



**Adult Smoking Rates and Lexington's Smoke-free Law**

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## Executive Summary

The purpose of the study was to evaluate whether there was a change in the rate of adult smoking in Lexington-Fayette County, Kentucky, following the enactment of a 100% smoke-free public places ordinance in April 2004. Restrictions on smoking in public places have been shown to reduce smoking prevalence and average daily cigarette consumption among smokers and to increase cessation attempts.

Behavioral Risk Factor Surveillance Survey (BRFSS) data from 2001-05 were used to test whether adult smoking rates changed significantly in Fayette County from the pre- to post-law period, relative to the degree of change during the same timeframe in five Kentucky counties with similar demographic characteristics. The national BRFSS survey uses a disproportionate stratified random sampling design. The sample for the study reported here consisted of 3,457 BRFSS respondents: 2,334 pre-law and 1,123 post-law.

The smoking rate and 95% confidence interval (CI) for Fayette County pre-law was 25.7% (CI: 21.2-20.1), and this declined to 17.5% (CI: 11.8-23.1) post-law, a decrease of 31.9%. In the five counties without a law (Control group), the rates at pre-law and post-law were 27.6% (CI: 24.7-30.5) and 27.6% (CI: 23.3-31.8), respectively, indicating no change. With gender, age, education and month of interview included as control variables, the interaction between Time (pre- vs. post-law) and Group (Fayette vs. controls) was significant (Wald  $\chi^2 = 4.0$ ,  $p = .05$ ). While Fayette and the Control counties did not differ in smoking rate during the pre-law period, Fayette had a significantly lower rate during post-law. The degree of decrease over time in Fayette was significant, while there was not a significant change from pre- to post-law in the Control counties.

While smoke-free legislation is typically enacted to protect nonsmokers from secondhand smoke, this study provides evidence that smoke-free laws also positively affect the health of future and current smokers by providing an environment conducive to preventing initiation and promoting quitting.

Purpose of the research study: To evaluate the effect of Lexington's smoke-free law on adult smoking rates in Lexington-Fayette County over time.

Background: On April 27, 2004, Lexington-Fayette County implemented a smoke-free ordinance prohibiting smoking in all public buildings including restaurants, bars, bingo parlors, pool halls, public areas of hotels/motels, and all other buildings open to the public. The ordinance was scheduled to go into effect on September 26, 2003, but there was a 7-month delay in enforcement due to a legal challenge. Lexington-Fayette County was the first community in Kentucky with a smoke-free law.

Kentucky leads the nation in smoking, with 28.7% of adults who smoke cigarettes, compared to 20.9% in the U.S.<sup>1</sup>

Each year tobacco use kills 440,000 Americans,<sup>2</sup> and nearly 53,000 nonsmokers in this country die from lung cancer and heart disease due to secondhand smoke exposure.<sup>3</sup> In Kentucky, cigarette smoking claims nearly 8,000 lives<sup>4</sup> and costs \$1.17 billion in health care expenditures<sup>2</sup> each year. In spite of the enormous economic burden caused by tobacco use, Kentucky spends only \$2.7 million per year for tobacco prevention and cessation (10.8% of the CDC recommended spending) and ranks 39<sup>th</sup> nationally in spending on tobacco prevention.<sup>5</sup> In contrast, the tobacco industry spends \$346.4 million each year marketing tobacco products in Kentucky.<sup>6</sup>

Currently in the U.S., there are 17 states that have enacted statewide laws restricting smoking in workplaces and/or restaurants and/or bars, with six of these states eliminating smoking in virtually all workplaces.<sup>7</sup> It is estimated that approximately 44.5% of the U.S. population are protected by clean indoor air regulations that cover virtually all indoor worksites including bars and restaurants. There are over 2,300 local ordinances or regulations that restrict smoking to some extent in workplaces across the United States and Washington D.C.<sup>8</sup> The extent of protection provided by these laws vary widely from community to community.

Currently in Kentucky, ten communities have enacted and implemented smoke-free laws. The most comprehensive ordinances, 100% smoke-free workplace *and* 100% smoke-free enclosed public place laws, have been implemented in Georgetown, Morehead, Ashland, and Elizabethtown. In February 2007, Oldham County will join this list, as well as Louisville in July 2007. The next most comprehensive ordinances, 100% smoke-free enclosed public place laws, have been implemented in Lexington, Letcher County, and Frankfort. Henderson, Kentucky has implemented a smoke-free law covering most workplaces and public places. Two communities are currently implementing partial smoke-free laws, protecting workers and patrons in some public venues: Louisville and Daviess County.

