The Intergenerational Effects of Cigarette Taxes on Smoking*

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Abstract

While teenage exposure to cigarette taxes reduces contemporary smoking, adult smoking, and mortality rates among the generation that experienced these policies, little is known about their effect on subsequent generations. This paper examines how a mother's exposure to cigarette taxes during her adolescence affects her children's smoking decisions and respiratory health outcomes. Using data from the National Longitudinal Survey of Youth 1979 (NLSY79) and the NLSY79 Children and Young Adult Survey (CNLSY), we leverage the variation in cigarette taxes experienced by mothers to understand the intergenerational effects of these taxes. Our findings suggest that a one-dollar increase in cigarette taxes experienced by the mother at ages 14-17 is associated with a 5 percentage points reduction in smoking participation and a 15 percentage points reduction in asthma incidence. These results shed light on the potential intergenerational effects of anti-tobacco policy on risky health behaviors and other health outcomes.

Keywords: Cigarette, Intergenerational, Smoking, Respiratory

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1 Introduction

Do policies experienced by mothers during their teenage years affect their children's future outcomes? Shocks and policies experienced by the first generation have been shown to impact the outcomes of subsequent generations (e.g., Black et al. (2019) on environmental policies, Barr and Gibbs (2022) on antipoverty initiatives, and Deza and Mezza (2023) on defense draft selection policy). However, little is known about how cigarette taxes experienced by the mothers affect their children's future outcomes. Youth exposure to cigarette taxes has persistent, yet declining, effects on adulthood smoking (Friedson et al., 2023, 2024) and previous evidence has identified intergenerational impacts of in-utero exposure to cigarette taxes (Hoehn-Velasco et al., 2022). However, whether teenage exposure to tobacco price control policies has intergenerational effects remains unknown.

To address this gap in the literature, this paper explores the intergenerational effects of cigarette taxes experienced by mothers during their teenage years on their children's smoking habits and respiratory health outcomes. We examine the impact of the cigarette tax policies in the mothers' states of residence during their teenage years on their children's future outcomes. To conduct this analysis, we combine data from the National Longitudinal Survey of Youth 1979 (NLSY79), the NLSY79 Children and Young Adult Survey (CNLSY), and annual state and federal cigarette tax rates from 1970 to 2020. By leveraging the variation in cigarette taxes that mothers experienced in their states of residence during their teenage years, we can compare the children of mothers exposed to different levels of cigarette taxes.

Our focus on cigarette taxes enforced during mothers' teenage years, as opposed to those imposed during adulthood, is based on two aspects of smoking behavior: the sensitivity of teenage smoking to price changes and the persistent effects of early smoking. First, previous studies have documented that the initiation of smoking among youth is particularly responsive to policies designed to deter smoking. For instance, evidence suggests that teenage cigarette taxes reduce adult smoking participation (Carpenter and Cook, 2008; Hansen et al.,

2017; Anderson et al., 2020; Dennett, 2022), and other smoke-free environment policies can also have deterrent effects (Friedman et al., 2019; Bryan et al., 2020). This is particularly significant given that most smokers begin their habit before the age of 20 (Lillard et al., 2013). Second, there is a strong relationship between teenage and adult smoking (Friedson et al., 2024). Therefore, we use the variation in the mothers' teenage cigarette tax exposure as an exogenous shock to smoking over their lifetime.

We analyze the effects of mothers' teenage cigarette taxes using a fixed effects model, which allows us to control for various factors influencing smoking behavior. The key identifying assumption is that teenage cigarette taxes are not determined by unobserved time-varying factors that influence state-level smoking dynamics; that is, there is no omitted time-varying variable correlated with the state's cigarette tax rate and smoking behavior. Therefore, the main specifications include mother and child state fixed effects, birth-year fixed effects, and survey-year fixed effects. This set of fixed effects accounts for common trends in anti-tobacco sentiment across cohorts and changes in tax rates linked to shifts in that sentiment. Moreover, since contemporary anti-tobacco policies significantly affect smoking behavior, we control for children's exposure to tobacco policies at the time of the survey. This ensures that the effect of mothers' exposure to cigarette taxes on their children's outcomes reflects only their mother's teenage exposure and not their later exposure to tobacco policies.

Our findings indicate that a one-dollar increase in cigarette taxes experienced by mothers during their adolescence (ages 14-17) is associated with a 5 percentage point reduction in smoking participation by their children over their lifetime. This equates to a 35% decrease relative to the average smoking rate. This significant reduction is consistent with prior research on the intergenerational effects of policies and shocks on risky health behaviors (Deza and Mezza, 2023; Barr and Gibbs, 2022) and health mobility (Fadlon and Nielsen, 2019; Halliday et al., 2020, 2021). The magnitude of our estimates exceeds previous evidence on the long-term impacts of cigarette taxes in the first generation (Friedson et al., 2023), suggesting that these taxes not only affect the initial generation but also have enduring, possibly cu-

mulative, effects on the second generation. This underscores the importance of policymakers considering such policies' broader and potential long-term and intergenerational implications.

This paper contributes to several bodies of literature. First, it adds to the body of research on the long-term and intergenerational effects of shocks and policies (Black et al., 2019; Barr and Gibbs, 2022; Deza and Mezza, 2023) by analyzing the impacts of cigarette taxes. Prior studies have shown that adolescent exposure to cigarette taxes reduces adult smoking rates and mortality (Friedson et al., 2023, 2024). Furthermore, in-utero exposure to cigarette taxes is associated with decreased adult pre-pregnancy and prenatal smoking, resulting in lasting effects on both adult and infant health (Hoehn-Velasco et al., 2022). This study provides new evidence on how teenage cigarette taxes influence smoking behavior and health outcomes in subsequent generations.

Second, this paper contributes to the literature on the intergenerational transmission of health behaviors. Children of smoking parents have been shown to be more likely to smoke as adults (Bantle and Haisken-DeNew, 2002; Göhlmann et al., 2010), and parental health shocks can causally affect the health behaviors of their adult children (Darden and Gilleskie, 2016; Fadlon and Nielsen, 2019). We provide the first causal estimates of how shocks experienced by mothers during their adolescence influence the smoking behavior and health outcomes of their children, using an anti-tobacco policy that changed mothers' risky health behaviors.

