**Revenue Diversification or Revenue Substitution?**
**Evidence from Local Cannabis Taxes and Property Tax Rates**

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**Abstract**

This study examines whether local cannabis tax revenues reduce reliance on property taxes or supplement existing revenue sources. Using a panel dataset of New Jersey municipalities, we analyze the association between local cannabis tax revenues and effective property tax rates. On average, a one dollar increase in local cannabis tax revenue per capita is associated with a statistically precise but substantively negligible 0.001 percentage point increase in effective property tax rates, suggesting that cannabis revenues do not meaningfully alter local property tax burdens. We also find little evidence that the association between cannabis revenues and effective property tax rates varies across municipalities with different levels of fiscal capacity or economic distress.

**Keywords**: marijuana taxation, cannabis legalization, property tax burden, local governments, New Jersey, cannabis policy

## 1. Introduction

A central challenge for local governments is to maintain public services while navigating political and institutional pressures that constrain growth in property taxes, one of the most salient sources of local revenue in the United States. Prior research consistently finds that voters view property taxes as among their least preferred forms of taxation, in part because the tax is highly visible to property owners (Ladd and Wilson 1982; Young and Thornburg 2024). These political pressures often lead policymakers to search for alternative revenue sources that may allow governments to expand public services while reducing the need to increase property taxes (Bartle, Kriz, and Morozov 2011; Carroll and Johnson 2010; Hoene 2004). One such opportunity has emerged with the legalization and local taxation of recreational cannabis.

The legalization of recreational cannabis has expanded rapidly across the United States over the past two decades. Since Colorado and Washington first legalized recreational cannabis in 2012, a growing number of states have adopted similar policies, often allowing state and local governments to tax cannabis production and retail sales. These policies have the potential to generate considerable tax revenues and are frequently framed by policymakers to support public services or offset other taxes (Brown, Cohen, and Felix 2023). As local governments begin to collect revenues from cannabis taxes and fees, an important policy research question emerges: do these new revenues result in reductions in traditional local taxes such as the property tax, or are they instead merged into existing revenue structures?

A growing body of research examines the consequences of recreational cannabis legalization on subnational governments, but much of this literature focuses on non-fiscal outcomes such as property values and crime (e.g., Bruijn and Ribas 2022; Burkhardt and Flyr 2019; Cheng et al. 2018; Conklin et al. 2020; Tyndall 2021). A smaller subset of this literature

examines fiscal aspects of cannabis legalization, but these past studies primarily focus on tax design, market behavior, and state-level revenue generation rather than local fiscal decisions. For example, prior studies show that cannabis tax revenues depend heavily on tax structure and market dynamics (Hansen et al. 2020; Hansen et al. 2025), and that cannabis consumption may reduce demand for other taxed goods such as alcohol and tobacco, potentially lowering revenues from those sources (Miller and Seo 2021). However, to our knowledge, there is no empirical evidence on whether municipalities use cannabis revenues to change their reliance on property taxes.

This study addresses this gap by examining whether increases in local cannabis tax revenue are associated with changes in effective property tax rates across New Jersey municipalities. New Jersey provides a useful setting because the state government grants substantial cannabis tax authority to local governments. Following voter approval of a constitutional amendment in November 2020, state legislation enacted in February 2021 legalized recreational cannabis and established a regulatory structure for cannabis businesses. Municipalities were given the authority to permit or prohibit cannabis establishments within their jurisdictions and to impose local taxes and fees on cannabis businesses. This local discretion generates variation across municipalities in both cannabis policy adoption and the timing of cannabis tax revenues, which we exploit to examine whether cannabis revenues are associated with changes in effective property tax rates.

Using a panel dataset of New Jersey municipalities between 2016 and 2024, our study's analysis yields two main findings. First, increases in local cannabis tax revenues are not associated with meaningful reductions in effective property tax rates. Although the estimate is statistically precise, its magnitude is practically negligible, suggesting that even sizable increases

in cannabis revenues correspond to only trivial changes in local property tax burdens. Second, there is little evidence that the association between cannabis revenues and effective property tax rates varies in a practically meaningful way across municipalities with different levels of fiscal capacity or economic distress. Overall, these findings provide little support for the revenue substitution hypothesis and instead are more consistent with a revenue diversification framework, in which municipalities include cannabis revenues into existing revenue structures without reducing reliance on property taxation.

The next section provides more background on cannabis legalization in New Jersey, reviews the relevant literature on the local consequences of cannabis legalization, and develops two competing theoretical frameworks to explain how new cannabis revenues may affect local property tax burdens. The third section describes the variables and data sources used to create the municipality-year panel dataset. The fourth section outlines the research design and empirical strategy. The fifth section presents the main results and robustness checks. The final section discusses the study's contributions to the literature, the policy implications of the findings, and directions for future research.

## 2. Background and Literature Review

### *2.1 New Jersey's Cannabis Policies*

New Jersey's first move towards cannabis legalization began with the enactment of the Compassionate Use Medical Marijuana Act in 2010, which established a limited medical cannabis program for qualifying patients. A major policy change occurred during the November 2020 general election, when voters approved a constitutional amendment legalizing recreational cannabis for adults age 21 and older. Following this successful referendum vote, Governor Phil Murphy signed legislation in February 2021 that decriminalized possession, established a

regulatory structure for cultivation and retail sales, and created the New Jersey Cannabis Regulatory Commission (NJCRC). The NJCRC subsequently created detailed regulations for municipal authority over cannabis establishments.

A significant feature of New Jersey's legalization framework is the amount of discretion granted to local governments. Local governments were given a 180-day window following enactment of the 2021 legislation to adopt ordinances either permitting or prohibiting cannabis businesses within their jurisdiction. The opt-out deadline expired in August 2021. Municipalities that did not act by the deadline were automatically authorized to permit cannabis establishments for a minimum period of five years. Municipalities that opted out retained the ability to opt in later through future local ordinances. Approximately 60 percent of municipalities initially opted out, and our study uses this variation in local adoption as a natural experiment for examining how local cannabis tax revenues are associated with changes in effective property tax rates.

The opportunity to generate more local revenues was likely an important factor for municipal decisions to opt in. The state allows municipalities to impose a local cannabis transfer tax on licensed cannabis establishments operating within their jurisdiction, with maximum rates that vary by license type: up to 2 percent of receipts from cultivators, manufacturers, and retailers, and up to 1 percent of receipts from wholesalers. The tax is assessed on each transfer of cannabis products and is collected entirely by the municipality in which the cannabis establishment is located. In addition, municipalities may impose an annual local licensing fee of up to $2,500 per cannabis establishment. These local revenues are separate from the state sales tax on cannabis, and they represent a new source of local own-source revenue.

