Senior Project

Department of Economics

The Impact of Source of Income Laws on Rent

Evan Stewart

Spring 2023

Advisor: *Dr. Ali Enami*

Abstract

After the enactment of the first Source of Income (SOI) law in Massachusetts in 1971, more states and local governments have adopted them with many put in place over the last five years. These laws protect renters that use undesirable sources of income, like Social Security, child support, or housing vouchers, from rejection by landlords based on that factor alone. At first glance, SOI laws appear to accomplish their goals by increasing housing voucher acceptance rates in the places they affect (Bell et al., 2022 and Freeman, 2011). Investigating further uncovers that SOI laws detriment the same low-income renters they were designed to protect by causing increased rents in various counties and cities across the United States. I examine the effects of SOI laws on rent at county and Metropolitan Statistical Area (MSA) levels using a two-way fixed effects difference in differences model with control variables to determine the present causal effect. With theory, my results, and previous research pointing to an increase in rent due to SOI laws, more equitable solutions need to be put in place to ensure low-income renters have fair access to affordable housing.

Table of Contents

I. Introduction

In the United States federal law prevents housing discrimination based on protected characteristics like race, sexual orientation, age, and others (U.S. Department of Housing and Urban Development, 2023). However, American landlords can possibly discriminate against renters based on the source of the renter's income. Sources of income that landlords avoid include Social Security, child support, or housing subsidies like vouchers. To prevent income-based discrimination, some states, counties, and localities enforce Source of Income (SOI) laws, designed to protect low-income renters. SOI laws prevent landlords from keeping alternate-income individuals out of residences in neighborhoods based on source of income alone (Ellen et al., 2022 and Freeman and Li, 2013). Unfair landlord rejection disproportionately affects protected racial and gender groups, increasing the need for better policy (Cunningham et al., 2018).

Massachusetts enacted the first SOI law in 1971 with many other states, counties, and cities following suit (Bell et al., 2018). Despite increased popularity in recent years, not every citizen has income protection because less than half of U.S. states use SOI laws while some states preempt them (National Multifamily Housing Council, 2021). Renters that rely on undesirable sources of income need legal defense against landlord discrimination to afford suitable housing. Government policymakers aim to eliminate these discriminatory effects and ensure all their constituents have equitable access to housing.

Landlords set prices for their housing units based on a variety of factors, namely the risk they take on from renters. Low-income renters protected by SOI laws carry many forms of risk including frequent inspections, troubles evicting, first month rent delays, and the lack of security deposits (Safier, 2022). Rent prices can rise for any or all of these reasons because landlords, like any investors, desire greater return for the risks they take on. The risk from subsidized housing arises from the portion of rent that the low-income renter provides. Needy renters rely on less favorable income sources such as child support or other non-labor supported cash flows that landlords accept less often. Landlords being forced to accept more alternative income sources for payment leads to a higher rent to account for the risks they take on.

Susin (2002) shows that areas with larger concentrations of Section 8 vouchers, one of the sources of income protected by SOI laws, have higher rent prices. Bell et al. (2018) examine the link between Section 8 voucher acceptance rates and source of income protections. While literature about SOI laws in the context of Section 8 vouchers exists, there is no recent research that investigates the effects of SOI laws on low-income renters. This paper aims to fill the literature gap by analyzing the causal effect of SOI laws on rent in counties. Progressively, higher rents in an SOI-protected geographic area produce negative effects on low-income residents in terms of housing affordability. Governments should consider the effects produced by enacting SOI laws to make sure they avoid disparate impacts for poor families.

The rest of the paper is organized as follows: Section II explores results from previous research on related topics; Section III discusses theories behind the research; Section IV previews the data used for analysis; Section V provides empirical models; Section VI displays results; Section VII concludes.

II. Literature Review

Many studies analyze the effects of SOI laws or subsidized housing programs on a variety of outcomes. Existing studies on these topics belong to four major categories: effects on neighborhood mobility, protected groups, landlord acceptance, and housing markets.

Ellen et al. (2022) and Freeman and Li (2013) evaluate the effects of SOI laws on neighborhood mobility. Freeman and Li use a difference in differences model to analyze many desirable mobility factors and find that SOI laws decrease poverty and increase mobility to "whiter neighborhoods" for low-income renters. Ellen et al. (2022) publish similar results in a more recent examination, finding increased moves to neighborhoods with more whites and less poverty. However, Ellen et al. also find that SOI laws decrease the concentration of voucher holders in neighborhoods, whereas Freeman and Li (2013) do not. Positive neighborhood mobility creates benefits for low-income renters because of the presence of SOI laws but neither of these studies account for rental rates in affected areas (Ellen et al., 2022 and Freeman and Li, 2013).

While Freeman and Li (2013) and Ellen et al. (2022) analyze positive neighborhood effects of SOI laws, Cunningham et al. (2018) and Tighe et al. (2017) examine the detrimental effects unfairly imposed on protected groups without SOI laws in place. Without knowledge of subsidy programs landlords can make assumptions about renters using them, which in turn causes discrimination against certain groups (Tighe et al., 2017). Cunningham et al. (2018) find that voucher rejections, even when legal, unfairly impact certain protected groups since more voucher holders belong to these groups. SOI laws protect impacted racial and gender groups landlords reject based on income. Cunningham et al. (2018) and Tighe et al. (2017) find source of income protections prevent biased landlord decision making that impacts disadvantaged groups but do not consider the possibility of increased rent that detriments the same low-income families SOI laws protect.

Cunningham et al. (2018) and Tighe et al. (2017) reveal the groups most affected by SOI laws, while other studies analyze the relationship between SOI laws and voucher acceptance

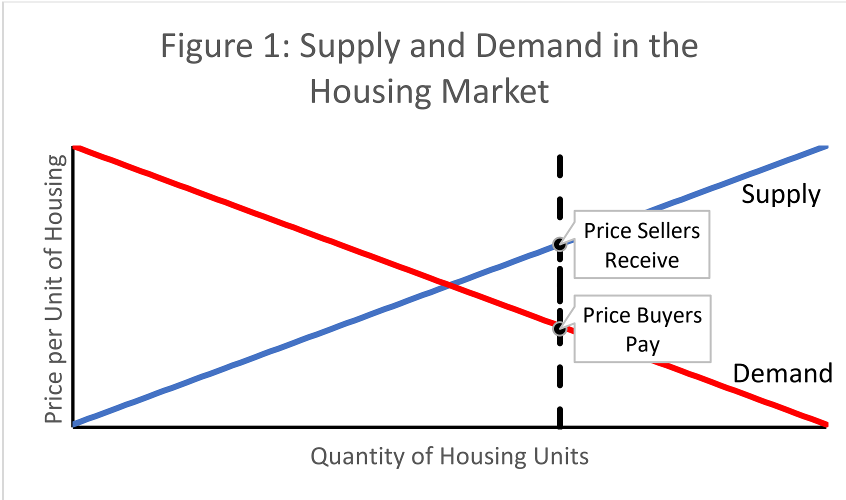
(Freeman, 2011; Bell et al., 2018; Finker and Buron, 2001; Chicago Lawyers' Committee, 2018). Bell et al. (2018) and Freeman (2011) determine the effects SOI laws have on Section 8 housing vouchers with both studies coming to the same conclusion that SOI laws are accomplishing protection due to increased voucher acceptance. Finker and Buron (2001) find that the national median voucher acceptance rate is between 60-70 percent. Finker and Buron do not divide areas with and without SOI laws as Bell et al. (2018) and Freeman (2011) do, meaning the median Finker and Buron find contains some inaccuracies for certain populations. Bell et al. (2018) provide a better representation of the effect of acceptance from SOI laws showing an acceptance rate of 85.2 percent in Washington D.C. and 22 percent in Fort Worth, with and without SOI laws respectively. Despite the increase in voucher acceptance in cities with SOI laws, an experimental study in Chicago, which has an SOI law in effect, shows that some landlords illegally reject voucher holders (Chicago Lawyers' Committee, 2018). Clearly SOI laws increase housing voucher acceptance, but not every landlord complies, negatively affecting low-income renters.

