

The Efficacy of Local Cigarette Excise Taxes in Virginia

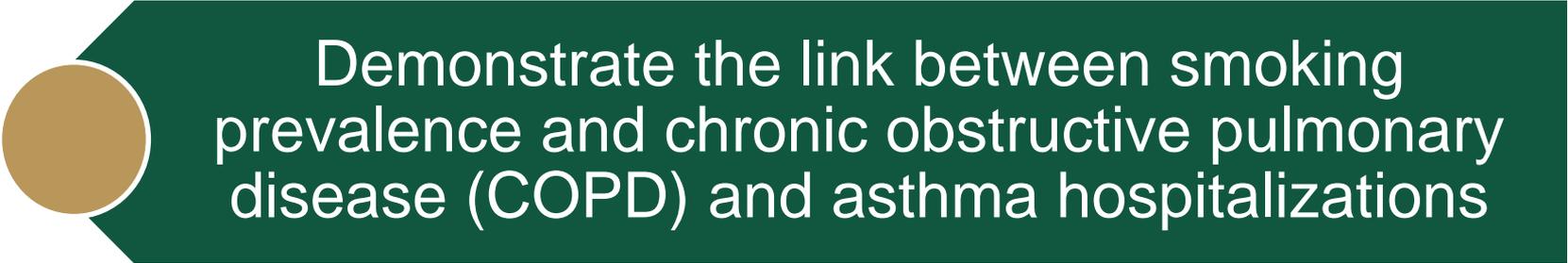
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Class of 2020



WILLIAM & MARY

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Aims of the Study



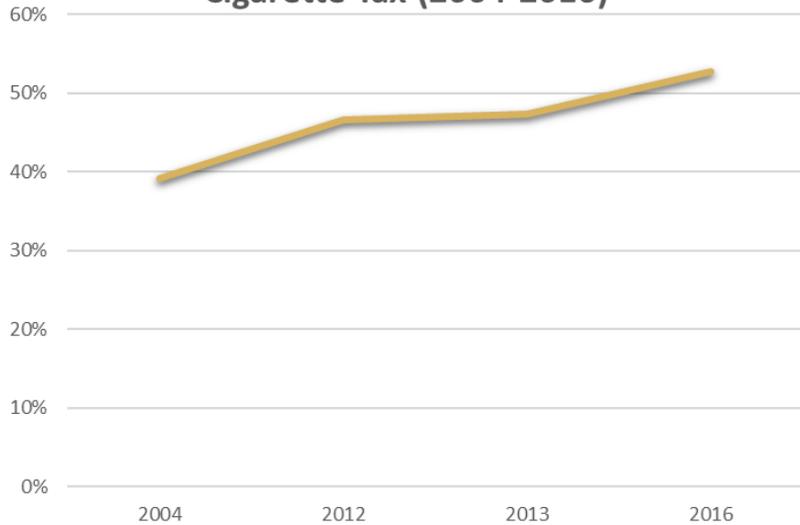
Demonstrate the link between smoking prevalence and chronic obstructive pulmonary disease (COPD) and asthma hospitalizations



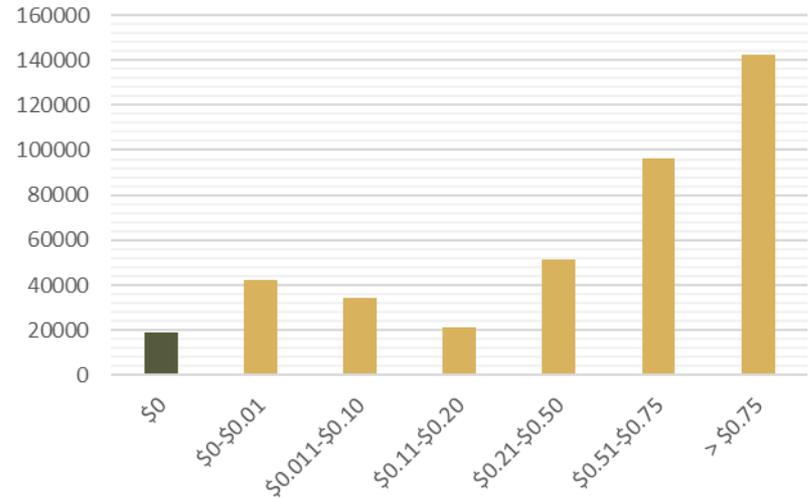
Examine whether local cigarette taxes in VA cause smoking prevalence to decline

Motivation

Percent of Counties in VA with a Local Cigarette Tax (2004-2016)



