0
Total	**100**	**100**	**100**
Depressive Disorder			
Yes	**27.1** ± 3.7	**19.7** ± 2.2	**13.2** ± 1.3
No	**72.9** ± 3.7	**80.3** ± 2.2	**86.8** ± 1.3
Total	**100**	**100**	**100**

Source: Minnesota Adult Tobacco Survey, 2010

Comparative Drinking Behavior of Smokers

A well-established behavioral relationship exists between smoking and drinking, particularly problem drinking.[7]

Drinking Indicators

MATS 2007 used several common measures of alcohol use, including daily frequency of alcohol use in past 30 days, quantity of drinks in past 30 days, heavy drinking and binge drinking.

- A **heavy drinker** has averaged more than two drinks per day over the past 30 days (men) / more than one drink per day over the past 30 days (women). The definition of heavy drinking conforms to that used by CDC's Behavioral Risk Factor Surveillance Survey.
- A **binge drinker** had one or more episodes of having five or more drinks on a single occasion in the past 30 days (men)/ four or more drinks on a single occasion in the past 30 days (women).

Survey Questions

- During the past 30 days, have you had at least one drink of any alcoholic beverage such as beer, wine, wine coolers or liquor?
- During the past 30 days, how many days did you drink any alcoholic beverages?
- A drink is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail or one shot of liquor. During the past 30 days, on the days when you drank, about how many drinks did you drink on an average day?
- Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5/4 or more drinks on a single occasion?

In terms of any use of alcohol, there is little difference among current, former and never smokers, with 65.0±4.0 percent of current smokers and 59.6±2.0 percent of never smokers having had a drink in the past 30 days (Table 2-10). However, smokers drank more often and in greater quantities than never smokers, averaging 5.3 days on which they drank and 30.3 drinks over the past 30 days, compared with 3.7 days and 13.5 drinks for never smokers. Former smokers partially deviate from the typical pattern of fitting between current and never smokers for the number of

days on which they drank (5.8 days); but they maintain the pattern for the number of drinks (20.0). (These data are not shown in Table 2-10.)

Table 2-10. Selected drinking behaviors, by smoking status

Drinking behaviors	Current smoker	Former smoker	Never smoker
	%	%	%
Drank alcohol in past 30 days			
Yes	**65.0** ± 4.0	**65.5** ± 2.6	**59.6** ± 2.0
No	**35.0** ± 4.0	**34.5** ± 2.6	**40.4** ± 2.0
Total	**100**	**100**	**100**
Heavy drinker			
Yes	**19.0** ± 4.1	**7.9** ± 1.7	**3.5** ± 1.0
No	**81.0** ± 4.1	**92.1** ± 1.7	**96.5** ± 1.0
Total	**100**	**100**	**100**
Binge drinker			
Yes	**38.7** ± 4.1	**19.9** ± 2.2	**15.1** ± 1.5
No	**61.3** ± 4.1	**80.1** ± 2.2	**84.9** ± 1.5
Total	**100**	**100**	**100**

Source: Minnesota Adult Tobacco Survey, 2010

The expected pattern is well defined for two measures of problem drinking: heavy drinking and binge drinking. Among current smokers, 19.0±4.1 percent were heavy drinkers during the past 30 days, compared with only 3.5±1.0 percent of never smokers. Current smokers engaged in binge drinking at more than double the rate of never smokers in the past 30 days, 38.7±4.1 percent compared with 15.1±1.5 percent. The differences between smokers and never smokers are statistically significant for both measures. As seen in Table 2-10, former smokers are more like never smokers than current smokers in regard to these two measures.

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. 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

More than four-fifths (81.3 percent) of current smokers tried their first cigarette before age 18, with 13.2±2.9 percent having tried their first cigarette by the time they were 11 years old, and another 36.7±4.0 percent between the ages of 12 and 14 (Table 2-11). Only 6.2±2.0 percent first tried smoking after reaching the age of 21.

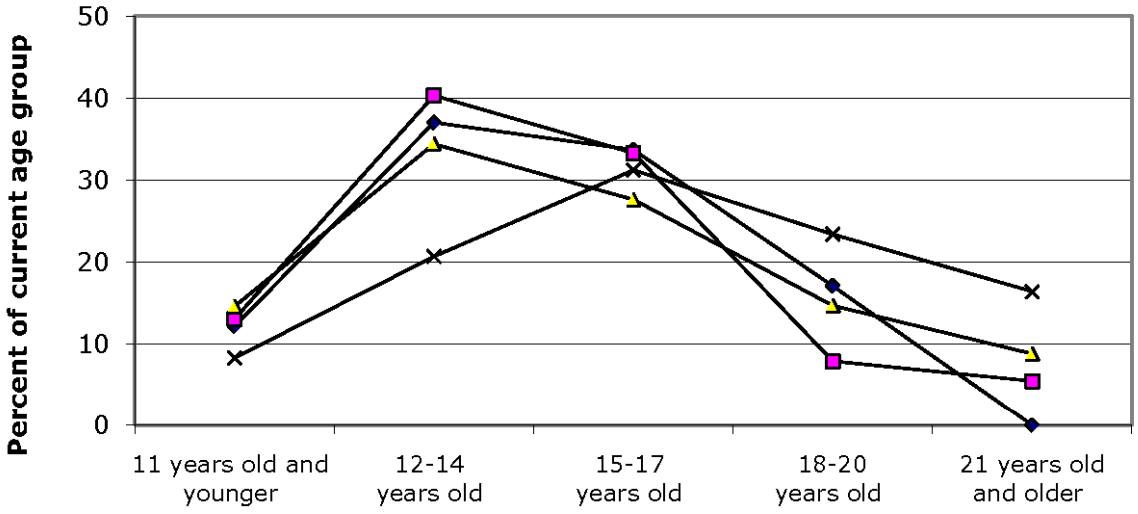
Table 2-11. Age of smoking initiation among current smokers, by selected demographic characteristics

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	**13.2** ± 2.9	**36.7** ± 4.0	**31.4** ± 3.9	**12.6** ± 2.6	**6.2** ± 2.0	**100**
Age						
18 to 24	**12.2** ± 6.8	**37.0** ± 10.1	**33.7** ± 10.2	**17.1** ± 7.9	**0.0** ± 0.0	**100**
25 to 44	**13.1** ± 4.7	**40.3** ± 6.6	**33.3** ± 6.3	**7.9** ± 3.4	**5.5** ± 3.4	**100**
45 to 64	**14.6** ± 4.6	**34.4** ± 6.1	**27.6** ± 5.8	**14.7** ± 4.5	**8.8** ± 3.9	**100**
65 or older	**8.3** ± 7.6	**20.7** ± 9.7	**31.2** ± 10.5	**23.4** ± 9.0	**16.4** ± 9.1	**100**
Gender						
Female	**11.6** ± 4.2	**38.2** ± 5.9	**29.6** ± 5.5	**13.4** ± 3.7	**7.2** ± 2.9	**100**
Male	**14.5** ± 3.9	**35.5** ± 5.4	**32.9** ± 5.4	**11.8** ± 3.6	**5.3** ± 2.9	**100**
Education						
Less than high school	**15.4** ± 10.8	**45.7** ± 14.2	**29.5** ± 13.6	**6.9** ± 6.1	**2.6** ± 2.6	**100**
High school graduate/GED	**16.2** ± 5.4	**36.4** ± 7.0	**29.3** ± 6.7	**14.4** ± 5.1	**3.7** ± 2.6	**100**
Some college or technical school	**10.7** ± 3.7	**36.0** ± 5.8	**34.6** ± 5.7	**10.0** ± 3.1	**8.6** ± 3.9	**100**
College graduate or beyond	**10.1** ± 6.3	**32.5** ± 9.8	**27.3** ± 8.9	**20.9** ± 8.9	**9.2** ± 5.3	**100**
Household income						
$35,000 or less	**15.0** ± 4.6	**41.5** ± 6.5	**26.7** ± 5.6	**12.5** ± 3.9	**4.4** ± 2.6	**100**
$35,001 to $50,000	**20.2** ± 8.9	**35.9** ± 10.3	**22.9** ± 8.8	**9.9** ± 5.9	**11.1** ± 7.4	**100**
$50,001 to $75,000	**6.4** ± 4.9	**31.4** ± 8.9	**44.5** ± 9.9	**12.9** ± 7.0	**4.7** ± 3.2	**100**
$75,001 or more	**10.8** ± 5.8	**36.7** ± 8.8	**32.1** ± 9.0	**14.2** ± 6.0	**6.3** ± 4.6	**100**

Source: Minnesota Adult Tobacco Survey, 2010

Compared with the oldest cohort, younger cohorts of current smokers initiated smoking at younger ages. The only distinct and statistically significant difference in age of initiation occurs between smokers who are under 65 years old and those who are 65 or older. Approximately 29 percent of these oldest smokers had begun smoking by age 14, compared with the approximately 49 percent to 53 percent of the other age groups who did so (Figure 2-5). Conversely, 16.4±9.1 percent of the oldest group did not try a cigarette until the age of 21, and only 5 percent to 9 percent of the other age groups show this later initiation. This last statement ignores the rate of later initiation for current 18-24-year-olds, which is zero; 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 2-5. 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	12.2±6.8	37.0±10.1	33.7±10.2	17.1±7.9	0.0±0.0
25 to 44	13.1±4.7	40.3±6.6	33.3±6.3	7.9±3.4	5.5±3.4
45 to 64	14.6±4.6	34.4±6.1	27.6±5.8	14.7±4.5	8.8±3.9
65 or older	8.3±7.6	20.7±9.7	31.2±10.5	23.4±9.0	16.4±9.1

Source: Minnesota Adult Tobacco Survey, 2010

Higher educational levels appear associated with later ages of smoking initiation, as shown in Table 2-11. The relationships, however, are not statistically significant. Still, the possibility that those who do not eventually complete high school tend to initiate earlier is sufficiently interesting to note here as a possible subject for future research. These differences in achieved educational levels were attained mostly in the future rather than at the time of the first cigarette. This suggests that socioeconomic, familial, psychological or behavioral factors that prevailed in adolescence may be associated with both early smoking uptake and lower educational expectations. (As will be discussed, this same pattern persists into the onset of regular smoking.)

There are no significant differences in age of initiation for gender. For income, there are isolated significant differences (e.g., smokers with household incomes in the $50,001 to $75,000 thousand range were more likely to initiate between the ages of 15 to 17 than were of the two lowest income groups), but there is no discernable trend across the income groups.‡

Age of Regular Smoking

Nearly half (49.6 percent) of current smokers became regular smokers before age 18 (Table 2-12). Overall, 11.9±2.8 percent of current smokers became regular smokers between the ages of 12 and 14, and 16.0±2.9 percent became regular smokers after reaching the age of 21. Slightly more than 2 percent (2.3±1.3 percent) have never smoked regularly.

Table 2-12. 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	**2.6** ± 1.3	**11.9** ± 2.8	**35.1** ± 3.9	**32.2** ± 3.8	**16.0** ± 2.9	**2.3** ± 1.3	**100**
Age							
18 to 24	**3.0** ± 3.5	**16.6** ± 7.8	**37.4** ± 10.3	**37.1** ± 10.2	**3.3** ± 3.3	**2.6** ± 2.9	**100**
25 to 44	**2.9** ± 2.3	**12.9** ± 4.8	**38.0** ± 6.4	**29.1** ± 6.0	**14.0** ± 4.8	**3.1** ± 2.5	**100**
45 to 64	**2.0** ± 1.7	**9.1** ± 3.8	**32.2** ± 5.9	**33.3** ± 6.2	**22.2** ± 5.4	**1.2** ± 1.1	**100**
65 or older	**2.8** ± 4.6	**5.6** ± 6.1	**20.4** ± 10.0	**33.5** ± 10.0	**36.0** ± 10.9	**1.8** ± 3.5	**100**
Gender							
Female	**3.2** ± 2.3	**15.6** ± 4.7	**32.7** ± 5.7	**30.1** ± 5.4	**16.6** ± 4.1	**1.8** ± 2.1	**100**
Male	**2.1** ± 1.5	**8.8** ± 3.3	**37.1** ± 5.4	**33.8** ± 5.4	**15.4** ± 4.2	**2.8** ± 1.6	**100**
Education							
Less than high school	**10.1** ± 9.0	**8.4** ± 7.2	**40.6** ± 13.9	**31.8** ± 14.0	**8.6** ± 6.6	**0.5** ± 1.0	**100**
High school graduate/GED	**2.7** ± 2.1	**18.3** ± 5.9	**28.8** ± 6.2	**34.8** ± 6.9	**12.9** ± 4.8	**2.6** ± 2.7	**100**
Some college or technical school	**1.3** ± 1.2	**8.7** ± 3.3	**41.4** ± 6.0	**28.9** ± 5.2	**18.5** ± 4.8	**1.2** ± 1.3	**100**
College graduate or beyond	**0.0** ± 0.0	**4.7** ± 4.3	**26.4** ± 9.4	**34.9** ± 9.9	**25.5** ± 8.7	**8.7** ± 5.7	**100**
Household income							
$35,000 or less	**4.1** ± 2.4	**14.4** ± 4.9	**36.2** ± 6.3	**30.4** ± 5.7	**13.3** ± 4.3	**1.6** ± 2.2	**100**
$35,001 to $50,000	**0.7** ± 1.3	**11.9** ± 7.8	**32.7** ± 10.1	**32.6** ± 9.9	**18.7** ± 8.5	**3.5** ± 3.5	**100**
$50,001 to $75,000	**1.2** ± 1.8	**7.5** ± 5.0	**34.9** ± 9.2	**38.4** ± 9.8	**15.3** ± 6.1	**2.7** ± 3.1	**100**
$75,001 or more	**1.3** ± 2.6	**9.7** ± 5.5	**39.5** ± 9.1	**25.6** ± 8.3	**20.4** ± 7.3	**3.5** ± 2.9	**100**

Source: Minnesota Adult Tobacco Survey, 2010

‡ As with educational level, current income level at the time of MATS 2007 was for nearly all of the population a future attainment at the time when they tried their first cigarette.

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 2-11 to Table 2-12, 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. 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, except for the 18-24-year-olds who became regular smokers at age 21 or older (3.3±3.3 percent, which is significantly different from all the other age groups). However, this statistic is confounded by the fact that the 18-20-year-olds in this age group by definition could not have become regular smokers at age 21 or older, but remain in the denominator for the percentage calculation.

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 classifies the number of cigarettes smoked per day into a common three-category approach: light (fewer than 15 cigarettes per day), moderate (15 to 24) or heavy (25 or more). These terms are used in the tobacco research literature in the relative sense; smoking fewer than 15 cigarettes per day still has serious health effects.

For the MATS analyses, smokers are grouped by the number of cigarettes they smoke per day: less than 15 cigarettes per day, 16-24 cigarettes per day, and 25 or more cigarettes per day. For convenience, these groups are referred to respectively as light, moderate, and heavy smokers. Well over half (63.2±4.0 percent) of Minnesota smokers are light smokers, while only 6.3±1.9 percent are heavy smokers (Table 2-13). While young adults have the highest smoking prevalence of all age groups, they smoke less intensely than any other group, with 81.5±7.7 percent of 18-24-year-olds being light smokers, a rate that is significantly higher than the rates for each of the other age groups. The 45-64-year-olds tend to smoke the most, with 53.9±6.5 percent being light smokers, and 10.2±3.7 percent heavy smokers. There are no significant differences for smoking intensity for gender or income. Smokers with a college degree are much more likely to be light smokers (83.2±6.3 percent) than the other three educational level groups, and their difference from each of the other groups is statistically significant. Almost none of the college graduates are heavy smokers (0.5±0.7 percent). Generally speaking, smoking intensity appears to be inversely related to educational level.

Table 2-13. Smoking intensity (averaged across past 30 days) and time to first cigarette after waking, for current smokers

Characteristics	Smoking intensity				Time to first cigarette		
	Light	Moderate	Heavy	Row Total	30 minutes or less	More than 30 minutes	Row Total
	%	%	%	%	%	%	%
Overall	**63.2** ± 4.0	**30.5** ± 3.8	**6.3** ± 1.9	**100**	**44.8** ± 4.1	**55.2** ± 4.1	**100**
Age							
18 to 24	**81.5** ± 7.7	**16.2** ± 7.4	**2.3** ± 2.7	**100**	**30.8** ± 9.4	**69.2** ± 9.4	**100**
25 to 44	**63.9** ± 6.6	**31.3** ± 6.4	**4.8** ± 2.9	**100**	**39.8** ± 6.6	**60.2** ± 6.6	**100**
45 to 64	**53.9** ± 6.5	**35.9** ± 6.4	**10.2** ± 3.7	**100**	**57.6** ± 6.3	**42.4** ± 6.3	**100**
65 or older	**53.6** ± 11.1	**38.4** ± 11.2	**8.0** ± 5.1	**100**	**53.6** ± 11.4	**46.5** ± 11.4	**100**
Gender							
Female	**69.4** ± 5.5	**26.5** ± 5.3	**4.2** ± 2.3	**100**	**45.6** ± 6.0	**54.4** ± 6.0	**100**
Male	**58.1** ± 5.6	**33.8** ± 5.4	**8.1** ± 2.9	**100**	**44.2** ± 5.6	**55.9** ± 5.6	**100**
Education							
Less than high school	**46.1** ± 14.2	**45.2** ± 14.4	**8.7** ± 8.5	**100**	**71.7** ± 12.3	**28.3** ± 12.3	**100**
High school graduate/GED	**62.0** ± 7.0	**31.8** ± 6.8	**6.1** ± 3.2	**100**	**46.6** ± 7.2	**53.4** ± 7.2	**100**
Some college or technical school	**64.2** ± 5.7	**28.8** ± 5.4	**7.1** ± 2.7	**100**	**40.7** ± 5.8	**59.3** ± 5.8	**100**
College graduate or beyond	**83.2** ± 6.3	**16.4** ± 6.3	**0.5** ± 0.7	**100**	**27.2** ± 8.8	**72.8** ± 8.8	**100**
Household income							
$35,000 or less	**61.4** ± 6.1	**32.5** ± 5.9	**6.1** ± 2.7	**100**	**50.1** ± 6.4	**49.9** ± 6.4	**100**
$35,001 to $50,000	**62.8** ± 10.3	**30.3** ± 10.0	**6.9** ± 4.4	**100**	**53.8** ± 10.8	**46.2** ± 10.8	**100**
$50,001 to $75,000	**71.3** ± 8.9	**24.0** ± 8.4	**4.7** ± 4.3	**100**	**33.5** ± 9.2	**66.5** ± 9.2	**100**
$75,001 or more	**66.5** ± 9.3	**25.9** ± 8.7	**7.6** ± 5.1	**100**	**31.7** ± 8.6	**68.3** ± 8.6	**100**

Source: Minnesota Adult Tobacco Survey, 2010

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?

Slightly less than half (44.8±4.1percent) of Minnesota smokers smoke their first cigarette of the day within 30 minutes of waking (Table 2-13). As age increases, this addiction measure tends to increase. The percentage of 45-64-year-olds who smoke within 30 minutes of waking (57.6±6.3 percent) is higher in a statistically significant

way than the percentage for the two younger age groups, in which less than 40 percent smoke within 30 minutes of waking. The 53.6±11.4 percent of smokers 65 or older who smoke within 30 minutes of waking is higher than the 30.8±9.4 percent of 18-24-year-olds and 39.8±6.6 percent of 25-44-year-olds who do so, but only the former difference is statistically significant. Similar to smoking prevalence, smokers with the highest educational and income levels are least likely to light up within 30 minutes of waking, at 27.2±8.8 percent and 31.7±8.6 percent, respectively. Education shows a pattern in relation to this indicator: immediate smoking after waking declines as education rises. The 71.7±12.3 percent of those with less than a high school degree who smoke within 30 minutes of waking is considerably higher than the other age groups, and the differences with them are all statistically significant. At the other end, the 27.2±8.8 percent of college graduate who smoke within 30 minutes of waking are a much lower percentage than for the other educational groups, and the differences with the lower two groups are statistically significant.

Looking at the combination of smoking intensity and time to first cigarette, there are two subgroups that show the highest percentages on *both* addiction measures: by age, the 45-64-year-olds, and by education, those with less than a high school degree have the highest percentages on both measures (heavy smoking and smoking within the 30 minutes of waking), albeit the differences from other groups may not be large or statistically significant.

Usual Cigarette Brand is Menthol or Non-menthol

In 2010, MATS began to measure menthol cigarette use by Minnesota smokers.

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.

Survey Question

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

Table 2-14 shows the percentage of smokers whose regular brand is menthol, overall and for the standard demographic subgroups. Overall, 22.0±3.6 percent of smokers usually smoke menthol cigarettes. The highest use by educational level is 27.3±6.7 percent among those whose highest level of education is a high school degree, although this is only significantly higher than the 13.4±6.7 percent of college graduates whose regular brand is menthol. The highest use by income level is 27.1±6.0 percent among the lowest income group, but this is only significantly higher than the 10.2±5.2 percent of the next highest income group who regularly smoke menthols.

Table 2-14. 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	**22.0** ± 3.6	**77.2** ± 3.7	**0.7** ± 1.0	**100**
Age				
18 to 24	**22.3** ± 8.9	**77.7** ± 8.9	**0.0** ± 0.0	**100**
25 to 44	**21.9** ± 5.9	**76.4** ± 6.1	**1.7** ± 2.2	**100**
45 to 64	**23.7** ± 5.9	**76.3** ± 5.9	**0.0** ± 0.0	**100**
65 or older	**11.3** ± 6.4	**88.7** ± 6.4	**0.0** ± 0.0	**100**
Gender				
Female	**27.1** ± 5.7	**72.0** ± 5.8	**1.0** ± 1.9	**100**
Male	**17.8** ± 4.6	**81.6** ± 4.6	**0.6** ± 0.8	**100**
Education				
Less than high school	**19.6** ± 11.9	**80.4** ± 11.9	**0.0** ± 0.0	**100**
High school graduate/GED	**27.3** ± 6.7	**72.8** ± 6.7	**0.0** ± 0.0	**100**
Some college or technical school	**19.9** ± 5.0	**78.4** ± 5.2	**1.7** ± 2.2	**100**
College graduate or beyond	**13.4** ± 6.7	**86.6** ± 6.7	**0.0** ± 0.0	**100**
Household income				
$35,000 or less	**27.1** ± 6.0	**72.5** ± 6.1	**0.4** ± 0.8	**100**
$35,001 to $50,000	**10.2** ± 5.2	**86.0** ± 7.5	**3.8** ± 5.9	**100**
$50,001 to $75,000	**17.6** ± 7.8	**82.4** ± 7.8	**0.0** ± 0.0	**100**
$75,001 or more	**16.7** ± 7.4	**83.3** ± 7.4	**0.0** ± 0.0	**100**
Smoking Status				
Current Smokers	**22.0** ± 3.6	**77.2** ± 3.7	**0.7** ± 1.0	**100**

Source: Minnesota Adult Tobacco Survey, 2010

2.4 Individual-level Influences on Smoking Behavior

This section explores a few, selected characteristics of individuals and of their personal social environment that may influence their smoking behavior.

2.4.1 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 (75.1±1.4 percent) agree that smoking an occasional cigarette is harmful (Table 2-15). The perceived harmfulness of occasional smoking is higher among never smokers (81.0±1.7 percent) than among former smokers (75.0±2.4 percent), and higher among former smokers than current smokers (55.2±4.1 percent).