Third, this paper also contributes to the literature on the effects of second-hand smoke exposure. While previous studies have examined the effects of reducing in-utero and second-hand smoke exposure on children's brain development, early health, and human capital formation (Adams et al., 2012; Bublitz and Stroud, 2012; Simon, 2016; HHS, Surgeon General, 2016), this paper directly tests whether higher cigarette taxes experienced by mothers during their teenage years lead to improved respiratory outcomes for children. This improvement is likely attributable to a reduction in second-hand smoke exposure within the household.

Fourth, this paper contributes to the literature on the cultural transmission of smoking

behaviors and the influence of a child's environment on smoking decisions (Christopoulou and Lillard, 2015; Tirtosudiro et al., 2016; Cambron et al., 2018; Rodríguez-Planas and de Galdeano, 2019; Catalano and Gilleskie, 2021). Specifically, we examine the effects of family composition and parenting styles on the adoption of risky health behaviors. While previous studies have explored the effects of divorced fathers (Kalmijn, 2022) and sibling centrality (McHale et al., 2012), we analyze how these impacts differ based on the number of children in the household. Additionally, we investigate how parents' styles of support can create an environment that either deters or fosters the adoption of risky health behaviors.

Finally, we examine the role of parenting style by analyzing how cigarette taxes might influence a mother's parenting style later in life, potentially creating an environment that either discourages or facilitates children's engagement in smoking, similar to Deza and Mezza (2023). Second, we examine the effect of family composition. While previous studies have explored the effects of divorced fathers (Kalmijn, 2022) and siblings centrality (McHale et al., 2012), we analyze how the impacts differ based on the number of children in the household. This paragraph is incomplete as we still don't have the complete results. We only have the family composition and education part, but we will also include parental styles in future versions.

The remainder of this paper is organized as follows. Section 2 describes our data sources, the samples and variables availability. Section 3 discusses our identification strategy and its potential identification threats. Section 4 presents our results and heterogeneous analyses, and Section 5 concludes.

2 Data

For this study, we use three primary sources of information: (i) the National Longitudinal Study of Youth 1979 (NLSY79), (ii) the National Longitudinal Study of Youth 1979 Child and Young Adult complement (CNLSY79), and (ii) annual state and federal cigarette taxes

from 1970 to 2022. Additionally, we draw on several secondary sources to construct control variables, following Hoehn-Velasco et al. (2022) and Friedson et al. (2023).

2.1 NLSY79 and NLSY79 C&YA

The NLSY79 is a nationally representative sample of over 12,000 individuals born between 1957 and 1964 residing in the United States at the start of the survey. The initial interviews were conducted in 1979 with respondents aged 14 to 22, continuing annually until 1994 and biennially after that. This dataset provides detailed information on health, education, family formation, and labor market outcomes. We use a restricted-access data version, including state-level identifiers, to link individuals to state cigarette tax rates during adolescence.

In 1986, the NLSY79 launched a longitudinal study tracking all children born to female respondents, known as the NLSY79 Children and Young Adults. This survey, collecting data up to 2020 from over 11,000 children, captures detailed responses from mothers and children on schooling, labor, health, and personal attitudes and behaviors, including smoking habits from 1988 to 2014. The design and timing of these surveys are particularly beneficial for our research, as they allow us to accurately link mothers' exposure to state cigarette taxes during their teenage years to their children's smoking habits and health outcomes. This will enable us to investigate the intergenerational effects of mothers' exposure to cigarette taxes on children's smoking habits and health outcomes potentially related to second-hand smoking, like respiratory illnesses.

Our analysis focuses on NLSY79 mothers whose children are part of the NLSY79 Children and Young Adults (C&YA) survey and have responded at least once to smoking-related questions. Specifically, children aged 10 and older were queried about their age at first use, along with the quantity and frequency of their cigarette use. Additionally, the main NLSY79 youth sample, which includes the mothers, contains detailed inquiries over several survey years about their smoking habits and those of other household members. This comprehensive data collection enables us to link children's smoking data with maternal and household

smoking information during the children's adolescence, a critical period for brain development and forming long-term health and behavioral patterns (Mezza and Buchinsky, 2021; Cawley and Ruhm, 2011; Winters and Arria, 2011; Renna, 2008; Grossman and Markowitz, 2005; Gruber and Zinman, 2001; Rees et al., 2001; Chassin et al., 1996).

Since the survey tracks children up to age 35, we can also assess the impact of lifetime cigarette use. To comprehensively capture the scope of smoking behavior, we define smoking in two main ways: (i) as an indicator variable representing whether the individual reported smoking at any survey point and (ii) the consumption intensity of those classified as smokers. The intergenerational impact of tobacco taxes on smoking behavior is significant. Still, the corresponding changes in health outcomes for children whose mothers were exposed to these taxes are particularly vital for public health policy. Accordingly, we utilize data on asthma, respiratory diseases, allergic conditions, heart trouble, and the mother's overall rating of the child's health, as reported in the C&YA NLSY, which allows us to study the broader implications of maternal exposure to cigarette taxes on the health of the next generation.

Table 1, Panel A provides summary statistics for the children in the sample. On average, children are 19 years old, 16% have smoked at some point in their life, and 29% have been diagnosed with asthma or experienced asthma symptoms. Panel B provides information about their mothers and their grandparents. The average mother in our sample was 27 years at birth and had 2.65 children. Also, 16% of grandparents have some post-secondary schooling.

2.2 Cigarette taxes

State and federal cigarette taxes come from historical data in Orzechowski and Walker (2018). The cigarette tax for state s in year t, denoted as Tax_{st}, comprises state and federal per-pack excise taxes. To align with the existing literature on smoking, we report these taxes in 2005 dollars. Although federal tax changes are included in the combined value, they do not contribute to identification since the models incorporate year-fixed effects accounting

for state-common characteristics that change over time. Figure 1 shows the state cigarette tax and the combined state and federal tax trends between 1970 and 2020. The relevant variation for our paper is the changes between 1970 and 1982 when the mothers in the sample were teenagers. During this period, the real value of taxes decreased, driven mainly by high inflation levels. The variation after 1988 is also relevant for our estimations as it allows us to control for the contemporary taxes experienced by the children when making risky health behavior decisions.