Median Population in Counties with and without Taxes, 2012



Motivation



Debate on
county's
authority to
levy cigarette
tax

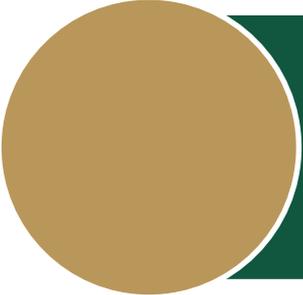


Fiscal
impacts of
cigarette
taxes

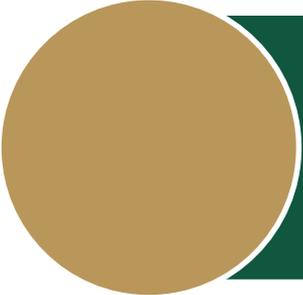


Public health
impacts

My Contributions



Pioneer study assessing the efficacy of local cigarette taxes in VA



Created unique locality-to-county weighted cigarette tax data set

Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Total Smoking Prevalence, 2004	133	26.25	4.02	14.21	33.94
Total Smoking Prevalence, 2012	133	23.27	4.28	10.02	31.65
Female Daily Smoking Prevalence, 2004	133	18.61	3.99	8.21	27.21
Female Daily Smoking Prevalence, 2012	133	15.85	3.88	5.36	25.78
Male Daily Smoking Prevalence, 2004	133	22.95	4.28	9.92	29.3
Male Daily Smoking Prevalence, 2012	133	18.3	3.98	5.43	26.61
Nominal Cigarette Tax Rate, 2004	133	0.08	0.16	0	0.65
Nominal Cigarette Tax Rate, 2012	133	0.11	0.21	0	0.85
COPD Hospitalizations (per 100,000), 2012	132	1744	1133	13	6530
Asthma Hospitalizations (per 100,000), 2012	132	843	431	0	2626

VHI disclaimer: Virginia Health Information (VHI) has provided non-confidential patient level information used in this study which it has compiled in accordance with Virginia law but which it has no authority to independently verify. By using this study, the user agrees to assume all risks that may be associated with or arise from the use of inaccurate data. VHI cannot and does not represent that the use of VHI's data was appropriate for this study or endorse or support any conclusions or inferences that may be drawn from the use of VHI's data.

Method & Results – Hospitalizations

Cross Sectional Regression

$$y_i = \beta_0 + \beta_1 smoke_i + \beta_2 X_i + u_i$$

y_i are smoking related hospitalizations in 2012 in a county i

$smoke_i$ is the smoking prevalence in 2012 in a county i

X_i are varying county traits in 2012 (controls)

u_i are unobserved differences between counties

VARIABLES	ln(COPD Hospitalizations, 2012)	Asthma Hospitalizations, 2012
2012 Smoking Prevalence	0.0453**	26.90*
	(0.0191)	(14.13)
Observations	132	132
R-squared	0.79	0.57

Population weighted standard errors displayed under estimated coefficients

Statistical significance indicated by * $p < 0.1$ ** $p < 0.05$,
*** $p < 0.001$

Methods & Results - Taxes

Cross Sectional Regression

$$y_i = \beta_0 + \beta_1 TAX_i + \beta_2 X_i + u_i$$

y_i is the smoking prevalence in a county i

TAX_i is the population-adjusted cigarette tax in a county i

X_i are varying county traits (controls)

u_i are unobserved differences between counties

VARIABLES	Smoking Prevalence, 2004	Female Daily Smoking Prevalence, 2004	Male Daily Smoking Prevalence, 2004
2004 Cigarette Tax - Nominal	-0.0287	-0.0914*	-0.0301*
	(0.0165)	(0.0517)	(0.0170)
Observations	133	133	133
R-Squared	0.703	0.728	0.723

Population weighted standard errors displayed under estimated coefficients

Statistical significance indicated by * $p < 0.1$ ** $p < 0.05$, *** $p < 0.001$

Methods & Results - Taxes

First Difference Model

$$\Delta y_i = \beta_0 + \Delta\beta_1 TAX_i + \Delta\beta_2 X_i + \Delta u_i$$

y_i is $\Delta smoke$ between 2004 and 2012 in a county i

TAX_i is ΔTAX between 2004 and 2012 in a county i

X_i are ΔX (controls) between 2004 and 2012 in a county i

u_i is the time varying error

VARIABLES	Δ Smoking Prevalence	Δ Female Daily Smoking Prevalence	Δ Male Daily Smoking Prevalence
Δ Cigarette Tax - Nominal	0.00163	-0.0230	0.0219
	(0.0127)	(0.0182)	(0.0168)
Observations	133	133	133
R-Squared	0.222	0.158	0.364

Population weighted standard errors displayed under estimated coefficients

Statistical significance indicated by * $p < 0.1$ ** $p < 0.05$,
*** $p < 0.001$

Discussion & Conclusion

Limitations

Omitted variable bias
in first difference
model

Takeaways

More study on the
efficacy of local
cigarette taxes

Policy lessons

Local cigarette taxes
may not reduce
smoking prevalence

Thank you!

QUESTIONS?

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Adverse Effects of Cigarette Taxes

- Excise taxes are inherently regressive
 - The tax places an equal burden upon everyone (no matter your income)
 - Excise taxes place the highest financial burden on people of low income
- Small businesses (convenience stores)
 - Cigarette prices cheaper in nearby towns without tax
 - Consumers begin to ditch convenience stores with a tax and move to those without one
 - “Deadweight loss” of excise taxes

Fiscal Impacts of Cigarette Taxes

- Projected revenue gains from taxes fall short of actual revenue gains, on average
- Local economy is disproportionately affected

