

Rhodes College Digital Archives - DLynx

Do Insurance Premium Surcharges for Tobacco Use Encourage Smoking Cessation?

Authors	Allen, Christian K.;Kaplan, Cameron
Download date	2026-03-15 11:17:16
Link to Item	http://hdl.handle.net/10267/33453

Do Insurance Premium Surcharges for Tobacco Use Encourage Smoking Cessation?

Christian Allen, Erin Kaplan & Cameron Kaplan

CONTENTS

1	Introduction	1
1.1	The ACA Tobacco Surcharge	2
2	Literature Review	3
3	Data	4
4	Methods	7
4.1	Identifying Cessation	7
5	Results	9
6	Discussion	14
6.1	Study Limitations	14
7	Conclusion	14

LIST OF FIGURES

Figure 1	Summary of Reported Smoking Status.	6
Figure 2	Characteristics of Every Day Smokers.	6
Figure 3	Median Tobacco Surcharge for Each US State.	7
Figure 4	OLS estimates from a regression on the 1 year change in cigarettes smoked per day.	10
Figure 5	OLS estimates from a regression on smoker's reported interest in quitting on a scale 1 – 10. .	12
Figure 6	OLS estimates from a regression on the proba- bility that an individual is an every day smoker.	13

ABSTRACT

As of 2014, the Affordable Care Act allows Marketplace plans to impose a surcharge of up to 50% on tobacco users' insurance premiums. The surcharge is intended to account for tobacco users' excess health care costs and encourage smoking cessation. Using data from the 2011 and 2015 Current Population Survey, we use rates of smoking cessation and reported interest in cessation before and after implementation of the Affordable Care Act, and conditional on enrollment on a Marketplace plan, to estimate the impact of the tobacco surcharge. Results offer no evidence to support the hypothesis that insurance premium surcharges for tobacco use promote smoking cessation.

1 INTRODUCTION

The Affordable Care Act (ACA) was signed into law in March of 2010 with a stated goal to make affordable health insurance available to more Americans. In pursuit of this goal, the ACA prohibits insurers from denying coverage based on factors such as health status and establishes an "adjusted community rating" in which insurance premiums are determined based on four factors: geographic region, family size, age, and tobacco use. Thus, tobacco use is the only behavioral factor that coverage providers can use to determine an individual's insurance premiums. Beginning January 1, 2014 coverage providers offering plans through the ACA Marketplaces may charge tobacco users up to 50% more for insurance premiums relative to nonusers. The surcharge serves two functions: first to help coverage providers account for excess costs stemming from medical conditions related to tobacco use, and second to provide individuals a financial incentive to cease their tobacco use. The latter is of public interest as conditions related to tobacco use are the number one preventable cause of death in the United States, killing nearly half a million people each year (Center for Disease Control).

Economic theory suggests that the introduction of a penalty or punishment for a behavior will lead to reduced occurrence of that behavior. In the context of surcharges on tobacco users' insurance premiums, tobacco users enrolled in plans that impose a surcharge should demonstrate higher rates of cessation and higher interest in cessation relative to tobacco users facing no surcharge. These effects should be directly correlated with surcharge level, with higher surcharges asso-

ciated with higher rates of tobacco cessation and higher interest in cessation.

While extensive research confirms the effectiveness of reward-based incentives for tobacco cessation (Volpp, 2009; Halpern, 2015)), there is little research into the effects of penalty-based incentives for cessation such as the insurance premium surcharge. One previous study into the effects of the ACA's tobacco surcharge found that rates of cessation among tobacco users facing medium (10% - 20%) or high (> 30%) surcharges were not statistically different from rates displayed by tobacco users facing no surcharge, suggesting that the surcharge may be ineffective as a tool to promote cessation (Friedman, 2016). The study also found that low surcharge levels (< 10%) may have the unintended affect of substantively *decreasing* the occurrence of tobacco cessation relative to users facing zero, medium, or high surcharge levels.