SOI laws increase voucher acceptance and Susin (2002) examines rental prices in markets based on the amount of housing vouchers used, finding markets in areas with a high voucher utilization rate experience higher rents. Low-income renters that use vouchers at a higher rate experience the full force of these rent increases much faster than middle to high income areas (Susin, 2002). This paper examines the effect of SOI laws on rent which Susin does not do. SOI laws increase voucher utilization rates which have been shown to increase rent (Bell et al., 2018; Freeman, 2011; Susin, 2002).

III. Theoretical Discussion

Landlords change rents of housing units based on many factors including supply and demand of the housing market and risk-to-reward elements. Free markets, such as housing markets, function within the predictive economic framework of the laws of supply and demand. With many subsidies affecting housing markets more than others, we cannot ignore the changes to housing markets that arise from subsidies. Landlords, like any investor, desire more reward for taking on risk. Safier (2022) cites many potential risks landlords accept by accepting subsidized housing such as Section 8 vouchers. These risks in highly subsidized markets increase rent as landlords expect increased rewards. Both of these factors support an increase in rent for markets with SOI laws.

Landlords and renters interact in housing markets that operate as predicted by the basic principles of supply and demand. In a market without subsidies, the price renters pay and the price landlords receive comes from the equilibrium price which is determined in the housing market. Housing subsidies, protected by SOI laws, drive a wedge into the market, increasing the price sellers receive while decreasing the price buyers pay. Landlords set the rent of their housing units themselves based on the price they receive, therefore the rent charged to all buyers in the market rises as landlords have no reason to accept less money for a unit. Low-income renters must have a subsidy to pay for part of their rent or be able to afford to rent the unit at full price, something difficult for low-income renters to accomplish. Studies find that SOI laws increase subsidized housing acceptance, meaning housing markets with SOI laws have higher subsidy effects (Bell et al., 2018 and Freeman, 2011). Therefore, theoretically, SOI enforced housing markets are expected to have higher equilibrium rent than areas without protections. Figure 1 shows the disparities between buyers and sellers resulting from a subsidy in the housing market.



Supply and demand influence markets but risk determines individual landlord decisions. Landlords consider multiple risk factors included with subsidized rent including security deposits, rental payments, and evictions (Safier, 2022). Landlords are expected to raise prices, even unfairly, because of the risks posed from low-income renters. Raising rents to account for risk seems unnecessary as housing subsidies come from the United States government. The Government never defaults on payments, meaning that in essence the rent will always be on time and is expected to have less risk. The empirical analysis done in this paper determines if risk and the economic effects of a subsidy actually cause higher rent in markets with SOI laws in effect.

IV. Data

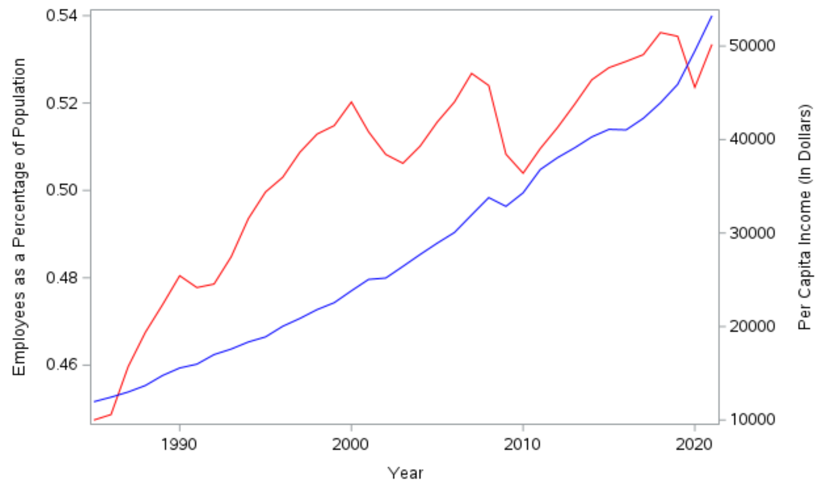
For the dependent variable in this analysis, two sources provide rental price variables from different area sizes and locations. The U.S. Department of Housing and Urban Development (2021) provides fair market rents for every county or census area in the United States from 1985 through 2021. Rents for multiple apartment sizes appear in the data as well, ranging from zero to four bedrooms. For this analysis, I use the data for two-bedroom apartments, because DeVault (2021) finds as of 2018 around 40 percent of rental units in

America have two bedrooms, more than any other apartment size. While not a representation of the actual or low-income rent in an area, fair market rents drive payments for the Housing Choice Voucher program, flat rents for Public Housing units, and other public housing policies nationwide (U.S. Department of Housing and Urban Development, 2021). I use fair market rents as a proxy for county-wide rent, because fair market rents determine housing costs for low-income renters protected by SOI laws. The second source of rent data for this research comes from the U.S. Bureau of Labor Statistics (BLS). In their dataset, BLS (2021) provides the annual rent of primary residence data for 29 different Metropolitan Statistical Areas (MSAs). This data can be used in rental analysis based on SOI laws because protections can vary by city and less aggregation occurs at the MSA level compared to the state level. MSA and county level data remain separate for the analyses. I exclude cities and counties that have an SOI law in place for the entire analysis period as well as areas with missing data.

I use Bureau of Economic Analysis (2021) data for my control variables of population, employees as a percentage of population, and per capita income by county. This dataset includes total income, population, employees, and per capita income for most counties in America. Counties with no data available are not included in analyses with controls in place. I calculate the employees as a percentage of population by using a ratio of total employees to total population. Bureau of Economic Analysis (2021) links to my rental data through state FIPS codes and county names providing extra controls in my model.

Figure 2 shows the trends for two of my control variables across time for all counties studied.

Figure 2: Average Employees as a Percentage of Population and Per Capita Income



Source: U.S. Bureau of Labor Statistics (2021).

Notes: Data from 1985-2021. The red line represents employees as a percentage of population, the blue line represents per capita income. All data points are averages of variables across all counites in a given year.

Due to the number of years in my data, understanding the trends in the variables in the sample is important for this analysis. Per capita income increases steadily over time and employment fluctuates with the economic environment as shown by dips in times of known recessions. Employment and income influence rental rates through macroeconomic effects. Increases in income and employment boost total economic activity in a county which will, in turn, raise the rent.

Table 1 shows descriptive statistics for the outcome and control variables present in the county level analysis.

Table 1: Descriptive Statistics

Variable	Number of Obs	Mean	Standard Deviation	Minimum	Maximum
Fair Market Rent	117,304	$551	$220	$194	$3,553
Population	113,867	92,123	301,054	55	10,123,521
Per Capita Income	113,867	$28,272	$14,006	$4,022	$318,297
Employees as a Percentage of Population	113,830	50.53%	15.89%	10.60%	487.59%

Source: U.S. Department of Housing and Urban Development (2021) and own calculations.

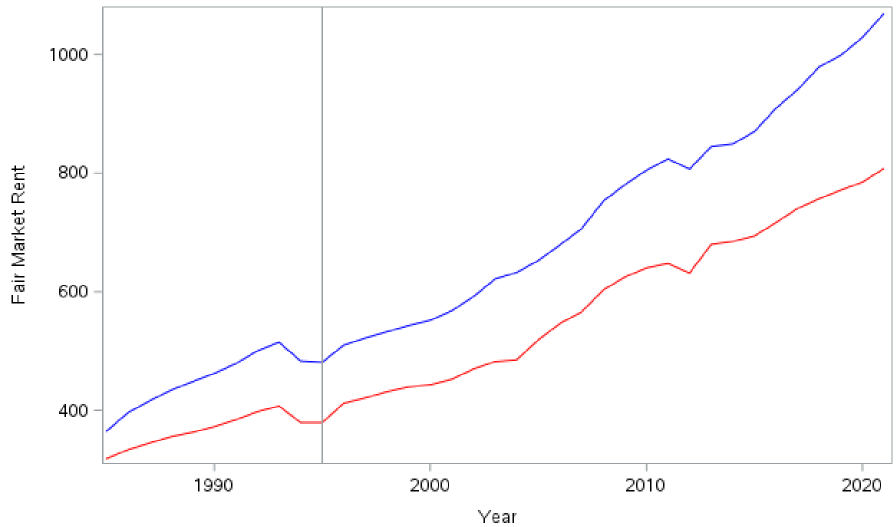
Notes: Statistics are from all counties in all states from years 1985-2021. All non-percentage measurements are rounded to the nearest whole number, all percentage measurements are rounded to the nearest two decimals.

