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Heterogeneous Effects of State Enterprise Zone Programs in the Short and Longer Run

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Abstract

We take up two questions that have not been explored in research on enterprise zones. First, does a considerably longer-run perspective on the effects of state enterprise zones lead to different answers? And second, are there heterogeneous effects of enterprise zones that depend on the set of incentives these programs offer, which can vary widely? Our results indicate that whether we look at state enterprise zone programs through a longer-term lens, or through the lens of program heterogeneity, we do not find any consistent indication of beneficial effects of state enterprise zone programs. This is consistent with most of the prior evidence that focuses on effects that are short-term and homogeneous.

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Introduction

The body of evidence on place-based policies, particularly enterprise zones, provides little reason to think these policies are effective. As reviewed recently in Neumark and Simpson (2015), most research on enterprise zone programs fails to find strong evidence that they contribute to job growth or reduce poverty.

There are some exceptions. Busso et al. (2013) find strong evidence that federal enterprise zones (Empowerment Zones) generated strong job growth, although even then, Reynolds and Rohlin (2015) find evidence suggesting that these zones may have this effect through displacing the most-disadvantaged original residents of these zones to other areas.

Also in contrast to most of the literature, Ham et al. (2011) find that both state and federal enterprise zones established in the 1990s significantly improved labor market outcomes, with sharp reductions in poverty from state enterprise zones, and sharp reductions in unemployment and poverty, and sharp increases in income measures, from federal enterprise zones (Empowerment Zones as well as Enterprise Communities).[1]

In this paper, we take up two questions that have not been explored in research on enterprise zones. First, does a considerably longer-run perspective on the effects of state enterprise zones lead to different answers? It is possible that a longer-run perspective will provide more evidence of beneficial effects than the shorter-run evidence, especially if enterprise zones help "jump start" economic activity in targeted areas, creating some self-sustaining gains. For example, one rationale for enterprise zones specifically, and place-based policies more

[1] In another paper (Neumark and Young, forthcoming), we have cast serious doubt on the magnitudes of the effects they estimate, in part because of data errors, and in part because of estimation strategies – in particular, the control tracts used. We do not rehash that material here but suffice it to say that we find very little evidence of positive effects of either state or federal enterprise zones. That paper also discusses the differences between Empowerment Zones and Enterprise Communities; these federal programs are not the focus of the present paper.

generally, is that they may generate benefits from agglomeration externalities intended to lead to persistent gains in economic activity from a shorter-term policy intervention (see Neumark and Simpson, 2015; and Kline and Moretti, 2014).

However, most research on the effects of enterprise zones takes a relatively short-run perspective. For example, Busso et al. (2013) and Reynolds and Rohlin (2015) estimate the impacts of federal enterprise zones created in the mid-1990s on changes in Census tracts over the 1990s (for their main analysis). Ham et al. (2011) pursue the same strategy, looking at both federal and state enterprise zones. Elvery (2009) uses a propensity score method rather than a difference-in-difference methods, measuring the impact in 1990 data of enterprise zones created in California and Florida between 1986 and 1990. Billings (2009) uses establishment-level data averaged between 1990 and 2000 to study zones created in the late 1980s, thus considering perhaps a mix of shorter-run and longer-run effects. Neumark and Kolko (2010) differs by comparing short-run and longer-run effects of California's enterprise zone program; however, these are captured only as shifts in employment levels vs. growth rates, which is quite restrictive. Our longer-run analysis also focuses on state enterprise zones and is done both with and without taking account of program heterogeneity.

The second question we consider is whether there are heterogeneous effects of enterprise zones that depend on the set of incentives these programs offer, which can vary widely. Evidence on this question could, in principle, help policymakers design more effective enterprise zone programs. Although the existing research on enterprise zones is generally discouraging, there is a strong theoretical expectation that well-designed hiring credits could boost job creation. Estimating the effects of different features of state enterprise zone programs may identify some features of these programs that are more effective in job creation or other goals such as poverty reduction.

Moreover, there is a smattering of evidence pointing to some heterogeneity in the job creation impacts of enterprise zones, suggesting that certain program designs and/or improved targeting could produce positive impacts. For example, Neumark and Simpson (2015) suggest that the initial federal Empowerment Zones studied by Busso et al. (2013) may have been more effective at creating jobs than subsequent versions of the policy because the initial zones included large block grants, which may have been spent on social services or other investments that boosted employment. In addition, Kolko and Neumark (2010) incorporated survey data from enterprise zone administrators into a causal analysis of the effects of California's state enterprise zones and found that a subset of efforts (e.g., marketing zone incentives) was associated with job gains. Finally, although one step removed from enterprise zones, recent work on general statewide hiring credits indicates that such credits are much more likely to lead to job creation when governments can "claw back" the credits if jobs are not created (Neumark and Grijalva, 2017).

Given our emphasis on enterprise zone program heterogeneity, in this paper we focus on state enterprise zone programs, which differ along many dimensions. In doing so, we build on the work by Ham et al. (2011) who estimated the effect of enterprise zones in 13 states – albeit, in contrast to our paper, without considering heterogeneity across state enterprise zone programs.

Data

There are two significant data challenges in this research. The first is to code the heterogeneity in state enterprise zone policies, and the second is to map over a longer period the Census tracts treated and not treated by state enterprise zone programs. We discuss these in turn.

State enterprise zone policy heterogeneity

There is significant heterogeneity in enterprise zone benefits across states. We use multiple data sources to classify the heterogeneity of state enterprise zone benefits for the 13 states we examine in this paper. Our primary source of information on enterprise zone benefits comes from reading each state's original legislative documents relating to the enactment and amendment of enterprise zone program and benefits. State bills and statutes relating to enterprise zones were accessed through HeinOnline and LexisNexis. The potential features by which state enterprise zone programs could be classified are too numerous and idiosyncratic to be directly usable in an empirical analysis. Thus, the information in these documents was used to classify all enterprise zone benefits for all 13 states into four broad categories. We provide the details of each state's enterprise zone benefits in Appendix A. The four categories of benefits we use in our analysis are listed in panels 1-4 of Appendix Table A1; we discuss these categories below. We also classify states by whether each state's enterprise zone legislation requires employees to be zone residents in order for a business to be eligible for enterprise zone incentives (panel 5 of Appendix Table A1), and whether these "live-in" requirements are specific to hiring credits (Appendix Table A2).

Our classification process is exhaustive in that every benefit offered by each of the 13 states between 1990-1999 is classified as belonging to one of the broad categories we use. Within each category, we further classify each benefit by the strength of the incentive. To verify that the benefits described in the letter of the law matches the incentives provided and marketed in practice to businesses (and in some cases employees), each state's list of benefits was cross-referenced with peer-reviewed journal articles,[2] state tax forms,[3] state agency reports,[4] and other

[2] An early version of Ham et al. (2011), written by Swenson (2008), provides an overview of various state enterprise zone programs in an appendix.
[3] Some examples include: California tax form 3805z is used by businesses claiming enterprise zone tax incentives and is available from 1994-2015. Colorado Department of Revenue provides form "FYI Income 22" to businesses claiming enterprise zone tax incentives. Massachusetts provides "Schedule EOA" 1099 form to businesses claiming economic opportunity area credits.
[4] For example, Hawaii's Department of Business produced a report entitled "Hawaii's Enterprise Zones Partnership Program" in 2007.

reports[5] about enterprise zones. See Appendix A for full details on the enterprise zone benefits provided by each of the 13 states.[6]

The four broad categories into which we classify enterprise zone benefits are as follows:

- Financing
- Tax credits for investments
- Miscellaneous
- Hiring incentives

Financing options are provided by six states and range from interest free loans (Florida) to providing tax deductions for contributions to a corporation designated for providing loans to businesses operating in enterprise zones. The provision of financing options may facilitate new firm entry into enterprise zones on the extensive margin while enabling expansion of existing firms on the intensive margin.

All state enterprise zone programs provide tax credits for investments – the second category. The definition of qualified investments varies across states from very vague (Nebraska) to rather specific (Ohio's environmental remediation tax credit). Generally, states provide incentives for investments in property, such as real estate, construction materials, and any other expansion or rehabilitation.

We use a catchall category of enterprise zone benefits that do not fit easily into a broad category. This category includes benefits provided optionally by local municipalities, day care reimbursements, loss limitations, and the sale or lease of public property for business use.

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[5] For example, Dowall (1996).

[6] For reasons explained below, Illinois gets dropped from our analysis. We nonetheless retain it in the description of policy variation, in case a reader wants to examine the HSIS state-specific estimates in light of this program variation. (Illinois remains in their data because they do not use the NCDB; see Neumark and Young, forthcoming).

Finally, our fourth category is hiring credits or hiring incentives, which are common to enterprise zones and attract the most attention in the literature. Hiring incentives generally reduce the wage bill for existing employees through tax credits, provide a flat credit for newly-hired employees, or provide exemptions for payroll and unemployment insurance taxes. These incentives are designed to encourage firms operating in enterprise zones to expand hiring or to initiate hiring of new employees. Therefore, on the extensive margin, hiring incentives are likely to increase employment and to decrease unemployment.

Construction of long-run enterprise zone dataset

The second data challenge for this project was to create a long-term classification of Census tracts (our unit of observation) by enterprise zone status. Our starting point is the tracts identified as being initially designated as state enterprise zones tracts in the 1990s, using the data from HSIS (2011), which they provided.[7]

Some tracts that HSIS (2011) use as controls for their 1980-2000 analysis (also excluding federally designated tracts in the 1990s) are later designated as state or federal enterprise zones between 2000-2010. Including these tracts as controls in our long-run analysis would attenuate our estimates. To identify the 2000 tracts that became state enterprise zones between 2000-2010, we did extensive work with agencies in each of the 13 states to generate geocoded maps of enterprise zone coverage, as best we could. We were able to identify these more recent state enterprise zone changes for all of HSIS (2011)'s 13 states except for Wisconsin and Massachusetts. We detail our efforts in Appendix B.[8]

[7] Their data can be downloaded from https://sites.google.com/usc.edu/ayse-imrohoroglu/programs?authuser=0.

[8] Our goal was to avoid contaminated controls in the form of tracts designated as enterprise zones in the 2000s. Some tracts lost their designation in the 2000s, although it is hard to pin down the timing, as explained in Appendix B. However, given that we are estimating the longer-run effects of zones established in the 1990s, the ending of a tracts designation as an enterprise zone in the 2000s is not

For federal enterprise zones, HSIS (2011) identify the tracts designated as federal enterprise zones in the mid-1990s. However, two additional waves of federal enterprise zones occurred in 1999 and 2001 that are not identified in their data. We identify all tracts enacted as federal enterprise zones in any of the three waves, which extend through 2001, using data from Busso et al. (2013).

Data on outcomes by tract

We use the Neighborhood Change Database to measure outcomes in treated and control tracts, for the period 1980-2010. Census tract geography changes over time, but the NCDB provides consistent tract definitions over time.[9] We make year 2000 tracts our preferred geography because this directly maps into the enterprise zone geography used in HSIS (2011). The 1980-2000 NCDB is available in terms of 2000 tracts. However, the 2010 NCDB, which we need to study longer-term effects of enterprise zones established in the 1990s, is only available in 2010 tract geography. We utilize a program called "Backwards LTDB," provided through the Longitudinal Tract Data Base, to map the 2010 NCDB data into 2000 tracts.[10]

We make several sample restrictions to the NCDB data. First, we drop tracts with zero population counts in 1980. This occurs, according to our best understanding, because of redrawn tract boundaries in terms of 2000 geography. It turns out that Illinois had relatively few tracts designated as enterprise zones, and all of them are dropped due to this restriction; thus, Illinois is

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problematic, although clearly it could be of interest to distinguish between tracts designated in the 1990s that remained enterprise zones in the 2000s and those that no longer did.

[9] The perception of researchers that the NCDB matches tracts well is reflected in the extensive – indeed, nearly exclusive – use of the NCDB data in research that matches tracts over time to study enterprise zones, other local programs, and different questions entirely. See, e.g., Oakley and Tsao (2006, 2007) and Meltzer (2012) on enterprise zones, and Cameron and McConnaha (2006), Card et al. (2008), Easterly (2009), and Logan and Zhang (2010) on a range of other topics.

[10] See https://s4.ad.brown.edu/projects/diversity/researcher/LTDB2.htm (viewed December 6, 2018).

not included in our analysis.[11] Second, we only keep data for the 13 states in HSIS (2011)'s analysis. Third, we remove one tract that appears in the 1980-2000 NCDB but does not appear in the 2010 NCDB after processing by the Backwards LTDB program. Fourth, we drop tracts that have missing values for any of the five outcomes in any year of the NCDB. We do this to ensure that our estimation is always done for the same sample, regardless of the outcome.

Analysis samples

In most cases, we report results for three different samples. We first use all the possible data. We then drop the data from Massachusetts and Wisconsin. We do this because, as explained above, we were unable to obtain information on changes in the enterprise zone designation of tracts, for the 2000s, for these states. Hence, we are unsure of whether some tracts in these states either became designated as enterprise zones. Finally, we also limit the set of control tracts, excluding those that were later designated as state enterprise zones in the 2000s (or as federal zones in 1999-2001). This is our cleanest estimation because it avoids contaminated controls, so we emphasize results for this sample, but show some results for the other samples as well. Table 1 shows the numbers of control and treated tracts by state, as well as information on the tracts that are contaminated controls, and those on which we do not have information for the 2000s (for Massachusetts and Wisconsin).

Methods and Results

Our analysis proceeds in a number of steps, and we explain these sequentially. We interleave the results from each analysis with the discussion of the methods used in each analysis, which makes it easier – we believe – to follow the rationale and the results from each

[11] Curiously, our work on identifying state enterprise zones, described in Appendix B, found many more Illinois tracts designated as enterprise zones than in the data in HSIS. We have not resolved this discrepancy, but to be consistent focus on the tracts HSIS use. Nonetheless, the larger list of tracts we identified for Illinois is used to ensure that we have appropriate control tracts.

step in our analysis. In all cases, we study effects on the five outcomes that HSIS study: the unemployment rate; the poverty rate (at the person level); the fraction of households with wage and salary income; average wage and salary income (measured at the household level, in $2000 dollars, and including zeros); and the level of employment.

Short-run estimation of the effects of state enterprise zones

We begin with short-run estimation of the effects of state enterprise zones. Our estimation framework, at its core, follows the broad strategy used by HSIS (2011). They study zones created between 1990 and 2000. They compute the difference in outcomes between 1990 and 2000 for tracts where zones were created, which we denote $\Delta Y_{cs1}{}^{T}$, where Y is the dependent variable of interest, the c subscript denotes Census tracts, the s subscript denotes states, the 1 subscript denotes that the difference is for the post-treatment period, and the T superscript denotes that this difference is computed for treated tracts. They subtract from this the pre-treatment difference – between 1980 and 1990 – for the same tracts, $\Delta Y_{cs0}{}^{T}$.

Two of the control tracts that HSIS use are the nearest tract, and the average over all contiguous tracts.[12] In either case, there is a control "tract" matched to each treated tract – a single tract in the case of the nearest tract controls, and an average tract in the case of the contiguous tract controls (averaging across the set of contiguous tracts); the nearest or contiguous tracts are in the same state as the treated tracts. In either approach, they construct a difference-in-difference for the control tract matched to each treated tract c, $\Delta Y_{cs1}{}^{C} - \Delta Y_{cs0}{}^{C}$. To estimate a common effect of state enterprise zones using these two types of controls (and similarly when they estimate the effects of federal zones), they form the triple-difference (DDD)

[12] The also implement an estimator using all potential control tracts in the state that are also not designated as federal zones, in a somewhat different framework. However, this is less comparable to our propensity score strategy so we do not discuss it further.

as the difference between the two double-differences, and estimate a simple regression of this DDD on an intercept (using random county effects), as in:

$$\{\Delta Y_{cs1}{}^{T} - \Delta Y_{cs0}{}^{T}\} - \{\Delta Y_{cs1}{}^{C} - \Delta Y_{cs0}{}^{C}\} = \beta + \varepsilon_{cs} \quad . \tag{1}$$

This DDD estimator identifies the effects of enterprise zone designation from the change in the dependent variable in treated tracts from 1990 to 2000 minus the change from 1980 to 1990, relative to the same difference-in-difference in control tracts.

However, as highlighted in Neumark and Young (forthcoming), simply using nearby or contiguous tracts as control does nothing to ensure that there are common pre-trends in the treated and control tracts. And, indeed, the 1980 to 1990 trends are often strongly different in the treated and control tracts. To better match the pre-treatment trends in outcomes between the treated and control tracts, we employ a data-driven approach to select control tracts, using propensity score methods. Using this approach, we match treatment and control tracts so as to minimize the differences in pre-treatment outcomes in terms of levels and changes, for the outcomes we study.[13] For each program, we match a single control tract to each treated tract by matching on the 1980 and 1990 levels for all five outcomes (i.e., we match on a total of 10 covariates); matching on levels in both years effectively matches on changes as well.[14] Our estimator is based on a comparison of the double-difference (the 1990 to 2000 change minus the 1980 to 1990 change) between each treated tract and its matched control tract, and hence we

[13] We do not restrict potential control tracts to be in the same state as the treated tract, for the same reason as in our analysis using rejected and future zone tracts.

[14] Matching on the 1980 to 1990 change and the level for one year would yield identical results. We reasoned that matching on levels, and not only changes, would provide better controls than just matching on changes.

estimate the average treatment effect on the treated (ATT).[15,16]

A standard procedure to verify the effectiveness of the propensity score matching procedure is to compare pre-treatment means between treated tracts and controls selected using matching, with the most relevant means in our case being pre-treatment changes in the outcomes. In Neumark and Young (forthcoming), we show that the propensity score matching procedure does a good job of matching 1980 to 1990 changes. For example, the change in unemployment from 1980 to 1990 in enterprise zone tracts is 1.4 percentage points (Panel 1), compared with about 1.3 percentage points in the matched controls, resulting in the small and insignificant difference of −0.146. For the samples used in the current paper (described just below), for each of our five outcomes, we never reject the equality of pre-treatment parallel trends using propensity score matched controls, at the five-percent level (we do in one case at the 10-percent level); see Appendix Table A3.

The results are reported in Table 2. The table has three panels. Panel 1 uses all the possible data. Panel 2 drops the data from Massachusetts and Wisconsin. And Panel 3 excludes from the control tracts those that were later designated as state enterprise zones in the 2000s (or as federal zones in 1999-2001). This is our cleanest estimation because it avoids contaminated controls, so we emphasize results for this sample, but show some results for the other samples as well.

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[15] Propensity score matching was performed using "teffects psmatch" command in Stata 13. Controls used for matching were the 1980 levels and 1990 levels for the unemployment rate, poverty rate, average wage and salary income, fraction with wage and salary income, and count of employed persons. The propensity score is estimated using a probit model, and we selected the option "atet" to estimate the average treatment effect on the treated.

[16] Interestingly, there is virtually no attention to pre-trends in the U.S. enterprise zone literature. O'Keefe (2004), Greenbaum and Engberg (2004), Elvery (2009), and Busso et al. (2013) all match on levels at a single point in time (as do, e.g., Gobillon et al. (2012) in research on French enterprise zones). We have only found one study, by Bondonio and Engberg (2000), that studies effects of enterprise zones on employment growth matching on employment growth in prior periods, paralleling what we do here. (They find a negative but insignificant effect of past growth on zone designation.)

The evidence in Table 2 (which essentially replicates our earlier work) generally shows no significant evidence of an effect of enterprise zones on the outcomes we study. The one exception is a decline in the unemployment rate of just over one percentage point, in Panels 1 and 3. For none of the outcomes are the estimated effects statistically significant. And the issue is not simply one of precision. The evidence is not generally in the direction of beneficial effects of enterprise zones; the point estimates for poverty are all positive, those for average wage and salary income are all negative, and for the other two outcomes the signs vary.

