Economic Impacts of Immigration Detention Centers Built Between 1990-2016 on U.S. Commuting Zones

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Abstract

This paper aims to investigate the impacts from an introduction of an immigration detention center within select U.S. Commuting Zones from 1990-2016 on certain economic performance variables such as employment in traded and non-traded industry sectors, median home value, median household income, and poverty rate. The methodology employed include event study and difference-in-differences regressions finding statistically insignificant results concerning the treatment effect of an introduction of a detention center. Reversing assumptions for categorizing industries into traded and non-traded sectors yields similar regression results for employment outcomes. Control variables that demonstrate some statistical significance on economic performance measures include individuals residing in group quarters and individuals having graduated from high school.

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1 Introduction

1.1 Intent of the Investigation

The aim of this investigation is to examine and evaluate the impacts on select United States Commuting Zones' economic health from introductions of immigration detention centers. Contracting with U.S. Immigration and Customs Enforcement is a tempting offer for rural communities; the opening of a detention center should bring with it employment opportunities within the facility and more traffic to the area via lawyers and family for those detained. Those in favor of abolishing immigration prisons argue against these supposed economic benefits, stating that alternatives to detainment cost pennies in contrast to immigration prisons – about 5 dollars per day per person in contrast to a detention bed of nearly 200 dollars per day – which can increase debt risk to a municipality. Whether or not municipalities benefit more from setting up detention centers or choosing an alternative economic pathway is continuously debated. The question for the investigation is thus as follows: how does the introduction of an immigration detention center in a rural community impact the community's associated Commuting Zone's economic health and wealth measures such as employment, median home value, median household income, and poverty rate?

1.2 Brief Overview of Existing Evidence & Approach of Investigation

Previous research into the economic impacts of incarceration centers has yet to have focused specifically on immigration detention centers. Past research into the economic impacts of studies such as Farrigan and Glasmeier (2007) have found that state-run prisons erected between 1985 and 1995 in rural counties have a limited economic impact on said counties and may even be positively correlated with poverty rates; prison impacts were not significant enough to boost economic health within a county. Besser and Hanson (2004), using Census data for 1990-2000, found that changes in the unemployment rates were essentially identical between prison and non-prison towns, though public sector employment increased more in prison towns. Employment growth within nonagricultural sectors, average household wages, and the median value of housing were actually found to be lower in new prison towns in comparison to non-prison towns. Hooks et al. (2004) obtained data on all U.S. prisons between 1969-1994 and examined the impact on employment growth in the counties containing them, finding no evidence that prisons contributed to job growth in those counties and impeding employment growth in some slower-growing counties. The study also found no significant relationship between the presence of a prison and employment growth in more populous metro counties – prison impact is drowned out within larger and more diverse urban economies. These past studies have focused on all prisons rather than immigration detention centers specifically and have

focused on newly constructed prisons prior to the year 2000, while the intended study aims to look at more current data concerning immigration detention centers. Data and other information collected on immigration detention centers have yet to provide causal evidence on the impact of detention center construction on local economies. Local newspapers detail the perceived economic impacts of detention centers. The Atlanta Journal Constitution considers the impact of Irwin County Detention Center on Irwin County – the center employs around 200 individuals with a 10.5 million dollar annual payroll, which appears substantial when considering the county has a population of just under 10,000. Small, local businesses such as mechanics also supposedly benefit from detention centers, making around 50,000 dollars just from tire and maintenance work on the center's vehicles per year. According to Irwin County officials, the detention center spends millions annually on a variety of local goods and services in the area, including food and utilities. The causal impact of detention centers on these local communities cannot stem from simple data comparisons. Economic impacts of detention centers specifically can have important policy implications when considering the problem of immigration within the United States – fewer economic benefits could potentially lend further argument as to the decline of these detention centers.

1.3 Paper Overview

To assess the economic impacts of immigration detention centers data from the 5-year American Community Survey (ACS), the 10 year U.S. Census, and the County Business Patterns (CBP) tables will be used. Detention centers are collected from the ICE over-72-hour facilities list and narrowed down to the following conditions: surrounding county population of under 30,000 (similar to the Hooks et al. study to focus on rural communities), not affiliated with the Bureau of Prisons, and ICE reports available. The objects of interest subsequently are the Commuting Zones the detention centers are located in with the final sample size numbering 24 detention centers and 19 Commuting Zones. Four of the Commuting Zones have two detention centers introduced throughout the span of the investigation.