Table 2-15. Perceived harmfulness of smoking an occasional cigarette, by selected demographic characteristics and smoking status

Characteristics	Perceived harmful %
Overall	**75.1** ± 1.4
Age	
18 to 24	**67.9** ± 4.7
25 to 44	**74.3** ± 2.5
45 to 64	**78.1** ± 2.0
65 or older	**76.4** ± 2.4
Gender	
Female	**79.3** ± 1.8
Male	**70.9** ± 2.1
Education	
Less than high school	**65.1** ± 6.4
High school graduate/GED	**72.0** ± 3.0
Some college or technical school	**74.7** ± 2.3
College graduate or beyond	**81.0** ± 1.8
Household income	
$35,000 or less	**69.6** ± 3.0
$35,001 to $50,000	**75.0** ± 3.7
$50,001 to $75,000	**75.8** ± 3.0
$75,001 or more	**79.2** ± 2.2
Smoking Status	
Never smokers	**81.0** ± 1.7
Current Smokers	**55.2** ± 4.1
Former Smokers	**75.0** ± 2.4

Source: Minnesota Adult Tobacco Survey, 2010

Perceptions of the harm in occasional smoking differ by gender, education and income in statistically significant ways. Women (79.3±1.8 percent) are more likely than men (70.9±2.1 percent) to think occasional smoking is harmful. Those with higher levels of education (81.0±1.8 percent of those with a college degree) are more likely than those with lower levels of education (65.1±6.4 percent of those without a high school diploma) to think occasional smoking is harmful. Similarly, people in

the highest income category (79.2±2.2 percent) are more likely than those in the lowest income category (69.6±3.0 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?
  - Light or ultra-light cigarettes?
  - "Natural" cigarettes like Native Spirit cigarettes?
  - Roll-your-own cigarettes?
  - Electronic cigarettes?
  - Snus, a new smokeless, moist, pouch tobacco product, such as Camel Snus?
  - Smokeless tobacco such as snuff and chewing tobacco?

Only between 4 percent and 11 percent of Minnesotans perceive other tobacco products as less harmful than cigarettes, depending on the tobacco product in question (Table 2-16). The highest percentage is those who believe natural cigarettes are less harmful (11.2±1.1 percent) and the lowest percentage is those who believe roll-your-own cigarettes are less harmful (4.7±0.8 percent).

With the exception of smokeless tobacco, current smokers are more likely than former and never smokers to think of the various tobacco products as less harmful than cigarettes. These differences are not large, and the difference is statistically significant in the case of natural cigarettes (compared to former and never smokers) and roll-your-own cigarettes (compared to never smokers). Even so, the percentage of smokers who perceive lower harm for these tobacco products is relatively small for all of them except natural cigarettes, ranging from 7.2±2.2 percent for smokeless tobacco to 12.5±3.3 percent for hookah, and jumping up to 22.8±3.9 percent natural cigarettes.

Table 2-16. 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	Light or Ultralight Cigarettes	Natural Cigarettes	Roll-your-own Cigarettes	Smokeless Tobacco	Snus	
	%	%	%	%	%	%	%
Overall	**9.4** ± 1.1	**7.8** ± 0.9	**11.2** ± 1.1	**4.7** ± 0.8	**7.4** ± 0.8	**8.6** ± 0.9	**36.4** ± 1.8
Age							
18 to 24	**23.5** ± 4.4	**8.7** ± 2.8	**18.3** ± 3.9	**8.1** ± 2.8	**10.1** ± 3.0	**10.9** ± 3.0	**44.0** ± 5.3
25 to 44	**9.3** ± 1.8	**8.4** ± 1.6	**13.7** ± 2.2	**6.8** ± 1.6	**8.8** ± 1.5	**10.4** ± 1.8	**44.2** ± 3.2
45 to 64	**5.8** ± 1.4	**8.2** ± 1.4	**8.3** ± 1.5	**2.3** ± 0.8	**6.2** ± 1.2	**7.8** ± 1.4	**32.8** ± 2.7
65 or older	**2.8** ± 1.0	**4.5** ± 1.1	**3.2** ± 1.2	**2.6** ± 1.0	**4.1** ± 1.1	**4.3** ± 1.3	**13.5** ± 2.5
Gender							
Female	**6.0** ± 1.2	**6.3** ± 1.1	**9.2** ± 1.5	**3.7** ± 1.0	**4.3** ± 0.9	**4.8** ± 1.0	**27.3** ± 2.2
Male	**12.8** ± 1.8	**9.4** ± 1.4	**13.1** ± 1.8	**5.8** ± 1.2	**10.6** ± 1.4	**12.6** ± 1.6	**46.0** ± 2.7
Education							
Less than high school	**7.3** ± 4.3	**8.4** ± 4.2	**9.9** ± 4.7	**5.8** ± 3.4	**7.9** ± 3.8	**9.2** ± 4.6	**32.9** ± 7.8
High school graduate/GED	**7.9** ± 2.1	**8.6** ± 2.0	**11.3** ± 2.4	**6.4** ± 1.9	**7.3** ± 1.7	**8.0** ± 1.9	**33.0** ± 3.6
Some college or technical school	**12.7** ± 2.1	**6.7** ± 1.3	**13.5** ± 2.1	**4.5** ± 1.2	**6.9** ± 1.4	**8.3** ± 1.5	**39.5** ± 3.1
College graduate or beyond	**7.4** ± 1.4	**8.3** ± 1.4	**8.6** ± 1.5	**3.2** ± 0.9	**8.0** ± 1.3	**9.5** ± 1.4	**36.7** ± 2.7
Household income							
$35,000 or less	**11.6** ± 2.4	**9.1** ± 2.0	**15.8** ± 2.7	**7.3** ± 2.0	**7.0** ± 1.7	**7.3** ± 1.8	**34.3** ± 3.7
$35,001 to $50,000	**10.5** ± 3.0	**8.1** ± 2.5	**13.3** ± 3.5	**6.0** ± 2.4	**9.6** ± 2.6	**14.6** ± 3.4	**37.4** ± 4.8
$50,001 to $75,000	**6.8** ± 2.1	**7.9** ± 2.0	**9.0** ± 2.4	**4.2** ± 1.5	**7.1** ± 1.8	**8.5** ± 2.0	**40.3** ± 4.1
$75,001 or more	**9.0** ± 1.9	**7.0** ± 1.4	**8.7** ± 1.7	**3.0** ± 0.9	**7.4** ± 1.4	**8.5** ± 1.5	**39.5** ± 3.1
Smoking Status							
Never smokers	**9.7** ± 1.5	**7.6** ± 1.2	**8.7** ± 1.4	**4.1** ± 0.9	**7.8** ± 1.1	**8.0** ± 1.1	**30.8** ± 2.2
Current Smokers	**12.5** ± 3.3	**10.2** ± 2.5	**22.8** ± 3.9	**7.8** ± 2.5	**7.2** ± 2.2	**12.1** ± 3.1	**58.0** ± 5.1
Former Smokers	**7.0** ± 1.8	**6.8** ± 1.6	**9.5** ± 1.9	**4.4** ± 1.3	**6.8** ± 1.4	**7.8** ± 1.6	**35.9** ± 3.3

Source: Minnesota Adult Tobacco Survey, 2010

For the 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 (23.5±4.4 percent), natural cigarettes (18.3±3.9 percent), and roll-your-own cigarettes (8.1±2.8 percent), as compared to some or all of the other age groups.

Men are consistently more likely to view the products as less harmful, at approximately one-and-a-half to three times the rate of women for most products. These differences are statistically significant for all but roll-your-own cigarettes.

There is little variation in the perception of lower harm for the various tobacco products across the educational and income levels.

From the perspective of specific products, it is encouraging that only 7.8±0.9 percent of Minnesotans believe that light or ultralight cigarettes are less harmful. MATS 2010 added snus to the list of products in this question, and 8.6±0.9 percent of Minnesotans believe snus is less harmful, with men nearly three times as likely as women to consider it so.

Over one-third of Minnesotans (36.4±1.8) 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 58.0±5.1 percent of them endorsing this view, compared to 35.9±3.3 percent of former smokers and 30.8±2.2 percent of never smokers.

2.4.2 Economic Influences on Smoking Behavior: Saving Money on Cigarettes

In light of the national economic downturn and the rising price of tobacco products around the time of fielding MATS 2010, a series of questions about the things smokers may have been doing in the past year to save money on cigarettes were added.

Methods Used by Smokers to Save Money on Cigarettes

Survey Question

- In the past year 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?

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) and two relate to using alternative products (roll-your-own, non-

cigarette tobacco). For each of the shopping options, from one-third to two-thirds of smokers had made use of a given option in the past year, ranging from 33.8±3.9 percent who bought a cheaper brand to 65.8±3.8 percent that used coupons and similar promotions (Table 2-17). Fewer smokers resorted to alternative products: 12.3±2.9 percent used another form of tobacco and 19.3±3.5 percent rolled their own.

Since the thrust of these questions is economic, examining these cost-saving measures by income level is the analysis of primary interest. Predictably, across all the measures, there appears to be a distinct 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 63.4±6.2 percent of the lowest income group who found less expensive places to buy cigarettes is approximately double the percentage of those with incomes above $50,000 who did so, and this difference is significant. The 71.0±5.4 percent of the lowest income group who used coupons is significantly different from the 52.7±9.2 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 methods and income groups. For example, almost none of the highest income group rolled their own cigarettes (3.5±3.4 percent), but over half of them used coupons (52.7±9.2 percent). The highest income groups were also highly resistant to giving up their preferred cigarettes: only 19.8±7.2 percent bought a cheaper brand and 9.8±5.5 percent used another form of tobacco to save money. Among the lowest income group, using coupons and finding cheaper places were quite common: 71.0±5.4 percent and 63.4±6.2 percent, respectively.

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 for using alternative products: 22.7±4.9 percent of men and 15.3±4.9 percent of women rolled their own (difference not significant), and 16.8±4.4 percent of men and 6.9±3.3 percent of women used another form of tobacco (difference significant).

Table 2-17. 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	Used Other Form of Tobacco
	%	%	%	%	%	%
Overall	**33.8** ± 3.9	**65.8** ± 3.8	**41.1** ± 4.1	**50.8** ± 4.1	**19.3** ± 3.5	**12.3** ± 2.9
Age						
18 to 24	**32.8** ± 9.8	**72.1** ± 9.1	**32.1** ± 10.0	**43.6** ± 10.4	**33.3** ± 9.9	**23.9** ± 8.9
25 to 44	**29.4** ± 6.3	**72.3** ± 6.0	**41.4** ± 6.7	**50.5** ± 6.7	**16.9** ± 5.4	**13.0** ± 4.6
45 to 64	**38.5** ± 6.4	**57.8** ± 6.3	**41.7** ± 6.4	**54.8** ± 6.4	**16.2** ± 5.2	**6.5** ± 3.3
65 or older	**44.1** ± 11.3	**40.6** ± 11.3	**64.7** ± 11.2	**53.9** ± 11.3	**11.3** ± 8.4	**3.3** ± 3.8
Gender						
Female	**34.4** ± 5.8	**68.0** ± 5.3	**41.6** ± 5.9	**53.7** ± 6.0	**15.3** ± 4.9	**6.9** ± 3.3
Male	**33.3** ± 5.3	**64.0** ± 5.3	**40.6** ± 5.6	**48.5** ± 5.7	**22.7** ± 4.9	**16.8** ± 4.4
Education						
Less than high school	**31.5** ± 13.2	**69.8** ± 12.2	**47.6** ± 14.3	**55.2** ± 14.2	**34.4** ± 14.0	**13.9** ± 11.2
High school graduate/GED	**43.2** ± 7.2	**64.4** ± 6.8	**43.5** ± 7.2	**55.6** ± 7.2	**22.7** ± 6.4	**16.4** ± 5.6
Some college or technical school	**29.7** ± 5.4	**69.4** ± 5.3	**39.7** ± 5.8	**50.0** ± 6.0	**15.7** ± 4.5	**9.6** ± 3.4
College graduate or beyond	**13.9** ± 7.4	**50.9** ± 10.3	**29.6** ± 9.1	**30.0** ± 9.5	**5.5** ± 5.3	**5.9** ± 4.8
Household income						
$35,000 or less	**41.1** ± 6.3	**71.0** ± 5.4	**38.9** ± 6.2	**63.4** ± 6.2	**27.9** ± 6.1	**13.8** ± 4.7
$35,001 to $50,000	**32.0** ± 10.2	**71.6** ± 9.5	**46.1** ± 10.9	**52.1** ± 10.8	**13.8** ± 7.6	**13.2** ± 7.1
$50,001 to $75,000	**30.4** ± 9.4	**65.9** ± 8.9	**37.4** ± 9.3	**32.6** ± 9.1	**14.0** ± 7.3	**8.4** ± 6.3
$75,001 or more	**19.8** ± 7.2	**52.7** ± 9.2	**40.0** ± 9.2	**33.2** ± 8.4	**3.5** ± 3.4	**9.8** ± 5.5

Source: Minnesota Adult Tobacco Survey, 2010

The oldest age group tended to adopt the shopping options at the highest rate of all the age groups: highest percentage for bought a cheaper brand and purchased cartons; second highest and nearly the same as the highest percentage for found less expensive places to buy. (Use of coupons was very high for 18-44-year-olds (over 72 percent), but only 40 percent for the oldest group.) The age pattern for the two alternative product options is the reverse: resorting to them was highest among the youngest 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 income levels for the various methods utilized.

While the six cost-reduction methods are far from exhaustive of all cost-saving possibilities, it is still worth noting how many smokers made use of multiple options. Table 2-18 shows the percentages of smokers who used varying numbers of the options, from none of the options to all six. Only 13.3±2.8 percent of smokers did not employ any of the cost-saving measures. Around two-thirds used two or

more options and over 40 percent used three or more. The pattern by income is as expected. In the lowest income group, about 93 percent used one or more, compared to around 69 percent of the highest income group. Approximately three-quarters of the two lower income groups used two or more methods, while less than half of the highest income group did so.

Table 2-18. 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	6	Row Total
	%	%	%	%	%	%	%	%
Overall	**13.3** ± 2.8	**20.4** ± 3.2	**24.2** ± 3.5	**22.2** ± 3.4	**13.9** ± 3.0	**4.6** ± 2.0	**1.5** ± 1.1	**100**
Household income								
$35,000 or less	**7.4** ± 3.3	**17.8** ± 4.7	**22.2** ± 5.3	**26.8** ± 5.6	**17.0** ± 5.0	**7.5** ± 3.9	**1.3** ± 1.4	**100**
$35,001 to $50,000	**11.2** ± 7.4	**16.0** ± 6.3	**37.2** ± 10.4	**13.5** ± 7.7	**15.0** ± 7.9	**4.5** ± 5.3	**2.6** ± 3.6	**100**
$50,001 to $75,000	**13.5** ± 6.2	**29.5** ± 8.9	**24.3** ± 8.2	**22.4** ± 8.4	**8.9** ± 6.3	**0.4** ± 0.8	**0.9** ± 1.8	**100**
$75,001 or more	**30.9** ± 8.9	**21.7** ± 7.4	**18.1** ± 7.0	**19.4** ± 7.2	**7.7** ± 4.9	**2.2** ± 2.6	**0.0** ± 0.0	**100**

Source: Minnesota Adult Tobacco Survey, 2010

2.4.3 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.

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±1.3 percent) of Minnesotans live with a smoker (Table 2-19). Current smokers (45.6±4.1 percent) are far more likely to live with a smoker than never smokers (10.8±1.4 percent) or former smokers (15.9±2.2 percent). This statistically significant relationship demonstrates the likely role of the home environment in supporting smoking behavior.

Young adults (31.3±4.7 percent) are also more likely to live with a smoker than 25-44-year-olds (17.5±2.2 percent), 45-64-year-olds (17.0±1.9 percent) and those 65 or older (8.9±1.9 percent). All of these differences between young adults and the other age groups are statistically significant.

Conversely, those with college degrees are less likely to live with a smoker (8.5±1.3 percent) than those with less than a high school degree (23.8±5.8), with only a high school degree (22.4±2.8 percent), and those with some college (20.7±2.2 percent). All of these differences between college graduates and the other educational levels are statistically significant.

Table 2-19. Smoking environment, by selected demographic characteristics and smoking status

Characteristics	Lives with a smoker
	%
Overall	**17.8** ± 1.3
Age	
18 to 24	**31.3** ± 4.7
25 to 44	**17.5** ± 2.2
45 to 64	**17.0** ± 1.9
65 or older	**8.9** ± 1.9
Gender	
Female	**17.6** ± 1.7
Male	**18.0** ± 1.8
Education	
Less than high school	**23.8** ± 5.8
High school graduate/GED	**22.4** ± 2.8
Some college or technical school	**20.7** ± 2.2
College graduate or beyond	**8.5** ± 1.3
Household income	
$35,000 or less	**22.9** ± 2.8
$35,001 to $50,000	**17.8** ± 3.3
$50,001 to $75,000	**19.6** ± 3.0
$75,001 or more	**14.2** ± 2.0
Smoking Status	
Never smokers	**10.8** ± 1.4
Current Smokers	**45.6** ± 4.1
Former Smokers	**15.9** ± 2.2

Source: Minnesota Adult Tobacco Survey, 2010

2.4.4 Characteristics of Smokers, 1999 to 2010

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

Smoking Intensity

As noted in section 2.3.2, smokers are grouped by the number of cigarettes they smoke per day: less than 15 cigarettes per day, 16-24 cigarettes per day, and 25 or more cigarettes per day, referred to respectively as light, moderate, and heavy smokers. These descriptions are for convenience only and do not imply reduced harm from smoking at the lower levels. From 2007 to 2010, there was approximately a 9 percentage point shift in the percentage of heavy and moderate smokers to light smokers, from 54.1±4.7 percent to 63.2±4.0 percent (Table 2-20). The 9.1 percentage point increase in light smokers is composed of a 5.1 percentage point decrease in moderate smokers and a 4.0 percentage point decrease in heavy smokers. The changes from 2007 to 2010 for all three levels of smoking intensity are statistically significant.

Table 2-20. Smoking intensity and time to first cigarette after waking, among smokers from 1999 to 2010

Smoking characteristics	1999	2003	2007	2010	Change from 2007 to 2010
	%	%	%	%	%
Smoking intensity					
Light[b]	**53.8** ± 4.4	**49.8** ± 4.5	**54.1** ± 4.7	**63.2** ± 4.0	**9.1** *
Moderate[a]	**32.1** ± 3.9	**38.1** ± 4.4	**35.6** ± 4.6	**30.5** ± 3.8	**-5.1** *
Heavy[a]	**14.1** ± 3.1	**12.2** ± 3.1	**10.3** ± 2.8	**6.3** ± 1.9	**-4.0** *
Time to first cigarette after waking					
30 minutes or less[a]	**46.8** ± 4.4	**47.5** ± 4.5	**46.2** ± 4.7	**44.8** ± 4.1	**-1.4**
More than 30 minutes[b]	**53.2** ± 4.4	**52.5** ± 4.5	**53.8** ± 4.7	**55.2** ± 4.1	**1.4**

[a] These items are hypothesized to decline from 2007 to 2010

[b] These items are hypothesized to increase from 2007 to 2010

* Statistically significant at the 95% confidence level

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

Time to First Cigarette after Waking

As mentioned earlier, time to first cigarette after waking is a robust indicator of level of nicotine dependence. The change between 2007 and 2010 in the percentage of smokers who smoke their first cigarette within 30 minutes of waking is not statistically significant. (Table 2-20). This suggests that there has been no change in the overall level of nicotine dependence among smokers in Minnesota during this time period.

As discussed in section 2.4.1, perception of harm is an important indicator of potential experimentation with tobacco use, motivation to quit and support for tobacco control policies. This section examines the trend in the perceived harmfulness of smoking an occasional cigarette. There was a decrease of about 3 percentage points in the percent of Minnesotans who regard smoking an occasional cigarette as harmful. In 2007, 78.3±1.5 percent of Minnesotans thought smoking an occasional cigarette was harmful. In 2010, this number decreased by 3.2 percentage points to 75.1±1.4 percent. Since the hypothesis for the one-tailed test for this change was specified as positive, this negative change does not test as statistically significant. However, this decrease is statistically significant if a two-tailed test is applied.

Living with a Smoker

MATS also examined the trends from 1999 to 2010 in living with a smoker. There was no significant change from 2007 to 2010, with the percentage of adults who live with a smoker holding virtually steady at 17.8±1.3 percent in 2010, compared to 17.5±1.5 percent in 2007.

2.5 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 2010

- About 625,000 adult Minnesotans, or 16.1±1.2 percent, are current smokers. Younger adults, those with lower educational levels and those with lower household income levels are more likely to be smokers.
- Overall, 27.8±4.4 percent of young adults have smoked in the past 30 days.
- About 1,062,000 adult Minnesotans, or 27.3±1.3 percent, are former smokers, and the quit ratio among those who have ever smoked is 62.9±2.2 percent.
- About 2.2 million adult Minnesotans, or 56.6±1.5 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 smokers tend to have lower educational levels than former smokers or never smokers. 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 either former smokers or never smokers.
- Minnesota smokers tend to have lower household incomes than former smokers or never smokers.
- Compared with nonsmokers, smokers are in poorer health and have been diagnosed with anxiety and depressive disorders at a higher rate.
- Compared with never smokers, smokers were far more likely to evidence problem drinking behaviors.
- Well over half (62.3±4.0 percent) of smokers are light smokers (smoke fewer than 15 cigarettes per day). Young adults and college graduates are more likely to be light smokers than other age groups and educational level groups, respectively.
- Slightly less than half (44.8±4.1 percent) of Minnesota smokers smoke their first cigarette of the day within 30 minutes of waking. Older smokers are more likely to do so than younger smokers. Those with less than a high school degree are much more likely to do so than those in the other educational levels.
- Overall, 22.0±3.6 percent of smokers usually smoke menthol cigarettes.

- Over three quarters (75.1±1.4 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 55.2±4.1 percent.

- Only between 4 percent and 11 percent of Minnesotans (depending on the product in question) 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, natural cigarettes, and roll-your-own cigarettes. Men are consistently more likely to view these products as less harmful.

- Over one-third of Minnesotans (36.4±1.8) deem electronic cigarettes (which do not contain tobacco but do contain nicotine) as less harmful than cigarettes. Smokers are much more likely to consider e-cigarettes less harmful than cigarettes, with 58.0±5.1 percent of them endorsing this view.

- In terms of things smokers could do to save money on cigarettes, from one-third to two-thirds of smokers made use of a given shopping-related option, ranging from 33.8±3.9 percent who bought a cheaper brand to 65.8±3.8 percent who used coupons and similar promotions. In the lowest income group, about 93 percent used one or more. Approximately three-quarters of the two lower income groups used two or more methods.

- About one in six Minnesotans lives with a smoker, but nearly half of smokers do. Young adults are more likely to live with a smoker than any other age group and those with a college degree are less likely to do so than those in other educational levels.

Key Smoking Prevalence Findings for 2007 to 2010

- Between 2007 and 2010, the percentage of adults in Minnesota who are current smokers declined from 17.0±1.4 percent to 16.1±1.2 percent, but this change is not statistically significant.

