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Earned Income Tax Credit and Youth Violence: Findings from the Youth Risk Behavior Surveillance System

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Abstract

Family- and neighborhood-level poverty are associated with youth violence. Economic policies may address this risk factor by reducing parental stress and increasing opportunities. The federal Earned Income Tax Credit (EITC) is the largest cash transfer program in the US providing support to low-income working families. Many states have additional EITCs that vary in structure and generosity. To estimate the association between state EITC and youth violence, we conducted a repeated cross-sectional analysis using the variation in state EITC generosity over time by state and self-reported data in the Youth Risk Behavior Surveillance System (YRBSS) from 2005 to 2019. We estimated the association for all youth and then stratified by sex and race and ethnicity. A 10-percentage point greater state EITC was significantly associated with 3.8% lower prevalence of physical fighting among youth, overall (PR: 0.96; 95% CI 0.94–0.99), and for male students, 149 fewer (95% CI: −243, −55) students per 10,000 experiencing physical fighting. A 10-percentage point greater state EITC was significantly associated with 118 fewer (95% CI: −184, −52) White students per 10,000 experiencing physical fighting in the past 12 months while reductions among Black students (75 fewer; 95% CI: −176, 26) and Hispanic/Latino students (14 fewer; 95% CI: −93, 65) were not statistically significant. State EITC generosity was not significantly associated with measures of violence at school. Economic policies that increase financial security and provide financial resources may reduce the burden of youth violence; further attention to their differential benefits among specific population subgroups is warranted.

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Conflict of Interest The authors declare no competing interests.

Ethical Approval This study was approved by the University of Washington Institutional Review Board and was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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Keywords

Youth violence; Tax policy; Policy; Poverty; Income support

Introduction

Youth violence affects the physical and mental health of young people and communities and increases the risk for experiencing violence in adulthood (David-Ferdon et al., 2016; Rivara et al., 2019). Both family- and neighborhood-level poverty are associated with experiencing youth violence (De Coster et al., 2006; Lösel & Farrington, 2012). For instance, household poverty and lower socioeconomic status are associated with increased risk for fighting (Shetgiri et al., 2010), physical aggression (Pickett et al., 2009), and exposure to bullying (Due et al., 2009; Hong & Espelage, 2012). Neighborhood-level economic disadvantage is associated with youth violence including assault, robbery, and weapon carrying (McAra & McVie, 2016). Even macroeconomic indicators, including consumer sentiment, poverty, and unemployment, have been found to be associated with serious violence among youth (Lauritsen et al., 2013). The pathways between poverty and youth violence are thought to include parental economic stress, which can lead to harsh parenting and family conflict (Conger et al., 2010), inability to purchase housing in safe and cohesive neighborhoods (Kim et al., 2018), and a lack of economic opportunities and social capital (Kramer, 2000).

Economic policies that provide financial relief to families may be one way to prevent youth violence. The federal Earned Income Tax Credit (EITC) is the largest cash transfer program in the United States (US) providing support to low-income working families and is attributed with raising millions of families out of poverty (Meyer, 2010). The size of the tax credit depends on household income, marital status, and number of dependents. The EITC increases economic security through receipt of the refundable tax credit as well as through increased labor participation which can increase income and other benefits such as health insurance (Baughman & Duchovny, 2016) and is particularly beneficial for single-parent working households (Dahl et al., 2009). The federal EITC was introduced in 1975, and over half of US states have enacted their own EITC policies to supplement the federal credit.

In prior studies, the EITC has been found to positively affect child and adolescent health including infant birth weight (Hamad & Rehkopf, 2015; Hoynes et al., 2015; Markowitz et al., 2017), general health condition (Baughman & Duchovny, 2016), educational attainment (Bastian & Michelmore, 2018), reduction in child maltreatment (Kovski et al., 2021), and reduction in foster care entries (Rostad et al., 2020). Additionally, the EITC has been associated with reductions in maternal stress (Evans & Garthwaite, 2014), suicidal behavior (Morgan et al., 2021), and frequent mental distress and poor physical health (Morgan et al., 2020) which may impact youth through their familial environment.