Similar Commuting Zones that did not introduce detention centers are paired to the Commuting Zones that did. An event study and difference-in-differences methodology for balanced and unbalanced panel data is utilized. Commuting Zones are paired using nearest neighbor matching with calculated propensity scores from a logistic regression designating the likelihood of a Commuting Zone being "treated" with the introduction of a detention center. The year of introduction of the detention centers is obtained from ICE facility overview reports.

The event study method will introduce dummy variables looking at the years before and after a county is treated (or not) for both unbalanced and balanced panels, with balanced panels specifically looking at 4 years prior to the introduction of a detention facility and 2 years after. Difference-in-differences for both

unbalanced and balanced panels will similarly examine the time, treatment, and interaction of time and treatment dummy variables introduced to assess the treatment effect of introducing a detention center. For both methodologies, dummy variables will be regressed on median home value, the log of employment, median household income, and poverty rate. Control variables include total population, land area, racial composition, group quarters population, and educational attainment. State and year fixed effects are also considered in the regressions.

The variables described are similar to the ones utilized in previous studies on prisons, though existing literature has yet to investigate these outcomes for immigration detention centers. This paper will also extend the time frame studied past the year 2000, providing more recent results on the impact of detention centers. Statistics on detention centers do not provide causal evidence for either positive or negative economic impacts on these rural counties, thus this investigation aims to evaluate such impacts via an event study and difference-in-differences methodology and advance the literature on economic consequences of detention center construction.

2 Literature Review

2.1 Previous Literature

Past academic literature has focused on the construction of general prisons in rural counties. These studies have all found the relationship between prison construction and economic health measures to be non-existent, if not negative. Reviewing this literature is helpful in assessing previously employed methodologies to potentially utilize in this study centered specifically on detention centers as well as to evaluate the channels through which prisons and similar structures could potentially impact a rural community.

A study by Hooks et al. (2004) considers all U.S. prisons in existence between 1969 and 1994 in both metropolitan and nonmetropolitan areas. Utilizing data from the 1995 Census of State and Federal Adult Correctional Facilities, Hooks et al. examine three periods: 1969-1979, 1979-1989, and 1989-1994 and employ a 10 year lag between these time periods to test for long-term development shifts at a local level. The dependent variable of focus is employment growth collected from the Regional Economic Information System (REIS) and is divided into public, private, and total growth. Spatial autocorrelation and control variables such as per capita property taxes, total bank deposits, and commercial aircraft activity as well as dummy variables for each state are utilized in the study. The results demonstrate that there is no significant relationship between prisons and job growth (aside from new prisons increasing public employment), and that prisons actually impeded employment growth in counties with lower growth rates. The study also found

that prison impact is drowned out within larger and more diverse urban economies – metropolitan counties had no significant relationship with prison presence and job growth. Hooks et al. (2010) revisits the study to expand upon data through 2004 and again find that prisons do not play a strong role in economic growth in rural counties, offering explanations such as correction officers moving to fill openings, adverse local impacts of prison labor, and weakness of local multipliers with prison openings.

Besser and Hanson (2004) utilizes Census data for 1990 and 2000 to look at economic and demographic changes associated with the introduction of a new prison in a small rural town. 1990 Census data is used to evaluate economic factors before prison opening while 2000 Census data looks at the factors after the prison was in operation. Using multiple regression analysis the study finds that changes in the unemployment rates were basically identical between towns with prisons and towns without (aside from public sector employment). Employment growth within median house value, household wages, and nonagricultural sectors was often found to be lower in newer prison towns.

Farrigan and Glasmeier (2007) examines state-run prisons constructed between 1985 and 1995 in rural counties and their impacts on county earnings by employment sector, population, poverty rate, and degree of economic health. The study employs a difference in differences method by matching treatment counties with constructed detention centers and similar control counties without detention centers. The results of the study demonstrate that prisons haven't had any significant economic effects on the rural counties studied, instead having a positive relationship with poverty rates on persistently poor rural counties. Prison construction also was shown to be associated with diminishing transfer payments in persistently poor counties but an increase in state and local government earnings in counties already in relatively good economic health. Overall Farrigan and Glasmeier (2007) concludes that prison construction isn't enough to foster economic change within a rural county.

