The Impact of New Jersey's Urban Enterprise Zones on Local Employment: A Synthetic Control Approach

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Abstract

The designation of enterprise zones is a place-based policy that seeks to revitalize economically blighted areas. The literature on place-based policies has found mixed results regarding their effects on local payroll employment. This paper examines the causal effects of five of New Jersey's Urban Enterprise Zones (UEZs) on local payroll employment. The five municipalities are Bayonne, Gloucester City, New Brunswick, Roselle Borough, and The Wildwoods (Wildwood City, Wildwood Crest, North Wildwood, and West Wildwood). All were designated as UEZs by the state in the 2000s, and none have been previously evaluated in the academic literature. The program offers reduced local sales tax, tax credits for newly hired employees, subsidized unemployment insurance costs, worker training assistance, and tax-free purchases on capital equipment and facilities. I use a synthetic control approach with the industrial composition of local firms and poverty rate as the covariate group and find no impact of UEZ status on local employment in the treatment periods of the five areas. These results suggest that enterprise zones may not be effective job creators for treated areas, particularly for those zones that were added long after the program's inception.

Keywords: Place-based policies, Employment, Enterprise zones

JEL Codes: J48, R11, R12, R58

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1 Introduction

Place-based policies have been implemented throughout Europe and North America since the end of the Second World War to stimulate economic development in blighted areas. In charting the rise of economic development as a widespread practice and field of study, Deller & Goetz (2009) suggest that a role for government in spurring economic activity evolved out of several perceptions in the immediate postwar period. The memory of the Great Depression raised questions about the stability and resiliency of private markets while recent central planning successes of the U.S. Marshall Plan, as well as in Japan and Soviet Russia, suggested government intervention could aid economic growth. Following the first wave of economic development policy which emphasized smokestack chasing or luring industry to a targeted locality, a second wave emerged in the 1970s that encouraged home-grown activity.

Rather than chasing large companies to relocate as in the previous wave, the new set of policies focused on the expansion and retention of small and medium firms that were already located in a blighted area. Enterprise Zones are an example of such a policy in that they rely on tax incentives to local firms for hiring, capital investment, and facility expansion. Hall (1977) noted that tax incentives could be used to encourage employment growth in blighted areas, which served as a blueprint for zones that would be established in the United Kingdom and the United States in the 1980s. Neumark & Simpson (2015) notes that these zones have been designated in at least 40 states in one form or another, as well as at the federal level, since the 1970s. A notable early adopter of the enterprise zone model, New Jersey established their Urban Enterprise Zone program (UEZ) in 1983 to encourage job creation in areas with high unemployment rates. New Jersey's program consisted of a 50 percent reduction in sales tax, tax-free purchases of capital equipment and facilities, and hiring subsidies for qualifying businesses (New Jersey Department of Community Affairs, 2019).

Most enterprise zones broadly target economic development as the intended outcome, with criteria encompassing but not limited to poverty reduction, business formation, unemployment reduction, and employment growth. Several studies of prominent enterprise zones have focused primarily on whether the policies were successful in encouraging employment growth. In a literature review of federal and state enterprise zone programs, Neumark & Simpson (2015) suggest that enterprise zone effectiveness in job creation ranges from nonexistent to limited. Freedman (2013) finds a positive but largely insignificant effect (3-8 percent per year) on payroll employment growth for Texas' enterprise zone employers. Neumark & Kolko (2010) and O'Keefe (2004) find conflicting evidence on the effectiveness of the zones in California inducing payroll employment growth with the former finding no effect and the latter finding a 3 percent payroll employment increase in the first six years that programs were operating. However, Busso et al. (2013) find a strong positive payroll employment

effect (12-21 percent) in neighborhoods targeted by Federal Empowerment Zones. A recent review of the literature on enterprise zones by Neumark & Young (2019) concludes that state enterprise zones have been mostly ineffective at reducing poverty or improving labor market outcomes in the United States.

A primary challenge that evaluators of enterprise zones face, and even program evaluators in general, is identifying a methodologically sound set of controls to compare to treated areas that received enterprise zone designation (Boarnet, 2001). Few papers have used the synthetic control method to evaluate the impact of enterprise zones in the United States despite the method offering a potential solution to handling the "endogenous selection" of zones discussed by Neumark & Young (2019). In other words, if zones are selected based on prior changes in labor market outcomes then such areas will tend to experience a negative trend in employment immediately before treatment, also known as "Ashenfelter's Dip". This poses a major source of bias for traditional program evaluation methods such as Differences-in-Differences, which were primarily employed in earlier enterprise zone studies, due to violation of the parallel trends assumption in the pre-treatment period. The ability of the SCM to match treated areas to a counterfactual with a similar trend prior to treatment may improve on earlier studies by addressing the endogenous selection issue for evaluating enterprise zone outcomes.

In this paper, I assess the impact of UEZ status on payroll employment for zones that have not been previously evaluated in the academic literature using data from the U.S. Census. These zones became active in 2002 within Bayonne, Roselle Borough, and The Wildwoods (Wildwood City, Wildwood Crest, North Wildwood, and West Wildwood) and in 2004 within Gloucester City and New Brunswick. The methodology used will be a synthetic control method (SCM) approach that develops a counterfactual for each of the five zones based on the industrial composition and poverty rates of the respective towns, addressing the credible control dilemma brought up by Boarnet (2001) and the "endogenous selection" issue of traditional approaches (Neumark & Young, 2019). I investigate the effect of enterprise zones at this ZIP code level using SCM, which is a smaller geographic unit than is typical in the literature. The results largely conform with the literature in suggesting that the UEZs had no impact on payroll employment growth in the five zones studied.

2 New Jersey's Urban Enterprise Zone Program

New Jersey's UEZ program was established in 1983 with the first five municipalities (Bridgeton, Camden, Newark, Trenton, and Plainfield) joining the program in 1986 and the most recent municipalities (New Brunswick and Gloucester City) joining the program in 2004. All zones listed in Table 1 are not set to expire until the end of 2023 at the earliest (New Jersey Department of Community Affairs, 2022). Figure 1 maps the state's Urban Enterprise Zones

along with their encompassing ZIP codes.

The goal of the UEZ program is to "stimulate growth by encouraging businesses to develop and create private sector jobs through public and private investment" (New Jersey Department of Community Affairs, 2022). The three major benefits of the program are a reduced sales tax (half the state-wide rate) as well as tax free purchases on capital equipment, facility expansions, and upgrades. Certified businesses are also eligible for funding grants through the New Jersey Economic Development Authority. Lastly, participating firms may receive assistance from the New Jersey Department of Labor through their "One Stop Centers" for hiring, training, and retraining existing or new employees.

In order to receive benefits from the UEZ program, a firm must become a Certified UEZ Business. This process requires registering with the state, locating within one of the 32 designated zones, and being in tax compliance with the state. New Jersey Economic Development Authority (2011) estimates the number of certified businesses as 6,639 out of 33,730 those eligible across the state's 32 zones in 2011 for a participation rate of 19.7 percent. Table 2 indicates these figures for the five zones examined in this study, which at 22.1 percent is slightly higher than across all 32 zones. A survey of participating UEZ firms conducted by the New Jersey Economic Development Authority in 2010 indicated varying degrees of participation across the UEZ programs for which they were eligible. Across 1,003 surveyed firms, 59 percent indicated participating in the sales tax reduction benefit, 7 percent participated in the employee tax credit program, and 3 percent participated in the worker training benefit.

Another feature of the UEZ program were Zone Assistance Funds (ZAFs), which were flexible revenue sources for communities to use for economic development activities that were funded by the sales tax generated by UEZ-certified businesses. ZAFs were used by participating municipalities to remediate properties, build infrastructure, and support economic development project gap funding (New Jersey Department of Community Affairs, 2019). However, ZAFs were discontinued in 2011 after Governor Chris Christie suspended payments to the zones in favor of balancing the state's budget which had come under pressure following the Great Recession (O'Dea, 2011).

