



# Surveillance Brief

Wisconsin's Comprehensive Cancer Control Program  
Prevention • Screening & Detection • Treatment • Quality of Life • Palliative Care

June 2007  
Volume 3 Number 3

## CIGARETTE PRICES AND TOBACCO CONSUMPTION IN WISCONSIN: IMPLICATIONS OF INCREASED TOBACCO TAXES

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### INTRODUCTION

Tobacco use is the leading preventable cause of premature death and disease in Wisconsin. Nearly 16% of all deaths in Wisconsin are directly attributable to cigarette smoking, with additional deaths indirectly attributable to smoking through causes such as secondhand smoke exposure and fires.<sup>1</sup> Tobacco use is also responsible for \$2.2 billion annually in health care costs, and \$1.6 billion in lost productivity.<sup>1</sup>

In light of these facts, Wisconsin supports various tobacco control policies and programs in an effort to reduce the health impact and financial toll tobacco use poses to the State and its residents. One proposed tool for tobacco control is increasing the cigarette excise tax. In 2001, Wisconsin increased its cigarette excise tax from \$0.59 to \$0.77 per pack, where it remains today.

Considerable evidence shows that higher cigarette prices are associated with lower overall cigarette consumption and lower overall smoking prevalence.<sup>2</sup> Higher prices may be partially responsible for smokers' decision to quit smoking, and for discouraging young people from ever starting. In addition, the day-to-day financial implications associated with paying more for cigarettes can contribute to reduced daily consumption among current smokers.

A previously published report demonstrated an inverse relationship between cigarette price and per capita consumption in Wisconsin.<sup>3</sup> This report updates those findings with more recent data. In addition, this study investigates the relationship of cigarette prices with smoking prevalence and individual levels of daily consumption among smokers.

### METHODS

Data on cigarette prices and per capita consumption were obtained from The Tax Burden on Tobacco,<sup>4</sup> an annual report listing historical price and consumption data for each U.S. state. Cigarette prices per pack were adjusted for inflation using 2005 dollars.

Adult smoking data came from the Behavioral Risk Factor Surveillance System (BRFSS).<sup>5</sup> Adult smokers were defined as individuals age 18 and older who had smoked 100 or more cigarettes in their lifetime and who reported smoking every day or some days at the time of interview. Average daily consumption was based on smokers' responses to the question, "On average, how many cigarettes do you smoke a day?" Daily consumption was assessed annually in the BRFSS from 1990 through 2005, with the exception of 2001 and 2003.

Data on youth smoking prevalence for high school students were obtained from the Youth Risk Behavior Survey (YRBS)<sup>6</sup> and the Youth Tobacco Survey (YTS).<sup>7</sup> The YRBS was conducted in Wisconsin in 1993, 1997, 1999, 2001, 2003 and 2005. The YTS was conducted in 2000, 2002, 2004 and 2006. Current youth smokers were defined as high school students who reported having smoked on at least one of the past 30 days.

Data for smoking prevalence and adult daily cigarette consumption were analyzed using SAS 9.1 and SPSS 13.0 statistical software. Data on

cigarette price and per capita consumption are based on fiscal years, while all other consumption and prevalence data are based on calendar years.

### Summary

**Objective** – To examine the relationship of cigarette prices to smoking prevalence and cigarette consumption by observing trends over time in Wisconsin.

**Methods** – Data on smoking prevalence and daily cigarette consumption were obtained from the Wisconsin Behavioral Risk Factor Survey, Youth Risk Behavior Survey, and Youth Tobacco Survey. Cigarette price and per capita consumption data came from The Tax Burden on Tobacco report.

**Findings** – Both smoking prevalence and cigarette consumption in Wisconsin were related to the price of cigarettes, with higher cigarette prices typically corresponding to lower prevalence rates and reduced levels of consumption.

**Implications** – These data provide further evidence that increased tobacco prices, as a result of tax increases, may serve as an effective tobacco control policy.

## RESULTS

Per capita cigarette consumption has been on the decline in Wisconsin for more than two decades, but this has not always been the trend. As seen in Figure 1, per capita cigarette consumption was increasing between 1970 and 1981, at a time when inflation-adjusted cigarette prices were decreasing. Thereafter, as prices increased, a decrease in consumption followed. However, beginning in 2003, as prices fell, decreases in per capita consumption leveled off.

