Evidence Suggests That The ACA’s Tobacco Surcharges Reduced Insurance Take-Up And Did Not Increase Smoking Cessation

ABSTRACT To account for tobacco users’ excess health care costs and encourage cessation, the Affordable Care Act (ACA) allowed insurers to impose a surcharge on tobacco users’ premiums for plans offered on the health insurance exchanges, or Marketplaces. Low-income tax credits for Marketplace coverage were based on premiums for non–tobacco users, which means that these credits did not offset any surcharge costs. Thus, this policy greatly increased out-of-pocket premiums for many tobacco users. Using data for 2011–14 from the Behavioral Risk Factor Surveillance System, we examined the effect of tobacco surcharges on insurance status and smoking cessation in the first year of the exchanges’ implementation, among adults most likely to purchase insurance from them. Relative to smokers who faced no surcharges, smokers facing medium or high surcharges had significantly reduced coverage (reductions of 4.3 percentage points and 11.6 percentage points, respectively), but no significant differences in smoking cessation. In contrast, those facing low surcharges showed significantly less smoking cessation. Taken together, these findings suggest that tobacco surcharges conflicted with a major goal of the ACA—increased financial protection—without increasing smoking cessation. States should consider these potential effects when deciding whether to limit surcharges to less than the federal maximum.

The Affordable Care Act (ACA) introduced several policies aimed at increasing smoking cessation as well as individual responsibility for the consequences of ongoing tobacco use. In particular, the law required plans in the health insurance exchanges, also known as Marketplaces, to cover screening for tobacco use and cessation treatment with no cost sharing. It also allowed tobacco premium rating—specifically, plans were allowed to charge tobacco users up to 50 percent more in premiums than non-users. Other than age and geography, the only factor allowed to affect premiums in the exchanges is tobacco use.
expected to purchase insurance through the exchanges indicated that higher premiums would significantly reduce insurance take-up. While the insurance penalty associated with the ACA’s individual mandate—a fee required of many people who remain uninsured—is designed to discourage insurance take-up, individuals are exempt from this penalty if premiums are deemed “unaffordable” for them. Specifically, they do not have to pay the fee if the annual premium of their exchange’s least expensive bronze-tier plan, including any tobacco surcharges, exceeds 8 percent of their household income. Applying this definition, Cameron Kaplan and coauthors found that plan options in more than 30 percent of states studied were unaffordable for a forty-five-year-old tobacco user with low to medium income. Thus, in combination with surcharges, this exemption from the individual mandate could further dampen tobacco users’ enrollment rates, even as the penalty rises to its full level in 2016.

However, some studies have found that introducing coverage of tobacco cessation treatment significantly increases smoking cessation. This suggests that quit rates could rise among smokers who do take up insurance. Some studies have found that financial incentives for quitting also increase cessation, but these studies tend to focus on rewards for quitting, not penalties for continuing to smoke. Still, evidence from one recent study suggests that penalties may be more effective than straightforward rewards.

Given this evidence, we hypothesized that tobacco surcharges would affect rates of both health insurance coverage and tobacco cessation, with larger surcharges reducing tobacco users’ insurance enrollment but increasing their cessation rates. The available data provided a detailed history of smoking cessation but not cessation from the use of other tobacco products. Thus, we were able to consider the impact of tobacco surcharges on cigarette smokers but not on all tobacco users. Reassuringly, in our sample, 90.4 percent of tobacco users smoked cigarettes, and 94.2 percent of smokers used no other tobacco products. Thus, surcharges’ effects on smokers reflect the impact on the vast majority of tobacco users in these data.

While some states capped their surcharge levels, insurers were empowered to set their specific plans’ tobacco surcharges within the bounds of a given state’s maximum. Thus, plan surcharges varied both between and within states. Enrollees were often able to choose among plans with different surcharge levels, and individual plans’ premiums and surcharges could vary among enrollees based on their ages. We used this variation to test the effect of surcharge size on both insurance coverage and smoking cessation. To estimate the association between surcharge level and health insurance enrollment, we compared smokers’ and nonsmokers’ coverage before and after the surcharges went into effect, across surcharge levels. Analogous regressions used similar variation to examine recent smoking cessation, limiting the analysis to respondents who had smoked at least once in the six months before their survey interview.