1.1 The ACA Tobacco Surcharge

While the ACA allows for premium surcharges up to 50%, some states have established more restrictive caps or abolished such surcharges completely. Seven states have prohibited insurers from imposing surcharges on tobacco users' premiums, and another three states have established maximum surcharges below that allowed by the ACA. Within states allowing a tobacco surcharge insurers are empowered to impose surcharges up to the given state's maximum, and surcharge level may vary based on coverage provider, plan type, and enrollee's age (Friedman, 2016). An analysis of variation in surcharge level for insurance plans offered through the state and federal Marketplaces found that the plan with the median surcharge charged tobacco users 10% more for insurance premiums relative to nonusers, and nine in ten plans imposed a surcharge less than the maximum allowed (Kaplan, 2014).

Tobacco use is screened for by self-response at the time of health insurance plan enrollment. For the purpose of the premium surcharge, the Affordable Care Act defines tobacco use as the use of any tobacco product—including cigarettes, cigars, chewing tobacco, snuff, and pipe tobacco—on average four or more times per week within the last six months. Religious or ceremonial use of tobacco is allowed under the ACA and does not qualify the individual as a tobacco user. Misrepresenting one's tobacco use may result in the retroactive payment of avoided surcharges.

2 LITERATURE REVIEW

There have been numerous controlled experiments conducted which confirm the effectiveness of reward-based incentives for tobacco cessation, where tobacco users are rewarded for completion of cessation programs and successful sustained cessation. A study involving approximately 900 tobacco users split participants into two groups: a control group which simply participated in a cessation education program, and a second group which received financial rewards for program completion and additional rewards for sustained abstinence from smoking (Volpp, 2009). The reward-group displayed significantly higher rates of program enrollment and completion, as well as higher rates of smoking abstinence after six months and after one year.

A similar study involving 2,500 CVS employees divided participants into four groups: two group-oriented cessation programs and two individual-oriented cessation programs (Halpern, 2015). Participants in one of each type of program were offered a reward of \$800 for smoking cessation. Participants in the other two groups were asked to submit a \$150 refundable deposit with the opportunity for a \$650 reward for smoking cessation. Rates of smoking cessation were higher in each of the four incentive based programs, relative to a control group which received no incentives for cessation.

A study involving enrollees in the Georgia State Employee's Health Benefit Plan (GSEHBP) offers insight on the effects of penalty-based incentives for tobacco cessation and the potential hazard relying on self-reporting. Beginning in 2005, the plan imposed a flat \$40 monthly premium surcharge for enrollees who reported using tobacco. The surcharge was raised in 2010 to \$60, and again in 2011 to \$80. Over the six years after plan's inception, the reported cessation rates among tobacco users within the GSEHBP were extremely high—nearly three times the average annual cessation rate of 2.6%. By 2011, only 55% of individuals who had reported using tobacco in 2005 were still reporting use. These results could be evidence of the surcharge's effectiveness as a tool to promote tobacco cessation, however the unusually high rates of cessation raise concerns that tobacco users may have simply misrepresented their tobacco use to avoid the surcharge. Under the plan's provisions tobacco use was self-reported and not confirmed or checked by the insurer, creating an incentive for individuals to misrepresent their tobacco use to avoid higher monthly premiums. This study highlights a potential concern that individuals may misrepresent their tobacco use at the time of enrollment in a Marketplace plan in order to avoid a possible premium surcharge. Misrepresentation of one's tobacco use would likely result in the avoidance of a tobacco

surcharge, but it also bars the individual from access to gainful cessation programs and counseling that would otherwise be offered at no cost.

3 DATA

The Current Population Survey (CPS) is a monthly survey of approximately 60,000 United States households conducted by the United States Census Bureau for the Bureau of Labor Statistics. A random sample of households are surveyed for four successive months, then not surveyed for the next eight months, and then surveyed again for an additional four months. The primary purpose of the CPS is to record employment information, but the survey also includes occasional supplemental questionnaires which collect information on topics including income, tobacco use, and health insurance coverage.

The CPS Annual Social and Economic Supplement is issued in March of each year and collects information on household income and the health insurance coverage of household members, including coverage status, coverage provider, monthly cost of insurance premiums, and total monthly spending on healthcare. Recent issuances of the CPS Tobacco Use Supplement occurred in January and May of 2011, before implementation of the Affordable Care Act's tobacco surcharge provision, and again in January and May of 2015, after implementation of the tobacco surcharge provision. The Tobacco Use Supplement records information on respondent's tobacco use, including frequency of use, average number of cigarettes smoked per day, average number of cigarettes smoked per day one year prior, attempts to quit smoking, and interest in quitting. While most questions in the Tobacco Use Supplement pertain only to current and former smokers, the first question of the supplement asks all survey respondents if they have smoked more than 100 cigarettes in their lifetime. Respondent's failing to provide a valid response to this first question were dropped from the sample population.