2.2 Contribution to Existing Literature

This paper will contribute to the existing literature in focusing on immigration detention centers rather than general prisons. The paper also will evaluate detention centers opening through 2016 whereas previous papers only examined prisons opened 2004 and prior. An event study methodology will also be employed in contrast to prior literature having worked solely with multiple regression analysis and difference in differences methodologies. Dependent variables on economic health in previous studies have looked mostly at employment growth whereas this study will examine not only employment, but median household income, median home value, and poverty rates per Commuting Zone. Potential weaknesses of this research include a smaller sample size as detention centers are less common than general prisons and discrepancies in matching Commuting Zones as matching is done with a simple nearest neighbor analysis – matching treatment and

observed counties more methodically involves a process like Mahalanobis Metric Matching as demonstrated in Farrigan and Glasmeier (2007).

3 Overview of Data

3.1 Data on Immigration Detention Centers

Data on immigration detention centers are collected from the ICE database of over 72 hour facilities. The detention centers and Commuting Zones containing them are chosen to be a part of the treatment group in the event study and difference-in-differences regressions based on a few conditions. Analyzing Commuting Zones rather than towns is chosen in order to better obtain data on economic measures and to account for detention centers often not being located central to their towns. From past literature it has been shown that prisons in metropolitan counties have no impact on economic health measures in said county. Thus to help ensure the Commuting Zones are relatively rural, similar to Hooks et al. (2004), detention centers are chosen if the counties they are located in are chosen to have a population under 30,000. Subsequently the Commuting Zone containing said county is chosen for analysis. The detention centers are further narrowed down in that they are not affiliated with the Bureau of Prisons, as those institutions often double as jails. ICE reports must be available as well in order to determine the date of the opening of a detention center. The final sample size totals 24 detention centers with 19 Commuting Zones in the treatment group and an additional 24 Commuting Zones selected for a control group. Four of the Commuting Zones have two detention centers opened throughout the 1986-2018 period of study. If another detention center opens less than 10 years after the first one is introduced, then it and its supposed effects are simply treated as an "expansion" of the already existing detention center. If there is more than a 10 year gap between the openings of the detention centers then the second detention center is treated as a separate facility and the Commuting Zone is entered twice in this study's methodology.

3.2 Commuting Zones

Commuting Zones are constructed utilizing David Dorn's crosswalk file for 1990 Counties to 1990 Commuting Zones. As data is gleaned from 10-Year Census, 5-Year ACS, and County Business Pattern tables at the county level, obtaining data for Commuting Zones requires aggregating all counties within a Commuting Zone. To obtain measures such as Median Home Value and Median Household Income in aggregating counties to build Commuting Zones, a weighted average with county populations is used.

Commuting Zones essentially cover local labor market geographies within the United States. These

Commuting Zones are groups of U.S. counties that exhibit relatively strong within-group and weak between-group commuting links, proving particularly valuable for analysis on employment as well as providing some more insight into how detention centers may impact neighboring communities not necessarily in the same county. As data for regressing on the outcome variable of employment stem from both U.S. Census/ACS data which are based on residents in a county as well as CBP data based on employers in a county, utilizing Commuting Zones helps eliminate the discrepancy that certain residents in a county may be employed in another county. Under the Commuting Zone level there is less error between and thus allows for the study to confidently compare certain covariates from one dataset with outcome variables from another.

3.3 Measures of Economic Health: Employment

The primary outcome variable of interest in the study is employment. Employment has been used previously in literature, i.e. Besser and Hanson (2004), to evaluate the claim that detention center construction creates jobs and lowers unemployment in the associated county. Employment numbers at county levels to be later aggregated into Commuting Zone levels are obtained from County Business Patterns from 1986 through 2018. For levels of total employment all industry numbers for Total Mid-March Employees are summed, ensuring that only the 3-digit names of industries are used to avoid double counting the Standard Industrial Classification (SIC) and North American Industrial Classification System (NAICS) code hierarchies. SIC Codes are utilized from 1986 through 1997 in CBP Data with NAICS Codes replacing them in the year 1998.