Panel A in Figure 2 shows the geographic variation in the average tax rate by state and highlights how different states have different tax levels. Additionally, we separate that geographic variation into two periods of time: (i) 1970-1982 (Mother's Teenage Years) and (ii) 1988 - 2020 (Survey Years of the Children). Panel B of the same figure illustrates how the tax rates were lower when the mothers were teenagers, but there were significant geographic differences even during that time. In Panel C, we can observe that tax rates have increased mainly in the West, Midwest, and Northeast states. This Panel highlights the importance of accounting for contemporary tax rates as they could impact the children's smoking dynamics.

Following Gruber and Zinman (2001), the tax experienced by individual i's mother as a teenager, $\text{TeenTax}_{m(i),\ell}$, is defined as the average cigarette tax in place in their state of residence ℓ, at the age range 14-17. The NLSY includes everybody's exact state of residence, which started in 1979. This implies that for those older than 14, we have to impute the tax assuming that i's mother's place of residence in 1979 is where she lived the previous years. For a teenager aged 14 in 1979, we can observe every state she was in from 14-17, while for a teenager who was 17 in 1979, we can only observe that state, but we assume that she was in that same state the previous 3 years. This assumption is consistent with the previous literature (Hoehn-Velasco et al., 2022; Friedson et al., 2023, 2024). Therefore, the tax experienced by the mother m of child i in state ℓ is given by $\text{TeenTax}_{m(i),\ell}$, and is

defined as follows:

$$\text{TeenTax}_{m(i),\ell} = \frac{1}{4}\sum_{t=14}^{t=17} \text{Tax}_{\ell,b(i)+t}$$

where $b(i)$ is i's year of birth and ℓ is the mother's state of residence as a teenager.

2.3 Adult and teen-dated state-level variables

One potential concern when attempting to disentangle the intergenerational effects of any shock experienced by parents on their children's outcomes is that there may be contemporary effects of similar policies on the second generation and that the shock could be correlated with other policies and economic conditions. Cigarette taxes might correlate with other anti-tobacco policies, tobacco-related public sentiment, or economic conditions. To address this, we include a set of state-level variables. These variables are used both contemporaneously, based on the child's state or county of residence at the time of the survey, and historically, reflecting the conditions when the mother was a teenager, aligning with how $\text{TeenTax}_{m(i),\ell}$ was defined.

For tobacco control policies, we focus on Tobacco 21 laws, the proportion of the population covered by indoor vaping restrictions and indoor smoking restrictions in bars, restaurants, and workplaces, the standardized e-cigarette tax, and the enactment of laws establishing the minimum legal purchasing age for both e-cigarettes and traditional cigarettes (Pesko and Currie, 2019; CDC, 2023; Cotti et al., 2023). For other policy information, we characterize variables related to health and risky health behaviors, such as the ACA Medicaid expansion status (KFF, 2023), state-level beer tax (TPC, 2023), recreational and medical marijuana legalization status (MPP, 2023). Finally, for economic conditions, we concentrate on unemployment rate, median income and percentage of people below the poverty line following Hoehn-Velasco et al. (2022) and taken from the U.S. Bureau of Labor Statistics and

University of Kentucky Center for Poverty Research (2024).[1]

2.4 Preliminary Checks

Before analyzing the impact of mothers' teenage cigarette taxes on children's smoking behaviors and health outcomes, it is important to provide evidence on two facts. Firstly, as descriptive evidence we would like to see whether the relationship between mothers' cigarette taxes and their children's smoking behavior and health outcomes is present without controlling for any confounding characteristics. Addressing these factors will provide a solid foundation for our subsequent analysis of the causal effects of mothers' exposure to cigarette taxes on children's health outcomes. Secondly, as in a first stage estimation of a reduced form analysis, we want to show that the tax experienced during teenage years influenced mothers' smoking behavior.

We begin by providing descriptive evidence on the relationship between mothers' teenage cigarette taxes, smoking behavior, and asthma. Panel A in Figure 4 illustrates the relationship between the mother's teenage tax and whether the child has ever smoked. Panel B shows the children's smoking behavior in the intensive margin, while Panel C depicts correlation between children's asthma diagnosis and their mothers' teenage cigarette taxes Panel B and C are still not approved to be shown.. Each figure compares children whose mothers experienced different tax rates during their teenage years, without accounting for or controlling other influencing factors. These preliminary analyses suggest that higher cigarette taxes during mothers' teenage years are associated with a reduced likelihood of smoking, with no changes on the intensive margin, and a lower incidence of asthma in their children.

[1] All information sources are detailed in the Appendix

3 Identification strategy

While previous studies have established a correlation between teenage exposure to cigarette taxes and long-term smoking decisions and health outcomes, similar to the descriptive evidence presented above (Friedson et al., 2023, 2024), no causal estimates of the intergenerational link have been provided. To measure the causal effect of mothers' exposure to cigarette taxes as teenagers on their children's smoking behaviors and health outcomes, we estimate the following specification:

$$\begin{aligned} Y_{ist}^{m\ell} = \beta_0 + \beta_1 \text{TeenTax}_{m(i),\ell} + \beta_2 \text{Tax}_{ist} + X'_{ist}\beta_3 + W'_{st}\beta_4 + W'_{m(i),\ell}\beta_5 \\ + \mu_s + \mu_\ell + b_{t-age_i} + \omega_t + \epsilon_{m(i),\ell} \end{aligned} \tag{1}$$

where, $Y_{ist}^{m\ell}$ denotes the outcome for child i, living in state s, surveyed in year t, and born to mother m, who lived in state ℓ during her teenage years. $\text{TeenTax}_{m(i),\ell}$ indicates the tax level to which mother m of child i was subject as a teenager in her state of residence ℓ. Tax_{ist} represents the contemporaneous cigarette tax rate experienced by the children in their state of residence s. X_{ist} includes child-level control variables that may vary over time, while W_{st} represents the children's state-level controls over time, and $W_{m(i),\ell}$ denotes mother m's state-level controls from her teenage years in state ℓ. The remaining variables capture fixed effects. μ_s represents the fixed effects for the child's state of residence, μ_ℓ indicates the mother's state of residence fixed effects, b_{t-age_i} denotes year of birth fixed effects, and ω_t represents survey-year fixed effects. Standard errors are clustered at the mother's state of residence level to account for serial correlation within each state at the .