The EITC could reduce youth violence by increasing family connectedness through reducing parental stress, allowing families to move to safer neighborhoods with more economic opportunity, and investing in other areas of child development that are protective factors of youth violence, such as tutoring for academic achievement, prosocial activities with peers, and treatment of mental health conditions and behavioral problems. However, it has also

been postulated that the EITC could have a negative effect on youth by reducing supervision and time with their parent through increased parental labor participation (Bastian & Michelmore, 2018).

Since the effect of income on experiencing violence has been found to differ by youth's gender (McAra & McVie, 2016) and race and ethnicity (Crouch et al., 2000), we hypothesize that the association between the EITC and youth violence might as well. Youth violence is more common among boys, and anti-poverty programs may be particularly beneficial to boys in high-poverty neighborhoods (Snell et al., 2013). However, other types of policies such as the Moving to Opportunity housing voucher program showed more sustained reductions in arrests for girls (Clampet-Lundquist et al., 2011; Kling et al., 2005). Anti-poverty programs may also be important in reducing racial disparities as welfare programs have been found to have decreased the poverty rate most substantially for Black children (Lichter & Crowley, 2004). Living in a poor family has been shown to be associated with physical fighting for White and Black youth but not for Hispanic/Latino or Asian youth (Shetgiri et al., 2010).

For the current study, we used variation in the generosity of EITCs across states and over time to estimate the association between the EITC and youth violence outcomes, including involvement in a physical fight, involvement in a physical fight on school property, and being threatened or injured with a weapon on school property, to assess whether a cash transfer program can serve as a prevention strategy for youth violence. We focused on state EITCs that are "refundable" (i.e., they can be received as cash transfer not just a credit toward tax liability) and measured generosity as a percentage of the federal EITC. In supplementary analyses, we assessed whether the association between EITC generosity and youth violence differed by youths' sex and race and ethnicity.

Method

We used repeated cross-sectional data and the "natural experiment" of variation in EITC policies across states and years to examine the association of the existence and generosity of state EITC with youth violence outcomes measured in the Youth Risk Behavior Surveillance System (YRBSS) from 2005 to 2019. YRBSS is a national survey system designed by the CDC in 1991 to assess the prevalence of health-risk behaviors over time for six categories including behaviors that contribute to violence. YRBSS data has been used in prior research to examine the effects of policies and programs (Gunn & Boxer, 2021; Hatzenbuehler et al., 2015; Raifman et al., 2017). YRBSS is a school-based survey administered biennially on odd-years to high school students in 9th through 12th grade. YRBSS participation has increased over the years with 26 states participating in 1991 to 46 states in 2019. Data are weighted to be representative of each state when response rates are greater than 60%. The number of states able to be weighted have also changed over the years with 9 states able to be weighted in 1991 and 44 states in 2019. Starting in 2005, 35 or more states were able to be weighted. Further description of the methodology of YRBSS can be found elsewhere (Brener et al., 2013).

Exposure

The treatment of interest in this study was state EITC generosity. We obtained data on EITC benefits from National Bureau of Economic Research's TAXSIM program (National Bureau of Economic Research, 2019) and parameterized state EITC as a percent of the federal EITC in increments of 10-percentage points. We included a state's EITC only if it was refundable (i.e., any credit amount beyond an individual's tax liability is refunded by the Internal Revenue Service (IRS)) because that is essential to the program's poverty-reducing effects. Also, prior research suggests that only refundable EITCs are associated with health outcomes (Klevens et al., 2017; Rostad et al., 2020).