Certain employment numbers are withheld from being published by CBP in order to maintain confidentiality for certain industries and are replaced by zeroes in the dataset. In order to estimate employment numbers, CBP provides a data suppression flag titled "EMPFLAG" which gives a range of employment size classes for these industries. The EMPFLAG employment size classes are noted as follows: A – 0-19; B – 20-99; C – 100-249; E – 250-499; F – 500-999; G – 1,000-2,499; H – 2,500-4,999; I – 5,000-9,999; J – 10,000-24,999; K – 25,000-49,999; L – 50,000-99,999; M – 100,000 or More. The middle value in these ranges is taken (aside from class M, of which there were no industries in the specific subset of data worked with) and assigned to industries with masked employment numbers.

Analysis of employment was also split into employment for industries having to do with traded goods and services as well as industries having to do with non-traded goods and services. Tradable sectors have to do mostly with goods that can be shipped fairly easily outside of local markets – manufacturing, food products, and raw material products are all examples of tradable sectors. Non-tradable sectors often focus on services that impact the local economy such as education, healthcare, construction, and retail. Completing analysis for both sectors provides a closer look as to what parts of the economy (if any) are being impacted with the introduction of a detention center. Arguments in favor of detention center construction in rural

communities focus around improvements in employment in non-tradable sectors, suggesting that sectors such as construction, lodging, retail, transportation, eating and drinking places should all see spikes in employment as more businesses open up and more employees are hired to supposedly support the detention center and a resulting increase in traffic in the area. Industries at the 3-digit SIC and NAICS hierarchy were coded as either tradable or non-tradable sectors. Certain categories that could have been designated in either tradable or non-tradable groups are noted and baseline assumptions for the categories are reversed in a robustness check in the paper. For a full categorization of tradable and non-tradable industries based on SIC and NAICS codes see Appendix A. The baseline employment split between traded and non-traded categories is as follows in Table 1.

Table 1. Employment split between tradable and non-tradable sectors in SIC (1986-1997) and NAICS (1998-2018) Codes

	SIC	NAICS
% Tradable	31.979%	27.883%
% Non-Tradable	68.022%	72.117%

For regression analysis a logarithmic transformation will be applied to employment in order to understand percent changes in employment as well as to rid the data of outliers (i.e. employment numbers of zero would automatically drop under a logarithmic transformation). The total number of observations is 1,178 – 38 Commuting Zones (treated and controlled) for 31 years.

3.4 Measures of Economic Health: Median Home Value, Median Household Income, Poverty Rate

Alongside employment, other measures of economic health are investigated. These measures of economic health are taken from the Decennial U.S. Census (adjusted for 2010 geographic boundaries) and the 5-Year American Community Surveys (ACS). Census data is taken specifically for 1980, 1990, and 2000 and all available 5-Year ACS up through 2020. The 5-Year ACS data begins for the 2005-2009 year range and culminates with the 2016-2020 range. Given that the Commuting Zones of interest include counties with low populations (some even under 5,000) to assess detention center impact on rural communities, the only survey data available for such counties with populations under 20,000 is the 5-Year ACS data. The total number of observations is 532 (38 Commuting Zones, 14 time periods of data available).

The outcome variables concerning economic health include measures of income, home value, and poverty rate. The median home value for all owner-occupied housing units (USD, adjusted to 2010 inflation) is

considered as housing prices often impact residential investment and thus a region's economic growth. Higher house prices likely encourage additional spending on construction as well, again spurring economic growth. Median household income (USD, adjusted to 2010 inflation), is used as a measure to examine whether or not detention centers bring in more income to Commuting Zone residents via local businesses, though it is important to consider if any potential income changes are associated with an influx of newcomers associated with the detention center. Poverty status will also be explored by looking at the percentage of individuals living below the poverty line between the ages of 18 to 64. Poverty status is included in the Farrigan and Glasmeier (2007) study on prison impacts on rural counties which finds that poverty rates actually increase in persistently poor counties when a correctional facility is introduced, thus looking into this measure of economic health could be fruitful for the intended study on immigration detention centers.