- Between 2007 and 2010, the percentage of never smokers decreased slightly by 1.3 percentage points, from 57.9±1.6 percent to 56.6±1.5 percent. While young adults showed a small decrease of 1.0 percentage point in the never-smoking rate, this decline is not statistically significant; importantly, young adults essentially sustained the large and statistically significant increase in never smoking that occurred from 1999 to 2007.

- Between 2007 and 2010, the percentage of former smokers increased by a statistically significant 2.2 percentage points, from 25.1±1.3 percent to 27.3±1.3 percent. Every one of the demographic subgroup presented in the report showed an increase in the percentage of the population who are former smokers, with statistically significant increases occurring among males (3.0 percentage points), 25-44-year-olds (3.9 percentage points), and those with some college or technical school (3.8 percentage points). Further, the quit ratio among those who have ever smoked increased by 3.3 percentage points, from 59.6±2.6 percent to 62.9±2.2 percent.

- From 2007 to 2010, young adult smoking (defined as 30-day smokers, as described in section 2.2.1) declined slightly by 0.6 percentage points, from 28.4±4.8 to 27.8±4.4 percent, but this decline is not statistically significant.

- Between 2007 and 2010, there was a statistically significant increase of 9 percentage points in the percentage of Minnesota smokers who are light smokers, to 63.2±4.0 percent.

- In 2007, to 78.3±1.5 percent of Minnesotans thought smoking an occasional cigarette was harmful. In 2010, this number decreased to 75.1±1.4 percent. This decrease of 3.2 percentage points is statistically significant, using a two-tailed test.

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3. Use of Non-Cigarette Tobacco Products

3.1 Introduction

MATS seeks to track 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 Minnesotans' Use of Tobacco Products (All Forms)

Another way of looking at the prevalence of tobacco use is to consider how many people use tobacco in *any* form. This measure provides a clear picture of the full extent of tobacco use among adult Minnesotans.

Overall, 21.0±1.3 percent of Minnesotans currently use some form of tobacco, including cigarettes, pipes, cigars, hookah, and any form of smokeless tobacco (Table 3-1). As previously mentioned in Chapter 2, 16.1±1.2 percent of Minnesotans are current cigarette smokers. Thus, 4.9 percent of Minnesotans use tobacco exclusively in non-cigarette forms. Further, over three quarters (77.7 percent) of all Minnesota tobacco users currently smoke cigarettes, further demonstrating why tobacco control efforts focus most of their resources on cigarette use. Table 3-1 shows that 6.9±1.5 percent of former smokers and 5.0±0.9 percent of never smokers currently use some form of tobacco other than cigarettes.

Table 3-1. Current use of any tobacco product , by selected demographic characteristics

Characteristics	Current use %
Overall	**21.0** ± 1.3
Age	
18 to 24	**30.6** ± 4.5
25 to 44	**25.4** ± 2.5
45 to 64	**18.7** ± 1.9
65 or older	**7.5** ± 1.4
Gender	
Female	**15.3** ± 1.6
Male	**26.9** ± 2.0
Education	
Less than high school	**27.7** ± 5.9
High school graduate/GED	**25.8** ± 2.8
Some college or technical school	**25.1** ± 2.3
College graduate or beyond	**10.0** ± 1.4
Household income	
$35,000 or less	**29.6** ± 3.0
$35,001 to $50,000	**22.2** ± 3.6
$50,001 to $75,000	**21.0** ± 3.0
$75,001 or more	**15.5** ± 2.0
Smoking Status	
Never smokers	**5.0** ± 0.9
Current Smokers	**100.0** ± 0.0
Former Smokers	**6.9** ± 1.5

Source: Minnesota Adult Tobacco Survey, 2010

The demographic patterns for use of any tobacco product are similar to those already presented for current cigarette smoking because cigarette smokers constitute the largest percentage of all tobacco users. Since only men use non-cigarette tobacco to any degree, the small difference in the percentages of women and men who are cigarette smokers (14.5 percent and 17.7 percent, as reported in Chapter 2) becomes much wider and statistically significant for the use of any tobacco product (15.3±1.6 percent and 26.9±2.0 percent).

3.3 Use of Non-Cigarette Tobacco Products and Other Products among all Minnesotans

In 2010, 7.5±0.8 percent of Minnesotans were current users of one or more non-cigarette tobacco products (Table 3-2). This includes people 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.

Classifications and terminology used in the MATS 2010 report

Tobacco products: cigarettes, pipes, cigars, hookah, and any form of smokeless tobacco.

Non-cigarette tobacco products: pipes, cigars, hookah, and any form of smokeless tobacco.

Smokeless tobacco products: chewing tobacco, snuff, snus, dissolvable tobacco, etc. In MATS 2010, the four products listed here were either explicitly asked about individually or were mentioned in asking about use of smokeless tobacco in general. The question about general use of smokeless tobacco could encompass any smokeless form used by respondents, even if not specifically alluded to in the question (e.g., dip).

Alternative nicotine products: Electronic cigarettes

New and emerging products: hookah, snus, dissolvable tobacco, and electronic cigarettes.

MATS 2010 continued to obtain data about pipes and cigars, the two most common forms of smoked tobacco other than cigarettes. Between 2007 and 2010, the tobacco industry has been notably active in the smokeless tobacco product market. Previous MATS addressed long-established forms of smokeless tobacco like chewing tobacco and snuff. MATS 2010 obtained additional data about two specific forms of smokeless tobacco: snus and dissolvable tobacco.

Non-Cigarette Tobacco Use Status

For MATS, users of non-cigarette tobacco products are classified similarly to cigarette smokers, as current, former and never users of each product type. The definitions are different for these products.

- **For pipes, cigars and smokeless tobacco (in general):**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.
- A **former user** has used the product at least 20 times in his or her life and has not used it any day in the past 30 days.
- A **never user** has used the product fewer than 20 times in his or her life.

Survey Questions

- Have you [smoked tobacco in a pipe / smoked cigars or cigarillos / used any kind of smokeless tobacco, such as chewing tobacco, snuff, or snus] at least 20 times in your life?
- During the past 30 days, how many days did you [smoke tobacco in a pipe / smoke cigars or cigarillos / use any kind of smokeless tobacco, such as chewing tobacco, snuff, or snus]?

For new and emerging tobacco products: hookah, snus, and dissolvable tobacco:

A hookah is a single or multi-stemmed (often glass) water pipe device for smoking that operates by water filtration and indirect heat. Hookah use is classified only as to whether someone is a current hookah user or not. From a global perspective, hookah is far from being a new product, but its use in the U.S. has emerged in recent years.

Snus is a form of oral, moist snuff contained in a pouch that users put in the front of their mouths. It has been quite common in Scandinavia for many decades and is now emerging in the U.S.

Dissolvable tobacco takes the form of tablets, sticks and strips of processed, compressed tobacco that users put in their mouths and allow to dissolve. Dissolvables are a relatively new product.

Non-Cigarette Tobacco Use Status (continued)

Electronic cigarettes:

Electronic cigarettes are a new product. 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.

- A **current user** of the respective product has used a hookah, snus, dissolvable tobacco, or an e-cigarette at least one day in the past 30 days.
- Anyone else is not a current user.

Survey Questions

- Have you ever used any of the following tobacco products?

  A hookah water pipe?

  Electronic cigarettes, such as “Smoking Everywhere” or “Njoy”?

  Snus, such as “Camel Snus” or “Tourney Snus”?

  Any tobacco product that dissolves in the mouth, such as tobacco tablets, sticks, or strips?

- During the past 30 days, how many days did you use

  A hookah water pipe?

  Electronic cigarettes, such as “Smoking Everywhere” or “Njoy”?

  Snus, such as “Camel Snus” or “Tourney Snus”?

  Any tobacco product that dissolves in the mouth, such as tobacco tablets, sticks, or strips?

Table 3-2. Non-cigarette tobacco use by all Minnesota adults and by current smokers, by gender

Population	Any non-cigarette tobacco use	Pipe use	Cigar use	Smokeless tobacco use
	%	%	%	%
Minnesota adults				
Overall	**7.5** ± 0.8	**0.6** ± 0.3	**3.3** ± 0.6	**4.4** ± 0.7
Age				
18 to 24	**17.0** ± 3.5	**2.8** ± 1.7	**8.6** ± 2.7	**8.8** ± 2.7
25 to 44	**9.0** ± 1.6	**0.4** ± 0.4	**3.1** ± 1.0	**6.5** ± 1.5
45 to 64	**4.9** ± 1.0	**0.2** ± 0.2	**2.6** ± 0.7	**2.1** ± 0.7
65 or older	**1.9** ± 0.7	**0.3** ± 0.3	**0.7** ± 0.4	**0.9** ± 0.5
Gender				
Female	**1.7** ± 0.6	**0.1** ± 0.1	**0.8** ± 0.4	**0.3** ± 0.3
Male	**13.4** ± 1.6	**1.1** ± 0.6	**5.8** ± 1.1	**9.1** ± 1.4
Current smokers				
Overall	**17.6** ± 3.2	**1.8** ± 1.2	**9.4** ± 2.5	**9.6** ± 2.7
Age				
18 to 24	**37.8** ± 10.0	**9.0** ± 6.2	**24.9** ± 9.1	**18.2** ± 7.9
25 to 44	**17.7** ± 5.2	**0.5** ± 1.0	**7.0** ± 3.5	**13.6** ± 5.1
45 to 64	**8.9** ± 3.7	**0.0** ± 0.0	**5.4** ± 3.0	**2.0** ± 1.8
65 or older	**1.9** ± 2.9	**0.0** ± 0.0	**1.9** ± 2.9	**0.0** ± 0.0
Gender				
Female	**8.2** ± 3.5	**0.7** ± 0.8	**4.6** ± 2.4	**1.2** ± 1.9
Male	**25.5** ± 5.0	**2.8** ± 2.1	**13.5** ± 4.1	**17.8** ± 4.8

Source: Minnesota Adult Tobacco Survey, 2010

The only important variation in the use of these forms of tobacco occurs among the age groups and between men and women; accordingly, Table 3-2 breaks out the statistics for all Minnesotans by age and gender. Use of non-cigarette tobacco declines steadily across the age groups, from 17.0±3.5 percent of the 18-24-year-olds to 1.9±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 double that of everyone else. Use of non-cigarette tobacco occurs almost exclusively among men, 13.4±1.6 percent of whom use some such form of tobacco, compared to 1.7±0.6 percent of women.

Minnesotans use pipes, cigars and smokeless tobacco at very low rates, and these are nearly exclusively used by men.

Table 3-3 presents statistics for use of selected new and emerging products, by all Minnesotans and by current smokers. Only 0.7±0.3 percent of Minnesotans are current hookah users. Hookah use varies little by gender, age, education and income, except for distinctly higher usage by young adults. The 3.6±1.6 percent of young adults who are current hookah users represent nearly all such users.

Table 3-3. Use of selected new and emerging tobacco products by all Minnesota adults and by current smokers, by selected demographic characteristics

Population	Hookah %	Snus %	Electronic cigarette %
Minnesota adults			
Overall	**0.7** ± 0.3	**1.3** ± 0.4	**0.7** ± 0.3
Age			
18 to 24	**3.6** ± 1.6	**3.7** ± 1.6	**1.6** ± 1.1
25 to 44	**0.5** ± 0.5	**1.7** ± 0.7	**0.9** ± 0.7
45 to 64	**0.1** ± 0.1	**0.6** ± 0.3	**0.5** ± 0.5
65 or older	**0.1** ± 0.2	**0.3** ± 0.3	**0.1** ± 0.1
Gender			
Female	**0.6** ± 0.4	**0.1** ± 0.2	**0.7** ± 0.5
Male	**0.8** ± 0.4	**2.6** ± 0.7	**0.7** ± 0.4
Current smokers			
Overall	**2.2** ± 1.2	**3.8** ± 1.6	**3.6** ± 1.8
Age			
18 to 24	**8.6** ± 5.2	**8.4** ± 5.2	**6.4** ± 4.8
25 to 44	**1.3** ± 1.7	**3.9** ± 2.6	**3.1** ± 2.7
45 to 64	**0.5** ± 0.9	**1.9** ± 1.8	**3.0** ± 3.1
65 or older	**0.0** ± 0.0	**0.0** ± 0.0	**0.9** ± 1.3
Gender			
Female	**2.0** ± 1.9	**0.7** ± 1.0	**4.5** ± 3.2
Male	**2.4** ± 1.6	**6.4** ± 2.7	**2.8** ± 1.8

Source: Minnesota Adult Tobacco Survey, 2010

The use of snus is somewhat greater than hookah use, but the prevalence is still low. Overall, 1.3±0.4 percent of Minnesotans are current snus users. Young adults 18-24-years-old (3.7±1.6 percent) and males (2.6±0.7 percent) use snus at higher rates than their complement groups (those 25 and older and females, respectively), a difference that is statistically significant.

Very few Minnesotans currently use electronic cigarettes (0.7±0.3 percent). There are no distinct differences by age or gender.

The prevalence of dissolvable tobacco use in Minnesota is currently too small to report, especially in light of the relatively large confidence intervals surrounding these small estimates. However, dissolvable tobacco use is captured among the products defining the measures of overall tobacco use, non-cigarette tobacco use, and smokeless tobacco use. If warranted, MATS will continue to monitor dissolvable tobacco use in the future.

3.4 Use of Non-Cigarette Tobacco Products and Other Products among Current Cigarette Smokers

Typically, use of non-cigarette tobacco products is more common among cigarette smokers than nonsmokers (Table 3-2). 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 3-2: since the sample size is small and the prevalences are low, the confidence intervals are large relative to the percentages.

Overall, 17.6±3.2 percent of cigarette smokers also use some other form of tobacco, which is more than double the prevalence among all Minnesotans. Statistically significant differences among the demographic groups occur between men and women and among various age groups. While 25.5±5.0 percent of male smokers use some other form of tobacco, 8.2±3.5 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 any other age group; all of these differences are statistically significant. Aside from demographic differences, the high absolute percentage of the 18-to-24-year-olds who are users of non-cigarette tobacco stands out, at 37.8±10.0 percent.

Among current cigarette smokers, 1.8±1.2 percent also smoke pipes. Smokers use cigars at a rate approximately three times the overall population, 9.4±2.5 percent vs. 3.3±0.6 percent, a statistically significant difference. The 9.6±2.7 percent of cigarette smokers who use smokeless tobacco are about double the 4.4±0.7 percent prevalence for all Minnesotans, also a statistically significant difference. As with

other tobacco forms, hookah use is higher among cigarette smokers (2.2±1.2 percent) than in the general population (0.7±0.3); this difference is statistically significant, although the table does not show this due to rounding.

At 3.8±1.6 percent, use of snus among current smokers is more than double its use in the general population, and this difference is statistically significant (Table 3-3). Among smokers, the same age and gender patterns appear as in the general population. The higher use of snus among smokers is consistent across the demographic subgroups, although the difference between the general population and smokers within each subgroup is not statistically significant. Among male smokers, 6.4±2.7 percent are current snus users, a statistically significant difference from the less than 1 percent of female smokers who use it.

Smokers currently use electronic cigarettes at approximately five times the rate of the general population (3.6±1.8 percent compared to 0.7±0.3 percent), a difference that is statistically significant.

3.5 Tobacco Use, 2007 to 2010

Between 2007 and 2010, there was essentially no change in the percentage of Minnesotans who were current users of some form of tobacco, including cigarettes, pipes, cigars, smokeless or other forms. In 2007, 21.1±1.5 percent of Minnesotans were current tobacco users, while in 2010 this figure held steady at 21.0±1.3 percent.

3.6 Use of Non-Cigarette Tobacco Products, 2007 to 2010

Use of Non-Cigarette Tobacco Products among all Minnesotans. Between 2007 and 2010, Minnesotans' current use of any non-cigarette tobacco products increased from 6.1±0.8 percent to 7.5±0.8 percent (Table 3-4). The hypothesized direction of change for the one-tailed test was negative, as this was the desired change; as a result, this positive change is not statistically significant. However, using a two-tailed test, the positive change does test as statistically significant. Current use of pipes and cigars increased marginally (each by less than 0.5 percent), but the increases are not statistically significant. Current use of smokeless tobacco increased by 1.2 percent, from 3.1±0.6 to 4.3±0.7 percent, a statistically significant change.

Table 3-4. Tobacco use among Minnesota adults and current smokers from 1999 to 2010, by tobacco product

Current toacco use	1999	2003	2007	2010	Change from 2007 to 2010
	%	%	%	%	%
Minnesota adults					
Any tobacco products[a]	**27.0** ± 1.9	**22.9** ± 1.6	**21.1** ± 1.5	**21.0** ± 1.3	**-0.1**
Any non-cigarette tobacco[a]	**7.9** ± 1.2	**5.9** ± 0.9	**6.1** ± 0.8	**7.5** ± 0.8	**1.4**
Pipe[a]	**0.9** ± 0.4	**0.5** ± 0.2	**0.5** ± 0.3	**0.6** ± 0.3	**0.1**
Cigar[a]	**4.5** ± 1.0	**2.5** ± 0.6	**2.8** ± 0.6	**3.2** ± 0.6	**0.5**
Smokeless tobacco[b]	**3.4** ± 0.7	**3.2** ± 0.7	**3.1** ± 0.6	**4.3** ± 0.7	**1.2** *
Current smokers					
Any non-cigarette tobacco[b]	**14.9** ± 3.2	**10.7** ± 2.8	**11.9** ± 2.8	**17.6** ± 3.2	**5.8** *
Pipe[a]	**2.0** ± 1.2	**1.1** ± 0.7	**0.9** ± 0.6	**1.8** ± 1.2	**0.9**
Cigar[b]	**10.9** ± 3.0	**5.4** ± 2.2	**7.5** ± 2.4	**9.4** ± 2.5	**1.9**
Smokeless tobacco[b]	**5.2** ± 2.0	**5.0** ± 2.0	**4.4** ± 1.6	**9.6** ± 2.7	**5.2** *

* Statistically significant at the 95% confidence level

[a] Hypothesis: the percentages for these items will decline from 2007 to 2010

[b] Hypothesis: the percentages for these items will increase from 2007 to 2010

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

Use of Non-Cigarette Tobacco Products among Current Cigarette Smokers. For ease of comparison, the statistics for the changes in cigarette smokers' use of non-cigarette tobacco products appear in Table 3-4 immediately below the results for all Minnesotans. There was a statistically significant increase in current use of non-cigarette tobacco products among smokers from 2007 to 2010. In 2007, 11.9±2.8 percent of smokers were current users of some form of non-cigarette tobacco, increasing by 5.8 percentage points to 17.6±3.2 percent in 2010. This is a function of increases in current pipe, cigar, and smokeless tobacco use among smokers, with the increase in smokeless tobacco use by itself accounting for most of the increase. The increases in current pipe and cigar use are approximately 1 and 2 percentage points respectively, neither change being significant. The 5.2 percentage point increase in current use of smokeless tobacco by smokers is relatively large (4.4±1.6 percent to 9.6±2.7 percent) and is statistically significant.

3.7 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 2010

- Over 20 percent (21.0±1.3 percent) of Minnesotans use some form of tobacco, including cigarettes, pipes, cigars, smokeless or other forms. The general patterns by age, gender, education and income are the same for overall tobacco use as for cigarette smoking.

- 7.5±0.8 percent of Minnesotans are current users of one or more non-cigarette tobacco products. Such use declines steadily across the age groups, from 17.0±3.5 percent of the 18-24-year-olds to 1.9±0.7 percent of those 65 or older. Notably, the percentage of young adults under 25 who are current users of non-cigarette tobacco is more than double that of everyone else. Use of non-cigarette tobacco occurs almost exclusively among men, 13.4±1.6 percent of whom use some such form of tobacco.

- Use of new and emerging tobacco products (snus, hookah, dissolvable tobacco, and electronic cigarettes) is very low; less than 2 percent of Minnesotans use any of these products.

- Use of non-cigarette tobacco is more common among cigarette smokers than nonsmokers. About one in six cigarette smokers (17.6±3.2 percent) also use some other form of tobacco. Male smokers are much more likely than female smokers to use other forms of tobacco (25.5±5.0 percent vs. 8.2±3.5 percent). The youngest age group of smokers is by far the most likely to use other forms of tobacco, at a rate of 37.8±10.0 percent.

- Of note, smokers' use of electronic cigarettes is low (3.6±1.8 percent), but this is several times the rate of the overall population (0.7±0.3 percent).

Key Tobacco Prevalence Findings for 2007 to 2010

- Between 2007 and 2010, there was essentially no change in the percentage of Minnesotans who were current users of some form of tobacco, holding steady at approximately 21 percent.

- Minnesotans' use of any non-cigarette tobacco products increased from 6.1±0.8 percent to 7.5±0.8 percent; using a two-tailed test, this positive change is statistically significant.

- Use of smokeless tobacco increased by 1.2 percentage points, from 3.1±0.6 percent in 2007 to 4.3±0.7 percent in 2010.

- Among smokers, there was an increase of 5.8 percentage points in the use of non-cigarette tobacco products, from 11.9±2.8 percent of smokers in 2007 to 17.6±3.2 percent in 2010. The 5.2 percentage point increase in use of smokeless tobacco by smokers (4.4±1.6 percent to 9.6±2.7 percent) accounts for much of the overall increase in smokers' use of non-cigarette tobacco products.

4. Quitting Behaviors among Minnesota Smokers

4.1 Introduction

This chapter describes quitting behaviors among Minnesota's smokers. The results presented here examine quit attempts, successful quitting, use of quitting programs and medications, assistance for quitting from health care providers, and 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. The finding does not describe sustained abstinence.

Quitting Among Past-year Smokers

Past-year Smokers**.** In the 12 months preceding MATS 2010, 18.7±1.3 percent of Minnesotans smoked cigarettes (Table 4-1); these past-year smokers combine current smokers and former smokers who last smoked regularly less than a year ago, and total about 717,000 people.

Successful Quitters. Among all past-year smokers, 12.8±2.5 percent (92,000 people) quit at the time of MATS 2010 (Table 4-1). Among this group of successful quitters, there is a statistically significant difference between the high school graduate group

(8.9±3.5 percent) and the college educated group (21.2±8.0 percent). Although, as mentioned above, young adults are more likely to have tried to quit smoking in the past year, they are equally likely to be successfully quit. There are no statistically significant differences by age, gender, or income.

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, 18.6±2.4 percent last smoked regularly between one and five years ago and 71.5±2.7 percent last smoked regularly more than 5 years ago (not shown in table). Thus, a high percentage of former smokers have been able to sustain their quit beyond the one-year marker.