*2.2 Prior Studies on Fiscal and Non-Fiscal Outcomes of Cannabis Legalization*

This study of New Jersey contributes to a growing literature on the local consequences of cannabis legalization, which has largely focused on non-fiscal outcomes. A growing body of literature examines the relationship between recreational cannabis legalization and housing values, and the empirical evidence remains mixed and highly context dependent. Much of the research focuses on specific geographic contexts, particularly Colorado, Washington, Canada, and the Netherlands, which limits generalizability. Several studies document positive capitalization effects following legalization. Using difference-in-differences and event study approaches, Cheng et al. (2018), Burkhardt and Flyr (2019), Conklin et al. (2020), and Kim et al. (2020) find increases in nearby home values following retail marijuana legalization (RML) or dispensary openings, with effects often concentrated within short distances of retail locations.

However, other research finds null or negative effects on house values. Bruijn and Ribas (2022) show that closing cannabis shops in specific Dutch cities led to localized increases in nearby home prices but declines in the home values outside of the central city, which suggests heterogeneous and spatially uneven economic effects. Similarly, Tyndall (2021) finds no consistent evidence of an increase in homes values near dispensaries in Vancouver and reports some evidence of declines very close to retail locations. Taken together, the housing literature suggests that capitalization effects are neither universal nor uniform; instead, they appear to depend on different policy and geographic contexts.

Crime has emerged as a central mechanism in this literature, yet findings are similarly inconsistent (Zambiasi and Stillman 2020). Some studies report increases in certain types of crime following cannabis legalization. Adda et al. (2014) find substantial increases in cannabis-related crime following legalization in London. Thomas and Tian (2021) document increases in nuisance and violent crimes near dispensaries in Seattle. In contrast, other studies find reductions

or no measurable changes in crime (Burkhardt and Flyr 2019; Conklin et al. 2020; Dillis et al. 2016; Dillis et al. 2021; Maier et al. 2017).

While much of the empirical focus has centered on neighborhood-level externalities and property values, considerably less attention has been devoted to local fiscal consequences. Existing studies on fiscal consequences focus primarily on tax design and market behavior rather than local government fiscal decisions (Kavousi et al. 2022). At the state level, evidence indicates that both tax design and market structure substantially influence revenue outcomes, as potency-based taxes will likely generate less revenue than traditional ad valorem taxes (Hansen et al. 2020), and cannabis tax reforms can shift who ultimately bears the tax burden (Hansen et al. 2025). Moreover, Miller and Seo (2021) document substitution between cannabis and other taxed substances, estimating that approximately 40 percent of early cannabis tax revenue in Washington was offset by declines in alcohol and tobacco tax collections. Together, these studies suggest that cannabis revenue generation is highly sensitive to tax design and consumer behavior.

Despite this growing body of work on the fiscal outcomes of cannabis legalization, far less is known about how state and local governments ultimately incorporate cannabis revenues into their budgets. While Link et al. (2024) show that New Jersey residents express preferences for directing cannabis revenues toward public health, education, and housing rather than traditional law enforcement functions, evidence on actual fiscal behavior remains scarce. Moreover, we lack systematic evidence on whether local governments use cannabis revenues as a mechanism to provide property tax relief, or a supplement to existing and new spending priorities. This study contributes to the literature by examining how municipalities adjust their effective property tax rates in response to increases in local cannabis tax revenue.

### *2.3 Theoretical Framework: Revenue Substitution versus Revenue Diversification*

The legalization of recreational cannabis introduces a new revenue source for local governments. The key research question is whether local cannabis tax revenue functions as a substitute for existing local own-source revenues (e.g., the local property tax) or instead adds to total municipality revenues without reducing existing own-source revenues. This section develops two competing hypotheses: revenue substitution and revenue diversification.

Using a revenue substitution framework, local cannabis tax revenues is expected to reduce effective property tax rates through at least two mechanisms. The first mechanism operates through changes in the marginal tax price of local public services. Using the median voter theorem in the context of local public finance, the level of local spending reflects the preferences of the median voter, who evaluates the benefit of public services relative to the tax price they face (Bergstrom and Goodman 1973; Borcherding and Deacon 1972; Downs 1957). The tax price represents the share of an additional dollar of local spending borne by the voter through local taxation. If cannabis revenues finance a portion of municipal expenditures, then the amount that must be raised through property taxation declines, holding spending levels constant. In this case, the resident share of financing local services falls, effectively lowering the marginal tax burden associated with public spending. If the median voter prefers lower property taxes to expanded public services, municipal officials may respond by reducing effective property tax rates rather than increasing spending. Prior empirical studies find that increases in intergovernmental aid can lead local governments to reduce their local tax effort, although revenue substitution is often incomplete (Gordon 2004; Knight 2002; Lutz 2010).

A second related mechanism arises from tax exportation, whereby jurisdictions may finance public services by shifting part of the tax burden to non-residents (Afonso 2018; Afonso and Moulton 2024; McLure 1967; Zhao and Hou 2008). Property taxes are borne primarily by

residents, whereas cannabis taxes may be partially paid by non-residents who purchase cannabis. To the extent that cannabis revenues shift part of the tax burden onto non-residents, municipalities may be able to finance a given level of public services with a smaller contribution from property owners. As a result, reducing property tax reliance via cannabis tax revenues becomes politically attractive because it reallocates part of the fiscal burden of funding government services to non-residents who do not vote in local elections. Taken together, these two mechanisms suggest:

**H1 (Revenue Substitution):** Increases in local cannabis tax revenues will be associated with reductions in effective property tax rates.

In contrast to the revenue substitution framework, a revenue diversification perspective predicts that cannabis revenues will supplement rather than replace property tax revenues. One mechanism supporting the revenue diversification framework comes from the intersection of the literature on tax salience and fiscal illusion (Afonso 2014; Buchanan 1967; Buchanan and Wagner 1977; Oates 1988; Puviani 1903; Wagner 1976). Property taxes are among the most salient forms of local taxation because they are highly visible to residents. By contrast, cannabis taxes are embedded in retail transactions and may add complexity to local governments' revenue structures, making them comparatively less visible to voters and potentially generating fiscal illusion (Carroll 2009; Carroll and Johnson 2010; Hendrick 2002; Ross and Mughan 2018).If residents do not perceive cannabis revenues as a potential mechanism to offset property taxes, political pressure to reduce property tax rates may be limited, allowing total revenues to increase without corresponding reductions in property taxes.