Study Data And Methods

Respondent-Level Data Data on individuals came from the Behavioral Risk Factor Surveillance System (BRFSS) of the Centers for Disease Control and Prevention. The BRFSS is an annual survey of noninstitutionalized adults that provides a representative sample for each state and the District of Columbia. Our analyses examined data for the period 2011–14, which included three years before (2011–13) and one year after (2014) implementation of the exchanges.

We determined individual insurance status based on responses to the question, “Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare, or Indian Health Service?” Current smokers were defined as respondents who indicated either that they currently smoked every day or some days or that they had last smoked a cigarette within the past month. We included this latter group because of evidence that relapse rates are high in the first month after quitting.

When estimating the effects on smoking cessation, we restricted the sample to recent smokers, defined as people who had smoked within the past six months. As above, a respondent was considered to have quit if he or she reported both being a former smoker and having stopped smoking more than a month before being surveyed.

We used each respondent’s reported income and marital status (as a proxy for household size among childless adults) to impute their income as a percentage of the federal poverty level, based on the 2013 state-specific standards for poverty by income and household size.

Sample Restrictions To focus on adults who were likely to use the health insurance exchanges as their source of insurance, our analyses considered only those who were eligible for premium tax credits on the exchanges. This restriction limited our sample to respondents younger than age sixty-five (and thus not eligible for Medicare based on age) with incomes above 100 percent and below 400 percent of poverty, who were ineligible for Medicaid based on their state’s
respondents who reported smoking within the six months before their interview. The smoking cessation analysis sample was further restricted to those not eligible for Medicaid, whose annual incomes were more than 138% of the federal poverty level, and who had no children in their household. Respondents from ages 25–40 were more likely to have access to a high quality non-Marketplace plan, compared to those without access to dependent coverage. The BRFSS data include codes for age ranges but not for exact age, so we excluded people under age twenty-five but retained twenty-five-year-olds (who could not be omitted unless we also excluded people ages 26–29).

Several additional exclusions were made to prevent bias in our estimates. Specifically, we excluded Massachusetts residents because that state’s exchange preceded those set up under the ACA. Respondents who completed the BRFSS survey during the exchanges’ first open enrollment period (the last quarter of 2013 or the first quarter of 2014) were also excluded. Including respondents from the last quarter of 2013 could have biased our results toward the null if some respondents incorrectly reported insurance coverage at the point of enrollment, when their insurance had not yet gone into effect. The first quarter of 2014 was omitted because this was not a “treatment” period in the same sense as the remainder of that year: Open enrollment continued throughout this quarter, and many people did not enroll for 2014 coverage until March.

Finally, because we could not identify the insurance relationship between respondents and other household members (and thus calculate family premiums), our analyses considered only people in households without children. This restriction has a notable benefit: It may have yielded effect sizes that better pinpoint the impact of the surcharge’s financial incentive on the person who faced that incentive, since surcharge levels were based on individuals’ premiums.

Of the sample of respondents with health insurance ($N = 206,952$), 80 percent had insurance, and 25 percent were current smokers (Exhibit 1). In the subsample of respondents who had smoked in the previous six months ($n = 48,942$), 73 percent had insurance and 7 percent reported having quit—that is, they identified themselves as former smokers and reported not having smoked for more than thirty days.

### Tobacco Surcharge Data

Our data on 2014 insurance premiums and tobacco surcharges for thirty-five states and the District of Columbia came from the Centers for Medicare and Medicaid Services’ Health Insurance Marketplace Public Use Files. We abstracted data for New York State directly from its exchange website and obtained the remaining states’ data via individual appeals, public records requests, and Freedom of Information Act filings with relevant state agencies. Only premiums and tobacco surcharges offered to individual beneficiaries were considered, because BRFSS data lack the infor-

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**Exhibit 1**

Characteristics of selected respondents to the Behavioral Risk Factor Surveillance System surveys, 2011–14