A similar relationship is portrayed in Figure 2. Among adult smokers, average daily cigarette consumption declined slightly between 1990 and 1993, as cigarette prices increased slightly. This was followed by a small dip in price, and a simultaneous increase in average daily consumption during 1994. Subsequently, pricing increased at a very slow pace, and daily consumption decreased minimally. After 1999, prices increased more sharply, followed by decreasing daily consumption one to two years later. More recently, between 2004 and 2005, average daily consumption appeared to level off, while small price decreases occurred between 2003 and 2005.

Figures 3 and 4 display the recent trends in smoking prevalence among adults and high school age youth in relation to cigarette prices. The overall trend in adult smoking prevalence from 1990 to 2005 reveals a modest relative decrease of 16.6% (down from 24.7% to 20.6%). From 1997 to 2000, prevalence increased slightly, but thereafter decreased to 20.6% in 2005, the lowest observed level. This decline in prevalence occurred following the sharp increase in cigarette prices after 1999.

Though fewer data were available, the relationship of cigarette price with youth smoking prevalence appears to be more pronounced (Figure 4). The increase in price between 1999 and 2003 is accompanied by a 45% relative decrease in smoking prevalence among Wisconsin high school students

between 1999 and 2004. However, as prices decreased in recent years, youth smoking prevalence increased slightly.

## COMMENTS

The data presented in this report suggest that cigarette price is inversely correlated with cigarette consumption and smoking prevalence in Wisconsin. This relationship appears to be strongest for per capita consumption, which can reflect reductions in both numbers of smokers and number of cigarettes consumed by smokers.

Though data are somewhat limited, the inverse relationship between cigarette price and youth prevalence also appears to be fairly strong. The sharp increase in cigarette prices observed between 1999 and 2002, along with sharply decreasing youth prevalence during that time, offers support to the important role that price may play in youth consumption. These findings in Wisconsin echo previously published findings from other studies examining the relationship of cigarette price to smoking prevalence and tobacco consumption<sup>8,9</sup> suggesting youth prevalence is more sensitive to price increases than adult prevalence.

It is important to note that price is not the only factor related to smoking prevalence and tobacco consumption. Other policy changes and programmatic tobacco control and prevention efforts, as well as social pressures and health concerns, may also play a role in the observed smoking trends.

## PROGRAM/POLICY IMPLICATIONS

Studies examining the impact of cigarette price on tobacco consumption suggest that a 10% increase in price will result in a 3% to 5% decrease in overall (per capita) cigarette consumption.<sup>2</sup> This overall smoking reduction results from both reduced consumption among smokers and a reduction in the number of smokers. Youth smoking seems to be especially sensitive to price, and it is estimated that youth smokers

are 2-3 times more likely than adult smokers to quit smoking or smoke less in response to price increases.<sup>2</sup> Studies estimate that a 10% increase in price will result in a 7% reduction in the proportion of teenagers who smoke.<sup>8</sup>

Using these estimates, the potential impact of increased cigarette prices on Wisconsin per capita cigarette consumption and high school smoking prevalence can be approximated. If the cigarette excise tax were increased in Wisconsin by \$1.25 and applied to 2005 prices, and no other price modifications were made, the per capita consumption could decrease approximately 13.3%, from 70.1 to 60.8 packs per capita.<sup>†</sup> Likewise, if the same tax increase were applied to 2005 prices to predict the decrease in smoking among high school students, the prevalence of high school smokers could decrease approximately 23.3%, from a prevalence rate of 22.8% to 17.5%. The proposed reduction in youth smoking could have far-reaching benefits since experimentation and progression to regular smoking typically occurs during these formative years.

In summary, this report provides further evidence that increasing cigarette prices in Wisconsin, through cigarette excise taxes, may serve as an effective policy tool in deterring smoking initiation among youth, encouraging smoking cessation among adults, and lowering cigarette consumption among those who continue to smoke.

## ACKNOWLEDGEMENTS

This study was supported by the Wisconsin Tobacco Prevention and Control Program, Bureau of Community Health Promotion, Division of Public Health, Wisconsin Department of Health and Family Services.

<sup>†</sup> Calculations based on the 2005 average price of cigarettes (\$3.76/pack) and assuming a 4% decrease in consumption per 10% increase in price.