In Table 1, the maximum value for employees as a percentage of population stands out but can be explained. After further examination, a majority of counties with a relatively higher number of employees than population are the counties with large metropolitan areas where people likely travel into for work or counties that have an extremely small population. I find that in my entire dataset of 3,191 counties only about 2.7 percent, or 89 counties, ever have county employment at 90 percent of population or higher.

Data from the Urban Institute (2021) allows for grouping of counties and cities from the datasets into control and treatment groups by providing a list of state, county, and city level SOI laws including the years governments enacted the legislation. Urban Institute includes 120 different SOI regulations made effective from 1971 through 2021. Using Urban Institute (2021), I create an indicator variable that is equal to 1 if a county or city has an SOI law in place in a given year and 0 otherwise. I cross-reference state laws with FIPS codes from U.S. Department of Housing and Urban Development (2021) and U.S. Bureau of Labor Statistics (2005) and manually enter county and city level laws to implement my difference in differences variable.

Figure 3 displays the fair market rent for counties with and without SOI laws separately.

Figure 3: Average Fair Market Rent for Treatment and Control Groups



Source: U.S. Department of Housing and Urban Development (2021) and Urban Institute (2021).
Notes: Data from 1985-2021. The red line shows counties that have a Source of Income law in a given year, the blue line shows counties that do not have a Source of Income law in a given year. All data points are averages of Fair Market Rent across all counties in a given year.

Treated counties with SOI laws and control group counties without them maintain a very similar trend throughout the sample years. The groups diverge more post 1995, shown by the vertical line in Figure 3. Since no defined pre-treatment period exists in the data, I use 1985 through 1995 as a representation of this time. During this period only three states and three individual counties enacted SOI laws whereas the number of laws enacted balloons in the mid to late 2000's. Figure 3 also visually represents a parallel trend between the treatment and control groups in my analysis.

V. Empirical Methodology

To see the effect of SOI laws on rent I use a two-way-fixed-effects difference-in-differences model. This approach allows for causal analysis of variables rather than correlation between variables. The difference-in-differences model estimates the differential effect of a treatment, in this study the implementation of an SOI law in a county. The two-way fixed effects included in the model account for attributes that change over time or counties. Control variables not included in my model, like federal policies or culture, are accounted for in the fixed effects. I use a parallel trend test and a balance of regressors test to increase confidence in the ability of the model to identify the causal effect.

For this analysis, five key assumptions are necessary. Firstly, entities move together before any treatment takes place. Second, the treatment effect is constant across time and regions. Third, all variables are correctly measured and specified with no error. Fourth, there are no other variables that influence the outcome variable besides the variables included in the model. Finally, no endogeneity is present in the model meaning no variable present in the error term is correlated with the regressor of interest.

The first assumption is confirmed through the parallel trend test showing that treatment and control groups move together before any SOI laws are enacted. This test improves the confidence that the model shows a causal relationship between SOI laws and rent in the affected areas. Visually, Figure 2 shows a high correlation between the trends of the control and treatment groups. Furthermore, the balance of regressors test shows no significant difference in control variables between the treatment and control groups. The balance of regressors test proves treatment and control groups are comparable before any treatment because any differences between them are statistically insignificant.

Table 2 displays results from the parallel trend test using a polynomial of order five for years and including control variables.

Table 2: Parallel Trend Test Results

Regressors	Results
Treatment	-11.44 (15.38)
Year	81.71*** (7.85)
$Year^2$	-35.67*** (3.75)
$Year^3$	6.77*** (0.77)
$Year^4$	-0.58*** (0.07)
$Year^5$	0.02*** (0.00)
Treatment*Year	37.3 (23.45)
$Treatment*Year^2$	-10.38 (11.45)
$Treatment*Year^3$	1.54 (2.39)
$Treatment*Year^4$	-0.1 (0.22)
$Treatment*Year^5$	0 (0.01)
Control Variables Included?	Yes

Note: robust standard errors are in parentheses. *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively.

As shown in Table 2 there is no statistical significance for any of the interaction terms between treatment and the year polynomial. This further indicates a parallel trend between the treatment and control groups analyzed as first shown in Figure 2.

Table 3 displays the results of my balance of regressors test.

Table 3: Balance of Regressors Test Results

Regressors	Difference
Population	-125176***
Per Capita Income	-3942.2***
Employees as a Percentage of Population	-0.0300***

Note: robust standard errors are in parentheses. *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively.

Despite concerns about high significance in treatment and control group differences in control variable, my analysis still maintains validity. Population differences between counties are controlled for in my county fixed effects. Per capita income, with a difference of less than 4,000 dollars, is not very economically significant. Compared to the median per capita income in the United States this value is dwarfed. The difference in employees as a percentage of population is also economically insignificant. Such a small change in employment by county makes little impact overall.

In addition to the results of the previous two tests, many variables that can cause changes in the dependent variable of rent are accounted for in this study. County and MSA fixed effects as well as year fixed effects included in the regression analysis will account for certain variables difficult to account for that remain the same over entities or years. To further eliminate omitted variable bias in this analysis, I include many control variables that influence rent prices. These steps improve the confidence that causality shown in the analysis is accurate and eliminate omitted variable bias in results.

Equation 1 is the equation used for county level analysis of SOI laws on rent.

$$Rent_{ct} = \beta_0 + \beta_1 SOILaw_{ct} + X_{ct} + County_c + Year_t + \varepsilon_{ct} \text{ (1)}$$

Rent measures the fair market rent for two-bedroom housing units in county *c* and year *t*. *SOILaw* is an indicator variable equal to 1 if a county has an SOI law affecting it in a given year; zero otherwise. *X* represents control variables including population, pollution, crime rate, percentage of black residents, and per capita income. *County* and *Year* are county and year fixed effects, respectively. Lastly, ε is the white noise term.

Equation 2 shows the regression equation for the MSA level analysis of SOI laws on rent.

$$Rent_{mt} = \beta_0 + \beta_1 SOILaw_{mt} + X_{mt} + MSA_m + Year_t + \varepsilon_{mt} \quad (2)$$

Rent measures the average monthly rent in MSA *m* and year *t* as opposed to the county level analysis that uses fair market rents instead. Equation 2 includes MSA fixed effects instead of county fixed effects but all other variables in equation 2 remain unchanged from Equation 1.

VI. Results

The results of my study show increased rent in areas with SOI laws with varying effects by region and metropolitan county status. Table 3 displays regression results from three models, one with all counties, one with only metropolitan counties, and the third with only non-metropolitan counties.

Table 3: County Level Regression Results

Regressors	All Counties	Metro	Non-Metro
DID	76.8720*** (4.9050)	109.5505*** (7.1302)	4.8191 (3.0974)
Intercept	386.2878*** (11.4167)	312.6737*** (10.4455)	239.5292*** (7.3801)
Includes Control Variables and Fixed Effects?	Yes	Yes	Yes
Number of Observations	112987	41023	71964
Adjusted R-Square	0.9172	0.9174	0.9363
Overall Significance	406.88***	398.67***	551.83***

Note: robust standard errors are in parentheses. *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively.

Across all counties in the United States rent increases by almost 77 dollars per month in counties with SOI laws in place. This results in rent expenses of just above 900 extra dollars over the course of a year for a two-bedroom apartment. Examining the effects on rent between metropolitan and non-metropolitan counties shows a stark difference. The large, significant increase in rent shown in metro counties differs starkly from the non-metro counties small and insignificant coefficient. SOI laws increase rent dramatically near large cities making renters there much worse off financially. While low-income households are more disadvantaged in metropolitan counties, non-metro counties have insignificant changes in rent. Low-income renters in non-metro counties receive the benefits of SOI protections without the increase in rent.

