



Secondhand Smoke
in Minnesota, 1999-2003

March 2005

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Minnesota Partnership for Action Against Tobacco

Blue Cross and Blue Shield of Minnesota

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University of Minnesota

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INTRODUCTION

Secondhand Smoke in Minnesota, 1999-2003 is the latest in a series of collaborative research reports about smoking based on the 2003 Minnesota Adult Tobacco Survey (MATS). Advance results from this report were released in the summer of 2004 titled “Secondhand Smoke: Knowledge, Attitudes, and Behaviors. Advance Results from the 2003 Minnesota Adult Tobacco Survey,” and are available online at www.mpaat.org. The other two reports in this series were released in January 2004 and are titled *Patterns of Smoking Among Minnesota’s Young Adults* and *Quitting Smoking, 1999-2003: Nicotine Addiction in Minnesota*. They are available online at <http://www.health.state.mn.us/divs/hpcd/tpc/TobaccoReports.html>. Four organizations joined to conduct the survey and produce these reports: the Minnesota Partnership for Action Against Tobacco (MPAAT), Blue Cross and Blue Shield of Minnesota, the Minnesota Department of Health and the University of Minnesota.

This report describes Minnesotans’ exposure to and attitudes about secondhand smoke for the general population of adult Minnesotans, and provides an update to the findings from the 1999 Adult Tobacco Prevalence Survey that were presented in our November 2000 report, *Secondhand Smoke: Knowledge, Attitudes, and Behaviors of Minnesotans*.¹ Our objective in conducting these surveys was to obtain scientifically valid data on Minnesotans’ knowledge, attitudes and behaviors concerning adult tobacco use and exposure to secondhand smoke in order to support policy development, advocacy and program planning. Our overarching goals are to help current smokers quit, to prevent more people from starting to smoke and to protect all Minnesotans by reducing exposure to secondhand smoke.

Between November 2002 and June 2003, 8,821 adults (age 18 and older) were interviewed for the Minnesota Adult Tobacco Survey. Unless otherwise noted, the data and statistics presented in this report come from the 2003 MATS. For a list of other data sources used, see page 23. Where relevant, comparisons are made between the 1999 and 2003 results. All comparisons presented in this report between the 1999 and 2003 Minnesota results and between different findings within the 2003 Minnesota results are statistically significant at or beyond $p < 0.05$ unless otherwise noted. (See Appendix A for a description of the research methods for both surveys.)

In addition, references are made to data from the state of California. California is important as a case study in tobacco control for many reasons. It was the first state to implement a statewide smoke-free law for indoor workplaces in 1995. Virtually all indoor workplaces in California are now smoke-free,[†] including restaurants, bars and gaming clubs. California’s comprehensive tobacco control policies, beginning with an increase in the cigarette excise tax enacted in 1989, have produced positive changes in the state’s adult smoking prevalence rates (from 23% in 1988 to 15% in 2002) and in health outcomes (e.g., reduced incidence of lung and other cancers).²⁻⁴ Although it typically takes 10 to 15 years for population-wide changes in smoking to reduce the incidence of smoking-related cancers, California’s lung and bronchus cancer incidence is already declining at a significantly higher rate than elsewhere in the nation.^{5,6} Because of its success in enacting tobacco control policies and improving the health of its residents, California provides a model to which Minnesota and other states can aspire.

[†] “Smoke-free” as used in this report indicates a policy that forbids smoking completely, i.e., smoking rooms or smoking sections are prohibited.

SECONDHAND SMOKE CAUSES DEATH AND DISEASE

Secondhand smoke is a complex mixture of chemicals contained in smoke from a lit tobacco product (cigarette, cigar or pipe) and smoke exhaled by a smoker. Secondhand smoke is very similar in composition to smoke inhaled directly from tobacco products and contains more than 4,000 chemicals. Of these, at least 11 are known human carcinogens.⁷ This classification of carcinogens is according to the International Agency for Research on Cancer. Moreover, unfiltered smoke from a cigarette contains greater amounts of ammonia, benzene, carbon monoxide, nicotine and other carcinogens[†] per milligram of tobacco burned than the smoke directly inhaled by a smoker.⁸

Secondhand smoke is estimated to be responsible for

3,000 deaths from lung cancer and 35,000 deaths from heart disease per year among non-smokers in the United States.⁹ In addition, numerous studies confirm that secondhand smoke causes many serious illnesses in non-smokers and exacerbates lung disease in non-smoking adults and respiratory problems in children.^{9, 10} Secondhand smoke exposure is associated with childhood health problems, such as low birth-weight, asthma induction and aggravation, increased ear and respiratory infections, and Sudden Infant Death Syndrome.² Non-smoking adults exposed to secondhand smoke in the workplace show a 91 percent increased risk of chronic heart disease¹¹ and an 82 percent increased risk of stroke.^{12, 13} The risk of stroke among spouses of smokers is twice that of spouses of non-smokers.^{12, 13}

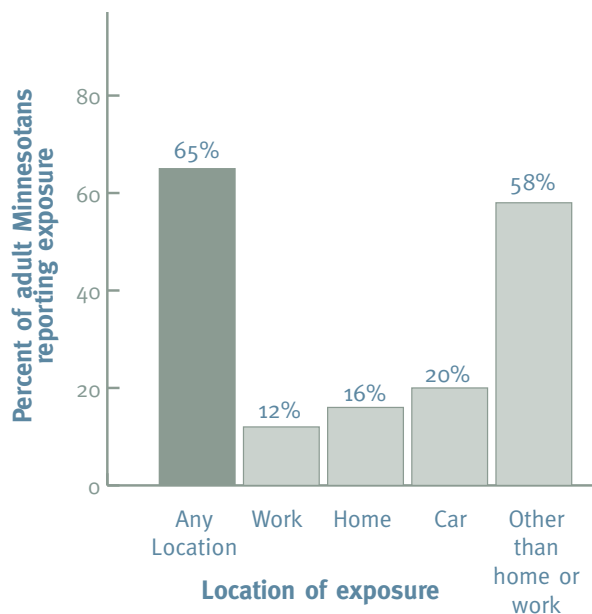
MOST MINNESOTANS BREATHE SECONDHAND SMOKE REGULARLY

Two of three adult Minnesotans (65%) reported exposure to secondhand smoke in their home, at work, in a car or in another location in the past seven days (Figure 1). This means that an estimated 2.4 million adult Minnesotans are exposed to secondhand smoke in a typical week.

Not surprisingly, nearly all current smokers (93%) reported exposure to other people's smoke in the past seven days. However, the majority of non-smokers[‡] (59%) also indicated exposure to secondhand smoke during the past seven days.

The most commonly reported location of exposure to secondhand smoke in the past seven days was "somewhere other than home or work," which included the following specific responses in descending frequency: a restaurant serving alcohol, a bar or tavern, a restaurant not serving alcohol,

Figure 1: Most adult Minnesotans reported exposure to secondhand smoke in the past seven days.