During the study period of 2005 to 2019, seven of the included states implemented a new refundable EITC: Connecticut, Iowa, Louisiana, Maine, Michigan, North Carolina, Nebraska, and New Mexico. Additional states changed the percentage of the EITC benefit over time, removed the state EITC, or changed the refundability status of the state EITC. See Appendix-Figure A1 for changes in generosity of the state EITC over time for the study sample. There are a few states that did not determine EITC benefits as a percentage of the federal EITC benefit. See Appendix-Figure A1 Note for more information about our coding of the EITC variable for these states.

Outcome

Youth violence outcomes in the YRBSS included self-reports of experiencing a physical fight in the past year, experiencing a physical fight on school property in the past year, and being threatened or injured with a weapon on school property. These questions were asked in YRBSS as follows: "During the past 12 months, how many times were you in a physical fight?"; "During the past 12 months, how many times were you in a physical fight on school property?"; and "During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?" For each question, we dichotomized the measure to 0 vs. 1 or more times in the past 12 months. Though the youth violence questions are classified as standard questions, states may decide to remove certain questions each year; therefore, state participation for each of the three youth violence outcomes varied (Tables A1 and B2 for number of years per state).

Covariates

Our models included both individual- and state-level covariates. At the individual level, the sex of the youth was determined by the question "What is your sex?" with the options male or female. Race and ethnicity was determined by asking participants if they identified as Hispanic or Latino and then asking them to select all races that applied from the following: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White. The current analysis used the YRBSS categorization of White, Black or African American (here after, Black), Hispanic/Latino, and all other race/ethnicity. All other race/ethnicity included American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, and Multiple Races (Non-Hispanic). Additionally, we included the following state-level socioeconomic indicators: the state's gross domestic product (GDP; $100,000 s), maximum Temporary Assistance for Needy Families (TANF) benefit ($1,000 s), and state minimum wage, available from the University of Kentucky

Center for Poverty Research (UKCPR; University of Kentucky Center for Poverty Research, 2021). Variables measured in US dollars were adjusted for inflation to the year 2016.

Statistical Analysis

We used modified Poisson regression models predicting the prevalence of violence as a function of EITC generosity in a state-year, controlling for state- and year-fixed effects, and time-variant state characteristics that might relate to youth violence (Zou, 2004). The statistical model was in the following form:

$$\log(Y_{itj}) = \alpha + \beta_1 \mathrm{EITC}_{tj} + \beta_2 X_{tj} + \gamma_j + \delta_t,$$

where i represents the indexed individuals, t the years, and j the states. Y_{itj} represents one of the three youth violence outcome measures dichotomously coded as 1 if the student experienced the outcome or 0 if they did not. EITC_{tj} was the continuous variable of EITC generosity in which each one-unit increase represents a 10-percentage-point greater state EITC as a percentage of the federal EITC. X_{tj} is a vector of the multiple state-year covariates, γ_j the state fixed effects, and δ_t the year fixed effects (Wing et al., 2018). The complex survey weighting method in YRBSS was used in the analysis to weight for state representativeness. Standard errors were clustered at the state level.

A key assumption of the difference-in-differences approach to estimating the causal effect of a policy is that the trends between the likely affected and comparison groups would have been parallel before and after the policy, if not for the policy. To test the parallel trend assumption for states that did not have an EITC and those that implemented an EITC during the study period, we conducted a modified Poisson regression model that included an interaction term between continuous calendar year prior to EITC adoption and an indicator variable for whether an EITC was introduced during the study period.

Additionally, we examined potential effect modification of this relationship by sex and race and ethnicity. We included an interaction term of EITC and sex in our models to assess for effect modification and an individual covariate for sex. Then, we used the margins command to calculate prevalence differences (PDs) using the average marginal effect. This was repeated for race and ethnicity. All analyses were conducted using R (Vienna, Austria) and STATA (College Station, TX). This study was approved by the University of Washington Institutional Review Board.