We also estimated the models for the same five dependent variables by state. We show, in Table 3, the estimates corresponding to Panel 3 of Table 2 – the most restrictive sample.[17] There is a smattering of significant effects estimated in Table 3. This is more the case for some states than others (e.g., for California, New York, and Ohio). Furthermore, for some states where there is statistically significant evidence, the evidence tends to point towards beneficial effects. In particular, the two significant estimates for California point to lowering the unemployment rate and increasing wage and salary income. And the three significant estimates for Ohio point to lowering the unemployment rate, lowering the poverty rate (substantially, by 3.4 percentage points), and increasing employment. And the two significant estimates for Oregon (one at only the 10-percent level) point to increasing the fraction with wage and salary income and increasing average wage and salary income, which can come about through either higher earnings or higher employment (reflected in the fraction with wage and salary income).

On the other hand, there is also statistically significant evidence in the opposite direction: in Hawaii lowering average wage and salary income; in Nebraska lowering employment; in New York increasing poverty and lowering the fraction with wage and salary income, average wage

[17] The results were similar for the samples corresponding to Panels 1 and 2 of Table 2. (Results available upon request.)

and salary income, and employment; and in Rhode Island increasing poverty and lowering average wage and salary income and employment.

This conflicting evidence by state, and the general absence of evidence of enterprise zone effects when estimating a single effect for all states, reinforces the conclusion from most of the research literature that it is hard to find compelling evidence of beneficial effects of state enterprise zones. One obvious question posed by the differences in estimates across states, however, is whether the differences are accounted for by variation in state enterprise zone features. However, before considering evidence on this question, we first turn to longer-run estimates.

Long-run estimation of the effects of state enterprise zones

Our strategy for estimating longer-run effects of state enterprise zones – while still treating these programs as homogeneous – is a simple extension of our shorter-run analysis. In particular, we maintain exactly the same matched control tracts, since these are based on 1980 to 1990 changes, but redefine our outcome variable as the 1990 to 2010 (instead of to 2000) changes in outcomes.

The results imposing a uniform effect on all states are reported in Table 4; these are reported for all three samples. We still find some evidence that state enterprise zones lowered the unemployment rate; the estimates are similar in magnitude to Table 2, although in this case the effect is small and insignificant in Panel 3, which is our cleanest evidence. Now, though, there are additional statistically significant estimated effects, but all are in the direction of adverse effects. In particular, in Panels 1 and 2 we find significant negative effects on average wage and salary income, and in Panel 1 we find a significant (at the 10-percent level) negative effect on the level of employment. But there is no significant evidence of an increase in the fraction of households with wage and salary income, or of an increased level of employment.[18] Thus, there is no clear evidence of positive effects of state enterprise zone programs in the longer run, and indeed if anything the evidence is weaker (or even in the opposite direction).

Finally, Panel 4 reports estimates, based on the sample in Panel 3, where we drop from the treatment group enterprise zone tracts that we confirmed as "de-designated" as enterprise zone tracts in the 2000s.[19] There are two ways to think about this issue. One is that we might expect to find more positive long-run effects when we drop from the long-run analysis tracts where enterprise zone incentives were eliminated. Alternatively, we might be particularly interested in the difference in results for tracts that remained enterprise zones and tracts that were de-designated, because perhaps the strongest policy argument for enterprise zones is that they can change economic conditions in ways that create some self-sustaining benefits; in this case, much stronger effects when the de-designated tracts are omitted from the set of treated tracts would provide evidence against such self-sustaining effects. In general, the results are mixed, as compared with Panel 3, there are now negative effects on average wage and salary income and employment, a positive effect on the poverty rate, and a smaller positive effect on the fraction of household with wage and salary income – although none of these estimates are statistically significant. The one exception is the now larger and statistically significant reduction in the unemployment rate. Overall, however, there is no clear evidence that effects were very different in de-designated tracts.

[18] The second outcome is of independent interest because an increase in the number of secondary or tertiary earners in households would not increase the fraction of households with wage and salary earners.

[19] We assume that if we do not have data showing a tract continuing to be designated as an enterprise zone in the 2000s, then it was de-designated. Given our uncertainty about developments in Massachusetts and Wisconsin, this analysis is best done excluding these two states. And we restrict the analysis to the control tracts considered in Panel 3 because, as argued above, these provide our cleanest evidence.

Table 5 reports the estimates by state, paralleling Table 3. Again, we show the estimates corresponding to Panel 3 of Table 4 – the most restrictive sample.[20] Compared to the short-run estimates in Table 3, there are fewer significant estimates of long-run effects. Furthermore, there are only two estimates in the table indicating a positive effect: the effect in reducing the unemployment rate in New York (by 2.7 percentage points) in Rhode Island (by 5 percentage points). In contrast, there are eight statistically significant estimates (a few at the 10-percent level) pointing to a worsening of outcomes. These are mostly for average wage and salary income and the level of employment, but in one case (for Virginia) the estimate also points to increased poverty.[21] Thus, the long-run estimates do even more to indicate that state enterprise zones did not generate beneficial effects. Still, there is some state variation pointing to at least a couple instances of positive effects. We next turn to explore heterogeneity in state enterprise programs.

Heterogenous effects: types of incentives

We next reconsider the evidence on both shorter-run and longer-run effects of state enterprise zone programs by focusing on the heterogeneity in the types of benefits offered across states. Table 4 gives a summary version of Appendix Table A1 that shows the classification of the states in our sample based on the four features of state enterprise zones we study.

We use a two-step estimation strategy. We begin – for the short-run analysis – with the state-specific short-run (1990-2000) estimates like those in Table 3 – although we use the estimates not just from Table 3, but also from corresponding estimates for the other two samples

[20] The results were similar for the samples corresponding to Panels 1 and 2 of Table 4. (Results available upon request.)
[21] Moreover, echoing the earlier point, the negative effect on average wage and salary income is never mirrored in a positive effect on the fraction with wage and salary income – and indeed in four out of five cases the point estimate on the fraction with wage and salary income is negative.

shown (not reported). We then regress these estimates on dummy variables for the different enterprise zone benefit categories shown in Table 6. In the second-stage estimation, we weight by the number of treated tracts in that state.[22]

As shown in Table 6, all 12 states included in the analysis provide investment credits as part of their enterprise zone programs. Hence, the effect of investment credits are subsumed in the intercept for the models we estimate. In addition, when we drop Massachusetts and Wisconsin, all of the remaining 10 states also include hiring credits – as only one state (Massachusetts) does not have hiring credits; so when we use just the 10 states, hiring credits, too, are subsumed in the intercept. Table 6 also shows that, with Massachusetts and Wisconsin dropped, only Nebraska does not have enterprise zone incentives we classify as miscellaneous. Thus, what we learn about hiring credits with 12 states, and from enterprise zones classified as miscellaneous with 10 states, comes from only one state relative to the others. It is not surprising, then, that the estimates for these features of enterprise zone incentives are very imprecise, which unfortunately – with the cleanest sample – leaves us only with reliable, independent information on financing credits. Where we are more successful is in estimating the effects of specific features of hiring credits, to which we turn below.

The results for the four features of enterprise zone incentives are reported in Table 7. By and large, the key finding is that we find very few significant effects of enterprise zone features. And when we do, the effects are not consistent with the features delivering benefits. In particular, the evidence in Panels 2 and 3 suggests that financing credits if anything lead to higher poverty,

[22] In a regression framework, one could instead estimate a single model with interactions between the enterprise zone dummy variable and dummy variables for enterprise zone benefit categories. However, this cannot be extended in a straightforward manner to the propensity score framework. We did, though, estimate this type of regression model using only the controls selected by the propensity score matching. This yields the same estimates but different (and incorrect) standard errors.

and there is evidence in Panel 3 (significant at the 10-percent level only) that these same credits lower the level of employment. The only possibly beneficial effect we find is in Panel 1 for the unemployment rate, indicating that enterprise zones with investment credits (reflected in the intercept) reduce the unemployment rate by 1.7 percentage points. Interestingly, as indicated in Panels 2 and 3, when hiring credits are also included (in the intercept), there is no evidence of declines in the unemployment rate.[23]

In Table 8, we present similar analyses, in this case using the state-specific long-run estimates from Table 5 (and corresponding estimates for the other two samples). Here, again, we find no consistent evidence of beneficial long-run effects of particular enterprise zone features. There are two statistically significant estimates indicative of positive effects: the effect of financing incentives on the fraction of households with wage and salary income, in Panel 1; and the effects of enterprise zones including investment and hiring credits on this same fraction, in Panel 3 (at the 10-percent level). But these results are not consistent across the panels, and are not mirrored in other outcomes (e.g., the unemployment rate). Moreover, none of the four other significant estimates in the table are in the direction of enterprise zones features delivering beneficial effects.[24] We would also point out that some of the estimates (on the fraction with wage and salary income, and average wage and salary income, in particular) appear implausibly

[23] Appendix Table A4 reports estimates for the same specifications and samples, but unweighted. Note that some coefficients are identified for only one state, in which case the weighting does not affect the estimated coefficient. Note also that some estimates are much more precise, owing to the weighting substantially reducing the influence of some states. There is a shade more evidence of beneficial effects: in Panel 1, for the effects of hiring credits on average wage and salary income, and miscellaneous incentives on employment; and in Panel 3 for the effects of miscellaneous incentives on the unemployment rate. And there is some offsetting evidence in the opposite direction. Thus, we read this table, too, as failing to provide consistent evidence of beneficial effects of particular enterprise zone features.

[24] Appendix Table A5 reports estimates for the same specifications and samples, but unweighted. The same comments regarding Appendix Table A4 apply. Here, too, we find some more significant effects. But they tend to go in opposite directions, again failing to provide consistent evidence of beneficial effects of particular enterprise zone features.

large in absolute value. We believe this a reflection of the fact that we have a small number of states, and some of these effects are estimated from only a single state. We hence next turn to a more information analysis – of the effects of different types of hiring credits.

Heterogenous effects: hiring credits

Finally, as discussed above, we could not learn much about whether enterprise zone programs offered hiring credits, as most do – and all states in our cleaner sample excluding Massachusetts and Wisconsin offer these benefits. However, there are differences in the nature of hiring credits across states, which we now explore. The differences in hiring credits are summarized in Table 9. Note that (see Appendix Table A2), we collapse two features pertaining to where eligible workers must live to indicate whether, for the most part, credits are available only for workers who live in the enterprise zone.

The results are reported in Tables 10 and 11, for the short-run and the long-run, respectively, using our three alternative analysis samples.[25] Paralleling our earlier findings, there is little evidence that any kind of enterprise zone hiring credit delivers beneficial effects. In Table 10, for the short-run estimates, there is one statistically significant estimate indicative of a beneficial effect (for the effect of a flat credit per new employee on poverty, in Panel 3). We might have expected that credits with live-in requirements would be most likely to deliver benefits to local residents, but there is no evidence of this in Table 10 – and for poverty, the effects point in the opposite direction (Panels 1 and 3). And in the long-run estimates, in Table 11, there is only one statistically significant effect pointing to beneficial effects (for the effect of any hiring credit on the fraction with wage and salary income, in Panel 1).

Small effects vs. imprecise estimates

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[25] The results for the estimates without weighting are reported in Appendix Tables A6 and A7. The findings are qualitatively similar.

In looking at the long-run estimated effects of state enterprise zones, the estimated effects are generally a bit less precise than the short-run effects – as we would expect. But the standard errors are generally not a lot larger. This is true comparing Tables 2 and 4, or comparing Tables 3 and 5. Thus, in our view the absence of significant effects in the longer run is not simply a reflection of imprecision. For example, in Panel 3 of Table 4, based on the standard errors we would be able to detect as statistically significant an unemployment rate decline of 0.51 percentage point, a poverty rate decline of 1.46 percentage point, an increase in the fraction with wage and salary income of 1.33 percentage point, an increase in average wage and salary income of $2,297, or an increase in employment of 70.

This is less true when we look at program heterogeneity, which is not surprising since the evidence is based on subsets of states. For example, comparing the uniform short-run effects in Table 2 with the heterogeneous effects in Table 7, the standard errors on specific program features are uniformly less precise. Moreover, the estimates are sometimes remarkably imprecise; see, e.g., the estimated effects of miscellaneous credits on all outcomes, and of hiring credits in Panel 1, and the constant in the average wage and salary income column. The same is generally true of the long-run effects. Thus, although in some cases the standard errors are only larger by a factor of two or a bit more, in general these results suggest that it is hard, at least in the data we used, to pin down the effects of different enterprise zone program features.

The problem is not as severe for the estimates of the effects of different features of hiring credits specifically, in Table 10. For example, for live-in requirements – a substantively interesting policy question – the standard errors for the short-run effects for the unemployment rate and poverty rate, at least, are only larger by a factor of about two to four. Still, one might conclude that this is too imprecise to detect a plausible effect as significant. For these estimates, we would detect as significant a reduction in the unemployment rate of 2.42 percentage point, and a reduction in the poverty rate of 1.81 percentage point. These are large effects, but perhaps not implausible or within the range of policymakers' goals.

Conclusions

Our analysis in this paper sought to explore two questions regarding the effectiveness of state enterprise zones. Is there stronger evidence of beneficial effects of enterprise zones in the longer-run, when the programs may have more chance to jump-start economic activity? And is there evidence that some particular state enterprise zone features deliver some of the intended benefits of these programs, despite the absence of overall beneficial effects of state enterprise zone programs. Unfortunately, neither looking at state enterprise zone programs through a longer-term lens, or through the lens of program heterogeneity, leads to any consistent indication of beneficial effects of state enterprise zone programs.

We think this evidence should be interpreted somewhat cautiously. The data provide limited capacity to test for program heterogeneity, as there are not that many state programs to study, and hence not a great deal of program variation. In addition, there could be richer dynamics associated with longer-run effects that our decadal analysis with Census data do not pick up. Moreover, there could be other sources of variation that are relevant – such as the initial economic (or other) conditions in the areas designated as enterprise zones.

That said, nothing in our analysis of longer-run effects of enterprise zones or effects of different features of enterprise zone programs overturns the generally negative conclusions about state enterprise zones. In that sense, we believe the new evidence we presented in this paper makes it even harder, despite the evidence, to maintain that enterprise zones – at least as implemented in the past – are a worthwhile policy to lift the economic fortunes of disadvantaged areas.

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Table 1. Treated and control tracts for alternative analysis samples

	Enterprise Zone in 2000 - NCDB			Enterprise Zone in 2000 - limited controls				
	Control	Treated	Total	Control	Treated	Contaminated controls (either fed or state EZ)	2000-2010 EZ data not available	Total
California	5,920	185	6,105	5,027	185	893	0	6,105
Colorado	823	14	837	551	14	272	0	837
Florida	2,753	67	2,820	2,380	67	373	0	2,820
Hawaii	255	9	264	198	9	57	0	264
Illinois	2,318	0	2,318	2,077	0	241	0	2,318
Massachusetts	699	567	1,266	0	0	0	1,266	1,266
Nebraska	219	3	222	210	3	9	0	222
New York	4,158	115	4,273	3,476	115	682	0	4,273
Ohio	2,186	205	2,391	510	205	1,676	0	2,391
Oregon	478	48	526	401	48	77	0	526
Rhode Island	194	27	221	156	27	38	0	221
Virginia	1,179	29	1,208	978	29	201	0	1,208
Wisconsin	698	25	723	0	0	0	723	723
Total	21,880	1,294	23,174	15,964	702	4,519	1,989	23,174

Table 2. Short-run estimates of the effect of enterprise zones using propensity score matched controls (1980-2000)

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
			Panel 1. No limits on controls		
EZ	-1.211***	0.312	0.0628	-571.0	-28.57
	(0.290)	(0.439)	(0.417)	(463.2)	(19.03)
N (EZ)	23,174	23,174	23,174	23,174	23,174
	(1,294)	(1,294)	(1,294)	(1,294)	(1,294)
			Panel 2. Excluding MA and WI		
EZ	-0.284	0.518	-0.252	-452.6	-8.506
	(0.412)	(0.575)	(0.616)	(501.7)	(28.10)
N (EZ)	21,185	21,185	21,185	21,185	21,185
	(702)	(702)	(702)	(702)	(702)
			Panel 3. Only limited controls		
EZ	-1.105***	-0.122	0.613	-460.6	18.81
	(0.351)	(0.625)	(0.616)	(577.0)	(26.71)
N (EZ)	16,666	16,666	16,666	16,666	16,666
	(702)	(702)	(702)	(702)	(702)

Notes: Each cell is an estimate of the average short-run (1980-2000) effect of enterprise zones from a separate propensity score matched probit model that matches treatment to control tracts using ten covariates: 1980 and 1990 tract-level average unemployment rate, poverty rate, fraction of households with wage and salary income, average wage and salary income, and employment. The estimates presented are average treatment effects on the treated. The control tracts are not restricted to the same state as the treated tracts. *** p<0.01, ** p<0.05, * p<0.1

Table 3. Short-run state-specific estimates of the effect of enterprise zones - only limited controls (1990-2000)

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
EZ×California	-1.368*	1.030	1.428	3,499**	-69.51
	(0.806)	(1.628)	(1.457)	(1,433)	(63.73)
N (EZ)	16,149 (185)	16,149 (185)	16,149 (185)	16,149 (185)	16,149 (185)
EZ×Colorado	-1.447	-1.279	-5.906	-2,179	253.6
	(2.182)	(6.480)	(7.201)	(3,892)	(186.5)
N (EZ)	15,978 (14)	15,978 (14)	15,978 (14)	15,978 (14)	15,978 (14)
EZ×Florida	-0.308	1.758	0.452	-2,331	-74.04
	(3.113)	(5.372)	(3.424)	(2,245)	(173.5)
N (EZ)	16,031 (67)	16,031 (67)	16,031 (67)	16,031 (67)	16,031 (67)
EZ×Hawaii	-0.0813	-1.154	-7.791	-9,456***	-305.1
	(4.188)	(6.312)	(8.915)	(2,875)	(302.4)
N (EZ)	15,973 (9)	15,973 (9)	15,973 (9)	15,973 (9)	15,973 (9)
EZ×Nebraska	3.353	-2.287	1.664	3,972	-263.0***
	(11.63)	(11.57)	(17.28)	(12,501)	(31.27)
N (EZ)	15,967 (3)	15,967 (3)	15,967 (3)	15,967 (3)	15,967 (3)
EZ×New York	-0.678	2.790*	-3.355**	-5,572***	-165.1***
	(0.907)	(1.529)	(1.486)	(1,551)	(59.45)
N (EZ)	16,079 (115)	16,079 (115)	16,079 (115)	16,079 (115)	16,079 (115)
EZ×Ohio	-1.887***	-3.351***	0.460	-1,366	98.09**
	(0.537)	(0.721)	(1.061)	(954.9)	(45.27)
N (EZ)	16,169 (205)	16,169 (205)	16,169 (205)	16,169 (205)	16,169 (205)
EZ×Oregon	-0.916	-2.970	4.261*	3,769**	87.58
	(1.435)	(1.898)	(2.514)	(1,850)	(106.3)
N (EZ)	16,012 (48)	16,012 (48)	16,012 (48)	16,012 (48)	16,012 (48)
EZ×Rhode Island	-3.041	4.148*	-2.871	-8,391***	-211.0*
	(2.161)	(2.495)	(3.813)	(2,210)	(110.5)
N (EZ)	15,991 (27)	15,991 (27)	15,991 (27)	15,991 (27)	15,991 (27)
EZ×Virginia	1.230	3.017	-4.110	-2,017	-200.4
	(1.143)	(3.348)	(3.596)	(1,591)	(134.0)
N (EZ)	15,993 (29)	15,993 (29)	15,993 (29)	15,993 (29)	15,993 (29)

Notes: Each cell is an estimate of the average short-run (1990-2000) effect of enterprise zones from a separate propensity score matched probit model that estimates the effect of enterprise zones in one state using potential controls from all states. The propensity score matched model matches on ten outcomes: 1980 and 1990 outcomes in unemployment rate, poverty rate, fraction of households with wage and salary income, average wage and salary income, and employment. The estimates presented are average treatment effects on the treated. The control tracts are not restricted to the same state as the treated tracts. All estimates in this table exclude tracts in Massachusetts and Wisconsin, and all control tracts that were designated as either state or federal enterprise zones in the 2000s.