Data Source: 2003 Minnesota Adult Tobacco Survey

[†]Other carcinogens include 2-naphthylamine, 4-aminobiphenyl, N-nitrosamine, benz[a]anthracene and benzo-pyrene.

[‡]Non-smokers include former smokers and people who have not smoked more than 100 cigarettes in their lifetimes and currently do not smoke.

another person's home, a building entrance, another person's car and a park or somewhere outdoors.

As expected, current smokers were more likely than non-smokers to report exposure to secondhand smoke in all types of locations. However, current smokers were significantly less likely to report exposure to secondhand smoke in indoor workplaces (28%) than in a car (65%) or at home (55%). This may be because smokers typically work in workplaces

with smoke-free policies but may not encounter smoking restrictions in private homes or cars.

The 2003 MATS showed that children also face exposure to secondhand smoke. Fifteen percent of adult respondents with at least one child in the home reported that someone smoked in the home in the past seven days. This means that at least 206,000 Minnesota children were likely exposed to tobacco smoke in the past seven days.

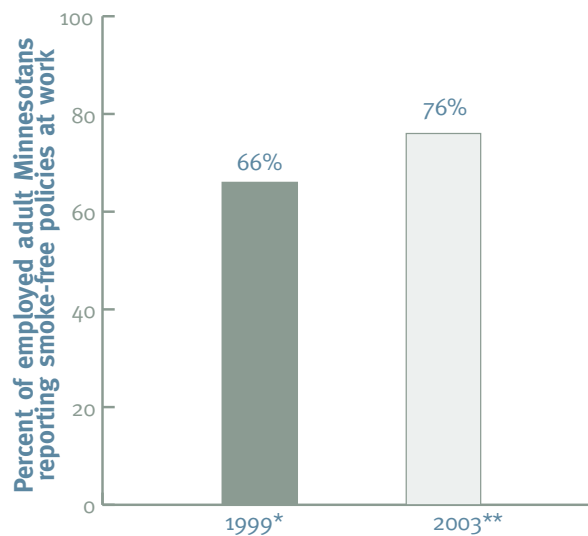
PROTECTION FROM SECONDHAND SMOKE IS UNEQUAL

Clean indoor air laws protect more adult Minnesota workers in 2003 than in 1999

The 2003 MATS study revealed increased protection of workers from secondhand smoke. Up from 66 percent in 1999, 76 percent of all Minnesota workers (indoor and outdoor) reported a smoke-free policy in 2003 (Figure 2). While this is a substantial increase,

results from California suggest that there is room for improvement. Among indoor workers in California, 93 percent reported a smoke-free policy at work in 1999, compared to only 35 percent of indoor

Figure 2: A greater percent of adult Minnesotans are protected from secondhand smoke at work in 2003 than in 1999.



Data Sources: *1999 Adult Tobacco Prevalence Survey
**2003 Minnesota Adult Tobacco Survey

MINNESOTA NO LONGER LEADS CLEAN INDOOR AIR PROTECTIONS

The Minnesota Clean Indoor Air Act was enacted in 1975 to protect public health by restricting smoking in offices – one of the first such policies in the U.S. The rules were amended in 2002 to regulate ventilation requirements for smoking-permitted areas of offices, factories, warehouses and similar places of work. Once a leader in secondhand smoke protection, Minnesota currently lags behind other states, such as California, Massachusetts, New York, Connecticut, Delaware and Maine that have passed legislation protecting the majority of workers from the harmful effects of secondhand smoke, including workers in all bars and restaurants. Entire countries have also banned smoking in all workplaces, including bars and restaurants, such as Ireland, Norway, New Zealand, Uganda and Montenegro.

workers in 1990.¹⁴ In Minnesota in 2003, only 82 percent of indoor workers reported a policy at work where smoking is not allowed anywhere.

The increase in the number of workers who report smoke-free policies at work is a positive step toward reducing Minnesotans' exposure to secondhand smoke.

Minnesota's clean indoor air laws do not protect all workers equally

Despite the increase in the percent of workers protected from secondhand smoke in 2003, there are important differences in who is likely to be protected by a clean indoor air policy. Employees of bars or restaurants serving alcohol have significantly less protection from exposure to secondhand smoke than other Minnesota workers (Figure 3).

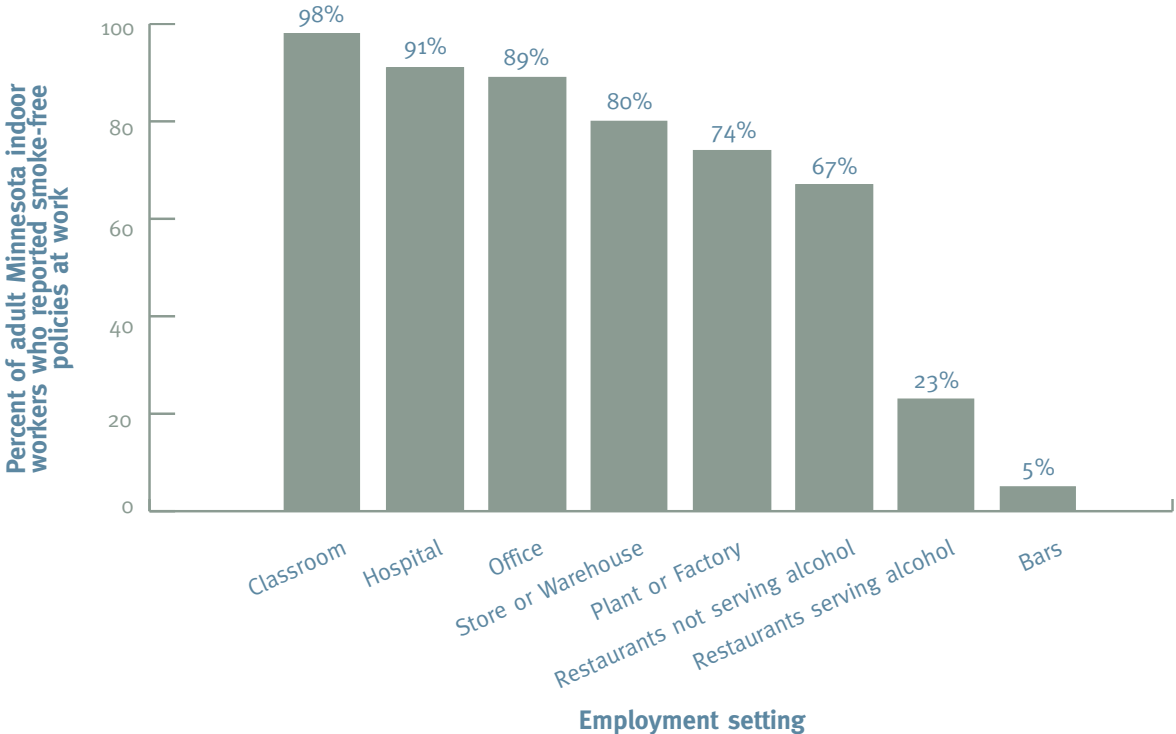
According to the U.S. Department of Labor's Bureau of Labor Statistics, more than 208,000 Minnesotans

are employed in food preparation and serving related occupations – about 8 percent of all workers in Minnesota.¹⁵ Minnesotans working in establishments serving alcohol report smoke-free policies at work much less often than workers in other indoor settings. Among workers in restaurants that serve alcohol, 23 percent reported smoke-free policies at work. Among workers in bars, only 5 percent reported smoke-free policies at work. This means that more than 50,000 Minnesota workers in bars and restaurants serving alcohol are not protected by smoke-free policies at work.