Results

Overall, the prevalence of all three youth violence measures declined from the 2005 to the 2019 survey years. During the study period, the state-level prevalence of physical fighting ranged from 15.0 to 37.3% of high school students, with an average of 26.0% over all state-years (Fig. 1). For physical fighting on school property, this ranged from 4.6 to 16.9%, averaging 9.2% over all state-years (Fig. A2), and for threatened or injured with a weapon on school property, the range was 4.3 to 12.8%, averaging 7.6% over all state-years (Fig. A3).

A 10-percentage point greater state EITC was associated with 102.0 fewer students per 10,000 experiencing physical fighting in the past 12 months (PD: −102.0 per 10,000; 95% CI: −176, −28) after adjusting for other economic indicators including state GDP, TANF maximum benefits, and state minimum wage (Table 1). On the relative scale, a 10-percentage point greater state EITC was associated with a 3.8% lower prevalence of physical fighting (PR: 0.96; 95% CI 0.94–0.99).

We further examined the association between EITC and physical fighting for effect modification by sex and race and ethnicity. We observed a significant interaction between state EITC generosity and participant sex (p-value = 0.04). A 10-percentage point greater state EITC was significantly associated with 149 fewer male students per 10,000 experiencing physical fighting in the past 12 months (PD: −149 per 10,000; 95% CI: −243, −55; Table 2). For female students, this association was not statistically significant (PD: −53 per 10,000; 95% CI: −117, 11). On the relative scale, a 10-percentage point greater state EITC was significantly associated with a 4.4% (PR: 0.96; 95% CI: 0.93, 0.98) lower prevalence of physical fighting for male students but the reduction among females was not significant (PR: 0.97; 95% CI: 0.94, 1.01). The association between the EITC generosity and physical fighting also varied by participant race and ethnicity (p-value < 0.001). A 10-percentage point greater state EITC was significantly associated with 118 fewer White students per 10,000 experiencing physical fighting in the past 12 months (PD: −118 per 10,000; 95% CI: −184, −52). For Black students (PD: −75 per 10,000; 95% CI: −176, 26) and Hispanic/Latino students (PD: −14 per 10,000; 95% CI: −93, 65), the reductions were not statistically significant. For students of all other race/ethnicities, a 10-percentage point greater state EITC was significantly associated with 313 fewer students per 10,000 experiencing physical fighting in the past 12 months (PD: −313 per 10,000; 95% CI: −384, −243).

We did not find a statistically significant association of state EITC generosity with prevalence of physical fighting on school property or being threatened or injured with a weapon on school property (Table 1). We found no evidence for the violation of the parallel trends assumption for the associations between state EITC generosity and experiencing physical fighting in the past 12 months. There was no evidence of interaction between future introduction of a state EITC and continuous calendar year in the association with physical fighting (p-value = 0.47), physical fight on school property (p-value = 0.78), or being threatened or injured with a weapon on school property (p-value = 0.48).

Discussion

We found that state EITC generosity was associated with a lower prevalence of physical fighting experienced by high school students. The EITC, which is primarily received by families with dependents, may be helpful in preventing youth violence by reducing financial insecurity and increasing financial resources among low-income working families. In addition to the reduction in family stress due to financial insecurity, there are a multitude of ways families could be using the extra financial resources. Families generally use their tax refund to pay bills, reduce debts, pay for household goods, and tuition or childcare (Halpern-Meekin et al., 2015). Adverse childhood experiences are risk factors for violence

in young adulthood (David-Ferdon et al., 2016) and prior work examining the impact of the EITC on child health outcomes has observed reductions in child maltreatment (Kovski et al., 2021). Future research should examine potential mechanisms of how the EITC might impact youth violence including whether EITC operates by reducing youth violence short-term after immediate receipt of the tax refund or from long-term effects of increased economic support throughout the youth's childhood that we are unable to identify in the current study. For example, research observing the effects of cumulative EITC has shown increased educational attainment (Bastian & Michelmore, 2018).