3.5 Control Measures

Control measures are included in the regressions conducted to assess for their impact on economic conditions within a certain Commuting Zone. The total population of the Commuting Zone as well as its land area (in square miles) is considered in order to control for the size of a Commuting Zone and thus just how much economic impact a detention center or lack thereof can impact the Commuting Zone. Racial composition is also factored into the event study and difference-in-differences regression by taking the proportion of white individuals in a Commuting Zone – most of the detention centers studied are located in areas with very low percentages of minorities thus this measure should be sufficient to account for a Commuting Zone's racial composition. The population of a Commuting Zone in group quarters is also utilized – this measure essentially looks at the percentage of the population that lives in a detention center or equivalent facility (i.e. incarcerated individuals would fall under this category as well) and serves as a good account for the size of the detention center in a Commuting Zone. Highest educational attainment for the population over the age of 25 is also accounted for via high school graduation rates. Messacar and Oreopoulos (2013) finds that high school dropouts are more likely to be unemployed and living below the poverty line, thus high school graduation rate potentially could substantially account for some of the economic measures assessed in the investigation.

Data for control measures is taken from 10-Year Census and 5-Year ACS Data, thus gaps in the data do exist for 1986-1989, 1991-1999, and 2001-2007. The 5-Year ACS Data is defined as the average of data collected over a range of 5 years – in order to allow compatibility with yearly CBP data the 5-Year ACS Data will be assigned to the midpoint year in the year range (i.e. ACS 2005-2009 values assigned to 2007). This results in the data behaving as a moving average, though it is important to note that as a result measurement error is likely to be higher earlier on in the range this assumption is made (2007-2018, as the first 5-Year

ACS is 2005-2009 and the last 5-Year ACS is 2016-2020). As for the gaps in the data mentioned previously, the assumption is made that for InterCensus years the control variable in question moves linearly. Thus linear interpolation is used to fill in the gaps in order to ensure compatibility with CBP Data and allows for event study regressions for employment. Linear interpolation is not utilized for outcome variables median home value, median household income, and poverty rate that also come from Census and ACS data.

3.6 Pairing Counties via Propensity Scores

For event study and difference-in-differences methodologies, the control group of Commuting Zones is selected first at county levels based on similar levels and trends of employment, median home value, median household income, and poverty rates (the outcome variables in the study) prior to the year of the introduction of the detention center. The year the detention center is introduced is obtained from ICE facility overview reports.

In order to match the control group of Commuting Zones to the treated group of Commuting Zones, a propensity score matching technique is employed. Commuting Zones are averaged across time prior to the opening of a detention center in order to produce one observation per Commuting Zone. Using control variables (notably excluding any and all outcome variables), a logistic regression is built as follows:

$$\pi(X) = \frac{1}{1 + exp(-X\beta)} \tag{1}$$

Where π denotes the probability of the observation X (in this case a Commuting Zone solely defined by covariates – population, proportion of white individuals, proportion of inhabitants in quarters, proportion of high school graduates, and area) being "treated" – having a detention center introduced at some point along the line. The results of the logistic regression (see Appendix B) are then used to predict the propensity scores for each Commuting Zone. Propensity scores are then matched using Nearest Neighbor Analysis and subsequently Commuting Zones are paired. The final pairings and propensity scores are shown below in Table 2.

Table 2. Facility name(s), paired Commuting Zones and corresponding propensity scores