FIGURE 1. Per Capita Cigarette Sales and Cigarette Price, Wisconsin, 1970-2005

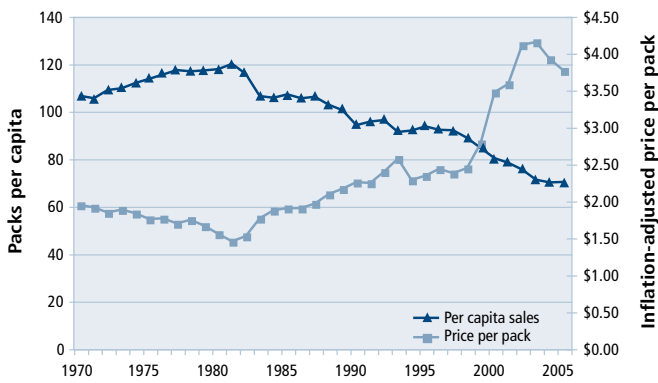
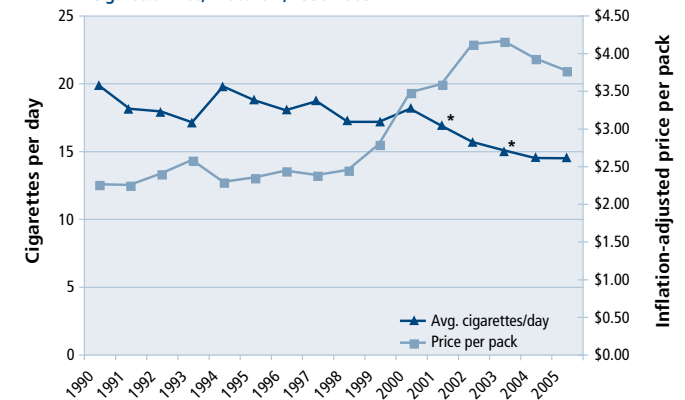


FIGURE 2. Average Daily Cigarette Consumption Among Adult Smokers and Cigarette Price, Wisconsin, 1990-2005



\* 2001 and 2003 datapoints were interpolated by averaging the values from the preceding and following years.

FIGURE 3. Adult Smoking Prevalence and Cigarette Price, Wisconsin, 1990-2005

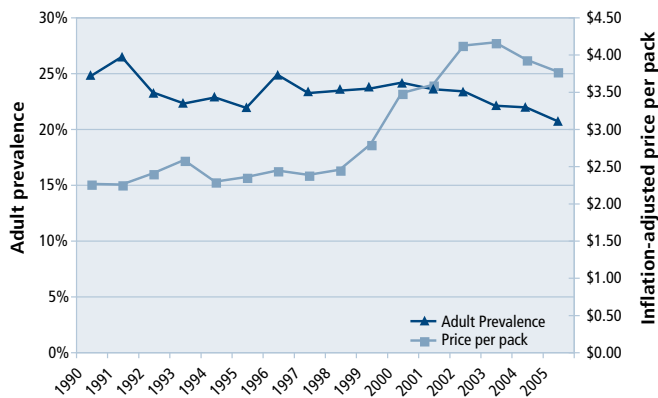
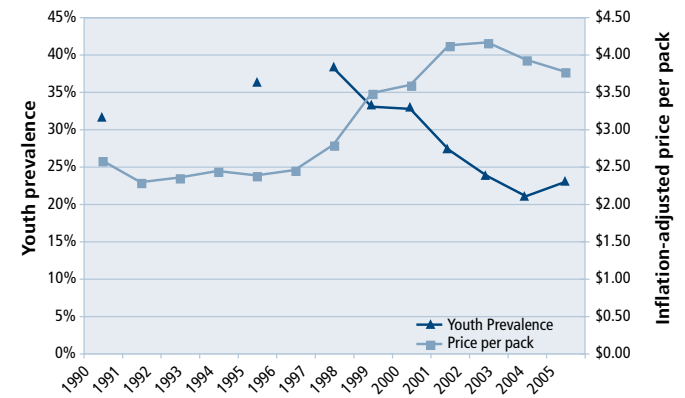


FIGURE 4. Youth Smoking Prevalence (HS only) and Cigarette Price, Wisconsin, 1993-2005



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### Suggested Citation:

Brown, et al. Cigarette Prices and Tobacco Consumption in Wisconsin: Implications of Increased Tobacco Taxes. Surveillance Brief. UW Paul P. Carbone Comprehensive Cancer Center. 2007; 3-3.

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Permit No. 658  
Madison, WI



# *Surveillance Brief*

**Wisconsin's Comprehensive Cancer Control Program**

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Funding is provided by The Center for Disease Control, The Wisconsin Department of Health and Family Services, The Wisconsin Healthier Partnership Fund, and the UW Paul P. Carbone Comprehensive Cancer Center.

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