<table>
<thead>
<tr>
<th>Health insurance sample ($N = 206,952$)</th>
<th>Smoking cessation subsample ($n = 48,942$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HEALTH AND HEALTH CARE</strong></td>
<td></td>
</tr>
<tr>
<td>Has insurance</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Age range (years)</td>
<td></td>
</tr>
<tr>
<td>25–29</td>
<td>128</td>
</tr>
<tr>
<td>30–34</td>
<td>7.8</td>
</tr>
<tr>
<td>35–39</td>
<td>7.1</td>
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<tr>
<td>40–44</td>
<td>10.1</td>
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<tr>
<td>45–49</td>
<td>17.8</td>
</tr>
<tr>
<td>50–54</td>
<td>18.1</td>
</tr>
<tr>
<td>55–59</td>
<td>21.2</td>
</tr>
<tr>
<td>60–64</td>
<td>24.6</td>
</tr>
<tr>
<td><strong>RACE/ETHNICITY</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>69.8</td>
</tr>
<tr>
<td>Black</td>
<td>12.3</td>
</tr>
<tr>
<td>Hispanic</td>
<td>11.2</td>
</tr>
<tr>
<td>Other</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>EDUCATION</strong></td>
<td></td>
</tr>
<tr>
<td>Less than high school diploma</td>
<td>9.8</td>
</tr>
<tr>
<td>High school graduate</td>
<td>33.3</td>
</tr>
<tr>
<td>Some college</td>
<td>35.3</td>
</tr>
<tr>
<td>College graduate</td>
<td>21.7</td>
</tr>
<tr>
<td><strong>INCOME (PERCENT OF FEDERAL POVERTY LEVEL)</strong></td>
<td></td>
</tr>
<tr>
<td>138 ≥ income &gt; 200</td>
<td>24.6</td>
</tr>
<tr>
<td>200 ≥ income &gt; 300</td>
<td>34.5</td>
</tr>
<tr>
<td>300 ≥ income &gt; 400</td>
<td>40.9</td>
</tr>
<tr>
<td><strong>TYPE OF PHONE USED FOR SURVEY</strong></td>
<td></td>
</tr>
<tr>
<td>Cellular phone respondent</td>
<td>37.4</td>
</tr>
<tr>
<td><strong>ECONOMIC INDICATORS</strong></td>
<td></td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>7.8</td>
</tr>
<tr>
<td>Cigarette tax</td>
<td>$1.50</td>
</tr>
</tbody>
</table>

**Source** Authors’ analysis of data from the following sources: respondent-level data for 2011–14 from the Behavioral Risk Factor Surveillance System (see Note 9 in text), cigarette tax rates for 2011–14 from the Federation of Tax Administrators (see Note 21 in text), and state unemployment rates for 2011–14 from the Bureau of Labor Statistics (see Note 22 in text). Notes All statistics are weighted means. As explained in the text, both samples were restricted to people ages 25–64 who were not eligible for Medicaid, whose annual incomes were 138–400 percent of the federal poverty level, and who had no children in their household. Respondents from Massachusetts were also excluded, as were people surveyed in the last quarter of 2013 or the first quarter of 2014. The smoking cessation analysis sample was further restricted to those respondents who reported smoking within the six months before their interview.
mation on legal relationships between house-
hold members and their insurance characteris-
tics needed to define the true insurance unit.

On average, forty-nine-year-old-smokers liv-
ing in one of the forty-three states that allowed 
surcharges in 2014 faced a median tobacco sur-
charge of $70 per month. We calculated the to-
bacco surcharge level as a percentage increase 
over the unsubsidized premium, since federal 
limits on surcharge size were written in these 
terms (for example, a plan’s surcharge may 
not exceed 50 percent of its premium). More-
over, because premium size varied across states, 
defining surcharges in dollar terms would con-
found responses to high surcharges with re-
sponses to higher premiums or costs of living.