The entirety of the academic literature on New Jersey's UEZs focuses on the zones that became active in the 1980s. Boarnet & Bogart (1996) study the impact of the UEZ designation on the first generation of targeted municipalities with data from 1980-1990 and find that the zones had no discernible impact on economic development, specifically payroll employment and municipal property values. Greenbaum & Engberg (2004) study the impact of New Jersey's zones from the 1980s (in addition to those of California, Florida, New York, Pennsylvania, and Virginia) and find no effect on overall employment growth when matched to similarly distressed and economically similar areas. While Rubin (1990) finds

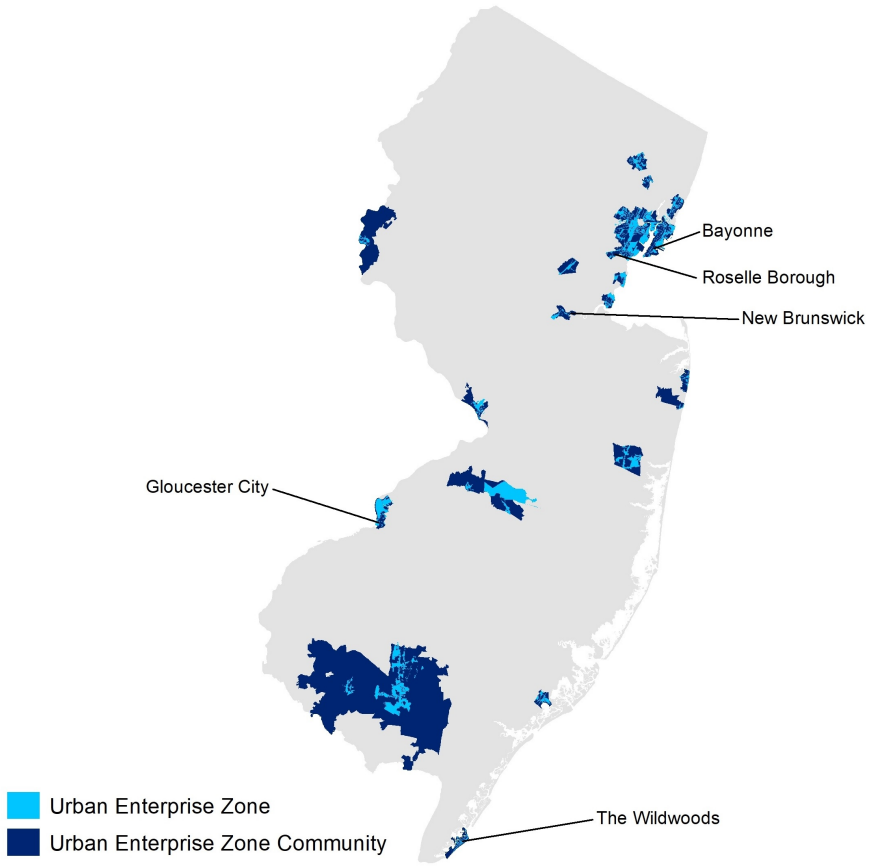

Figure 1: New Jersey's Urban Enterprise Zones with Encompassing ZIP Code Communities

a five percent increase in employment over the first two years of a zone's active status, the author does not use a control group in their analysis.

This paper will focus on the three zones that became active in 2002 within Bayonne, Roselle Borough, and The Wildwoods[1] and the two zones that became active in 2004 within Gloucester City and New Brunswick, all of which are labeled in Figure 1. Bayonne is a city of 72,000 east of Newark, over Newark bay, and south of Jersey City that contains Port Jersey, an intermodal freight transport facility. Roselle is a borough of 21,000 west of Elizabeth that is famous for being the first town in the world to be electrically lit with overhead wires by Thomas Edison in 1883. The Wildwoods are a group of "Jersey Shore" seaside resort communities north of Cape May with a collective year-round population of 13,000. Gloucester City is a city of 11,000 east over the Delaware River of Philadelphia and south of Camden. New Brunswick is a city of 55,000 located along the Raritan River and is home to Rutgers University).

[1]The municipalities that received UEZ designation before 2002 were excluded since Zip Code Business Patterns is only available from 1994 onward.

3 Data

I use data from the U.S. Census to construct all variables at the ZIP code level. For the employment and industry share variables, I use data from ZIP Code Business Patterns (ZBP), which provides annual statistics for businesses with paid employees within the U.S. at the ZIP Code level. ZBP are calculated using data from the Standard Statistical Establishment List, a business register of all known single and multi-establishment companies, as well as several other economic surveys (e.g. Annual Company Organization Survey, Annual Survey of Manufacturers, Current Business Surveys) and government administrative records (e.g. Internal Revenue Service, Social Security Administration, Bureau of Labor Statistics).

To construct the employment series, I use the ZBP series total number of payroll employees for the pay period including March 12. The raw employment series from ZBP are volatile on a year-to-year basis, which could be the result of nonsampling errors[2] from the various surveys utilized and the Census' use of noise infusion methodology beginning in 2007. In order to remove noise and isolate medium-term trends from short-term noise, I apply a three-year moving average from 1996 to 2012. I use raw data beginning in 1994 to construct the moving average so that the value of the dependent variable in 1996 is equivalent to:

$$\frac{1}{3}\sum_{i=1994}^{1996} Employment_i \tag{1}$$

To construct the industry share[3] variables I use the ZBP series total number of establishments and the number of establishments by North American Industry Classification System (NAICS) at the two-digit level in 2000. I identify the number of firms at the zip code level for eight broad industries using the industry groupings in Table 4 and calculate their shares out of the total number of establishments.

For the poverty share variable, I use data from the U.S. Census 2000 Decennial Summary File 3 - Table P090. To construct the poverty share variable, I simply use the number of families living below the poverty line divided by the number of families at the ZIP code.

The final ZIP Code level dataset consists of employment series for 1996-2012, the share of firms in eight industry groupings in 2000, and the share of families in poverty in 2000 at the ZIP code level. Summary statistics for the variables can be found in Table 3.

[2]The Census identifies potential sources of nonsampling error as: inability to identify all cases in the universe; definition and classification difficulties; differences in interpretation of questions; errors in recording or coding the data obtained; and estimation of employers who reported too late to be included in the tabulations and for records with missing or misreported data.

[3]ZBP does not contain employment by industry.

4 Methods

I use the synthetic control method to empirically evaluate the impact of UEZ designation on the local payroll employment levels of the five treated areas. The treated areas are the ZIP codes that encompass the five selected Urban Enterprise Zones, which are labeled and referred to as Urban Enterprise Zone Communities in Figure 1. Ferman & Pinto (2019) suggest that standard econometric methods (e.g. Differences-in-Differences) are unlikely to detect program effects or produce reliable hypothesis tests in settings where there are few treated areas and recommend SCM as an alternative estimator for such cases. There are several examples of the SCM used to empirically evaluate the effect of a policy on employment (Castillo et al., 2017; Munasib & Rickman, 2015). Bundrick & Yuan (2019) use SCM to evaluate the impact of an Arkansas targeted business subsidy program on per-capita income and poverty at the county level. Additionally, Chaurey (2017) and Gobillon & Magnac (2016) use SCM to evaluate place-based policies in India and France respectively.

It is worth noting that this study uses the synthetic control method at a much smaller geographic scale than most of the literature. It is much more typical for synthetic control studies to apply the method to policy interventions implemented at an aggregate level affecting a small number of large units (countries, regions, or states). While recent studies (Kreif et al., 2015; Acemoglu et al., 2016) have extended the SCM to settings with a large number of units, Abadie (2021) warns that a large number of units in the donor pool may introduce bias to the estimator, so each of the units in the donor pool must be chosen judiciously. Nevertheless, Ferman (2019) suggests that a large number of units in the donor pool may be beneficial in high-dimensional settings such as ours, and that the SCM estimator becomes asymptotically unbiased as the number of pre-treatment periods and donor pool units increase.

