

# Tobacco Surcharges Reduce Marketplace Enrollment Rates, Especially in Rural Counties

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Tobacco Online Policy Seminar  
TOPS  
June 24th, 2021

- This research was supported by a Research Scholar Grant-Insurance, RSGI-16-019-01- CPHPS from the American Cancer Society (PI: Pesko).
- The views expressed in this paper are the authors' and do not reflect the views of the American Cancer Society, the Agency for Healthcare Research and Quality, or the U.S. Department of Health and Human Services.
- Dorilas has no current or historical tobacco-related conflicts to report.

# One-minute Overview

- **Justification:** Tobacco use is a public health issue (CDC, 2017).
- **Policy:** To reduce tobacco consumption, the Affordable Care Act (ACA) permits insurers to charge tobacco users up to 50% more than non-tobacco users.
- **Research Questions:**
  - What is the effect of this policy on insurance enrollment?
  - What is the effect of this policy on cancellation of plan selection?
- **Theory:** Law of Demand (Higher Premiums  $\rightarrow$  Lower Quantity Demanded of Insurance)
- **Empirical model:** Two-Way Fixed Effect Model
- **Data:** Administrative data on the sizes of tobacco surcharges and enrollment in different plan levels from the Centers for Medicare & Medicaid Services (CMS).
- **Results**
  - Tobacco Surcharges reduce total enrollment and smoker share of enrollment.
  - Effects are bigger in rural areas.
  - Tobacco surcharges have no significant effect on the rate of cancellation of plan selection.
- Findings are important considering the toll tobacco use imposes on society.

# Smoking and the Private, Nongroup Insurance Market in the ACA

- Every day 1,300 people die from the long-term effects of cigarette smoking in the United States.
- Smoking costs the United States more than \$300 billion a year,
  - including about \$170 billion in direct medical costs for adult smokers (Xu et al., 2015).
- Over 34 million (14%) of adults used tobacco in 2019.
- A person's tobacco use can play a role in how much he/she pays for health insurance coverage.
- The Affordable Care Act (ACA) brought dramatic changes to the way individual health insurance premiums are determined.
- Insurance companies can no longer base premium on an applicant's medical history.
- They cannot reject an applicant based on their pre-existing conditions or overall health history.

- But ACA allows individual health insurers to adjust premiums based on just four factors **geographic location, age, family size, and tobacco use**.
- ACA permits insurers to charge tobacco users up to 50% more than non-tobacco users for at least two reasons:
  - 1) to finance additional health care that smokers may have,
  - 2) to financially incentivize smoking cessation.
- States are able to limit these surcharges or prohibit them altogether.
- Seven states prohibit these surcharges in the individual market (CMS, 2017).
  - California, DC, Massachusetts, New Jersey, New York, Rhode Island, Vermont, and Connecticut (only for plans sold in the state exchange, Access Health CT).
- Premium subsidies (premium tax credits) are used by the majority of individual market enrollees.
- But, the subsidies are not designed to cover the tobacco surcharge.

# There are Several Concerns About this Policy

- One **concern** is that tobacco surcharges may lead individuals to misrepresent their tobacco use when enrolling in nongroup insurance (Liber et al., 2011. Liber et al., 2015, Pesko et al. 2017).

HealthCare.gov

Ernest  Logout [Español](#)

 Ernest Dorilas

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 MY PROFILE

 MESSAGES (0)

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Status: **In progress**

- When consumers select a nongroup plan, they are instructed to report whether each adult applying for coverage has used tobacco on average four or more times per week over the past six months, which classifies them as a tobacco user.