Significant differences in prevalence of youth violence were not observed when examining physical fighting on school property or being threatened or injured with a weapon on school property. Risk factors in the school environment, however, may respond differently to economic policies received at the household level, such as the EITC. Prior research has shown that school contextual factors, social competence, and peer rejection have stronger associations for school violence than community economic deprivation and individual socioeconomic status (Turanovic et al., 2019). Thus, there may be different risk factors for violence at schools than those occurring in the community, requiring specific and tailored prevention strategies (Akiba et al., 2002). Though we did not find a significant association with lower youth violence on school property, we also did not observe a higher prevalence of youth violence associated with EITC generosity which would have been a concern as supervision and time with their parent may decrease through increased labor participation.

When further examining the association between EITC generosity and physical fighting, we observed evidence of effect modification by sex and race and ethnicity. EITC generosity was associated with a greater difference in physical fighting among male students compared to female students. This is consistent with the higher prevalence of physical fighting among male students and findings from Snell et al. (2013) that neighborhood poverty and family income and employment may have more impact on academic and behavioral outcomes for boys.

We also found a stronger association between the EITC and physical fighting in White youth and youth of other race and ethnicities compared to Black youth and Hispanic/Latino youth. It is possible that the association between EITC and youth violence for Black youth and Hispanic/Latino youth is influenced by structural barriers including neighborhood disadvantage and racial discrimination in multiple institutions (Beyers et al., 2003). Economic policies, including tax credits, can reduce racial inequities, but there still remain notable disparities in poverty by race and ethnicity (Trisi & Saenz, 2021). In addition, the effects of economic policies on reducing income instability in Black families has declined over time and relative to White families (Hardy, 2017). The mechanisms through which the EITC may be affecting youth violence such as parental employment, healthcare access, and housing are institutions fraught with racism (Yearby, 2018) which could diminish the full benefits of the EITC on outcomes for Black and Hispanic/Latino families, including youth violence. Black and Hispanic/Latino families are more likely to live in neighborhoods with lower median neighborhood incomes compared to White families, even among families with the same household income (Reardon et al., 2015).

Limitations

Our study has several limitations. First, the YRBSS does not collect demographic information about household size, parental income, or education. Therefore, the outcomes were not limited to youth of single parents or parents with less than college educational attainment who may be more likely to receive the credit. Household size also determines the amount received by the EITC; therefore, we were not able to account for this potential variation. Second, though we were able to include at least 42 unique states in our analyses including 273 state-years for each outcome; however, not all states are included in YRBSS. Schools and states may also not be included in years when responses are lower than 60%. Therefore, if inclusion was associated with potential EITC impacts, our results may not generalize to all 50 states. Third, there may also be additional factors not included in the models that may be important in understanding the relationship between EITC generosity and youth violence such as school financial resources. The CDC is considering methods to stratify by school-level socioeconomic status and geography which would provide useful information for policy analysis (Underwood et al., 2020).

Fourth, though self-selected, race and ethnicity was categorized in YRBSS as White, Black or African American, Hispanic/Latino, and other race/ethnicity, which includes American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, and Multiple Races (Non-Hispanic). There are limitations in categorizing youth by their race and ethnicity as these groups do not reflect all participants' experiences, identity, and culture. We include these findings to continue further research to understand equitable youth violence prevention efforts. Fifth, YRBSS is cross-sectional and designed to monitor risk behaviors. The reasons and circumstances in which youth experience risk behaviors including violence are not measured. Sixth, it is unknown if youth underreport experiences of youth violence; though, reliability has previously been found to be substantial for being involved in a physical fight and involved in a physical fight on school property and moderate for threatened or injured with a weapon on school property (Brener et al., 2002). Finally, YRBSS is administered at school; therefore, youth disconnected from high school will be missing. Youth not enrolled in high school or frequently absent from school may experience more violence (Peguero, 2011).