We assigned respondents to the median tobac-
co surcharge for their age across all bronze-level 
plans that were offered to adults on the exchange 
for their state’s largest-population rating area.18 
Respondents were categorized as facing one of 
the following four median surcharge levels: zero 
(no surcharge), low (more than zero and less 
than 10 percent), medium (at least 10 percent 
and less than 30 percent), and high (30 percent 
or more). For a map illustrating state-level vari-
ation in tobacco surcharge categories for a forty-
ine-year-old, see online Appendix Exhibit A1.19

DATA ANALYSIS We used a triple-difference ap-
proach to estimate the association between sur-
charge level and health insurance enrollment, 
comparing coverage status before and after the 
surcharges went into effect, for current smokers 
versus nonsmokers, across groups that would 
face different levels of tobacco surcharges in 
2014 (given their state and age). For the smoking 
cessation outcome, an analogous difference-in-
differences design focused on recent smokers— 
that is, individuals who either were smokers at 
the time of their interview or had quit within six 
months before the interview. This analysis com-
pared cessation before and after the exchange 
plans went into effect across groups that would 
face different 2014 tobacco surcharges.

Age-stratified analyses evaluated our models 
separately for individuals younger than age forty 
and those ages forty and older. Robustness 
checks reestimated the main specifications via 
multiple imputation to verify that our findings 
were unchanged by the inclusion of respondents 
with missing household size data.

To ease the interpretation of our regression 
results, we used the resulting coefficients to es-
timate the insurance and smoking cessation re-
sponses to different surcharge levels in each 
year, for a representative smoker and a represen-
tative nonsmoker (that is, individuals with the 
characteristics of the average smoker or non-
smoker in 2011 in our sample). By holding other 
characteristics constant, these estimates capture 
the changes in insurance and smoking cessation 
that can be attributed specifically to the different 
surcharge levels. For brevity, only estimates for 
2013 and 2014 are presented here.

All regressions were sample-weighted linear 
probability models, with standard errors clus-
tered at the state level. Controls included age 
in five-year ranges; income (138 percent of pov-
erty or more but less than 200 percent, 200 per-
cent or more but less than 300 percent, or 
300 percent or more but less than 400 percent); 
sex; education (less than a high school diploma, 
high school graduate, some college, or college 
graduate); race/ethnicity (white, black, Hispanic, 
or other); whether the survey was conducted 
via cellular versus landline phone; state cigarette 
taxes and unemployment rates; and state, year, 
and quarter fixed effects.20,21 The insurance and 
smoking cessation specifications passed the re-
quite common trends tests. For further details 
on the methods, see the Appendix.19

Yale University’s Institutional Review Board 
deemed this study exempt from review.

LIMITATIONS This study had several important 
limitations. First, because of a lack of data on 
respondents’ plan preferences, exact geographic 
location, and key income and household information 
needed to calculate premium subsidies, 
the surcharge assignment mechanism was in-
exact. Given this limitation, respondents were 
matched to the median surcharge for their age 
group among bronze plans in their state’s larg-
est-population rating area—an approach similar 
to that of Kaplan and coauthors.3 These median 
surcharges were highly correlated with the 
weighted average of median surcharges across 
all other rating areas within the same state 
($\rho = 0.95$).

Second, the percentage of poverty level that we 
imputed for each respondent was determined 
imperfectly because of missing data on house-
hold size and the BRFSS’s use of grouped income 
levels. Consequently, some individuals’ Medic-
ad eligibility may be misclassified. To be conser-
ervative, our poverty calculations used the lowest 
income in the reported income band and took 
marital status as a proxy for household size when 
the latter was unreported. Robustness checks 
reclassified individuals using the highest income 
in the reported income band and applied multi-
ple imputation methods to address missing 
household sizes. The main specification and ro-
 bustness check regressions found similar results 
(for further details, see the Appendix).19

Third, in the context of these surcharges, the 
definition of tobacco use, as explained above, is 
“the use of a tobacco product or products four or 
more times per week within no longer than the
past 6 months.” While states had discretion to further restrict this definition, none of them did so.2 Because of data limitations, however, our analyses considered only cigarette use and did not measure the frequency of that use.