Restrictions on smoking in public places and private workplaces reduce both smoking prevalence and average daily cigarette consumption among smokers<sup>7-17</sup> and increase cessation attempts.<sup>18,19</sup> Smoke-free workplaces are associated with a 29% drop in cigarette consumption.<sup>20</sup> Employees who work in a smoke-free environment are less

likely to smoke than those who work in establishments that allow smoking.<sup>7</sup> Restrictions on smoking may alter the perceived norms related to smoking by changing attitudes concerning the social acceptability of smoking<sup>21</sup> and increase public awareness about the dangers of cigarette smoking.<sup>7</sup>

### Study Methods:

Behavioral Risk Factor Surveillance Survey (BRFSS) data from 2001-05 were used to test whether smoking rates changed significantly in Fayette County from the pre- to post-law period, relative to the degree of change during the same timeframe in five Kentucky counties with similar demographic characteristics (Oldham, Boone, Woodford, Hardin, Kenton). The national BRFSS survey of adults aged 18 and older uses a disproportionate stratified random sampling design. The BRFSS is administered by the Behavioral Surveillance Branch (BSB) of the Centers for Disease Control and Prevention and the states. States conduct the telephone interviews and forward data to the BSB, which weights the data according to state-specific population estimates. The sample for this study consisted of 3,457 Kentucky BRFSS respondents: 2,334 pre-law and 1,123 post-law. The pre-law period spanned from January 2001 to April 2004 (40 months); post-law was May 2004 to December 2005 (20 months).

Socioeconomic status affects smoking rates. Thus, to make the comparison of smoking rates in Fayette County to counties without a smoke-free law more equitable, the data used in the study were from respondents living in the six counties (including Fayette) with the highest percentages of high school graduates in Kentucky. Fayette, with the smoke-free law, was the intervention county while the remaining five counties in the study (Boone, Hardin, Kenton, Oldham, and Woodford) without smoke-free legislation formed the control group. Using the BRFSS methodology, data were weighted to adjust for the probability of respondent selection and post-stratified to reflect the age and sex distribution of Kentucky's estimated adult population during 2001-05; these weights were adjusted to account for multiple years of survey data used.

Two BRFSS items were used to determine current smoking status. Lifetime usage was determined with the question, "Have you smoked at least 100 cigarettes in your entire life?" Current cigarette usage was ascertained by asking "Do you now smoke cigarettes every day, some days, or not at all?" Respondents who had smoked at least 100 cigarettes in their life and who, at the time of the interview, smoked either "every day" or "some days" were coded as current smokers. Other respondents, including both former smokers and never smokers, were coded as nonsmokers. Other survey variables used in this analysis included date of interview, county of residence, age, gender, and education.

### Findings:

The smoking rate and 95% confidence interval (CI) for Fayette County pre-law, on average, was 25.7% (CI: 21.2-30.1), and this declined to 17.5% (CI: 11.8-23.1) post-law, a decrease of 31.9% (see Figure 1). In the five counties without a law (Control group), the rates at pre-law and post-law were 27.6% (CI: 24.7-30.5) and 27.6% (CI: 23.3-31.8),

respectively, indicating no change over this time period. It is estimated that during the 40 months included in the pre-law period there were, on average, 53,444 adult cigarette smokers living in Fayette County compared with an average of 36,977 during the first 20 months after the law took effect.