A second mechanism reflects features of the budgetary process. Incremental budgeting theory suggests marginal adjustments rather than structural changes to major revenue sources

like the local property tax (Lindblom 1959; Wildavsky 1964). Property taxes represent a substantial and stable revenue source for local governments. In the context of local cannabis taxation, new revenue sources such as cannabis taxes are more likely to supplement existing budgets than used to justify reductions in property taxes. Likewise, local cannabis tax revenues may therefore be treated as windfall revenues, and municipalities may use these funds to expand services, build reserves, or increase fiscal flexibility rather than reduce property tax rates (Brunner, Hoen, and Hyman 2022; Brunner and Schwegman 2022). This response reflects both incremental budgeting norms and arguably prudent fiscal management in the face of revenue uncertainty (Afonso 2013). Overall, these two mechanisms suggest:

**H2 (Revenue Diversification):** Increases in local cannabis tax revenues will not be associated with reductions in effective property tax rates.

## 3. Data

To test whether local cannabis tax revenues function as a substitute for or supplement to local property taxation, we create a panel dataset comprising 5,085 New Jersey municipality-year observations between 2016 and 2024. This dataset includes publicly available data from several New Jersey government data sources and the U.S. Census Bureau. The analytical sample includes all municipality-year observations that either allow and collect local taxes on cannabis businesses ("cannabis-active" municipalities) or allow and do not yet collect local taxes on cannabis businesses as of 2024 ("cannabis-permitted" municipalities). The analytical sample excludes about 3,240 municipality-years that prohibit any cannabis businesses in their jurisdiction ("cannabis-prohibited" municipalities) because they have no ability to collect local cannabis tax revenues. As a robustness check, we run the analysis that includes all municipality-years, including "cannabis-prohibited" municipalities, and we find qualitatively similar results.

The dependent variable in this analysis comes from the New Jersey Division of Taxation which publishes effective property tax rates for all municipalities for all years between 2016 and 2024. The effective property tax rate represents the average tax burden in the municipality. Specifically, the state collects home price data from local tax assessors and compares the actual sale prices in a municipality to the local assessed values, which results in a unique equalization ratio for each municipality. Then, the state calculates the effective property tax rate for each municipality by multiplying its general tax rate by its equalization ratio. This "normalization" process allows us to use effective property tax rates to compare local tax burdens across municipalities that may use different local property tax assessment approaches.

The main explanatory variable of interest in this study is local cannabis tax revenue per capita. We collected these data from publicly available municipality budget documents and financial statements posted on each municipality's website. When information was missing or incomplete, we filed Open Public Records Act (OPRA) requests and obtained the data directly from municipal officials via email. Specifically, we collected information on all forms of local cannabis tax revenue, including transfer taxes, and licensing, application, and permit fees.

We include a set of control variables that likely influence both the decision to collect local cannabis revenue and the variation in effective property tax rates across the sample. Local government fiscal decisions are influenced by a combination of fiscal capacity, expenditure needs, political preferences, and socioeconomic conditions (Bergstrom and Goodman 1973; Borcherding and Deacon 1972). By controlling for these factors, we can better isolate the within-municipality association between cannabis revenue and effective property tax rates.

To proxy for socioeconomic conditions, we use the Municipality Revitalization Index (MRI), which is published by the NJ Department of Community Affairs. The MRI score

measures the level of economic distress in a municipality, with higher values indicating less economic distress. Socioeconomic conditions likely influence the demand for both alternative revenue sources and differences in political pressure on local tax decisions.

To control for political ideology, we use gubernatorial election results from the NJ Department of State. Specifically, we calculate the percentage of votes cast for the Democratic gubernatorial candidate in the 2017 and 2021 elections for each municipality. The 2017 election results are used for years between 2016 and 2020, and the 2021 results are used for years after 2020. Political preferences may shape municipal decisions to permit cannabis businesses as well as broader local fiscal policy decisions.

To account for differences in fiscal capacity, we collect data on equalized property values from the NJ Department of Treasury. Equalized property values is a measure that allows us to compare the level of fiscal capacity across municipalities, which likely influences the need for alternative revenue sources. Additionally, the fiscal capitalization hypothesis suggests that changes in local fiscal policy and economic activity can become capitalized into property values (Oates, 1969). If permitting cannabis establishments results in more commercial investment, the local property tax base may rise. A larger property tax base allows municipalities to generate equivalent revenues at lower statutory property tax rates, thereby reducing effective property tax rates even if total revenues remain stable.

To control for differences in levels of intergovernmental aid, we collect data on total state aid to municipalities from the NJ Department of Treasury. Cannabis legalization may influence local fiscal capacity indirectly through intergovernmental fiscal relations. Increased state sales tax collections from cannabis transactions may increase state revenues, potentially affecting state

aid allocations to municipalities. If state aid increases because of higher state cannabis revenues, municipalities may face reduced pressure to rely on local property taxation.

We also control for population and the percentage of residents aged 65 or older. This data is obtained from the U.S. Census Bureau. Differences in population can factor into differences in government service demands and the potential customer base for cannabis-related economic activity. Similarly, the age composition of a municipality may affect the fiscal policy choices. Older populations often have different service needs and tax preferences, and they likely vary in their political support for permitting cannabis businesses.

Table 1 reports the mean values differences across New Jersey municipalities by cannabis policy status. Cannabis-active municipalities are those that allow cannabis businesses and collect local cannabis taxes. Compared to municipalities that prohibit cannabis businesses, cannabis-active municipalities are significantly larger in population, set higher effective property tax rates, have a higher percentage of residents voting for a Democratic gubernatorial candidate, a lower percentage of elderly residents, and are more economically distressed. These systematic differences are one reason the main analytical sample excludes cannabis-prohibited municipalities.

Also shown in Table 1, cannabis-active municipalities are more similar to cannabis-permitted municipalities, which are those that have opted into allowing cannabis businesses but have not yet begun collecting local cannabis tax revenue. This latter group of municipalities will serve as the comparison group in our study's analysis. However, although smaller in magnitude, statistically significant differences remain between these two groups in terms of population, percentage of elderly residents, and political voting patterns. Overall, these descriptive statistics

motivates the use of a two-way fixed effects regression framework to estimate the within-municipality association between cannabis revenues and effective property tax rates.