As the CPS surveys households for only four consecutive months, individuals who responded to the January Tobacco Use Supplement were not surveyed in May, and vice versa. Respondents completing either a January or May Tobacco Use Supplement were matched to their responses to the March Health Supplement containing information on income and health insurance coverage status for the respective year.

Three conditions must be satisfied to ensure that survey respondents matched across months represent the same individual in each month, and not another household member or a new resident of the household. First, the respondent's reported age cannot have increased by more than one year between either January and March or March and May, and the respondent's age cannot have decreased over the same intervals. Further, the respondent's reported race and sex cannot have changed between the months in which they responded to the CPS. Respondent's failing to meet any one of these three conditions were dropped from the sample population.

For the purpose of estimating the impact of insurance premium surcharges for tobacco use we want to restrict the sample population to individuals most likely to purchase plans offered through the Marketplaces established by the ACA. For this reason we dropped respondents younger than 26, due to their eligibility for coverage through a parent's insurance plan, and older than 65, due to their eligibility for coverage through Medicare.

The CPS Health Supplement does not directly inquire if an individual acquired their health insurance coverage plan through a Marketplace established by the ACA. Information regarding coverage provider is gathered through a series of yes or no questions which ask if an individual's coverage is provided through an employer, union membership, military or veteran benefits, Medicare, Medicaid, or a private plan not offered through an employer or union.

Data on insurance premium tobacco surcharges imposed on plans offered through ACA Marketplaces is limited to the median surcharge level within each state that participates in the Federal Exchange. Individuals were matched to their corresponding surhcharge based on state of residence. Individuals responding to surveys issued in 2011 have a corresponding surcharge of 0% as the ACA surcharge provision was not introduced until 2014.

Do you smoke?

Never Smoked	68.0%
Every Day	12.2%
Some Days	3.1%
Former Smoker	16.4%
Sample Size	98,879

Figure 1: Summary of Reported Smoking Status.

Characteristics of Every Day Smokers

Average Age	44.98
Average Income Percentile (1 - 10)	5.19
Married	47.9%
Male	52.7%
Sample Size	12,046

Figure 2: Characteristics of Every Day Smokers.

State	Median Tobacco Surcharge (%)	State	Median Tobacco Surcharge (%)
Alabama	10.0	Nebraska	23.7
Alaska	7.4	New Hampshire	29.7
Arizona	7.5	New Jersey	0.0
Arkansas	0.0	New Mexico	24.7
Delaware	14.5	Nevada	26.1
Florida	19.7	Ohio	22.7
Georgia	13.1	Oklahoma	28.4
Illinois	12.2	Oregon	9.8
Indiana	27.9	Pennsylvania	10.5
Iowa	10.7	South Carolina	20.0
Kansas	10.3	South Dakota	15.0
Louisiana	20.8	Tennessee	15.0
Maine	25.5	Texas	26.5
Minnesota	12.5	Utah	10.0
Missouri	22.1	Virginia	25.0
Mississippi	10.0	Wisconsin	17.7
Montana	20.0	West Virginia	14.5
North Carolina	20.0	Wyoming	25.0
North Dakota	20.0		

Figure 3: Median Tobacco Surcharge for Each US State.

4 METHODS

To most accurately sort individuals based on criteria of the ACA's definition of tobacco use, we assume that only individuals reporting every day use would be classified as tobacco users by Marketplace plans. Thus, individuals reporting both enrollment in a private health insurance plan and every day tobacco use are assumed to be subject to their state's median tobacco surcharge level.

4.1 Identifying Cessation

The Current Population Survey data is limited in the fact that we cannot track respondents' tobacco use over time, as we only have responses from one CPS Tobacco Use Supplement for each individual in the sample population.