To see the geographic changes in SOI law's impact on rent I split metro and non-metro counties by region. Table 4 shows the regression analysis by region and metro status.

Table 4: Regression Results by Region and Metro Status

	Northeast		Midwest		South		West	
Regressors	**Metro**	**Non-Metro**	**Metro**	**Non-Metro**	**Metro**	**Non-Metro**	**Metro**	**Non-Metro**
DID	40.6790*** (12.7858)	-0.4217 (5.2957)	44.7070*** (15.8034)	255.6735*** (25.5966)	98.5388*** (10.6291)	33.9152*** (7.3991)	37.7357*** (8.6544)	-13.2681*** (3.5867)
Intercept	44.8404 (33.6515)	-4.3864 (55.3026)	249.3426*** (6.9762)	-40.8697*** (15.8633)	345.9341*** (9.6754)	291.6782*** (7.8689)	454.1049*** (53.9944)	-4.9603 (37.6457)
Includes Control Variables and Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	4561	3219	11137	27779	20165	30007	5160	10959
Adjusted R-Square	0.9448	0.9509	0.941	0.9561	0.9198	0.9418	0.9203	0.9044
Overall Significance	501.49***	484.49***	569.31***	1,104.22***	383.80***	634.19***	230.12***	266.58***

Note: robust standard errors are in parentheses. *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively.

As displayed in Table 4 the effects on rent vary across regions. Rent across metro areas remains statistically significant while values change by region. The southern United States sticks out with the highest rent increase due to SOI laws, more than double any other region. Low-income renters in the south receive far more financial detriment from SOI laws than anywhere else in the country. Non-metro counties display massive inconsistencies as shown in Table 4. Based on these results location clearly changes the effects of SOI laws have on rent and should be considered in future policy decisions.

VII. Conclusion

While local and state governments aim to protect low-income renters with SOI laws, these laws result in renters paying more every month. An increase of $77 per month in rent may seem insignificant but compounded over many months and years results in unintended consequences including increased rent for subsidized and unsubsidized renters and segregated poor and rich neighborhoods. Renters that have undesirable sources of income, as viewed by landlords, already face enough trouble finding equitable housing because of predetermined biases (Tighe et al., 2017 and Safier, 2022). As shown from previous research this result is the expected one as SOI laws increase voucher acceptance rate and areas with higher rates of voucher acceptance have higher rents (Bell et al., 2022; Freeman, 2011; Susin, 2002). Policymakers in every level of government should use these findings to create a better way to help low-income families out of poverty and slums. Before enacting an SOI law the government should consider potential rent increases based on the region they are in. A non-metro county in the northeastern region of the United States would see far better results from SOI laws than a metro county in the south. Places that already have SOI laws in place should further consider all of the consequences of having the policy in place. More individualized research can be done on a case-by-case basis to establish the social costs of SOI laws so lawmakers can compare them to the benefits for their low-income populations.

VIII. References

Bell, A., Sard, B., and Koepnick, B. (2018). *Prohibiting Discrimination Against Renters Using Housing Vouchers Improves Results.* Accessed from https://www.nhlp.org/wp-content/uploads/CBPP-2018-report-on-SOI-laws.pdf

Bureau of Economic Analysis. (2021). *Regional Economic Accounts: Download.* Accessed from https://apps.bea.gov/regional/downloadzip.cfm. Data extracted on March 8, 2023.

Chicago Lawyers' Committee. (2018). *Fair Housing Testing Project for the Chicago Commission on Human Relations.* Accessed from https://www.chicago.gov/content/dam/city/depts/cchr/supp_info/FairHousingReportAUG2018.pdf

Cunningham, M., Galvez, M., Aranda, C. L., Santos, R., Wissoker, D., Oneto, A., Pitingolo, A., and Crawford, J. (2018). *A Pilot Study of Landlord Acceptance of Housing Choice Vouchers.* Accessed from https://www.huduser.gov/portal/portal/sites/default/files/pdf/Landlord-Acceptance-of-Housing-Choice-Vouchers.pdf

DeVault, J. (2021). *Average Apartment Size in the United States: the Complete Guide.* Accessed from https://getflex.com/blog/average-apartment-size/

Ellen, I. G., O'Regan, and K. Harwood, K. WH. (2022). *Advancing Choice in the Housing Choice Voucher Program: Source of Income Protections and Locational Outcomes.* Accessed from https://deliverypdf.ssrn.com/delivery.php?ID=8650730710820880991100960761060861231180750370490860251061200891121150070981120831030200130211000080510300

00127116085101020110051055054015028082068009031002023009044056096094092070096085001104127087127108069117015095112091004065006108127083112005&EXT=pdf&INDEX=TRUE

Finker, M. and Buron L. (2001). *Study on Section 8 Voucher Success Rates.* Accessed from https://www.huduser.gov/publications/pdf/sec8success.pdf

Freeman, L. (2011). *The Impact of Source of Income Laws on Voucher Utilization and Locational Outcomes.* Accessed from https://www.nhlp.org/wp-content/uploads/HUD-Impact-of-Source-of-Income-Laws-on-Voucher-Utilization-and-Locational-Outcomes-Feb.-24-2011.pdf

Freeman, L. and Li, Y. (2013). *Do Source of Income Anti-Discrimination Laws Facilitate Access to Less Disadvantaged Neighborhoods?* Accessed from https://www.researchgate.net/publication/256405326_Do_Source_of_Income_SOI_Anti-Discrimination_Laws_Facilitate_Access_to_Better_Neighborhoods

Greene, S., Ramakrishnan, K., and Morales-Burnett, J. (2020). *State Preemption of Local Housing Protections.* Accessed from https://www.urban.org/sites/default/files/publication/102981/state-preemption-of-local-housing-protections_1.pdf

National Multifamily Housing Council. (2021). *Source of Income Laws by State, County and City.* Accessed from source-of-income-laws-by-state-county-and-city-chart.pdf (nmhc.org)

Safier, R. (2022). *Risks of Renting to Section 8 Tenants.* Accessed from https://www.thebalancemoney.com/renting-to-section-8-tenants-disadvantages-2124975

Susin, S. (2002). *Rent Vouchers and the Price of Low-Income Housing.* Accessed from https://www.sciencedirect.com/science/article/abs/pii/S0047272701000810

Tighe, J. R., Hatch, M. E., and Mead, J. (2017). *Source of Income Discrimination and Fair Housing Policy.* Accessed from https://www.nhlp.org/wp-content/uploads/Source-of-Income-Discrimination-and-Fair-Housing-Policy-by-Tighe-and.pdf

Urban Institute. (2021). *State and Local Voucher Protection Laws.* Accessed from https://datacatalog.urban.org/dataset/state-and-local-voucher-protection-laws. Data extracted on February 17, 2023.

U.S. Bureau of Labor Statistics. (2005). *Appendix D – USPS State Abbreviations and FIPS Codes.* Accessed from Appendix D - USPS State Abbreviations and FIPS Codes : U.S. Bureau of Labor Statistics (bls.gov). Data extracted on March 1, 2023.

U.S. Bureau of Labor Statistics. (2021). Accessed from https://data.bls.gov/pdq/SurveyOutputServlet. Data extracted on February 17, 2023.

U.S. Department of Housing and Urban Development. (2021). *Fair Market Rents (40th Percentile Rents).* Accessed from https://www.huduser.gov/portal/datasets/fmr.html#history. Data extracted on January 23, 2023.