## 4. Methods

To estimate the within-municipality association between local cannabis revenue and changes in effective property tax rates, we estimate the following two-way fixed effects regression model using Ordinary Least Squares (OLS):

$$Y_{it} = \alpha + \gamma\, Cannabis\_Revenue_{it} + \beta X_{it} + \theta_i + \tau_t + \varepsilon_{it} \quad (1)$$

where *i* and *t* index municipality and year, respectively; *Y* is the effective property tax rate; *Cannabis_Revenue* is a continuous variable that measures local cannabis tax revenues per capita; *X* is a vector of time-varying control variables including the natural log of population, the MRI index, the percentage of residents that voted for a Democratic gubernatorial candidate, the natural log of state aid, and natural log of equalized property levels; $\theta$ is a municipality fixed effect (FE); $\tau$ is a year (FE), and $\varepsilon$ is an idiosyncratic error term.

The coefficient of interest is $\gamma$, which measures the within-municipality association between a change in local cannabis tax revenues and changes in the effective property tax rate. For example, a negative and statistically significant coefficient for $\gamma$ would suggest that local governments are responding to an increase in local cannabis tax revenues by decreasing their local property tax burdens. Standard errors are clustered at the municipality-level, which makes inference robust to arbitrary serial correlation within municipalities.

To address concerns about differential pre-existing trends across municipalities, we augment equation (1) by including municipality-specific linear time trends. This additional specification of equation (1) allows each municipality to follow its own underlying trajectory in effective property tax rates. In doing so, the coefficient on local cannabis tax revenue reflects

deviations from each municipality's prior linear trend, strengthening the credibility of the within-municipality association.

To check whether the equation (1) may be biased by possible changes in municipality characteristics during the study's time period, we estimate a set of placebo regressions using time-varying demographics and political characteristics as dependent variables. Specifically, we re-run equation (1) separately on the natural log of population, the MRI index, % of residents that voted for a Democratic Party candidate, the natural log of state aid, and natural log of equalized property levels. The model only controls for the local cannabis tax revenues per capita, municipality FEs, year FEs, but no other explanatory variables. If changes in local cannabis tax revenues are not systematically related to the changes in other municipality demographics, the coefficient on local cannabis tax revenues should not be statistically significant in regression models on these placebo outcomes. As shown in Appendix Table A.1, the estimated coefficients are neither statistically nor practically significant, which suggests that local cannabis tax revenues are not associated with corresponding changes in these specific time-varying municipality characteristics.

Lastly, we examine whether the association between local cannabis tax revenues and effective property tax rates varies across municipalities. Specifically, we re-estimate equation (1) by adding interaction terms between local cannabis tax revenue and the MRI index, and between local cannabis tax revenue and the natural log of equalized property values. These interaction models allow the association between local cannabis tax revenue and effective property tax rates to vary by levels of economic distress and fiscal capacity.

## 5. Results

Table 2 reports the OLS regression results from equation (1). The first column of Table 2 includes results from a regression model on effective property tax rates that controls for only the local cannabis tax revenues per capita, municipality fixed effects, and year fixed effects. The coefficient is 0.001 and statistically significant. On average, a one dollar increase in local cannabis tax revenues per pupil is associated with a 0.001 percentage point increase in effective property tax rates, controlling for municipality and year fixed effects. This is a very small association because, for the average "cannabis-active" municipality, a one dollar increase in local cannabis tax revenue per pupil represents a 36% increase in local cannabis tax revenues, while a 0.001 percentage point increase in effective property taxes only represents a 0.03% increase.

As shown in Table 2, the coefficient of interest reported in columns 2 through 4 are identical as additional sets of time-varying control variables are included to the regression model. In column 5, we add municipality-specific linear time trends to account for differential underlying trajectories in effective property tax rates. Although the coefficient is no longer statistically significant in this more demanding specification, its magnitude remains nearly identical to the baseline estimates. This stability in the point estimate suggests that the association between local cannabis tax revenue and effective property tax rates is not driven by pre-existing linear trends across municipalities. Instead, the results reflect within-municipality deviations from prior fiscal trajectories, which provide additional credibility to the estimated association.

Many of the coefficients on the time-varying control variables are not statistically or practically significant, with one exception. In column 5, the coefficient on the natural log of equalized property values is -1.151, which suggests a ten percent increase in equalized property values is associated with a 0.115 percentage point (4%) reduction in effective property tax rates.

This negative relationship is consistent with the expectation that increases in property values expand the tax base, allowing municipalities to generate comparable revenues while setting lower effective tax rates.

We further test the robustness of regression results reported in Table 2 in several ways. First, Appendix Table A.2 reports regressions from re-estimating equation (1) after excluding all municipality-years observations from two municipalities that collected the highest levels of local cannabis tax revenues per pupil. The estimated coefficient of interest ranges from 0.000 and 0.002, which are qualitatively similar and suggest that the main result is not driven by outlier revenue observations. Second, Appendix Table A.3 reports alternative estimates of equation (1) where all explanatory and control variables are lagged by one year. The results are almost identical to those reported in Table 2, which suggests that the main findings are not driven by contemporaneous fiscal adjustments related to cannabis revenue collection.

Third, Appendix Table A.4 re-estimates equation (1) using an inverse hyperbolic sine (HIS) transformation of local cannabis tax revenue. A traditional natural logarithm transformation would be undefined for observations with zero cannabis revenues and would therefore require dropping a substantial number of municipality-year observations, particularly in the pre-2022 period when municipalities were not yet collecting cannabis revenues. The HIS transformation is similar to a logarithmic transformation, but it retains zero values, making it particularly useful in samples where many observations have zero revenues (Bellemare and Wichman 2020). The main coefficient of interest reported in Appendix Table A.4 is neither statistically or substantively different than the main results reported in Table 2.

Fourth, Appendix Table A. 5 reports coefficients of equation (1) using the full sample of municipality-years, including those municipalities that prohibit cannabis businesses. In these

regression models, the coefficient on the local cannabis tax revenues is -0.001 and not statistically significant. This suggests that including or excluding municipalities that prohibit cannabis businesses from the analytical sample does not change the association between local cannabis revenues and effective property tax rates.

Lastly, we examine whether the association between local cannabis tax revenue and effective property tax rates varies across different levels of socioeconomic distress and fiscal capacity. Figures 1 and 2 plot the marginal effects from separate interaction models with the Municipality Revitalization Index (MRI) and the natural log of equalized property values. See the methods section for more details about these interaction models. Across both figures, the estimated association is more negative among municipalities with greater economic distress and lower property values, and they become smaller among less economically distressed and higher fiscal capacity municipalities. It is important to stress that the magnitude of these marginal effects is still modest. For example, in Figure 1, the marginal effects range from approximately -0.04 and 0.01 percentage points, compared to an average effective property tax rate of 2.86. Overall, while the results from the interaction models suggest some heterogeneity in the association between local cannabis tax revenues and effective property tax rates, the differences are small in terms of practical significance.