Facility Name(s)	Year(s) Opened	CZ [State]	Propensity Score	Paired CZ [State]	Propensity Score
MORGAN COUNTY ADULT DETENTION CENTER	2000	29602 [MO]	0.219	27901 [NE]	0.354
WEST TEXAS DETENTION FACILITY	2004	30601 [TX]	0.690	31501 [TX]	0.684
KARNES COUNTY CORRECTIONAL CENTER	2012	31302 [TX]	0.521	27802 [NE]	0.476
SOUTH TEXAS ICE PROCESSING CENTER / LA SALLE COUNTY REGIONAL DETENTION CENTER	2005/2015	31502 [TX]	0.573	32501 [TX]	0.514
BROOKS COUNTY DETENTION CENTER	2001	31700 [TX]	0.677	34801 [NM]	0.529
LASALLE ICE PROCESSING CENTER / CATAHOULA CORRECTIONAL CENTER	2007/1999	3201 [LA]	0.496	32503 [TX]	0.475
RIVER CORRECTIONAL CENTER	2001	3202 [LA]	0.490	30906 [TX]	0.470
LIMESTONE COUNTY DETENTION CENTER	1990	32802 [TX]	0.539	24600 [MO]	0.489
CIBOLA COUNTY CORRECTIONAL CENTER / TORRANCE COUNTY DETENTION FACILITY	1994/1990	34901 [NM]	0.623	9600 [GA]	0.521
ALLEN PARISH PUBLIC SAFETY COMPLEX	2015	3700 [LA]	0.559	4002 [LA]	0.504
MONTGOMERY COUNTY JAIL	1997	24702 [MO]	0.431	26101 [MO]	0.445
JACKSON PARISH CORRECTIONAL CENTER / WINN PARISH CORRECTIONAL CENTER	2007/1990	4003 [LA]	0.546	3500 [LA]	0.499
GLADES COUNTY DETENTION CENTER	2007	7100 [FL]	0.448	7900 [GA & FL]	0.449
FOLKSTON IPC / BAKER COUNTY SHERIFF'S OFFICE	2016/2009	7600 [GA & FL]	0.460	24701 [MO]	0.454
IRWIN COUNTY DETENTION CENTER	1994	8501 [GA]	0.602	3901 [LA]	0.516
STEWART DETENTION CENTER	2006	9702 [GA]	0.538	3203 [LA]	0.480
CASS COUNTY JAIL	1994	28202 [NE]	0.494	6800 [FL]	0.473
PHELPS COUNTY JAIL	2003	28609 [NE]	0.420	32402 [TX]	0.392
CALDWELL COUNTY DETENTION CENTER	2004	29503 [MO]	0.483	8402 [GA]	0.468

Propensity scores range from 0.219 to 0.690 with most propensity scores falling close to the 0.5 mark. Most of the paired Commuting Zones also appear to be included in the same states, or in bordering states (i.e. Texas and New Mexico).

In order to conduct event study and difference-in-differences regressions, t-tests are performed to ensure that differences between treated and untreated Commuting Zones prior to the opening of detention centers are not systematic. The results of the t-tests are summarized in Table 3.

Table 3. t-Tests for outcome variables after propensity score matching

Variable of Interest	Treated CZs	Control CZs	t-statistic	p-value
	Mean	*Mean*		
Employment	117,278.600	128,251.000	-0.592	0.554
Median Household Income	39,378.500	39,774.810	-0.282	0.778
Median Home Value	81,939.740	84,605.440	-0.455	0.650
Poverty Rate	0.090	0.093	-0.614	0.541

The t test results suggest that for the outcome variables there is no significant difference between Commuting Zones that will never introduce detention centers throughout the course of the study and Commuting Zones that will. Means for treated and controlled Commuting Zones are relatively close for all outcome vari-

ables and p-values of 0.554, 0.778, 0.650, and 0.541 are all well above the $\alpha = 0.05$ threshold.

3.7 Employment for Paired Counties

As an event study methodology is to be employed in this study for the logarithmic transformation of the employment variable, parallel trends and consistency (i.e. no drastic changes in employment year to year) should be checked prior to the introduction of a detention center. Figure 1 below demonstrates employment, log employment, log employment for tradable sectors, and log employment for non-tradable sectors for 3 pairs of Commuting Zones: Commuting Zones 7100 & 7900 (FL) with a dashed line at 2007 to note the introduction of the Glades County Detention Center, Commuting Zones 7600 & 24701 (GA, MO) with a dashed line at 2009 to note the introduction of the Folkston IPC, and Commuting Zones 28202 & 6800 (NE, FL) with a dashed line at 1994 to note the introduction of Cass County Jail.

Additional graphs for employment and log(employment) for total, tradable, and non-tradable sectors can be found in Appendix C.