Unequal policies correspond to unequal secondhand smoke exposure

The 2003 MATS survey results suggest that smoke-free policies protect workers from secondhand smoke. Employees in the types of indoor workplaces that generally have policies explicitly banning smoking are far less likely to report exposure to

Figure 3: Minnesota workplace smoke-free policies do not protect workers equally.



Data Source: 2003 Minnesota Adult Tobacco Survey

secondhand smoke at work. Among respondents reporting an explicit ban on smoking at work, only 4 percent also reported exposure to secondhand smoke at work in the past seven days. Conversely, workers in industries that typically allow smoking at work are much more likely to report exposure to secondhand smoke at work. Among respondents reporting no explicit smoke-free policy,[†] 57 percent reported someone smoking in their workplace in the past seven days.

This relationship between policy and exposure is illustrated in Figure 4. Among workers in restaurants that do not serve alcohol, 33 percent reported no smoke-free policies at work, and 38 percent reported that someone had smoked in their workplace in the past seven days. Of workers in restaurants serving alcohol, 77 percent reported not having a smoke-free policy at work, and 71 percent reported someone smoking in their workplace in the past seven days. Of workers in bars or taverns, 95 percent reported not having a smoke-free policy at work, and 98 percent reported someone smoking in their workplace in the past seven days.

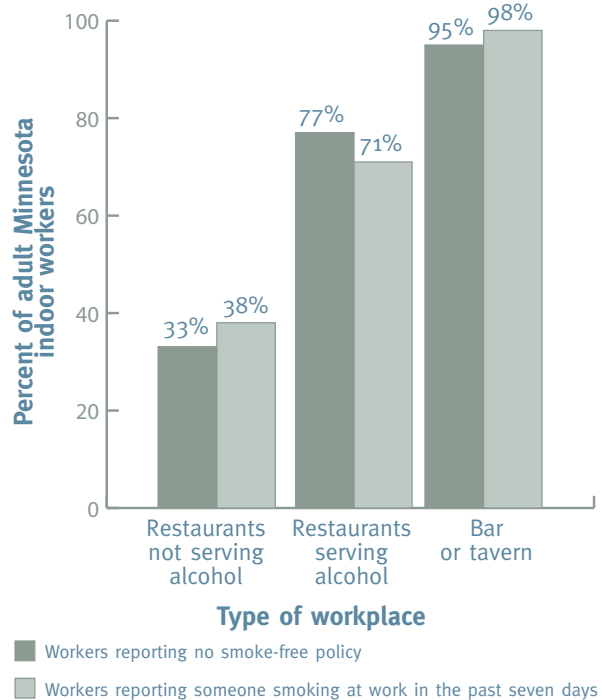
Some groups are exposed to secondhand smoke more often

Exposure to secondhand smoke varies among demographic groups. Younger adults, those with lower income and education levels, and those working in certain employment sectors were most likely to report secondhand smoke exposure in any situation, including at work, at home, in a car and in other locations.

Age

The smoking prevalence rate among Minnesota's young adults aged 18- to 24-years old is 32 percent.[‡]

Figure 4: Lack of explicit smoking policy corresponds to a high likelihood of exposure for adult Minnesotans working indoors.*



Data Source: 2003 Minnesota Adult Tobacco Survey

*There is no significant difference within workplace type comparisons (e.g., there is no significant difference between the 33 percent of workers reporting no smoke-free policy in restaurants not serving alcohol and the 38 percent of workers reporting someone smoking at work in the past seven days in restaurants not serving alcohol). Between workplace type comparisons (e.g., restaurants serving alcohol compared to bars or taverns) are significant at $p < 0.05$.

The overall rate among all adult Minnesotans is 18 percent. In addition to smoking at higher rates than the rest of the adult population, a greater proportion of Minnesota's young adults reported exposure to secondhand smoke in various places than Minnesotans aged 25 and over, including at work (26% vs. 11%), in the home (26% vs. 15%), in a car (45% vs. 17%) and in other locations (74% vs. 56%). This means that more than 378,000 18- to 24-year-old Minnesotans were exposed to secondhand smoke in the past seven days.

[†]Respondents with "no explicit smoke-free policy" include those reporting policies allowing smoking as well as those without any explicit policy either banning or allowing smoking.

[‡]The prevalence of smoking among 18- to 24-year-olds is even higher, 39 percent, when measured according to the adolescent definition of smokers (smoked at least a puff in the last 30 days). The MATS team has defined these additional young adults as "previously unrecognized smokers." For more information on these smokers, see Patterns of Smoking Among Minnesota's Young Adults authored by the Minnesota Department of Health, Blue Cross and Blue Shield of Minnesota, Minnesota Partnership for Action Against Tobacco and University of Minnesota in 2004.

Education

Workplace exposure in the last seven days was reported much more often by respondents with a high school degree or less (24%) than respondents with some college education or more (10%). Those with a high school degree or less reported exposure to secondhand smoke twice as often as those with more than a high school degree in their homes (24% vs. 12%) or in a car (31% vs. 15%), and reported exposure to secondhand smoke slightly more often in some other location (62% vs. 56%). This means that more than 857,000 Minnesotans with a high school education or less were exposed to secondhand smoke in the past seven days.

Income

Respondents reporting a household income of less than \$35,000 reported exposure to secondhand smoke more often than people reporting higher household incomes at work (21% vs. 10%), in the home (24% vs. 12%) and in a car (29% vs. 16%). The two income groupings did not significantly differ in terms of reporting exposure at a place other

than home or work (58% vs. 58%). This means that more than 700,000 Minnesotans earning \$35,000 or less per year were exposed to secondhand smoke in the past seven days.

Employment sector

A greater proportion of respondents in certain employment sectors reported someone smoking in their workplace than other workers.[†] Almost all (98%) bar workers and 71 percent of workers in restaurants serving alcohol reported someone smoking in their workplace in the past seven days. This means that more than 87,000 workers in bars, restaurants serving alcohol or restaurants not serving alcohol were exposed to secondhand smoke in the past seven days. In comparison, fewer Minnesotans working in other employment sectors reported exposure to secondhand smoke at work: 61 percent of construction workers, 49 percent of workers in non-construction outside settings, 33 percent of people who work from their cars, 28 percent of plant or factory workers and 24 percent of workers on farms or in barns.

[†] Percentages reported in this section refer to all workers, not just indoor workers. This analysis assumes that nearly all bar and restaurant workers are indoor workers.