In summary, our main results suggest that sizable increases in local cannabis tax collections correspond to only trivial changes in effective property tax rates. In practical terms, cannabis revenues do not translate into meaningful property tax relief. Moreover, we find no evidence of significant heterogeneity across municipalities by equalized property values or levels of economic distress. Taken together, these results provide little support for the revenue substitution hypothesis and instead align more closely with the revenue diversification

framework, whereby municipalities incorporate cannabis revenues into existing revenue structures without reducing reliance on local property taxes.

## 6. Discussion

This study contributes to the growing literature on the fiscal consequences of cannabis legalization by examining how local governments respond to the introduction of a local cannabis tax and whether these new cannabis tax revenues reduce reliance on the local property tax. While prior research on cannabis policy has focused primarily on outcomes such as housing values and crime, much less is known about how cannabis legalization affects local fiscal behavior. New Jersey provides a useful setting to study this question because municipalities are allowed to impose local taxes and fees on cannabis businesses following the legalization of recreational cannabis approved by voters in 2020. Using a municipality-year panel dataset covering the period from 2016 through 2024, this study tests two competing frameworks from the public finance literature: a revenue substitution framework, in which new revenues reduce reliance on existing taxes, and a revenue diversification framework, in which new revenues supplement rather than replace existing taxes.

Our study yields several important findings. First, increases in local cannabis tax revenues are not associated with meaningful reductions in effective property tax rates. The estimates are statistically precise but practically negligible, indicating that even substantial increases in cannabis revenues correspond to only trivial changes in local property tax burdens. These results are robust across alternative specifications, including models with municipality-specific time trends, alternative transformations of the local cannabis tax revenue variable, and alternative sample restrictions. Second, we find little evidence that the association between cannabis revenues and effective property tax rates differs across municipalities with varying

levels of fiscal capacity or economic distress. Taken together, these findings provide little support for the revenue substitution hypothesis and instead are more consistent with a revenue diversification framework, in which local governments incorporate cannabis revenues into their existing revenue system.

These findings contribute to two related areas of prior research. First, they add to the emerging literature on the fiscal consequences of cannabis legalization. Existing research on fiscal outcomes has largely focused on tax design, market structure, and the revenue-generating potential of cannabis taxation (Hansen et al. 2020; Hansen et al. 2025; Kavousi et al. 2022; Miller and Seo 2021). Much less attention has been devoted to how cannabis revenues affect local government fiscal behavior once those revenues are collected. By examining whether municipalities adjust effective property tax rates in response to cannabis tax revenues, this study provides new empirical evidence on how local governments incorporate cannabis revenues into their revenue systems.

Second, the findings contribute to the broader public finance literature on how governments respond to new or emerging revenue sources. Prior research suggest that new revenue streams may allow governments to substitute away from existing tax bases, particularly politically salient taxes such as property taxes (Bartle, Kriz, and Morozov 2011; Carroll and Johnson 2010; Hoene 2004). However, our findings suggest that when new revenues are modest or politically less salient than traditional tax bases, governments may incorporate them into existing revenue structures rather than use them to reduce reliance on property taxes.

Our findings suggest several policy implications for local governments. In particular, the results do not support the policy framing that cannabis revenues will be used to meaningfully offset local property tax burdens. Instead, municipalities appear to use cannabis revenues into

their fiscal systems as a supplementary revenue source without reducing reliance on property taxation. This may reflect a form of prudent fiscal management given the uncertainty surrounding the long-run economic and neighborhood effects of cannabis legalization (e.g., Adda et al. 2014; Bruijn and Ribas 2022; Thomas and Tian 2021). For example, if cannabis-related activity were to negatively affect property values in some communities, the resulting fiscal consequences may be difficult to predict and could persist over time. Recent research on property tax reassessment shows that negative shocks to housing values often take several years to be reflected in assessed values, and the resulting declines in the property tax base can be deeper and more persistent than the initial market shock (Deng and Skidmore 2024). In this context, maintaining stable local revenue sources rather than substituting away from property taxation may help municipalities manage fiscal risk while incorporating new and potentially uncertain revenue sources (Afonso 2013).

A second policy implication is related to the broader regulatory environment surrounding cannabis legalization. Despite widespread state-level legalization, cannabis remains illegal under federal law, creating regulatory and administrative challenges for state and local governments. For example, federal prohibition has historically limited access to traditional banking services for cannabis businesses, resulting in a largely cash-based industry that can complicate tax collection and oversight (Mallinson et al. 2020). These constraints may limit the reliability and administrative simplicity of cannabis taxation compared with more traditional revenue sources. As a result, municipalities may treat their cannabis revenues as a supplemental and potentially uncertain revenue stream rather than as a stable foundation for restructuring local tax systems.

Our study has several limitations that suggest directions for future research. First, our study's time period focuses on the early years of cannabis revenue collection in New Jersey.

Local fiscal responses may change as local cannabis markets mature and revenues become more predictable. Second, the findings reflect the institutional context of New Jersey, and future research should examine whether similar results emerge in states with different taxation and regulatory frameworks. Third, cannabis revenues may influence other fiscal outcomes, including spending priorities, fiscal slack, municipal credit ratings, and the long-run fiscal condition. Future work could also examine whether cannabis revenues are directed toward specific policy priorities such as housing, public health, or community development (Link et al. 2024). Finally, cannabis taxation may have broader economic consequences beyond local fiscal decisions. Prior research suggests that the effects of local fiscal decisions on economic growth can vary substantially across communities depending on local socioeconomic conditions (Deller and Maher 2024). Understanding whether cannabis taxation influences local economic activity, and whether these effects differ across municipalities with varying socioeconomic conditions, represents an important direction for future research.