The synthetic control method generates a synthetic version of the treatment area's variable of interest based on weights of untreated donor areas to be used as a counterfactual in evaluating a policy's effects. In our case, the synthetic version of a treated zip code's payroll employment will be constructed from a weighted average of donor zip codes from New Jersey. However, the donor pools will exclude zip codes that hold UEZ status (see Table 1). These donor zip codes will be selected in order to match the employment levels, poverty rates and industrial composition of firms in 2000 (based on eight categories specified in Table 4) in each respective treated zip code before UEZ treatment occurred. Therefore, five separate synthetic control models will be estimated in order to generate synthetic controls for Bayonne, Gloucester City, New Brunswick, Roselle Borough, and The Wildwoods respectively.

I follow the synthetic control methodology from Abadie et al. (2010), which I briefly outline below. Y_{it}^N represents the payroll employment level that would be observed for ZIP code i

at time t in the absence of the enterprise zone treatment for ZIP codes $i = 1, ..., J + 1$ ZIP codes and time periods $t = 1, ..., T$, where J represents the number of untreated "donor" ZIP codes.

Let T_0 be the number of pre-treatment periods, with $1 <= T_0 < T$. Y_{it}^I represents the employment that would be observed for ZIP code i at time t for the ZIP code exposed to the enterprise zone intervention in period $T_0 + 1$. We assume that the enterprise zone treatment has no effect on payroll employment before the implementation period, so for $t\varepsilon(1, ..., T_0)$ and all $i\varepsilon(1, ..., J + 1)$, we have that $Y_{it}^I = Y_{it}^N$.

Let $\alpha_{it} = Y_{it}^I - Y_{it}^N$ be the effect of the enterprise zone intervention for ZIP code i at time t, and let D_{it} be an indicator that takes value one if ZIP code i is exposed to the treatment at time t, and value zero otherwise. Therefore, the observed outcome for unit i at time t is

$$Y_{it} = Y_{it}^N + \alpha_{it} D_{it} \tag{2}$$

Only the first ZIP code (Zip code "one") is exposed to the enterprise zone treatment after period T_0 so we aim to estimate $(\alpha_{1T_0+1}, ..., \alpha_{1T})$. For $t > T_0$,

$$\alpha_{1t} = Y_{1t}^I - Y_{1t}^N = Y_{1t} - Y_{1t}^N \tag{3}$$

Since Y_{1t}^I is observed, in order to estimate α_{1t} we need only Y_{1t}^N which is the synthetic control, or counterfactual outcome.

The synthetic control estimator will estimate Y_{1t}^N using a linear combination of donor zip codes $i\varepsilon(2, ..., J+1)$ using weights $w = (w_2, ..., w_{J+1})$ which solve a constrained optimization problem that matches the treated ZIP code on both pre-treatment employment levels and pre-treatment firm industrial composition and poverty rates (see Abadie et al. (2010) for a more detailed explanation of the estimation procedure). The weights are nonnegative and sum to one. Therefore, the synthetic control of the treated ZIP Code is:

$$Y_{1t}^N = \sum_{i=2}^{J+1} w_i^* Y_{i,t} \tag{4}$$

where w_i^* are the optimally chosen weights. Ideally, the synthetic control should match a treated ZIP code on pre-treatment employment levels and on pre-treatment covariates. The synthetic control represents what the treated ZIP code would have experienced without the enterprise zone treatment. $T_0 + 1$ is 2002 for three models (Bayonne, Roselle, The Wildwoods) and 2004 for two models (Gloucester City, New Brunswick). The pre-treatment payroll employment series begin in 1996 for all five models. The treatment horizons end in

2010 (Bayonne, Roselle, The Wildwoods) and 2012 (Gloucester City, New Brunswick) so each model has an 8 year treatment horizon.

In order to estimate the significance of the α_{1t} effects for the five models, I use a permutation method that compares the synthetic control estimates to a distribution of placebo estimates. This results in the estimation of the same synthetic control procedure in each model for the J donor ZIP codes. I provide standardized p-values for each of the years in the treatment horizon. Additionally, I provide an overall p-value that measures the proportion of placebos that have a ratio of posttreatment Root Mean Square Percentage Error (RMSPE) over pretreatment RMSPE at least as large as the ratio for the treated ZIP code. Please see Cunningham (2021) or Galiani & Quistorff (2017) for a more detailed discussion of the placebo methodology.

I use the local poverty rate as a covariate to ensure that the synthetic control matches the same level of economic blight as the treated areas. According to the original legislation that established the zones, a municipality must meet several criteria to qualify such as high poverty, high unemployment, and high dependence on public assistance (New Jersey Department of Community Affairs, 2019). The five treated areas in this study placed in the 76th (Roselle), 82nd (Gloucester City), 85th (Bayonne), 88th (The Wildwoods), and 94th (New Brunswick) percentiles respectively for families in poverty across New Jersey zip codes in 2000.

Using firm industry composition as the set of covariates for the selection of donor areas is based on how local payroll employment evolves over the business cycle (Rissman, 1999). The rationale for selecting donor areas based on industrial structure is that a good control area should experience roughly the same cyclical sensitivity to the national business cycle, or "regional business cycle," as the treated area over the treatment horizon. Domazlicky (1980) identifies industrial structure and trade relations as the primary drivers of differences in regional cyclical amplitudes. Industrial structure refers to the the composition of output produced by an area and trade relations refers to who is buying the goods and services that a region produces, regional residents or those of another area. Therefore, employment growth fluctuates largely with the nature of the business cycle in that national booms and busts have disparate effects on local economies based on their industry mix. For example, during the COVID-19 pandemic recession areas that had a large share of workers in leisure and hospitality suffered the highest unemployment rates in the nation while manufacturing job loss was relatively intense over the period between 2001 and the great recession, disproportionately affecting Rust Belt cities along the Great Lakes (Muro et al., 2020; Alder et al., 2014). Additionally, evidence from firm surveys in 2010 and 2019 suggest that firms from certain industries (retail, manufacturing) are more likely to participate in the enterprise zone program than others (professional and business services, construction) (New Jersey Economic Development Authority, 2011; New Jersey Department of Community Affairs,

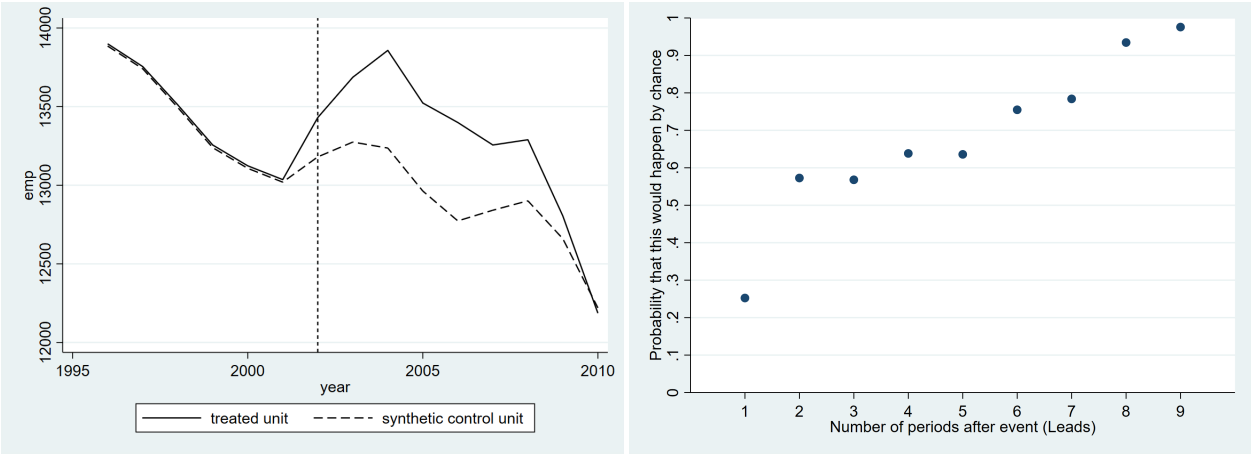

Figure 2: Synthetic Control Results: Bayonne

2019).