MINNESOTANS RECOGNIZE THE DANGERS OF SECONDHAND SMOKE

Nearly all adult Minnesotans know that secondhand smoke is harmful. Most Minnesotans prefer smoke-free workspaces and restaurants, and more are taking action to create smoke-free spaces around them in 2003 than in 1999.

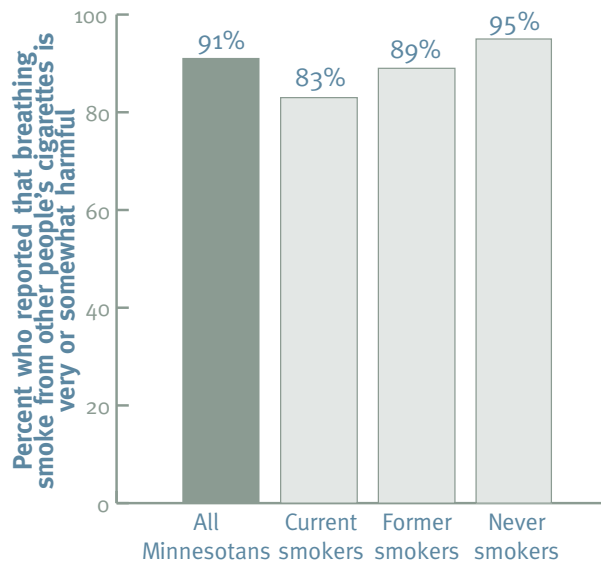
Minnesotans know that secondhand smoke is harmful

The vast majority (91%) of Minnesota adults believes that breathing smoke from other people's cigarettes is very or somewhat harmful to one's health (Figure 5). This percentage remained high from that

found in 1999 (89%).[†] Even among smokers, awareness of the dangers of secondhand smoke is high: 83 percent of current smokers think that breathing smoke from other people's cigarettes is "very harmful" or "somewhat harmful."

Younger (18- to 44-years old) Minnesotans reported the belief that breathing smoke from other people's cigarettes is very or somewhat harmful to one's health more often than older respondents (45 years old or older) (94% vs. 89%). Women (94%) were more likely than men (88%) to report that breathing smoke from other people's cigarettes is harmful, regardless of smoking status.

Figure 5: Minnesotans believe that breathing secondhand smoke is harmful.



Data Source: 2003 Minnesota Adult Tobacco Survey

Minnesota indoor workers want smoke-free workplaces

While 18 percent of indoor workers are not protected by a smoke-free policy at work, only 2 percent of employed adult Minnesotans who work indoors reported a preference for working where smoking is allowed indoors. A large majority (80%) prefers working where smoking is not allowed indoors, and 18 percent said that it made no difference. Of employed smokers, only 8 percent reported preferring to work where smoking is allowed, while 39 percent reported preferring to work where smoking is not allowed. (The remaining 53 percent reported no preference.) This means that nearly 1,900,000 of smoking and non-smoking Minnesota adult indoor workers prefer a non-smoking work environment.

[†]The question asked in 2003 was: "Do you think that breathing smoke from other peoples' cigarettes is very harmful to one's health, somewhat harmful to one's health, not very harmful to one's health, or not harmful at all?"

[†]The question asked in 1999 was slightly different: "Would you agree or disagree with the statement: 'smoke from other people's cigarettes is harmful to adults?'"

The majority of Minnesotans bans smoking in their homes

The proportion of Minnesotans who ban smoking in their homes increased 15 percent since 1999. In 2003, 76 percent of Minnesotans reported having a smoke-free policy in their homes, an increase from 66 percent in 1999 (Figure 6). This increase includes 41 percent of current smokers with smoke-free policies in their homes, as compared to 32 percent in 1999. In fact, 45 percent of current smokers reported that no smoking of any kind occurred in their home in the past seven days.

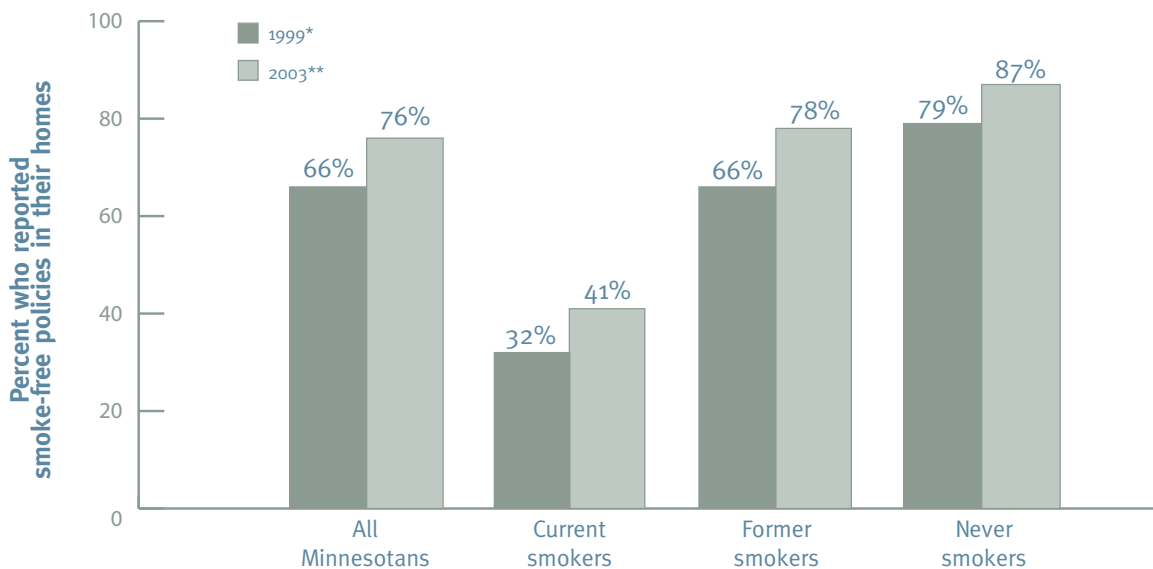
Smoking bans at home are more common among adults living with children than among people living alone or only with adults. In 2003, 81 percent of Minnesotans living with children reported a smoke-free policy in their homes, an increase from 70 percent in 1999. In comparison, 73 percent of

people living alone or with only adults reported smoke-free policies in their homes in 2003, an increase from 63 percent in 1999.

This relationship holds true for households with at least one smoker as well. Of adults living with both a smoker (cigarettes, cigars or pipes) and one or more children, 55 percent forbade smoking in the home, up from 47 percent in 1999. Of adults living with at least one smoker but without children, only 49 percent had smoke-free policies in their homes in 2003.

Despite these positive changes, in 2003 nearly half (45%) of adult Minnesotans living with children and at least one smoker did not have smoke-free policies in their homes. This means that more than 187,000 individual Minnesotans who live with both children and smokers do not have smoke-free policies in their homes.

Figure 6: More Minnesotans report smoke-free policies in their homes in 2003 than in 1999.