- If an insurance company later discovers that the non-smoker is in fact a smoker, the individual may have to retroactively pay the surcharges.
- Enrollment can be canceled if retroactive surcharges are not paid.
- Another **concern** is that tobacco surcharges may make insurance unaffordable for many tobacco users (Hill 2015, Kaplan et al. 2014, Liber et al., 2015).
- So surcharges may reduce enrollment for tobacco users.
- Tobacco surcharges could indirectly increase enrollment for people who do not use tobacco, because their premiums do not include the additional costs of care for tobacco users.
- Hence, the net effect of surcharges on total enrollment is **theoretically ambiguous**.
- The effect is expected to benefit non-smokers at the expense of smokers.
- **Research Questions:**
  - What is the effect of surcharge rate sizes on insurance enrollment?
  - What is the effect of surcharge rate sizes on the rate of plan cancellation?

- Most of the plans offered through the health insurance exchanges had lower tobacco surcharges than allowed by legislation (Kaplan et al., 2014).
- In states with low surcharges, tobacco surcharges do not have a significant impact on uninsurance (Friedman et al., 2016).
- Tobacco surcharges are associated with a substantial reduction in insurance coverage but no significant effect on smoking cessation in states with medium and high surcharges (Friedman et al., 2016).
- No evidence of association between surcharges and lower enrollment among self-reported tobacco users or in rates of smoking (Pesko et al., 2017).
- Kaplan and Kaplan (2020) builds on Friedman et al., 2016 and Pesko et al., 2017 to investigate the relationship between tobacco surcharges and insurance coverage.
- For nongroup insurance, Kaplan and Kaplan (2020) found that having any tobacco surcharge was associated with reductions in enrollment for smokers.



# Contribution

- 1) Estimate heterogeneity in the effect of surcharges by gender, age, and rural/urban status
  - In that sense, we provide insight into the effects of surcharge policies on health insurance disparities.
- 2) We measure enrollment in nongroup plans through the Marketplace using administrative data.
  - In contrast, most previous studies used survey data, which may suffer from misreported types of insurance.
- 3) We use more precise, county-level measures of surcharges, whereas prior studies use state-level surcharges.
- 4) To our knowledge, we are the first to study the effect of surcharges on insurance dis-enrollment (i.e, consumers canceling their enrollment and plan selection).
- 5) Unlike most papers in this literature, we study the surcharges for both bronze and silver plans.

- We study the states that used the HealthCare.gov eligibility and enrollment platform over the period 2014 to 2019.
- Administrative data.
- The data contains the number of unique consumers who selected a qualified health plan.
- **Outcomes**
  - Total enrollment rate, smoker enrollment share, and dis-enrollment rate for all metal levels.
  - **Total enrollment rate:** Total number of enrollees in all metal levels divided by the county population (below 65 years).
  - **Smoker enrollment share:** The share of total enrollees in all metal levels who reported any tobacco use.
  - **Dis-enrollment rate:** Fraction of the population (below 65 years) that canceled a plan selection in a state and a given year.
- Enrollment data are also available for these sub-populations: male, female, age 18-34, age 35-54, age 55 and over.

# Data: Surcharges

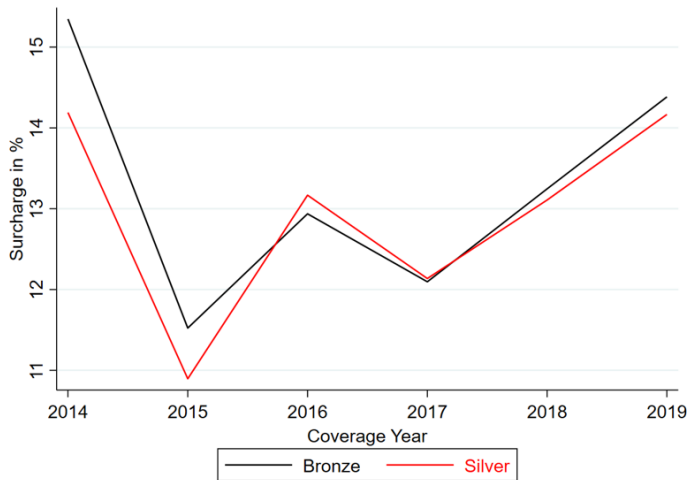
- We use exchange public use files assembled by the CMS' Center for Consumer Information and Insurance Oversight (CCIIO).
- This data compiles plan and issuer level information for all the states of our study period.
- First, we construct a county-age level dataset for bronze and silver plans offered in the marketplaces for the years 2014 to 2019 (for ages 19-64).
  - For each county, metal level, and age, we find:
    - 1) the plan with the lowest premium ("lowest cost plan") for adults who do not use tobacco ("nonsmokers").
    - 2) the plan with the lowest premium ("lowest cost plan") for tobacco users ("smokers").
  - We then calculate the minimum effective tobacco surcharge.
  - It is the ratio of the premium of the lowest-cost plan for tobacco users divided by the premium of the lowest-cost plan for non-tobacco users minus one.