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

Characteristics	Past year smokers (among all Minnesotans)	Successful past-year quitters (among past-year smokers)
	%	%
Overall	**18.7** ± 1.3	**12.8** ± 2.5
Age		
18 to 24	**25.0** ± 4.3	**12.7** ± 6.7
25 to 44	**22.9** ± 2.4	**12.9** ± 3.9
45 to 64	**17.2** ± 1.9	**11.8** ± 3.9
65 or older	**6.8** ± 1.4	**18.1** ± 8.6
25 or older	**17.7** ± 1.29	**12.8** ± 2.66
Gender		
Female	**16.9** ± 1.7	**13.2** ± 3.8
Male	**20.6** ± 1.9	**12.4** ± 3.3
Education		
Less than high school	**26.0** ± 5.8	**17.0** ± 11.1
High school graduate/GED	**24.1** ± 2.8	**8.9** ± 3.5
Some college or technical school	**23.3** ± 2.2	**13.1** ± 3.6
College graduate or beyond	**6.2** ± 1.1	**21.2** ± 8.0
Household income		
$35,000 or less	**29.6** ± 2.9	**11.0** ± 3.7
$35,001 to $50,000	**20.1** ± 3.5	**12.5** ± 6.6
$50,001 to $75,000	**17.3** ± 2.8	**12.9** ± 5.9
$75,001 or more	**11.2** ± 1.8	**12.8** ± 5.6

Source: Minnesota Adult Tobacco Survey, 2010

Quitting Among Current Smokers

In the past year, 54.6±4.1 percent of 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 340,000 current smokers who tried to quit in the past 12 months. There are no statistically significant differences by gender, age, 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	**54.6** ± 4.1
Age	
18 to 24	**67.9** ± 9.7
25 to 44	**55.0** ± 6.7
45 to 64	**48.1** ± 6.4
65 or older	**46.5** ± 11.2
25 or older	**51.7** ± 4.47
Gender	
Female	**57.2** ± 5.9
Male	**52.4** ± 5.7
Education	
Less than high school	**58.1** ± 13.8
High school graduate/GED	**50.9** ± 7.2
Some college or technical school	**56.8** ± 5.9
College graduate or beyond	**54.6** ± 10.3
Household income	
$35,000 or less	**55.3** ± 6.4
$35,001 to $50,000	**51.8** ± 10.8
$50,001 to $75,000	**61.0** ± 9.6
$75,001 or more	**53.9** ± 9.2

Source: Minnesota Adult Tobacco Survey, 2010

Among current smokers with a quit attempt in the past 12 months, nearly 70 percent made more than one attempt: 25.8±5.2 percent made two attempts, 19.5±4.8 percent made three attempts, and 23.8±4.8 percent made four or more attempts (Table 4-3). The fact that so many smokers make multiple attempts to quit demonstrates both high interest in quitting and the need for support in overcoming nicotine addiction.

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	**30.9** ± 5.2	**25.8** ± 5.2	**19.5** ± 4.8	**23.8** ± 4.7	**100**
Age					
18 to 24	**28.4** ± 10.8	**28.2** ± 12.2	**32.2** ± 12.7	**11.1** ± 7.7	**100**
25 to 44	**29.6** ± 8.1	**27.3** ± 8.5	**17.8** ± 7.2	**25.3** ± 7.7	**100**
45 to 64	**34.6** ± 9.3	**22.6** ± 7.9	**13.4** ± 6.6	**29.5** ± 8.7	**100**
65 or older	**32.6** ± 16.5	**18.6** ± 11.7	**10.6** ± 9.4	**38.2** ± 17.0	**100**
Gender					
Female	**26.0** ± 7.1	**30.2** ± 7.9	**21.7** ± 7.5	**22.0** ± 6.4	**100**
Male	**35.2** ± 7.4	**21.9** ± 6.9	**17.5** ± 6.1	**25.4** ± 6.8	**100**
Education					
Less than high school	**38.1** ± 18.1	**17.6** ± 13.8	**24.3** ± 17.3	**20.0** ± 16.6	**100**
High school graduate/GED	**26.8** ± 8.7	**31.5** ± 10.1	**14.6** ± 7.7	**27.1** ± 8.8	**100**
Some college or technical school	**32.3** ± 7.7	**25.2** ± 7.4	**21.9** ± 7.3	**20.7** ± 6.3	**100**
College graduate or beyond	**33.0** ± 13.4	**16.6** ± 11.1	**17.6** ± 12.2	**32.9** ± 13.1	**100**
Household income					
$35,000 or less	**29.6** ± 7.9	**24.1** ± 7.6	**23.3** ± 7.9	**23.0** ± 7.1	**100**
$35,001 to $50,000	**31.1** ± 13.9	**37.8** ± 16.4	**3.2** ± 3.5	**27.9** ± 13.8	**100**
$50,001 to $75,000	**33.4** ± 11.9	**20.5** ± 11.5	**18.7** ± 10.7	**27.4** ± 11.2	**100**
$75,001 or more	**29.1** ± 12.2	**23.6** ± 10.5	**25.2** ± 11.8	**22.1** ± 10.0	**100**

Source: Minnesota Adult Tobacco Survey, 2010

Stages of Change among Current Smokers

Stages of Change

For MATS, the transtheoretical stages of change model is used to characterize a current smoker's readiness to quit smoking. There are five stages in the model:

Pre-contemplation includes current smokers who are not planning to quit smoking.

Contemplation includes current smokers who are planning to quit smoking in the next six months.

Preparation includes current smokers who have made one quit attempt in the past 12 months and who are planning to quit smoking in the next 30 days

Action includes former smokers who have not smoked within the last six months.

Maintenance includes former smokers who have not smoked for longer than six months.

Survey Questions

- Are you seriously considering stopping smoking within the next six months?
- Are you planning to stop smoking within the next 30 days?

By definition, current smokers can only be in the pre-contemplation, contemplation or preparation stages of change, so these are the only stages shown in Table 4-4. 41.3±4.3 percent of current smokers in Minnesota are in the pre-contemplation stage, while 35.7±4.3 percent are in the contemplation stage and 23.1±3.6 percent are in the preparation stage. The only statistically significant differences are between the oldest age group and the two younger groups for the pre-contemplation stage.

Table 4-4. Stages of Change among current smokers, by selected demographic characteristics

Characteristics	Pre-contemplation	Contemplation	Preparation	Row Total
	%	%	%	%
Overall	**41.3** ± 4.3	**35.7** ± 4.3	**23.1** ± 3.6	100
Age				
18 to 24	**38.9** ± 10.6	**38.0** ± 11.2	**23.1** ± 9.1	**100**
25 to 44	**38.1** ± 6.9	**37.8** ± 7.0	**24.1** ± 6.0	**100**
45 to 64	**43.9** ± 6.7	**34.0** ± 6.4	**22.1** ± 5.6	**100**
65 or older	**61.2** ± 11.4	**19.6** ± 8.6	**19.2** ± 8.6	**100**
Gender				
Female	**39.0** ± 6.2	**35.9** ± 6.3	**25.1** ± 5.5	**100**
Male	**43.1** ± 5.9	**35.5** ± 5.9	**21.4** ± 4.8	**100**
Education				
Less than high school	**41.1** ± 14.5	**30.8** ± 14.5	**28.1** ± 13.3	**100**
High school graduate/GED	**41.3** ± 7.5	**33.8** ± 7.5	**24.9** ± 6.6	**100**
Some college or technical school	**43.1** ± 6.3	**38.3** ± 6.3	**18.6** ± 4.7	**100**
College graduate or beyond	**34.8** ± 10.4	**36.0** ± 10.1	**29.2** ± 10.0	**100**
Household income				
$35,000 or less	**43.7** ± 6.8	**35.3** ± 6.7	**21.0** ± 5.4	**100**
$35,001 to $50,000	**41.7** ± 11.2	**30.0** ± 11.1	**28.3** ± 10.6	**100**
$50,001 to $75,000	**33.1** ± 9.6	**40.5** ± 10.6	**26.4** ± 8.5	**100**
$75,001 or more	**42.7** ± 9.5	**31.9** ± 9.0	**25.4** ± 8.6	**100**

Source: Minnesota Adult Tobacco Survey, 2010

4.2.2 Awareness and Use of Quitting Programs and Medications

This section focuses on awareness of free assistance to quit smoking. This indicator suggests how smokers understand the resources that are available to support their quit attempts.

Awareness of Availability of Quitting Assistance

Survey Question

- During the past 12 months, have you heard of any stop-smoking programs, such as a helpline, support group or website that offered free help to smokers who were trying to quit?

Among current smokers, 77.2±3.5 percent are aware of free assistance to quit smoking. Similar high levels of awareness (80.32±4.9 percent) are reported among

former smokers who have quit in the past five years. No statistically significant differences exist in awareness by age, gender, education or income.

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 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.

Over half (56.1±5.8 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 4-5). There is a large and significant difference by age. Among current smokers, 81.9±9.5 percent of 18-24-year-olds believe they can quit smoking without stop-smoking medications, compared with 51.5±9.3 percent of 25-44-year-olds, 45.5±9.6 percent of 45-64-year-olds, and 49.2±17.5 percent of the 65 or older group. The difference between the 18-24-year-olds and all the other age groups is statistically significant. There are no significant differences by gender, education or income.

Table 4-5. 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	**56.1** ± 5.8
Age	
18 to 24	**81.9** ± 9.5
25 to 44	**51.5** ± 9.3
45 to 64	**45.5** ± 9.6
65 or older	**49.2** ± 17.5
Gender	
Female	**50.1** ± 8.5
Male	**61.4** ± 7.7
Education	
Less than high school	**44.9** ± 19.2
High school graduate/GED	**57.8** ± 10.2
Some college or technical school	**55.8** ± 8.5
College graduate or beyond	**67.2** ± 13.9
Household income	
$35,000 or less	**52.1** ± 8.9
$35,001 to $50,000	**60.4** ± 16.1
$50,001 to $75,000	**54.9** ± 13.0
$75,001 or more	**69.9** ± 11.4

Source: Minnesota Adult Tobacco Survey, 2010

Perceptions of stop-smoking medications among current smokers who have tried to quit in the past year include the following:

- 74.0±5.4 percent believe that stop-smoking medications are too expensive.
- 42.8±5.8 percent believe that they do not know enough about stop-smoking medications to use them properly.
- 51.7±6.2 percent believe that stop-smoking medications might harm their health.
- 20.6±5.0 percent believe that stop-smoking medications are too hard to get.

No statistically significant differences exist by age, gender, education or income on the above items.

Use of Quitting Assistance

Types of Quitting Assistance

Smokers can choose from many types of 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 assistance**: use of any type of stop-smoking medication or behavioral counseling
- **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 medications (Zyban®/bupropion or Chantix® /varenicline)
- **Use of any nicotine replacement therapy**
- **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? Did you use…
  - Nicotine gum?
  - A nicotine patch?
  - A nicotine nasal spray?
  - A nicotine inhaler?
  - Nicotine lozenges?
  - 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?
- The last time you tried to quit smoking, did you use a stop-smoking telephone help line?
- The last time you tried to quit smoking, did you use one-on-one counseling from a doctor, nurse or other health professional?
- The last time you tried to quit smoking, did you use an on-line or web-based counseling service?

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

Any Assistance. Of current smokers with a quit attempt in the past 12 months, nearly half (49.2±5.6 percent) used some form of quitting assistance. This also means that about half of current smokers who have tried to quit in the past year 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. Nearly half (46.3±5.6 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 (Table 4-6). There are significant differences by age. Smokers in the 45-64-year-old age group (58.7±9.1 percent) were more likely than smokers in the 18-24-year-old age group (28.0±11.7 percent) to use quit medications. No significant differences were found in the use of quit medications by gender, education or income.

Over 30 percent (32.6±5.4 percent) of current smokers with a quit attempt in the past 12 months used some form of nicotine replacement therapy (Table 4-7). Smokers more commonly used the three over-the-counter NRT medications (patch, gum and lozenges) than the prescription NRT medication (inhalers). The patch was used by 21.8±4.8 percent of current smokers who have tried to quit in the past 12 months, followed by gum (14.8±4.2 percent), lozenges (5.9±2.5 percent), and inhalers (3.9±2.4 percent). (Although a question was asked about use of a nicotine nasal spray, no current smokers who had tried to quit in the past 12 months used it, and very few former smokers used it.) Among smokers with a quit attempt in the past 12 months, 22.1±4.4 percent used non-NRT prescription medications.

Table 4-6. Use of any stop-smoking medication among current smokers who tried to quit in the past 12 months, by selected demographic characteristics

Characteristics	Used medication
	%
Overall	**46.3** ± 5.6
Age	
18 to 24	**28.0** ± 11.7
25 to 44	**46.9** ± 9.0
45 to 64	**58.7** ± 9.1
65 or older	**49.6** ± 16.4
Gender	
Female	**51.2** ± 8.2
Male	**41.8** ± 7.7
Education	
Less than high school	**44.6** ± 19.4
High school graduate/GED	**48.9** ± 10.1
Some college or technical school	**45.4** ± 8.1
College graduate or beyond	**39.6** ± 14.1
Household income	
$35,000 or less	**50.7** ± 8.7
$35,001 to $50,000	**42.9** ± 15.3
$50,001 to $75,000	**46.0** ± 12.9
$75,001 or more	**38.0** ± 12.2

Source: Minnesota Adult Tobacco Survey, 2010

Table 4-7. Use of various stop-smoking medications among current smokers who have tried to quit in the past 12 months

Type of medication	%
Use of any medication*	**46.3** ± 5.6
Use of any nicotine replacement therapy*	**32.6** ± 5.4
Use of nicotine patch	**21.8** ± 4.8
Use of nicotine gum	**14.8** ± 4.2
Use of nicotine lozenges	**5.9** ± 2.5
Use of nicotine inhaler	**3.9** ± 2.4
Use of prescription medications	**22.1** ± 4.4

* Individual percentages sum to more than overall percentage because respondents could have used more than one type of medication.

Source: Minnesota Adult Tobacco Survey, 2010

Behavioral Counseling. Overall, 20.1±4.6 percent of current smokers with a quit attempt in the past year used some kind of behavioral quit-smoking counseling (Table 4-8). The most common form of behavioral counseling was one-on-one counseling from a health professional, used by 12.0±3.6 percent of current smokers who tried to quit in the past 12 months. Less than 8 percent of current smokers used each of the other forms of behavioral assistance.

Table 4-8. Use of various forms of behavioral counseling to aid quitting, among current smokers who have tried to quit in the past 12 months

Type of behavioral counseling	%
Use of any non-medication assistance*	**20.1** ± 4.6
Use of one-on-one counseling from a health professional	**12.0** ± 3.6
Use of a quit smoking telephone helpline	**7.2** ± 3.2
Use of on-line or web-based counseling	**5.0** ± 2.7
Use of a stop-smoking clinic or class	**3.8** ± 2.2
Use of some other program, product or service	**3.7** ± 2.3

* Individual percentages sum to more than overall percentage because respondents could have used more than one type of counseling.

Source: Minnesota Adult Tobacco Survey, 2010

Willingness to Use Quit-smoking Assistance

Among all current smokers, willingness to use some type of quit-smoking assistance is high. Nearly two-thirds (67.4±4.0 percent) of current smokers say they would be willing to use some form of assistance if cost were not an issue (Table 4-9). There are no statistically significant differences by age, gender, education or income.

Table 4-9. Willingness to use a program, product or medication to help quit smoking if cost were not an issue, among current smokers, by selected demographic characteristics

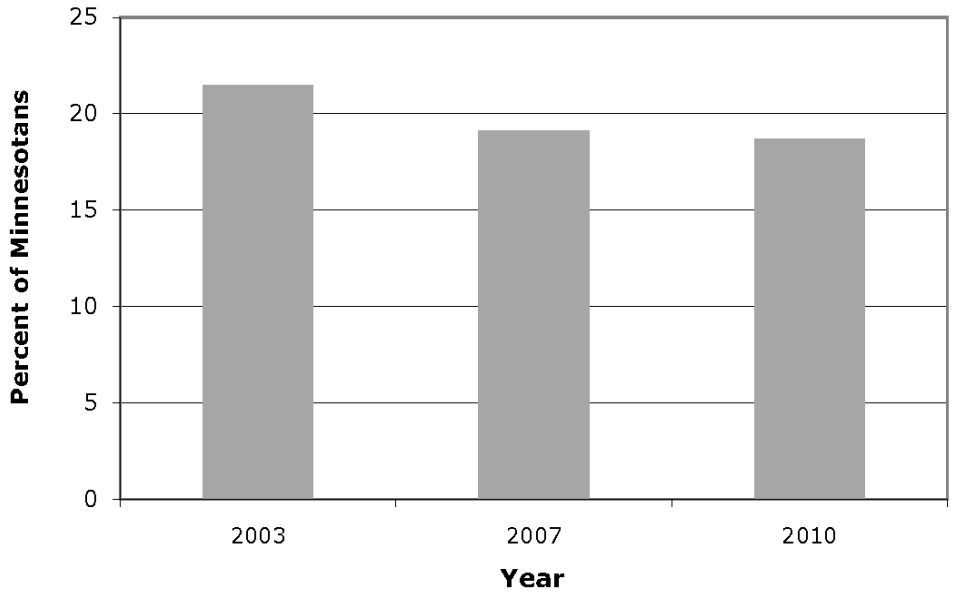
Characteristics	Willing to use a program, product or medication
	%
Overall	67.4 ± 4.0
Age	
18 to 24	61.1 ± 10.1
25 to 44	69.2 ± 6.4
45 to 64	71.5 ± 5.8
65 or older	48.5 ± 11.9
Gender	
Female	70.0 ± 5.8
Male	65.2 ± 5.5
Education	
Less than high school	64.4 ± 13.7
High school graduate/GED	67.5 ± 7.1
Some college or technical school	69.1 ± 5.6
College graduate or beyond	60.7 ± 10.3
Household income	
$35,000 or less	65.5 ± 6.3
$35,001 to $50,000	67.0 ± 10.7
$50,001 to $75,000	78.7 ± 7.6
$75,001 or more	65.1 ± 8.8

Source: Minnesota Adult Tobacco Survey, 2010

4.2.3 Past-year Smoking, Quit Attempts and Successful Quitting, 2007 to 2010

Past-year Smokers. In the 12 months before MATS 2010, 18.7±1.3 percent of Minnesotans 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 2007 (19.1±1.4 percent).

Figure 4-1. Past-year smokers, from 2003 to 2010



	2003	2007	2010	Change from 2007 to 2010
Percent of Minnesotans	21.5 ± 1.6	19.1 ± 1.4	18.7 ± 1.3	- 0.5

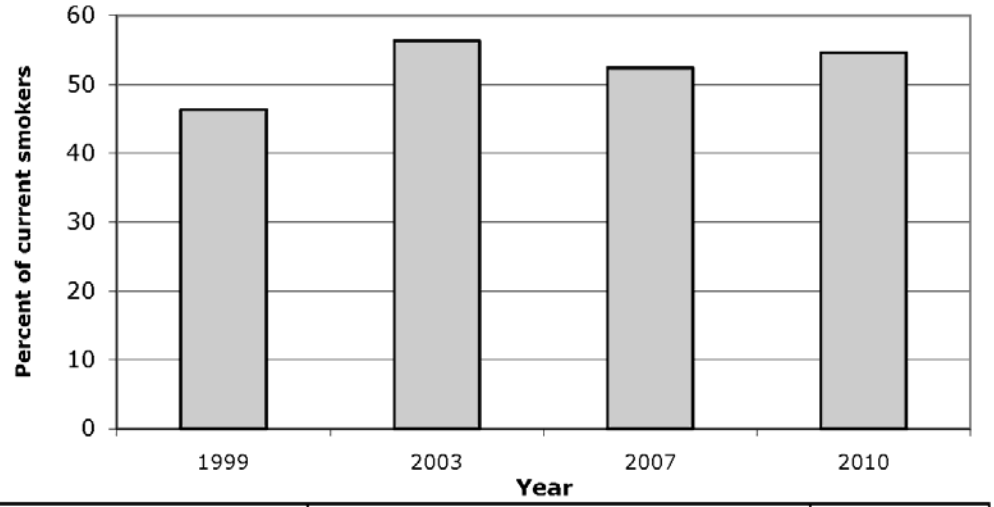
Hypothesis: The percentage who are past year smokers will decline from 2007 to 2010

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

Past-year Successful Quitters. Between 2007 and 2010, the percentage of past-year smokers who successfully quit increased from 9.8±2.1 percent to 12.8±2.5 percent. This is a statistically significant change.

Current Smokers with Quit Attempts. In 2010, 54.6±4.1 percent of 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 4-2). This represents no statistically significant change from 2007 (52.4±4.6 percent).

Figure 4-2. Current smokers who have tried to quit in the past 12 months, from 1999 to 2010



	1999	2003	2007	2010	Change from 2007 to 2010
Percent of current smokers	46.3 ± 4.4	56.3 ± 4.5	52.4 ± 4.6	54.6 ± 4.1	2.2

Hypothesis: The percentage who have tried to quit in past 12 months will increase from 2007 to 2010

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

Perceptions of Quitting Assistance

With one exception, there is almost no change in the perceptions of quitting assistance between 2007 and 2010 among current smokers who have tried to quit in the past 12 months. In 2010, over half (56.1±5.8 percent) of current smokers who have tried to quit smoking in the past year believe that they could quit smoking without stop-smoking medications, which is about the same as was reported in 2007 (55.0±6.5). As shown in Table 4-10, there is very little change in the percentage that believe that stop-smoking medications are too expensive (74.0±5.4 in 2010 compared to 72.3±5.9 in 2007), that they don't know enough about stop-smoking

medications (42.8±5.8 in 2010 compared to 42.9±6.2 in 2007) and that stop-smoking medications are hard to get (20.6±5.0 in 2010 compared to 14.9±4.1 in 2007).

Table 4-10. Perceptions of stop-smoking medications, among current smokers who have tried to quit in the past 12 months, from 2007 to 2010

Perceptions	2007	2010	Change from 2007 to 2010
	%	%	%
Think they could quit without stop-smoking medications	**55.0** ± 6.5	**56.1** ± 5.8	**1.2**
Believe that stop-smoking medications are too expensive	**72.3** ± 5.9	**74.0** ± 5.4	**1.7**
Believe that they don't know enough about stop-smoking medications	**42.9** ± 6.2	**42.8** ± 5.8	**-0.1**
Believe that stop-smoking medications might harm health	**30.5** ± 6.1	**51.7** ± 6.2	**21.2**
Believe that stop-smoking medications are hard to get	**14.9** ± 4.1	**20.6** ± 5.0	**5.7**

Hypothesis: The percentage agreeing with each statement will decline from 2007 and 2010.

Source: Minnesota Adult Tobacco Surveys, 2007 and 2010

There was a large increase in the perception that stop-smoking medications might harm health between 2007 and 2010. In 2007, 30.5±6.1 percent reported believing that stop-smoking medications might harm health, while in 2010, 51.7±6.2 percent reported believing that stop-smoking medications might harm health. Since the hypothesis for the one-tailed test for the change in the perception that stop-smoking medications might harm health was negative, this large positive change does not test as statistically significant. However, this change is statistically significant if a two-tailed test is implemented.

This increase in the perception of harm is likely related to press stories generated by the July 2009 notification from the FDA to the manufacturers of varenicline and bupropion to add warning labels to the product packaging highlighting the possible risk of serious neuropsychiatric symptoms in patients using the products.