Table 4. Long-run estimates of the effect of enterprise zones using propensity score matched controls (1980-2010)

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls					
EZ	-0.773**	0.416	0.355	-3,406***	-47.70*
	(0.332)	(0.499)	(0.462)	(978.3)	(25.87)
N (EZ)	23,174 (1,294)	23,174 (1,294)	23,174 (1,294)	23,174 (1,294)	23,174 (1,294)
Panel 2. Excluding MA and WI					
EZ	-1.176**	-0.517	0.567	-2,540*	-37.34
	(0.476)	(0.650)	(0.651)	(1,315)	(44.87)
N (EZ)	21,185 (702)	21,185 (702)	21,185 (702)	21,185 (702)	21,185 (702)
Panel 3. Only limited controls					
EZ	-0.347	-0.582	0.826	141.7	0.633
	(0.260)	(0.743)	(0.678)	(1,172)	(35.82)
N (EZ)	16,666 (702)	16,666 (702)	16,666 (702)	16,666 (702)	16,666 (702)
Panel 4. Only limited controls, dropping enterprise zone tracts de-designated in 2000s					
EZ	-0.861**	0.416	0.366	-1,262	-23.36
	(0.362)	(0.926)	(0.751)	(1,205)	(38.95)
N (EZ)	16,543 (579)	16,543 (579)	16,543 (579)	16,543 (579)	16,543 (579)

Notes: Each cell is an estimate of the average long-run (1990-2010) effect of enterprise zones from a separate propensity score matched probit model that matches treatment to control tracts using ten covariates: 1980 and 1990 tract-level average unemployment rate, poverty rate, fraction of households with wage and salary income, average wage and salary income, and employment. The estimates presented are average treatment effects on the treated. The control tracts are not restricted to the same state as the treated tracts. In Panel 4, we assume that if we do not have data showing a tract continuing to be designated as an enterprise zone in the 2000s, then it was de-designated. *** p<0.01, ** p<0.05, * p<0.1

Table 5. Long-run state-specific estimates of the effect of enterprise zones - only limited controls (1980-2010)

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
EZ×California	-0.0411	-0.193	1.294	3,982	-116.4
	(0.926)	(1.658)	(1.564)	(2,957)	(90.27)
N (EZ)	16,149 (185)	16,149 (185)	16,149 (185)	16,149 (185)	16,149 (185)
EZ×Colorado	9.681	5.086	-4.924	-6,118	12.38
	(7.480)	(12.83)	(6.809)	(10,783)	(243.1)
N (EZ)	15,978 (14)	15,978 (14)	15,978 (14)	15,978 (14)	15,978 (14)
EZ×Florida	5.484*	-0.908	-0.137	-975.1	23.72
	(2.832)	(6.527)	(3.412)	(4,484)	(218.2)
N (EZ)	16,031 (67)	16,031 (67)	16,031 (67)	16,031 (67)	16,031 (67)
EZ×Hawaii	-2.509	-4.324	-6.223	-297.2	152.9
	(3.397)	(7.170)	(10.92)	(14,804)	(334.8)
N (EZ)	15973 (9)	15973 (9)	15973 (9)	15973 (9)	15973 (9)
EZ×Nebraska	5.320	0.824	19.39	-44,133**	-744.5*
	(11.09)	(13.76)	(14.94)	(21,945)	(442.4)
N (EZ)	15,967 (3)	15,967 (3)	15,967 (3)	15,967 (3)	15,967 (3)
EZ×New York	-2.746*	1.694	-0.980	-12,567***	-100.7
	(1.479)	(1.614)	(1.740)	(3,489)	(88.75)
N (EZ)	16,079 (115)	16,079 (115)	16,079 (115)	16,079 (115)	16,079 (115)
EZ×Ohio	-0.350	-0.441	-1.614	-5,533***	-14.23
	(0.599)	(0.984)	(1.087)	(1,551)	(63.29)
N (EZ)	16,169 (205)	16,169 (205)	16,169 (205)	16,169 (205)	16,169 (205)
EZ×Oregon	-1.690	-2.956	2.579	2,810	150.4
	(1.502)	(2.461)	(2.608)	(3,769)	(131.8)
N (EZ)	16,012 (48)	16,012 (48)	16,012 (48)	16,012 (48)	16,012 (48)
EZ×Rhode Island	-5.011**	2.383	-1.061	-17,375**	-229.4
	(2.521)	(2.380)	(4.570)	(6,755)	(162.5)
N (EZ)	15,991 (27)	15,991 (27)	15,991 (27)	15,991 (27)	15,991 (27)
EZ×Virginia	2.051	6.866**	-3.083	-6,684*	-277.5*
	(1.782)	(3.370)	(4.562)	(3,804)	(162.0)
N (EZ)	15,993 (29)	15,993 (29)	15,993 (29)	15,993 (29)	15,993 (29)

Notes: Each cell is an estimate of the average long-run (1990-2010) effect of enterprise zones from a separate propensity score matched model that match treatment to control tracts using ten covariates: 1980 and 1990 outcomes in unemployment rate, poverty rate, fraction of households with wage and salary income, average wage and salary income, and employment. The estimates presented are average treatment effects on the treated. The control tracts are not restricted to the same state as the treated tracts. *** p<0.01, ** p<0.05, * p<0.1

Table 6. Enterprise zone broad benefit categories by state

	State													
Benefit	CA	CO	FL	HI	IL	MA	NE	NY	OH	OR	RI	VA	WI	Total
1. Financing	X	X	X		X			X			X			6
2. Tax Credit for Investments or Operations	X	X	X	X	X	X	X	X	X	X	X	X	X	13
3. Miscellaneous	X	X	X	X	X			X	X	X	X	X	X	11
4. Hiring Incentives	X	X	X	X	X		X	X	X	X	X	X	X	12

Notes: See Appendix A for details.

Table 7. Short-run estimates of heterogeneous effects of enterprise zone benefits

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Constant (includes investment credits (12))	-1.715***	0.736	-0.780	-2,087*	-56.40
	(0.396)	(1.109)	(0.787)	(1,008)	(50.54)
Financing (5)	-0.156	2.125	1.666	-2,119	-125.8
	(0.707)	(1.979)	(1.404)	(1,799)	(90.19)
Miscellaneous (10)	1.097	-3.153	-3.565	-7,487	425.7
	(5.475)	(15.32)	(10.87)	(13,930)	(698.2)
Hiring credits (11)	0.0471	1.029	3.058	10,175	-297.6
	(5.463)	(15.29)	(10.85)	(13,901)	(696.7)
Panel 2. Excluding MA and WI (N=10)					
Constant (includes investment credits (10))	0.830	0.929	-1.686	5,003	16.33
	(5.236)	(9.730)	(9.359)	(18,421)	(610.4)
Financing (5)	-0.0340	3.422**	-1.241	-1,394	-132.8
	(0.696)	(1.293)	(1.244)	(2,448)	(81.12)
Miscellaneous (9)	-2.216	-2.451	2.050	-4,704	32.45
	(5.263)	(9.780)	(9.407)	(18,516)	(613.5)
Panel 3. Only limited controls (N=10)					
Constant (includes investment credits (10))	3.353	-2.287	1.664	3,972	-263
	(4.654)	(8.618)	(14.06)	(21,320)	(546.4)
Financing (5)	0.247	4.359***	-0.993	-162.9	-149.6*
	(0.618)	(1.145)	(1.869)	(2,833)	(72.61)
Miscellaneous (9)	-4.714	-0.299	-1.287	-4,806	317.1
	(4.678)	(8.662)	(14.13)	(21,430)	(549.2)

Notes: Each column presents estimates from a separate two-stage model where the state-specific short-run (1990-2000) estimates in Table 3 (and corresponding estimates for the other samples) are regressed against indicators for different enterprise zone benefits. Each second-stage estimate is weighted by the number of treated tracts in that state. All states included in Panel 1 provide investment credits, so the effects of investment credits are subsumed in the constant. All states included in Panels 2 and 3 provide investment and hiring credits, so the effects of investment and hiring credits are subsumed in the constant. Number in parentheses next to each benefit category refers to the number of states that provide that benefit. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 8. Long-run estimates of heterogeneous effects of EZ benefits

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Constant (includes investment credits (12))	0.155	1.750*	-0.532	-5,469*	-168.1**
	(0.654)	(0.936)	(0.556)	(2,528)	(72.44)
Financing (5)	-1.990	-2.203	4.442***	-425.1	32.73
	(1.167)	(1.670)	(0.993)	(4,512)	(129.3)
Miscellaneous (10)	6.196	-6.321	-12.59	10,223	409.3
	(9.031)	(12.93)	(7.686)	(34,925)	(1,001)
Hiring credits (11)	-6.011	4.331	10.55	-6,425	-245.9
	(9.012)	(12.90)	(7.670)	(34,852)	(998.6)
Panel 2. Excluding MA and WI (N=10)					
Constant (includes investment credits (10))	-1.169	-5.242	8.673	-9,401	96.45
	(12.03)	(11.20)	(12.27)	(34,424)	(902.7)
Financing (5)	-1.382	-0.348	0.125	20.31	-1.854
	(1.599)	(1.488)	(1.631)	(4,575)	(120.0)
Miscellaneous (9)	0.255	4.637	-8.591	6,550	-125.7
	(12.09)	(11.25)	(12.33)	(34,601)	(907.4)
Panel 3. Only limited controls (N =10)					
Constant (includes investment credits (10))	5.320	0.824	19.39*	-44,133	-744.5
	(15.68)	(11.44)	(9.363)	(36,868)	(499.1)
Financing (5)	0.507	0.821	1.260	852.9	-83.90
	(2.084)	(1.521)	(1.244)	(4,900)	(66.33)
Miscellaneous (9)	-5.718	-1.072	-20.60*	40,024	736.3
	(15.76)	(11.50)	(9.411)	(37,057)	(501.6)

Notes: Each column presents estimates from a separate two-stage model where the state-specific short-run (1990-2000) estimates in Table 5 and Appendix Tables C3 and C4 are regressed against indicators for different enterprise zone benefits. Each second-stage estimate is weighted by the number of treated tracts in that state. All states included in Panel 1 provide investment credits, so the effects of investment credits are subsumed in the constant. All states included in Panels 2 and 3 provide investment and hiring credits, so the effects of investment and hiring credits are subsumed in the constant. Number in parentheses next to each benefit category refers to the number of states that provide that benefit. *** p<0.01, ** p<0.05, * p<0.1.

Table 9. Hiring credit differences across states

	State													
Hiring credit	CA	CO	FL	HI	IL	MA	NE	NY	OH	OR	RI	VA	WI	Total
Live-in requirement to receive hiring credit		X	X				X	X			X	X		6
Credit based on wages	X		X					X			X		X	5
Flat credit per new employee		X	X		X		X	X						5
Payroll or unemployment insurance tax exemption				X					X	X		X		4

Notes: A credit based on wages provides a tax credit for businesses who employ eligible employees equal to some portion (varies by state) of the total wage bill paid to those employees.

Table 10. Short-run estimates of heterogeneous enterprise zone hiring credits, weighted by frequency of treated tracts

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Constant	-1.715***	0.736	-0.780*	-2,087**	-56.40
	(0.354)	(0.882)	(0.386)	(726.3)	(39.05)
Any hiring credit (11)	1.967	-8.060	4.739	8,418	441.4
	(2.239)	(5.582)	(2.440)	(4,594)	(247.0)
Live-in requirement to receive hiring credit (5)	1.604	7.297**	-5.212***	-5,058*	-226.4
	(1.192)	(2.971)	(1.298)	(2,445)	(131.5)
Credit based on wages (4)	-1.664	6.206	-1.699	-5,917	-326.5
	(2.137)	(5.329)	(2.329)	(4,386)	(235.8)
Flat credit per new employee (4)	-0.557	-4.582	1.588	969.3	1.196
	(1.343)	(3.349)	(1.464)	(2,757)	(148.2)
Payroll or unemployment insurance tax exemption (4)	-0.916	5.645	-4.805*	-4,919	-295.8
	(2.261)	(5.637)	(2.464)	(4,640)	(249.5)
Panel 2. Excluding MA and WI (N=10)					
Constant (includes any hiring credit (10))	-2.316	-3.456	5.840	8,293	377.7
	(2.232)	(4.507)	(3.129)	(5,882)	(202.5)
Live-in requirement to receive hiring credit (5)	-0.0983	0.231	-2.393	-6,185	-158.6
	(1.203)	(2.428)	(1.686)	(3,169)	(109.1)
Credit based on wages (4)	0.200	4.669	-5.482	-6,302	-385.6
	(2.149)	(4.340)	(3.013)	(5,664)	(195.0)
Flat credit per new employee (4)	1.602	1.540	-0.314	202.1	-8.690
	(1.355)	(2.735)	(1.899)	(3,569)	(122.9)
Payroll or unemployment insurance tax exemption (4)	0.941	1.911	-5.238	-7,378	-313.2
	(2.282)	(4.608)	(3.198)	(6,013)	(207.0)
Panel 3. Only limited controls (N=10)					
Constant (includes any hiring credit (10))	-1.731	-3.044	-1.142	6,076	233.9
	(2.292)	(1.714)	(5.297)	(7,128)	(192.1)
Live-in requirement to receive hiring credit (5)	0.719	4.750***	-4.659	-6,330	-215.7*
	(1.235)	(0.924)	(2.854)	(3,840)	(103.5)
Credit based on wages (4)	0.0580	3.867*	2.616	-3,285	-294.0
	(2.207)	(1.651)	(5.101)	(6,864)	(185.0)
Flat credit per new employee (4)	0.412	-3.163**	1.231	-839.0	144.2
	(1.391)	(1.040)	(3.214)	(4,326)	(116.6)
Payroll or unemployment insurance tax exemption (4)	0.299	-0.0151	1.983	-6,279	-158.3
	(2.343)	(1.752)	(5.415)	(7,287)	(196.4)

Notes: Each column presents estimates from a separate two-stage model where the state-specific estimates in Table 3 (first stage) are regressed against indicators for different enterprise zone benefits (outlined in Table 9 and described in more detail in Appendix Table A1 and A2). Each second stage estimate is weighted by the number of treated tracts in that state. The overall effect of hiring credits is not estimable in Panels 2 and 3 because Massachusetts was the only state to not provide hiring credits, and Massachusetts is dropped from these analyses. *** p<0.01, ** p<0.05, * p<0.1.

Table 11. Long-run estimates of heterogeneous enterprise zone hiring credits, weighted by frequency of treated tracts

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Constant	0.155	1.750*	-0.532	-5,469*	-168.1*
	(0.739)	(0.820)	(0.542)	(2,431)	(70.80)
Any hiring credit (11)	-0.0121	-9.148	6.924*	8,885	439.0
	(4.674)	(5.184)	(3.427)	(15,374)	(447.8)
Live-in requirement to receive hiring credit (5)	0.955	5.212	-1.683	-12,531	-289.4
	(2.487)	(2.759)	(1.824)	(8,182)	(238.3)
Credit based on wages (4)	-2.234	4.833	-3.721	-3,840	-143.7
	(4.462)	(4.949)	(3.272)	(14,678)	(427.6)
Flat credit per new employee (4)	-0.152	-5.074	-0.332	8,783	79.80
	(2.804)	(3.111)	(2.056)	(9,225)	(268.7)
Payroll or unemployment insurance tax exemption (4)	0.123	6.805	-8.988**	-2,904	-241.1
	(4.720)	(5.236)	(3.461)	(15,528)	(452.3)
Panel 2. Excluding MA and WI (N=10)					
Constant (includes any hiring credit (10))	-4.964	-5.735	6.464	9,061	168.5
	(6.215)	(5.364)	(6.158)	(12,062)	(454.0)
Live-in requirement to receive hiring credit (5)	0.224	0.270	-0.765	-10,779	-159.8
	(3.348)	(2.890)	(3.318)	(6,498)	(244.6)
Credit based on wages (4)	1.981	3.774	-6.235	-6,253	-137.0
	(5.985)	(5.165)	(5.930)	(11,615)	(437.1)
Flat credit per new employee (4)	1.349	2.030	0.419	-36.55	42.49
	(3.771)	(3.255)	(3.737)	(7,320)	(275.5)
Payroll or unemployment insurance tax exemption (4)	4.027	5.103	-6.306	-10,838	-181.8
	(6.353)	(5.483)	(6.296)	(12,331)	(464.1)
Panel 3. Only limited controls (N=10)					
Constant (includes any hiring credit (10))	8.072	3.049	1.311	-1,783	-170.3
	(7.211)	(3.779)	(5.805)	(15,046)	(227.0)
Live-in requirement to receive hiring credit (5)	-0.927	5.375**	-2.210	-11,634	-210.9
	(3.885)	(2.036)	(3.127)	(8,106)	(122.3)
Credit based on wages (4)	-8.627	-3.598	-0.0355	4,527	66.29
	(6.944)	(3.639)	(5.590)	(14,489)	(218.6)
Flat credit per new employee (4)	1.767	-4.090	0.265	590.9	259.9
	(4.376)	(2.293)	(3.522)	(9,131)	(137.8)
Payroll or unemployment insurance tax exemption (4)	-8.378	-3.832	-2.302	-1,167	183.1
	(7.372)	(3.863)	(5.934)	(15,381)	(232.1)

Notes: Each column presents estimates from a separate two-stage model where the state-specific estimates in Table 5 (first stage) are regressed against indicators for different enterprise zone benefits (outlined in Table 9 and described in more detail in Appendix Table A1 and A2). Each second stage estimate is weighted by the number of treated tracts in that state. The overall effect of hiring credits is not estimable in Panels 2 and 3 because Massachusetts was the only state to not provide hiring credits, and Massachusetts is dropped from these analyses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix Table A1. Enterprise zone broad benefit categories by state

	State													
Benefit	CA	CO	FL	HI	IL	MA	NE	NY	OH	OR	RI	VA	WI	Total
1. Financing	**X**	**X**	**X**		**X**			**X**			**X**			6
Lender interest deduction	X													1
Interest free loans			X											1
Corporation for providing loans					X			X						2
Stock investment incentive								X						1
Incentives for providing loans											X			1
Tax deduction for contributions		X			X			X			X			4
2. Tax Credit for Investments or Operations	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	13
Credit contingent on private investment (sales and use tax)							X							1
General excise tax credit				X										1
Credit for opening new or expanding existing business			X	X								X		3
Resident Business Owner Tax Deduction											X			1
Research and Experimental Activities tax credit		X												1
Credit for qualified research expenses													X	1
Investment in land not included in determining issued or outstanding stock									X					1
Property tax credit or exemption (total value)			X			X		X	X	X	X			6
Property tax credit or exemption (added value from renovation/expansion)		X	X		X	X		X	X	X		X	X	9
Property tax exemption for hotels										X				1
Site Preparation										X				1
Tax credit for construction materials			X					X					X	3
Environmental remediation tax credit									X				X	2
Investment in tangible personal property not included in determining issued or outstanding stock									X					1
Machinery and equipment sales and use or property tax exemption	X	X	X		X	X			X	X	X			8
Tax exemption for all items purchased to conduct business												X	X	2
Utility Tax Credit/Incentive								X						1
3. Miscellaneous	**X**	**X**	**X**	**X**	**X**			**X**	**X**	**X**	**X**	**X**	**X**	11
"Optional" services or assistance authorized by municipal corporation									X					1
Net Operating Loss Computation and Loss Limitations	X													1
Regulatory relief			X											1
Technology infrastructure investment tax credit (rural internet)		X												1
Sale/lease of public real property for business use				X	X					X		X		4
Property tax exemption for leased government buildings/structures										X				1
Credit for paying employee insurance premiums		X		X										2
Job training/school tax credit or reimbursement		X			X				X					3
Day care		X	X						X				X	4
Employee tax credit	X										X		X	3
(Local) Occupational licenses/regulatory relief	X		X	X								X		4
(Local) Real property tax incentive (total)		X	X	X				X						4
(Local) Real property tax incentive (ad valorem for increase in value)	X		X		X									3
(Local) Taxable tangible property (sales and use tax) incentives		X												1
(Local) Tax increment funds	X													1
(Local) Bonds/loans	X		X											2
(Local) Job/referral placement	X													1
(Local) Energy tax exemption/credit			X		X									2
4. Hiring Incentives	**X**	**X**	**X**	**X**	**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**	12
Credit based on wages	X		X					X			X		X	5
Flat credit per new employee		X	X		X		X	X						5
Payroll or unemployment tax exemption				X					X	X		X		4
5. Live-in Requirements		**X**	**X**				**X**	**X**			**X**	**X**		6
Limited benefits for non-enterprise zone residents							X	X			X	X		4
Only enterprise zone residents qualify for benefit purposes		X	X											2