Mother's state-of-residence fixed effects (μ_ℓ) account for systematic differences in mothers' states of residence that might be constant over time, it can include smoking sentiment or cultural characteristics associated with smoking. Consequently, these fixed effects ensure that identification stems from within-state variations. Simultaneously, year-of-birth fixed effects

(b_{t-age_i}) capture shocks affecting specific cohorts (i.e., national-level shocks that impact generations). These fixed effects help identify the causal effects of mothers' teenage cigarette taxes in a given state, in comparison to mothers in other cohorts within the same state who experienced different cigarette tax rates. We also include state-specific fixed effects (μ_s), which control for systematic differences in smoking sentiment and other state-constant characteristics that might influence smoking behavior across children's states of residence; and survey-year fixed effects (ω_t) which account for shocks in anti-smoking sentiment and changes in policies occurring within a given year that affect all states.

This empirical strategy exploits variation in mothers' exposure to differential teenage taxes depending on their state of residence and their year of birth. The year and state fixed effects included in equation 1 control for differences across cohorts within a given state in the teenage cigarette taxes. The ability to exploit teenage cigarette taxes relies on sufficient residual variation after considering the fixed effects. Figure 3 shows that, as expected, the corresponding distribution of residualized cigarette taxes looks normally distributed, conditional on year and state-fixed effects. The parameter of interest is, therefore, β_1. It measures the impact of a one-dollar increase in the teenage cigarette tax in the mother's state of residence on the probability that child i, residing in state s reports having ever smoked or been diagnosed with asthma in survey year t.

A potential limitation of this specification is that fixed effects may not fully account for time-varying anti-tobacco sentiments within a given state. For this reason, we include Tax_{ist} and control for additional observable characteristics of the state (W_{st}) like the unemployment rate, whether marijuana is legal, and the minimum legal purchase age. These set of controls, mainly Tax_{ist}, ensure that the effect of mothers' exposure to cigarette taxes on children's smoking and health outcomes reflects only their mother's teenage exposure and not their later exposure to tobacco policies.

4 Results

4.1 Smoking participation and intensity

Leveraging the cigarette taxes experienced by mothers during their adolescence (ages 14-17), we find that a one-dollar increase in taxes is associated with a 5.4 percentage point (pp.) reduction in their children's probability of ever smoking (see Table 2). This significant decrease represents a 34% reduction relative to the average smoking rate, underscoring the effectiveness of cigarette taxes in curbing smoking habits across generations. However, when exploring the intensive margin, we find no significant effects on the number of cigarettes the children smoke.

The effects are not uniform across the cigarette tax distribution. Panel A in Figure 5 illustrates that the higher the tax experienced by the mother during her teenage years, the lower the probability of her children ever engaging in smoking. More specifically, children whose mothers were exposed to tax rates in the third and fourth quartiles of the cigarette tax distribution are significantly less likely to report ever smoking compared to those whose mothers experienced the lowest tax rates.

4.1.1 The role of family composition

Prior literature has established that teenage smoking is particularly sensitive to cigarette taxes (Carpenter and Cook, 2008; Hansen et al., 2017; Anderson et al., 2020), with evidence showing that exposure to these taxes during adolescence significantly reduces adult smoking rates (Friedson et al., 2023, 2024). Friedson et al. (2024), for instance, found that cigarette taxes experienced during adolescence are associated with a 15% decrease in the probability of becoming a smoker. Therefore, it is not surprising that mothers' exposure to taxes can have a more pronounced effect on their children's smoking behaviors, given the potential for multiplicative effects. The average mother in the 1980s and 1990s, when most of the children in our sample were born, had two children. Consequently, interventions during the

mother's adolescence can have a broad impact, influencing multiple subsequent individuals and amplifying the public health benefits of higher cigarette taxes.

Table 3 presents the results for children with no siblings compared to those with one or more siblings. Notably, the effect is larger and statistically significant for children with at least one sibling, where a one-dollar increase in the tax experienced by their mothers is associated with a 6.5 percentage point decrease in the likelihood of ever being a smoker, a 42% reduction. This finding may suggest the multiplicative effects of a mother's exposure or indicate that first-born children reinforce non-risky behaviors among their siblings.

4.1.2 Differences by education level

When examining the heterogeneous effects of family composition on smoking behaviors, a key question arise on whether the family structure drives these effects or if they serve as a proxy for income, particularly given that families with lower incomes often have more children in that time period (Dribe et al., 2014; Weeden et al., 2006). Given the potential endogenous nature in the mother's income and educational levels, we use the educational level of the grandparents as a proxy for family income. Due to power limitations, we cannot fully interact grandparents' education with family composition; instead, we analyze the heterogeneous effects by education level separately, as detailed in Table 4.

If the effect of family composition were merely a reflection of income, individuals from higher educational backgrounds would be 11.8 pp less likely to become smokers when their mothers are exposed to a one-dollar increase in cigarette taxes during their adolescence. This finding aligns with recent research from Yu et al. (2023), which indicates that the higher the father's education level, the more significant the intergenerational transmission of risky behaviors, including smoking. Additionally, this outcome also resonates with studies showing that more highly educated (and presumably higher-income) individuals respond more strongly to cigarette taxes (Azagba and Sharaf, 2011).

4.2 Child health outcomes

The intergenerational impact of tobacco taxes on smoking behavior is significant. Yet, the corresponding health improvements in children whose mothers were exposed to these taxes are crucial for public health policy. In Table 5, we explore the intergenerational effects of cigarette taxes on children's respiratory outcomes. We find that a one-dollar increase in cigarette taxes during a mother's adolescence relates to a 15 pp decrease in asthma incidence among their children, which represents a 52% reduction compared to the average asthma prevalence. Panel B in Figure 5 suggests non-linear effects of the mother's tax exposure on their child's asthma report, with children of mothers exposed to higher taxes showing a lower likelihood of having asthma.