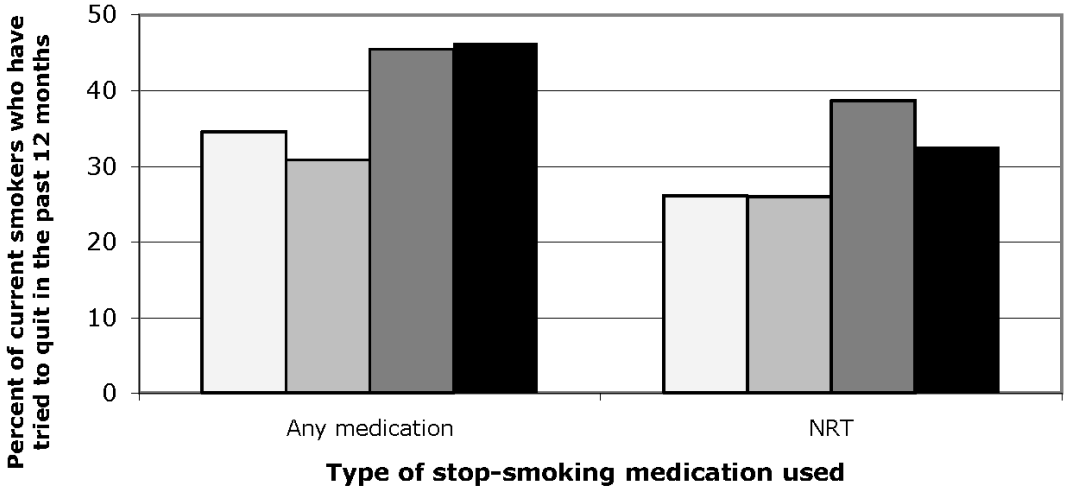
Use of Assistance

In 2010, 49.2±5.6 percent of current smokers with a quit attempt in the previous 12 months used some form of assistance in their most recent quit attempt, compared to 48.5±6.2 in 2007. This slight change is not statistically significant.

Stop-smoking Medications and Behavioral Counseling. In 2010, 46.3±5.6 percent of current smokers with a quit attempt in the previous 12 months used some kind of stop-smoking medication in their most recent quit attempt (Figure 4-3). This is not a statistically significant change from 2007 (45.5±6.7 percent).

In 2010, 32.6± 5.4 percent of current smokers with a quit attempt in the previous 12 months used some form of nicotine replacement therapy (Figure 4-3). This is not a statistically significant change from 2007 (38.7±5.8 percent).

Figure 4-3. 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 2010



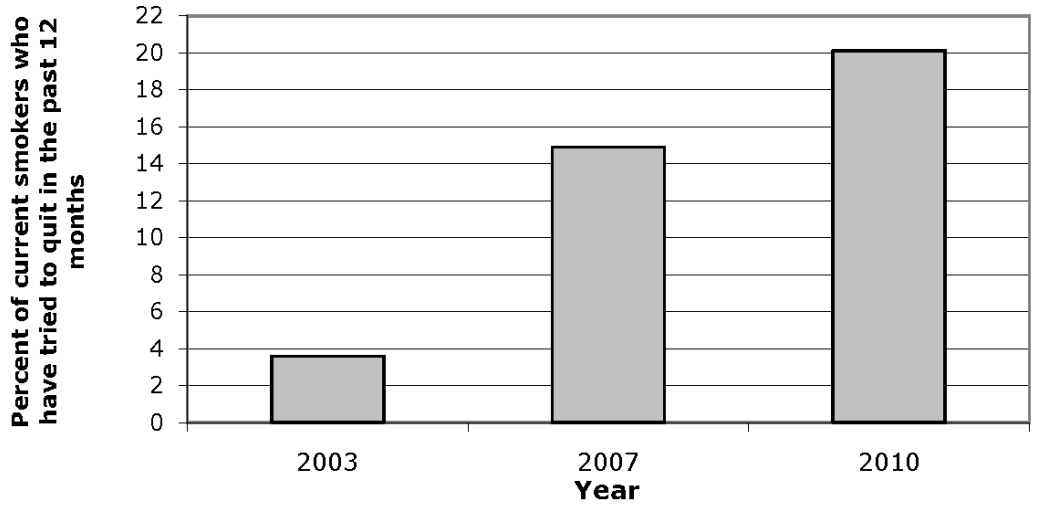
Year	Any medication	NRT
1999	34.6 ± 6.7	26.2 ± 6.0
2003	30.9 ± 4.8	26.0 ± 4.4
2007	45.5 ± 6.1	38.7 ± 5.8
2010	46.3 ± 5.6	32.6 ± 5.4
Change from 2007 to 2010	0.8	- 6.1

Hypothesis: The percentages who used any medication or used NRT will increase from 2007 to 2010

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

In 2010, 20.1±4.6 percent of current smokers with a quit attempt in the past year used some kind of behavioral smoking cessation counseling (such as a class or program) in their last attempt (Figure 4-4). This increase of 5.2 percentage points from 2007 is statistically significant.

Figure 4-4. Use of behavioral therapy by current smokers who have tried to quit in the past 12 months, from 2003 to 2010



				Change from 2007 to 2010
	2003	2007	2010	
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	5.2*

*Statistically significant at the 95% confidence level

Hypothesis: The percentage who used behavioral therapy will increase from 2007 to 2010

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

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, and referred to an appropriate cessation counseling program. Section 4.3.1 examines the Minnesota smokers who see health care providers and their demographic characteristics. Section 4.3.2 describes how well

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 type of health care provider about your own health?

Visits to Any Provider by All Minnesotans

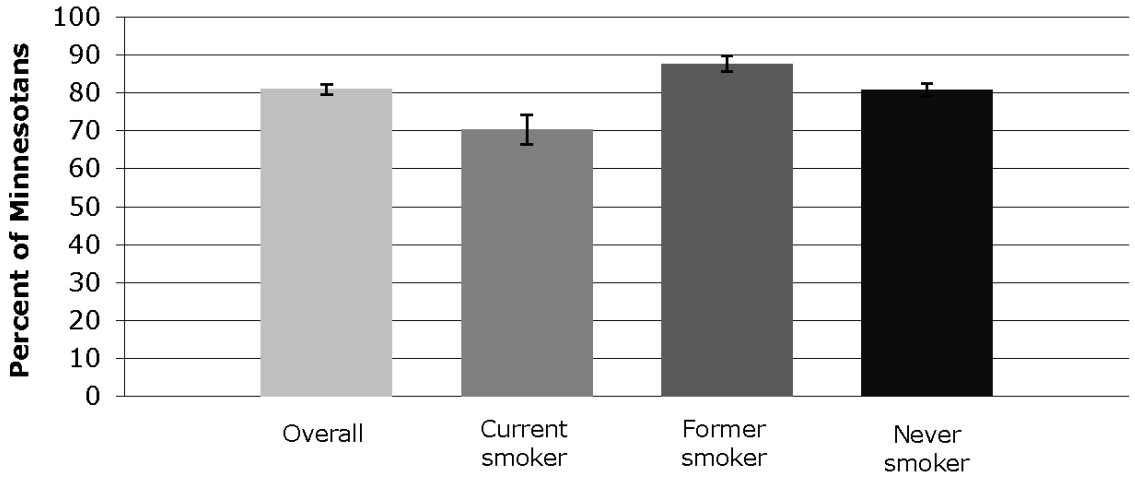
Visit to Any Provider. Over 80 percent (80.9±1.3 percent) of all Minnesotans saw a health care provider in the last 12 months, while 70.0±3.9 percent of smokers saw a provider (Figure 4-5). Provider interventions offer the opportunity to give most smokers support for quitting from a health care provider. In comparison, 80.7±1.7 percent of never smokers and 87.6±2.0 percent of former smokers saw a provider in the last 12 months. These differences are all statistically significant.

Visits to Providers by Smokers

The statistics about Minnesotans 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, 70.0±3.9 percent of current smokers—about 438,000 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.

Figure 4-5. Minnesotans who visited a health care provider in the last 12 months, by smoking status



Smoking status	Visited one or more providers
Overall	80.9 ± 1.3
Current smokers	70.0 ± 3.9
Former smokers	87.6 ± 2.0
Never smokers	80.7 ± 1.7

Source: Minnesota Adult Tobacco Survey, 2010

Table 4-11 presents the percentage of each demographic group of smokers who saw a provider.

The likelihood that a smoker visited any health care provider in the past year increases steadily with the age of the smoker, ranging from 57.6±10.5 percent of the youngest age group to 87.7±6.3 percent of the oldest. There are no statistically significant differences between each successive pair of age groups, but otherwise all differences are significant.

Female smokers saw a healthcare provider at a considerably higher rate than male smokers, 80.8±4.8 percent as compared to 61.0±5.6 percent, a statistically significant difference.

Table 4-11. Health care provider visits in the last 12 months among current smokers, by selected demographic characteristics

Characteristics	Any provider
	%
Overall	**70.0** ± 3.9
Age	
18 to 24	**57.6** ± 10.5
25 to 44	**66.8** ± 6.4
45 to 64	**78.2** ± 5.4
65 or older	**87.7** ± 6.3
Gender	
Female	**80.8** ± 4.8
Male	**61.0** ± 5.6
Education	
Less than high school	**65.0** ± 13.7
High school graduate/GED	**61.2** ± 7.0
Some college or technical school	**77.1** ± 4.9
College graduate or beyond	**78.4** ± 9.6
Household income	
$35,000 or less	**68.8** ± 6.0
$35,001 to $50,000	**77.2** ± 8.6
$50,001 to $75,000	**66.9** ± 9.6
$75,001 or more	**75.7** ± 8.6

Source: Minnesota Adult Tobacco Survey, 2010

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 77-78 percent compared to 61-65 percent. The percentages for the two higher educational levels are significantly different from smokers with only a high school degree.

There are no significant differences by household income level.

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

The MATS 2010 questions capture the outcomes of the three-step health care provider tobacco treatment model (Ask, Advise and Refer). The rest of this section examines implementation of this model.

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 any doctor, nurse, dentist, pharmacist, or any other kind of health professional ask if you smoke?

Advise

- During the past 12 months, did any doctor, nurse, dentist, pharmacist, or any other kind of health professional advise you to quit smoking?

Refer

- In the past 12 months, did any of these health professionals you saw … recommend any product or prescription for a medication to help you quit smoking?
- In the past 12 months, did any of these health professionals you saw suggest that you seek help to quit smoking using a quit smoking program, such as a helpline, a class or group or an online website or program?

If Yes to the above:

- In the past 12 months, did any of these health professionals you saw help you access that quit smoking program?

Implementation of Ask, Advise and Refer Model in Minnesota

The next sections look at the extent to which Minnesota 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. In 2010, 80.2±1.2 percent of Minnesotans who saw a health care provider reported being asked if they smoke. 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 4-12. 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.

Getting the Ask, Advise and Refer Model from Any Provider. Among smokers who saw any provider in the last 12 months, 94.4±2.1 percent of them reported being asked if they smoke and 71.8±4.3 percent were advised not to smoke. Fewer than half (43.9±4.8 percent) of current smokers, however, received a referral for assistance to quit smoking.

In 2010, 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 refer suggests that more providers need to implement this portion of the guideline more 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 seem to have received referrals the least of all the age groups (32.7±12.3 percent), and the 45-64-year-olds seem to have received referrals at the highest rate (50.4±7.2 percent); while these are significantly different from each other, neither is significantly different from the other two age groups. There are no statistically significant differences by gender, education or income.

Table 4-12. 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	94.4 ± 2.1	71.8 ± 4.3	43.9 ± 4.8
Age			
18 to 24	95.2 ± 5.3	72.4 ± 12.5	32.7 ± 12.3
25 to 44	95.5 ± 3.3	71.8 ± 7.3	42.9 ± 8.1
45 to 64	93.1 ± 3.7	72.6 ± 6.4	50.4 ± 7.2
65 or older	92.6 ± 6.4	66.4 ± 11.5	38.6 ± 12.1
Gender			
Female	96.3 ± 2.3	77.5 ± 5.6	49.3 ± 6.7
Male	92.2 ± 3.7	65.6 ± 6.6	38.0 ± 6.8
Education			
Less than high school	90.6 ± 10.5	58.0 ± 16.7	34.7 ± 17.0
High school graduate/GED	97.1 ± 2.4	79.4 ± 7.3	47.5 ± 8.9
Some college or technical school	93.5 ± 3.5	70.9 ± 6.3	44.2 ± 6.8
College graduate or beyond	92.5 ± 5.5	63.4 ± 10.7	37.5 ± 10.4
Household income			
$35,000 or less	96.1 ± 2.8	73.3 ± 6.6	43.0 ± 7.5
$35,001 to $50,000	93.4 ± 5.8	61.5 ± 12.7	38.0 ± 11.6
$50,001 to $75,000	95.8 ± 3.8	75.4 ± 9.6	45.5 ± 11.5
$75,001 or more	92.9 ± 5.8	72.1 ± 9.1	44.6 ± 10.0

Source: Minnesota Adult Tobacco Survey, 2010

4.3.3 Forms of Referral Received by Smokers from Providers

As noted, MATS identified three ways that providers could refer their patients who smoke to assistance with quitting: recommending stop-smoking medications, recommending behavioral counseling and actually providing assistance in gaining access to a behavioral counseling program, such as a stop-smoking telephone quitline.

Table 4-13 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 4-12 and is included here for convenient reference. A provider may furnish more than one form of referral.

Table 4-13. 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	**43.9** ± 4.8
Recommended medication	**37.5** ± 4.7
Suggested quit smoking program	**24.8** ± 4.2
Helped access quit smoking program	**10.1** ± 2.6

Source: Minnesota Adult Tobacco Survey, 2010

Overall, 37.5±4.7 percent of smokers who saw a provider received a recommendation for stop-smoking medication from a provider in the last 12 months. Nearly one quarter (24.8±4.2 percent) received a recommendation for a quit-smoking program; and 10 percent (10.1±2.6 percent) got help accessing such a program.

4.3.4 Assistance from Health Care Providers, 2007 to 2010

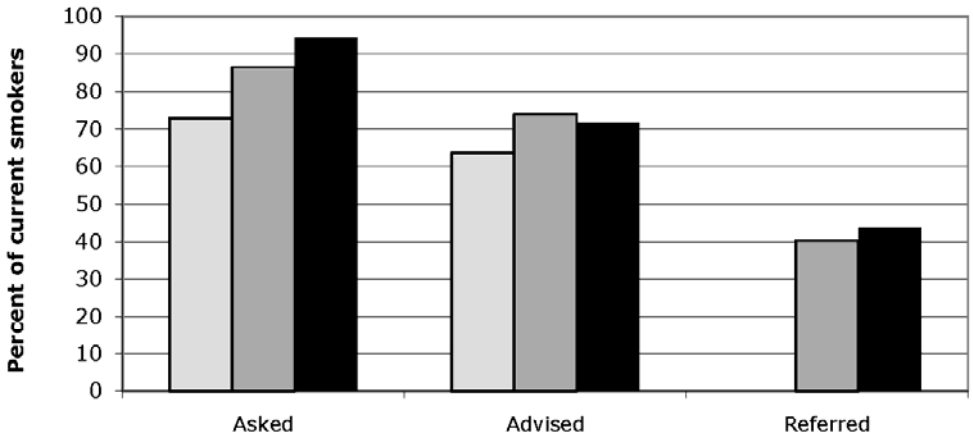
Between 2007 and 2010, the percentage of Minnesotans who visited a health care provider decreased by 8.3 percentage points, from 89.1±1.3 percent in 2007 to 80.9±1.3 percent in 2010. This difference is not statistically significant using a one-tailed test, because the hypothesis was that the percentage of Minnesotans who visited a health care provider would have increased. However, when a two-tailed test is implemented, this result is statistically significant. Similarly, between 2007 and 2010, the percentage of smokers who visited a health care provider decreased by 11.7 percentage points, from 81.7±3.7 percent to 70.0±3.9 percent. This is a statistically significant decrease. There was a statistically significant increase of 10.8 percentage points in the percentage of Minnesotans who were asked by health care providers if they smoke (69.4±1.5 percent in 2007 to 80.2±1.2 percent in 2010).

Figure 4-6 shows the change over time in the extent to which Minnesota smokers experienced the Ask, Advise and Refer model. As in the comparable section for

MATS 2007, the percentages of smokers are based on smokers who saw a health care provider in 2010. The results show:

- A statistically significant 7.8 percentage point increase in the percentage of current smokers who reported being asked if they smoke, from 86.5±3.3 percent in 2007 to 94.4±2.1 percent in 2010.
- Essentially no change in the percentage of current smokers who were advised not to smoke, which was 74.0±4.3 percent in 2007 and 71.8±4.3 percent in 2010.
- No statistically significant change in the percentage of current smokers who received any form of referral to stop smoking medications or programs, which was 40.3±5.1 in 2007 and 43.9±4.8 percent in 2010.

Figure 4-6. Current smokers who were asked, advised, and referred† by health care providers in the last 12 months, from 2003 to 2010



Year	Asked	Advised	Refered
2003	72.9 ± 4.6	63.6 ± 4.7	NA
2007	86.5 ± 3.3	74.0 ± 4.3	40.3 ± 5.1
2010	94.4 ± 2.1	71.8 ± 4.3	43.9 ± 4.8
Change from 2007 to 2010	7.8*	- 2.2	3.7

† Referred was not determined in 2003

*Statistically significant at the 95% confidence level

Hypothesis: The percentages who were asked, advised, and referred will each increase from 2007 to 2010

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

4.4 Smoke-free Policies and Quitting

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

4.4.1 Workplace Smoke-free Policies and Quitting

In 2007, Minnesota passed and implemented a comprehensive smoke-free law that covers indoor public places and workplaces, including bars and restaurants. The following sections are based on the survey respondent's self-reported answers to questions about workplace smoke-free policies in 2010.

Workplace Smoke-free Policies

MATS collects information about the smoking policies at Minnesotans' workplaces. All analyses of workplace policies are limited to Minnesotans who are employed.

Survey Questions

- Which of the following best describes your place of work's official smoking policy for work areas? Smoking is…not allowed in any work areas, allowed in some work areas, allowed in all work areas, or there is no official smoking policy?
- Which of the following best describes your place of work's official smoking policy for indoor public or common areas, such as lobbies, rest rooms and lunchrooms? Smoking is…not allowed in any common areas, allowed in some common areas, allowed in all common areas, or there is no official smoking policy?
- At your workplace, is smoking allowed anywhere on the property outside the building?

MATS defines a smoke-free workplace by a combination of the first two questions. If the responses to both questions are that smoking is not allowed, this is construed to mean that smoking is not allowed in most areas.

The definition excludes people who work in their own homes from analyses of workplace smoking policies. Working at home is determined by the following question:

- What best describes where you work for money? Would you say it is a classroom, a hospital, an office, your home, other people's homes, a plant or factory, a store or warehouse, a restaurant that does not serve alcohol, a restaurant that serves alcohol, a bar, a vehicle, or some other setting?

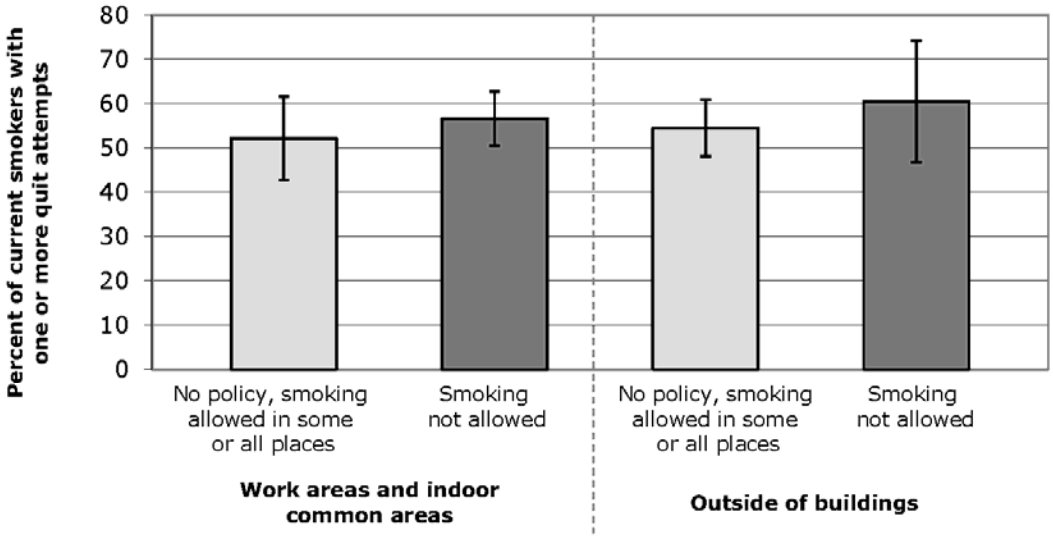
The discussion below includes all employed Minnesotans except for those who work in their own homes.

Over three-quarters of Minnesotans (80.7±1.6 percent) who are employed say that smoking is not allowed in their work area or indoor common areas. Among current smokers, 70.8±4.6 percent say that smoking is not allowed, while 81.3±3.1 percent of former smokers and 83.3±2.0 of never smokers report that smoking is not allowed.

Among smokers who work where smoking is allowed in neither work areas nor indoor common areas, 56.6±6.1 percent have tried to quit in the past year (Figure 4-7). In comparison, among smokers who work where smoking is allowed at some times or in some places in work areas or indoor common areas, 52.2±9.4 percent have tried to quit in the past year. This difference is not statistically significant.

Among smokers who work where smoking is not allowed outside the buildings, 60.5±13.7 percent have tried to quit smoking in the past year compared with 54.5±6.4 percent of smokers who have tried to quit smoking in the past 12 months among those who work where smoking is allowed outside the buildings (Figure 4-7). This difference is not statistically significant.

Figure 4-7. Current smokers with one or more quit attempts in the past 12 months, by various workplace smoking policies



	Work areas and indoor common areas		Outside of buildings	
	No policy, smoking allowed in some or all places	Smoking not allowed	No policy, smoking allowed in some or all places	Smoking not allowed
Percent of current smokers with one or more quit attempts	52.2 ± 9.4	56.6 ± 6.1	54.5 ± 6.4	60.5 ± 13.7

Source: Minnesota Adult Tobacco Survey, 2010

4.4.2 Home Smoke-free Rules and Quitting

Home Smoke-free Rules

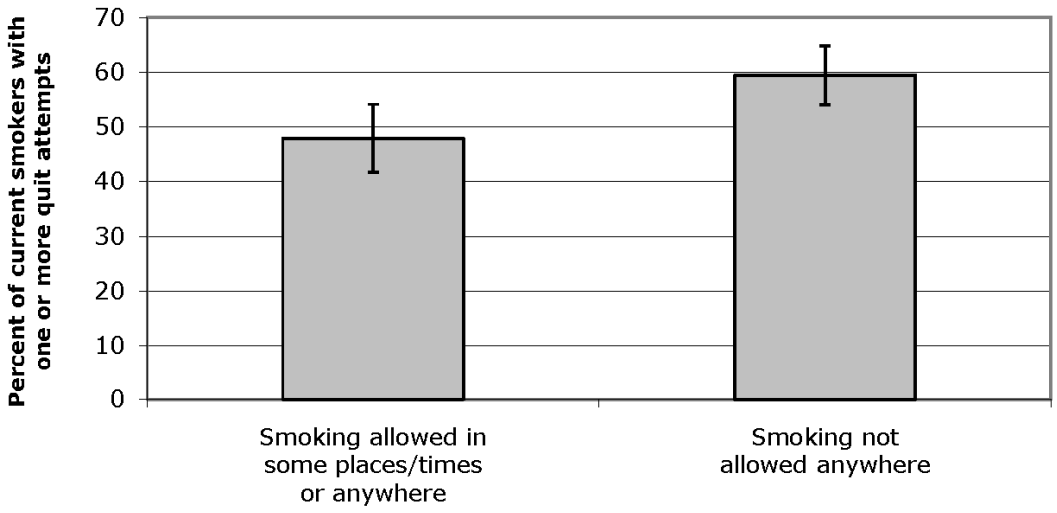
Survey Question

- 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?