5 Results

5.1 Validity of Synthetic Controls

Table 5 compares the balance of the pre-treatment employment levels and covariates between the treated area and the synthetic control for each of the five respective models. The synthetic controls are very similar to treated ZIP codes in terms of pre-treatment employment levels. However, the synthetic control models provide higher shares of Professional and Business Service firms than their treated areas in four out of the five models (all except Gloucester City). The synthetic control model for New Brunswick appears to resemble its treated area the least out of the five models while the model for Gloucester City resembles its treated area the most in terms of pre-treatment characteristics. Table 6 reports the donor ZIP codes that are assigned nonzero weight values in the estimation procedure.

5.2 UEZ Impact on Employment

Of the five models examined in this study, only Bayonne outperformed its synthetic control over the treatment horizon. However, the overall standardized p-values reported in Table 5 do not indicate a significant difference between the employment trajectories between any of the five treated areas and their respective synthetic controls.

Figure 2 plots the estimated synthetic control for Bayonne compared with its actual employment levels before and after enterprise zone treatment (vertical line indicates treatment year) in the left panel. The right panel plots year-specific p-values from the placebo test. The results suggest that Bayonne's payroll employment outperformed its synthetic control over most of the treatment horizon with its most significant employment impact occurring one year after treatment. However, by the final year the treatment series matched the syn-

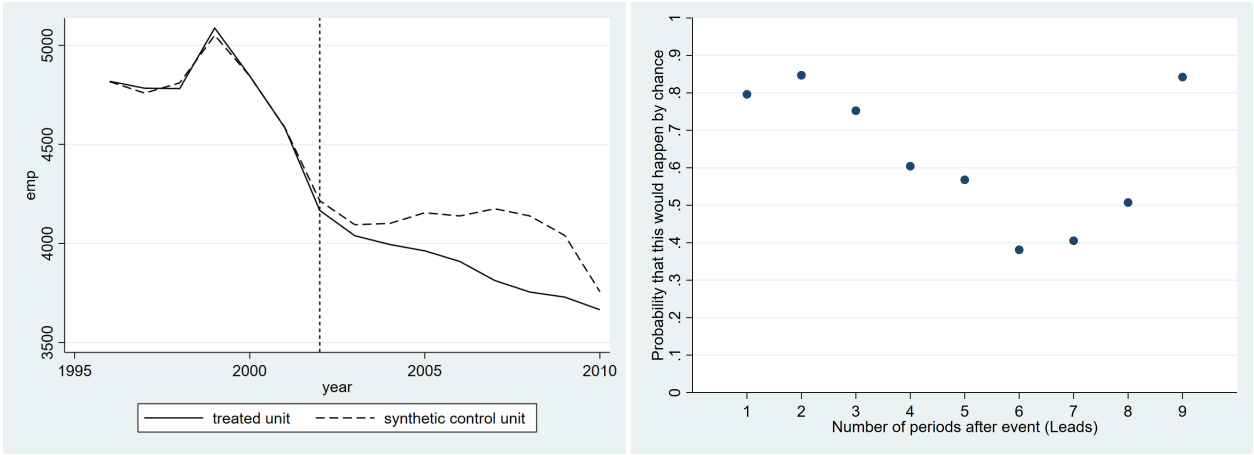

Figure 3: Synthetic Control Results: Roselle Borough

thetic control. Figure 3 indicates that Roselle's payroll employment performed just below its synthetic control in the treatment horizon between 2002 and 2010. Figure 4 suggests that The Wildwoods' payroll employment performed far below its synthetic control over the treatment horizon with a major drop in employment occurring two years after enterprise zone designation. Figure 5 indicates that Gloucester City's payroll employment under performed its synthetic control over most of the treatment horizon by about 200-300 jobs. Figure 6 shows that New Brunswick's payroll employment under performed its synthetic control over most of the treatment horizon where it suffered a much more substantial loss than its control from the Great Recession. However, by the end of the treatment horizon the city was only down 1,000 jobs from its synthetic control.

Firm participation in the program across the five zones might play a role in explaining their divergent paths of employment over the treatment period. Bayonne firms participated in the enterprise zone program at an above average rate in 2011 (23.2 percent) and it was the only area which experienced better employment outcomes than its synthetic control. However, The Wildwoods had by the far the highest participation rate among zones in 2011 (46.4 percent) despite having the worst employment growth in the treatment period relative to its synthetic control (see Table 2.) It is possible that the proximity of other UEZs could be playing a role in enhancing area zone employment effects via spillover effects. Gloucester City is directly south of Camden (UEZ area), Bayonne is directly south of Jersey City (UEZ area), and Roselle is southwest of Elizabeth (UEZ area). These three areas performed comparatively better than the two zones studied which are not adjacent to another UEZ community (New Brunswick and The Wildwoods).

5.3 Robustness to Rescaling Dependent Variable

In this section, I re-estimate the five synthetic control models using a scaled version of the dependent variable. Abadie (2021) suggests that using synthetic controls with weights that