U. S. Department of Housing and Urban Development. (Accessed 2023). *Housing Discrimination Under the Fair Housing Act.* Accessed from Housing Discrimination Under the Fair Housing Act | HUD.gov / U.S. Department of Housing and Urban Development (HUD)

IX. Appendix: SAS Code

```
proc import datafile="/home/u60658046/MySAS/FMR_2Bed_Edited.xlsx"
                                        out=work.data dbms=xlsx replace;
        getnames=yes;
        sheet=FMR_2BED_1983_2023;
run;


proc import datafile="/home/u60658046/MySAS/FMR_2Bed_Edited.xlsx"
                                        out=work.year dbms=xlsx replace;
        getnames=yes;
        sheet=Sheet2;
run;


data cleandata;
        set data;
        keep state fips name msa21 census_region fmr83_2 fmr85_2      fmr86_2
        fmr87_2                          fmr88_2    fmr89_2    fmr90_2    fmr91_2
        fmr92_2                          fmr93_2    fmr94_2    fmr95_2    fmr96_2
        fmr97_2                          fmr98_2    fmr99_2    fmr00_2    fmr01_2
```

```
    fmr02_2     fmr03_2   fmr04_2   fmr05_2   fmr06_2
    fmr07_2     fmr08_2   fmr09_2   fmr10_2   fmr11_2
    fmr12_2     fmr13_2   fmr14_2   fmr15_2   fmr16_2
    fmr17_2     fmr18_2   fmr19_2   fmr20_2   fmr21_2
    fmr22_2     fmr23_2;
    where state ne .;
run;

proc sort data=cleandata;
    by state fips name msa21;
    run;

proc transpose data=cleandata out=trandata;
    var fmr83_2 fmr85_2   fmr86_2   fmr87_2   fmr88_2
    fmr89_2     fmr90_2   fmr91_2   fmr92_2   fmr93_2
    fmr94_2     fmr95_2   fmr96_2   fmr97_2   fmr98_2
    fmr99_2     fmr00_2   fmr01_2   fmr02_2   fmr03_2
    fmr04_2     fmr05_2   fmr06_2   fmr07_2   fmr08_2
    fmr09_2     fmr10_2   fmr11_2   fmr12_2   fmr13_2
    fmr14_2     fmr15_2   fmr16_2   fmr17_2   fmr18_2
    fmr19_2     fmr20_2   fmr21_2   fmr22_2   fmr23_2;
```

```
    by state fips name msa21 census_region;
    run;

data cleandatat;
    set trandata;
    fmr=col1;
    run;

proc sort data=cleandatat;
    by _NAME_;
    run;

    proc sort data=year;
    by _NAME_;
    run;

data cleandatay;
    merge cleandatat year;
```

```
    by _NAME_;
    run;

data cleandata2;
    set cleandatay;
    where 1983<year<2022 and 0<state<57;
    run;

proc sort data=cleandata2;
    by state fips name year;
    run;

proc import datafile="/home/u60658046/MySAS/State and Local Voucher Protection Laws
Dataset v.2 Final 9.13.21_0.xlsx"
                        out=work.fips dbms=xlsx replace;
    getnames=yes;
    sheet=Sheet1;
run;
```

```
proc sort data=fips;

	by state;

	run;



data cleandata3;

	merge cleandata2 fips;

	by state;

	run;



proc sort data=cleandata3;

	by state fips name year;

	run;



proc import datafile="/home/u60658046/MySAS/income data.xlsx"

					out=work.income dbms=xlsx replace;

	getnames=yes;

	sheet=Sheet1;

run;
```

```
data income2;
	set income;
	state=stfips;
	run;

proc sort data=income2;
	by state name;
	run;

proc transpose data=income2 out=incomet;
	var _1985 _1986 _1987 _1988 _1989 _1990 _1991 _1992 _1993 _1994 _1995 _1996
_1997 _1998 _1999 _2000 _2001 _2002 _2003 _2004 _2005 _2006 _2007 _2008 _2009 _2010
_2011 _2012 _2013 _2014 _2015 _2016 _2017 _2018 _2019 _2020 _2021;
	by state name;
	id newname;
	run;

proc import datafile="/home/u60658046/MySAS/FMR_2Bed_Edited.xlsx"
```

```
                    out=work.year2 dbms=xlsx replace;
    getnames=yes;
    sheet=Sheet3;
run;

proc sort data=incomet;
    by _NAME_;
    run;

proc sort data=year2;
    by _NAME_;
    run;

data incomenew;
    merge incomet year2;
    by _NAME_;
    run;
```

```
proc import datafile="/home/u60658046/MySAS/employment.xlsx"
                                        out=work.emp dbms=xlsx replace;
        getnames=yes;
        sheet=Sheet1;
run;

data emp2;
        set emp;
        state=stfips;
        run;

proc import datafile="/home/u60658046/MySAS/income data.xlsx"
                                        out=work.names dbms=xlsx replace;
        getnames=yes;
        sheet=Sheet2;
run;

proc sort data=emp2;
```

```
    by GeoName;
    run;

proc sort data=names;
    by GeoName;
    run;

data empm;
    merge emp2 names;
    by GeoName;
    run;

proc sort data=empm;
    by state name;
    run;

data empdel;
    set empm;
```

```
	where varname ne "ignore";
	run;

proc transpose data=empdel out=emp3 (rename=(col1=totemp)keep= state name _NAME_
col1);
	var _1985 _1986 _1987 _1988 _1989 _1990 _1991 _1992 _1993 _1994 _1995 _1996
_1997 _1998 _1999 _2000 _2001 _2002 _2003 _2004 _2005 _2006 _2007 _2008 _2009 _2010
_2011 _2012 _2013 _2014 _2015 _2016 _2017 _2018 _2019 _2020 _2021;
	by state name;
	run;

data emp4;
	set emp3;
	if name="Fremont County" and state=. then state=16;
	else state=state;
	run;

proc sort data=emp4;
	by _NAME_;
```

```
    run;

data empnew;
    merge emp4 year2;
    by _NAME_;
    run;

proc sort data=empnew;
    by state name year;
    run;

proc sort data=cleandata3;
    by state name year;
    run;

proc sort data=incomenew;
    by state name year;
    run;
```

```
data fulldata;

	merge incomenew cleandata3 empnew;

	by state name year;

	run;


data fulldatanew;

	set fulldata;

	cpop=input(pop,9.);

	pcinc=input(pcincome,9.);

	totinc=input(totincome,9.);

	emp=input(totemp,9.);

	run;


data fulldatafinal;

	set fulldatanew;

	emppctpop=emp/cpop;

	where 0<state<57;
```

```
    spcounty=cats(state, name);

    if substr(msa21,1,5)="METRO" then metro=1;

    else metro=0;

    run;


data treat;

    set fulldatafinal;

    if state=25 then treatment=1;

    else if state=23 then treatment=1;

    else if state=34 then treatment=1;

    else if state=38 then treatment=1;

    else if state=40 then treatment=1;

    else if state=50 then treatment=1;

    else if state=9 then treatment=1;

    else if state=49 then treatment=1;

    else if state=41 then treatment=1;

    else if state=53 then treatment=1;

    else if state=6 then treatment=1;
```

```
    else if state=36 then treatment=1;
    else if state=8 then treatment=1;
    else if state=24 then treatment=1;
    else if state=51 then treatment=1;
    else if state=44 then treatment=1;
    else if name="Dane County" then treatment=1;
    else if name="Miami-Dade County" and state=12 then treatment=1;
    else if name="Broward County" and state=12 then treatment=1;
    else if name="Alachua County" and state=12 then treatment=1;
    else if name="Hillsborough County" and state=12 then treatment=1;
    else if name="Cook County" and state=17 then treatment=1;
    else if name="Milwaukee County" and state=55 then treatment=1;
    else treatment=0;
    run;

data did;
    set treat;
    if state=25 and year>1970 then did=1;
```

```
else if state=23 and year>1974 then did=1;

else if state=34 and year>1980 then did=1;

else if state=38 and year>1982 then did=1;

else if state=40 and year>1984 then did=1;

else if state=50 and year>1986 then did=1;

else if state=9 and year>1988 then did=1;

else if state=49 and year>1992 then did=1;

else if state=41 and year>2012 then did=1;

else if state=53 and year>2017 then did=1;

else if state=6 and year>2019 then did=1;

else if state=36 and year>2018 then did=1;

else if state=8 and year>2020 then did=1;

else if state=24 and year>2019 then did=1;