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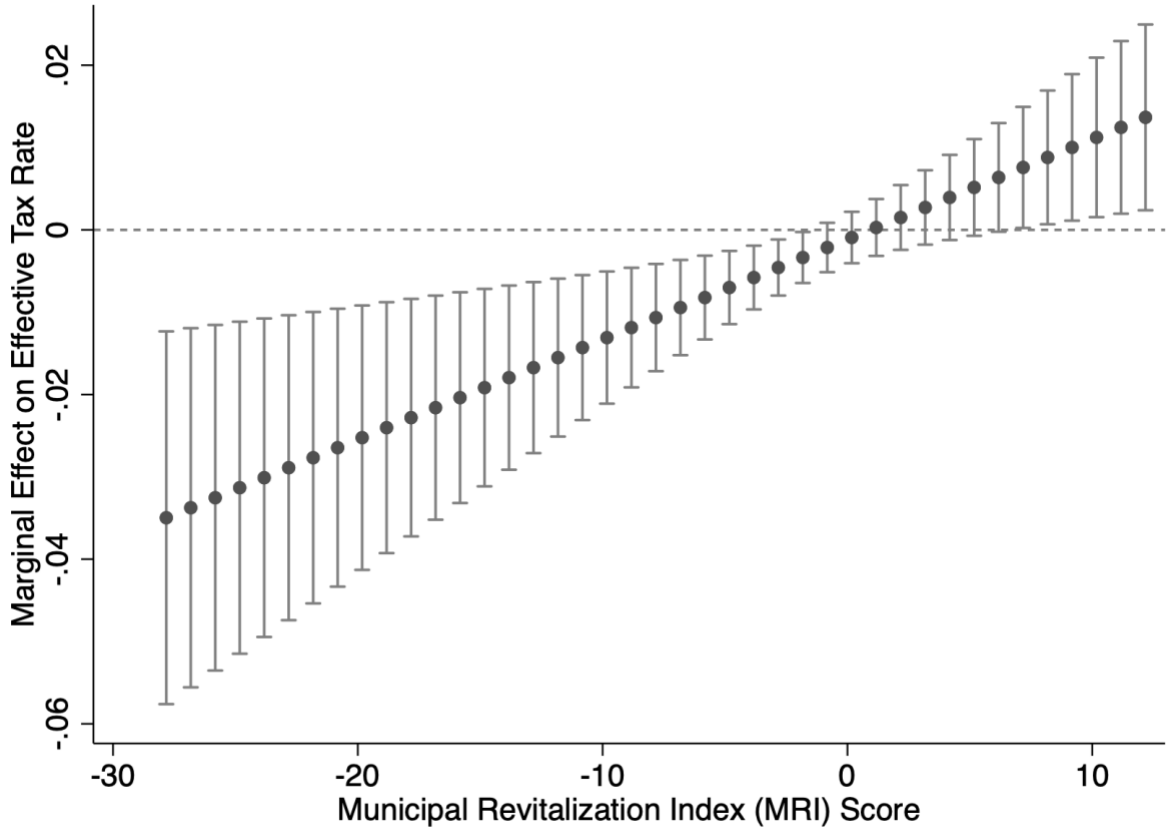
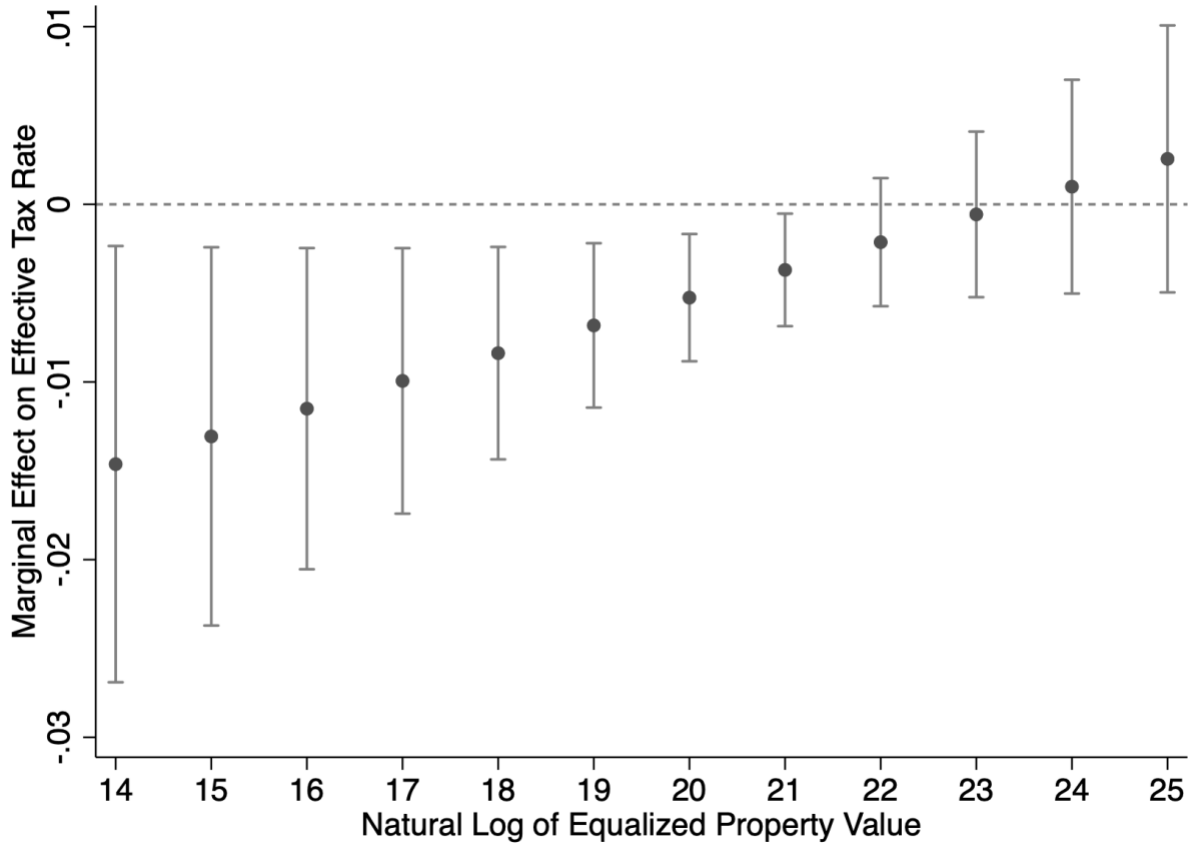
**Figure 1.** Marginal Effect of Local Cannabis Tax Revenue on Effective Property Tax Rates by Municipal Revitalization Index (MRI)




Notes: Points display the estimated marginal effect of local cannabis tax revenue (per capita) on the effective property tax rate evaluated at different values of the Municipal Revitalization Index (MRI). Vertical bars represent 95 percent confidence intervals based on cluster-robust standard errors. Estimates are derived from Equation (1), which includes municipality and year fixed effects (and other controls as specified in the text). The dashed horizontal line denotes a zero marginal effect. Negative MRI values correspond to more fiscally distressed municipalities.