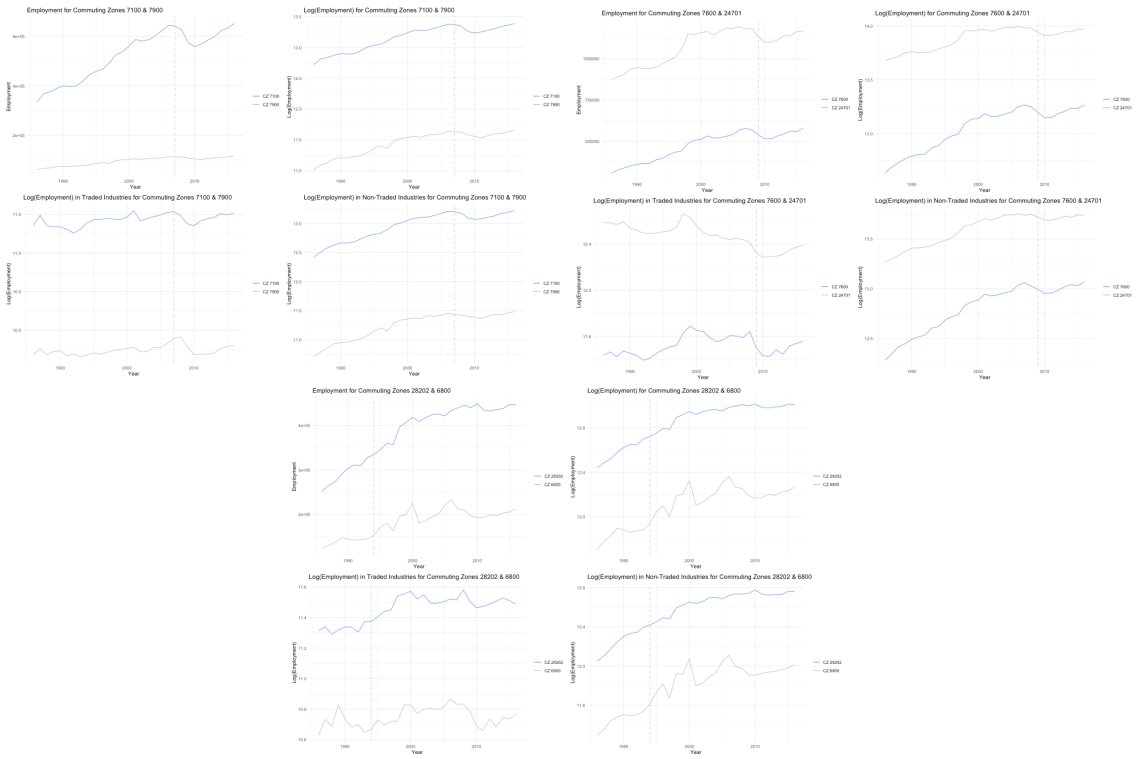

Figure 1: Trends of Employment Outcome Variables (Employment and log(Employment) for Tradable and Non-Tradable Sectors for Select Pairs of Commuting Zones

From the sample of Commuting Zones shown above to investigate the parallel trends assumption, it appears as though most of the outcome variables appear to satisfy the assumption. There are certainly discrepancies to keep in mind. For example log(employment) for traded industries prior to 1994 does not

follow an exact matching pattern between paired Commuting Zones 28202 & 6800. This may be of interest in further investigation, but for the limitations of current study the assumption that parallel trends hold is taken.

3.8 Data Limitations

There are limitations to the dataset constructed for this study using 10-Year Census, 5-Year ACS, and annual CBP data. Given the finite number of immigration detention centers and the desire to investigate non-metropolitan communities, the sample size of 19 Commuting Zones (38 when paired with controls) is relatively small.

Employment data is inherently noisy due to the nature of CBP tables masking employment numbers for certain industries for confidentiality purposes. Around 24.5 percent of the employment numbers in the selected data are masked and hence the mid-point of the range of the Employment Suppression Flag is utilized – though this offers a solution in proceeding further in the analysis, there is a large probability of measurement error with this variable as a result. Measurement error traditionally results in a downward bias in estimates, noted by the formula for bias of error:

$$bias(\hat{\theta}) = E(\hat{\theta}) - \theta \tag{2}$$

Where $\hat{\theta}$ is our estimate in question. A higher bias means that the difference between the estimate and the true parameter is greater as well – limited measurement error results in a limited amount of bias while prolific measurement error suggests downward bias may be present. As there is measurement error in the available data, this relationship is something to keep in mind.

4 Discussion of Approach

4.1 Methodology

An event study and difference-in-differences methodology is to be used to investigate how detention centers impact the economic conditions of Commuting Zones.