else if state=51 and year>2019 then did=1;

else if state=44 and year>2020 then did=1;

else if name="Dane County" and year>1987 then did=1;

else if name="Montgomery County" and state=24 and year>1990 then did=1;

else if name="Howard County" and state=24 and year>1991 then did=1;
```

```
else if name="Frederick County" and state=24 and year>2008 then did=1;
else if name="Anne Arundel County" and state=24 and year>2018 then did=1;
else if name="Baltimore County" and state=24 and year>1990 then did=1;
else if name="Nassau County" and state=36 and year>2006 then did=1;
else if name="Westchester County" and state=36 and year>2012 then did=1;
else if name="Suffolk County" and state=36 and year>2014 then did=1;
else if name="Erie County" and state=36 and year>2017 then did=1;
else if name="King County" and state=53 and year>2005 then did=1;
else if name="Miami-Dade County" and state=12 and year>2008 then did=1;
else if name="Broward County" and state=12 and year>2016 then did=1;
else if name="Alachua County" and state=12 and year>2018 then did=1;
else if name="Hillsborough County" and state=12 and year>2016 then did=1;
else if name="Cook County" and state=17 and year>2012 then did=1;
else if name="Marin County" and state=6 and year>2016 then did=1;
else if name="Santa Clara County" and state=6 and year>2016 then did=1;
else if name="Alameda County" and state=6 and year>2018 then did=1;
else if name="Los Angeles County" and state=6 and year>2016 then did=1;
else if name="Milwaukee County" and state=55 and year>2017 then did=1;
```

```
else did=0;

run;


ods output ParameterEstimates=PEforModel1 DataSummary=ObsModel1
FitStatistics=AdjRsqModel1  Effects=OverallSigModel1;

proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;


ods output ParameterEstimates=PEforModel2 DataSummary=ObsModel2
FitStatistics=AdjRsqModel2  Effects=OverallSigModel2;

proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=1;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;
```

```
ods output ParameterEstimates=PEforModel3 DataSummary=ObsModel3
FitStatistics=AdjRsqModel3  Effects=OverallSigModel3;

proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=0;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;


Data Table_Long;

	length Model $10; /* Makes sure the variable Model has the right length and its values
are not truncated */

	length Parameter $30; /* Makes sure the variable Parameter has the right length and its
values are not truncated */

	set PEforModel1 PEforModel2 PEforModel3 indsname=M; /*"indsname" creates an
indicator variable (here I call it "M") that tracks the name of databases use in the "set" statement
*/

	keep Model Parameter EditedResults;

	if				M="WORK.PEFORMODEL1" then Model="Model1";

					else if M="WORK.PEFORMODEL2" then
Model="Model2";
```

```
else if M="WORK.PEFORMODEL3" then
Model="Model3";
else if M="WORK.PEFORMODEL4" then
Model="Model4";
Where Estimate ne 0;


if Probt le 0.01 then Star="***";
else if Probt le 0.05 then Star="**";
else if Probt le 0.1 then Star="*";


Results=Estimate;
EditedResults=Cats(put(Results,comma16.4),Star);
output;


Results=stderr;
EditedResults=Cats("(",put(Results,comma16.4),")");
output;
```

```
run;

data remtable;
	set Table_Long;
	if substr(Parameter,1,4)="Year" then cut=0;
	else if substr(Parameter,1,8)="spcounty" then cut=0;
	else cut=1;
	run;

proc sort data=remtable out=Table_Long_Sorted;
	by Model Parameter;
	where cut=1;
run;

data Model1Results(rename=(EditedResults=Model1))
Model2Results(rename=(EditedResults=Model2))
Model3Results(rename=(EditedResults=Model3));
	set Table_Long_Sorted;
	if Model="Model1" then output Model1Results;
```

```
	if Model="Model2" then output Model2Results;
	if Model="Model3" then output Model3Results;
	drop Model;
run;


data Table_Wide;
	merge Model1Results Model2Results Model3Results;
	by Parameter;
	if mod(_n_,2)=1 then Regressors=Parameter;


	length Order 3;
	if Parameter="Intercept" then Order=6;
					else if Parameter="did" then Order=2;
					else if Parameter="cpop" then Order=3;
					else if Parameter="pcinc" then Order=4;
					else if Parameter="emppctpop" then Order=5;
					else Order=100;
```

```
run;

proc sort data=Table_Wide out=Table_Wide_Sorted(drop=Order Parameter);
	by Order;
run;

data NumofObs(keep=Label1 Model1 Model2 Model3 Model4);
	merge ObsModel1(rename=(nvalue1=NVModel1))
ObsModel2(rename=(nvalue1=NVModel2)) ObsModel3(rename=(nvalue1=NVModel3));
	by Label1;
	where Label1="Number of Observations";
	Model1=put(NVModel1,comma16.0);
	Model2=put(NVModel2,comma16.0);
	Model3=put(NVModel3,comma16.0);
run;

/* The row for Adj R-sq */
Data AdjRsq;
```

```
	merge AdjRsqModel1(rename=(cvalue1=Model1))
AdjRsqModel2(rename=(cvalue1=Model2)) AdjRsqModel3(rename=(cvalue1=Model3));
	by Label1;
	Where Label1="Adjusted R-Square";
	drop nvalue1;
run;


/* The row for Overall Significance */
data OSM1(rename=(EditedValue=Model1)) OSM2(rename=(EditedValue=Model2))
OSM3(rename=(EditedValue=Model3));
	set OverallSigModel1 OverallSigModel2 OverallSigModel3 indsname=M;
	Where Effect="Model";
	Label1="Overall Significance";

	if ProbF le 0.01 then Star="***";
				else if ProbF le 0.05 then Star="**";
				else if ProbF le 0.1 then Star="*";

	EditedValue=Cats(Put(FValue,comma16.2),Star);
```

```
	if M="WORK.OVERALLSIGMODEL1" then output OSM1;
	else if M="WORK.OVERALLSIGMODEL2" then output OSM2;
	else if M="WORK.OVERALLSIGMODEL3" then output OSM3;
	keep Label1 EditedValue;
run;

data overallsig;
	merge OSM1 OSM2 OSM3;
	by Label1;
	run;

/* Combine all rows for other statistics */
Data OtherStat;
	set NumofObs AdjRsq overallsig;
	rename Label1=Regressors;
Run;
```

```
/* Step 5: Add other statistics to the results table */

Data Table_Wide_Sorted_WithStat;

	set Table_Wide_Sorted OtherStat;

run;



ods excel file="/home/u60658046/MySAS/regresstable.xlsx" options(Embedded_Titles="ON"
Embedded_Footnotes="ON"); /*Use the path to your MySAS folder */

Title "Table 3: County Level Regression Results";

footnote justify=left "Note: robust standard errors are in parentheses. *, **, and *** indicate

                                                            10%, 5%, and 1%

significance levels, respectively.";

proc print data=Table_Wide_Sorted_WithStat noobs;

	var Regressors;

	var model1 model2 model3;

run;

ods excel close;



/*NE*/
```

```
ods output ParameterEstimates=PEforModel1 DataSummary=ObsModel1
FitStatistics=AdjRsqModel1  Effects=OverallSigModel1;

proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=1 and census_region=1;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;



ods output ParameterEstimates=PEforModel2 DataSummary=ObsModel2
FitStatistics=AdjRsqModel2  Effects=OverallSigModel2;

proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=0 and census_region=1;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;



/*MW*/

ods output ParameterEstimates=PEforModel3 DataSummary=ObsModel3
FitStatistics=AdjRsqModel3  Effects=OverallSigModel3;
```

```
proc surveyreg data=did plots=none;
	class spcounty year /ref=first;
	where year>1983 and state<57 and metro=1 and census_region=2;
	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;
	run;

ods output ParameterEstimates=PEforModel4 DataSummary=ObsModel4