Over 85 percent (87.2±1.0 percent) of Minnesotans live in homes where smoking is not allowed anywhere. Not unexpectedly, never smokers (93.9±1.1 percent) are the most likely to live in homes with smoke-free policies, followed by former smokers (90.9±1.5 percent) and current smokers (58.1±4.0 percent). These differences among smoking status groups are statistically significant. Notably, half of all smokers live in homes where smoking is not allowed.

About 60 percent (59.4±5.4 percent) of smokers with smoke-free policies in their home tried to quit smoking in the past year, compared with 47.9±6.2 percent of those who do not have smoke-free policies at home (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 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	47.9 ± 6.2	59.4 ± 5.4

Source: Minnesota Adult Tobacco Survey, 2010

4.4.3 Perceived Effect of Smoke-free Policies on Quitting Attitudes and Behaviors

Perceived Effect of Smoking Restrictions

Survey Questions

- What effects, if any, {did/do} smoking restrictions at work, home, restaurants, bars, or elsewhere have on your smoking? Would you say smoking restrictions…

  {Helped/Help} you think about quitting?

  {Helped/Help} you to cut down on cigarettes?

  {Helped/Help} you make a quit attempt?

  {Helped/Help} you maintain a quit?

The past-tense wording was used with former smokers, and the present tense wording was used with current smokers.

The self-reported effect of smoking restrictions is summarized in Table 4-14. Since educational, outreach and legislative efforts to promote smoke-free policies are somewhat recent, MATS uses former smokers who have quit in the past five years to approximate the group of former smokers likely to have been affected. Current and former smokers are combined for this analysis to present a complete picture of the effect of the policy on people who were smoking during the period when such policies were in effect.

It appears that current smokers and former smokers who have quit in the past five years are encouraged to think about quitting or cutting down by public and private policies that restrict secondhand smoke exposure. Over 40 percent (41.5±3.4 percent) of current smokers and former smokers who have quit in the past five years say that smoke-free policies have made them think about quitting. In addition, 62.4±3.3 percent of current smokers say that smoke-free policies have made them cut down on cigarettes, and 48.8±6.1 percent of former smokers who have quit in the past five years say that smoke-free policies made them cut down before quitting.

Table 4-14. Smoking-related reactions to restrictions on smoking (at home, at work, in restaurants and bars or elsewhere) among current smokers and former smokers (who quit within the past five years)

Smoking status	Reactions			
	Thought about quitting	Cut down on cigarettes	Made a quit attempt	Maintained a quit attempt
	%	%	%	%
Overall	**41.5** ± 3.4	**62.4** ± 3.3	**34.0** ± 3.3	**30.9** ± 3.2
Current Smokers	**41.9** ± 4.1	**68.2** ± 3.8	**32.2** ± 3.9	**22.4** ± 3.5
Former Smokers	**40.5** ± 6.0	**48.8** ± 6.1	**38.4** ± 5.9	**51.4** ± 6.1

Source: Minnesota Adult Tobacco Survey, 2010

Current smokers and former smokers who have quit in the past five years also seem more likely to try to quit or maintain a quit when smoking is restricted. About one-third (34.0±3.3) percent of this group said that restrictions on smoking helped them make a quit attempt. There are no statistically significant differences between current and former smokers.

Combined, 30.9±3.2 percent of current smokers and former smokers who have quit in the past five years said that restrictions on smoking helped them maintain a quit. Taken separately, 22.4±3.5 percent of the current smokers said that such restrictions helped them maintain a quit (although they must have relapsed since they are now current smokers), while 51.4±6.1 percent of the former smokers did so.

4.5 Raising the Cost of Tobacco Products and Quitting

For MATS 2010, current smokers and former smokers who last smoked regularly within the past year are combined to examine the full response to the nationwide 62-cent tax increase that went into effect in 2009.

Effect of Cost Increase on Quitting and Locations of Cigarette Purchase

Survey Questions

- In March of 2009, a 62 cent cigarette tax increase took effect nation-wide. 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?

Minnesota's current smokers and former smokers who were still smoking at the time of the increase did respond to it. Overall, 51.0±3.8 percent of current smokers and former smokers who have quit in the past year thought about quitting as a result of the increase, 41.4±3.8 percent cut down on cigarettes and 38.4±3.8 percent attempted to quit as a result of the cost increase (Table 4-15). There were no statistically significant differences in thinking about quitting, cutting down or attempting to quit between current and former smokers.

Table 4-15. Smoking-related reactions to the 2009 nationwide 62-cent tobacco tax increase among current and former smokers (who quit within the last two years), 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	**51.0** ± 3.8	**41.4** ± 3.8	**38.4** ± 3.8	**14.8** ± 2.8
Age				
18 to 24	**49.5** ± 9.9	**41.8** ± 9.9	**44.8** ± 9.9	**13.2** ± 6.6
25 to 44	**52.9** ± 6.2	**37.8** ± 6.2	**42.9** ± 6.2	**16.1** ± 4.8
45 to 64	**49.9** ± 6.1	**45.5** ± 6.0	**31.1** ± 5.6	**14.1** ± 4.2
65 or older	**48.5** ± 10.3	**44.3** ± 10.3	**25.4** ± 8.4	**14.2** ± 7.0
Gender				
Female	**55.8** ± 5.5	**46.9** ± 5.6	**42.7** ± 5.7	**17.5** ± 4.7
Male	**47.1** ± 5.3	**36.7** ± 5.1	**34.8** ± 5.1	**12.6** ± 3.3
Education				
Less than high school	**56.2** ± 13.3	**48.5** ± 13.4	**44.2** ± 13.6	**19.8** ± 10.4
High school graduate/GED	**52.1** ± 6.8	**45.7** ± 6.8	**39.6** ± 6.8	**15.2** ± 5.1
Some college or technical school	**51.0** ± 5.6	**38.3** ± 5.4	**36.7** ± 5.5	**11.5** ± 3.6
College graduate or beyond	**40.3** ± 9.2	**29.7** ± 8.8	**35.8** ± 9.2	**22.6** ± 8.7
Household income				
$35,000 or less	**55.3** ± 6.0	**48.9** ± 6.1	**45.5** ± 6.1	**16.4** ± 4.4
$35,001 to $50,000	**53.2** ± 10.1	**36.3** ± 9.9	**35.5** ± 10.1	**15.8** ± 8.2
$50,001 to $75,000	**50.6** ± 9.1	**38.1** ± 9.0	**40.4** ± 9.2	**12.3** ± 6.2
$75,001 or more	**42.2** ± 8.6	**30.1** ± 7.9	**26.6** ± 7.5	**8.9** ± 4.5
Smoking Status				
Current Smokers	**51.1** ± 4.1	**43.2** ± 4.1	**38.0** ± 4.1	**11.0** ± 2.7
Former Smokers	**50.6** ± 10.5	**28.8** ± 9.5	**41.1** ± 10.6	**41.1** ± 10.3

Source: Minnesota Adult Tobacco Survey, 2010

Nearly 15 percent (14.8±2.8 percent) of 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 11.0±2.7 percent of current smokers saying they maintained a quit attempt, and 41.1±10.3 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.

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 2010

- In the 12 months preceding MATS 2010, 18.7±1.3 percent of Minnesotans smoked cigarettes; these past-year smokers combine current smokers and former smokers who last smoked regularly less than a year ago, and total about 717,000 people.

- Among all former smokers, 18.6±2.4 percent last smoked regularly between one and five years ago and 71.5±2.7 percent last smoked regularly more than 5 years ago.

- In the past year, 54.6±4.1 percent of 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. This equates to approximately 340,000 current smokers who tried to quit in the past 12 months.

- Among current smokers with a quit attempt in the past 12 months, nearly 70 percent made more than one attempt: 25.8±5.2 percent made two attempts, 19.5±4.8 percent made three attempts, and 23.8±4.8 percent made four or more attempts.

- In terms of their readiness to quit smoking, 41.3±4.3 percent of current smokers in Minnesota are in the pre-contemplation stage of change, while 35.7±4.3 percent are in the contemplation stage and 23.1±3.6 percent are in the preparation stage.

- Among current smokers, 77.2±3.5 percent are aware of free assistance to quit smoking. Similar high levels of awareness (80.32±4.9 percent) are reported among former smokers who have quit in the past five years.

- Over half (56.1±5.8 percent) of current smokers who have tried to quit smoking in the past year believe that they could quit smoking without stop-smoking medications.

- Other perceptions of stop-smoking medications among current smokers who have tried to quit in the past year include: 74.0±5.4 percent believe that stop-smoking medications are too expensive; 42.8±5.8 percent believe that they do not know enough about stop-smoking medications to use them properly; 51.7±6.2 percent believe that stop-smoking medications might harm their health; 20.6±5.0 percent believe that stop-smoking medications are too hard to get.

- Nearly half (49.2±5.6 percent) of current smokers with a quit attempt in the past 12 months used some form of quitting assistance.

- Nearly half (46.3±5.6 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 (Table 4-6). There are significant differences by age. Smokers in the 45-64-year-old age group (58.7±9.1 percent) were more likely than smokers in the 18-24-year-old age group (28.0±11.7 percent) to use quit medications.

- Over 30 percent (32.6±5.4 percent) of current smokers with a quit attempt in the past 12 months used some form of nicotine replacement therapy.

- Overall, 20.1±4.6 percent of current smokers with a quit attempt in the past year used some kind of behavioral quit-smoking counseling (such as a class or program) in their last attempt. The most common form of behavioral counseling was one-on-one counseling from a health professional, used by 12.0±3.6 percent of current smokers who tried to quit in the past 12 months.

- Over 65 percent (67.4±4.0 percent) of current smokers say they would be willing to use some form of assistance if cost were not an issue.

- In 2010, 80.2±1.2 percent of Minnesotans who saw a health care provider were asked if they smoke.

- Among smokers who saw any provider in the last 12 months, 94.4±2.1 percent of them were asked if they smoke and 71.8±4.3 percent were advised not to smoke.

- Among smokers who saw any provider in the last 12 months, 94.4±2.1 percent of them were asked if they smoke and 71.8±4.3 percent were advised not to smoke. Fewer than half (43.9±4.8 percent) of current smokers, however, received a referral for assistance to quit smoking.

- Overall, 37.5±4.7 percent of smokers who saw a provider received a recommendation for stop-smoking medication from a provider in the last 12 months. Nearly one quarter (24.8±4.2 percent) received a recommendation for a quit-smoking program; and one tenth (10.1±2.6 percent) got help accessing such a program.

- Among smokers who work where smoking is allowed in neither work areas nor indoor common areas, 56.9±5.9 percent have tried to quit in the past year.

- Among smokers who work where smoking is not allowed outside the buildings, 60.5±13.7 percent have tried to quit smoking in the past year.

- Over 85 percent (87.2±1.0 percent) of Minnesotans live in homes where smoking is not allowed anywhere. Not unexpectedly, never smokers (93.9±1.1 percent) are the most likely to live in homes with smoke-free policies, followed by former smokers (90.9±1.5 percent) and current smokers (58.1±4.0 percent). These differences among smoking status groups are statistically significant.

- About 60 percent (59.4±5.4 percent) of smokers with smoke-free policies in their home tried to quit smoking in the past year, compared with 47.9±6.2 percent of those who do not have smoke-free policies at home (Figure 4-7). This association is statistically significant ($p<0.05$).

- Over 40 percent (41.5±3.4 percent) of current smokers and former smokers who have quit in the past five years say that smoke-free policies helped them think about quitting.

- 62.4±3.3 percent of current smokers say that smoke-free policies helped them cut down on cigarettes, and 48.8±6.1 percent of former smokers who have quit in the past five years say that smoke-free policies helped them cut down before quitting.

- Overall, 51.04±3.8 percent of current smokers and former smokers who have quit in the past year thought about quitting as a result of the nationwide 62-cent tax increase that went into effect in 2009, 41.4±3.8 percent cut down on cigarettes and 38.4±3.8 percent attempted to quit as a result of the cost increase.

Key Quitting Behavior Findings for 2007 to 2010

- Between 2007 and 2010, the percentage of past-year smokers who successfully quit increased from 9.8±2.1 percent to 12.8±2.5 percent. This is a statistically significant change.

- There was a large increase in the perception that stop-smoking medications might harm health between 2010 and 2007. In 2007, 30.5±6.1 percent reported believing that stop-smoking medications might harm health, while in 2010, 51.7±6.2 percent reported believing that stop-smoking medications might harm health.

- In 2010, 20.1±4.6 percent of current smokers with a quit attempt in the past year used some kind of behavioral smoking cessation counseling (such as a class or program) in their last attempt. This increase of 5.2 percentage points from 2007 is statistically significant.

- There was a 7.8 percentage point statistically significant increase in the percentage of current smokers who reported being asked if they smoke by any healthcare provider, from 86.5±3.3 percent in 2007 to 94.4±2.1 percent in 2010.

5. Secondhand Smoke Exposure among Minnesota Adults

5.1 Introduction

This chapter examines changes in attitudes and social norms regarding the acceptance of secondhand smoke exposure. The MATS 2010 results presented here examine the percentage of Minnesotans protected by smoke-free policies in the community, at workplaces and in the home as of June 2010. This chapter also presents the prevalence of exposure to secondhand smoke among Minnesotans in each of those settings.

5.2 Perceptions that Secondhand Smoke Is Harmful

MATS tracks Minnesotans' changing awareness and understanding of the harmfulness of secondhand smoke. This section examines the perceived harmfulness of secondhand smoke among Minnesotans.

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?

Nearly all Minnesotans agree that secondhand smoke is harmful; 92.3±0.8 percent of adult Minnesotans say that secondhand smoke is very or somewhat harmful to health (Table 5-1).

Table 5-1. Agreement that secondhand smoke is harmful, by selected demographic characteristics and smoking status

Characteristics	Secondhand smoke is very or somewhat harmful
	%
Overall	**92.3** ± 0.8
Age	
18 to 24	**95.0** ± 2.1
25 to 44	**92.2** ± 1.6
45 to 64	**91.9** ± 1.3
65 or older	**91.1** ± 1.6
Gender	
Female	**95.0** ± 0.9
Male	**89.5** ± 1.4
Education	
Less than high school	**83.4** ± 5.0
High school graduate/GED	**90.8** ± 1.8
Some college or technical school	**93.2** ± 1.2
College Graduate or beyond	**95.1** ± 0.9
Household income	
$35,000 or less	**90.7** ± 1.9
$35,001 to $50,000	**91.7** ± 2.4
$50,001 to $75,000	**94.0** ± 1.6
$75,001 or more	**93.6** ± 1.3
Smoking Status (BRFSS)	
Never smokers	**95.2** ± 0.9
Current Smokers	**83.6** ± 2.9
Former Smokers	**91.5** ± 1.5

Source: Minnesota Adult Tobacco Survey, 2010

Even a vast majority of current smokers (83.6±2.9 percent) agree that exposure to secondhand smoke is harmful, although former smokers (91.5±1.5 percent) and never smokers (95.2±0.9 percent) are more likely to hold this view. While all of these differences are statistically significant, it is noteworthy that smokers are not that different from the rest of Minnesotans on a relative basis.

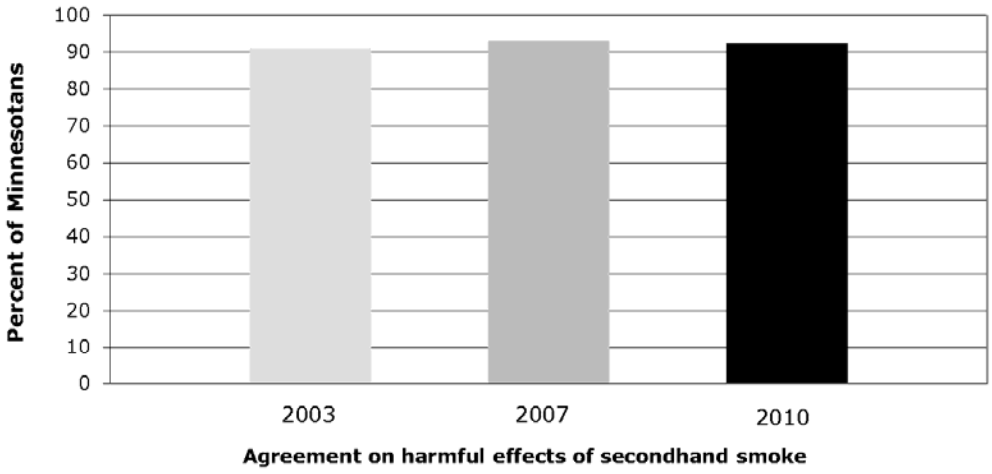
Although there are some statistically significant differences by gender, education, and smoking status, they are relatively small; 83 percent to 95 percent of the members of all subgroups agree that secondhand smoke is harmful. Men (89.5±1.4 percent) are less likely to believe secondhand smoke is harmful than women

(95.0±0.9 percent). The group with the lowest level of educational attainment (83.4±5.0 percent) is less likely than every other educational group (which vary from 90.8 percent to 95.1 percent) to agree that secondhand smoke is harmful. While some of the differences among education and income groups are statistically significant, the actual differences are small.

5.2.1 Perceptions that Secondhand Smoke is Harmful, 2007 to 2010

Between 2007 and 2010, the percentage of Minnesotans who believe that secondhand smoke is very or somewhat harmful decreased slightly from 93.0±0.8 to 92.3±0.8, but this difference is not statistically significant and thus represents a stable finding (Figure 5-1). This stability is noteworthy because the overall percentage is very high, as desired.

Figure 5-1. Agreement that secondhand smoke is harmful, from 2003 to 2010



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

Hypothesis: The percentage who agree that secondhand smoke is harmful will increase from 2007 to 2010

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

5.3 Minnesotans Covered by Smoke-free Policies at Work and at Home

Workplace policies protect a large number of people in settings where Minnesotans spend a lot of time. Voluntary policies in the home or car set rules that protect family members and friends in those settings.

5.3.1 Smoke-free Policies at Work

Smoke-free Policies at Work

MATS collects information about the smoking policies at Minnesotans' workplaces. All analyses of workplace policies are limited to Minnesotans who are employed.

Survey questions

- Which of the following best describes your place of work's official smoking policy for work areas? Smoking is…not allowed in any work areas, allowed in some work areas, allowed in all work areas, or there is no official smoking policy?
- Which of the following best describes your place of work's official smoking policy for indoor public or common areas, such as lobbies, rest rooms and lunchrooms? Smoking is…not allowed in any common areas, allowed in some common areas, allowed in all common areas, or there is no official smoking policy?
- At your workplace, is smoking allowed anywhere on the property outside the building?

MATS defines a smoke-free workplace by a combination of the first two questions. If the responses to both questions are that smoking is not allowed, this is construed to mean that smoking is not allowed in most areas.

Smoke-free Policies at Work (continued)

The definition excludes people who work in their own homes from analyses of workplace smoking policies. Working at home is determined by the following question:

- What best describes where you work for money? Would you say it is a classroom, a hospital, an office, your home, other people's homes, a plant or factory, a store or warehouse, a restaurant that does not serve alcohol, a restaurant that serves alcohol, a bar, a vehicle, or some other setting?

Analysis of workplace policies is conducted separately for those working primarily in an indoor or outdoor setting using the following survey question:

While working at your job, are you indoors most of the time?

Excluding those workers who work in their own homes, over three-quarters of all Minnesotans who are employed (80.7±1.6 percent) say that smoking is not allowed in their work area or indoor common areas (Table 5-2).

Table 5-2. Minnesotans covered by smoke-free policies in work areas and indoor common areas at work, by selected demographic characteristics and smoking status (excluding those who work in their own homes)

Characteristics	Smoking not allowed anywhere in these areas
	%
Overall	**80.7** ± 1.6
Age	
18 to 24	**70.6** ± 5.4
25 to 44	**79.7** ± 2.7
45 to 64	**85.2** ± 2.0
65 or older	**78.6** ± 5.6
Gender	
Female	**90.7** ± 1.7
Male	**72.0** ± 2.5
Education	
Less than high school	**62.8** ± 11.4
High school graduate/GED	**70.7** ± 4.0
Some college or technical school	**79.8** ± 2.5
College graduate or beyond	**91.5** ± 1.6
Household income	
$35,000 or less	**71.6** ± 4.4
$35,001 to $50,000	**77.7** ± 4.4
$50,001 to $75,000	**80.7** ± 3.3
$75,001 or more	**87.5** ± 2.1
Smoking Status (BRFSS)	
Never smokers	**83.3** ± 2.0
Current Smokers	**70.8** ± 4.6
Former Smokers	**81.3** ± 3.1

Source: Minnesota Adult Tobacco Survey, 2010

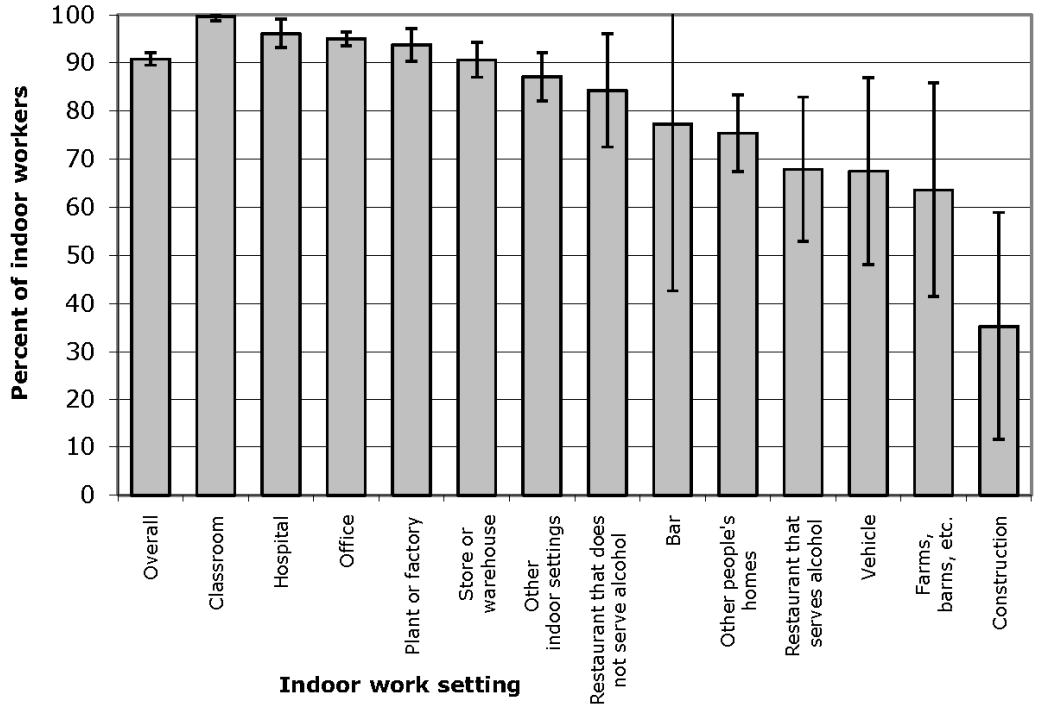
There are statistically significant differences in work area policy coverage in work areas and indoor common areas among age, gender, education, and income groups, and among smoking status groups. Young adults aged 18-24 (70.6±5.4 percent) are less likely to report that these areas are smoke-free than are 25-44-year-olds (79.7±2.7 percent) and 45-64-year-olds (85.2±2.0 percent). Men (72.0±2.5 percent) are less likely to report that these areas are smoke-free than are women (90.7±1.7 percent). People in the lower education groups (62.8±11.4 percent of those with less than a high school degree) are much less likely to report these areas as smoke-free than those in higher education groups (91.5±1.6 percent of those with a college

degree). And those in lower income groups (71.6±4.4 percent of those in the lowest income group) are less likely to do so than those in higher income groups (87.5±2.1 percent of those in the highest income group). The trend for smoke-free policies at work 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. Among current smokers, 70.8±4.6 percent say that smoking is not allowed in these areas at work, while 81.3±3.1 percent of former smokers report that smoking is not allowed, a statistically significant difference.