Data Sources: *1999 Adult Tobacco Prevalence Survey
**2003 Minnesota Adult Tobacco Survey

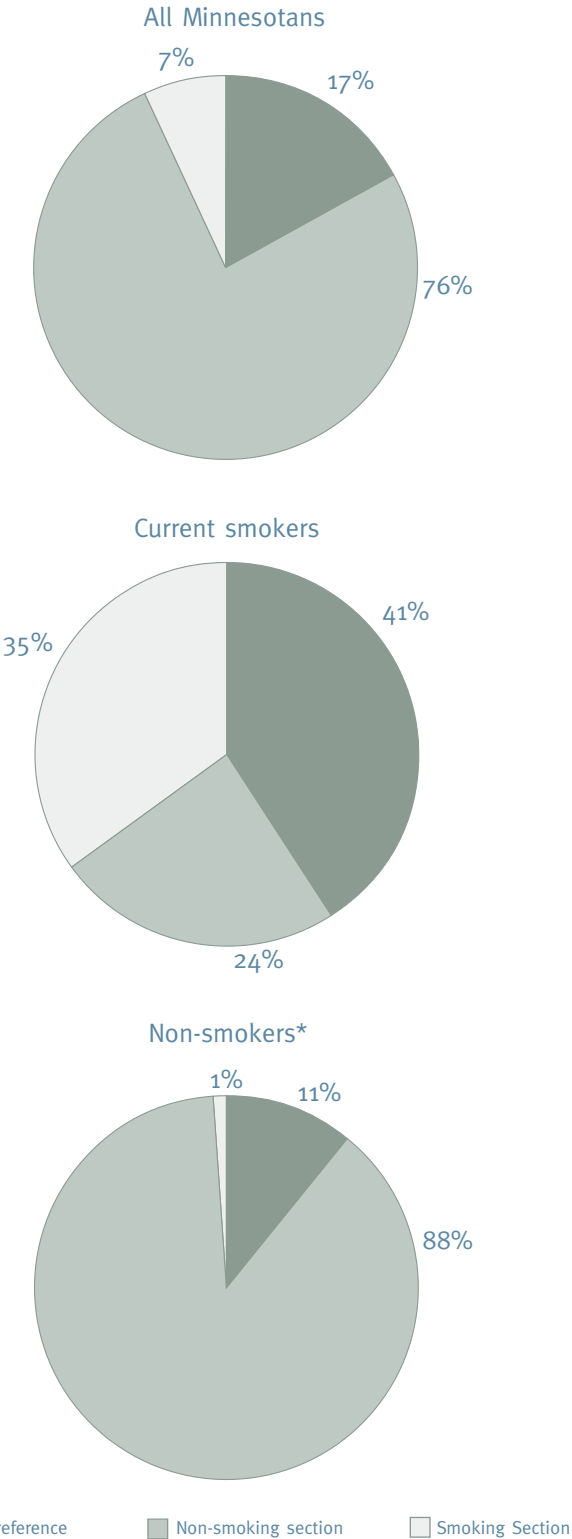
Most people, including many smokers, prefer to dine in non-smoking sections of restaurants

U.S. studies of both smokers and non-smokers show the increasing acceptance of, and preference for smoke-free eating and drinking establishments.^{16, 17} Minnesotans are no different.

The 2003 MATS survey asked Minnesotans about their seating preferences in restaurants as a way to ascertain their attitudes about smoke-free restaurants. Among Minnesotans expressing a preference, more preferred to sit in non-smoking sections of restaurants by a margin of greater than 10 to 1.

The majority (76%) of adult Minnesotans prefer non-smoking seating in restaurants, including 24 percent of current smokers (Figure 7). Only 7 percent of Minnesotans prefer to be seated in the smoking section, while 17 percent had no preference for seating.

Figure 7: Minnesotans prefer dining in smoke-free spaces.



Data Source: 2003 Minnesota Adult Tobacco Survey
 *Non-smokers include former smokers and people who have not smoked more than 100 cigarettes in their lifetimes and currently do not smoke.

“NON-SMOKING” DOES NOT EQUAL SMOKE-FREE

Efforts to reduce the exposure of non-smokers to secondhand smoke have included the creation of smoking sections in restaurants and other public places, and improving the ventilation of areas where smoking is allowed. Such efforts have lessened the levels of exposure to tobacco smoke, but they neither eliminate the presence of secondhand smoke for non-smokers, nor encourage smokers to reduce their smoking or quit altogether. The U.S. Surgeon General stated in 1986 that “the simple separation of smokers and non-smokers may reduce, but does not eliminate, the exposure of non-smokers to environmental tobacco smoke.”¹⁸ Further, the 2000 Surgeon General’s report, *Reducing Tobacco Use*, stated that smoking bans are the most effective method for reducing secondhand smoke exposure.¹⁹

Better ventilation is another mechanism proposed for reducing the level of exposure for non-smokers to secondhand smoke. However, several studies have shown that this approach does not effectively remove carcinogenic particles from the air, or the risks associated with such exposure. A Delaware study showed that smoke-free workplace laws eliminate the hazard and provide health protection impossible to achieve through ventilation and cleaning.²⁰

MORE MINNESOTANS WOULD EAT OUT WITH A TOTAL BAN ON RESTAURANT SMOKING

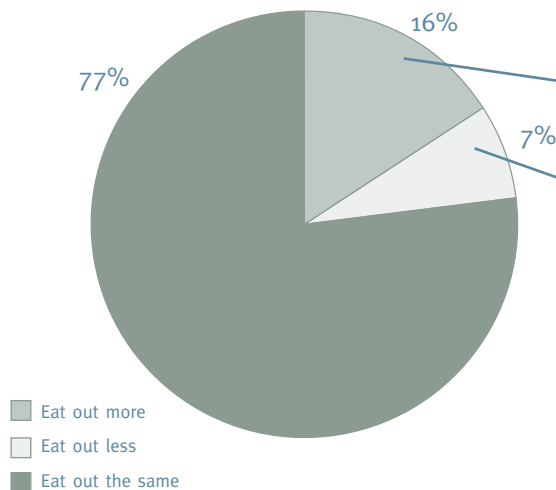
Many who oppose smoke-free policies in restaurants and bars have raised the concern that such policies will cause establishments to lose business. Results from the 2003 MATS suggest that this concern is unfounded. Survey results showed that the number of people who would eat out more often is considerably greater than the number who would eat out less often if smoking were prohibited in restaurants.[†]

Nearly all (93%) Minnesota adults indicated that they would eat out more often or the same amount if there were a total ban on smoking in restaurants (Figure 8). This means that more than 600,000 Minnesotans would eat out more often if smoking

were banned in restaurants, while slightly more than 250,000 would eat out less often (Figure 9). These results suggest that restaurants would gain more customers than they would lose under a total smoking ban in restaurants.