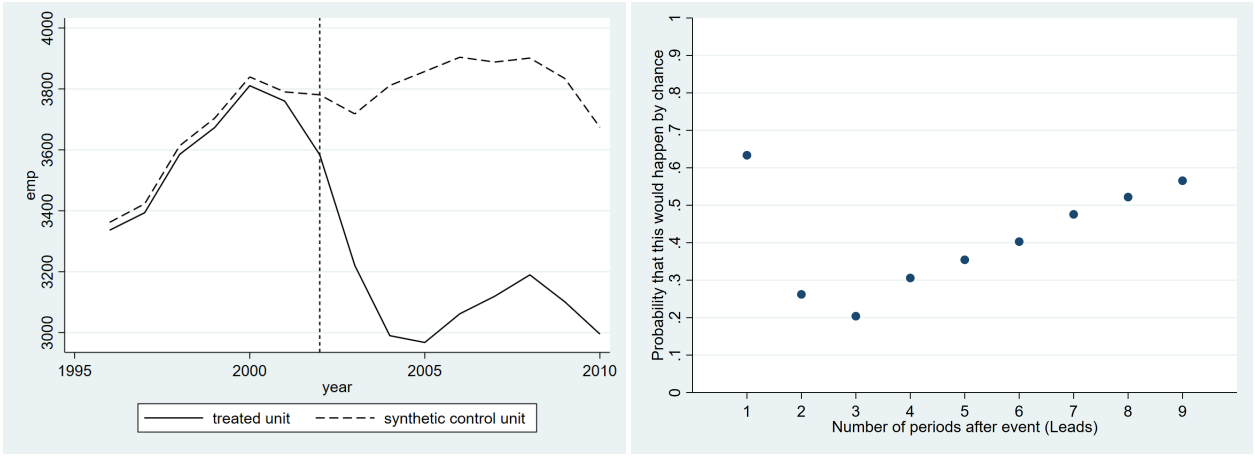

Figure 4: Synthetic Control Results: The Wildwoods

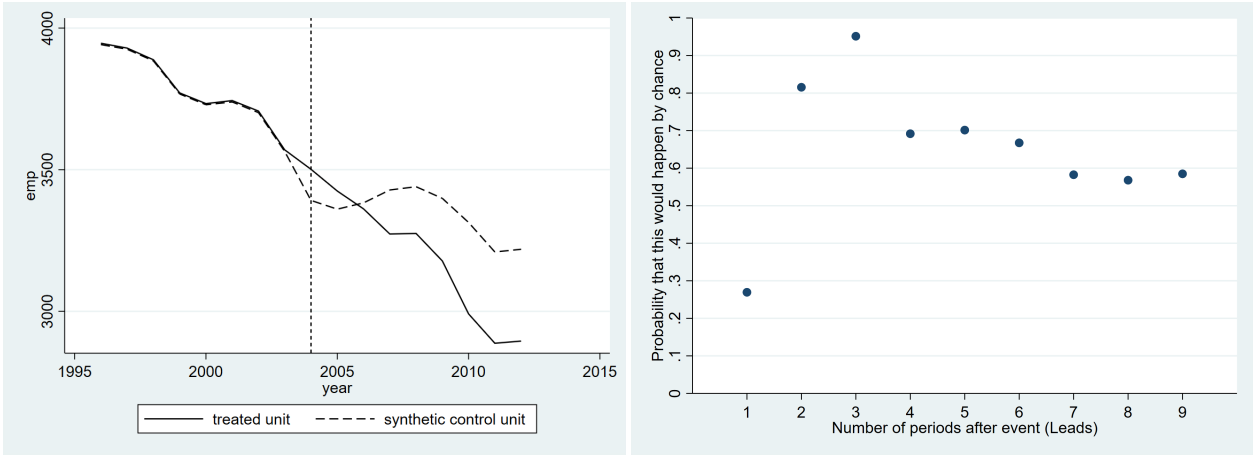

Figure 5: Synthetic Control Results: Gloucester City

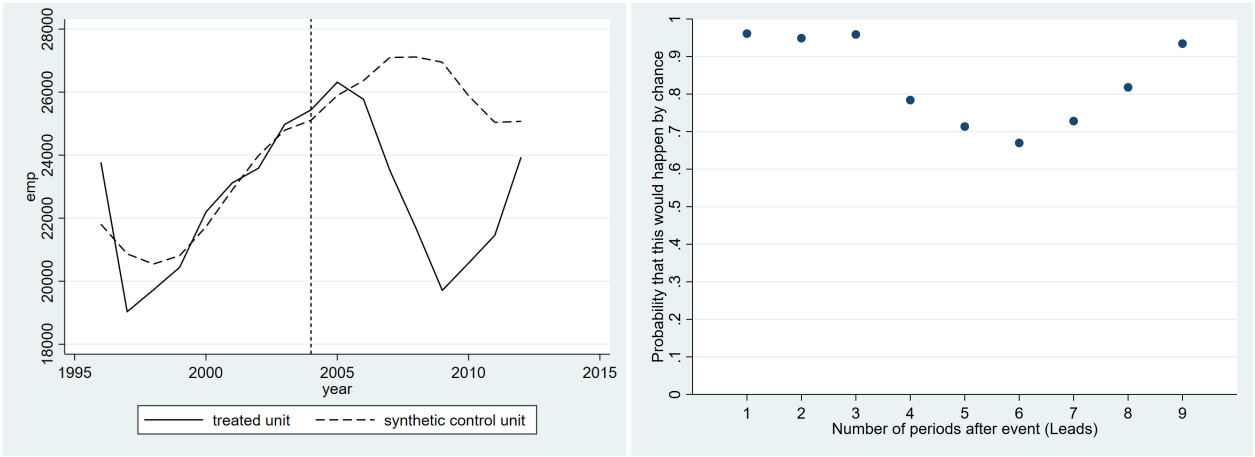

Figure 6: Synthetic Control Results: New Brunswick

sum to one may be valid only if the variables in the data are rescaled to correct for differences in the size between units. Since there are likely differences in employment levels between the treated and donor ZIP codes in the main results, it is worth investigating whether the

results are sensitive to rescaling employment. Therefore, I index employment[4] Y_i so that it equals 100 in year T_0, the year before treatment, for each ZIP code i:

$$\hat{Y}_t = \frac{Y_t}{Y_{T_0}} * 100 \tag{5}$$

Table 7 compares the balance of the pre-treatment employment levels and covariates between the treated area and the synthetic control for each of the five respective models and Table 8 contains the nonzero area weights used in the models. Note that T_0 is equivalent to 2001 for Bayonne, Roselle, and The Wildwoods and 2003 for Gloucester City and New Brunswick. The match for pre-treatment indexed employment across all models is stronger than the match for employment levels in the previous section. Additionally, the match across all covariates is much better for New Brunswick with the indexed employment variable. However, the model for the Wildwoods has a considerably worse match for the leisure and hospitality industry share.

Several of the models are highly sensitive to using the indexed employment series. Bayonne now performs substantially worse than its synthetic control over most of the treatment horizon, when it had previously performed better (see Figure 7). While both Roselle and Gloucester City's employment performed slightly below their respective synthetic controls in the main results, they both now perform much worse than their counterfactuals (see Figures 8 and 5). However, the models for the Wildwoods and New Brunswick were not sensitive to rescaling employment (see Figures 9 and 11). Despite the trajectory of the synthetic controls being altered, Figure 7 indicates that none of the differences treated areas and their synthetic controls were statistically significant.

[4]Employment refers to the smoothed employment series described in Section 3

6 Discussion

My examination of New Jersey's UEZs that became active in the 2000s suggests that the place-based policy did not produce a significant impact on local payroll employment in the encompassing zip codes of the five zones studied. Despite the paths of the respective synthetic controls for some areas experiencing sensitivity to the scaling of employment, there is little to no evidence of a positive employment effect from enterprise zone designation across the five treated areas. These results are consistent with other studies of the local employment impact of the zones that became active in the 1980s (Boarnet & Bogart, 1996; Greenbaum & Engberg, 2004). However, the paper addresses the credible control issue brought up by Boarnet (2001) by attempting to match a synthetic control that exhibits a similar level of economic distress as well as industrial composition as the treated area. Since the urban economics literature suggests that local payroll employment fluctuates throughout the business cycle based on industry mix, a credible control group should exhibit similar industry mix as treated areas for evaluations of place-based policies on employment. Otherwise, the selection of the treatment horizon might impact the results of the program evaluation, due to varying regional business cycles between treatment and control groups. Additionally, firms in certain industries (retail, manufacturing) are more likely to participate and benefit from the enterprise zone program than others.

The evaluation procedure put forth in this paper offers a highly transparent framework to select controls for areas treated with a place-based policy based on observable factors. Ferman & Pinto (2019) suggests that the SCM is a suitable estimation strategy for policy settings with relatively few treated areas. Additionally, the SCM should be better able than traditional program evaluation methods to reduce bias from the "endogenous selection" of enterprise zones, noted by Neumark & Young (2019), by matching a treated area to a counterfactual with a similar trend prior to treatment. Furthermore, unlike approaches such as difference-in-differences, the control weights are reported in a standardized way which can allow researchers to assess with a sniff-test whether these control areas are valid. For example, the donor area with the largest weight in the synthetic control for The Wildwoods was Seaside Heights, a comparable "Jersey Shore" resort town). However, Abadie (2021) cautions that small policy interventions can be difficult to detect with the SCM, which may be an issue given the size of the incentives and relatively low firm participation rate across the zones. Additionally, Abadie (2021) cautions that a large number of donor units in the pool can introduce bias into the SCM estimation procedure.

One potentially significant issue is the existence of an enterprise zone saturation effect present in the state that could be biasing the treatment effect in these five models towards zero. In other words, by the time the five most recent UEZs were introduced in New Jersey, businesses around the state already could have received similar incentives in 27 other

zones. Therefore, the relative desirability of these five zones is probably lower for potential firm entrants compared to zones that were established earlier when zones were scarcer. Additionally, there lies the corresponding concern that since these five areas were the last ones chosen that they were less likely to benefit from the UEZ program than zones that were designated earlier in its history. Therefore, the conclusion that one might reach from the lack of treatment effects in these zones isn't that New Jersey's UEZs do not increase employment, but that there is no marginal employment benefit of adding zones to a saturated program twenty years after its inception. Furthermore, given that New Jersey Department of Community Affairs (2019) suggests a substantial decline in firm participation rate in some of the state's older zones (e.g. Camden, Elizabeth, Vineland, Bridgeton) in recent years, the program's overall desirability has likely waned since its inception. On the other hand, the results from section 5.2 suggest that the three areas that performed best (relative to their respective synthetic controls) were adjacent to existing UEZ communities, which potentially suggests a positive cluster effect from the zones rather than a geographic saturation effect.