Reducing respiratory disease incidence can be linked to several mechanisms, such as higher cigarette taxes during a mother's adolescence. These taxes deter smoking initiation among teenagers, resulting in a generation of mothers less likely to expose their children to harmful second-hand smoke. The absence of maternal smoking during critical developmental periods, such as in-utero and early childhood, significantly enhances pregnancy outcomes and reduces children's exposure to environmental tobacco smoke and nicotine's addictive properties, thereby decreasing the risk of asthma. Furthermore, higher tobacco taxes foster cultural shifts towards anti-smoking attitudes, perpetuating non-smoking behaviors among mothers and creating healthier environments for children.

5 Conclusions

This paper extends the literature on the impacts of teenage taxes by exploring the intergenerational effect on the next generation's smoking and health outcomes. It provides evidence of how mothers' teenage exposure to cigarette taxes affects their children's smoking and health. By employing a fixed effects model and using comprehensive data on children and their mothers' characteristics, we found that a one-dollar increase in mothers' teenage cigarette taxes

is associated with a 5.4 percentage point reduction in the likelihood of their children ever smoking. This reduction not only highlights the effectiveness of cigarette tax policies in curbing smoking habits but also underscores their potential to improve public health outcomes across generations. In particular, our analysis reveals that a one-dollar increase in cigarette taxes during a mother's adolescence is associated with a 15 percentage point decrease in asthma incidence among their children, representing a 52% reduction compared to the average prevalence of asthma. Notably, the effects are non-linear, as only the most significant tax increases affect the children's outcomes. These results also underscore that the teenage exposure of mothers to cigarette taxes has caused intergenerational spillovers, emphasizing the importance of policymakers considering the broader and potential long-term implications of such policies.

The results indicate that exposure to cigarette taxes can alter mothers' and children's life trajectories by reducing the likelihood of smoking and positively affecting respiratory health outcomes. These results raise essential policy questions that future research should explore, particularly the underlying mechanisms through which mothers' exposure to teenage taxes affects their children.

6 Extra Steps

1. We are missing the first stage results but for future versions we should have them. If you have any ideas on how we should do it, we would appreciate them.

2. We need to understand what is driving the results of family composition.

3. We are planning on exploting the birth order in some way but still unsure. Also, we could use the first-born child to try to understand the mechanisms. Maybe it could be a role models story.

4. We have vaping questions and we are planning on adding them.

5. Survey issues:

   - Selection into the survey issues: This one is tricky to deal with so we need to think about it carefully.
   - Attrition: We need to check if the tax policy is related in any way to the likelihood of leaving the survey.

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7 Figures and Tables

7.1 Figures

Figure 1: Cigarette Tax Trends 1970-2019

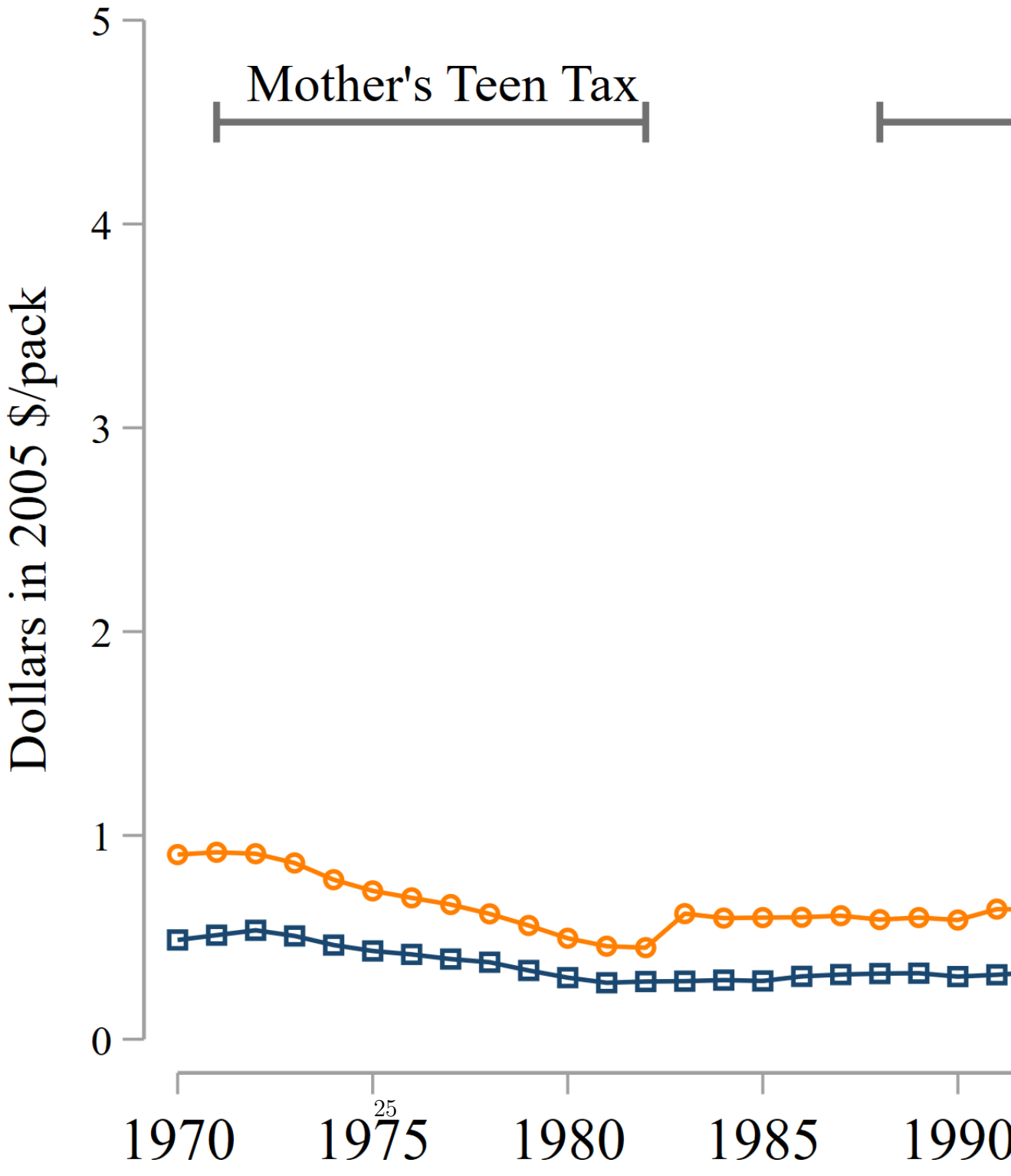
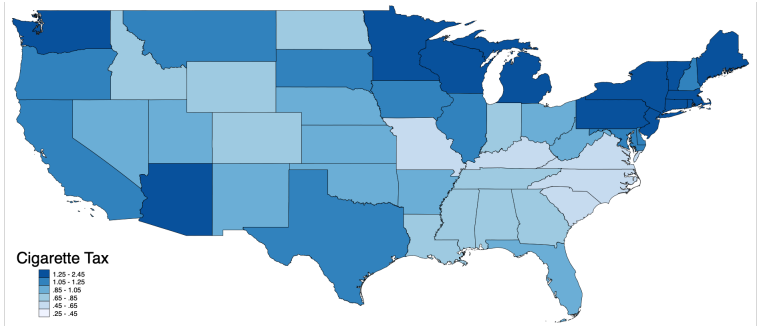
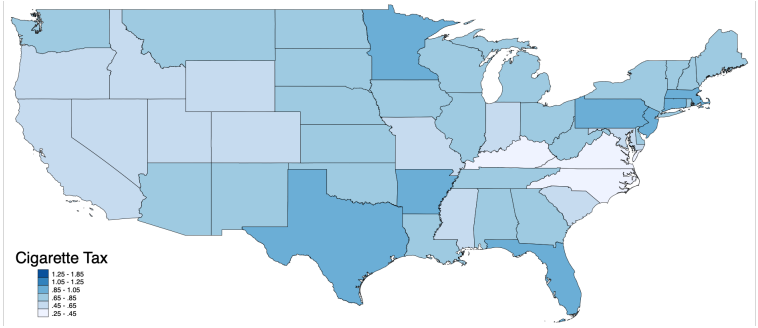


