

Smoking Behavior and Healthcare Expenditure in the United States, 1992– 2009: Panel Data Estimates

Take Away Points

- Previous estimates of the medical costs of smoking have not evaluated how these expenditure changes over time are associated with changes in smoking behavior and the effects of tobacco control programs.
- This study of national data documented that reductions in smoking are associated with reduced per capita spending on healthcare.
 - States with low smoking rates have lower medical costs, and states with higher smoking rates have higher medical costs.
 - Funding for population-based tobacco control programs was associated with reductions in cigarette consumption and, reductions in per capita healthcare expenditure.
- Predictive modeling indicates that a relative decrease in smoking rates of 10% across all states would result in a \$63 billion reduction (in 2012 US dollars) in healthcare expenditures the following year.
- Medical savings for states accrue quickly when smoking prevalence and intensity decrease.
- Policies that reduce smoking likely yield reductions in health care costs, and quickly.

The Issue

Substantial evidence proves that reduction in smoking behaviors results in both substantial short and long term health benefits. Short term benefits include decreased risk of heart attack and stroke by about half in the first year after smoking cessation. The risk of having a low birth weight infant due to smoking almost entirely disappears if a pregnant woman quits smoking during the first trimester.

The 2014 Surgeon General's report: *The Health Consequences of Smoking—50 Years of Progress* summarized 59 studies that reported immediate drops in hospital admissions (10–20%) for acute myocardial infarction, other cardiac events, stroke, asthma, and other pulmonary events following an implementation of smoke-free laws. These changes often were observed within a month of implementation. The researchers sought to estimate by how much on average would a 1% relative reduction in smoking prevalence in a state reduce the health costs in that state a year later.

Study Methods and Design

The relationship of smoking on healthcare costs was analyzed using cross-sectional time series data on smoking, healthcare costs, and demographics for all 50 states and the District of Columbia from 1992 to 2009. The researchers used the Centers for Medicare and Medicaid Services (CMS) estimates of total (public and private payer) health care expenditure by state of residence. Prevalence of current smoking and state and federal cigarette tax data were obtained from the Behavioral Risk Factor Surveillance System (BRFSS) provided by the Centers for Disease Control and Prevention (CDC) State Tobacco

Source

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Activities Tracking and Evaluation (STATE) System. State-specific per capita cigarette consumption and cigarette tax rates were obtained from the The Tax Burden on Tobacco provided by the CDC STATE System. The researchers then used regression modeling to calculate estimates for each state of annual per capita healthcare expenditure (dependent variable), and controlled for the effects of other variables, besides smoking, that might influence health care expenditure at the state level (e.g., demographic factors, such as population age composition, per capita income, and ethnic composition; other health risk behaviors in the population, such as alcohol use and obesity). Independent variables in the model also included two state-specific measures of smoking behavior.

Key Findings and Limitations

- The average prevalence of smoking in the United States from 1992 to 2009 was 21.2%, the average consumption per smoker was 372 packs per year, and per capita healthcare expenditure, was \$6,426.
- The study revealed strong evidence that reducing smoking prevalence and intensity of smoking (cigarette consumption per smoker) were rapidly followed by lower healthcare expenditures.
 - A 1% relative reduction in smoking prevalence, from an absolute prevalence of 21.2% to 21.0%, was associated with a \$7.58 reduction in per capita healthcare expenditure.
 - A 5% relative drop in smoking prevalence (from 21.2% to 20.1%) was associated with a reduction in per capita healthcare expenditure of \$37.90.
 - A 1% relative reduction in consumption per smoker from 372 packs per year to 368 packs per year was associated with a \$6.94 reduction in per capita healthcare expenditure.
 - A 5% relative drop in consumption per smoker (from 372 packs per smoker per year to 353 packs per year) was associated with a reduction in per capita healthcare expenditure of \$34.70.
- 10% relative drop in smoking prevalence (about a 2.1% absolute drop) combined with a 10% relative drop in consumption per remaining smoker (about 37 fewer packs/year) would be followed in the next year by a \$63 billion reduction in healthcare expenditures (in 2012 dollars).
- The study found a possible direct effect of education on health care expenditure. States with a higher proportion of high school graduates or individuals with bachelor degree had a lower prevalence of smoking behaviors and lower per capita health care expenditures.

Limitations

Interpreting the results of this study requires recognizing the limitations of analyzing aggregate observational data, and the inherent difficulty in establishing causal connections with this type of research. The research identifies associations. However, an extensive and valid body of research has already established that the relationship between smoking behavior and health care costs is causal. Thus, this study's results extend previous research and show how investment in tobacco control programs likely yield rapid reductions in health care costs.

Final Thoughts

Lower smoking prevalence and cigarette consumption per smoker are associated with lower per capita healthcare expenditures. States that have implemented public policies to reduce smoking have substantially lower medical costs. Likewise, states without tobacco control policies have higher medical costs. Therefore, states and national policies that reduce smoking should be part of short-term healthcare cost containment.