Appendix Table A2. Details of enterprise zone live-in requirements

State	Live in requirement for benefits?	Benefits subject to employee residence	Related legislation and additional details
California	No	None	Statues of 1984, Section 7082 (i)(1)-(2). There is a requirement that residents belong to a high-density unemployment area.
Colorado	Yes	Hiring credit	1987 c. 310 p.1470-1472: Section 39-30-105
Florida	Yes	Hiring credit	1995 section 220.181. There is also a 20% employee resident requirement for businesses to receive a business property credit
Hawaii	No	None	1995 Act 91, p. 136-139 Section 5. Section 209E-9: For a business to qualify for credits, 40% or more of their employees must be low income, but there is no requirement that they must reside in the enterprise zone.
Illinois	No	None	Public Act 86-203 201(g)
Massachusetts	No	None	1993 Chapter 19 Section 3E (5)(b)(v): enterprise zone project proposals are supposed to have a "reasonable chance of increasing employment opportunities for residents of the project ETA [Economic Targeted Area]…" but there is no actual requirement set forth.
Nebraska	Yes/Limited	Hiring credit	1999 77-27-188(3)(a)-(b) Employers operating in enterprise zones can still claim hiring credits for non-enterprise zone residents, however the amount is reduced ($3,000 for each non-resident hired versus $5,000 for each resident hired)
New York	Yes/Limited	Hiring credit	1993, c. 708 Sect 8,9: Until legislation enacted in 1993, there were requirements that qualified employees reside within a certain distance to the zone depending on the density of the population. After modification to this language in 1993, it appears there were no longer residency requirements.
Ohio	No	None	1993/1994 Section 5709.64(A)(2)(e): There is a requirement that 25% of newly hired employees must meet one of several conditions; one way to qualify is if the employee resided for at least 6 months in the county containing the enterprise zone.
Oregon	No	Property tax exemption	Oregon Laws 1995 Section 8. ORS 285.605: After 1995, the enterprise zone residency requirements were removed. Prior to 1995, to comply with the hiring requirements (285.605), 50% of all new zone employees hired had to be residents of enterprise zones.
Rhode Island	Yes/Limited	Hiring credit	1999 Ch. 177 Section 1, 42-64.3-6: Tax credit equal to 50% of total wages paid to new hires if not enterprise zone residents. Credit increases to 75% for employees who are enterprise zone residents.
Virginia	Yes/Limited	All	1995 c. 517 Section 59.1-279: Businesses qualified to receive enterprise zone tax credits must have 40% of their employees have had incomes below 80% of the median income prior to employment at the enterprise zone firm, *or* be residents of an enterprise zone
Wisconsin	No	No	Tax form Schedule EC just says that employees must be residents of Wisconsin.

Appendix Table A3. Testing for pre-trends in state enterprise zone tracts

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($ 2000)	Employment
Panel 1: No limits on controls					
Treated tracts: 1980 – 1990 level change	1.434	1.090	0.209	5,574	182.3
N	1,294	1,294	1,294	1,294	1,294
Difference in 1980 – 1990 level change between treated and PSM	-0.112 [0.649]	0.362 [1.312]	0.047 [0.165]	-505.5 [1.409]	-13.06 [0.975]
N	1,294	1,294	1,294	1,294	1,294
Number of unique NENTZs	1,198	1,198	1,198	1,198	1,198
Panel 2: No MA or WI					
Treated tracts: 1980 – 1990 level change	0.499	1.760	-0.156	2,261	198.3
N	702	702	702	702	702
Difference in 1980 – 1990 level change between treated and PSM	0.064 [0.239]	-0.413 [1.093]	0.746* [1.847]	507.4 [1.525]	-0.613 [0.029]
N	702	702	702	702	702
Number of unique NENTZs	675	675	675	675	675
Panel 3: Limited control sample					
Treated tracts: 1980 – 1990 level change	0.499	1.760	-0.156	2,262	198.3
N	702	702	702	702	702
Difference in 1980 – 1990 level change between treated and PSM	0.056 [0.200]	0.446 [1.209]	0.064 [0.148]	-240.2 [0.674]	16.90 [0.879]
N	702	702	702	702	702
Number of unique NENTZs	648	648	648	648	648

Notes: The data used for these estimates come from the Neighborhood Change Database (NCDB). *t*-statistics, in brackets, are from a t-test comparing the 1980-1990 changes in the control tracts to the treated tracts are in brackets, and the asterisks identify whether the changes are statistically different (*** 1%, ** 5%, and * 10%). The propensity score matched controls are identified by matching treated enterprise zone tracts to control tracts using ten covariates: 1980 levels and 1990 levels for all five outcomes. The propensity score matched control tracts are the same controls used to produce the estimates in Table 2. For each dataset, we restrict the sample to tracts with non-missing information for all outcomes and non-zero population counts in 1980 and 1990 according to the NCDB.

Appendix Table A4. Short-run estimates of heterogeneous effects of enterprise zone benefits, unweighted

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Constant (includes investment credits (12))	-1.715	0.736	-0.780	-2,087	-56.40
	(1.364)	(5.002)	(2.730)	(3,213)	(249.1)
Financing (5)	0.227	0.0718	0.753	-1,997	-219.1
	(0.862)	(3.163)	(1.727)	(2,032)	(157.6)
Miscellaneous (10)	1.473	-1.920	-3.477	-8,490**	533.1*
	(1.494)	(5.479)	(2.991)	(3,520)	(272.9)
Hiring credits (11)	0.0471	1.029	3.058	10,175*	-297.6
	(1.929)	(7.074)	(3.861)	(4,544)	(352.3)
Panel 2. Excluding MA and WI (N=10)					
Constant (includes investment and hiring credits (10))	0.830	0.929	-1.686	5,003	16.33
	(1.148)	(3.013)	(2.636)	(4,229)	(197.9)
Financing (5)	0.189	0.697	-0.952	-792.2	-176.2
	(0.770)	(2.021)	(1.768)	(2,837)	(132.7)
Miscellaneous (9)	-2.015	-0.569	1.763	-6,061	90.73
	(1.284)	(3.369)	(2.947)	(4,729)	(221.2)
Panel 3. Only limited controls					
Constant (includes investment and hiring credits (10))	3.353**	-2.287	1.664	3,972	-263
	(1.174)	(2.450)	(4.117)	(4,899)	(191.7)
Financing (5)	-0.955	2.804	-0.256	-727.2	26.73
	(0.787)	(1.644)	(2.762)	(3,287)	(128.6)
Miscellaneous (9)	-3.767**	1.172	-3.458	-6,239	183.0
	(1.312)	(2.739)	(4.603)	(5,478)	(214.3)

Notes: Each column presents estimates from a separate two-stage model where the state-specific short-run (1990-2000) estimates in Table 3 (and corresponding estimates for the other two samples) are regressed against indicators for different enterprise zone benefits. Each second-stage estimate is weighted by the number of treated tracts in that state. All states included in Panel 1 provide investment credits, so the effects of investment credits are subsumed in the constant. All states included in Panels 2 and 3 provide investment and hiring credits, so the effects of investment and hiring credits are subsumed in the constant. Number in parentheses next to each benefit category refers to the number of states that provide that benefit. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Appendix Table A5. Long-run estimates of heterogeneous effects of EZ benefits, unweighted

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Constant (includes investment credits (12))	0.155	1.750	-0.532	-5,469	-168.1
	(1.982)	(4.243)	(1.888)	(9,806)	(381.9)
Financing (5)	-0.633	-2.973	3.287**	-2,538	-205.2
	(1.253)	(2.683)	(1.194)	(6,202)	(241.5)
Miscellaneous (10)	6.095**	-6.506	-11.69***	9,005	608.6
	(2.171)	(4.648)	(2.069)	(10,741)	(418.3)
Hiring credits (11)	-6.011*	4.331	10.55***	-6,425	-245.9
	(2.803)	(6.000)	(2.670)	(13,867)	(540.1)
Panel 2. Excluding MA and WI (N=10)					
Constant (includes investment and hiring credits (10))	-1.169	-5.242*	8.673**	-9,401	96.45
	(2.477)	(2.453)	(3.314)	(7,083)	(259.8)
Financing (5)	-0.331	-0.571	0.0480	-4,709	-257.0
	(1.662)	(1.645)	(2.223)	(4,751)	(174.3)
Miscellaneous (9)	-0.420	4.651	-8.447*	9,109	83.79
	(2.769)	(2.742)	(3.705)	(7,919)	(290.5)
Panel 3. Only limited controls					
Constant (includes investment and hiring credits (10))	5.320	0.824	19.39***	-44,133***	-744.5***
	(4.744)	(3.720)	(2.961)	(7,124)	(154.2)
Financing (5)	2.098	1.826	0.924	-4,185	-84.97
	(3.182)	(2.495)	(1.986)	(4,779)	(103.5)
Miscellaneous (9)	-5.944	-1.038	-21.47***	41,707***	747.4***
	(5.304)	(4.159)	(3.311)	(7,965)	(172.4)

Notes: Each column presents estimates from a separate two-stage model where the state-specific short-run (1990-2000) estimates in Table 5 and Appendix Tables C3 and C4 are regressed against indicators for different enterprise zone benefits. Each second-stage estimate is weighted by the number of treated tracts in that state. All states included in Panel 1 provide investment credits, so the effects of investment credits are subsumed in the constant. All states included in Panels 2 and 3 provide investment and hiring credits, so the effects of investment and hiring credits are subsumed in the constant. Number in parentheses next to each benefit category refers to the number of states that provide that benefit. *** p<0.01, ** p<0.05, * p<0.1.

Appendix Table A6. Short-run estimates of heterogeneous enterprise zone hiring credits, unweighted

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Constant	-1.715	0.736	-0.780	-2,087	-56.40
	(1.429)	(3.597)	(1.754)	(3,244)	(260.7)
Any hiring credit (11)	0.552	-8.959	5.052	8,059	302.6
	(2.219)	(5.585)	(2.725)	(5,038)	(404.9)
Live-in requirement to receive hiring credit (5)	1.392	8.184**	-5.355**	-3,955	-351.2
	(1.201)	(3.022)	(1.474)	(2,725)	(219.1)
Credit based on wages (4)	-0.259	3.957	-2.435	-7,796*	-128.4
	(1.429)	(3.597)	(1.754)	(3,244)	(260.7)
Flat credit per new employee (4)	-0.0951	-2.066	2.182	2,522	62.93
	(1.531)	(3.852)	(1.879)	(3,474)	(279.2)
Payroll or unemployment insurance tax exemption (4)	0.910	7.599	-4.339*	-4,745	32.50
	(1.801)	(4.533)	(2.211)	(4,088)	(328.6)
Panel 2. Excluding MA and WI (N=10)					
Constant (includes any hiring credit (10))	-0.950	-1.005	3.565	7,112	348.8
	(1.776)	(4.201)	(3.039)	(5,221)	(186.6)
Live-in requirement to receive hiring credit (5)	-0.704	-1.287	-2.023	-5,133	-217.9
	(1.218)	(2.882)	(2.085)	(3,581)	(128.0)
Credit based on wages (4)	-0.218	3.037	-4.032	-6,704	-336.4*
	(1.362)	(3.222)	(2.331)	(4,004)	(143.1)
Flat credit per new employee (4)	1.487	1.634	-0.302	1,389	3.347
	(1.492)	(3.529)	(2.554)	(4,386)	(156.7)
Payroll or unemployment insurance tax exemption (4)	-0.0581	1.687	-2.982	-6,888	-187.3
	(1.827)	(4.323)	(3.127)	(5,372)	(192.0)
Panel 3. Only limited controls (N=10)					
Constant (includes any hiring credit (10))	-1.081	-3.744**	0.395	4,679	51.07
	(2.454)	(1.369)	(6.178)	(7,327)	(287.6)
Live-in requirement to receive hiring credit (5)	0.646	4.552***	-3.572	-4,555	-153.0
	(1.683)	(0.939)	(4.238)	(5,026)	(197.3)
Credit based on wages (4)	-1.446	4.057**	0.669	-4,848	-114.9
	(1.882)	(1.050)	(4.738)	(5,620)	(220.6)
Flat credit per new employee (4)	1.388	-2.591*	1.056	772.5	97.16
	(2.061)	(1.150)	(5.191)	(6,156)	(241.6)
Payroll or unemployment insurance tax exemption (4)	0.506	1.491	-1.297	-5,808	-92.79
	(2.525)	(1.409)	(6.357)	(7,539)	(296.0)

Notes: Each column presents estimates from a separate two-stage model where the state-specific estimates in Table 3 (first stage) are regressed against indicators for different enterprise zone benefits (outlined in Table 9 and described in more detail in Appendix Table A1 and A2). Each second stage estimate is weighted by the number of treated tracts in that state. The overall effect of hiring credits is not estimable in Panels 2 and 3 because Massachusetts was the only state to not provide hiring credits, and Massachusetts is dropped from these analyses. Note that some point estimates are the same as in Table 10; this occurs for coefficients identified for only one state, in which case the coefficient estimate is not affected by weighting. *** p<0.01, ** p<0.05, * p<0.1.

Appendix Table A7. Long-run estimates of heterogeneous enterprise zone hiring credits, unweighted

	Unemployment rate (%)	Poverty rate (%)	Fraction of households with wage and salary income (%)	Average wage and salary income ($2000)	Employment
Panel 1. No limits on controls (N=12)					
Any hiring credit (11)	-2.681	-4.593	8.721*	-3,877	230.6
	(4.739)	(8.099)	(4.166)	(14,096)	(605.9)
Live-in requirement to receive hiring credit (5)	0.644	5.960	-1.825	-9,781	-454.4
	(2.564)	(4.381)	(2.254)	(7,626)	(327.8)
Credit based on wages (4)	1.223	-0.486	-6.281*	1,152	46.15
	(3.052)	(5.215)	(2.683)	(9,077)	(390.2)
Flat credit per new employee (4)	0.155	-5.137	0.229	14,252	266.6
	(3.268)	(5.585)	(2.873)	(9,721)	(417.9)
Payroll or unemployment insurance tax exemption (4)	2.637	1.363	-9.719**	11,312	312.2
	(3.846)	(6.572)	(3.381)	(11,439)	(491.7)
Constant (includes any hiring credit (10))	0.155	1.750	-0.532	-5,469	-168.1
	(3.052)	(5.215)	(2.683)	(9,077)	(390.2)
Panel 2. Excluding MA and WI (N=10)					
Live-in requirement to receive hiring credit (5)	0.541	-0.303	-0.369	-12,400*	-318.1
	(2.432)	(2.521)	(2.726)	(5,179)	(229.5)
Credit based on wages (4)	2.148	3.700	-8.170**	-2,534	-190.8
	(2.719)	(2.819)	(3.048)	(5,790)	(256.6)
Flat credit per new employee (4)	1.856	0.645	0.190	4,058	128.0
	(2.978)	(3.088)	(3.339)	(6,343)	(281.0)
Payroll or unemployment insurance tax exemption (4)	3.190	3.971	-6.983	-775.5	0.695
	(3.648)	(3.782)	(4.089)	(7,768)	(344.2)
Constant	-4.915	-4.487	7.300	3,584	259.1
	(3.545)	(3.675)	(3.974)	(7,550)	(334.5)
Panel 3. Only limited controls (N=10)					
Live-in requirement to receive hiring credit (5)	0.152	6.694**	-1.740	-11,950	-269.5
	(3.289)	(2.345)	(7.320)	(11,994)	(230.8)
Credit based on wages (4)	-6.131	-2.562	-7.789	18,355	327.6
	(3.678)	(2.621)	(8.184)	(13,409)	(258.0)
Flat credit per new employee (4)	3.819	-4.050	0.195	5,900	269.2
	(4.029)	(2.872)	(8.966)	(14,689)	(282.7)
Payroll or unemployment insurance tax exemption (4)	-4.192	-2.198	-10.43	19,638	436.0
	(4.934)	(3.517)	(10.98)	(17,991)	(346.2)
Constant (includes any hiring credit (10))	3.529	0.310	8.776	-19,076	-365.7
	(4.795)	(3.418)	(10.67)	(17,484)	(336.4)

Notes: Each column presents estimates from a separate two-stage model where the state-specific estimates in Table 5 (first stage) are regressed against indicators for different enterprise zone benefits (outlined in Table 9 and described in more detail in Appendix Table A1 and A2). Each second stage estimate is weighted by the number of treated tracts in that state. The overall effect of hiring credits is not estimable in Panels 2 and 3 because Massachusetts was the only state to not provide hiring credits, and Massachusetts is dropped from these analyses. Note that some point estimates are the same as in Table 10; this occurs for coefficients identified for only one state, in which case the coefficient estimate is not affected by weighting. *** p<0.01, ** p<0.05, * p<0.1.

Appendix A. Details of State Enterprise Zone Incentives

This appendix documents the features of state enterprise zone programs. Appendix Tables A1 and A2 at the end summarize our coding.

California

1. *Local incentives*
   - i) *Occupational licenses/regulatory relief*
     - (1) Business Incentive/Regulatory Relief: Mostly modest development assistance. E.g. streamlined permit assistance, expedited permits, one-stop application and issuance etc.
       - (a) 1986 –
       - (b) Source: Dowall (1996)
     - (2) Fee/Tax incentives
   - ii) *Real property tax incentive (ad valorem for increase in value)*
     - (1) Tax increment funds: Tax incentives for funds
       - (a) 1986 -
       - (b) Source: Dowall (1996)
   - iii) *Bonds/loans*
     - (1) Assistance with Financing of Capital Equipment and Buildings: Allows interest (less expenses) to be deducted by lender with no ownership or equity interest in the business. Also, block grants, and revenue bonds are available in some areas.
       - (a) 1986 –
       - (b) Source: Dowall (1996)
   - iv) *Job/referral placement*
     - (1) Job Referral/Placement: This is a program service and incentive and according to Dowel et al. (1994), this was the most effective employment enhancing local benefit. As of 1993, this benefit was available in LA (Central city, Pacoima, and Watts), Sacramento: Northgate, San Diego: Barrio Logan, and West Sacramento.
       - (a) 1986 –
       - (b) Source: Dowall (1996)

2. *Financing*
   - i) *Lender interest deduction*
     - (1) Net Interest Deduction: Allows interest (less expenses) to be deducted by lender with no ownership or equity interest in business.
       - (a) 1986 –
       - (b) Source: Dowall (1996).
3. *Hiring credit*
   - i) *Tax credit based on wage bill*
     - (1) Wage credit is 10-50% of wages paid to enterprise zone employees (declines by employee tenure).
       - (a) 1986 –
       - (b) Source: Dowall (1996) and tax form CA3850z.
4. *Misc.*

i) *Net operating loss computation and loss limitations*
   (1) Net Operating Loss Deduction: Allows interest (less expenses) to be deducted by lender with no ownership or equity interest in business.
      (a) 1986 –
      (b) Source: Dowall (1996) and tax form CA3850z
ii) *Employee income tax credit*
   (1) Employees working in zone may claim credit against income tax on wages earned in zone.
      (a) 1986 –
      (b) Source: Dowall (1996) and tax form CA3850z

5. *Tangible personal property*
   i) *Machinery and equipment sales and use or property tax exemption*
      (1) Business expense deductions: Deduction cost of a portion of depreciable business property (like machinery) for exclusive use in a zone. Max deduction: $10,000 (20,000 for program areas).
         (a) 1986 –
         (b) Source: Dowall (1996) and tax form CA3850z
      (2) Sales and use tax credit: Can be claimed on machinery used that manufactures, processes, combines or fabricates; or produces renewable energy or control air or water pollution. Individuals can claim up to $1 mil annually; corporations can claim up to $20 mil annually.
         (a) 1986 -
         (b) Source: Dowall (1996) and tax form CA3850z.