- This rate is equivalent to how much more the premium for the lowest-cost plan is for smokers as a percentage of the premiums for non-smokers.
- Second, we take the average across all ages to merge it with the enrollment data and investigate the effect of interest.
- We identify urban and rural counties using the 2013 Rural-Urban Continuum Codes classification scheme.
- The resulting sample size is 14,097 county-year pairs (an average of 2,349 counties per year)
- 2,349 counties represent about 75% of all counties and 248 million individuals.

Descriptive			
Variables	Below the Median	Above the Median	Difference
Total Enrollment	3856.34	3418.43	-437.906
Total Enrollment Rate	0.046	0.041	-0.004
Smoker Share	0.082	0.07	-0.012
Silver Surcharge	0.093	0.188	0.095
Bronze Surcharge	0.091	0.194	0.102
Bronze Premium	385.709	375.699	-10.009
Silver Premium	484.261	476.37	-7.89

- Compares county-years below and above the median minimum effective bronze surcharge over the 6 years of the study.
- Bronze surcharges below the median were associated with higher enrollment rates.
- Lower surcharges were also associated with counties having more policies to reduce tobacco and alcohol use.
- We control for these differences in the regression analysis.

**Exhibit 2:** Average County-Population-Weighted Surcharges by Metal Level  
Over Time



# Empirical Specification

- $Y_{ct} = \beta_0 + \beta_1 \text{Surcharges}_{ct} + \beta_2 X_{ct} + \delta_c + \gamma_t + \varepsilon_{ct}$
- $Y_{ct}$ : Total enrollment rate, smoker enrollment share, and dis-enrollment rate.
- $\text{Surcharges}_{ct}$ : Minimum effective ratio for Silver and Bronze (separately).
- $X_{ct}$ : Bronze plan premium, silver plan premium, CPI-adjusted cigarette tax, CPI-adjusted e-cigarette tax, CPI-adjusted beer tax, marijuana laws, CPI-adjusted minimum wage, Medicaid Expansion states, unemployment level, and poverty level.
- These variables may affect insurance enrollment, so we control for them.
- $\delta_c$ : County fixed effects, to remove confounding from time-invariant differences across counties that pertain to insurance enrollment.
- $\gamma_t$ : Time fixed effects, to remove confounding factors from changes affecting the outcomes over time.
- $\varepsilon_{ct}$ : disturbance term.
- For dis-enrollment, we use state-year level analysis instead of county-year level since the data is only available at the state level.

- **Three limitations**

- 1) Use the states that used HealthCare.gov eligibility and enrollment platform. State-Based Exchanges are excluded.
  - As of November 2020, 15 State-Based Exchanges (SBE), 6 State-Based Exchanges on the Federal Platform (SBE-FP).
- 2) Estimates of smoker enrollment share are based on tobacco use reported by enrollees.
  - Smokers may misreport their smoking status to avoid the surcharge.
  - So, we do not capture the effect of actual tobacco users, rather we capture the effect on admitted tobacco users.
- 3) While we have separate tobacco surcharges for bronze and silver plans, our outcome measures combine all metal levels.



# Results' Interpretation

- We present these effects in terms of the impacts of a one percentage point increase in the surcharges on the outcome variables.
- We also compute the elasticity of the outcome variables with respect to silver and bronze surcharges at the mean of the other independent variables.