Indoor Work Settings

Worksite policy coverage further varies by work setting. Among those who work primarily in an indoor setting, 90.8±1.3 percent are covered by a policy prohibiting smoking in their own work areas. The highest coverage of such prohibitions occurs among those who work in classrooms (99.6±08 percent), hospitals (96.1±3.0 percent), or offices (95.0±1.4 percent) (Figure 5-2). The lowest coverage is among those who work in indoor construction (35.2±23.7 percent) or in indoor agricultural settings (63.6±22.2 percent).

Figure 5-2. Minnesotans working in indoor* work settings who are covered by smoke-free policies in work areas, overall and for selected common indoor work settings



	Overall	Classroom	Hospital	Office	Plant or factory	Store or warehouse	Other indoor settings	Restaurant that does not serve alcohol	Bar	Other people's homes	Restaurant that serves alcohol	Vehicle	Farms, barns, etc.	Construction
Percent of indoor workers	90.8 ± 1.3	99.6 ± 0.8	96.1 ± 3.0	95.0 ± 1.4	93.7 ± 3.4	90.6 ± 3.6	87.1 ± 5.0	84.3 ± 11.8	77.3 ± 34.7	75.4 ± 8.0	67.9 ± 15.0	67.5 ± 19.4	63.6 ± 22.2	35.2 ± 23.7

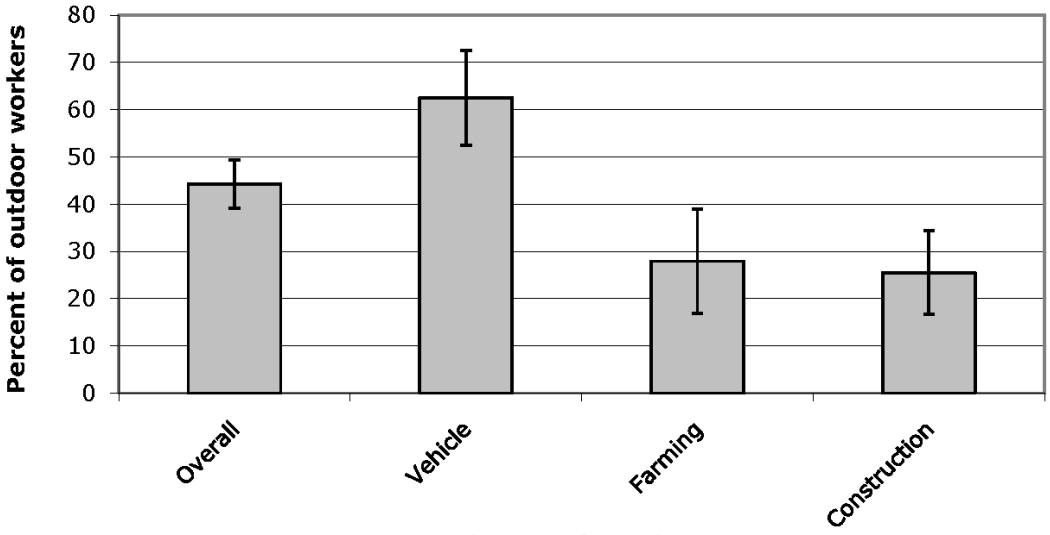
* Indoor setting based on respondents' characterization of their primary work setting as indoors or not.

Source: Minnesota Adult Tobacco Survey, 2010

Outdoor Work Settings

Among those who do not work primarily indoors, work area smoking prohibitions are less common overall, covering 44.2±5.1 percent of such workers (Figure 5-3). Work area smoking prohibitions are most common for those outdoor workers who work in a vehicle (62.5±10.0 percent). Only about a quarter of outdoor workers who work in farming (27.9±11.0 percent) and construction (25.5±8.9 percent) are covered.

Figure 5-3. Minnesotans working in outdoor* work settings who are covered by smoke-free policies in work areas, overall† and for selected common outdoor work settings



	Overall	Vehicle	Farming	Construction
Percent of outdoor workers	44.2 ± 5.1	62.5 ± 10.0	27.9 ± 11.0	25.5 ± 8.9

* Outdoor setting based on respondents' characterization of their primary work setting as indoors or not.

† Overall includes other miscellaneous outdoor settings in addition to those presented in the figure.

Source: Minnesota Adult Tobacco Survey, 2010

5.3.2 Smoke-free Rules at Home

Secondhand smoke policies at home differ from secondhand smoke policies in the community or at work 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 5-3, 87.2±1.0 percent of Minnesotans 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 aged 25-44, 90.2±1.8 percent live in homes where smoking is not allowed. This percentage is significantly higher than for any other age group, including young adults aged 18-24 (83.5±3.9). Those with higher levels of education are more likely to live in homes where smoking is not allowed. Whereas 95.0±0.9 percent of Minnesotans with a college degree have smoke-free policies in their homes, 72.5±5.8 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: 93.5±1.4 percent of those with incomes over $75,000 per year live in a home with such a policy, while 76.8±2.7 percent of those with incomes of $35,000 per year or less live in a home with such a policy. As in the case of workplace policies, 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. Finally, as might be expected, never smokers (93.9±1.1 percent) are the most likely to live in homes with smoke-free policies, followed by former smokers (90.9±1.5 percent) and current smokers

(58.1±4.0 percent). These differences among smoking status groups are statistically significant.

Table 5-3. Minnesotans living in homes with smoke-free policies, by selected demographic characteristics and smoking status

Characteristics	Smoking not allowed anywhere inside home
	%
Overall	**87.2** ± 1.0
Age	
18 to 24	**83.5** ± 3.9
25 to 44	**90.2** ± 1.8
45 to 64	**86.1** ± 1.6
65 or older	**86.2** ± 1.9
Gender	
Female	**87.6** ± 1.4
Male	**86.9** ± 1.5
Education	
Less than high school	**72.5** ± 5.8
High school graduate/GED	**84.4** ± 2.2
Some college or technical school	**86.2** ± 1.8
College graduate or beyond	**95.0** ± 0.9
Household income	
$35,000 or less	**76.8** ± 2.7
$35,001 to $50,000	**87.7** ± 2.7
$50,001 to $75,000	**90.0** ± 2.2
$75,001 or more	**93.5** ± 1.4
Smoking Status (BRFSS)	
Never smokers	**93.9** ± 1.1
Current Smokers	**58.1** ± 4.0
Former Smokers	**90.9** ± 1.5

Source: Minnesota Adult Tobacco Survey, 2010

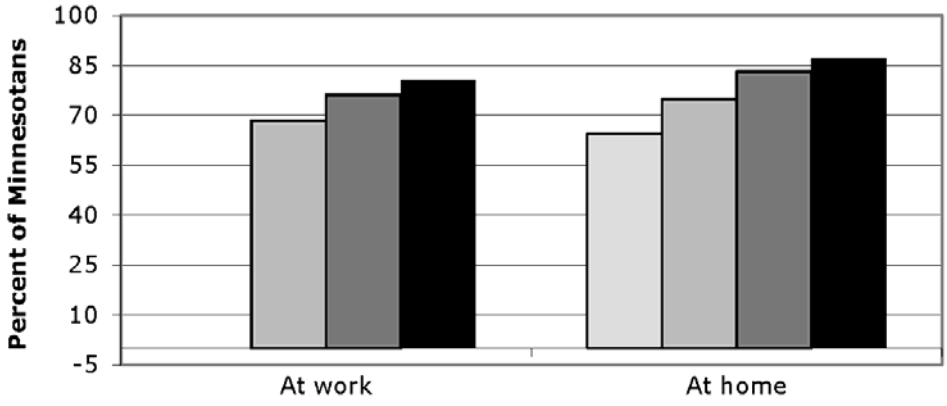
Among people with children aged 17 or younger living in their households, 90.8±1.6 percent live in homes with a rule against smoking in their homes. In contrast, among people who do not have children living in their household, 85.1±1.4 percent have a rule against smoking in their homes (not shown in 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.

5.3.3 Minnesotans Covered by Smoke-free Policies at Work and at Home, 2007 to 2010

In 2010, 80.7±1.6 percent of Minnesotans who work outside their own homes said their workplace had a policy that did not permit smoking in either work areas or indoor common areas. This is a statistically significant increase of 4.6 percentage points over 2007 (Figure 5-4).

Figure 5-4. Minnesotans covered by a smoke-free policy at work† and at home, from 1999 to 2010



Year	At work	At home
1999	NA	64.5 ± 2.0
2003	68.4 ± 2.1	74.8 ± 1.6
2007	76.1 ± 1.9	83.2 ± 1.3
2010	80.7 ± 1.6	87.2 ± 1.0
Change from 2007 to 2010	4.6 *	4.1 *

† Work areas and indoor common areas. Excludes those who work in their own homes. Not determined in 1999.

* Statistically significant at the 95% confidence level

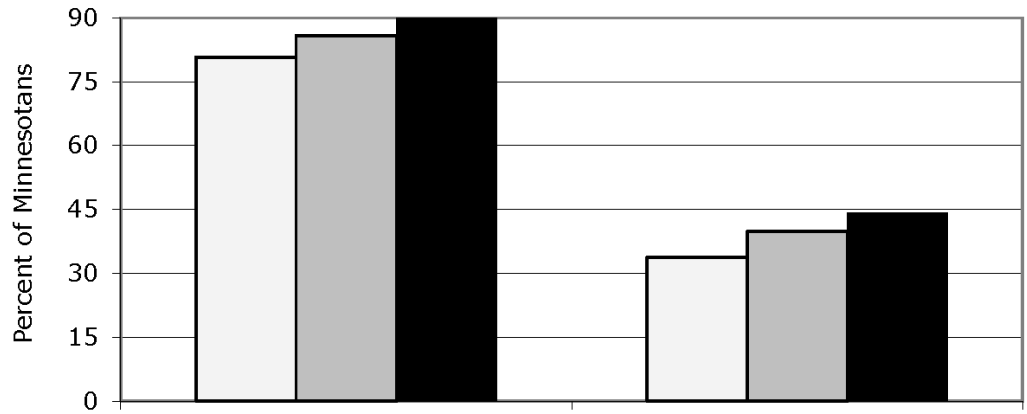
Hypothesis: The percentages who are covered by smoke-free policies at work and at home will each increase from 2007 to 2010

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

As discussed, smoke-free policies are more common for indoor work settings than for outdoor work settings. Among those who work indoors, 90.8±1.3 percent said smoking was not allowed in their work area in 2010, a statistically significant increase of 5.0 percentage points over 2007 (Figure 5-5). Among outdoor workers, the percentage with workplace policies increased by 4.4 percentage points to 44.2±5.1 percent, but this change is not significant.

The percentage of Minnesotans living in homes where smoking is not permitted showed a similar significant increase from 2007 to 2010, rising by 4.1 percentage points from 83.2±1.3 percent to 87.2±1.0 percent.

Figure 5-5. Minnesotans covered by a smoke-free policy in work areas†, by indoor/outdoor work setting, from 2003 to 2010



Year	Working indoors	Working outdoors
2003	80.8 ± 1.7	33.7 ± 5.3
2007	85.8 ± 1.7	39.9 ± 5.4
2010	90.8 ± 1.3	44.2 ± 5.1
Change from 2007 to 2010	5.0 *	4.4

† Excludes those who work in their own homes.

* Statistically significant at the 95% confidence level

Hypothesis: The percentages who are covered by smoke-free policies in their work areas for indoor and outdoor work settings will each increase from 2007 to 2010

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

5.4 Secondhand Smoke Exposure

This section focuses on exposure to secondhand smoke in any setting, and then examines exposure in the community, at work, in a car and at home.

5.4.1 Any Exposure to Secondhand Smoke

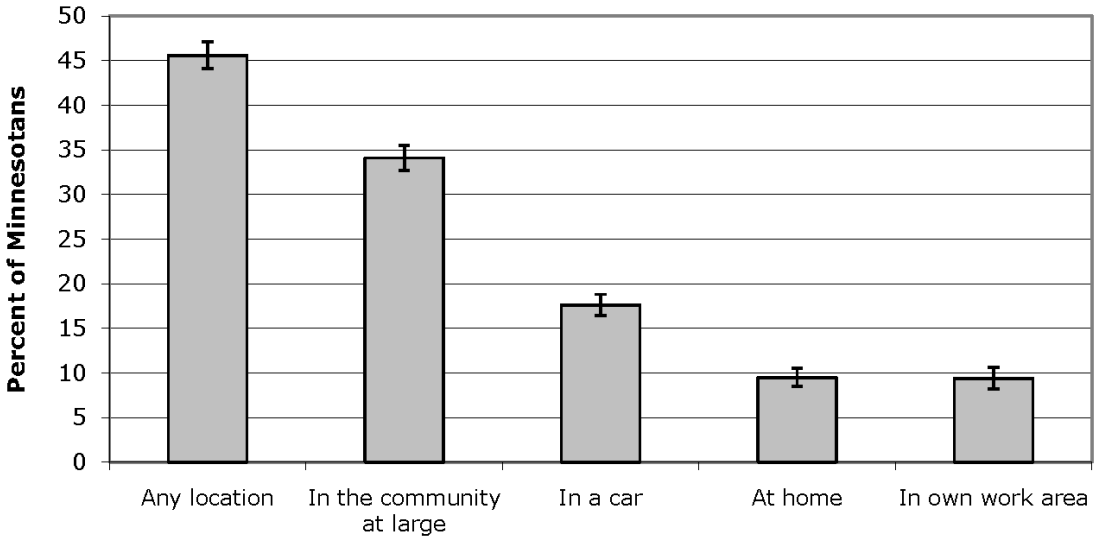
Exposure to Secondhand Smoke in Any Setting

Exposure to secondhand smoke in any setting is exposure in any one or more of the following settings: in the community at large, at work, in a car or at home. For work, it encompasses any type of work setting, including indoor and outdoor settings.

Questions and definitions for each individual exposure setting (community, work, car and home) can be found in the sections below.

Almost half (45.6±1.5 percent) of Minnesotans have been exposed to secondhand smoke in some location in the past seven days (Figure 5-6). There are statistically significant differences in general exposure to secondhand smoke by age, gender, education and smoking status (Table 5-4). Young adults aged 18-24 (73.8±4.2 percent) are more likely to be exposed to secondhand smoke in any location than any other age group. There is a consistent, statistically significant trend for age: as age increases, exposure to secondhand smoke in any location decreases. Similarly, men (50.5±2.2 percent) are more likely to be exposed than women (40.8±2.0 percent), and people who do not have a college degree are significantly more likely to be exposed than people who do. Exposure to secondhand smoke varies by setting. Minnesotans are more likely to be exposed to secondhand smoke in the community at large (34.1±1.4 percent) than in a car (17.6±1.2 percent and less likely to be exposed at home (9.5±1.0 percent) or at work (9.4±1.2 percent) than in either of the first two locations. These differences are statistically significant.

Figure 5-6. Exposure of Minnesotans to secondhand smoke in the past 7 days, in selected settings



	Any location	In the community at large	In a car	At home	In own work area
Percent of Minnesotans	45.6 ± 1.5	34.1 ± 1.4	17.6 ± 1.2	9.5 ± 1.0	9.4 ± 1.2

Source: Minnesota Adult Tobacco Survey, 2010

Table 5-4. Minnesotans exposed to secondhand smoke in the past seven days in various settings, by selected demographic characteristics and smoking status

Characteristics	Setting				
	At any location	At home	In own work area	In a car	In the community at large
	%	%	%	%	%
Overall	**45.6** ± 1.5	**9.5** ± 1.0	**9.4** ± 1.2	**17.6** ± 1.2	**34.1** ± 1.4
Age					
18 to 24	**73.8** ± 4.2	**14.0** ± 3.6	**19.4** ± 4.9	**40.4** ± 4.9	**56.8** ± 4.9
25 to 44	**48.1** ± 2.7	**8.4** ± 1.7	**9.0** ± 1.9	**18.4** ± 2.2	**35.9** ± 2.6
45 to 64	**40.4** ± 2.3	**10.5** ± 1.5	**6.7** ± 1.4	**13.6** ± 1.7	**29.4** ± 2.1
65 or older	**27.4** ± 2.5	**6.1** ± 1.4	**8.5** ± 4.1	**5.5** ± 1.2	**21.3** ± 2.3
Gender					
Female	**40.8** ± 2.0	**9.7** ± 1.3	**4.1** ± 1.2	**15.6** ± 1.6	**29.7** ± 1.9
Male	**50.5** ± 2.2	**9.3** ± 1.4	**14.1** ± 2.0	**19.7** ± 1.9	**38.6** ± 2.2
Education					
Less than high school	**51.6** ± 6.3	**17.5** ± 5.0	**19.3** ± 9.3	**27.1** ± 5.9	**38.0** ± 6.4
High school graduate/GED	**50.4** ± 3.1	**13.0** ± 2.2	**14.1** ± 3.1	**20.9** ± 2.6	**35.1** ± 3.0
Some college or technical school	**51.9** ± 2.5	**10.7** ± 1.6	**10.6** ± 2.0	**22.9** ± 2.3	**37.9** ± 2.5
College graduate or beyond	**31.8** ± 2.1	**2.7** ± 0.7	**3.4** ± 1.1	**5.6** ± 1.1	**27.6** ± 2.0
Household income					
$35,000 or less	**55.7** ± 3.0	**18.7** ± 2.6	**13.2** ± 3.4	**27.3** ± 2.9	**38.9** ± 3.1
$35,001 to $50,000	**49.0** ± 4.0	**8.7** ± 2.3	**11.9** ± 3.5	**19.7** ± 3.3	**35.8** ± 4.0
$50,001 to $75,000	**45.5** ± 3.4	**8.0** ± 2.1	**9.4** ± 2.5	**16.7** ± 2.8	**34.0** ± 3.3
$75,001 or more	**38.0** ± 2.5	**4.6** ± 1.2	**6.5** ± 1.6	**10.1** ± 1.7	**30.5** ± 2.4
Smoking Status (BRFSS)					
Never smokers	**36.8** ± 2.0	**3.5** ± 0.8	**7.5** ± 1.4	**8.6** ± 1.3	**29.5** ± 1.9
Current Smokers	**86.8** ± 2.7	**39.3** ± 4.0	**18.4** ± 3.9	**61.7** ± 3.9	**57.2** ± 4.1
Former Smokers	**39.6** ± 2.7	**4.5** ± 1.2	**8.0** ± 2.2	**10.4** ± 1.8	**30.3** ± 2.5

Note: Smoking reported at home or in work areas could refer to smoker's own smoking, as well as that of others. If report referred only to smoker, this does not represent the person's exposure to secondhand smoke. True secondhand smoke exposure may be somewhat lower than presented for home and work areas.

Source: Minnesota Adult Tobacco Survey, 2010

5.4.2 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 work, car or home.

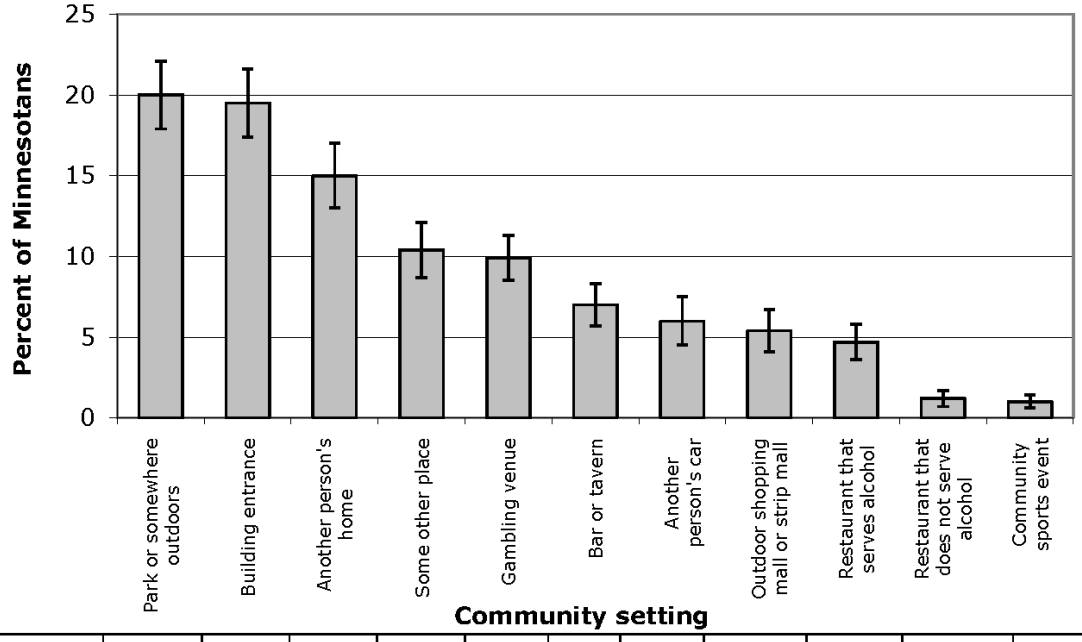
Survey Question

- In Minnesota, in the past seven days, has anyone smoked near you at any place besides your home, workplace or car? If Yes:
- The last time this happened, in Minnesota, where were you? Were you at… a restaurant that does not serve alcohol, a restaurant that serves alcohol, a bar or tavern, a park or somewhere outdoors, a building entrance, an outdoor shopping mall or strip mall, a community sports event, a gambling venue, another person's home, another person's car, or some other place?

Over a third (34.1±1.4 percent) of Minnesotans have been exposed to secondhand smoke in their community in the past seven days (Table 5-4). There are significant differences in community exposure among age and gender groups. Young adults (56.8±4.9 percent), are more likely to be exposed to secondhand smoke in the community than any other age group. Similarly, men (38.6±2.2 percent) are more likely to be exposed to secondhand smoke in the community than women (29.7±1.9 percent).

The most commonly reported location for community exposure to secondhand smoke is a park or somewhere outdoors (20.0±2.1 percent), followed by a building entrance (19.5±2.1 percent) and another person's home (15.0±2.0 percent). (Figure 5-7.)

Figure 5-7. Most recent exposure of Minnesotans to secondhand smoke in community settings, by type of setting



	Park or somewhere outdoors	Building entrance	Another person's home	Some other place	Gambling venue	Bar or tavern	Another person's car	Outdoor shopping mall or strip mall	Restaurant that serves alcohol	Restaurant that does not serve alcohol	Community sports event
Percent of Minnesotans	20 ± 2.1	19.5 ± 2.1	15.0 ± 2.0	10.4 ± 1.7	9.9 ± 1.4	7.0 ± 1.3	6.0 ± 1.5	5.4 ± 1.3	4.7 ± 1.1	1.2 ± 0.5	1.0 ± 0.4

Source: Minnesota Adult Tobacco Survey, 2010

5.4.3 Secondhand Smoke Exposure at Work

Exposure to Secondhand Smoke at Work

MATS collects information about people's exposure to secondhand smoke in a variety of settings, including at work. For exposure at work, MATS also collects information about whether people are indoor or outdoor workers and whether they work at home. All analyses of exposure to secondhand smoke at work are limited to Minnesotans who are employed away from their home.