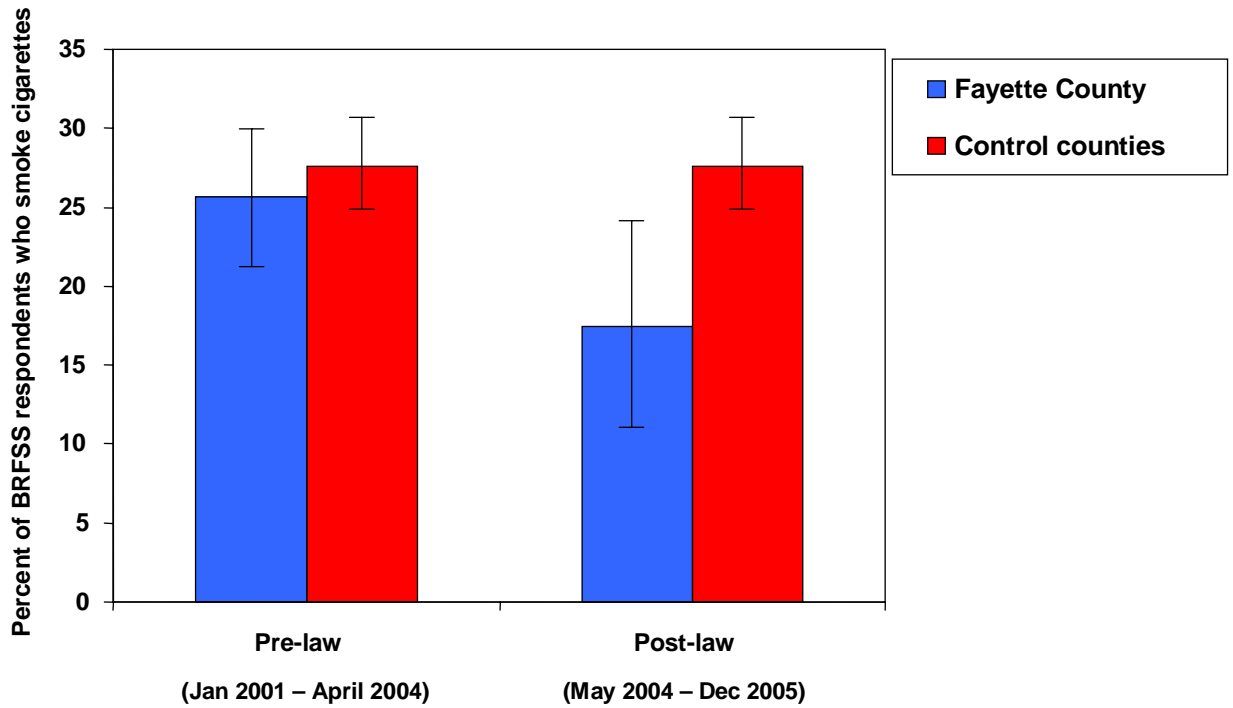


Figure 1. Percentages of smokers before and after smoke-free law, by group (N = 3,457)

Figure 2 displays the weighted rates for each 4-month interval in the five-year study period, with separate profiles for Fayette County and the Control group.

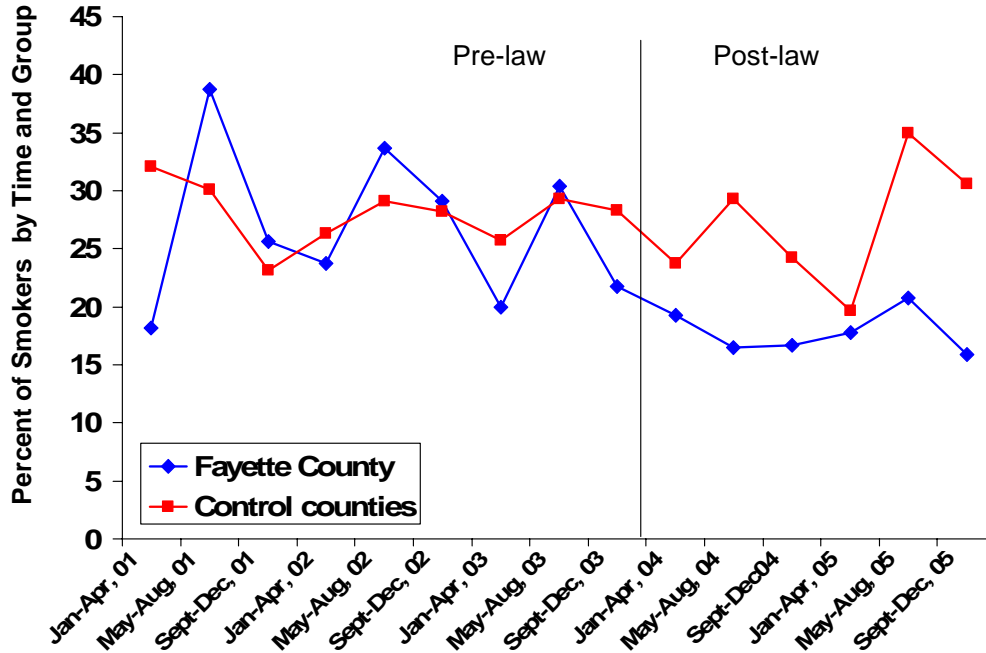


Figure 2. Percent of smokers for each 4-month period, by group.

Smoking rates were compared between the two groups and between the two time periods, while controlling for month of the interview, and the respondent demographic characteristics of age (less than the median age of 50 versus at or above the median), gender (male versus female) and education (less than high school versus high school diploma or above).

With gender, age, education and month of interview included as control variables, the interaction between Time (pre- vs. post-law) and Group (Fayette vs. controls) was significant (Wald  $\chi^2 = 4.0$ ,  $p = .05$ ). This result demonstrated that the magnitude of change from pre-law to post-law was significantly different for Fayette County compared to the Control counties. While Fayette and the Control counties did not differ in smoking rate during the pre-law period, Fayette had a significantly lower rate during post-law. The degree of decrease over time in Fayette was significant, while there was not a significant change from pre- to post-law in the Control counties.

The comparison of the pre-law and post-law rates within the Control counties was not significant, and the comparison between Fayette County and the Control counties prior to the smoke-free law enactment also was not significant.

## Conclusions:

While smoke-free legislation is typically enacted to protect nonsmokers from secondhand smoke, this study provides evidence that smoke-free laws also positively affect the health of future and current smokers by providing an environment conducive to preventing initiation and promoting quitting. Given that Kentucky spends an estimated \$1.17 billion per year to treat sick smokers, the 31.9% reduction in the number of smokers in Lexington-Fayette County after the smoke-free law took effect will result in significant savings in healthcare costs and will promote workplace productivity.

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