Conventional evidence of smoking cessation would be a change in smoking status from "every day smoker" or "some days smoker" to "nonsmoker." Due to limitations in the data which prevent us from measuring the occurrence of such changes in smoking status, we must establish several proxies to serve as measurements of the smoking cessation or effective promotion of smoking cessation. Evidence of the ACA surcharge's effectiveness as a tool to encourage smoking cessation may come in several forms. First, larger reductions in the average number of cigarettes smoked per day from one year prior among tobacco users facing a surcharge compared to users facing no surcharge. Second, higher reported interest in quitting among tobacco users facing a surcharge compared to users facing no surcharge. Third, a lower probability of being an every day smoker among individuals potentially subject to a surcharge for tobacco use compared to individuals covered under plans which do not impose surcharges for tobacco use. Each of these effects should be correlated with surcharge level, with larger effects associated with higher surcharges.

The models for estimating the impact of tobacco surcharges on the aforementioned measurements of tobacco cessation are given by the following equations:

$$\begin{aligned} \Delta\text{AverageCigarettes/day} = & \\ & \beta_0 + \beta_1\text{Age} + \beta_2\text{MetropolitanResident} + \beta_3\text{IncomePercentile} \\ & + \beta_4\text{Married} + \beta_5\text{Female} + \beta_6\text{Hispanic} + \beta_7\text{Employed} + \beta_i\text{i.State} \\ & + \beta_8\text{CompletedHighSchool} + \beta_9\text{CollegeDegree} + \beta_{10}\text{GraduateDegree} \\ & + \beta_{11}2015 + \beta_{12}\text{LowSurcharge} + \beta_{13}\text{MediumSurcharge} + \beta_{14}\text{HighSurcharge} \end{aligned} \tag{1}$$

$$\begin{aligned} \text{InterestInQuitting} = & \\ & \beta_0 + \beta_1\text{Age} + \beta_2\text{MetropolitanResident} + \beta_3\text{IncomePercentile} \\ & + \beta_4\text{Married} + \beta_5\text{Female} + \beta_6\text{Hispanic} + \beta_7\text{Employed} + \beta_i\text{i.State} \\ & + \beta_8\text{CompletedHighSchool} + \beta_9\text{CollegeDegree} + \beta_{10}\text{GraduateDegree} \\ & + \beta_{11}2015 + \beta_{12}\text{TobaccoUseSurcharge} + \beta_{13}\text{PriceOfCigarettes} \end{aligned} \tag{2}$$

$$\begin{aligned}
\Pr(\text{EveryDaySmoker} = 1) = & \\
& \beta_0 + \beta_1 \text{Age} + \beta_2 \text{MetropolitanResident} + \beta_3 \text{IncomePercentile} \\
& + \beta_4 \text{Married} + \beta_5 \text{Female} + \beta_6 \text{Hispanic} + \beta_7 \text{Employed} + \beta_i \text{i.State} \\
& + \beta_8 \text{CompletedHighSchool} + \beta_9 \text{CollegeDegree} + \beta_{10} \text{GraduateDegree} \\
& + \beta_{11} \text{2015} + \beta_{12} \text{TobaccoUseSurcharge}
\end{aligned}
\tag{3}$$

$\text{InterestInQuitting}$ is given on a scale 1 – 10, with 10 corresponding to very high interest in quitting and 1 corresponding to no interest in quitting. IncomePercentile is the household’s decile category for household income percentage relative to United States national rank. LowSurcharge corresponds to tobacco surcharges 0% – 9%, MediumSurcharge corresponds to tobacco surcharges 10% – 19%, and HighSurcharge corresponds to tobacco surcharges > 20%. The variable i.State denotes a vector of dummy variables for each US state. Each regression was performed twice: first for a sample of individuals enrolled in private health insurance plans, then for a sample of all other individuals.

5 RESULTS

An analysis of equation (1) produced insufficient evidence to reject the null hypothesis that insurance surcharges for tobacco use do not promote a reduction in the average number of cigarettes smoked per day. Figure 4 provides a summary of the ordinary least squares (OLS) estimates for the coefficients described in equation (1). The reduction in the average number of cigarettes smoked per day among individuals enrolled in private plans and facing low, medium, or high tobacco surcharges was not statistically different from the reduction in average number of cigarettes smoked per day among individuals enrolled in private plans and facing no surcharge, holding all other variables constant.