**Exhibit 3: Effect of Surcharge Ratio on Enrollment, Smoking, and Disenrollment Rates for Bronze and Silver Plan**

	Enrollment Rate	Enrollment Rate	Smoker Share	Smoker Share	Disenrollment Rate	Disenrollment Rate
<b>Silver Surcharge</b>	-0.0257** (0.0127)		-0.0584*** (0.00452)		0.000462 (0.00286)	
<b>Bronze Surcharge</b>		-0.0340* (0.0177)		-0.0528*** (0.00457)		0.00274 (0.00291)
<b>Observations</b>	14,094	14,094	14,094	14,094	222	222
<b>R-squared</b>	0.327	0.327	0.821	0.821	0.769	0.770
<b>Mean Dependent Variable</b>	0.0597	0.0597	0.075	0.075	0.0098	0.0098
<b>Elasticity</b>	-0.083**	-0.11*	-0.106***	-0.097***	0.0062	0.0375
<b>Controls</b>	YES	YES	YES	YES	YES	YES
<b>Year FE</b>	YES	YES	YES	YES	YES	YES
<b>County FE</b>	YES	YES	YES	YES	NO	NO
<b>State FE</b>	NO	NO	NO	NO	YES	YES

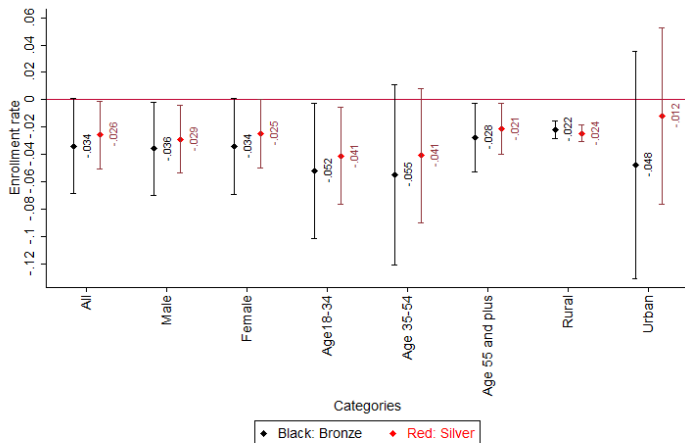
Notes: Authors' analysis using Center for Medicare & Medicaid Services Data. Each column represents a different model. The outcome variables are the enrollment rate (total enrollment divided by non-elderly population), smoking rate (share of total enrollees who reported any tobacco use), and disenrollment rate (fraction of (below 65 years) populations who canceled a plan selection). Each regression controls for Bronze plan premium, Silver plan premium, CPI-adjusted cigarette tax, Consumer Price Index (CPI)-adjusted e-cigarette tax, CPI-adjusted beer tax, marijuana decriminalization laws, medical marijuana laws, CPI-adjusted minimum wage, unemployment level, and poverty level. The standard errors (in parentheses) are clustered at the county level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1

# Main Results Summary

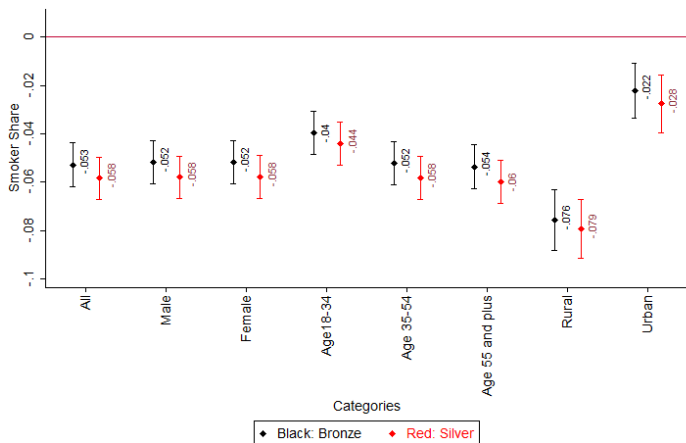
- Results show that tobacco surcharges reduce total enrollment rate and smoker share enrollment significantly.
- The elasticity suggests that the effects are inelastic for both self-reported smokers and non-smokers.
- Estimates suggest that tobacco surcharge policy does not incentivize people who have already made plan selections to cancel those plans.