**Figure 2.** Marginal Effect of Local Cannabis Tax Revenue on Effective Property Tax Rates by Equalized Property Values




Notes: Points display the estimated marginal effect of local cannabis tax revenue (per capita) on the effective property tax rate evaluated at different values of the natural log of equalized property values. Vertical bars represent 95 percent confidence intervals based on cluster-robust standard errors. Estimates are derived from Equation (1), which includes municipality and year fixed effects (and other controls as specified in the text). The dashed horizontal line denotes a zero marginal effect.

**Table 1. Mean Differences Across New Jersey Municipalities by Cannabis Policy Status**

| | Cannabis-Active | Cannabis-Permitted | Cannabis-Prohibited |
|---|---|---|---|
| Effective Property Tax Rate | 2.86 | 2.88 | 2.41*** |
| Cannabis Revenue Per Capita | 2.77 | 0.00*** | 0.00*** |
| % Elderly | 15.84 | 16.91*** | 19.89*** |
| Population | 22,478.00 | 19,122.00*** | 13,566.00*** |
| Municipal Revitalization Index (MRI) | -2.02 | -2.17 | 1.20*** |
| % Democrats | 57.61 | 54.13*** | 44.79*** |
| State Aid ($ in millions) | 4.30 | 5.34 | 1.55*** |
| Equalized Property Value ($ in millions) | 3,450.00 | 2,470.00*** | 2,420.00*** |
| Municipality-Years | 702 | 1,143 | 3,240 |

Notes: The full sample includes all 565 municipalities in New Jersey between 2016 and 2024. "Cannabis-active" municipalities have opted into allowing cannabis businesses and have started to collect cannabis revenue. "Cannabis-permitted" municipalities have opted into allowing cannabis businesses but have not started to collect cannabis revenue. "Cannabis-prohibited" municipalities have opted out of allowing cannabis businesses. The Municipal Revitalization Index (MRI) measures the level of economic distress in a municipality, with a higher score indicating less economic distress. The % Democrats variable indicates the percentage of the votes cast for Democrat governor candidate during gubernatorial elections in 2017 and 2021 in New Jersey Municipalities. The asterisks represent the level of significance for the difference in unconditional means between cannabis-active and cannabis-permitted municipalities in column (2) and between cannabis-active and cannabis -prohibited municipalities in column (3). Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Table 2. OLS Regressions on Effective Property Tax Rates**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Cannabis Revenue Per Capita | 0.001** | 0.001** | 0.001** | 0.001*** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| % Elderly | | -0.004 | -0.004 | -0.002 | -0.005** |
| | | (0.003) | (0.003) | (0.003) | (0.002) |
| Log of Population | | -0.189 | -0.117 | -0.087 | -0.180* |
| | | (0.136) | (0.152) | (0.105) | (0.101) |
| Municipal Revitalization Index | | | -0.011 | -0.009 | 0.001 |
| | | | (0.008) | (0.007) | (0.007) |
| % Democrats | | | -0.002 | -0.002 | 0.001 |
| | | | (0.003) | (0.002) | (0.001) |
| Log of State Aid | | | | 0.009 | 0.008 |
| | | | | (0.007) | (0.006) |
| Log of Equalized Property Value | | | | -1.283*** | -1.151*** |
| | | | | (0.209) | (0.141) |
| Controls: | | | | | |
| Municipality FEs | √ | √ | √ | √ | √ |
| Year FEs | √ | √ | √ | √ | √ |
| Municipality-Specific Linear Trend | | | | | √ |
| Adjusted R-squared | 0.955 | 0.956 | 0.956 | 0.967 | 0.983 |
| Observations | 1,845 | 1,845 | 1,845 | 1,845 | 1,845 |

Notes: The sample includes only cannabis-active and cannabis-permitted municipalities. All municipalities that do not allow cannabis businesses are excluded from this sample. The Municipal Revitalization Index (MRI) measures the level of economic distress in a municipality, with a higher score indicating less economic distress. The % Democrats variable indicates the percentage of the votes cast for Democrat governor candidate during gubernatorial elections in 2017 and 2021 in New Jersey Municipalities. Clustered-robust standard errors at municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.

## Appendix Tables

**Appendix Table A.1 Placebo Regressions on Time-Varying Municipality Characteristics**

| | Log of Population | MRI | Percent Democrats | Log of State Aid | Log of Property Values |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Cannabis Revenue Per Capita | -0.000 | 0.004 | -0.012 | -0.000 | 0.000 |
| | (0.000) | (0.002) | (0.008) | (0.001) | (0.000) |
| Controls: | | | | | |
| Municipality FEs | √ | √ | √ | √ | √ |
| Year FEs | √ | √ | √ | √ | √ |
| Adjusted R-squared | 0.998 | 0.972 | 0.882 | 0.832 | 0.998 |
| Observations | 1,845 | 1,845 | 1,845 | 1,845 | 1,845 |

Notes: The sample includes only cannabis-active and cannabis-permitted municipalities. All municipalities that do not allow cannabis businesses are excluded from this sample. The Municipal Revitalization Index (MRI) measures the level of economic distress in a municipality, with a higher score indicating less economic distress. The % Democrats variable indicates the percentage of the votes cast for Democrat governor candidate during gubernatorial elections in 2017 and 2021 in New Jersey Municipalities. Clustered-robust standard errors at municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.

**Appendix Table A.2. OLS Regressions on Effective Property Tax Rates Without the Municipalities Having Two Largest Values of Cannabis Revenue Per Capita**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Cannabis Revenue Per Capita | 0.002*** | 0.002*** | 0.002*** | 0.002*** | 0.000 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| % Elderly | | -0.004 | -0.004 | -0.002 | -0.004* |
| | | (0.003) | (0.003) | (0.003) | (0.002) |
| Log of Population | | -0.185 | -0.112 | -0.074 | -0.165 |
| | | (0.139) | (0.155) | (0.104) | (0.100) |
| Municipal Revitalization Index | | | -0.011 | -0.010 | 0.001 |
| | | | (0.008) | (0.007) | (0.007) |
| % Democrats | | | -0.002 | -0.002 | 0.001 |
| | | | (0.003) | (0.002) | (0.001) |
| Log of State Aid | | | | 0.009 | 0.008 |
| | | | | (0.007) | (0.006) |
| Log of Equalized Property Value | | | | -1.321*** | -1.159*** |
| | | | | (0.217) | (0.141) |
| Controls: | | | | | |
| Municipality FEs | √ | √ | √ | √ | √ |
| Year FEs | √ | √ | √ | √ | √ |
| Municipality-Specific Linear Trend | | | | | √ |
| Adjusted R-squared | 0.954 | 0.955 | 0.95 | 0.967 | 0.983 |
| Observations | 1,827 | 1,827 | 1,827 | 1,827 | 1,827 |