Colorado

1) *Investment in employees and benefits*
   1. *Credit for paying employee insurance premiums*
   2. Credit or refund for tax paid on insurance premiums to the same extent that the taxpayer would qualify for a credit or refund against income tax.
      (1) 1996 –
      (2) Source: S.B. 96-193 section 39-30-107.6
   3. *Job training/school tax credit or reimbursement*
      i) Taxpayers are allowed to claim a credit of 10% of their total investment in a qualified job-training program. “Qualified job training program” means a structured training or basic education program conducted on-site or off-site by the taxpayer or another entity to improve the job skills of employees who are employed by the taxpayer. These employees must be working predominately within an enterprise zone. (On the job training is not a qualified job-training program. Expenses incurred in training employees leased by the taxpayer do not qualify for the credit. Total investment means: (1) Land, building, real property improvement, leasehold improvement, or space lease costs and the cost of any capital equipment purchased or leased by the taxpayer and used entirely within an enterprise zone primarily for qualified job training program purposes or to make a training site accessible to the extent such investments or costs do not qualify for the enterprise zone investment tax credit; and

         (2) Expenses for a qualified job training program, whether incurred within or

outside of an enterprise zone, including expensed equipment, supplies, training staff wages or fees, training contract costs, temporary space rental, travel expenses, and other expense costs of qualified job training programs for employees working predominantly within an enterprise zone. (Wages of employees being trained are not includible expenses.)

(1) 1996 –

(2) Carryover of up to 12 years

(3) Source: S.B. 96-193 section 39-30-104 (4); Income 31 Enterprise Zone Qualified Job Training Program Investment Credit tax form

4. *Day care*

i) *This is part of the Tax deduction for contributions (39-30-105.6).*

(1) 1990-1993

(2) Source 39-30-105.6

2) *Local incentives*

1. *Real property tax incentive (total)*

i) <u>Property tax relief</u>: County/municipality/city may negotiate with the taxpayer who qualified for the hiring credit (39-30-105) for an amount equal to but not more than the property taxes levied against the taxpayer.

(1) 1987 –

(2) Source: Chapter 310 section 39-30-107.5 (1) of the 1987 legislative session

(3) Exemption cannot be more than the current property tax liability and the tax liability for the same property for the preceding year in which the enterprise zone is approved.

2. *Taxable tangible property (sales and use tax) incentives*

i) <u>Refund for purchases</u>: County/municipality/city may negotiate with taxpayer who qualified for the hiring credit (39-30-105) a refund for the purchase of equipment, machinery, machine tools, or supplies used in the business.

(1) 1987 –

(2) Source: Chapter 310 section 39-30-107.5 (2) of the 1987 legislative session.

3) *Financing*

1. *Tax deduction for contributions*

i) 50% (this is reduced to 25% as of 1/1/96) of deduction from income tax of the amount contributed for the purpose of implementing the economic development plan for the enterprise zone to the person or agency that has been designated the enterprise zone administrator. Credit cannot exceed $100,000 or the total amount of the income tax imposed on the taxpayer. In-kind contributions shall not exceed 50% of the total credit claimed. To qualify for the credit, the contribution must be used for purposes that are directly related to job creation, job preservation, or assistance programs for homeless persons.

(1) 1989 -

(2) 5-year carryover

(3) Source: Chapter 341 section 39-30-103.5 of the 1989 legislative session; FYI Income 23 Tax Credit for Contributions to Enterprise Zone Administrators, Programs, Projects, or Organizations tax form.

4) *Hiring credit*

1. *Flat credit for each new employee*

i) <u>New employee credit:</u> Credit against income tax of $500 for each new employee for a business that is new and located in an enterprise zone for at least one year. Beginning in 1987, a credit is available for each new employee, for the first 2 years, who is insured under a health insurance plan or program provided through the employer, equal to $200. The employer must contribute 50% or more of the total cost of a health insurance plan or program. Also in 1987, an additional $500 credit is available for employers who add jobs and add value through manufacturing or processing of agricultural commodities. Beginning in 1989, existing facilities can qualify if they expand the business by increasing employment by 10 or more new employees compared to the year prior to the expansion
   (1) 1986 –
   (2) 5-year carryover beginning on or after January 1, 2003
   (3) Source: Chapter 310 section 39-30-105 of the 1987 legislative session; Income 10 Enterprise Zone New Business Facility Employee Credits tax form.

5) *Research tax credits*
   1. *Research and experimental activities tax credit*
      i) Credit against income tax for 3% of the amount expended for research and experimental activities over what the average expenditures are for the firm from the previous year. In any one year the amount of the allowable credit for deduction is 25% of the total amount of the credit with the balance being carried forward to the next year. Carryover is allowed until the total amount is used. Business must make expenditures in research and experimental activities (section 174)
         (1) 1988 – 1992
         (2) Source: Chapter 288 section 39-30-105.5 of the 1988 legislative session; FYI Income 22 Research and Development Income Tax Credit for Enterprise Zones tax form.

6) *Misc.*
   1. *Technology infrastructure investment tax credit (rural internet)*
      i) Income tax credit equal to 10% of the amount of total investment made in technology infrastructure required to provide Internet access in rural technology enterprise zones. Credit can only be claimed for specific capital investments in technology infrastructure that will qualify as specified by the public utilities commission (39-32-104(1)(d)).
         (1) 10 year carryover
         (2) 1989 -
         (3) Source: 39-32-105; FYI Income 36 Rural Technology Enterprise Zone Credit tax form.

7) *Real property (land or buildings)*
   1. *Property tax credit or exemption (added value from renovation/expansion)*
      i) <u>Rehabilitated building credit</u>: A credit equal to 25% of aggregate qualified expenditures or $50,000, whichever is less, is available for rehabilitating a building for commercial use. Buildings must be at least 20 years old and have been unoccupied for at least 2 years. The credit limit is $50,000 per building.
         (1) 1989 –
         (2) 5-year carryover

(3) Source: Chapter 341 section 39-30-105.6 of the 1989 legislative session; Income 24 Vacant Commercial Building Rehabilitation Credit for Enterprise Zones tax form.

8) *Tangible personal property*

1. *Machinery and equipment sales and use or property tax exemption*

i) <u>Sales and use tax</u>: Purchase of machinery or machine tools by a person engaged in manufacturing is exempt from sales and use tax. Purchase of machinery or machine tools by a person engaged in manufacturing is exempt from sales and use tax. Beginning in 1989, the credit also applies to materials used for construction or repair of machinery or machine tools. Beginning in 1990, there is a special provision for licensed air carriers to receive benefits for sale, storage, use or consumption of any machinery, tools or equipment (must employ more than 2000 people). Also in 1991, definition of manufacturing is expanded to include refining, blasting, exploring, mining, and mined land reclamation, quarrying for, processing and beneficiation or otherwise extracting from the earth or from waste or stockpiles or from pits of banks any natural resource. Beginning in 1988, purchases must exceed $500. Purchases in a single year cannot exceed $10 million (this restriction is removed in 1987 under 39-30-106)

(1) 1986 –

(2) Source: Chapter 248 section 39-30-106 of the 1986 legislative session.

ii) <u>Credit against tax</u>: Any person in an enterprise zone is allowed a credit against the property tax equal to 30% for property used exclusively in an enterprise zone. Credit is 3x the amount of the investment tax credit allowed by 39-22-507.5, which is 10%. As of 1/1/97 the credit is 3% of the total qualified investment.

(1) 1986 –

(2) Source: Chapter 248 section 39-30-104 of the 1986 legislative session.

Florida

1. *Investment in employees and benefits*

i. *Day care*

i) <u>Exemption for Licensed Child Care Facility</u>: Any real estate used and owned by a childcare facility, as defined in 402.302, that operates within an enterprise zone is exempt from taxation.

(1) 1999 -

(2) Source: Section 196.095

2. *Local Incentives*

i. *Occupational licenses/regulatory relief*

i) <u>Regulatory Relief</u>: Beginning with the 1984 legislation, local municipalities could elect to partially exempt businesses in enterprise zones of occupational license tax at a rate of 50%. Each state agency rule adopted after January 1, 1987, where applicable, shall provide encouragements and incentives which will increase rehabilitation, renovation, restoration, improvement or new construction of housing and which will increase the economic viability and profitability of business and commerce located within enterprise zones. Each agency shall take necessary steps to waive, modify or otherwise minimize the adverse effects of such rules upon rehabilitation, renovation, restoration, improvement or new construction of housing or upon the economic viability and profitability of business and commerce.

(1) 1984-1993

(2) Source: Chapter 84-356 Section 205.054; Chapter 91-262 Section 290.0135

ii. *Real property tax incentive (total)*

i) Economic Development Ad Valorem Tax Exemption: Allows referendums to be voted on that will allow for ad valorem tax exemption for new businesses and expansions of existing businesses located in enterprise zones. Upon majority vote in favor of such authority, the board of county commissioners or the governing authority of any municipality, at its discretion, by ordinance may exempt from ad valorem taxation 100% of the assessed value of all improvements to real property made by or for the use of a new business and all tangible personal property of such new business, or 100% of the assessed value of all added improvements to real property made to facilitate the expansion of an existing business and of the net increase in all tangible personal property acquired to facilitate such expansion of the existing business. In the case of a referendum, the exemptions are limited solely to new businesses and expansions of existing businesses, which are located in an enterprise zone.

(1) 1982-1993

(2) Source: Chapter 82-119 Section 162.007 (2) (a)

iii. *Real property tax increment financing*

(1) Tax Increment Financing: Pursuant to part III of Chapter 163. This is the Community Redevelopment Act[26]. The act allows a CRA to annually capture and spend a portion of the incremental increase in ad valorem tax revenues resulting from redevelopment.

(2) 1982-1993

(3) Source: Chapter 82-119 Section 162.007 (2) (c)

iv. *Bonds/loans*

i) Industrial Revenue Bonds: Allows the use of industrial revenue bonds pursuant to the Florida Industrial Development Financing Act.

(1) 1982 – 1993

(2) Source: Chapter 82-119 Section 162.007 (2) (b)

v. *Energy tax exemption/credit*

i) Public Service Tax: A municipality may by ordinance exempt not less than 50% of the tax imposed on purchasers of electrical energy who are determined to be eligible for the exemption provided in s. 212.08(12), which says that a qualified business operating in an enterprise zone that has passed a local ordinance pursuant to 166.231(8) (i.e. this law) is exempt from electrical energy tax for a period of 5 years from the first billing period after the department has authorized an exemption.

(1) 1984 – 1993

(2) There is a recapture provision in 212.08(12)(c)

(3) Source: Chapter 84-356 Section 166.231(8) and Chapter 84-356 Section 212.08(12)(a)

3. *Financing*

i. *Interest free loans*

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[26] More available here: https://www.floridabar.org/divcom/jn/jnjournal01.nsf/Author/1CE0373378668370852573050058A3D5

i) Community Development Corporation Support and Assistance Program: Allows for the development of community development corporations that can offer assistance to businesses who operate in enterprise zones. Includes issuing interest free loans to be repaid within 15 years (288.608(6)). Terminating a project requires repayment of the loan

(1) 1982 –

(2) Chapter 82-119 ss. 288.601 – 288.609.

4. *Hiring credit*

i. *Tax credit based on wage bill*

i) Economic Revitalization Jobs Creation Incentive Credit/Enterprise Zone Jobs Credit: The tax credit is computed as a percentage of the actual monthly wages of new employees ranging from 5-25%. From 1982 to 1987, the tax credit is equal to 25%. From 1988-1994, the credit is lowered to 15%. Beginning in 1995, the credit is lowered to 10% of the actual monthly wages paid in this state to each new employee. However, if no less than 20 percent of the employees of the business are residents of an enterprise zone, excluding temporary and part-time employees, the credit shall be calculated as 15% for a period of up to 12 consecutive months. Then, in 1996, the credit is computed as follows: 10% of the monthly wages paid to each new employee with wages less than $1,500 a month. If no less than 20% of the employees are residents of the enterprise zone, the credit is computed as 15% of the monthly wages paid to each new employee; OR 5% of the first $1,500 of actual monthly ages to each new employee whose wages exceed $1,500; OR 15% of the first $1,500 of actual monthly wages for each new employee who is a WAGES program participant

(1) 1982 –

(2) Carryover of 5 years allowed beginning in 1995.

(3) Source: Chapter 82-119 section 220.181.

5. *Income tax credit for operating in enterprise zone*

i. *Credit for opening new or expanding existing business*

i) Economic Revitalization Tax Incentive Credit: From 1982-1984 there are several ways to qualify for this credit. The first way to qualify is to establish 5 or more new full-time employees of whom the majority of new employees must be residents of an enterprise zone. The second way to qualify is as a new or rebuilt business, with the majority of all employees being residents of an enterprise zone. From 1984 – 1993 qualifications change slightly. In each year during the 10-year period for which the credit is available, no fewer than 5 more employees than in the year preceding the initial granting of the credit. For a new, expanded, or rebuilt business, no less than 20 percent of its employees are residents of an enterprise zone, excluding temporary employees. There is a $50,000 max credit allowed for every year this credit was available. Note that after 1984 these benefits existed for other areas as well (not just enterprise zones): blighted area, neighborhood strategy area, neighborhood housing service area, and historic preservation district.

ii) 1982 –

iii) Carryover of 5-years

iv) Source: Chapter 82-119 section 220.182

ii. *Energy tax exemption*

i) Electrical Energy Used in an Enterprise Zone: From 1984 – 1993, charges for electrical energy used by a qualified business in an enterprise zone in a municipality that has enacted an ordinance pursuant to s. 166.231(8) [This is the local credit] shall be exempt from state tax for 5 years from when the exemption has been authorized. Beginning in 1994, the sales tax exemption is 50% for municipal utility taxes for electricity used by a business in an enterprise zone. However, if no less than 20% of the employees are residents of the enterprise zone excluding part-time and temporary employees, the exemption is 100%.
  (1) 1984 –
  (2) Source: Chapter 84-356 section 212.08(12)(a) and Chapter 94-136 section 212.08(15)(1)

6. *Misc.*
  i. Regulatory relief
  i) Regulatory Relief: Each state agency rule adopted after 1/1/87 where applicable, shall provide encouragements and incentives which will increase rehabilitation, renovation, restoration, improvement or new construction of housing and which will increase the economic viability and profitability of business and commerce located within enterprise zones. Each agency shall take necessary steps to waive, modify or otherwise minimize the adverse effects of such rules upon rehabilitation, renovation, restoration, improvement or new construction of housing or upon the economic viability and profitability of business and commerce.
    (1) 1987 –
    (2) Source: Chapter 84-256 section 290.013(1)

7. *Real property (land and buildings)*
  i. Property tax credit or exemption (total value)
  i) Business property used in an enterprise zone: Business property purchased for use by businesses located in an enterprise zone, which is subsequently used in an enterprise zone, shall be exempt from sales and use tax if not less than 20% of employees are residents of the zone. Exemption is inured through previously paid taxes. The 20% employee requirement is eliminated starting in 1995.
    (1) 1984 –
    (2) Source: Chapter 84-356 section 212.08(5)(g); Chapter 94-136 section 212.08(5)(h)
  ii. Property tax credit or exemption (added from value from renovation/expansion)
  i) Enterprise Zone Property Tax Credit: Ad valorem tax credit equal to 96 percent of property taxes levied for operating purposes against the corporate or franchise tax. Credit computed annually as ad valorem tax paid in this state resulting from assessments on additional real or tangible personal property acquired to facilitate the expansion of an existing business; or the ad valorem taxes paid in this state resulting from assessments on property replaced or restored. Qualified businesses are those that establish a new business or expand an existing business. Includes pollution and waste control facilities, or any part thereof and including one or more buildings or other structures, machinery, fixtures, and equipment. Amount of credit taken in any one year cannot exceed $25,000 or if no less than 20 percent of employees, excluding temporary employees, are residents of an enterprise zone, the amount cannot exceed $50,000.

(1) 1995 –
(2) Carryover for 5 years
(3) Source: Chapter 94-136 Section 220.182

iii. Tax credit for construction materials

i) <u>Building materials used in the rehabilitation of real property located in an enterprise zone</u>: Building materials used in the rehabilitation of real property located in an enterprise zone shall be exempt from sales and use tax. Building materials must be used for the rehabilitation of real property in the enterprise zone and credits are inured through previously paid taxes.

ii) 1984 –

iii) Source: Chapter 84-356 section 212.08(5)(f); Chapter 94-136 section 212.08(5)(g)

8. *Tangible personal property*

i. Machinery and equipment sales and use or property tax exemption

i) <u>Business equipment used in enterprise zone</u>: See Enterprise Zone Property Tax Credit for details. It allows exemptions for machinery.

ii) 1995 –

iii) Carryover for 5 years

iv) Source: Chapter 94-136 Section 220.182

Hawaii

1. *Investment in employee benefits*

i. Credit for paying employee insurance premiums

i) <u>State general excise tax exemption</u>: Except for the general excise tax, the credit will count against unemployment taxes, and income tax and shall be 80% of the tax due for the first tax year, 70% for the second, 60% for the third, 50% for the forth, 40% for the fifth, 30% for the sixth, and 20% for the seventh. No carryover.

(1) 1986 -
(2) Source: S.B. No. 2095-86 Act 78, section 10

2. *Local incentives*

i. Occupational licenses/regulatory relief

i) <u>Reduction of permit fees and user fees</u>: There are several regulatory relief type benefits that could be offered on a local level. This list is not comprehensive but is inclusive. In addition to reducing permit fees, and user fees, local agencies can also specially zone districts, reform the permit process, exempt businesses from local ordinances and provide other non-aforementioned public incentives proposed in the locality's application. Localities must provide incentives in order for their enterprise zone application to be considered.

(1) 1986 –
(2) Source: S.B. No. 2095-86 Act 78 section 12.

ii. Real property tax incentive (total)

i) <u>Reduction of real property taxes</u>: This is the only non-regulatory type benefit mentioned in the list of local benefits that localities can provide. Every locality must select local benefits as part of their enterprise zone application.

(1) 1986 –
(2) Source: S.B. No. 2095-86 Act 78 section 12.