Fourth, if the surcharges were not salient (that is, not sufficiently conspicuous to induce attention to their existence and size), their effect on smoking cessation may have been muted. This seems plausible since, when asking potential enrollees about their smoking status, exchange websites did not clearly note that smokers might be charged a higher premium, nor did they present tobacco user and nonuser premiums side by side. Typically, potential enrollees could view their plan options only after indicating their smoking status, with the listed premiums accounting for any tobacco surcharges. Because the interfaces were consistent in this presentation across states, we could not empirically test for salience effects. However, a lack of salience might attenuate the fifth limitation: potentially dishonest reporting of one’s smoking status.

Current smoking status, with the listed premiums accounting for any tobacco surcharges. Because the interfaces were consistent in this presentation across states, we could not empirically test for salience effects. However, a lack of salience might attenuate the fifth limitation: potentially dishonest reporting of one’s smoking status.

Study Results

The main specifications’ results matched those of our robustness checks. Thus, for simplicity, only the former are discussed below. Full results for every analysis are in the Appendix.19

Insurance Based on the regression estimates, predicted insurance coverage in 2013 and 2014 was plotted by surcharge size for a representative smoker and nonsmoker (Exhibit 2). While predicted coverage rates vary by surcharge in 2013 and for nonsmokers, these observations are neither surprising nor a threat to the analysis. Both the likelihood of being insured and the surcharge level differed by age within states, so a general association between these variables is expected. This relationship does not bias our estimates because the results are based on how key outcomes changed over time, not the associations that were stable over time.

As expected, nonsmokers exhibited an increase in their likelihood of having insurance after Marketplace implementation that did not differ by the size of the tobacco surcharge (8.1 percentage points; p < 0.01) (Appendix Exhibit A2). For smokers, however, larger tobacco surcharges dampened the increase in insurance coverage associated with the exchanges’ implementation. Indeed, Exhibit 2 shows no increase in coverage for a representative smoker at the “high” surcharge level.

The results in Exhibit 3 under model 1 are from the regressions used to generate Exhibit 2. These results represent the differential impact of surcharge size on smokers’ 2014 insurance coverage, relative to the effect on smokers in the zero-surcharges group. Regardless of age group, low

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**EXHIBIT 2**

Predicted likelihood of having health insurance for representative smokers and nonsmokers, by tobacco surcharge level, 2013 and 2014

**SOURCE** Authors’ analysis of data for 2011–14 from the Behavioral Risk Factor Surveillance System (see Note 9 in text). **NOTES** Respondents were assigned to surcharge levels based on their age group and state, using newly collected information on 2014 tobacco surcharges in their state’s health insurance exchange. The sample was restricted, as explained in the Notes to Exhibit 1. The exhibit shows the predicted likelihood of having insurance for medium (at least 10 percent and less than 30 percent), and high (30 percent or more).
surcharges yielded a statistically insignificant drop in smokers’ health insurance take-up in 2014, relative to the zero-surcharge group. These effects grew and became statistically significant as surcharge levels rose, reaching −11.6 percentage points in the group with a high surcharge. At every surcharge level, effects were even larger in the subsample younger than age forty.

Thus, it appears that higher surcharges reduced smokers’ gains in health insurance during the first year of the exchanges’ implementation.

**SMOKING CESSATION** For a representative smoker, the predicted likelihood of quitting in 2013 varied somewhat by surcharge level (Exhibit 4). As above, this is not a threat to the analysis, since we were examining changes in outcomes over time. Respondents in states with no surcharges showed a statistically insignificant increase in their likelihood of quitting from 2013 to 2014 (2.0 percentage points; 95% CI: −4.1, 8.0) (Appendix Exhibit A3), consistent with the hypothesis that higher surcharges increase cessation.

Concurrently, the likelihood of quitting smoking fell markedly and significantly (by 5.6 percentage points) in the group with a low surcharge, compared to the group with no surcharge (model 2 in Exhibit 3). Thus, low surcharges may have had the unintended consequence of reducing smoking cessation. The concurrent finding that responses to medium and high surcharges were statistically insignificant and much smaller than responses to low surcharges may be consistent with the hypothesis that sufficiently high surcharges do more than low surcharges to incentivize quitting.