Regression on the Change in Cigarettes Per Day from One Year Prior		
VARIABLE	(i)	(ii)
Age	0.001 (0.003)	0.001 (0.0009)
Income Percentile	-0.017 (0.013)	0.003 (0.004)
Married	-0.114** (0.068)	0.027 (0.022)
Female	-0.040 (0.063)	0.041** (0.019)
Employed	0.084 (0.076)	0.069*** (0.024)
High School Diploma	-0.121 (0.128)	0.023 (0.035)
College Degree	-0.072 (0.072)	0.010 (0.023)
Graduate Degree	0.023 (0.010)	0.001 (0.031)
2015	(1.662) 0.055	0.009 (0.056)
Low Tobacco Surcharge	-0.510 (1.773)	-0.372 (0.287)
Medium Tobacco Surcharge	-0.143 (1.662)	-0.435** (0.245)
High Tobacco Surcharge	-0.040 (1.657)	-0.237 (0.238)
Observations	2,736	27,486

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
(i) Individuals on private insurance plans
(ii) Individuals not on private insurance plans

Figure 4: OLS estimates from a regression on the 1 year change in cigarettes smoked per day.

Analysis of equation (2) yielded insufficient evidence to reject the null hypothesis that insurance surcharges for tobacco use do not promote a higher interest in quitting among smokers facing a surcharge. Figure 5 displays the OLS estimates for the coefficients outlined in

equation (2). The reported interest in quitting among smokers enrolled in a private plan and facing a tobacco surcharge is not statistically different from the reported interest in smoking among smokers enrolled in a private plan and facing no tobacco surcharge, holding all other variables constant. Among individuals not enrolled in a private insurance plan, factors that affect the individuals interest include marriage status, sex, and educational attainment. Married individuals, women, and college graduates, on average, report an interest in quitting 0.2 – 0.3 points higher on a 10 point scale than unmarried individuals, males, or non-college graduates, holding other factors constant.

Regression on Interest In Quitting		
VARIABLE	(i)	(ii)
Age	0.006 (0.021)	6.88e-05 (0.004)
Income Percentile	-0.031 (0.088)	0.057*** (0.021)
Married	0.186 (0.461)	0.222** (0.103)
Female	0.032 (0.426)	0.282*** (0.095)
Employed	-0.532 (0.471)	0.074 (0.109)
High School Diploma	0.857 (0.628)	-0.055 (0.135)
College Degree	0.233 (0.499)	0.309** (0.129)
Graduate Degree	2.241 (1.519)	0.342 (0.353)
2015	-1.944 (1.246)	0.160 (0.270)
Cost of a Pack of Cigarettes	-0.0512 (0.040)	0.005 (0.022)
Tobacco Surcharge	0.102 (0.067)	-0.002 (0.014)
Observations	302	4,829

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
(i) Individuals on private insurance plans
(ii) Individuals not on private insurance plans

Figure 5: OLS estimates from a regression on smoker's reported interest in quitting on a scale 1 – 10.

Analysis of equation (3) produced insufficient results to reject the null hypothesis that insurance surcharges for tobacco use do not decrease the likelihood that an individual is an every day smoker. Figure 6 provides a summary of the OLS estimates for the coefficients described in equation (3). Tobacco surcharge does not substantively reduce the likelihood of an individual enrolled in a private insurance plan being an every day smoker. Several factors were found to have a statistically significant impact on the probability of an individual being an every

day smoker. Married individuals are on average about 5.5% less likely to be every day smokers than unmarried individuals, holding other factors constant. Employed individuals and women are on average 2% – 3% less likely to smoke every day compared to unemployed individuals and men, respectively. Analysis also shows strong effects for education as a smoking deterrent, notably, individuals with at least a college degree are 7% – 9% less likely to be every day smokers compared to individuals with less than a high school diploma.

Regression on the Probability of being an Every Day Smoker		
VARIABLE	(i)	(ii)
Age	-0.0004 (0.0003)	-0.0004*** (0.0001)
Income Percentile	-0.001 (0.002)	-0.010*** (0.0006)
Married	-0.053*** (0.008)	-0.059*** (0.003)
Female	-0.023*** (0.008)	-0.029*** (0.002)
Employed	-0.029*** (0.010)	-0.034*** (0.003)
High School Diploma	-0.044*** (0.0164)	-0.051*** (0.004)
College Degree	-0.070*** (0.00887)	-0.093*** (0.003)
Graduate Degree	-0.037*** (0.013)	-0.032*** (0.004)
2015	-0.002 (0.025)	-0.018** (0.007)
Tobacco Surcharge	-0.000989 (0.001)	0.0003 (0.0004)
Observations	5,929	71,732

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(i) Individuals on private insurance plans

(ii) Individuals not on private insurance plans

Figure 6: OLS estimates from a regression on the probability that an individual is an every day smoker.