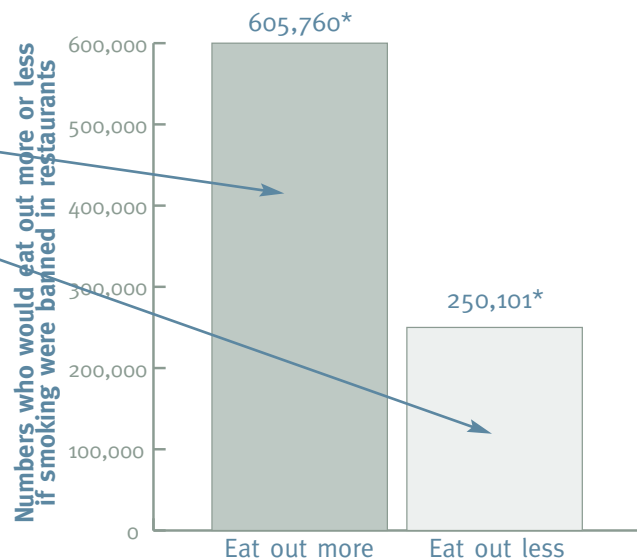
Moreover, MATS respondents who reported that they *would* eat out more often are similar to people who *currently* eat out frequently. According to U.S. Department of Labor statistics, the people who currently spend the most money in full-service restaurants in the United States are those 45-64 years old, white non-Hispanic, married couples and single people with no children, college graduates and those making \$50,000 or more per year.²¹

Figure 8: Most adult Minnesotans report that they would eat out more often or the same amount if there were a total ban on smoking in restaurants.



Data Source: 2003 Minnesota Adult Tobacco Survey

Figure 9: Many more Minnesotans would eat out more often than would eat out less often if there were a total ban on smoking in restaurants.



Data Source: 2003 Minnesota Adult Tobacco Survey
*Estimated counts

[†]The 2003 MATS survey did not ask what people would do if smoking were prohibited in bars because at the time of the survey no communities were considering policies that addressed bars.

According to the 2003 MATS survey results, a higher proportion of people in every category listed above (people 45-64 years old, white non-Hispanics, married couples, single people with no children, college graduates and people with incomes of

\$50,000 or more per year) would eat out more often than less often in the event of a total ban on smoking in restaurants. These results suggest that smoke-free restaurants in Minnesota would gain customers who typically spend more and eat out more often.

ECONOMIC RESULTS OF SMOKE-FREE POLICIES IN OTHER STATES SHOW INCREASES IN BUSINESS AND JOBS

Economic studies in other locations that have enacted smoke-free policies demonstrate that the economic impact of such policies is negligible or positive. In Florida, the statewide smoke-free law, which took effect July 1, 2003, has not hurt sales or employment in the hotel, restaurant and tourism industries.²² In Massachusetts, a comparison between communities adopting smoke-free laws and those that did not showed no effect on taxable sales receipts of all eating and drinking establishments from 1992 to 1998.²³ In New York City, business receipts for restaurants and bars increased 8.7 percent following the enactment of their smoking ban in 2003, and the number of jobs rose.²⁴

SMOKE-FREE POLICIES HELP SMOKERS QUIT AND REDUCE THEIR SMOKING

Providing smoke-free spaces is an effective strategy for helping smokers reduce or quit smoking, and remain tobacco-free. The Centers for Disease Control and Prevention recommends that such efforts be part of an effective comprehensive strategy to reduce smoking rates.²⁵ Of current Minnesota smokers who work indoors, 42 percent (more than 175,000 smokers) reported having reduced their smoking because of restrictions at work. Of all current smokers (employed or not employed), 45 percent (nearly 300,000 smokers) reported having reduced their smoking because of restrictions in public places.

Minnesota smokers are also trying to quit. Nearly 370,000 adult Minnesota smokers attempted to quit in the year before the 2003 survey, and at the time of the survey more than 170,000 adult Minnesota smokers were planning a quit attempt in the next month.²⁶ The 2003 survey did not ask about smokers' reasons for quitting. However, a large percentage of smokers reported having reduced their smoking because of policies at work and other public places. This, combined with the large number of smokers planning and making quit attempts, is consistent with other studies showing that workers in smoke-free environments reduce their smoking and also quit.²⁷⁻³¹

QUITTING ASSISTANCE IS AVAILABLE TO EVERY MINNESOTAN

Resources are currently available for every Minnesotan to get help quitting their use of tobacco, regardless of their health care coverage or benefits package.

Stop-smoking telephone helplines: Telephone-based stop-smoking counseling is an effective approach to quitting smoking.³² National studies have found that the combination of counseling and medication, however, leads to the greatest success in quitting.³³ Therefore, many counseling programs include covered medications for participants. Most major health plans in Minnesota provide telephone counseling at no cost to all of their members who want to quit using tobacco. Minnesotans who want to quit can call either their health plan or the MPAAT-funded QUITPLANSM Helpline at 1-888-354-PLAN.

Effective stop-smoking medications: Several medications help reduce the symptoms of withdrawal from nicotine or help people cope better with those symptoms. Nicotine replacement therapy (NRT) products effectively increase the odds of quitting smoking successfully. These medications include nicotine patches, gum, nasal sprays, inhalers and lozenges. Bupropion, a non-nicotine medication marketed as Zyban[®], also is effective and may be combined with NRT.³⁴ Smokers may purchase many NRT products without a prescription. Zyban, however, requires a doctor's prescription.

Many Minnesotans have access to stop-smoking medications through their health plans. Individuals who have health insurance can call the telephone number on the back of their health plan identification card to find out what coverage for stop-smoking medications they may have.

Other programs for quitting tobacco use: In addition to the services offered by health plans in Minnesota, the Minnesota Partnership for Action Against Tobacco (MPAAT) offers several programs under the QUITPLAN name to help people quit using tobacco, including the state-wide telephone helpline (1-888-354-PLAN), an interactive website at quitplan.com and face-to-face counseling individually or in group settings through the QUITPLAN Centers and QUITPLAN-at-Work programs. MPAAT serves under- or un-insured Minnesotans through its QUITPLAN programs. For more information on any of the QUITPLAN programs, go to www.mpaat.org.

Through Minnesota's health plans and MPAAT-funded programs, the resources exist to help those who want to quit using tobacco.

SMOKE-FREE POLICIES IMPROVE HEALTH

Recent studies of the impact of smoke-free policies have shown that smoke-free environments have short-term health benefits. One such study demonstrated that cotinine levels (a marker for smoke exposure) in non-smoking bar and restaurant workers in New York City decreased by 85 percent since the smoking ban was put in place.²⁴ Another demonstrated an association between the establishment of smoke-free bars and taverns in California and improvements in the respiratory health of bartenders.³⁵

In addition, a smoke-free ordinance was passed in Helena, Montana, and then repealed six months later. An analysis of medical record data for the time period before, during and after the implementation of the ordinance showed a significant decrease in the number of hospital admissions for heart attacks just after the passage of the policy and a return to pre-ban levels of heart attack admissions once the ban was repealed.³⁶

Smoke-free policies also have long-term health benefits. California's lung and bronchial cancer rates have decreased at a higher rate than the rest of the country's, which are likely population health benefits associated with statewide reductions in smoking rates over the past two decades.³⁷

SMOKE-FREE POLICIES CAN HELP REDUCE HEALTH CARE COSTS

Cigarette smoking has been identified as the most important source of preventable morbidity and premature mortality worldwide.³⁸ With health care costs at an all-time high causing concern for large and small businesses alike, curbing cigarette use and encouraging people to quit smoking through the implementation of workplace policies could be a large source of controllable health-care cost savings.