The results from the analysis largely conform to the literature on place-based policy evaluation in that their effects on payroll employment are minimal. There are several potential reasons why enterprise zones have not been particularly effective job creators since their inception in the 1970s. Gottlieb (1997) posits that cities and neighborhoods might not be the correct scale for enterprise zones due to commuting patterns. He suggests that if most employed residents of targeted neighborhoods commute to outside of their immediate residential area, a county or regional policy might better stimulate job growth for area residents. Additionally, Rubin (1988) suggest that due to environmental uncertainty, economic development practitioners often tilt the system in favor of the business community. Therefore, policy might not always be optimized in the best interests of the public to create quality jobs. Lastly, it is worth noting that beyond job creation, the accompanying goals of the program were to stimulate investment and economic development activity within the zones New Jersey Economic Development Authority (2011). Therefore, it is possible that the zones could be affecting other indicators related to the local economy such as local property values and business formation, which are not examined in this study. Future studies might utilize this empirical framework to study the impact of place-based policies on other local economic indicators.

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Table 1: New Jersey Urban Enterprise Zones by Effective Year

Municipality	**County**	**Year**
Bridgeton	Cumberland	1986
Camden	Camden	1986
Newark	Essex	1986
Trenton	Mercer	1986
Plainfield	Union	1986
Millville	Cumberland	1988
Vineland	Cumberland	1988
Elizabeth	Union	1992
Jersey City	Hudson	1992
Kearny	Hudson	1992
Orange	Essex	1992
Asbury Park	Monmouth	1994
Lakewood	Ocean	1994
Long Branch	Monmouth	1994
Passaic	Passaic	1994
Paterson	Passaic	1994
Perth Amboy	Middlesex	1994
Phillipsburg	Warren	1994
Carteret	Middlesex	1995
Mount Holly	Burlington	1995
Pleasantville	Atlantic	1995
Union City	Hudson	1995
East Orange	Essex	1996
Guttenberg	Hudson	1996
Hillside	Union	1996
Irvington	Essex	1996
Pemberton	Burlington	1996
North Bergen	Hudson	1996
West New York	Hudson	1996
Bayonne	Hudson	2002
Roselle Borough	Union	2002
The Wildwoods	Cape May	2002
Gloucester City	Camden	2004
New Brunswick	Middlesex	2004

Table 2: Urban Enterprise Zone Business Participation Rate in 2011

Zone	**Certified Businesses**	**Eligible Businesses**	**Participation Rate (%)**
The Wildwoods	255	549	46.4
Bayonne	229	986	23.2
Gloucester City	36	214	16.8
Roselle	41	274	15.0
New Brunswick	117	1,046	11.2
Total	**678**	**3,069**	**22.1**

Source: New Jersey Economic Development Authority (2011)

Table 3: Pre-Treatment Summary Statistics

	Bayonne	**Roselle**	**The Wildwoods**	**Gloucester City**	**New Brunswick**	**NJ**
Employment	13,456	4,773	3,591	3,842	22,523	4,585
Poverty Rate (%)	8.4	5.8	11.3	7.5	16.9	5
Construction (%)	10.6	11.1	6.6	10.3	3.6	12.5
Manufacturing (%)	3.4	14.8	1.5	9.6	7.2	4.9
Trade, Transp., and Util. (%)	29.6	26.5	17.6	31.8	21.4	23.6
Information (%)	0.1	0.1	0.1	1.5	1.5	1.7
Finan., Insur., and Real Est. (%)	7.6	6.2	8.4	5	6.6	8
Prof. and Bus. Serv. (%)	10.4	8.3	6.1	9.2	19.6	17.4
Educ. and Health Serv. (%)	15.2	8.3	3.1	5.4	14.2	9.3
Leisure and Hospitality (%)	9.6	6.5	46.9	14.6	12.9	9

Notes: Employment is mean from 1994-2001. All other variables indicate shares in 2000. "NJ" indicates mean statistics across all New Jersey zip codes.

Table 4: Firm Industry Classification

Industry Group	**NAICS Codes**
Construction	23
Manufacturing	31, 32, 33
Trade, Transportation, and Utilities	22, 42, 44, 45, 48, 49
Information	51
Finance, Insurance, and Real Estate	52, 53
Professional and Business Services	54, 55, 56
Education and Health Services	61, 62
Leisure and Hospitality	71, 72

Table 5: Predictor Balance and Model Fit

	Bayonne		Roselle Borough		The Wildwoods		Gloucester City		New Brunswick	
Predictor Variables	***Treated***	***Synthetic***	***Treated***	***Synthetic***	***Treated***	***Synthetic***	***Treated***	***Synthetic***	***Treated***	***Synthetic***
Employment (1996)	13,900	13,885	4,819	4,817	3,336	3,362	3,946	3,942	23,775	21,809
Employment (1997)	13,755	13,741	4,784	4,759	3,394	3,423	3,929	3,925	19,032	20,866
Employment (1998)	13,512	13,495	4,782	4,810	3,585	3,614	3,888	3,884	19,725	20,546
Employment (1999)	13,256	13,239	5,088	5,051	3,673	3,704	3,771	3,767	20,442	20,810
Employment (2000)	13,124	13,108	4,846	4,845	3,811	3,839	3,733	3,729	22,195	21,726
Employment (2001)	13,036	13,020	4,585	4,586	3,760	3,790	3,744	3,739	23,119	22,896
Employment (2002)	-	-	-	-	-	-	3,707	3,701	23,586	23,987
Employment (2003)	-	-	-	-	-	-	3,570	3,564	24,976	24,791
Poverty Rate (2000)	.084	.054	.058	.041	.113	.115	.075	.073	.169	.025
Construction (2000)	.106	.093	.111	.134	.066	.063	.103	.103	.036	.078
Manufacturing (2000)	.034	.053	.148	.099	.015	.029	.096	.096	.072	.037
Trade, Transportation, and Utilities (2000)	.296	.281	.265	.262	.176	.18	.318	.318	.214	.278
Information (2000)	.009	.013	.006	.011	.006	.009	.015	.015	.015	.022
Financial, Insurance, and Real Estate (2000)	.076	.073	.062	.097	.084	.069	.05	.05	.066	.081
Professional and Business Services (2000)	.104	.166	.083	.155	.061	.097	.092	.092	.196	.265
Education and Health Services (2000)	.152	.137	.083	.054	.031	.042	.054	.053	.142	.079
Leisure and Hospitality (2000)	.096	.077	.065	.035	.469	.412	.146	.145	.129	.070
Model Fit										
Pre-Treatment RMSPE	88.4		27.5		49.2		34.8		978	
Post-Treatment/Pre-Treatment RMSPE	4.86		8.49		11.2		6.28		4.0	
p-value	.813		.612		.427		.718		.874	