**Discussion**

**INSURANCE** We found that medium and high tobacco surcharges dampened the increases in smokers’ insurance coverage during the first year of the exchanges’ implementation. Our analysis of the full sample found that smokers facing the highest surcharges exhibited a 12-percentage-point reduction in coverage relative to the group with no surcharge, while an analysis of the sample younger than age forty showed a 20-percentage-point reduction. Comparing smokers’ and nonsmokers’ responses to variation in tobacco surcharges as exchange plans went into effect makes these results particularly compelling, as the estimated effect for nonsmokers controlled for outside factors that might have influenced insurance enrollment in state-age groups with higher surcharges.

While reduced insurance take-up is not a surprising response to higher surcharges, it is concerning. Smokers were 7.3 percentage points less likely than nonsmokers to have coverage (Appendix Exhibit A2), so smokers’ enrollment is critical to achieving universal coverage. Moreover, as younger adults’ enrollment in exchange plans is important for risk pooling, the large effects found among smokers younger than age forty may have broad implications for the long-term stability of Marketplaces in states with high surcharge levels.

**SMOKING CESSATION** Among the groups with zero, medium, or high surcharges, the exchange implementation’s effects on smoking cessation were neither substantive nor statistically different from each other. However, relative to members of every other surcharge group, those facing

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**EXHIBIT 3**

<p>| Tobacco surcharge effects on health insurance coverage and smoking cessation |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| <strong>Low surcharge</strong>               | <strong>Medium surcharge</strong> | <strong>High surcharge</strong> |</p>
<table>
<thead>
<tr>
<th>Change 95% CI</th>
<th>Change 95% CI</th>
<th>Change 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODEL 1: INSURANCE COVERAGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full sample</td>
<td>−22 (−10.1, 5.7)</td>
<td>−4.3* (−9.4, 0.8)</td>
</tr>
<tr>
<td>Younger than 40</td>
<td>−7.4 (−21.5, 6.7)</td>
<td>−11.9*** (−19.3, −4.5)</td>
</tr>
<tr>
<td>40 or older</td>
<td>−0.1 (−6.8, 6.6)</td>
<td>−0.7 (−5.1, 3.6)</td>
</tr>
<tr>
<td><strong>MODEL 2: SMOKING CESSATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full sample</td>
<td>−5.6** (−10.9, −0.3)</td>
<td>−1.6 (−6.8, 3.7)</td>
</tr>
<tr>
<td>Younger than 40</td>
<td>−5.4 (−16.7, 5.9)</td>
<td>0.2 (−10.6, 11.0)</td>
</tr>
<tr>
<td>40 or older</td>
<td>−5.2*** (−8.1, −2.4)</td>
<td>−2.6* (−5.5, 0.4)</td>
</tr>
</tbody>
</table>

**Source** Authors’ analysis of data for 2011–14 from the Behavioral Risk Factor Surveillance System (see Note 9 in text)

**Notes** Respondents were assigned to surcharge levels based on their age group and state, using newly collected information on 2014 tobacco surcharges in their state’s health insurance exchange. The analyses are sample-weighted linear probability models based on the triple-difference analysis explained in the Notes to Exhibit 2, with additional controls for the variables listed there. “Changes” are the differential percentage-point increases in health insurance coverage (model 1) and smoking cessation (model 2) exhibited by smokers facing each of the surcharge levels, compared to the increases for smokers in the zero-surcharge group. Surcharges were calculated as explained in the Notes to Exhibit 2, where the surcharge levels are defined. Both samples were restricted as explained in the Notes to Exhibit 1. Outputs from the full models are available in Appendix Exhibits A2 and A3 (see Note 19 in text). CI is confidence interval. *p < 0.10 **p < 0.05 ***p < 0.01
Predicted likelihood of smoking cessation for representative smokers, by tobacco surcharge level, 2013 and 2014