DISCUSSION

Minnesota communities are currently debating the issue of secondhand smoke at many governmental levels. The results from the 2003 MATS survey can inform four aspects of this discussion: the extent of exposure to secondhand smoke for adult Minnesotans, the inequality of exposure to secondhand smoke in Minnesota, the attitudes and desires of Minnesotans around smoke-free spaces, and the efficacy of smoke-free policies for protecting people from secondhand smoke exposure. We put forth these findings for those involved in the policy process to consider.

Exposure to secondhand smoke is extensive

The extent of exposure to secondhand smoke is a major public health concern in Minnesota. Two of three adult Minnesotans (65%) reported exposure to secondhand smoke in the past seven days, either at home, in a car, at work or in another place. The Environmental Protection Agency classified secondhand smoke as a human lung carcinogen in 1992.⁷ Secondhand smoke has also been linked to heart disease, stroke and lower respiratory tract infections such as bronchitis and pneumonia.⁹⁻¹³ Nearly all Minnesotans recognize that exposure to secondhand smoke is dangerous, and many are taking actions to protect themselves and their families. Yet while a growing number of adult Minnesotans living with children have smoke-free policies in their homes, nearly half (45%) of Minnesotans living with children and at least one smoker do not have smoke-free policies in their home.

Exposure to secondhand smoke is unequal

The 2003 MATS survey results show that some Minnesotans are far more likely to be exposed to secondhand smoke than others. Adults who are

young (18- to 24-years old), have less education, earn less income or work in certain industries are more likely to report recent exposure to secondhand smoke than other Minnesotans. The inequality of exposure is not limited to the private or voluntary aspects of peoples' lives, such as their homes or cars; tremendous inequality of exposure exists in different kinds of workplaces. People who work in places that serve alcohol, such as restaurants and bars, were far more likely to report that smoking was allowed at their workplace, and they had recently been exposed to secondhand smoke. These workplace inequalities mean that employees in these settings face a substantially greater chance of disease and death from exposure to tobacco smoke than employees who work in smoke-free environments.

Minnesotans want smoke-free spaces

Most Minnesota workers who are exposed to secondhand smoke at work would prefer their workplace to be smoke-free. Only 2 percent of all indoor workers in Minnesota prefer to work where smoking is allowed. Not only do Minnesota workers want smoke-free workplaces, but the majority of all Minnesotans also prefer smoke-free spaces in general. The 2003 MATS survey results demonstrate that the arguments of opponents to smoke-free spaces are not reflected in the opinions, preferences and reported behavior of Minnesotans. Most Minnesotans prefer eating in smoke-free environments. Further, when asked if they would eat out more or less often if there were a total ban on smoking in restaurants, those reporting they would eat out more often or the same amount outnumber those reporting they would eat out less often by a margin of more than 10 to 1.

Smoke-free policies work

The U.S. Surgeon General stated in a 2000 report that smoke-free policies are the most effective

method for reducing exposure to secondhand smoke.¹⁹ In addition, studies have shown that smoke-free workplaces encourage smokers to reduce their smoking or quit altogether. Results from the 2003 MATS survey are consistent with these findings. The majority of smokers (61%) reported that they have reduced their smoking because of policies either at work or in public places. In addition, more smokers reported having made a quit attempt in the past year than in 1999. The 2003 MATS survey results show that policies limiting the places smokers are allowed to smoke result in behavior that research shows make future quit attempts more successful.^{39, 40}

Smoke-free policies are part of any comprehensive tobacco control plan. Work remains to be done to ensure that all Minnesotans are protected from the harmful effects of secondhand smoke. We hope this report contributes to our understanding of secondhand smoke exposure, sheds light on the attitudes and preferences of Minnesotans regarding that exposure, and reinforces the ongoing efforts to enhance the lives of all Minnesotans by reducing tobacco use and exposure to secondhand smoke.

APPENDIX A: METHODS

A Note on the Sample and Methods Used in the 2003 Minnesota Adult Tobacco Survey and Comparisons to the 1999 Adult Tobacco Prevalence Survey

The Minnesota Adult Tobacco Survey (MATS) was designed to estimate smoking prevalence rates and other tobacco-related attitudes, beliefs and behaviors for a representative sample of adults aged 18 and above living in the state of Minnesota, and for a representative sample of individual adult members of the Blue Cross and Blue Shield of Minnesota (Blue Cross) health plan. In addition, the MATS team sought to gather sufficient information from young adults, aged 18 to 24, to perform a detailed analysis of their attitudes, beliefs and behaviors regarding smoking.

To accomplish these goals, the MATS team set a goal of interviewing 10,000 Minnesota adult residents. Because of the survey's multiple goals, it required a complex sample design, which was devised by researchers from the University of Minnesota School of Public Health. The sample included 5,500 adults from a statewide random digit dial sample (RDD sample), which gave all households in Minnesota with telephones a chance of inclusion in the study. The sample also included 4,500 adults from an enrollee list of Blue Cross members (Blue Cross list sample). The Blue Cross list sample was itself composed of representative random samples from each of four major under-writing pools of Blue Cross members: (1) Senior Medicare supplemental insurance (Medicare), (2) Blue Plus Prepaid Medical Assistance Program enrollees (PMAP), (3) Blue Plus MinnesotaCare enrollees and (4) those covered through commercially purchased health plans (both self-insured employer plans and fully-insured plans) (Commercial). Self-insured plans, used only by large employers, directly bear the risk of health care costs and are only administered by the health plan. In fully-insured plans, the health plan assumes the risk for health care costs on behalf of the employer and

subscriber. The goal of gathering sufficient data on young adults ages 18 to 24 was accomplished by over-sampling this group in both the RDD sample and the Blue Cross list sample.

The MATS team employed quality control procedures throughout the survey process — including the overall design of the survey, the wording of questions, review of the work of interviewers and coders, and statistical review of reports. Most survey questions were derived from a survey instrument developed by the Centers for Disease Control (CDC), and other questions had been previously tested and used in other large surveys, such as the ongoing California Tobacco Surveys (CTS) and the 1999 Minnesota Adult Tobacco Prevalence Survey. Clearwater Research, Inc., an experienced telephone survey vendor, administered the survey using research quality methods. The University of Minnesota researchers and the MATS team supervised the implementation of the survey. The Clearwater Research interviewers used Computer Assisted Telephone Interviewing (CATI) software to perform data collection accurately and efficiently. The interviewers made at least 15 attempts to reach persons in the sample. Interviews were conducted from November 2002 to June 2003. For the purpose of this study, the Council of American Survey Research Organizations (CASRO) methodology was used to calculate the response rate. The overall response rate for the survey was 56.5 percent.