3. *Hiring credit*
   i. *Payroll or unemployment tax exemption*
      i) State business tax credit: A credit equal to 80% of the unemployment tax paid during the first year, 70% of the taxes in the second year, 60% in the third year, 50% in the fourth year, 40% in the fifth year, 30% in the sixth year and 20% in the seventh year of operation. The unemployment tax is small though – about 1-2% of total taxable wages.
         (1) 1986 –
         (2) Source: S.B. No. 2095-86 Act 78 section 10 (c)-(d). Department of Business, Economic Development and Tourism Research and Economic Analysis Division Report (2007)
4. *Income tax credit for operating in enterprise zone*
   i. *General excise tax credit*
      i) State general excise tax exemption: A qualified business (starting in 1989 this means a business in an enterprise zone engaged in manufacturing, the wholesale sale of tangible personal property or a service business or calling) is exempt from general excise taxes on the gross proceeds from all items sold in the enterprise zone. Exemption shall extend for not longer than 7 years. In 1989 the exemption is restricted to include only those sold from the manufacture of tangible personal property, the wholesale of tangible personal property, or the engaging in the service business or calling. In 1997, exemptions from the use tax for purchases by a qualified business are included. Additionally, the gross proceeds received by a contractor shall be exempt from the general excise tax for construction.
         (1) 1986 –
         (2) Source: S.B. No. 2095-86 Act 78, section 11; H.B. No. 1879 Section 209E-2(2)
   ii. *Credit for opening new or expanding business*
      i) State business tax credit: Except for the general excise tax, the credit will count against unemployment taxes, and income tax and shall be 80% of the tax due for the first tax year, 70% for the second, 60% for the third, 50% for the forth, 40% for the fifth, 30% for the sixth, and 20% for the seventh. No carryover.
         (1) 1986 –
         (2) Source: S.B. No. 2095-86 Act 78, section 10
5. *Public property*
   i. *Sale/lease of public real property for business use*
      i) Sale or lease of public land: The state and any agency of a political subdivision that own any land within the enterprise zone may make available for sale or lease all land not designated or targeted for some public use, with the condition it be developed.
         (1) 1986 –
         (2) Source: S.B. No. 2095-86 Act 78 section 6.

Illinois

1. *Investment in employees and benefits*
   i. *Job training/school tax credit or reimbursement*
      i) Training Expense Credit: 1.6% credit against income tax for educational or vocational training in semi-technical or technical fields or semi-skilled or skilled fields. Credit

also available for high impact businesses[27] located in federally designated trade zones[28] or sub zones.

(1) 1987 –
(2) 5-year carryover.
(3) Source: Public Act 85-1182 sub-section (j) of section 201

2. *Local incentives*
   i. *Real property tax incentive (ad valorem for increase in value)*
      i) Real Property Tax Abatement: Any taxing district can vote to order the county clerk to abate any portion of taxes on real property or any class thereof in enterprise zone. Eligible property includes new improvements that have been constructed after this act.
         (1) 1983 –
         (2) Source: Public Act 82-1019 Section 162e
   ii. *Energy tax exemption/credit*
      i) Utility Tax Exemption: Any municipality that includes an Enterprise Zone area may put up a vote to its corporate authorities to exempt taxes on receipts of public utilities received from business in Enterprise Zones for up to 20 years. Also, businesses are exempted from additional charges added to utility bills as a pass-on of municipal and state utility taxes. In 1986, this is expanded to include exemptions for charges from telecommunication carriers; the department of commerce and community affairs determines the percentage of charges exempted. In 1986, this is expanded to include public utility tax exemptions for businesses in federally designated Foreign Trade Zone or Sub-Zones and designated high impact businesses.
         (1) 1985 –
         (2) Source: Public Act 84-166
3. *Financing*
   i. *Corporation for providing loans*
      i) Industrial Grants and Loans: Expands the "Illinois Industrial Development Authority Act" to include Enterprise Zones as areas that the Authority can make direct loans for projects. May issue bonds, notes or other debts for developing, constructing, acquiring or improving industrial projects by businesses in Enterprise Zones. The Illinois Industrial Development Authority Act was enacted in 1979 – it is just expanded to include Enterprise Zones.
         (1) 1983 –
         (2) Source: Act 82-1019 Section 12.
   ii. *Tax deduction for contributions*
      i) State Income Tax Deduction for Contributions: A business entity may receive a deduction against income subject to state taxes for a contribution to a designated zone organization if the project for which the contribution is made has been specifically approved by the designating municipality or county and by the department. Designated zone organization must submit application for project to be approved for the contribution. The project must enhance the enterprise zone by creating permanent

[27] High impact businesses are approved based on an application process and must be designated in federal Foreign Trade Zones or other approved Zones (Public Act 84-769 Section 1 subsection 5.5).
[28] Foreign-trade zones are geographic areas adjacent to a port of entry to the United States.

jobs, physically improving housing stock, stimulating neighborhood business activity, or by preventing crime.
(1) 1983 –
(2) Source: Act 82-1019 Section 11.

4. *Hiring credit*
   i. *Flat credit for each new employee*
      i) Jobs Tax Credit: Credit against income tax of $500 for each eligible employee hired during the taxable year. In 1986 this is expanded to include high impact businesses and businesses that operate in federally designated foreign trade zones or sub-zones. Qualifications: must hire 5 or more eligible employees; total firm employment must increase by 5 or more employees beyond the total employed in previous year; eligible employees must be employed 180 consecutive days. An eligible employee is a dislocated worker, hired after enterprise zone was designated, employed in enterprise zone, and full-time employee working 30 or more hours per week. Available at least until 2002 based on the document "Enterprise Zone Incentives", but appears to be repealed sometime thereafter because it does not appear in "Illinois enterprise zone Program Benefits" which is undated.
      (1) 1986 –
      (2) Carryover of 5 years
      (3) Source: Public Act 84-166 Section 4 amending Sec. 201(h)(6)(i) of the Illinois Income Tax Act
5. *Public property*
   i. *Sale/lease of public real property for business use*
      i) Sale of Publicly Owned Real Property in an Enterprise Zone: The state, county or municipality containing an enterprise zone that owns any unused structures or vacant land may either (A) sell such structures or vacant land at public auction or other methods, (B) establish an urban homestead program whereby individual residences are sold for no more than $100 with the requirement that the new owner live there for 7 years and agrees to renovations, or (C) establish an urban shopstead program similar to (B) but for a Zone organization
      (1) 1983 -
      (2) Source: Act 82-1019 Section 10.
6. *Real property (land and buildings)*
   i. *Property tax credit or exemption (added from renovation/expansion)*
      i) Property Investment Credit: Amends the Ch. 120 section 201 of the Illinois Income Tax Act to allow for a credit of 0.5% on the basis for qualified property[29]. Credit is only available in the taxable year in which the qualified property is placed in service. In 1985, the credit is extended to high impact businesses[30]. In 1993 qualified property

[29] Qualified property includes new or used tangible property, including buildings and structural components of buildings. Property can only qualify if it has not been used in Illinois before.
[30] A business is considered a high impact business if their application is accepted by the department for business that operate in federally designated Foreign Trade Zone or Zones subject to the business expecting to cause a substantial increase in per capita income, reverse loss or out migration of jobs, decrease unemployment, decrease number of people living in poverty. Beginning in 1988, high impact businesses no longer need to be located in federally designated foreign trade zones or subzones. They do however have to invest a minimum of $150,000,000 which will place in service qualified property and

is expanded to include signs that are real property but not to include land, or improvements to real property that are not a structural component of a building such as landscaping, sewer lines, local access roads, fencing, parking lots and other appurtenances.

(1) 1982 –
(2) No carryover for first few years but in 1985 there is a 5-year carryover as long as the investment created a minimum of 2000 full time jobs and is located in enterprise zone.
(3) Recapture provision: If the property is moved outside of the enterprise zone within 48 months of being placed in service, the business would have to pay back the credit.
(4) Source: Public Act 82-1019 section 13

7. *Tangible personal property*
   i. *Machinery and equipment sales and use or property tax exemption*
      i) Sale of Building Materials Incorporated into Enterprise Zone Real Estate: This is a supply side benefit in that it is only available for retailers selling building materials to enterprise zone businesses. Each retailer who operates in an enterprise zone who makes a sale of building materials to be incorporated into real estate in such enterprise zone by remodeling, rehabilitation or new construction may file claims for credit or refund to recover the amount of tax paid under this act and the "municipal retailers occupation tax act" or the "county retailers occupation tax act." Beginning in 1985, sales of building materials to High Impact Businesses are eligible for retailers to file a claim for credit or refund to recover the taxes paid.
         (1) 1983 -
         (2) Source: Act 82-1019 Section 5k
      ii) Manufacturing Property Tax Exemption: All tangible personal property used or consumed within an enterprise zone for manufacturing or assembly of tangible personal property for wholesale or retail sale or lease is exempted from tax. Includes repair and replacement parts for machinery and equipment used primarily in the process of manufacturing or assembling tangible personal property for wholesale or retail sale, or lease, and equipment, manufacturing fuels, material and supplies for maintenance, repair or operation of such manufacturing or assembling machinery or equipment. Also, tangible personal property for pollution control facilities in enterprise zones are exempt. Beginning in 1988, high impact businesses qualify for this exemption. Requirement that the business must make investments that cause the creation or retention of a minimum of 200 full-time jobs.
         (1) 1985 –
         (2) Source: Act 84-940 Section 7 amending Ch. 120 new par. 440d section 1d-e
      iii) Manufacturing or Equipment Tax Exemption: Tax exemption for machinery or equipment of high impact service facilities. Machinery and equipment, new and replacement, shall include but not be limited to: motor driven heavy equipment not considered rolling stock which is used for the purpose of transporting parcels, machinery or equipment used to maintain and provide in-house services, within the

create 1,000 full time jobs in an enterprise zone or $30,000,000 investment in qualified property and retain at least 1,500 full time jobs.

confines of the facility, AND automated machinery and equipment used for the purposes of transporting parcels within the facility, along with all components, parts, pieces, and computer software or hardware contained in the electronic control systems related thereto.

(1) 1988 –

(2) Source: Public Act 85-1409 section 6 amending Ch. 120, new par. 440j section 1j.

iv) Aircraft Maintenance Facility Tax Exemption: Machinery and equipment tax exemption. Tangible personal property, used or consumed within an Enterprise Zone by any aircraft maintenance facility qualifies for an exemption from machinery and equipment tax. An exemption for jet fuel is added in 1997 if the business has waived it's right to the public utility exemption. Facility operated by an interstate carrier for hire that is used primarily for the maintenance, rebuilding or repair of aircraft, aircraft parts and auxiliary equipment owned or leased by that carrier as rolling stock moving in interstate commerce that will make an investment of $400mil or more in the Enterprise Zone, will cause creation of at least 5,000 full time jobs in the Enterprise Zone, located in a county with populations not less than 150,000 and not more than 2000,00 and that contains 3 Enterprise Zones. As long as these three requirements are satisfied, an agreement may be made.

(1) 1990 –

(2) Source: Public Act 86-1490 section 4 amending Ch. 120 new par. 440k section 1k.

Massachusetts

1. *Real property (land and buildings)*
   i. *Property tax credit or exemption (total value)*
      i) Special Tax Assessment – Real Estate: Four-year declining exemption equal to 100% of a parcel's value in the first year 75% in the second, 50% in the third and 25% in the fourth and final year.
         (1) 1994 -
         (2) Source: General Laws Ch. 23A section 3E and Information Guideline Release No. 94-201 by the Department of Revenue Property Tax Bureau
   ii. *Property tax credit or exemption (added value from renovation/expansion)*
      i) Tax Increment Financing: Exemption of local property tax for the percentage of increase in a parcel's value over its base value in the year before the exemption is granted. Exemption can last for up to 20 years and can be as high as 100%.
         (1) 1994 –
         (2) Source: General Laws Chapter 59 section 5 Clause 51, General Laws Chapter 40 section 59, and Information Guideline Release No. 94-201 by the Department of Revenue Property Tax Bureau
      ii) Renovation Tax Credit: A corporation who renovates an abandoned building in an EOA may deduct 10% of the cost of renovation against their income tax. (Section 38O)
         (1) 1994 –
         (2) Source: Chapter 19 Section 18 amending Chapter 63 section 38O.
2. *Tangible personal property*

i. *Machinery and equipment sales and use or property tax exemption*
    i) <u>Property Tax Credit</u>: Corporation subject to the corporate excise tax may take a credit of 5% of the cost of any property purchased as long as the property is used exclusively for a certified project within an EOA
        (1) 1994 –
        (2) Carryover for unspecified amount of time.
        (3) Source: General Laws Chapter 19 Section 18 amending Chapter 63 section 38N and Information Guideline Release No. 94-201 by the Department of Revenue Property Tax Bureau.

Nebraska

1. *Hiring credit*
    i. *Flat credit for each new employee*
        i) <u>Hiring Tax Credit:</u> The hiring tax credit and investment tax credit are part of the same section of Nebraska's enterprise zone legislation. In order to qualify for the hiring credit (or the investment tax credit), the employer must increase employment by two new full-time employees and make at least a $75,000 investment during the taxable year. The hiring tax credit is $4,500 for each new employee if at least 50% of the new employees of the taxpayer reside within the boundaries of the enterprise zone OR $4,500 for each new employee residing in the enterprise zone and $1,500 for each new employee not residing within the enterprise zone if less than 50% of the new employees reside in the Enterprise Zone. Max credit of $75,000 including the hiring tax credit and the investment tax credit.
            (1) 1993 –
            (2) Source: LB 725. Section 16. Amending Section 77-27,188(3)(a-b)
2. *Income tax credit for operating in enterprise zone*
    i. *Credit contingent on private investment (sales and use tax)*
        i) <u>Investment Tax Credit</u>: $3,000 credit for each $75,000 of increased investment if at least 50% of the new employees of the taxpayer reside within the boundaries of the enterprise zone OR $1,000 for each 75,000 of increased investment if less than 50% of the new employees reside within the enterprise zone. In order to qualify for this credit, the employer must invest at least $75,000 and hire at least two new employees in the year the credit is to be claimed. Max credit of $75,000 including the hiring tax credit and the investment tax credit.
            (1) 1993 –
            (2) Source: LB 725. Section 16. Amending Section 77-27,188(3)(a-b)

New York

1. *Local incentives*
    i. *Real property tax incentive (total)*
        i) <u>Real property tax exemption</u>: A municipal corporation may, after a public hearing, pass legislation that exempts the taxes on the base amount of a property of 100% for the first 7 years, and 75%, 50%, and 25% respectively for the 8th 9th and 10th year
            (1) 1994 –

(2) Source: Laws of New York, 1993: Chapter 708 Section 40 amending section 485-e of the real property tax law by adding sub-division 1-a.

2. *Financing*
   i. *Corporation for providing loans*
      i) Economic Development Zone Capital Corporation: A capital corporation may be established in each zone for the purpose of raising funds to be used in making investments in, and loans to, qualified business firms for the purpose of encouraging the establishment or expansion of businesses and the provision of additional job opportunities. 20 percent of all loans made by this corporation must be made to local owned business enterprises
         (1) 1987 –
         (2) Source: Laws of New York, 1986: Chapter 686 Article 18-B Section 964.
   ii. *Stock investment incentive*
      i) Economic Development Zone Capital Corporations Credit: Credit amount is equal to 25% of the consideration paid for the original issue stock purchased during the taxable year from one or more EDZ capital corporations.
         (1) 1987 – 1993
         (2) Source: Laws of New York, 1993: Section 24 subdivision 20 of section 210 of the tax law.
   iii. *Tax deduction for contributions*
      i) Economic Development Zone Capital Corporation Credit: (This amends/replaces the stock investment incentive) Changes are made to eligible incentives: credit is equal to 25% of the sum of the following investments and contributions made during the taxable year and certified by the commissioner of econ development: (1) qualified investments made in, or contributions in the form of donations to one or more econ development zone capital corporations, (2) qualified investments in certified zone businesses which in the last 12 months employed 250 or fewer full time employees.
         (1) 1994 –
         (2) Source: Laws of New York, 1993: Chapter 708 Section 24 amending subdivision 20 of section 210 of the tax law.
3. *Hiring credit*
   i. *Tax credit based on wage bill*
      i) Credit against wages for targeted employees: Benefits depend on whether the employee is a "targeted employee", i.e. a NY resident who receives enterprise zone wages, is eligible for targeted jobs tax credit, benefits under job partnership training act, receives public assistance, or in poverty. For targeted employees, the benefit declines with the years in which incentive is claimed (1-5 years): 25%, 20%, 15%, 10%, 5%. For regular employees, incentive is (1-5 years): 12.5%. 10%, 7.5%, 5%, 2.5%.
         (1) 1987 – 1993
         (2) Source: Laws of New York, 1986: Chapter 686 Article 18-B section 966
   ii. *Flat credit for each new employee*
      (1) Credit against wages for targeted employees: The credit equals the sum (1) of the product of $1500 and the average number of full time employees who received EDZ wages for at least half the year, received an hourly wage which was at least 135% of the minimum wage for at least half the year at the employer, AND are

targeted employees, and (2) the product of $750 and the average number of full time employees who received EDZ wages for at least half the year. Only applies to workers for one year (the first) for which EDZ wages are paid. Qualifications require at least 20% of the taxpayer's employees who are employed in the jobs created in a zone during the period of its designation are residents of zones or census tracts contiguous with the zone AND the average number of individuals employed full time in the state and EDZ by the tax payer exceeds the average number that the taxpayer had 4 years prior. After 2000, when the Economic Development Zone program becomes the Empire Zones Program, the hiring credit is as high as $3,000 per employee if they belong to a special targeted group (persons who have received public assistance in the prior two years, have income below the federal poverty level, qualify for benefits for dislocated workers, or have been honorably discharged from the U.S. Armed Services.)

(2) Carryover, but unclear for how long

(3) 1994 –

(4) Source: Laws of New York 1993: Chapter 708 section 28 amending paragraphs 3, 4 and 5 of subsection (k) of section 606 of the tax law. Citizens Budget Commission 2008 report.

4. *Misc.*

   i. *Utility tax credit/incentive*

      i) <u>Utility Cost Reduction and Correlative Tax Credit</u>: Reduction of 3% in the rate charged for gas, electricity, steam or water sold, or gas, electric, steam or water service rendered, for ultimate consumption or use with an area designated as an economic development zone. Does not apply to retail businesses.

         (1) 1987-

         (2) Source: Laws of New York, 1986: Chapter 686 section 6 amends section 186a of the tax law section 8.

5. *Real property (land and buildings)*

   i. *Property tax credit or exemption (added value from renovation/expansion)*

      i) <u>Real Property Tax Exemption</u>: Real property constructed, altered, installed or improved in an enterprise zone is exempt from taxation and special ad valorem levies by any municipal corporation as long as the local municipality adopts a law as such. 100% for the first 7 years, 75% for year 8, 50% for year 9 and 25% for year 10 on the base amount. The base amount is the increase in the assessed value of the property post improvement

         (1) 1987 – 1993

         (2) Source: Laws of New York, 1986: Chapter 686 Section 5 amending a new section 485-e to the real property tax law.

   ii. *Property tax credit or exemption (total value)*

      i) <u>Tangible Personal Property Tax Credit</u>: Credit of 10% of the cost or other basis for federal income tax purposes of tangible personal property, including buildings and structural components of buildings. (12-C) says that taxpayer can use 30% of the credit received through (12-B) over the 3 years following first receiving credit, as long as the business employs at least 101% of the number of employees as the average business in the enterprise zone.

         (1) 1987 – 1993

(2) Source: Laws of New York, Ch. 686 section 7 amending section 210 section 12-B.