Notes: The sample includes only cannabis-active and cannabis-permitted municipalities. All municipalities that do not allow cannabis businesses and the two municipalities with the highest values for cannabis revenue per capita are removed (West Cape May Boro and Egg Harbor Township) are excluded from this sample. The Municipal Revitalization Index (MRI) measures the level of economic distress in a municipality, with a higher score indicating less economic distress. The % Democrats variable indicates the percentage of the votes cast for Democrat governor candidate during gubernatorial elections in 2017 and 2021 in New Jersey Municipalities. Clustered-robust standard errors at municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

**Appendix Table A.3. OLS Regressions on Effective Property Tax Rates (All Explanatory Variables are Lagged)**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Cannabis Revenue Per Capita | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.000) |
| % Elderly | | -0.003 | -0.002 | 0.000 | -0.003 |
| | | (0.003) | (0.003) | (0.003) | (0.002) |
| Log of Population | | -0.151 | -0.064 | 0.004 | -0.078 |
| | | (0.137) | (0.158) | (0.112) | (0.104) |
| Municipal Revitalization Index | | | -0.016** | -0.015 | -0.006 |
| | | | (0.008) | (0.009) | (0.007) |
| % Democrats | | | -0.002 | -0.002 | -0.002 |
| | | | (0.003) | (0.002) | (0.001) |
| Log of State Aid | | | | 0.002 | 0.001 |
| | | | | (0.004) | (0.003) |
| Log of Equalized Property Value | | | | -1.326*** | -1.663*** |
| | | | | (0.276) | (0.174) |
| Controls: | | | | | |
| Municipality FEs | √ | √ | √ | √ | √ |
| Year FEs | √ | √ | √ | √ | √ |
| Municipality-Specific Linear Trend | | | | | √ |
| Adjusted R-squared | 0.959 | 0.959 | 0.959 | 0.970 | 0.989 |
| Observations | 1,640 | 1,640 | 1,640 | 1,640 | 1,640 |

Notes: The sample includes only cannabis-active and cannabis-permitted municipalities. All municipalities that do not allow cannabis businesses are excluded from this sample. The Municipal Revitalization Index (MRI) measures the level of economic distress in a municipality, with a higher score indicating less economic distress. The % Democrats variable indicates the percentage of the votes cast for Democrat governor candidate during gubernatorial elections in 2017 and 2021 in New Jersey Municipalities. Clustered-robust standard errors at municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.

**Appendix Table A.4. OLS Regressions on Effective Property Tax Rates Using the IHS Transformed Version of Cannabis Revenue**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| HIS Transformed Cannabis Revenue Per Capita | 0.006 | 0.006 | 0.006 | 0.004 | 0.009 |
| | (0.018) | (0.018) | (0.017) | (0.015) | (0.009) |
| % Elderly | | -0.003 | -0.002 | 0.000 | -0.003 |
| | | (0.003) | (0.003) | (0.003) | (0.002) |
| Log of Population | | -0.151 | -0.065 | 0.004 | -0.076 |
| | | (0.137) | (0.158) | (0.112) | (0.103) |
| Municipal Revitalization Index | | | -0.016** | -0.015 | -0.006 |
| | | | (0.008) | (0.009) | (0.007) |
| % Democrats | | | -0.002 | -0.002 | -0.002 |
| | | | (0.003) | (0.002) | (0.001) |
| Log of State Aid | | | | 0.002 | 0.002 |
| | | | | (0.004) | (0.003) |
| Log of Equalized Property Value | | | | -1.326*** | -1.663*** |
| | | | | (0.277) | (0.173) |
| Controls: | | | | | |
| Municipality FEs | √ | √ | √ | √ | √ |
| Year FEs | √ | √ | √ | √ | √ |
| Municipality-Specific Linear Trend | | | | | √ |
| Adjusted R-squared | 0.959 | 0.959 | 0.959 | 0.970 | 0.989 |
| Observations | 1,640 | 1,640 | 1,640 | 1,640 | 1,640 |

Notes: The sample includes only cannabis-active and cannabis-permitted municipalities. All municipalities that do not allow cannabis businesses are excluded from this sample. The Municipal Revitalization Index (MRI) measures the level of economic distress in a municipality, with a higher score indicating less economic distress. The % Democrats variable indicates the percentage of the votes cast for Democrat governor candidate during gubernatorial elections in 2017 and 2021 in New Jersey Municipalities. Clustered-robust standard errors at municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.

**Appendix Table A.5. OLS Regressions on Effective Property Tax Rates (Full Sample)**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Cannabis Revenue Per Capita | -0.000 | -0.000 | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.001) | (0.000) |
| % Elderly | | -0.000 | -0.000 | 0.002 | 0.001 |
| | | (0.002) | (0.002) | (0.002) | (0.002) |
| Log of Population | | 0.231*** | 0.228*** | 0.545*** | 0.423*** |
| | | (0.054) | (0.054) | (0.090) | (0.141) |
| Municipal Revitalization Index | | | -0.011*** | -0.004 | 0.007 |
| | | | (0.004) | (0.004) | (0.005) |
| % Democrats | | | 0.000 | -0.001 | -0.001 |
| | | | (0.002) | (0.002) | (0.001) |
| Log of State Aid | | | | 0.000 | 0.002 |
| | | | | (0.004) | (0.003) |
| Log of Equalized Property Value | | | | -1.010*** | -0.700*** |
| | | | | (0.133) | (0.162) |
| Controls: | | | | | |
| Municipality FEs | √ | √ | √ | √ | √ |
| Year FEs | √ | √ | √ | √ | √ |
| Municipality-Specific Linear Trend | | | | | √ |
| Adjusted R-squared | 0.973 | 0.974 | 0.974 | 0.977 | 0.988 |
| Observations | 5,085 | 5,085 | 5,085 | 5,085 | 5,085 |

Notes: The sample includes cannabis-active, cannabis-permitted, and cannabis-prohibited municipalities. The Municipal Revitalization Index (MRI) measures the level of economic distress in a municipality, with a higher score indicating less economic distress. The % Democrats variable indicates the percentage of the votes cast for Democrat governor candidate during gubernatorial elections in 2017 and 2021 in New Jersey Municipalities. Clustered-robust standard errors at municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.