The MATS team made every effort to ensure the confidentiality of respondents. The survey's design and confidentiality procedures were approved by Institutional Review Boards at the University of Minnesota and the Minnesota Department of

Health. Names or other identifying information were not gathered for the RDD sample and respondent identifiers in the Blue Cross list sample were not retained. Reports cite only aggregate data.

After completion of all interviews, the data from the subsamples in the complex sample design were merged using standard scientific methods in order to create the final merged sample file. The data in this report are derived from this final merged data set, which consists of 8,821 respondents. The final merged data set includes all of the RDD respondents and the Blue Cross list sample respondents in the MinnesotaCare, Commercial and Senior strata. The Blue Cross list PMAP respondents were not brought into the final merged data set because the Minnesota PMAP is only a partial subset of the broader statewide Medical Assistance Program. The Medical Assistance Program includes some types of enrollees that are not enrolled in PMAP. However, the RDD sample does include all types of Medical Assistance program members, including PMAP members, so enrollees of the entire Medical Assistance Program are represented in the final merged data set.

The MATS data represent the attitudes, beliefs and behaviors of Minnesota's adult population in 2002-03, when the MATS interviews were conducted. This report often compares results from the 2003 MATS data to results from the Minnesota sample of the 1999 Adult Tobacco Prevalence Survey, a similar telephone-based random digit dial survey of approximately 6,000 adult residents of Minnesota. The methods used in the 1999 survey are described in more detail in two public reports derived from the Adult Tobacco Prevalence Survey; *Secondhand Smoke: Knowledge, Attitudes and Behaviors of Minnesotans*, issued in November 2000, and *Quitting Smoking: Nicotine Addiction in Minnesota*, issued in July 2001. The 1999 Adult Tobacco Prevalence Survey was also administered by Clearwater Research, Inc. using similar research methods, including full protection of all respondents'

confidentiality. The response rate for the Minnesota sample of the Adult Tobacco Prevalence Survey was 44.8 percent. Questions from the two surveys that are compared in the present report are identical or very similar. Nevertheless, while the two surveys are comparable, caution must be used when interpreting changes observed between these surveys. In particular, causal inferences should be drawn very cautiously because many factors may have been involved in producing any observed differences over this time period.

The 1999 Adult Tobacco Prevalence Survey data and the 2003 MATS data provide highly accurate and detailed representations of the smoking-related attitudes, beliefs and behaviors of Minnesota's adult residents at two points in time. However, statistics from surveys are always subject to sampling and nonsampling error. All comparisons between results from the two surveys and within the 2003 survey results presented in this report have taken sampling error into account and, unless otherwise noted, are statistically significant at or beyond $p < 0.05$. Statistical tests were computed using t-tests and standard errors were adjusted for the complex survey design of the MATS survey.

Nonsampling errors in surveys may be attributed to a variety of sources, such as how the survey was designed, how respondents interpret questions, how able and willing respondents are to provide correct answers, and how accurately the answers are coded and classified. The Adult Tobacco Prevalence Survey and the MATS teams took several steps to minimize nonsampling errors. Following completion of the interviews in each survey, post-stratification adjustments were applied, whereby sample estimates are adjusted to independent estimates of the statewide adult population by age, sex and geographic region. This weighting partially corrects for bias due to minor discrepancies in the representativeness of the sample. Moreover, 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, it is likely that racial and ethnic minority communities are under-represented in both surveys. All of these considerations affect comparisons across different surveys or data sources. Most of these limitations are inherent in all surveys, but the MATS teams made every effort to minimize these limitations through pretesting of the survey questions and other standard techniques.

For more information about the MATS survey sample design and methods for comparing its results to the 1999 Adult Tobacco Prevalence Survey, please contact:

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APPENDIX B: PROFILE OF ADULTS IN MINNESOTA

Using data from the 2003 Minnesota Adult Tobacco Survey, Table 1 provides demographic data on the adult population of Minnesota in the categories discussed in this report. Since smoking status is highly correlated with attitudes and behaviors regarding secondhand smoke, each demographic category includes subgroupings by smoking status. In the 1999 Adult Tobacco Prevalence Survey, the demographic characteristics among the three groups were similar to the 2003 profile.

Table 1: 2003 Profile of adults in Minnesota

	Current smokers	Former smokers	Never smokers	Total (percent of adult population)
Age				
18-24	22%	4%	13%	12%
25-44	42%	24%	42%	37%
45-64	31%	46%	31%	35%
65+	5%	26%	13%	15%
Total	100%	100%	100%*	100%*
Gender				
Female	44%	44%	55%	50%
Male	56%	56%	45%	50%
Total	100%	100%	100%	100%
Employment				
No	22%	36%	25%	27%
Yes	78%	64%	75%	73%
Total	100%	100%	100%	100%
Education				
Less than high school	8%	5%	6%	6%
High school graduate/GED	39%	29%	23%	27%
Some college or technical	34%	31%	29%	31%
College degree and above	19%	35%	42%	36%
Total	100%	100%	100%	100%
Income				
Less than \$35,000	42%	31%	28%	31%
\$35,000 - \$49,999	18%	20%	16%	18%
\$50,000 - \$74,999	21%	22%	23%	22%
\$75,000+	19%	27%	33%	29%
Total	100%	100%	100%	100%

*Percentages do not add up to 100% because of rounding to whole percentages.

Data Source: 2003 Minnesota Adult Tobacco Survey

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COLLABORATING ORGANIZATIONS

BLUE CROSS AND BLUE SHIELD OF MINNESOTA (Blue Cross), with headquarters in the St. Paul suburb of Eagan, was chartered in 1933 as Minnesota's first health plan and continues to carry out its charter mission today: to promote a wider, more economical and timely availability of health services for the people of Minnesota. Its Center for Tobacco Reduction and Health Improvement was formed in 1998 in the wake of Blue Cross' landmark lawsuit against and settlement with the tobacco industry. The Center works to reduce tobacco use among Blue Cross members, invests in community-wide prevention and treatment efforts for tobacco use and related health risks, and creates new knowledge and models for health improvement. Blue Cross and Blue Shield of Minnesota is an independent licensee of the Blue Cross and Blue Shield Association.

THE MINNESOTA DEPARTMENT OF HEALTH works to protect, improve and maintain the health of all Minnesotans. The department helps to conduct research on youth and adult tobacco use through its Center for Health Statistics. The department also provides grants to community organizations for the purpose of creating environments and policies that reduce youth tobacco use. The grants help fund scientifically-proven,

population-based strategies. These strategies include adopting private and public policies restricting tobacco use, implementing comprehensive school-based tobacco prevention programs and reducing youth access to tobacco.

THE MINNESOTA PARTNERSHIP FOR ACTION AGAINST TOBACCO (MPAAT) is an independent, non-profit organization that improves the health of Minnesota by reducing the harm caused by tobacco. MPAAT serves Minnesota through its grant-making program, QUITPLANSM services to help people stop smoking and statewide outreach activities. It is funded with 3 percent of the state's tobacco settlement.

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