Broader Implications

Our findings add to the growing body of literature demonstrating that the EITC may have effects beyond economic outcomes. Economic policies have the potential to improve health outcomes and reduce health and economic disparities. These findings are timely as expansions to similar programs across governmental levels are being discussed (Maag & Airi, 2020). Individual states can introduce an EITC or increase its generosity. Recently, for example, Washington state reinstated their state-level EITC, the Working Families Tax Credit (Tax Credits for Workers and Families, n.d.). Federally, expansions of the child tax credit provided income support to low- and middle-income families, similar to the EITC (Tax Policy Center, n.d.). Eligibility changes, such as expanding EITC eligibility to filers without a Social Security number and the 2021 American Rescue Plan (ARP) which included a temporary tripling of federal EITC to childless workers (Urban Institute, n.d.), may also have affected additional health outcomes.

The federal EITC was estimated to cost over $73.1 billion in 2021. State EITC cost varies by percentage of the state eligible and generosity (percentage of the federal credit) (Williams et al., 2020). In examining cost effectiveness for health outcomes, state EITC was estimated to cost about $7,786 per quality-adjusted life-year (QALY) gained, significantly lower cost compared to other health programs such as Medicaid expansion ($66,000/QALY gained) (Muennig et al., 2016). This estimate did not include the increasing evidence of health benefits to children in EITC-receiving families (Baughman & Duchovny, 2016; Hamad & Rehkopf, 2016).

Youth violence is estimated to cost $48 billion annually for medical costs and quality of life for youth ages 10–19, not including the costs associated with the criminal legal system (CDC WISQARS, 2020). In 2020, the average state cost for secure confinement was $588 per day, and over 40 states report spending at least $100,000 annually per youth (Justice Policy Institute, 2020). Therefore, the additional association between state EITC on unintended outcomes such as youth violence may be a further benefit when considering the cost of state EITC supplements. Future research should quantify the reduction in state costs related to potential EITC impacts on youth violence including homicide, injury, and legal system expenditures in addition to the benefits of preventing youth violence for educational attainment and quality of life.