FitStatistics=AdjRsqModel4  Effects=OverallSigModel4;
proc surveyreg data=did plots=none;
	class spcounty year /ref=first;
	where year>1983 and state<57 and metro=0 and census_region=2;
	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;
	run;

/*S*/
ods output ParameterEstimates=PEforModel5 DataSummary=ObsModel5
FitStatistics=AdjRsqModel5  Effects=OverallSigModel5;
proc surveyreg data=did plots=none;
	class spcounty year /ref=first;
```

```
	where year>1983 and state<57 and metro=1 and census_region=3;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;


ods output ParameterEstimates=PEforModel6 DataSummary=ObsModel6
FitStatistics=AdjRsqModel6  Effects=OverallSigModel6;

proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=0 and census_region=3;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;


/*W*/

ods output ParameterEstimates=PEforModel7 DataSummary=ObsModel7
FitStatistics=AdjRsqModel7  Effects=OverallSigModel7;

proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=1 and census_region=4;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;
```

```
run;

ods output ParameterEstimates=PEforModel8 DataSummary=ObsModel8
FitStatistics=AdjRsqModel8  Effects=OverallSigModel8;

proc surveyreg data=did plots=none;

    class spcounty year /ref=first;

    where year>1983 and state<57 and metro=0 and census_region=4;

    model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

    run;

Data Table_Long;

    length Model $10; /* Makes sure the variable Model has the right length and its values
are not truncated */

    length Parameter $30; /* Makes sure the variable Parameter has the right length and its
values are not truncated */

    set PEforModel1 PEforModel2 PEforModel3 PEforModel4 PEforModel5 PEformodel6
PEforModel7 PEforModel8 indsname=M; /*"indsname" creates an indicator variable (here I call
it "M") that tracks the name of databases use in the "set" statement */

    keep Model Parameter EditedResults;
```

```
if M="WORK.PEFORMODEL1" then Model="Model1";
    else if M="WORK.PEFORMODEL2" then
Model="Model2";
    else if M="WORK.PEFORMODEL3" then
Model="Model3";
    else if M="WORK.PEFORMODEL4" then
Model="Model4";
    else if M="WORK.PEFORMODEL5" then
Model="Model5";
    else if M="WORK.PEFORMODEL6" then
Model="Model6";
    else if M="WORK.PEFORMODEL7" then
Model="Model7";
    else if M="WORK.PEFORMODEL8" then
Model="Model8";
Where Estimate ne 0;

if Probt le 0.01 then Star="***";
    else if Probt le 0.05 then Star="**";
    else if Probt le 0.1 then Star="*";
```

```
    Results=Estimate;

    EditedResults=Cats(put(Results,comma16.2),Star);

    output;



    Results=stderr;

    EditedResults=Cats("(",put(Results,comma16.2),")");

    output;



run;



data remtable;

    set Table_Long;

    if substr(Parameter,1,4)="Year" then cut=0;

    else if substr(Parameter,1,8)="spcounty" then cut=0;

    else cut=1;

    run;
```

```
proc sort data=remtable out=Table_Long_Sorted;
	by Model Parameter;
	where cut=1;
run;


data Model1Results(rename=(EditedResults=Model1))
Model2Results(rename=(EditedResults=Model2))
Model3Results(rename=(EditedResults=Model3))
Model4Results(rename=(EditedResults=Model4))
Model5Results(rename=(EditedResults=Model5))
Model6Results(rename=(EditedResults=Model6))
Model7Results(rename=(EditedResults=Model7))
Model8Results(rename=(EditedResults=Model8));
	set Table_Long_Sorted;
	if Model="Model1" then output Model1Results;
	if Model="Model2" then output Model2Results;
	if Model="Model3" then output Model3Results;
	if Model="Model4" then output Model4Results;
	if Model="Model5" then output Model5Results;
```

```
	if Model="Model6" then output Model6Results;

	if Model="Model7" then output Model7Results;

	if Model="Model8" then output Model8Results;

	drop Model;

run;



data Table_Wide;

	merge Model1Results Model2Results Model3Results Model4Results Model5Results
Model6Results Model7Results Model8Results;

	by Parameter;

	if mod(_n_,2)=1 then Regressors=Parameter;



	length Order 3;

	if Parameter="Intercept" then Order=6;

					else if Parameter="did" then Order=2;

					else if Parameter="cpop" then Order=3;

					else if Parameter="pcinc" then Order=4;

					else if Parameter="emppctpop" then Order=5;

					else Order=100;
```

```
run;

proc sort data=Table_Wide out=Table_Wide_Sorted(drop=Order Parameter);
	by Order;
run;

data NumofObs(keep=Label1 Model1 Model2 Model3 Model4 Model5 Model6 Model7
Model8);
	merge ObsModel1(rename=(nvalue1=NVModel1))
ObsModel2(rename=(nvalue1=NVModel2)) ObsModel3(rename=(nvalue1=NVModel3))
ObsModel4(rename=(nvalue1=NVModel4)) ObsModel5(rename=(nvalue1=NVModel5))
ObsModel6(rename=(nvalue1=NVModel6)) ObsModel7(rename=(nvalue1=NVModel7))
ObsModel8(rename=(nvalue1=NVModel8));
	by Label1;
	where Label1="Number of Observations";
	Model1=put(NVModel1,comma16.0);
	Model2=put(NVModel2,comma16.0);
	Model3=put(NVModel3,comma16.0);
```

```
	Model4=put(NVModel4,comma16.0);
	Model5=put(NVModel5,comma16.0);
	Model6=put(NVModel6,comma16.0);
	Model7=put(NVModel7,comma16.0);
	Model8=put(NVModel8,comma16.0);
run;


/* The row for Adj R-sq */
Data AdjRsq;
	merge AdjRsqModel1(rename=(cvalue1=Model1))
AdjRsqModel2(rename=(cvalue1=Model2)) AdjRsqModel3(rename=(cvalue1=Model3))
AdjRsqModel4(rename=(cvalue1=Model4)) AdjRsqModel5(rename=(cvalue1=Model5))
AdjRsqModel6(rename=(cvalue1=Model6)) AdjRsqModel7(rename=(cvalue1=Model7))
AdjRsqModel8(rename=(cvalue1=Model8));
	by Label1;
	Where Label1="Adjusted R-Square";
	drop nvalue1;
run;
```

```
/* The row for Overall Significance */

data OSM1(rename=(EditedValue=Model1)) OSM2(rename=(EditedValue=Model2))
OSM3(rename=(EditedValue=Model3)) OSM4(rename=(EditedValue=Model4))
OSM5(rename=(EditedValue=Model5)) OSM6(rename=(EditedValue=Model6))
OSM7(rename=(EditedValue=Model7)) OSM8(rename=(EditedValue=Model8));
	set OverallSigModel1 OverallSigModel2 OverallSigModel3 OverallSigModel4
OverallSigModel5 OverallSigModel6 OverallSigModel7 OverallSigModel8 indsname=M;
	Where Effect="Model";
	Label1="Overall Significance";


	if ProbF le 0.01 then Star="***";
					else if ProbF le 0.05 then Star="**";
					else if ProbF le 0.1 then Star="*";


	EditedValue=Cats(Put(FValue,comma16.2),Star);


	if M="WORK.OVERALLSIGMODEL1" then output OSM1;
	else if M="WORK.OVERALLSIGMODEL2" then output OSM2;
	else if M="WORK.OVERALLSIGMODEL3" then output OSM3;
```

```
	else if M="WORK.OVERALLSIGMODEL4" then output OSM4;
	else if M="WORK.OVERALLSIGMODEL5" then output OSM5;
	else if M="WORK.OVERALLSIGMODEL6" then output OSM6;
	else if M="WORK.OVERALLSIGMODEL7" then output OSM7;
	else if M="WORK.OVERALLSIGMODEL8" then output OSM8;
	keep Label1 EditedValue;
run;


data overallsig;
	merge OSM1 OSM2 OSM3 OSM4 OSM5 OSM6 OSM7 OSM8;
	by Label1;
	run;


/* Combine all rows for other statistics */
Data OtherStat;
	set NumofObs AdjRsq overallsig;
	rename Label1=Regressors;
Run;
```

```
/* Step 5: Add other statistics to the results table */

Data Table_Wide_Sorted_WithStat;

	set Table_Wide_Sorted OtherStat;

run;



ods excel file="/home/u60658046/MySAS/regionlevel.xlsx" options(Embedded_Titles="ON"
Embedded_Footnotes="ON"); /*Use the path to your MySAS folder */

Title "Table 4: Regression Results by Region and Metro Status";