Exposure at Work

Survey Questions

- As far as you know, in the past seven days, has anyone smoked in your work area?

In order to further classify work settings as indoor or outdoor, and to identify people who work at home:

- While working at your job, are you indoors most of the time?
- What best describes where you work for money? Would you say it is a classroom, a hospital, an office, your home, other people's homes, a plant or factory, a store or warehouse, a restaurant that does not serve alcohol, a restaurant that serves alcohol, a bar, a vehicle, or some other setting?

Interpreting the Data

MATS did not specifically determine if anyone other than the smoker (including the respondent) was present when the smoking occurred. As a result, the actual immediate secondhand smoke exposure rates in work areas may be slightly lower than presented in this report.

Among all Minnesotans who are employed, 9.4±1.2 percent were exposed to secondhand smoke at work over the past seven days (Table 5-4). There are significant differences in exposure to secondhand smoke at work by age, gender, education, income. Young adults are more likely to be exposed to secondhand smoke (19.4±4.9 percent) at work compared with all three older age groups. Men (14.1±2.0 percent) are much more likely to be exposed than women (4.1±1.2 percent). Exposure at work decreases as educational level increases, declining from 19.3±9.3 percent of those with less than a high school degree to 3.4±1.1 percent of those with a college degree. Those with household incomes of $35,000 or less

(13.2±3.4 percent) or $35,001 to $50,000 (11.9±3.5 percent) are more likely to be exposed to secondhand smoke at work than the highest income group (6.5±1.6 percent)

5.4.4 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?

Under one-fifth (17.6±1.2 percent) of Minnesotans were exposed to secondhand smoke in a car in the past seven days (Table 5-4). There are significant differences in exposure to secondhand smoke in a car by age, gender, and education. Young adults aged 18-24 (40.4±4.9 percent) are about twice as likely to be exposed to secondhand smoke in a car as 25-44-year-olds (18.4±2.2 percent) and about three times more likely to be exposed to secondhand smoke than 45-64-year-olds (13.6±1.7 percent). Women (15.6±1.6 percent) are less likely to be exposed than men (19.7±1.9 percent). There is a sharp, statistically significant drop-off in exposure to secondhand smoke in a car as education level increases. Among those people who do not have a college degree, between 21 percent and 27 percent were exposed to secondhand smoke in a car, while among those who have a college degree, only 5.6±1.1 percent were exposed. Similarly, about one-quarter of people in the lower income levels were exposed to secondhand smoke in a car, while there is a statistically significant drop-off among those with household incomes of more than $75,000, 10.1±1.7 percent of whom were exposed to secondhand smoke in a car.

5.4.5 Secondhand Smoke Exposure at Home

Children in the Home and Exposure to Secondhand Smoke

Survey Questions

- How many children living in your household are…
  - Younger than 5 years old?
  - 5 through 11 years old?
  - 12 through 17 years old?
- During the past seven days, how many days did anyone smoke cigarettes, cigars, or pipes anywhere inside your home?

Interpreting the Data

MATS did not specifically determine if anyone other than the smoker (including the respondent) was present when the smoking occurred. As a result, the actual immediate secondhand smoke exposure rates in the home may be slightly lower than presented in this report.

Among all Minnesotans, 9.5±1.0 percent report that someone has smoked cigarettes inside their home in the past seven days (Table 5-4). There are statistically significant differences in smoking in the home by age, education, income and smoking status. Young adults aged 18-24 (14.0±3.6) are more likely to report that someone has smoked in their home than adults aged 25-44 (8.4±1.7) or adults 65 and older (6.1±1.4). People with less than a high school degree (17.5±5.0 percent), people with a high school degree (13.0±2.2 percent), and people with some college or technical school (10.7±1.6) are much more likely to say that someone has smoked in their home than people with a college degree (2.7±0.7). Similarly, people with lower incomes are more likely to say that someone has smoked in their home than people with higher incomes. As in the case of exposure in various other location, exposure in the home appears to decrease steadily as education and income level increase. Current smokers (39.3±4.0 percent) are much more likely to say someone has smoked in their home in the past seven days than former smokers (4.5±1.2 percent) and never smokers (3.5±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 people with children living in their households, 8.3±1.6 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 122,000 adults who have one or more children in the home.

5.4.6 Secondhand Smoke Exposure, 2007 to 2010

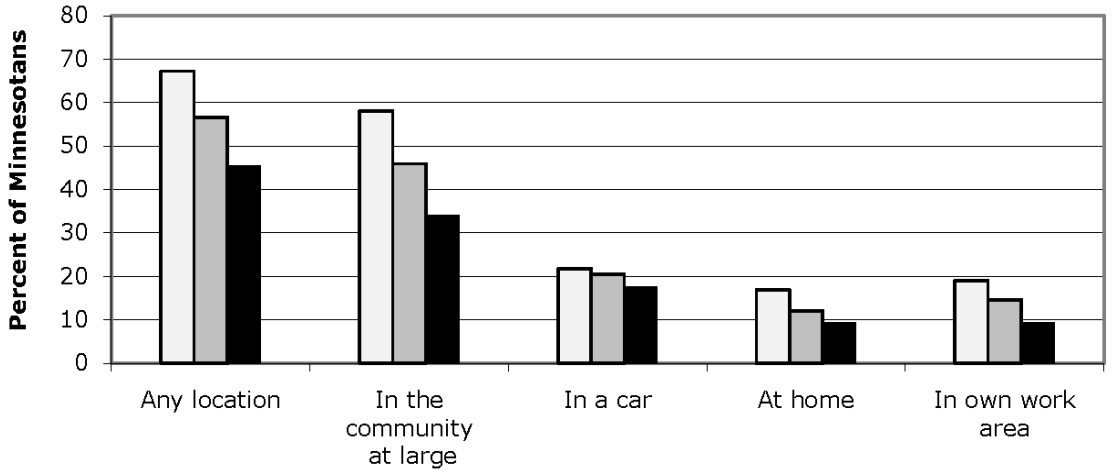
Between 2007 and 2010, there was a large and significant decrease in the percentage of Minnesotans exposed to secondhand smoke in any location (Figure 5-8). In 2007, 56.7±1.7 percent of Minnesotans reported being exposed to secondhand smoke in the past seven days. This declined by 11.1 percentage points, to 45.6±1.5 percent in 2010. There were statistically significant declines for every subgroup except young adults aged 18-24 (Table 5-5). The largest declines were among former smokers (15.1 percentage points), college graduates (15.0 percentage points), and adults aged 45-64 (14.4 percentage points).

There were statistically significant declines in seven-day exposure to secondhand smoke in all of the types of settings tracked by MATS. The largest decline in exposure to secondhand smoke in a specific setting was in community exposure (Figure 5-8). In 2007, 46.0±1.6 percent of Minnesotans were exposed to secondhand smoke in the community in the past seven days, while in 2010 community exposure declined to 34.1±1.4 percent of Minnesotans. This is a statistically significant change.

As discussed in Section 5.4.2, the most commonly reported location for community exposure to secondhand smoke in 2010 is a park or somewhere outdoors, followed by a building entrance and another person's home. In 2007, the most commonly reported locations were a bar or tavern (20.7±2.1 percent) and a restaurant that serves alcohol (18.1±1.6 percent). (Figure 5-7). Their lower relative positions in the list of locations in 2010 probably reflects the implementation of Minnesota's Freedom to Breathe Act on October 1, 2007 (after MATS 2007 data collection concluded), prohibiting smoking in most indoor public places, including restaurants and bars.

Exposure to secondhand smoke declined by 5.1 percentage points at work, 3.0 percentage points in a car and by 2.5 percentage points at home. All of these declines are statistically significant.

Figure 5-8. Exposure of Minnesotans to secondhand smoke in the past 7 days in selected settings, from 2003 to 2010



Year	Any location	In the community at large	In a car	At home	In own work area†
2003	67.2 ± 1.7	58.0 ± 1.8	21.7 ± 1.7	16.9 ± 1.4	19.0 ± 1.9
2007	56.7 ± 1.6	46.0 ± 1.6	20.6 ± 1.4	12.0 ± 1.2	14.6 ± 1.6
2010	45.6 ± 1.5	34.1 ± 1.4	17.6 ± 1.2	9.5 ± 1.0	9.4 ± 1.2
Change from 2007 to 2010	- 11.1*	- 11.9*	- 3.0*	- 2.5*	- 5.1*

† Excludes those who work in their own homes.

* Statistically significant at the 95% confidence level

Hypothesis: The percentages who were exposed to secondhand smoke in the various settings will each decline from 2007 to 2010

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

Table 5-5. Minnesotans exposed to secondhand smoke in the past seven days in any location, by selected demographic characteristics and smoking status, from 2003 to 2010

Characteristics	2003	2007	2010	Change from 2007 to 2010
	%	%	%	%
Overall	**67.2** ± 1.7	**56.7** ± 1.6	**45.6** ± 1.5	**-11.1** *
Age				
18 to 24	**81.7** ± 3.7	**73.2** ± 5.1	**73.8** ± 4.2	**0.6**
25 to 44	**72.3** ± 2.8	**59.9** ± 2.9	**48.1** ± 2.7	**-11.9** *
45 to 64	**65.1** ± 3.1	**54.8** ± 2.3	**40.4** ± 2.3	**-14.4** *
65 or older	**46.5** ± 3.4	**39.3** ± 2.4	**27.4** ± 2.5	**-11.9** *
Gender				
Female	**61.3** ± 2.4	**52.5** ± 2.0	**40.8** ± 2.0	**-11.7** *
Male	**73.4** ± 2.3	**61.0** ± 2.4	**50.5** ± 2.2	**-10.5** *
Education				
Less than high school	**64.8** ± 7.0	**60.6** ± 6.0	**51.6** ± 6.3	**-9.0** *
High school graduate/GED	**72.5** ± 2.9	**62.8** ± 3.0	**50.4** ± 3.1	**-12.4** *
Some college or technical school	**69.0** ± 3.0	**58.6** ± 2.9	**51.9** ± 2.5	**-6.7** *
College graduate or beyond	**59.9** ± 2.9	**46.8** ± 2.3	**31.8** ± 2.1	**-15.0** *
Smoking Status (BRFSS)				
Never Smokers	**59.4** ± 2.6	**47.2** ± 2.1	**36.8** ± 2.0	**-10.4** *
Current Smokers	**93.8** ± 1.7	**91.5** ± 2.0	**86.8** ± 2.7	**-4.7** *
Former Smokers	**64.1** ± 2.7	**54.7** ± 2.7	**39.6** ± 2.7	**-15.1** *

Hypothesis: The percentage of Minnesotans exposed to second hand smoke will decline from 2007 to 2010.

*Statistically significant at the 95% confidence level

Source: Minnesota Adult Tobacco Surveys, 2003, 2007, and2010

5.5 Smoke-free Policies and Their Association with Exposure to Secondhand Smoke at Work and at Home

This section looks at the intersection of policy and secondhand smoke exposure to illustrate the impact policy has on reducing exposure in each setting.

5.5.1 Smoke-free Policies in the Workplace and Their Association with Workplace Exposure

Minnesotans with policies that do not allow smoking at work face less exposure to secondhand smoke in their work area than those without such policies. Among Minnesotans who report that smoking is not allowed in work areas, only 3.3±0.8 percent had someone smoke in their work area in the past seven days (Table 5-6). By comparison, those who report that smoking is allowed in work areas had someone smoke in their work area at over twelve times that rate (41.3±5.1 percent, $p<0.05$).

Table 5-6. Minnesotans exposed to secondhand smoke in the past seven days in own work area, by the presence or absence of a smoke-free policy for work areas

Smoke-free policy for work areas	7-day exposure to secondhand smoke in own work area		
	Yes	No	Row total
	%	%	%
Yes	**3.3** ± 0.8	**96.8** ± 0.8	**100**
No	**41.3** ± 5.1	**58.7** ± 5.1	**100**

Source: Minnesota Adult Tobacco Survey, 2010

5.5.2 Smoke-free Rules in the Home and Their Association with Home Exposure

Minnesotans living in homes with rules that do not allow smoking face far less exposure to secondhand smoke than those living in homes without such rules. Among those with such a rule, only 1.3±0.4 percent report that someone has smoked in their home in the past seven days (Table 5-7). In contrast, among Minnesotans who do not have such a rule, 66.7±4.0 percent say that someone has smoked in their home in the past seven days ($p<0.05$).

Table 5-7. Minnesotans exposed to secondhand smoke inside home in the past seven days, by the presence or absence of a smoke-free rule inside the home

Smoke-free policy inside home	7-day exposure to secondhand smoke inside home		
	Yes	No	Row total
	%	%	%
Yes	**1.3** ± 0.4	**98.7** ± 0.4	**100**
No	**66.7** ± 4.0	**33.3** ± 4.0	**100**

Source: Minnesota Adult Tobacco Survey, 2010

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

MATS 2010 asked new questions about smoking in various settings. These 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, only in special smoking areas, or not at all?

Smoking in Cars When Children Are Present

Overall, 94.0 percent of Minnesotans think that smoking should not be allowed in cars when there are children in them (Table 5-8). This view is highly consistent across all the demographic groups (not shown in table). Smokers are slightly less likely to subscribe to this view; their rate of 87.5±2.7 percent is significantly different from the approximately 95 rate for percent of former and never smokers (not shown in table).

Table 5-8. Opinions about allowing smoking in various areas, among all Minnesotans and current smokers

Areas	Should not be allowed	
	All Minnesotans	Current smokers
	%	%
Cars when children are in them	**94.0** ± 0.7	**87.5** ± 2.7
Various Outdoor Areas		
Near building entrances and exits	**69.4** ± 1.4	**43.1** ± 4.2
Parks, playgrounds, and beaches	**56.3** ± 1.5	**31.8** ± 4.0
Outdoor areas of county fairs or community-sponsored gatherings	**53.5** ± 1.5	**29.7** ± 3.9
Patios of restaurants, cafes and bars	**43.8** ± 1.5	**11.6** ± 2.7
Sidewalks	**34.9** ± 1.4	**12.1** ± 2.7

Source: Minnesota Adult Tobacco Survey, 2010

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 5-8): over two-thirds of Minnesotans (69.4±1.4 percent) think that smoking should not be allowed in this location. A majority of Minnesotans also say that smoking should not be allowed in outdoor public recreational areas or in the outdoor areas of country fairs and other community gatherings (56.3±1.5 percent and 53.5±1. percent, respectively). Somewhat less than half (43.8±1.5 percent) would prohibit smoking in outdoor patios of dining and drinking establishments, while only one-third (34.9±1.4 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 Minnesotans

in general. The 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 43.1±4.2 percent. Few smokers favored prohibiting smoking on public sidewalks or outdoor patios of dining and drinking establishments, which received similar low support: 12.1±2.7 percent and 11.6±2.7 percent of smokers, respectively, were in favor of such policies.

Table 5-8 does not show difference across the demographic groups. There were few significant differences or trends in terms of demographics. Generally speaking, among all Minnesotans, statistically significant 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. These same patterns occur among smokers, but they are not statistically significant.

Smoking in Minnesota Casinos

Among all Minnesotans, 43.8±1.5 percent think that smoking should not be allowed at all in Minnesota casinos (Table 5-9). Slightly more (47.1±1.5 percent) believe it should be allowed in special smoking areas. Only 9.2±0.9 percent say it should be allowed throughout the building.

There are few differences by age, education or income. Women are more likely than men to say it should not be allowed at all (48.6±2.1 percent vs. 38.8±2.2 percent) and less likely to say it should be allowed throughout the building (5.2±1.0 percent vs. 13.2±1.5 percent). Both of these differences are statistically significant.

As might be expected, few current smokers believe smoking should not be allowed at all (14.6±2.9 percent), while around 50 percent of former and never smokers support prohibiting smoking anywhere in casinos. Over a quarter of smokers (27.3±3.7 percent) would allow smoking anywhere in the casino building, compared to 8.0±1.5 percent of former smokers and 4.5±0.9 percent of never smokers. Interestingly, there is more consistent support for allowing smoking in special areas of casinos among all of the smoking statuses: 58.1±4.1 percent of current smokers support this concept, compared to 44-45 percent of former and never smokers. All differences between current smokers and the other smoking groups are significant.

Table 5-9. Opinions about whether smoking should be allowed in Minnesota casinos, among all Minnesotans, by selected demographic characteristics and smoking status

Characteristics	Allowed throughout the building	Allowed only in special smoking areas	Not allowed at all	Row Total
	%	%	%	%
Overall	**9.2** ± 0.9	**47.1** ± 1.5	**43.8** ± 1.5	**100**
Gender				
Female	**5.2** ± 1.0	**46.2** ± 2.1	**48.6** ± 2.1	**100**
Male	**13.2** ± 1.5	**47.9** ± 2.3	**38.8** ± 2.2	**100**
Smoking Status				
Never smokers	**4.5** ± 0.9	**44.6** ± 2.0	**50.9** ± 2.0	**100**
Current Smokers	**27.3** ± 3.7	**58.1** ± 4.1	**14.6** ± 2.9	**100**
Former Smokers	**8.0** ± 1.5	**45.7** ± 2.8	**46.3** ± 2.8	**100**

Source: Minnesota Adult Tobacco Survey, 2010

5.7 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 2010

- Nearly all Minnesotans (92.3±0.8 percent) agree that secondhand smoke is very or somewhat harmful to health. Although there are some statistically significant differences by gender, education, and smoking status, they are relatively small: 83 percent to 95 percent of the members of all subgroups agree that secondhand smoke is harmful.

- Over three-quarters (80.7±1.6 percent) of Minnesotans work where smoking is not allowed in their own work areas or indoor common areas. Coverage for these areas tends to increase with the worker's age, education, and income level.

- There is a large and significant difference in coverage by such workplace smoking policies between those who work primarily indoors and those who do not: 90.8±1.3 percent compared to 44.2±5.1 percent.

- Most Minnesotans (87.2±1.0 percent) live in homes where smoking is not allowed. The presence of smoke-free home policies is associated with higher educational and income levels and with the non-smoking status of the individual.

- Almost half (45.6±1.5 percent) of Minnesotans have been exposed to secondhand smoke in some location in the past seven days. Young adults (73.8±4.2 percent) are more likely to be exposed to secondhand smoke in any location than any other age group. People who do not have a college degree are more likely to be exposed than people who do.

- Exposure to secondhand smoke varies by setting. Minnesotans are significantly more likely to be exposed to secondhand smoke in the community at large (34.1±1.4 percent) than in a car (17.6±1.2 percent), and less likely to be exposed at home (9.5±1.0 percent) or at work (9.4±1.2 percent) than in either of the first two locations.

- Among all Minnesotans who are employed outside their homes, 9.4±1.0 percent were exposed to secondhand smoke at work over the past seven days. There are significant differences in exposure to secondhand smoke at work by age, gender, education, and income, with young adults, men, those with less education, and those with lower household incomes being more likely to be exposed to secondhand smoke at work.

- Under one-fifth (17.6±1.2 percent) of Minnesotans were exposed to secondhand smoke in a car in the past seven days. There are significant differences in exposure to secondhand smoke in a car by age, gender, and education. Young adults, those who do not have a college degree, and people in the lower income levels were two to four times as likely to be exposed to secondhand smoke in a car, compared with others in their respective groups.

- Among all Minnesotans, 9.5±1.0 percent report that someone smoked cigarettes inside their home in the past seven days. Young adults, people with less than a college degree, and people with lower incomes are more likely to say that someone has smoked in their home. Current smokers (nearly 40 percent) are much more likely to say someone has smoked in their

home in the past seven days than former smokers and never smokers (both under 5 percent).

- Among people with children in their households, 8.3±1.6 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 122,000 adults who have children in the home.

- The existence of smoke-free policies in the workplace and the home is associated with greater freedom from exposure to secondhand smoke in these settings. Among Minnesotans who report that smoking is not allowed in their work areas, only 3.3±0.8 percent had someone smoke in their work area in the past seven days, while those who report that smoking is allowed in work areas had someone smoke in their work area at over twelve times that rate (41.3±5.1 percent). Among those living in homes that with a rule prohibiting smoking, only 1.3±0.4 percent report that someone smoked in their home in the past seven days, while two-thirds of Minnesotans who do not have such a rule say that someone smoked in their home in the past seven days.

- Overall, 94.0 percent of Minnesotans think that smoking should not be allowed in cars when there are children in them.

- Over two-thirds of Minnesotans (69.4±1.4 percent) support forbidding smoking near building entrances and exits, the highest level of support among all the public areas where smoking might be prohibited. A majority believe that smoking should not be allowed in outdoor public recreational areas or in the outdoor areas of country fairs and other community gatherings. (56.3±1.5 percent and 53.5±1. percent, respectively). Somewhat less than half (43.8±1.5 percent) would prohibit smoking in outdoor patios of dining and drinking establishments, while only one-third (34.9±1.4 percent) would do so on public sidewalks.

- Among smokers, the degree of support for prohibiting smoking in the various outdoor spaces was significantly lower than the levels of support expressed by Minnesotans in general. The 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 43.1±4.2 percent. Few smokers favored prohibiting smoking on public sidewalks or outdoor patios of dining and drinking establishments.

- Among all Minnesotans, 43.8±1.5 percent think that smoking should not be allowed at all in Minnesota casinos. Slightly more (47.1±1.5 percent) believe it should be allowed in special smoking areas. Only 9.2±0.9 percent say it should be allowed throughout the building. Few current smokers believe smoking should not be allowed at all (14.6±2.9 percent) in Minnesota casinos.

Key Secondhand Smoke Findings for 2007 to 2010

- In 2010, 80.7±1.6 percent of Minnesotans said their workplace had a policy that did not permit smoking in either work areas or indoor common areas. This is an increase of 4.6 percentage points over 2007 (76.1±1.9 percent).

- Among those who work indoors, 90.8±1.3 percent said smoking was not allowed in their work area in 2010, a statistically significant increase of 5.0 percentage points over 2007.

- The percentage of Minnesotans living in homes where smoking is not permitted showed a similar significant increase from 2007 to 2010, rising by 4.1 percentage points from 83.2±1.3 percent to 87.2±1.0 percent.

- Between 2007 and 2010, there was a large and significant decrease in the percentage of Minnesotans exposed to secondhand smoke in any location in the past seven days, declining by 11.1 percentage points, from 56.7±1.7 percent to 45.6±1.5 percent in 2010.

- There were statistically significant declines in seven-day exposure to secondhand smoke in all of the types of settings tracked by MATS. The largest decline in exposure to secondhand smoke in a specific setting was in community exposure, which decreased from 46.0±1.6 percent of Minnesotans in 2007 to 34.1±1.4 in 2010. Exposure to secondhand smoke declined by 5.1 percentage points at work, 3.0 percentage points in a car and 2.5 percentage points at home.

MINNESOTA ADULT TOBACCO SURVEY

Tobacco Use in Minnesota: 1999 to 2010

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