Ohio

1. *Investment in employees and benefits*
   i. *Job training/school tax credit or reimbursement*
      i) Training program reimbursement: Enterprises that reimburse their new employees for getting training will be provided a tax credit of up to $1,000 per employee.
         (1) 1982 –
         (2) Source: 1981 HB 351 section 5709.65(a)(5)
   ii. *Day care*
      i) Day-care reimbursement: Enterprises that reimburse their new employees for childcare services are entitled a credit of the reimbursed amount up to $300 for each child.
         (1) 1982 -
         (2) Source: 1981 HB 351 section 5709.65(A)(4)
2. *Hiring credit*[31]
   i. *Payroll or unemployment tax exemption*
      i) Payroll tax exemption: Compensation paid to new employees who are hired as a result of the project are exempt from the payroll tax.
         (1) 1982 –
         (2) Source: 1981 HB 351 section 5709.65(A)(3)
3. *Misc.*
   i. *"Optional" services or assistance authorized by municipal corporations*
      i) Optional services or assistance: Provision for a specified number of years, not to exceed 10, of any optional services or assistance that the municipal corporation is authorized to provide with regard to the project site.
         (1) 1982 –
         (2) Source*:* 1981 HB 351 section 5709.62(c)(3), 5709.63(a)(3) and 5709.63(a)(3)
4. *Real property (land and buildings)*
   i. *Investment in land not included in determining issued or outstanding stock*
      i) Land and personal property tax treatment: An investment in land or tangible personal property shall not be considered an asset of a corporate enterprise in determining the value of its issued or outstanding stock (retail does not qualify)
         (1) 1982 –
         (2) Source: 1981 HB 351 section 5709.65(A)(1)
   ii. *Environmental remediation credit*
      i) Environmental remediation: Businesses who meet the requirements may claim one or more of the following incentives: Exemption for up to 10 years of up to 50% of the assessed valuation of the real property prior to remediation. Exemption for up to

[31] Contrary to Ham et al. (2011), there is no $300 hiring credit for new employees. A flat credit for each new employee hired is available beginning in the mid 1990s for enterprise zone businesses that meet stringent employee requirements described in 1993/1994 S.B. 19 Section 5709.66(A) of up to $1,000 for new employees as described in 1993/1994 S.B. 19 5709.66(B)(2). There is however a $300 credit for employers who subsidize day care (see "Day-care reimbursement")

100% of the increase in the assessed valuation of the real property after remediation. Exemption for 10 years of a portion up to 100% of the assessed value of tangible personal property first used in the project site as a result of the agreement. Provision for a specified number of years, not to exceed 10, of any optional services or assistance that the municipal corporation is authorized to provide with regard to the project site. Business must spend an amount equal to at least 250% of the true value in money of the real property of the facility prior to remediation as determined for the purposes of property taxation to establish, expand, renovate, or occupy the remediated facility and to hire new employees, or preserve economic opportunities for existing employees at the remediated facility

(1) 1982-

(2) Source: 1981 HB 351 section 5709.62(C)(2)

iii. *Property tax credit or exemption (total value)*

i) Real property tax exemption: Exemption for a specified number of years, not to exceed 10, of a specified portion up to 100% or 50% depending on the extent of economic difficulty in the area (the 87/88 legislation changed this to 100% and then 60% - 75% in 1994 onward for central cities in MSAs designated as enterprise zones) of real personal property constituting the project site first used in business at the project site as a result of the agreement.

(1) 1982 –

(2) Source: 1981 HB 351 section 5709.62(c)(2), 5709.63(a)(2) and 5709.63(a)(2)

iv. Property tax credit or exemption (added value from renovation/expansion)

i) Land and personal property tax exemption[32]: An investment in land or tangible personal property shall not be considered an asset of a corporate enterprise in shall be exempt from property tax (called property factor) (retail does not qualify)

(1) 1982 –

(2) Source: 1981 HB 351 section 5709.65(A)(2)

5. *Tangible personal property*

i. *Investment in tangible property not included in determining issued or outstanding stock*

i) Land and personal property tax treatment: An investment in land or tangible personal property shall not be considered an asset of a corporate enterprise in determining the value of its issued or outstanding stock (retail does not qualify)

(1) 1982 –

(2) Source: 1981 HB 351 section 5709.65(A)(1)

ii. *Machinery and equipment sales and use or property tax exemption*

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[32] Business must be designated as an EZ. Additionally, the business must satisfy the following requirements (5709.64(A)): (1) Establish, expand renovate or occupy a facility; (2) Hire new employees to fill nonretail positions, of whom at least 25% were at least one of the following: unemployed who had resided at least 6 months in the county of the EZ, CETA eligible employees who had resided at least 6 months in the county, recipients of aid to dependent children, general relief, or unemployment compensation benefits with at least 6 month residence, handicapped persons with at least 6 months residence, residents for at least one year in a zone located in the county in which the EZ project site is located; (3) Average number of positions increases year over year; (4) Enterprise has not closed or reduced employment at a place of business in the state for the primary purpose of establishing, expanding, renovating or occupying a facility.

i) Tangible personal property tax credit: Exemption for a specified number of years, not to exceed 10, of a specified portion up to 100% or 50% depending on the extent of economic difficulty in the area (the 87/88 legislation changed this to 100% and then 60% - 75% in 1994 onward for central cities in MSAs designated as enterprise zones) of tangible personal property first used in business at the project site as a result of the agreement.
(1) 1982 –
(2) Source: 1981 HB 351 section 5709.62(c)(1), 5709.63(a)(1) and 5709.63(a)(1)

Oregon

1. *Hiring Credit*
   i. *Payroll or unemployment tax exemption*
      i) Payroll and employee benefit cost exemption: This is not technically a hiring credit because it is not limited to new employees but we categorize it as such because it lowers the average (and therefore marginal) employee cost. The credit is equal to 62.5% of a qualified taxpayer's payroll and employee benefit costs, including but not limited to worker's compensation insurance and payroll taxes for up to 15 years.
      (1) 1997 –
      (2) Source: Oregon Law 1997 Chapter 835 section 40
2. *Public property*
   i. *Sale/lease of public real property for business use*
      i) Public property availability: Any state or municipal property within an enterprise zone that is not being used will be made available for lease or purchase to qualified businesses
      (1) 1986 –
      (2) Source: Oregon Laws 1985 Chapter 807 section 9
   ii. *Property tax exemption for leased government buildings/structures*
      i) Leased Government structures33: 100% property tax exemption for a new building or associated structures owned by a governmental body that is leased to one or more qualified business firms.
      (1) 1989 –
      (2) Source: Oregon Laws 1989 Chapter 1015 Section 18 (2)(f)
3. *Real property (land and buildings)*
   i. *Property tax credit or exemption (total value)*
      i) New construction tax credit[33] 100% property tax exemption of the true cash value of a new building or structure with a cost of $25,000 or more.

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[33] Total cost of the qualified property must be at least $25,000. Firm must have business operations in EZ and use the qualified property in the EZ. More specifically, firms must receive 75% of its annual gross receipts from within a zone and provide goods, products or services to other businesses through manufacturing, assembly, fabrication, processing, shipping or storage. If firm is an existing business, must increase average number of employees by 10% or more year. If it's a new business, must hire one or more employees per year. Also, the firm must not substantially curtail employment outside zone. An existing business that makes a $25 mil investment in qualified property within an EZ with less than a 10% increase in employment but without loss of employment also qualifies (if there is loss of employment, the business needs the approval of a sponsor).

(1) 1989 –
(2) Source: Oregon Laws 1989 Chapter 1015 section 18 (2)(a).

ii. *Property tax credit or exemption (added value from renovation/expansion)*

i) New construction tax credit: New construction (does not include land) is partially exempt from property taxation for up to 5 years immediately following the new construction. 100% of the true cash value of the property in the first assessment year, 80% in the second year, 60% in the third year, 40% in the fourth year, and 20% in the fifth and final year. Property is constructed or added to a business by January 1st of the application year. Property is located in enterprise zone. If the business becomes unqualified during the 5-year time, it will lose exemption AND have to pay back the property tax breaks it received PLUS interest. Only available for non-retail business. Property includes only new buildings or structures or additions to buildings or structures.
(1) 1986 – 1988
(2) Source: Oregon Laws 1985 Chapter 807 section 13. Oregon Laws 1987 Chapter 769 section 6 amending ORS 284.210(1)

ii) Building modification or addition credit33: 100% property tax exemption of the increase in true cash value that result from the additions or modifications that cost $25,000 or more in one calendar year. Note that two or more additions or modifications can be aggregated to meet this requirement.
(1) 1989 –
(2) Source: Oregon Laws 1989 Chapter 1015 section 18 (2)(b).

iii. *Property tax exemption for hotels*

i) Hotel property tax exemption: 100% property tax exemption for any property otherwise described in this section that is owned or leased and operated by a business firm operating a hotel, motel, or destination resort, to the extent that the property is located at the same site as the hotel, motel, or destination resort and is used primarily to serve overnight guests of the hotel, motel, or destination resort. Property must be primarily used to serve guests; i.e. 50% of all receipts must be from paying guests.
(1) 1989 –
(2) Source: Oregon Laws 1989 Chapter 1015 section 18 (2)(g)

iv. *Site preparation*

i) New construction tax exemption for site preparation33: 100% property tax exemption for the increase in property value that results from site preparation that was necessary for and undertaken within 6 months before qualifying for new construction.
(1) 1989 -
(2) Source: Oregon Laws 1989 Chapter 1015 section 18(2)(c)

4. *Tangible personal property*

i. *Machinery and equipment sales and use or property tax exemption*

i) New machinery and equipment tax credit33: Real property (does not include land) is partially exempt from property taxation for up to 5 years immediately following the new construction. 100% of the true cash value of the property in the first assessment year, 80% in the second year, 60% in the third year, 40% in the fourth year, and 20% in the fifth and final year. Beginning in 1989, 100% property tax exemption for any real property machinery or equipment whether new, used or reconditioned that is newly purchased, leased or transferred into the enterprise zone from outside the

county within which the zone is located and installed in property owned or leased by a qualified firm.
(1) 1987 –
(2) Source: Oregon Laws 1987 Chapter 769 section 6 amending ORS 284.210(3). Oregon Laws 1989 Chapter 1015 section 18(2)(d)-(e).

Rhode Island

1. *Financing*
   - *i. Incentives for providing loans*
     - i) Interest income credit: Credit of 10% against taxes for interest earned on loans made to qualified businesses in the zone. Special provision for interest earned on loans made for the rehabilitation of locally certified industrial or commercial property for us in construction, expanding or rehabilitation of industrial or commercial real property of 100% provided that the loan shall be a minimum of 25% of the basis of the real property and said credit shall not be counted against the maximum credit provided by the 10% credit.
       (1) 1991 –
       (2) Source: January Session, 1991—Chapter 340 Section 42-64.3-8.1
   - *ii. Tax deduction for contributions*
     - i) Tax credit for donations: Credit of 20% against taxes for cash donations to public supported improvement projects in the zone. To qualify for the credit, the taxpayer must obtain certification from the city or town that the project is an endorsed zone capital improvement. Maximum credit of $10,000 per year.
       (1) 1991 –
       (2) Source: January Session, 1991—Chapter 340 Section 42-64.3-7.1
2. *Hiring credit*
   - *i. Tax credit based on wage bill*
     - i) Business tax credits for hiring: During the first 3 years of operation within a zone, the tax credit equals 100% of total wages and salaries paid to qualified zone employees in excess of payroll paid to such employees in the taxable year prior to the zone designation. Max credit is $15,000 per employee. During the 4th and 5th year, the credit is 75% and the cap is $12,000 per employee. During 6th and 7th year, the credit is 25% and the cap is $5,000 per employee. In 1991 this benefit structure is modified such that for the first 5 years the credit is 50% of total wages and salaries. The credit increases by 2% for each 1% that the workforce exceeds the minimum 25% annual average of workers. Moreover, there is a new requirement that a minimum of 25% of the business' work force must be enterprise zone workers. Max credit per year is $10,000 per employee. All the credits that existed for years 4-7 are no longer available.
       (1) 1982 – 1993
       (2) Source: January Session 1982—Chapter 396 Chapter 64.3 section 42-64.3-6. January Session 1991—Chapter 340 Section 42-64.3-6.
     - ii) Business tax credits for hiring: This credit replaces the previous one. Credit against tax during the first 5 years of enterprise zone designation equal to 50% of wages paid to enterprise job employees comprising the 5% of new jobs with the wages subject to

the credit reduced by any direct state or federal wage assistance. Max credit is $10,000 per employee. Starting in 1997, the 5-year limitation is dropped. In 1998 the following benefit is added: credit against tax equal to 75% of wages paid to enterprise job employees who live in the enterprise zone comprising the 5% of new jobs with the wages subject to the credit reduced by any direct state or federal wage assistance. Max credit is $15,000 per employee. A taxpayer who takes this credit is not eligible for resident business owner modification credit (42-64.3-7). Limitations for the benefits added in 1997: max credit is $15,000 per employee. A taxpayer who takes this credit is not eligible for resident business owner modification credit (42-64.3-7).

(1) Starting in 1999, a 3-year carryover is permitted
(2) 1994 –
(3) Source: January Session, 1994—Chapter 176 Section 42-64.3-6. January Session, 1997—Chapter 68 Section 42.64.3-6. January Session 1999—Chapter 31 Section 42-64.3-6 (6).

3. *Income tax credit for operating in enterprise zone*
   i. *Resident business owner tax deduction*
      i) Resident business owner tax deduction: During the first 3 years of operation within and enterprise zone, the business owners who live in the enterprise zone and operate their business in an enterprise zone can deduct $50,000 per year from the entire net worth or entire net income, whichever is applicable. During the 4th and 5th years of operation the deduction is $12,000 per year. In 1991, the benefits change such that now the deduction is treated as a modification reducing federal adjusted gross income. Deductions are the same value as before. Beginning in 1994, taxpayers that take this credit are not eligible for the business tax credit (42-64.3-6)
         (1) 1982 –
         (2) Source: January Session, 1982—Chapter 396 Chapter 64.3 Section 42-64.3-7. January Session, 1991—Chapter 340 Section 42-64.3-7. January Session, 1994—Chapter 176 Section 42-64.3-7.
4. *Misc.*
   i. *Employee tax credit*
      i) Enterprise worker tax exemption: Each enterprise worker who earns or receives in excess of 90% of his gross income directly from a qualified business located within an enterprise zone shall be allowed an additional exemption of the lesser of $5,000 or the amount earned per year for a period of 2 taxable years, which may be taken as a deduction from Rhode Island gross income. 1991 changes: the exemptions that were previously allowed are no longer. They are converted to modifications that reduce federal AGI, as in 42-64.3-7
      ii) 1982 – 1993
      iii) Source: January Session, 1982—Chapter 396 Chapter 64.3 Section 42-64.3-8. January Session, 1991—Chapter 340 Section 42-64.3-8. Repealed by January Session, 1994—Chapter 176 section 2.
5. *Real property (land and buildings)*
   i. *Property tax credit or exemption (total)*
      i) Business property tax exemption: First year, no property taxes shall be levied whatsoever. Second year, 20% of total property taxes shall be due. Third year, 40%. Fourth year, 60%. Fifth year, 80%. In all subsequent years, 100% of the total property

taxes shall be due and payable. 1991 changes: removes specifics for exemptions based on time. Just says "real and tangible property taxes in enterprise zones for qualified business may be exempted or stabilized upon authorization of the city or town council. Nothing in this section shall be deemed to permit the exemption or stabilization herein provided for any manufacturing or commercial concern locating from one city or town within the state of RI to another."

(1) 1982 –

(2) Source: January Session, 1982—Chapter 396 Chapter 64.3 Section 42-64.3-9.

6. *Tangible personal property*
   i. *Machinery and equipment sales and use or property tax exemption*
      i) Business property tax exemption: First year, no property taxes shall be levied whatsoever. Second year, 20% of total property taxes shall be due. Third year, 40%. Fourth year, 60%. Fifth year, 80%. In all subsequent years, 100% of the total property taxes shall be due and payable. 1991 changes: removes specifics for exemptions based on time. Just says "real and tangible property taxes in enterprise zones for qualified business may be exempted or stabilized upon authorization of the city or town council. Nothing in this section shall be deemed to permit the exemption or stabilization herein provided for any manufacturing or commercial concern locating from one city or town within the state of RI to another." Note that this is the same credit as the Real property tax credit or exemption above – it applies to both real and tangible property.
         (1) 1982 –
         (2) Source: January Session, 1982—Chapter 396 Chapter 64.3 Section 42-64.3-9.

Virginia

1. *Local incentives*
   i. *Occupational licenses/regulatory relief*
      i) Local incentives: Localities may propose local tax incentives in their applications including but not limited to: reduction of permit fees, reduction of user fees, reduction of business, professional or occupational license tax, regulatory flexibility such as special zoning districts, permit process reform, and exemptions from local ordinances. If a local governing body fails to offer any local incentives, the zone designation will terminate. Qualified firms will be eligible for public incentives even after zones have expired but no new firms will.
         (1) 1982-
         (2) Source: Acts of Assembly, VA., 1982: Chapter 275 Chapter 22 section 59.1-283.
2. *Hiring credit*
   i. *Payroll or unemployment tax exemption*
      i) State unemployment tax credit: Tax credit against the unemployment tax of 80% for the unemployment tax in year 1, 60% in year 2, 40% in year 3, and 20% in years 4 and 5. Tax credits can only be applied for unemployment tax due on employees employed at qualified businesses established in Urban Enterprise Zones. Unemployment taxes averaged about $50-115 per year, so this benefit was not very large.
         (1) Carryover of unused credit is allowed for 5-years.

(2) 1982 - 1983
(3) Source: Acts of Assembly, VA., 1982: Chapter 22 section 59.1-281. Repealed by Acts of Assembly, VA., 1983: Chapter 572 Part 2

3. *Income tax credit for operating in enterprise zone*
   i. *Credit for opening new or expanding existing business*
      i) State business income tax credit: Credit against state income tax, franchise tax, gross receipts tax, or shares tax of 80% for the first tax year, 60% for the second tax year, 40% for the third year, and 20% for the fourth and fifth years. From 1992 – 1994 the credit changes such that it is 80% for the first year, and 60% for the second through the tenth year. Beginning in 1995 the amount of the credit and carryover for firms that invest more than $25 million, and create 100 full time positions will be determined by an agreement between the firm and the Department of Housing and Community Development.
         (1) Carryover of unused credit is allowed for 5-years.
         (2) 1982 -
         (3) Source: Acts of Assembly, VA., 1982: Chapter 22 section 59.1-280. Acts of Assembly, VA., 1992: Chapter 301 section 59.1-280. Acts of Assembly, VA., 1995 Chapter 792 section 59.1-280.
4. *Public Property*
   i. *Sale/lease of public property for business use*
      i) Sale of public land: The Commonwealth of Virginia and any local municipalities that own land in an Urban Enterprise Zone shall make that land for sale if it is not designated or targeted for some public use, as long as it will be developed by the purchaser.
         (1) 1982 –
         (2) Source: Acts of Assembly, VA., 1982: Chapter 22 section 59.1-276.
5. *Real property (land and buildings)*
   i. *Property tax credit or exemption (added value from renovation/expansion)*
      i) Enterprise zone real property investment tax credit: 30 percent of qualifying zone improvement spending (rehabilitation, or expansion of a facility or building a new structure) can be taken as tax credit. If it is a big project, in excess of 100 million and results in at least 200 new full time employees, then they can get up to 5 percent instead of the 30 percent.
         (1) 1995 –
         (2) Source: Acts of Assembly, VA., 1995: Chapter 792 section 59.1-280.1
6. *Tangible personal property*
   i. *Tax exemption for all items purchased to conduct business*
      i) State sales tax exemption: Qualified businesses are exempt from the payment of taxes for all items purchased for the conduct of its business within the Urban Enterprise Zone.
         (1) 1982 –
         (2) Source: Acts of Assembly, VA., 1982: Chapter 22 section 59.1-282.

Wisconsin

1. *Investment in employees and benefits*

i. *Day care*

i) <u>Development zones day care credit</u>: For any taxable year for which a person is certified to receive enterprise zone benefits[34] and begins operations in an enterprise zone, a person may credit against taxes for employment related day care expenses up to $1200 for each qualifying individual.

(1) Carryover allowed.

(2) 1995 –

(3) Source: 1995 Wisconsin Act 27 section 3399r creating 71.28(1dd).