6 DISCUSSION

The estimated impact of insurance surcharges for tobacco use on our three proxy measurements of smoking cessation described in equations (1)-(3) produced no evidence to support the claim that insurance surcharges on tobacco users encourages tobacco cessation. The effect of the surcharge was not statistically significant in reducing the number of cigarettes every day smokers smoked per day, increasing an individual's interest in smoking cessation, or decreasing the probability that an individual is an every day smoker.

We found evidence of several factors that do have a significant impact on the decision to use tobacco. Married individuals are more interested in quitting, compared to an unmarried population of smokers, and less likely to be an every day smoker in general. Educational attainment is positively correlated with tobacco abstinence, with substantive effects for each additional level of education attainment.

6.1 Study Limitations

Limitations in the specificity of information on insurance coverage provider as collected by the Current Population Survey makes it difficult to differentiate individuals purchasing plans through an ACA Marketplace from those acquiring private insurance coverage from another source. Data on surcharge level is also limited to the median surcharge level—among plans imposing a surcharge—within each state participating in the federal Marketplace, though surcharge level may vary based on coverage provider, plan type, or age.

The distribution of income level within the study sample is biased toward higher earners (Household Income > 50%, national rank) which could bias our estimates. This bias is likely due to sample population age restrictions which excluded young adults and retirees, who are typically low earners. Inclusion in the sample population also required steady residence over a three month period in order to be matched across surveys, and wealthier individuals tend to have more stable and secure living conditions.

7 CONCLUSION

Despite prior studies suggesting the effectiveness of reward-based incentives for smoking cessation, our findings, as well as similar re-

search, suggest that penalty-based incentives for tobacco cessation—such as an insurance premium surcharge—are ineffective as a means of promoting tobacco cessation (Volpp, 2009; Halpern, 2015; Friedman, 2016). It could be the case that the surcharge is effectively too small to encourage cessation, though our findings show no evidence of larger effects for higher surcharge levels. Previous research also provides evidence of the reality of the concerns associated with an insurance premium surcharge for tobacco use: the surcharge reduces the likelihood that tobacco users seek enrollment and effectively makes health coverage unaffordable for many Americans (Friedman, 2016; Kaplan, 2014).

As evidence suggests that insurance premium surcharges for tobacco use fail as a means of promoting tobacco cessation, the surcharge thus only serves the purpose of helping coverage providers account for excess costs stemming from treatment for conditions related to tobacco use. Further research should be conducted to discern if costs related to tobacco use exceed the public costs of smokers lacking coverage due to a lack of affordable coverage in the presence of a surcharge.

BILIOGRAPHY

1. Volpp, Kevin G, et al. "A Randomized, Controlled Trial of Financial Incentives for Smoking Cessation." *The New England Journal of Medicine*, 12 Feb. 2009
2. Halpern, Scott D, et al. "Randomized Trial of Four Financial-Incentive Programs for Smoking Cessation." *The New England Journal of Medicine*, 28 May 2015
3. Friedman, Abigail S, et al. "Evidence Suggest That the ACA's Tobacco Surcharges Reduced Insurance Take-up and Did Not Increase Smoking Cessation." *Health Affairs*, The People-to-People Health Foundation, July 2016
4. Kaplan, Cameron M, et al. "Most Exchange Plans Charge Lower Tobacco Surcharges than Allowed, but Many Tobacco Users Lack Affordable Coverage." *Health Affairs*, August, 2014
5. Liber, Alex C, et al. "The Potential and Peril of Health Insurance Tobacco Surcharge Programs; Evidence from Georgia's State Employee's Health Benefit Plan." *Nicotine and Tobacco Research*, June 2014

6. "Current Population Survey (CPS)." *U.S. Bureau of Labor Statistics*, www.bls.gov/cps/.