Table 6: Synthetic Control Weights

Bayonne		**Roselle Borough**		**The Wildwoods**		**Gloucester City**		**New Brunswick**	
ZIP Code	**Weight**	**ZIP Code**	**Weight**	**ZIP Code**	**Weight**	**ZIP Code**	**Weight**	**ZIP Code**	**Weight**
07631 - Englewood	.191	08067 - Pedricktown	.523	08751 - Seaside Heights	.715	08316 - Dorchester	.263	08817 - Edison	.338
07006 - Caldwell	.187	08033 - Haddonfield	.14	08016 - Burlington	.074	07970 - Mount Freedom	.107	08807 - Bridgewater	.214
07657 - Ridgefield	.133	08512 - Cranbury	.139	07041 - Millburn	.068	07029 - Harrison	.105	08002 - Cherry Hill	.183
08084 - Stratford	.133	07662 - Rochelle Park	.124	08343 - Monroeville	.037	07608 - Teterboro	.102	08534 - Pennington	.137
08401 - Atlantic City	.086	08084 - Stratford	.053	08002 - Cherry Hill	.03	07657 - Ridgefield	.091	08854 - Piscataway	.104
08089 - Waterford Works	.069	07058 - Pine Brook	.018	07058 - Pine Brook	.021	08751 - Seaside Heights	.078	07470 - Wayne	.024
08648 - Lawrence	.064	08520 - Hightstown	.002	07662 - Rochelle Park	.021	07857 - Netcong	.04		
07041 - Millburn	.049			08837 - Edison	.019	07863 - Oxford	.037		
08832 - Keasbey	.047			08402 - Margate City	.011	07660 - Ridgefield Park	.033		
07109 - Belleville	.041			08817 - Edison	.006	08873 - Somerset	.032		
						07734 - Keansburg	.025		
						08078 - Runnemede	.023		
						08809 - Clinton	.022		
						08015 - Browns Mills	.018		
						07662 - Rochelle Park	.009		
						07960 - Morristown	.006		
						08349 - Port Norris	.006		
						08402 - Margate City	.001		

Table 7: Robustness Check: Predictor Balance and Model Fit

	Bayonne		Roselle Borough		The Wildwoods		Gloucester City		New Brunswick	
Predictor Variables	***Treated***	***Synthetic***	***Treated***	***Synthetic***	***Treated***	***Synthetic***	***Treated***	***Synthetic***	***Treated***	***Synthetic***
Employment (1996)	106.6	106.9	105.1	105.0	88.7	88.8	110.5	110.4	95.2	95.2
Employment (1997)	105.5	105.7	104.3	104.3	90.3	90.3	110.1	109.9	76.2	76.3
Employment (1998)	103.6	103.8	104.3	104.3	95.4	95.4	108.9	108.8	79.0	78.9
Employment (1999)	101.7	101.8	111.0	110.9	97.7	97.7	105.6	105.5	81.8	82.1
Employment (2000)	100.7	100.8	105.7	105.7	101.3	101.3	104.6	104.5	88.9	88.9
Employment (2001)	-	-	-	-	-	-	104.9	104.8	92.6	92.6
Employment (2002)	-	-	-	-	-	-	103.8	103.7	94.4	94.6
Poverty Rate (2000)	.084	.084	.058	.050	.113	.095	.075	.075	.169	.083
Construction (2000)	.106	.106	.111	.112	.066	.076	.103	.103	.036	.125
Manufacturing (2000)	.034	.039	.148	.060	.015	.048	.096	.096	.072	.044
Trade, Transportation, and Utilities (2000)	.296	.278	.265	.302	.176	.255	.318	.318	.214	.233
Information (2000)	.009	.011	.006	.003	.006	.008	.015	.015	.015	.016
Financial, Insurance, and Real Estate (2000)	.076	.070	.062	.062	.084	.069	.05	.05	.066	.064
Professional and Business Services (2000)	.104	.105	.083	.126	.061	.087	.092	.092	.196	.168
Education and Health Services (2000)	.152	.146	.083	.084	.031	.056	.054	.054	.142	.111
Leisure and Hospitality (2000)	.096	.10	.065	.108	.469	.230	.146	.145	.129	.107
Model Fit										
Pre-Treatment RMSPE	1.49		2.41		2.23		0.246		0.155	
Post-Treatment/Pre-Treatment RMSPE	6.06		14.3		11.2		78.2		53.9	
p-value	.70		.49		.57		.13		.18	

Table 8: Robustness Check: Synthetic Control Weights

Bayonne		**Roselle Borough**		**The Wildwoods**		**Gloucester City**		**New Brunswick**	
ZIP Code	**Weight**	**ZIP Code**	**Weight**	**ZIP Code**	**Weight**	**ZIP Code**	**Weight**	**ZIP Code**	**Weight**
08046 - Willingboro	.302	08880 - South Bound Brook	.384	08751 - Seaside Heights	.286	07857 - Netcong	.19	07822 - Augusta	.203
08242 - Rio Grande	.219	08048 - Lumberton	.245	08349 - Port Norris	.227	08242 - Rio Grande	.134	08326 - Landisville	.176
08078 - Runnemede	.162	08514 - Cream Ridge	.117	08066 - Paulsboro	.155	08751 - Seaside Heights	.107	08066 - Paulsboro	.134
08010 - Beverly	.097	08401 - Atlantic City	.091	07440 - Pequannock	.123	07608 - Teterboro	.097	08402 - Margate City	.127
08015 - Browns Mills	.055	08067 - Pedricktown	.072	08752 - Seaside Park	.083	08066 - Paulsboro	.077	07970 - Mount Freedom	.124
08401 - Atlantic City	.049	08010 - Beverly	.037	07865 - Port Murray	.064	07863 - Oxford	.055	08048 - Lumberton	.095
07631 - Englewood	.033	07608 - Teterboro	.035	08048 - Lumberton	.041	07460 - Stockholm	.051	08535 - Perrineville	.066
08316 - Dorchester	.031	08402 - Margate City	.019	08343 - Monroeville	.017	07029 - Harrison	.051	07028 - Glen Ridge	.042
08069 - Penns Grove	.027			08402 - Margate City	.004	08014 - Bridgeport	.048	08755 - Toms River	.027
07462 - Vernon	.013					07420 - Haskell	.039	08316 - Dorchester	.007
08402 - Margate City	.013					08316 - Dorchester	.023		
						08349 - Port Norris	.013		
						07109 - Belleville	.005		
						08343 - Monroeville	.001		