2. *Hiring credit*

i. *Tax credit based on wage bill*

i) <u>Development zones jobs credit</u>: Credit is calculated according to section 51 of the internal revenue code. According to section 51[35], the credit is equal to 40% of total qualified wages for the first and second year of employment for targeted groups that have high unemployment rates or other special employment needs, up to $6,000 and up to $3,000 for qualified summer youth employees. There is also a 10% credit for the total wage bill of development zone residents (they do not need to be targeted employees) for their wages in their first year of employment; max of $6,000.[36]

(1) 1987 –

(2) Source: 1987 Wisconsin Act 328 section 10 creating 71.09(12dj), Schedule DC tax form.

3. *Research tax credits*

i. *Credit for qualified research expenses*

i) <u>Research credit</u>: Credit against taxes equal to 10% of qualified research expenses incurred for research conducted in a development zone. Note that there is a research benefit broadly provided in the state of 5% -- the credit provided in development zones simply doubles this credit.

(1) Carryover allowed

(2) 1987 –

(3) Source: 1987 Wisconsin Act 328 section 12 amends 71.09 (12r) (a)

ii) <u>Development zones research credit</u>: Any person may credit against taxes an amount equal to 5% of the amount obtained by subtracting from the person's qualified research expenses, as defined in section 41 entitled “Credit for increasing research activities.” Qualified research expenses cannot include compensation used in computing the credit under 2dj.

(1) 15-year carryover

(2) 1995 –

(3) Source: 1995 Wisconsin Act 27 section 14 creating 71.07(2dr).

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[34] 1987 Wisconsin Act 328 section 560.765(3) describes the eligibility requirements to receive enterprise zone benefits. These include things like the taxpayer will make reasonable attempts to hire employees from the targeted population, and that the taxpayers’ economic activity will attract other forms of economic activity.

[35]https://www.law.cornell.edu/uscode/text/26/51

[36] Ham et al. (2011) mention that businesses in Wisconsin enterprise zones can claim a 15.8% credit against new payroll however this is based on 71.28(3w), Wisc Stat., 71.47(3w) Wisc. Stat., and 560.799 Wisc. Stat., which were not passed until 2005 and therefore do not apply to enterprise zones enacted between 1990-2000.

4. *Misc.*
   i. *Employee tax credit*
      i) Working credit: A credit of 10% of wages is available for employees who work and reside in development zones for the first year of employment in the zone. Beginning in 1995, this credit is available for the first 2 years of employment for residents. Max credit is $600 per year.
         (1) 1993 –
         (2) Source: 1993 Wisconsin Act 16 section 1734 creating 71.07 (2dj) (am) 8m. 1995 Wisconsin Act 209 section 10 amending 71.07 (2dj) (am) 8m
5. *Real property (land or buildings)*
   i. *Property tax credit or exemption (added value from renovation/expansion)*
      i) Development zones location credit: Income tax credit equal to 2.5% of the amount expended to acquire, construct, rehabilitate, remodel or repair real property in a development zone.
         (1) Carryover allowed
         (2) 1987 –
         (3) Source: 1987 Wisconsin Act 328 section 11 creates 71.09 (12dL)
   ii. *Tax credit for construction materials*
      i) Development zones sales tax credit: Tax credit against sales tax for purchases, leases and rentals of eligible property such as construction materials and supplies and other materials used to construct, rehabilitate, repair or remodel real property in a development zone and investment credit property. No credit available for partnerships and tax-option corporations. Cannot also get credit for 12di on same property.
         (1) 1987 –
         (2) Source: 1987 Wisconsin Act 328 section 12 creating 71.09 (12ds)
   iii. *Environmental remediation tax credit*
      i) Development zones environmental remediation credit: For any taxable year for which a person is certified to receive enterprise zone benefits (34) and begins operations in an enterprise zone, the person may claim as a credit against taxes otherwise due under this subchapter an amount equal to 7.5% of the amount that the person expends to remove or contain environmental pollution, or to restore soil or groundwater that is affected by environmental pollution.
         (1) 1995 –
         (2) Source: 1995 Wisconsin Act 27 section 3377r creating 71.07(2de).
6. *Tangible personal property*
   i. *Tax exemption for all items purchased to conduct business*
      i) Development zones investment credit: Income tax credit of 2.5% of the amount expended to purchase tangible personal property or 1.75% of the amount expended to purchase tangible personal property that is expensed under section 179 of the internal revenue code for purposes of taxes. No credit available for partnerships and tax-option corporations. Property must be used in business operations in the development zone. Subject to recapture provisions if the property is moved out of the zone.
         (1) Carryover allowed
         (2) 1987 –
         (3) Source: 1987 Wisconsin Act 328 section 9 creating 71.09 (12di).

Appendix B: Classification of Tracts as Enterprise Zones or Controls in the 2000s

In this appendix, we detail our work to map enterprise zones to tracts from 2000 to 2010. We study state-level enterprise zones, for which rules and how areas are designated vary by state. As a consequence, different approaches were needed for different states. In some cases, it was possible to retrieve information of changes in the evolution zones boundaries over the entire period. In other states, the information available was available only for is only for one or two years. The states include in the original Ham et al. (2011) study were California, Colorado, Florida, Hawaii, Illinois, Massachusetts, Nebraska, New York, Ohio, Oregon, Rhode Island, Virginia, and Wisconsin. We construct a database that includes all these states, except for Massachusetts and Wisconsin, for which we could not obtain any information on enterprise zone boundaries for this decade.

Census tracts

We downloaded all the Census tracts from the Census website TIGER/Line. We use the 2000 tracts because our period of interest is from 2000 to 2010. The downloaded files are shapefiles: https://www.census.gov/geo/maps-data/data/tiger-line.html.

Using ArcGIS to map enterprise zones to tracts

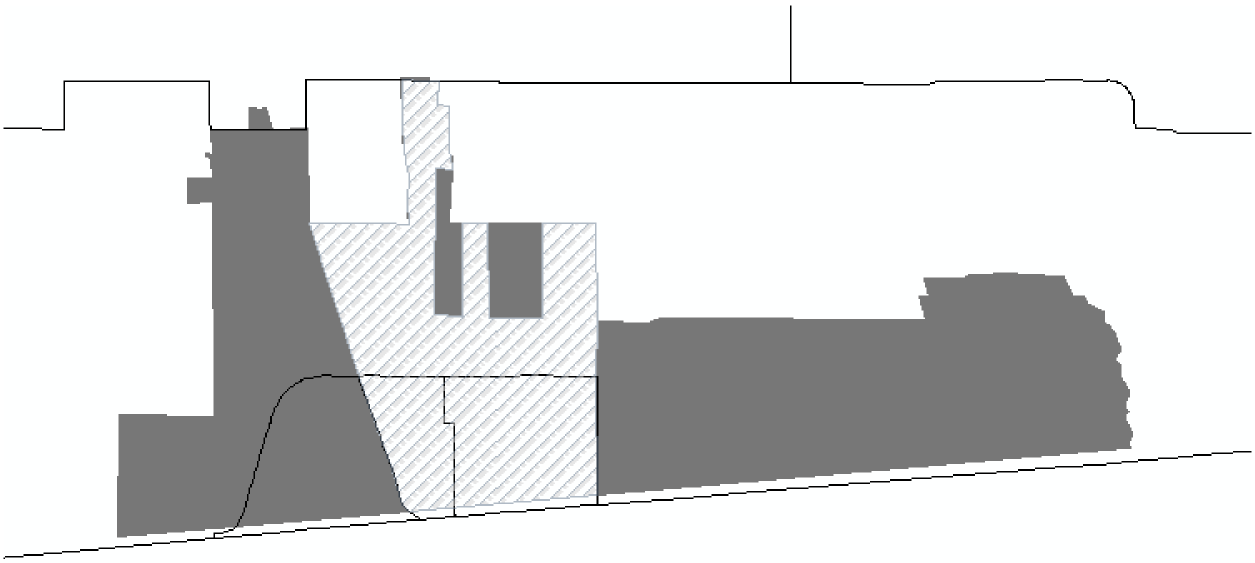
To calculate the area covered by each enterprise zone program across Census tracts, we use the software ArcGIS Maps. ArcGIS support different types of files; the most important ones are layers (files that contain only an image projected on a map) and shapefiles (files that contain images, coordinates, area, perimeter, and a spreadsheet with many characteristics).

We use shapefiles to measure the area covered by the enterprise zone program and to determine the geographic overlap with each Census tract. There are three possible situations that arise:

1) We obtain the shapefiles for the whole period from one state's enterprise zone program, and we use it to calculate the area covered by the enterprise zone. (We do not necessarily have a file for every year, if we know, for example, there were not changes in the enterprise zone boundaries.) States: Colorado, Oregon, Virginia, and Rhode Island.
2) We obtain the shapefile for one or more years, and we modify the file so that we can take into account changes in the boundaries of the enterprise zone in other years based on other information like old maps (pdf files, images, or even paper maps). States: Illinois and Ohio.
3) We have to draw the whole map using a layer as a guide (this is a file that does not contain any geographic information; it is just a projected image). States: California.
4) We obtain a shapefile of one state's enterprise zone program for few years, but we do not have any information from other years. We assume that the boundaries did not change in the years for which we have no information. States: Florida, Nebraska, Hawaii, and New York.

Modifying shapefiles

For cases 2 and 3 above, we have to modify shapefiles to reflect changes in the enterprise zone boundaries over time. For example, parts of Calexico, CA were designated as an enterprise zone in 1986, and the area was expanded in 2001. However, we only have shapefiles of the area after 2001. Hence we modify the area so that we can have two shapes of Calexico, one pre-2001 and the other one post-2001:



Lighter area defines the Calexico enterprise zone pre-2001

Merging shapefiles

Once we finished editing the enterprise zone shapefile and we are sure that we have all possible information regarding boundaries and dates of designation, the next step is to calculate the area of each Census tract that overlaps with an enterprise zone. This is calculated using “Geoprocessing” in ArcGIS.

State-specific information

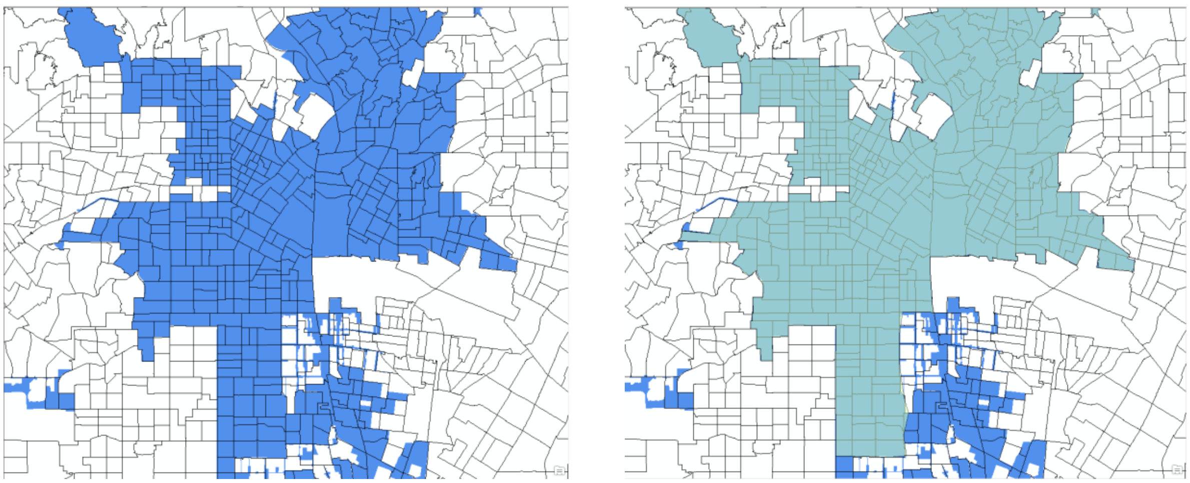
We worked with agencies in each state to obtain the required information. Here we provide some details about the information we received from each state.

California

California provides maps of EZs on the website: http://maps.gis.ca.gov/gobiz/dga/default.aspx.

The program expired in 2014. The information on the website does not allow the user to download data. Hence, we communicated with the Employment Development Department of California, and they give us access to the files used in the website.

The files obtained were layers, not shapefiles. This means that the data did not contain geolocation codes or any other data; they were only pictures projected on a map. Hence, we had to redraw all the enterprise zones using these layers as a guide. The redrawing was useful because we created shapefiles that capture changes in boundaries over time. We used old maps from the enterprise zone program from the website: http://www.hcd.ca.gov/grants-funding/archive/enterprise-zone.shtml. With these maps, we were able to build a map database of California that includes changes of the enterprise zone boundaries on time.



(a) Layer File *(b) Shape File*

To illustrate an example, in the figure above we use the Los Angeles area as an example. The layer file is shown in panel (a), and in panel (b) we show the shapefile that we drew (green shadow). We use the layer as a guide to generate the shapefile, but we exclude all the areas that were designated after 2010. Panel (b) excludes part of the blue layers because these areas were designated after 2010.

Once we redrew all the enterprise zones, we merged the information with Census tracts in California, and calculated what percentage of each tract overlaps with the EZ each year (as explained in the previous section). In the case of California, we usually have two points in time, because the EZ boundaries only change twice since the beginning of the program.

Colorado

This state only had shapefiles and maps from 2016. However, we communicated with Sonya Guram, director of the state enterprise zone program, and she told us that there were only two main changes in enterprise zone boundaries. One change occurred in 2000 and the other in 2016.

Ms. Guram and her team provided us with the shapefiles updated in 2016 that reflected the new changes that year, and the shapefiles for just the "new areas" added in 2016. We identified the tracts that were active between 2000-2015 by subtracting the "new areas" added in 2016 to get the 2000-2015 maps from the updated 2016 areas.

Florida

Florida only had data starting from 2015. There are no old maps or any references on old enterprise zone boundaries or changes available. The state reports data in "FGDL" instead of standard shapefiles. (The FGDL is a type of file that the state of Florida uses to geolocate information in maps. It is very similar to a shapefile; this type of file will not open on ArcGIS.) However, we managed to find shapefiles online: http://mail.geoplan.ufl.edu/pipermail/fgdl-l/2015-September/000094.html.

Most of the Florida enterprise zones were updated in 2010, but we do not know if the update included boundary changes or not. We calculate the area covered by the enterprise zone as discussed at the beginning of this document, but because we do not observe boundary changes over time, we cannot be certain the areas were constant between 2000-2010. Nonetheless, these are the best data available, and we have to assume no changes in this period.

Hawaii

In Hawaii, most of the enterprise zone boundaries were defined in 2000. We obtained a shapefile from 2015; we were not able to get other shapefiles to calculate changes in the boundaries. The significant enterprise zone area changes occurred in 2001. These changes were: Koolauloam became an enterprise zone, new zones were added to the urban Honolulu enterprise zone, and five of the six island zones being expanded. Other changes occurred in 2004, 2006, 2007 and 2008 and were relatively minor. This information is all provided at: http://files.hawaii.gov/dbedt/annuals/2015/2015-bdsd-ez.pdf.

We use the 2015 shapefile and calculate the intersection of the enterprise zones Census tracts to determine the covered area using the methods described above.

Illinois

Illinois was a problematic state, because it has a lot of enterprise zones and they do not have all the information in a central state database. Each enterprise zone is administered individually, and therefore all maps and files are administered by a different administration for each enterprise zone. The central (state) enterprise zone administration website has information on the maps, but everything is in pdf files: https://www2.illinois.gov/dceo/ExpandRelocate/Incentives/taxassistance/Pages/EnterpriseZone.aspx.

We wrote to all the local administrations asking for information, and we got some historical files from Urbana, Chicago, Beardstown, Carmi-White, and Belvidere-Boone. We have changes in boundaries for these cities, but it was not enough to calculate the enterprise zones for the whole state.

To overcome this problem, we contact professors from the University of Illinois who have done research on Illinois enterprise zones. Richard Funderburg responded and shared shapefiles of the EZ that he used in his research. We modify the shapefiles to capture the changes in boundaries over time (using the pdf maps). Finally, we merge the enterprise zones and the census tracts to calculate the covered areas.

Nebraska

Nebraska has data available from 1992 and 2015. We found data from 1992 online, and we got the 2015 EZ data from Jacob Knutson, who is in charge of the Nebraska Department of Economic Development. Mr. Knutson told us there is no data available on boundaries prior to 2015. Hence, it was impossible to determine how the boundaries change from 1992 to 2015. Thus, we use both the 1992 dataset and the 2015 data to infer as much as possible about changes between 2000-2010. For instance, if an enterprise zone covered an area in both 1992 and 2015 (which we observe), then we can assume that the enterprise covered the area between 2000 and 2010.

New York

In New York, the program is called "Empire Zones." We found data that was updated in 2017. Most of the zones were effective between 2006 and 2007. The information from New York City was downloaded from this website: https://data.cityofnewyork.us/City-Government/Empire-Zones/3aim-ipk8.

We found the rest of the state enterprise zone areas using Google search codes to find shapefiles related to the program. The link to the file is: http://www.nysgis.state.ny.us/gisdata/fileserver/?DSID=895&file=empirezone.zip.

Ohio

Erick Linder from the Development Services Agency of Ohio claimed that they did not have any shapefiles. He invited us to Columbus to take pictures of all the old paper maps in their archive. We visited the Development Service Agency in Columbus, and we created a digital file of all the maps from 2000 to 2010.

Once we were there, we had access to shapefiles updated in 2015 by Daniel Strasser from the Development Services Agency that were not available publicly. We use these 2015 shapefiles as a guide to redraw some of the maps (when needed), and we create a shapefile that contains all the changes in enterprise zone boundaries. We use this file to calculate the covered area by Census tract and year.

We use the 2015 shapefile as a baseline. Using information of the digital file with the maps from 2000 to 2010, and the website (https://development.ohio.gov/bs/bs_oezp.htm) with all the dates of expiration and designation of zones, we modify the 2015 shapefile to have all the changes in boundaries of the EZ over time.

Oregon

We contacted Arthur Fish who is the coordinator of the program in Oregon. They only report the enterprise zone areas at the following online website: gttp://geo.maps.arcgis.com/apps/View/index.html?appid=e086ca6b2ef04f13a8240fced7bb8cad.

However, we can only use these maps online. Mr. Fish told us that they did not have shapefiles, but supplied us with pdfs, and an Excel file with the designation dates of each zone.

To get the data, we use Google search codes to retrieve Oregon enterprise zone shapefiles. The link to the shapefile is: http://lib-arcgis5.library.oregonstate.edu/arcgis/rest/services/osdl/Framework/MapServer/10. We use the pdfs and the spreadsheet as a guide to modify the shapefile and capture changes in the boundaries over time. Finally, we combine these data with Census tract data to calculate the covered areas.

Rhode Island

Rhode Island publishes shapefiles of their enterprise zones, and they provide information on the changes in designated areas. The program does not change the boundaries of an existing EZ; instead, they add new zones (even if they share boundaries), this makes it easy to track changes. The information about the changes in the zones is here: https://www.arcgis.com/home/item.html?id=687ed3ad6fc54b89838236e6eaa3f592.

The shapefiles are located at: http://www.rigis.org/datasets/5aa96ee738a044a9b95cf8da3fde9045_0.

We use this information to construct a time series of the changes in the enterprise zones and merge this with the Census tracts to calculate the covered areas.

Virginia

We worked with Kyle Flanders, who is the Senior Policy Analyst at the Virginia Department of Housing and Community Development. He provided a link to the shapefiles with the designation dates: http://gis.yesvirginia.org/datasets/394e709c529a4ec3bcc644dbd03d91f2_3/data?orderBy=Designation.

We use this information to create a time series of the enterprise zones from 1998 to 2010. We merge the data with the Census tracts to calculate the covered areas. However, the database indicates that sometimes there were changes in the boundaries and we do not know the precise changes, but only what the boundaries were in 2010. We have data about which enterprise zone was designated in a specific year, but we do not know the changes in the boundaries that occur after that.