Figure 2: Cigarette Tax Trends 1970-2019

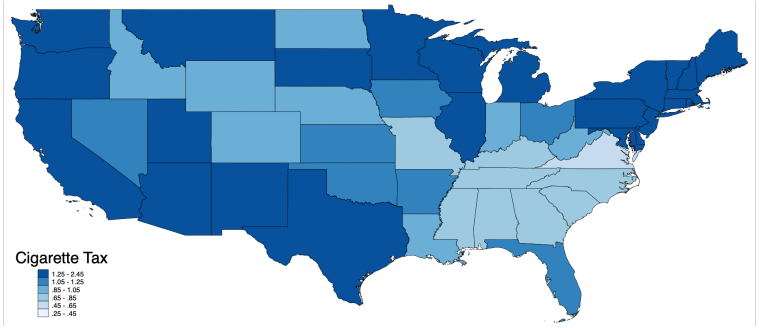
(a) Geographic Variation 1970-2020



(b) Geographic Variation 1970 - 1982



(c) Geographic Variation 1988 - 2020



Notes: Data obtained from Orzechowski and Walker (2018). The figure above shows the per-pack tax excise rate in 2005 dollars.

Figure 3: Residual Cigarette Tax 1970-1982 by State and Year

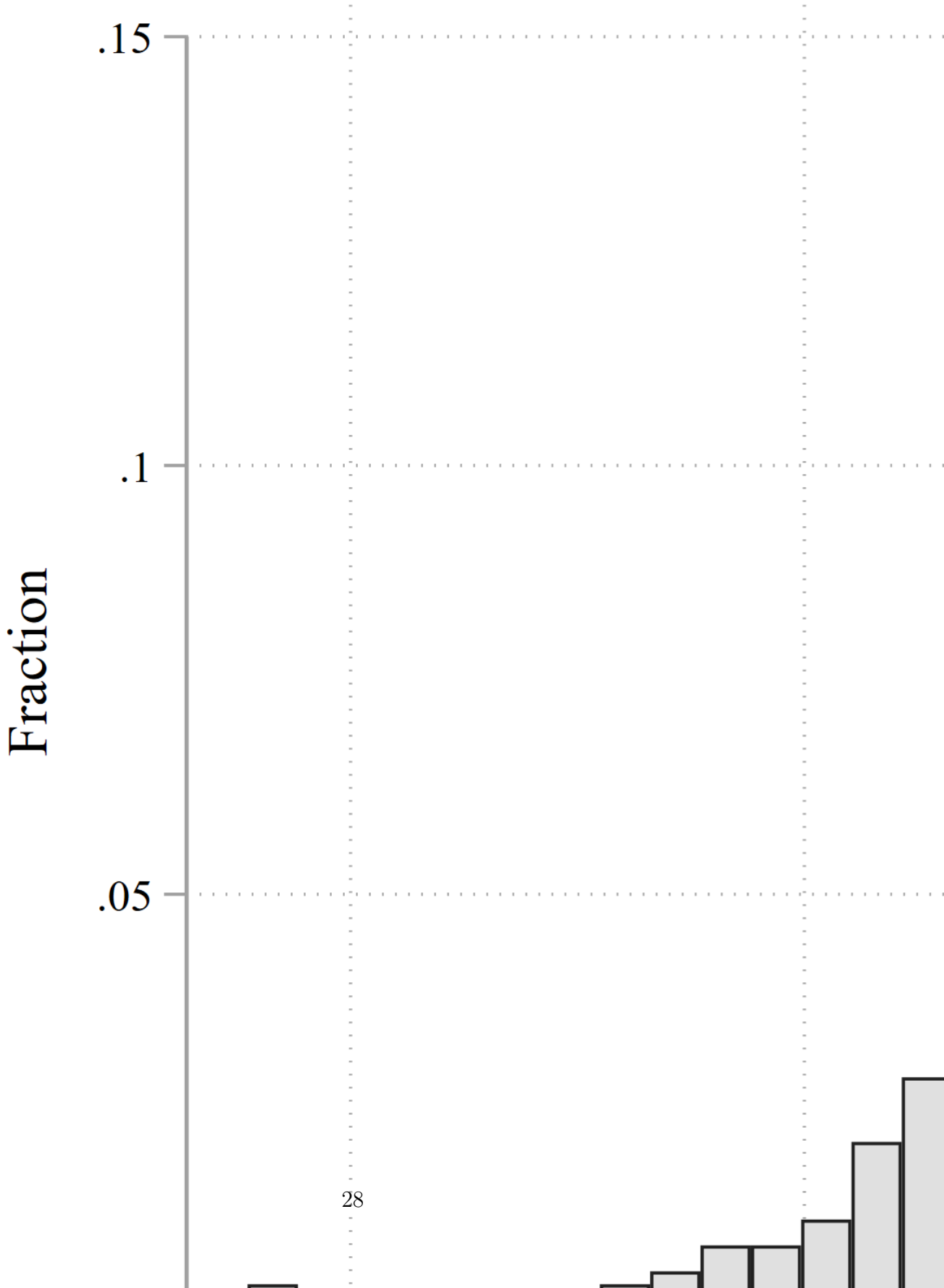
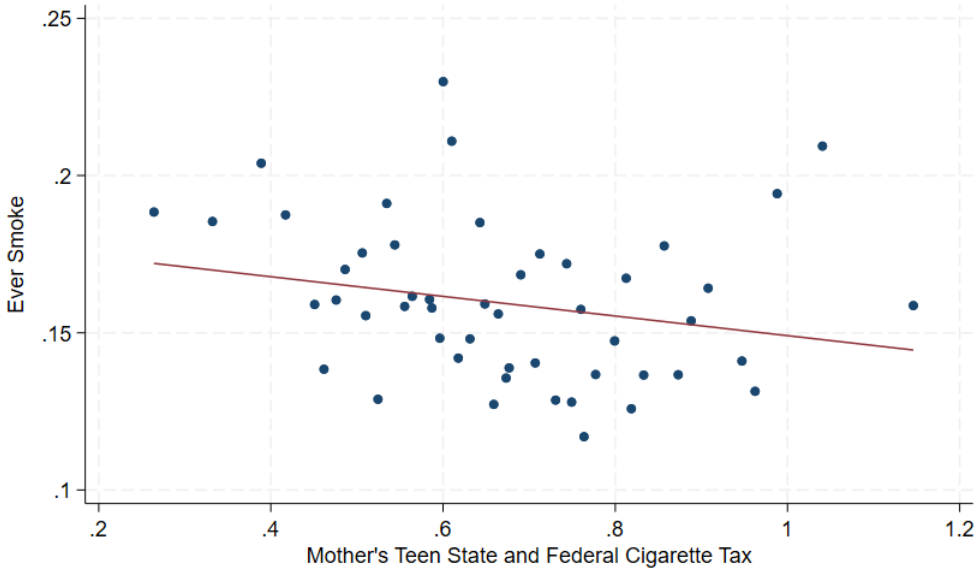


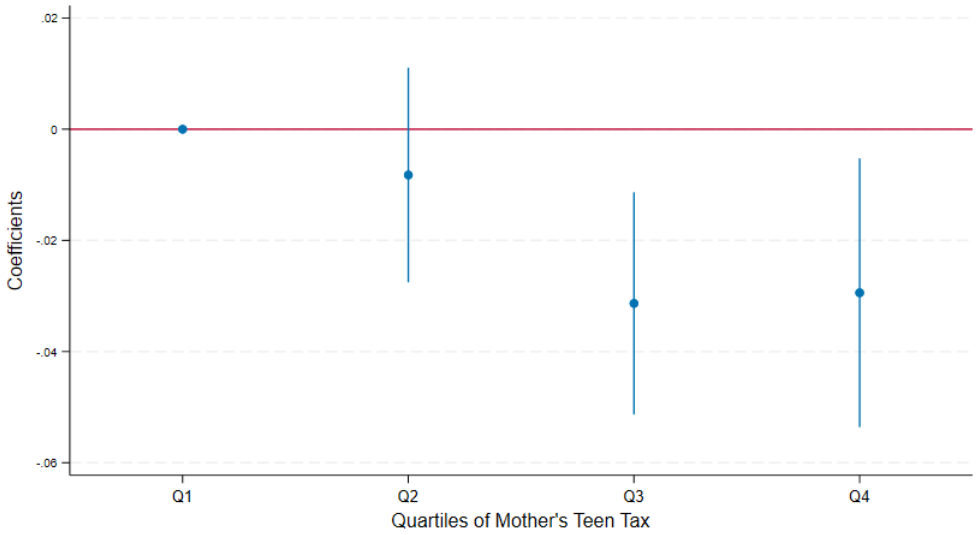
Figure 4: Correlation between Mothers' Teen Tax and Children's Outcomes (smoking and asthma incidence)