# Heterogeneity Analysis

Effect of Bronze and Silver Surcharges on Enrollment Rates by Categories



# Effect of Bronze and Silver Surcharges on Smoker Share Enrollment by Categories



# Heterogeneity Analysis Summary

- Tobacco surcharge rates have significantly larger impacts in rural areas than urban areas for smoker share enrollment.
  - A one percentage point increase in bronze tobacco surcharge is associated with a decrease in smoker enrollment shares by 0.076 percentage point for rural residents relative to a 0.022 percentage point reduction for urban residents.
  - A one percentage point increase in silver tobacco surcharge is associated with a decrease in smoker enrollment shares by 0.079 percentage point for rural residents relative to a 0.029 percentage point reduction for urban residents.
- The effects are not so different by sex and age.

- The conclusions did not change when we:
  - Only keep the 34 states that participated in Healthcare.gov every year over the study period.
  - When we remove counties with fewer than ten plan selections for which we imputed the mean of the interval  $[0,9]$ .
  - When we did a dynamic analysis (contemporaneous effect and past value of the surcharges)

- Tobacco surcharges reduce health insurance enrollment on HealthCare.gov overall and shift the composition of enrollment away from self-reported tobacco users.
- Decline in enrollment among tobacco users more than offsets any higher enrollment among non-tobacco users.
- Lower enrollment shares of self-reported tobacco users as surcharges rise is consistent with either:
  - less enrollment
  - or more concealment of tobacco use.
- However, combined effect of lower total enrollment and lower shares of self-reported tobacco users → changes in concealment are much less than changes in enrollment of actual tobacco users.
- No evidence that individuals who make plan selections cancel those plan selections differentially due to tobacco surcharges.



- **Important finding:** Surcharges disproportionately reduce smoker share of enrollment rates in rural areas.
- **Reasons:**
  - 1) Rural residents are more likely to be tobacco users than urban residents.
    - 13.4% of urban-residing adults used cigarettes daily
    - 18.3% of rural-residing adults used cigarettes daily in 2013-2014 (Roberts et al., 2017).
  - 2) rural residents generally have lower incomes and are more budget-sensitive than urban residents.
    - Over 2013-2017, rural residents' median household income was only \$47,020 compared to \$59,970 for urban residents (Guzman et al., 2018)
  - 1) and 2) make it more likely for rural enrollees to be more sensitive to additional premium charges than subscribers living in urban communities.

# Effect on rural insurance coverage is concerning

- The effect is concerning because of well-documented health disparities between urban and rural residents.
- Rural residents relative to urban residents:
  - have much worse outcomes for cancer diagnosis than their urban counterparts (Jenkins et al., 2018)
  - have higher rates of lung cancer incidence and mortality (Odahowski et al., 2019)
  - are twice as likely to have unstaged cancers than urban residents (Liff et al., 1991)
  - had lower gains in life expectancy than non-metropolitan areas (Singh and Siahpush, 2014).
- As such, tobacco surcharges may disproportionately impact health equity.

## Other implications

- Seven states prohibit these surcharges in the individual market (CMS, 2017).
- Findings suggest that the prohibition is likely to decrease premiums for tobacco users and likely raises prices somewhat for others.
- Federal premium tax credits are based on the silver plan with the second-lowest premium for non-tobacco users.
- Prohibiting tobacco surcharges would likely increase tax credits as the second-lowest cost premium rises.
- Premium tax credits could also rise more in rural areas because premiums are likely to increase more in rural areas.
- Prohibiting tobacco surcharges would likely funnel more tax credits to rural areas.

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