Conclusion

Economic policies that increase financial security and provide financial resources may reduce the burden of youth violence. Using high-quality data and a rigorous difference-in-difference technique, this study contributes some of the first evidence on whether a cash transfer program can serve as a prevention strategy for youth violence. We found that greater EITC generosity was associated with a lower prevalence of physical fighting. However, we did not find an association on youth violence measures that occur on school property. The mechanisms by which EITC affects youth violence and how those may relate to violence experienced in different settings should be further explored.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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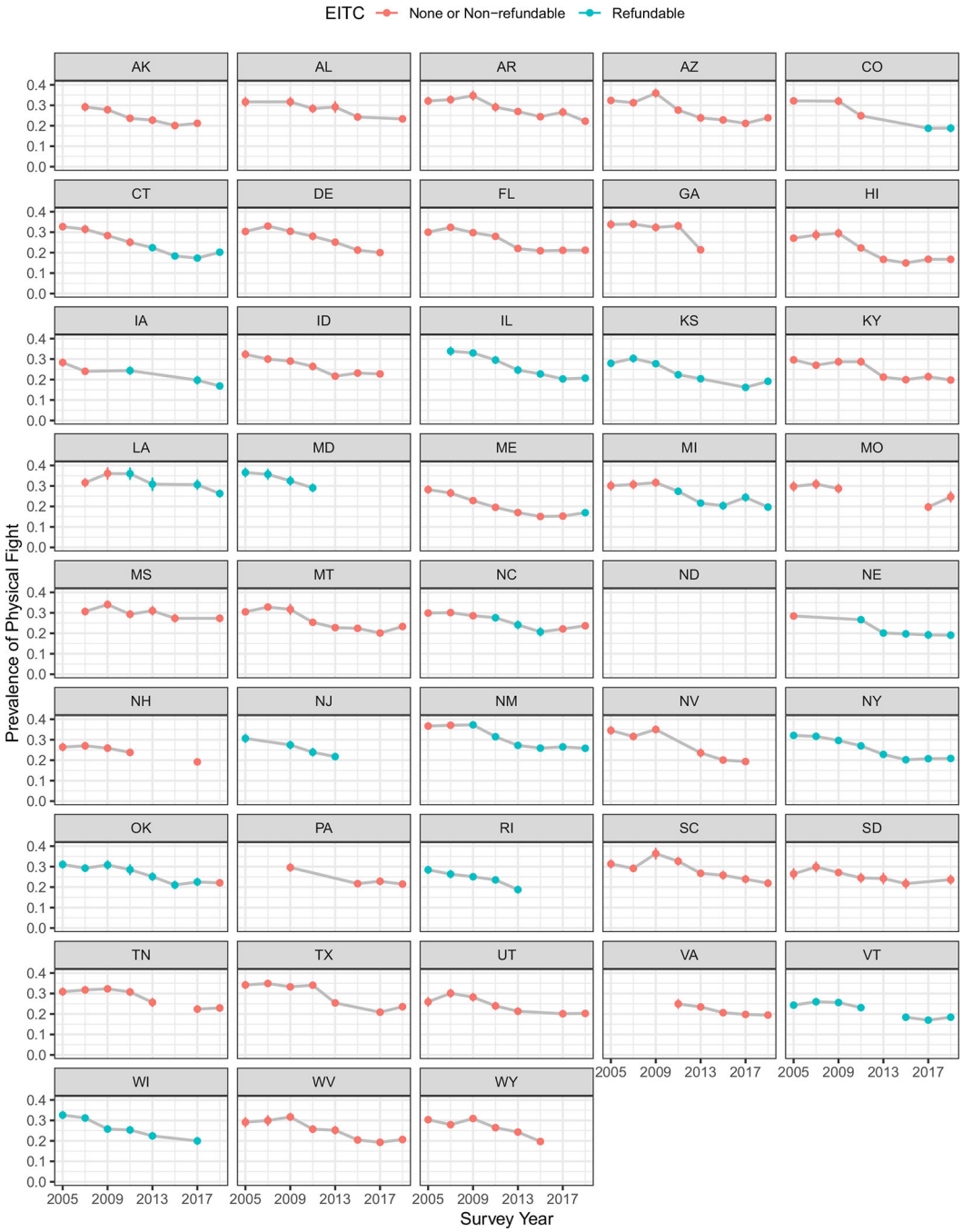

Fig. 1.

Prevalence of physical fighting in the past 12 months by state over time, 2005–2019. Color denotes state EITC status

Table 1

Prevalence ratio (PR) and prevalence differences (PD) per 10,000 for the association between state EITC generosity and youth violence

Youth violence outcome	PR (95% CI)	PD (95% CI) per 10,000
Physical fight	0.96 (0.94–0.99)	−102.0 (−176.13, −27.94)
Physical fight on school property	1.01 (0.95–1.07)	6.94 (−57.01, 70.88)
Threatened or injured with a weapon on school property	0.97 (0.92–1.02)	−23.56 (−60.98, 13.86)

Table 2

Sex and race and ethnicity group-specific prevalence ratio (PR) and prevalence differences (PD) per 10,000 for the association between state EITC generosity and physical fighting

Sub-groups	PR (95% CI)	PD (95% CI) per 10,000
Sex subgroups		
Male	0.96 (0.93, 0.98)	−148.99 (−242.67, −55.30)
Female	0.97 (0.94, 1.01)	−53.05 (−116.61, 10.52)
Race and ethnicity subgroups		
White	0.95 (0.92, 0.98)	−117.97 (−184.23, −51.71)
Black	0.98 (0.95, 1.01)	−74.91 (−176.15, 26.34)
Hispanic/Latino	1.00 (0.97, 1.02)	−14.12 (−93.34, 65.09)
Other race and ethnicity *	0.89 (0.86, 0.91)	−313.43 (−383.91, −242.96)

p-value for EITC and sex interaction term was 0.04 and the *p*-value for EITC and race and ethnicity interaction term was < 0.001

*Other race and ethnicity includes American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, and Multiple Races (Non-Hispanic)