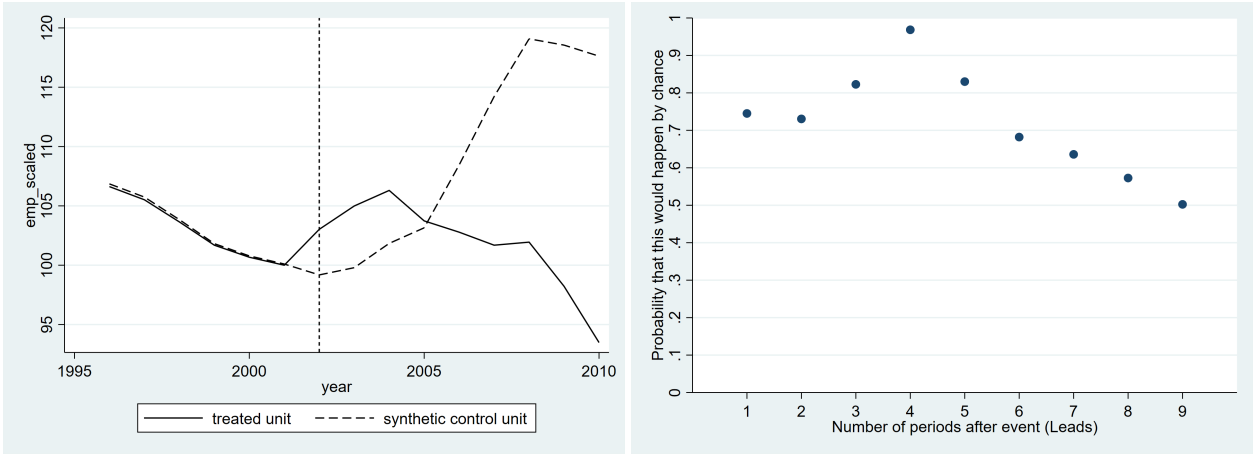

Figure 7: Robustness Check: Bayonne

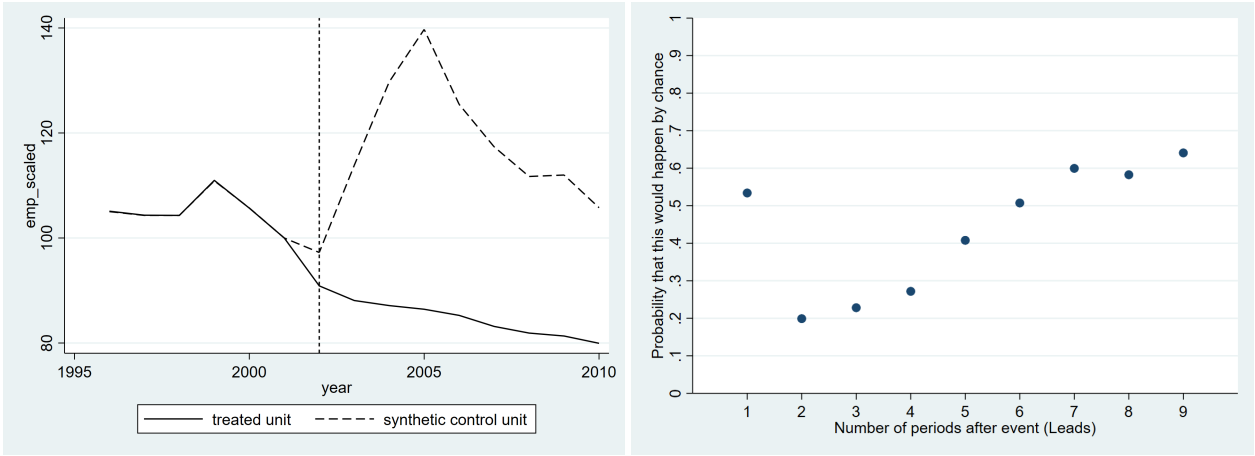

Figure 8: Robustness Check: Roselle Borough

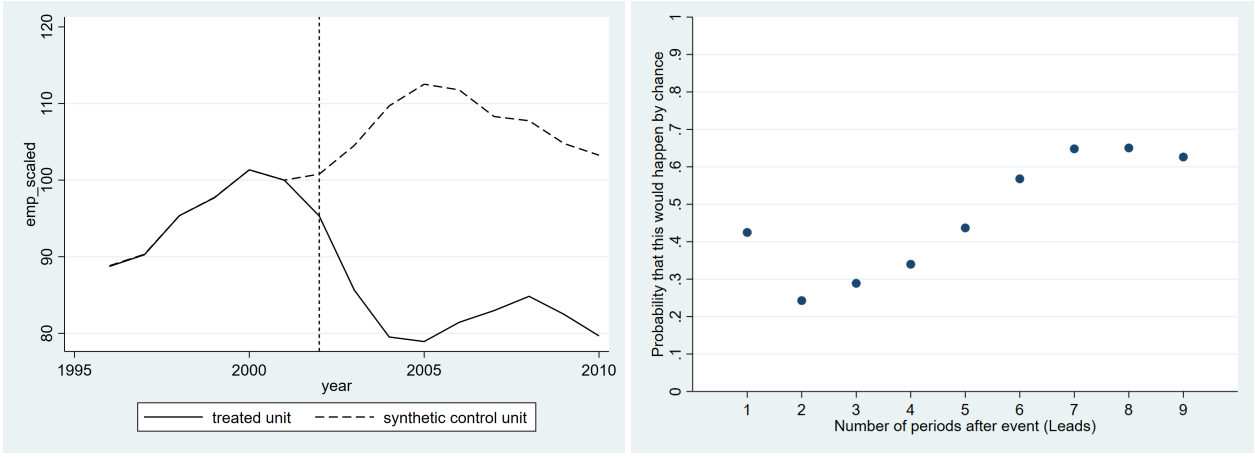

Figure 9: Robustness Check: The Wildwoods

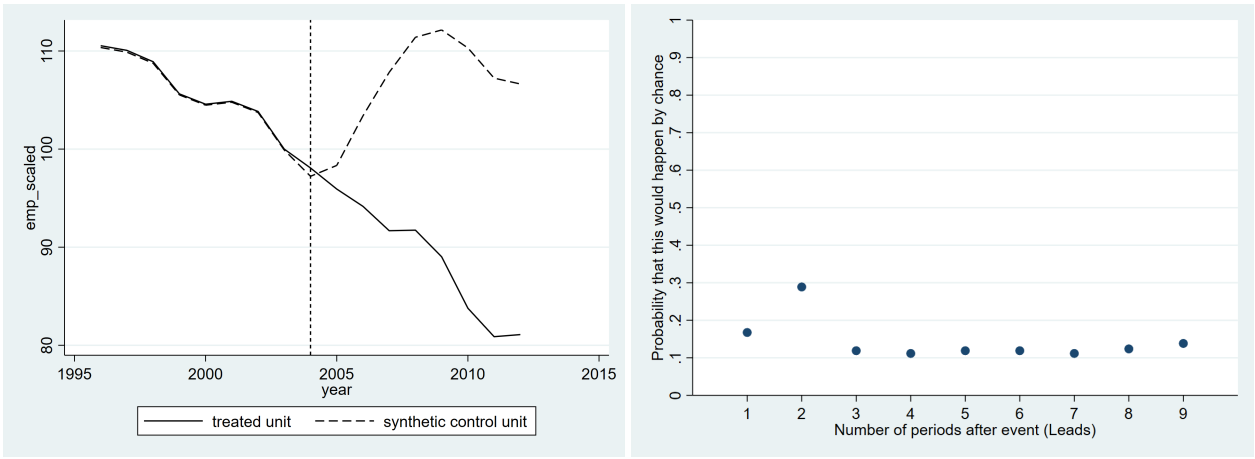

Figure 10: Robustness Check: Gloucester City

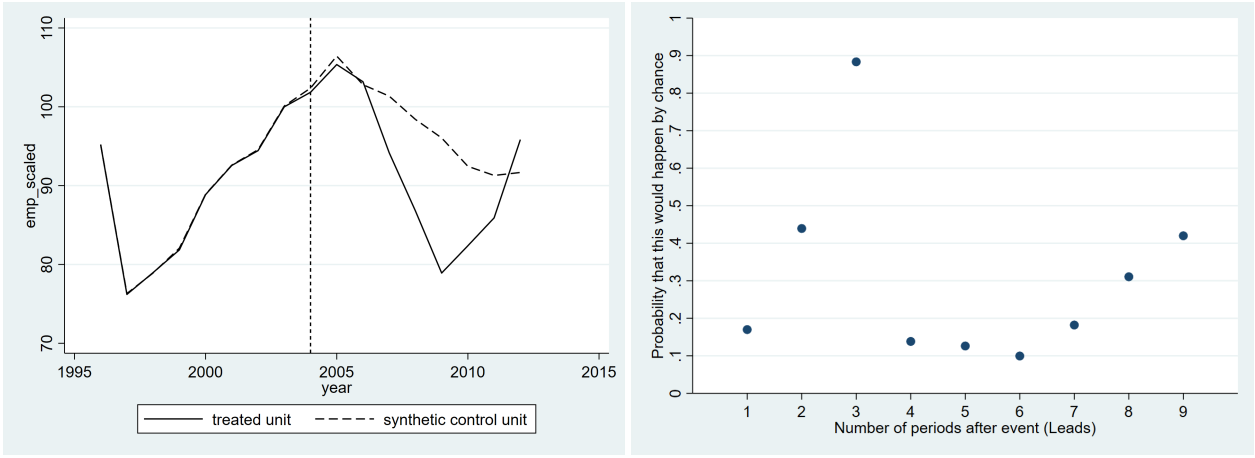

Figure 11: Robustness Check: New Brunswick