footnote justify=left "Note: robust standard errors are in parentheses. *, **, and *** indicate

                                                10%, 5%, and 1%

significance levels, respectively.";

proc print data=Table_Wide_Sorted_WithStat noobs;

	var Regressors;

	var model1 model2 model3 model4 model5 model6 model7 model8;

run;

ods excel close;



proc surveyreg data=did plots=none;
```

```
	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=1 and census_region ne 2;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;


proc surveyreg data=did plots=none;

	class spcounty year /ref=first;

	where year>1983 and state<57 and metro=0 and census_region ne 2;

	model fmr=did cpop pcinc emppctpop spcounty year /solution adjrsq;

	run;


proc ttest data=did plots=none;

	var cpop pcinc emppctpop;

	class treatment;

	run;


proc sort data=did;

	by treatment year;
```

```
run;

ods output summary=didavg;
proc means data=did;
	var fmr;
	by treatment year;
	run;

proc sort data=did;
	by year;
	run;

ods output summary=didavg2;
proc means data=did;
	var fmr cpop pcinc emppctpop;
	by year;
	run;
```

```
title "Figure 3: Average Fair Market Rent for Treatment and Control Groups";

proc sgplot data=didavg noautolegend;

	footnote1 justify=left "Source: U.S. Department of Housing and Urban Development (2021) and Urban Institute (2021).";

	footnote2 justify=left "Notes: Data from 1985-2021. The red line shows counties that do not have a Source of Income law in a given year, the blue line shows counties that have a Source of Income law in a given year. All data points are averages of Fair Market Rent across all counties in a given year.";

   styleattrs datacontrastcolors=(red blue);

   series x=year y=fmr_mean /group=treatment;

   yaxis label="Fair Market Rent";

   refline 1995/axis=x;



title "Figure 2: Average Employees as a Percentage of Population and Per Capita Income";

proc sgplot data=didavg2 noautolegend;

	footnote1 j=left "Source: U.S. Bureau of Labor Statistics (2021).";

	footnote2 j=left "Notes: Data from 1985-2021. The red line represents employees as a percentage of population, the blue line represents per capita income. All data points are averages of variables across all counites in a given year.";
```

```
    styleattrs datacontrastcolors=(red blue);

    series x=year y=emppctpop_mean;

    series x=year y=pcinc_mean /y2axis;

    y2axis label="Per Capita Income (In Dollars)";

    yaxis label="Employees as a Percentage of Population";




ods output summary=means;

proc means data=did;

        var fmr cpop pcinc emppctpop;

        run;


ods excel file="/home/u60658046/MySAS/descstats.xlsx" options(Embedded_Titles="ON"
Embedded_Footnotes="ON"); /*Use the path to your MySAS folder */

Title "Table 1: Descriptive Statistics";

footnote1 justify=left "Source: U.S. Department of Housing and Urban Development (2021) and
own calculations.";

footnote2 justify=left "Notes: Statistics are from all counties in all states from years 1985-2021.
All measurements are rounded to the nearest whole number.";
```

```
proc print data=means noobs;

run;

ods excel close;



proc freq data=did;

	where emppctpop>.9;

	tables name;

	run;



proc freq data=did;

	tables year;

	run;



data partrend;

	set did;

	where year<1996;

	year=year-1984;

	y2=year*year;
```

```
y3=year*year*year;

y4=year*year*year*year;

y5=year*year*year*year*year;

y6=year*year*year*year*year*year;

if state=25 then del=1;

else if state=23  then del=1;

else if state=34  then del=1;

else if state=38  then del=1;

else if state=40  then del=1;

else if state=50 then del=1;

else if state=9  then del=1;

else if state=49 then del=1;

else if name="Dane County"  then del=1;

else if name="Montgomery County" then del=1;

else if name="Howard County" then del=1;

else del=0;

run;
```

```
proc surveyreg data=partrend plots=none;

	model fmr=treatment year y2 y3 treatment*year treatment*y2 treatment*y3 cpop pcinc
emppctpop /solution adjrsq;

	where del=0;

	run;


proc surveyreg data=partrend plots=none;

	model fmr=treatment year y2 y3 y4 treatment*year treatment*y2 treatment*y3
treatment*y4 cpop pcinc emppctpop /solution adjrsq;

	where del=0;

	run;


ods output ParameterEstimates=partrendpe;

proc surveyreg data=partrend plots=none;

	model fmr=treatment year y2 y3 y4 y5 treatment*year treatment*y2 treatment*y3
treatment*y4 treatment*y5 cpop pcinc emppctpop /solution adjrsq;

	where del=0;

	run;
```

```
ods output ParameterEstimates=partrendpe;

proc surveyreg data=partrend plots=none;

	model fmr=treatment year y2 y3 y4 y5 y6 treatment*year treatment*y2 treatment*y3
treatment*y4 treatment*y5 treatment*y6 cpop pcinc emppctpop /solution adjrsq;

	where del=0;

	run;


Data Table_Long;

	length Model $10; /* Makes sure the variable Model has the right length and its values
are not truncated */

	length Parameter $30; /* Makes sure the variable Parameter has the right length and its
values are not truncated */

	set partrendpe indsname=M; /*"indsname" creates an indicator variable (here I call it
"M") that tracks the name of databases use in the "set" statement */

	keep Model Parameter EditedResults;

	if				M="WORK.PEFORMODEL1" then Model="Model1";

					else if M="WORK.PEFORMODEL2" then
Model="Model2";

					else if M="WORK.PEFORMODEL3" then
Model="Model3";
```

```
                    else if M="WORK.PEFORMODEL4" then
Model="Model4";
    Where Estimate ne 0;

    if Probt le 0.01 then Star="***";
                    else if Probt le 0.05 then Star="**";
                    else if Probt le 0.1 then Star="*";

    Results=Estimate;
    EditedResults=Cats(put(Results,comma16.3),Star);
    output;

    Results=stderr;
    EditedResults=Cats("(",put(Results,comma16.3),")");
    output;

run;
```

```
proc sort data=Table_Long out=Table_Long_Sorted;
	by Model Parameter;
run;


data Table_Wide;
	set Table_Long_Sorted;
	if mod(_n_,2)=1 then Regressors=Parameter;


	length Order 3;
	if Parameter="treatment" then Order=1;
						else if Parameter="Year" then Order=2;
						else if Parameter="y2" then Order=3;
						else if Parameter="y3" then Order=4;
						else if Parameter="y4" then Order=5;
						else if Parameter="y5" then Order=6;
						else if Parameter="y6" then Order=7;
						else if Parameter="treatment*Year" then Order=8;
						else if Parameter="treatment*y2" then Order=9;
```

```
else if Parameter="treatment*y3" then Order=10;

else if Parameter="treatment*y4" then Order=11;

else if Parameter="treatment*y5" then Order=12;

else if Parameter="treatment*y6" then Order=13;

else Order=100;


run;


proc sort data=Table_Wide out=Table_Wide_Sorted(drop=Order Parameter);

    by Order;

run;


ods excel file="/home/u60658046/MySAS/partrendtable.xlsx" options(Embedded_Titles="ON"
Embedded_Footnotes="ON"); /*Use the path to your MySAS folder */

Title "Table 2: Parallel Trend Test Results";

footnote justify=left "Note: robust standard errors are in parentheses. *, **, and *** indicate

                                                  10%, 5%, and 1%

significance levels, respectively.";

proc print data=Table_Wide_Sorted noobs;
```

```
        var Regressors;

        var EditedResults;

run;

ods excel close;
```