SOURCE Authors’ analysis of data for 2011–14 from the Behavioral Risk Factor Surveillance System (see Note 9 in text). NOTES Respondents were assigned to surcharge levels based on their age group and state, using newly collected information on 2014 tobacco surcharges in their state’s health insurance exchange. The sample was restricted as explained in the Notes to Exhibit 1. The exhibit shows the predicted likelihood of quitting smoking for a representative smoker (that is, holding other characteristics constant), based on a difference-in-differences analysis that compared smoking cessation before and after the exchange plans went into effect across groups with different levels of 2014 tobacco surcharges (given their state and age). The underlying regression controlled for the variables listed in the Notes to Exhibit 2. Surcharges were calculated as explained in the Notes to Exhibit 2, where the surcharge levels are defined.

low (but nonzero) surcharges were significantly less likely to quit smoking. Among the nonzero-surcharge groups, the fact that those with higher surcharges showed a greater likelihood of quitting than those in the group with low surcharges, despite having no gains in coverage, suggests a direct response to surcharge size (that is, a tendency to respond to a high smoking penalty by quitting, conditional on the imposition of a nonzero penalty). As the low-surcharge group showed greater coverage increases than groups with higher surcharges, this pattern of cessation responses is not explained by an insurance effect (that is, a benefit from enhanced access to providers and cessation treatment through insurance). Indeed, some tobacco users may not have taken up coverage in 2014 but quit during that year in anticipation of wanting to purchase insurance for 2015 (perhaps to avoid the rising individual penalty for being uninsured).

However, neither of these competing mechanisms explains why people with low surcharges exhibited a decline in smoking cessation relative to those with no surcharge, when both groups showed similar increases in insurance coverage (Exhibit 3). One possible explanation is that putting a price on bad behaviors can alleviate the guilt of engaging in them, which has an unexpected effect: The behaviors increase. In one famous illustration, instituting a fee for late pick-up at an Israeli day care center resulted in more, not fewer, tardy caregivers. Similarly, low surcharges might dampen smoking cessation if some smokers feel that the surcharge compensates society for their behavior, and if the fine is not high enough to incentivize quitting. Unfortunately, this hypothesis is not testable with the survey data used in this study.

One purpose of the surcharges is to have tobacco users pay for the excess health costs associated with their smoking. Yet Kaplan and co-authors found that surcharges were often significantly greater than smoking’s added health care costs. As people with psychological distress or depression have much higher smoking rates than those without mental health conditions (34 percent versus 17 percent), some insurers could be using the tobacco surcharges to discourage enrollment by patients with high-cost conditions. If the risk-adjustment mechanism in a state’s exchange does not adequately compensate plans for these disease states, insurers may profit by encouraging such adverse selection.

Thus, an unintended consequence of tobacco surcharges may be reduced coverage (or unfairly high premiums) for some individuals with persistently high health care costs unrelated to their tobacco use. Such individuals might have benefited greatly from gaining coverage. When considering the effects of tobacco surcharges, policy makers should account for such costs.

Our findings may inform the evolution of state-level policy on tobacco premium ratings. Results indicate that if insurance coverage and tobacco cessation are the most important goals, having no surcharge is preferable to having a low, medium, or high surcharge, as having no surcharge yields the highest or equivalent rates of both coverage and cessation. Low surcharges may actually work against cessation, while high surcharges appear to impede enrollment.

Conclusion

Compared to smokers facing low or no tobacco surcharges, those who faced medium or high surcharges were less likely to gain coverage after implementation of the health insurance exchanges. Yet smokers who faced a surcharge were no more likely to quit than those who did not, and were less likely to quit when the surcharge was low. This suggests that tobacco surcharges increased neither smoking cessation nor financial protection from high health care costs—the primary goal of the Affordable Care Act.
This research was supported by a grant from the Robert Wood Johnson Foundation (Grant No. 72673). William Schpero received support from an Agency for Healthcare Research and Quality Ruth L. Kirschstein Institutional National Research Service Award (No. T32 HS017589). The sponsors played no role in the design or conduct of the study; in the collection, management, analysis, or interpretation of the data; or in the preparation, review, or approval of the manuscript. The authors acknowledge the excellent research assistance of Laurence Brown, a medical student at Meharry Medical College, in Nashville, Tennessee.

**NOTES**


19. To access the Appendix, click on the Appendix link in the box to the right of the article online.