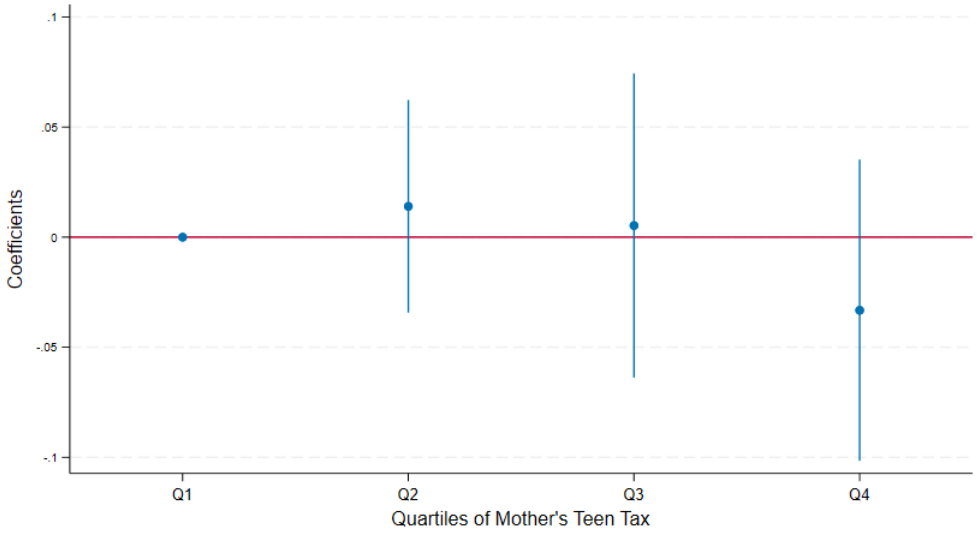
Notes: The figure above shows the relationship between mothers' cigarette teen tax and their children's likelihood of smoking in Panel A and the children asthma incidence in Panel B.

Figure 5: Non-Linear Effects of High Achievers

(a) Ever Smoked



(b) Asthma



Notes: The figures above report non-linear estimates from regressions of the quintiles of the mothers' cigarette teen tax on their children's likelihood of smoking and having asthma. Vertical bars represent 95% confidence intervals. Standard errors are corrected for heteroskedasticity and clustered at the mothers' state of residence during their teenage years level.

7.2 Tables

Table 1: Child, Teacher, and Classroom Characteristics

	Mean	SD
A. Child characteristics		
Age in years	19.27	7.03
Sex (1 = Female)	0.51	0.50
Hispanic	0.21	0.41
Black	0.32	0.47
Non-Black, Non-Hispanic	0.47	0.50
Ever smoked	0.16	0.37
Asthma diagnosis	0.29	0.45
B. Mother and Grandparents characteristics		
Age at birth (Mother)	27.41	5.09
Number of Children (Mother)	2.65	1.27
Post Secondary Schooling (Grandparents)	0.16	0.36
C. Policy information		
Child's State and Federal Cigarette Tax	1.49	0.90
Mothers' Teen State and Federal Cigarette Tax	0.67	0.18

Notes: Table reports summary statistics of the children in the sample. It includes children's characteristics and those of their mothers and grandparents. It also includes information on the cigarette taxes.

Table 2: Effects on Children's Smoking

	Ever Smoked	
	(1)	(2)
Mother's Teen Tax	-0.054*	-0.054*
	(0.027)	(0.031)
Mean of Dependent Variable	0.154	0.157
Observations	36,419	33,522
Controls	No	Yes
Children's State FE	Yes	Yes
Mom's State FE	Yes	Yes
Year of Birth FE	Yes	Yes
Survey Year FE	Yes	Yes

Notes: The table reports estimates from regressions of the mothers' cigarette teen tax on their children's likelihood of smoking. The model with controls includes unemployment rates, minimum legal purchase age of tobacco, and whether marijuana was legal for the mother's state of residence as a teenager and the children's current state of residence. *** indicates significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level. Standard errors are corrected for heteroskedasticity and clustered at the mothers' state of residence during their teenage years level.

Table 3: Effects on Children's Smoking by Family Composition

	One Child		Multiple Children	
	(1)	(2)	(3)	(4)
Mother's Teen Tax	0.009	0.006	-0.063**	-0.065*
	(0.061)	(0.069)	(0.031)	(0.035)
Mean of Dependent Variable	0.177	0.181	0.150	0.153
Observations	5,081	4,699	31,338	28,823
Controls	No	Yes	No	Yes
Children's State FE	Yes	Yes	Yes	Yes
Mom's State FE	Yes	Yes	Yes	Yes
Year of Birth FE	Yes	Yes	Yes	Yes
Survey Year FE	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressions of the mothers' cigarette teen tax on their children's likelihood of smoking. The model with controls includes unemployment rates, minimum legal purchase age of tobacco, and whether marijuana was legal for the mother's state of residence as a teenager and the children's current state of residence. *** indicates significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level. Standard errors are corrected for heteroskedasticity and clustered at the mothers' state of residence during their teenage years level.

Table 4: Effects on Children's Smoking by Grandparents Education

	High school or Less		Post Secondary	
	(1)	(2)	(3)	(4)
Mother's Teen Tax	-0.040	-0.044	-0.098*	-0.118*
	(0.029)	(0.033)	(0.054)	(0.060)
Mean of Dependent Variable	0.158	0.162	0.126	0.126
Observations	28,988	26,890	5,392	4,876
Controls	No	Yes	No	Yes
Children's State FE	Yes	Yes	Yes	Yes
Mom's State FE	Yes	Yes	Yes	Yes
Year of Birth FE	Yes	Yes	Yes	Yes
Survey Year FE	Yes	Yes	Yes	Yes

Notes: The table reports estimates from regressions of the mothers' cigarette teen tax on their children's likelihood of smoking. The model with controls includes unemployment rates, minimum legal purchase age of tobacco, and whether marijuana was legal for the mother's state of residence as a teenager and the children's current state of residence. *** indicates significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level. Standard errors are corrected for heteroskedasticity and clustered at the mothers' state of residence during their teenage years level.

Table 5: Effects on Children's Asthma

	Asthma	
	(1)	(2)
Mother's Teen Tax	-0.164***	-0.150**
	(0.060)	(0.065)
Mean of Dependent Variable	0.285	0.290
Observations	5,730	4,725
Controls	No	Yes
Children's State FE	Yes	Yes
Mom's State FE	Yes	Yes
Year of Birth FE	Yes	Yes
Survey Year FE	Yes	Yes

Notes: The table reports estimates from regressions of the mothers' cigarette teen tax on their children's likelihood of smoking. The model with controls includes unemployment rates, minimum legal purchase age of tobacco, and whether marijuana was legal for the mother's state of residence as a teenager and the children's current state of residence. *** indicates significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level. Standard errors are corrected for heteroskedasticity and clustered at the mothers' state of residence during their teenage years level.