The event study on the log of employment proves particularly useful as the opening of detention centers is staggered by county rather than on one specific date, with opening years ranging from 1990 to 2016. Parallel trends are checked when pairing counties, described in the previous Section 3.6. A long panel will be created with the data of interest, each row being identified by a Commuting Zone and a time period. The data of interest is a combined dataset of interpolated 10-Year U.S. Census, 5-Year ACS, and 1-Year CBP

Data with 32 available time periods or observations per Commuting Zone starting in 1986 and culminating in 2018. For a long unbalanced panel, 60 dummy variables are to be created, taking into account 32 years before the introduction of a detention center and 28 years after the introduction of a detention center though not every Commuting Zone will have a "1" entry in each dummy variable. For the purposes of this investigation, only the coefficients for 15 years prior and 15 years after will be reported. For a long balanced panel with the requirement that all entities are present in all time periods, 6 dummy variables are to be created corresponding to 4 years prior to the opening and 2 years after the opening of a detention center. Event study regressions are conducted on the log of total employment, employment in traded sectors, and employment in non-traded sectors.

From the event study regression the coefficients of interest will be on the dummy variables, particularly on the time periods after the introduction of a detention center. The lags associated with the dummy variables are denoted with k = -32, . . . , -4, -3, -2, -1, 0, 1, 2, . . . , 28 and the coefficients are further described in the model description section below. After the event study regressions are carried out for each outcome variable, event study graphs will be drawn to visualize the impact of the construction of a detention center and to again better visualize the parallel trends prior to the occurrence of the event.

Difference-in-differences regressions for both balanced and unbalanced panels are also conducted in order to find the average effect of an introduction of a detention center, or "treatment." In order to conduct difference-in-differences regressions, dummy variables for "time", "treated", and "time x treated" are generated. "Time" has an indicator of 1 if the observation for a Commuting Zone and its pair is equal to or greater than the year the detention center is introduced. "Treated" has an indicator of 1 if the Commuting Zone is to have a detention center introduced. "Time x treated" is the interaction term of the two dummy variables. These regressions are conducted for all outcome variables while the event study regressions are solely conducted for log of employment.

Both event study and difference-in-differences regressions will consider state and year fixed effects. As some Commuting Zones overlap states, the state with the greatest number of counties comprising the Commuting Zone is attached to the Commuting Zone for regression purposes.

4.2 Model Descriptions

The event study regression model is as follows for unbalanced (3) and balanced (4) panels:

$$Y_{it} = \alpha_i + \gamma_t + \phi X_{it} + \sum_{k=-32}^{28} \beta_k D_{it}^k + \epsilon_{it} \tag{3}$$

$$Y_{it} = \alpha_i + \gamma_t + \phi X_{it} + \sum_{k=-4}^{2} \beta_k D_{it}^k + \epsilon_{it} \tag{4}$$

Where Y_{it} is the outcome variable measured – log of employment of the Commuting Zone in question.

The α_i term denotes unit fixed effects, in this case state, while γ_t looks at time fixed effects (years or "time periods" in this case). Thus the regression in question employs two-way within fixed effects. The ϕX_{it} term is a vector of control variables including population, race, group quarters, high school graduate percentage, and land area. ϵ_{it} denotes the error term. Heteroskedastic robust standard errors are used . Heteroskedasticity is accounted for as years post the year in the data stem from the ACS while earlier data is U.S. Census data, opening the possibility of varying error within the data given potential different measuring techniques, survey responses, etc.[1]

The summation of $\beta_k D_{it}^k$ terms from k = -32 to k = 28 (unbalanced) or k = -4 to k = 2 (balanced) present the β coefficients of interest in the event study. The event time dummies, which number 60 for unbalanced and 6 for balanced, take a value of 1 if the Commuting Zone in question has a detention center (i.e if it is a part of the treatment group) opening k years from then. For example, a Commuting Zone with a detention center opening in 2012 would take on a value of 1 in the k = -2 column for 2010. Commuting Zones without a detention center ever being constructed (i.e if part of the control group) have a 0 in all the k columns regardless of year. The k right before the event starting point (i.e k = 0 is the event occurring) is a vector of 0 values; k = -1 is normalized to avoid collinearity in the regression. Assuming the parallel trend assumption to be true, k values prior to k = 0 should have their respective β coefficients be fairly close to 0.

The difference-in-differences regression model is as follows:

$$Y_{it} = \alpha_i + \gamma_t + \phi X_{it} + \beta_0 + \beta_1 Treated_i + \beta_2 Time_t + \beta_3 \cdot TreatedTime_{it} \tag{5}$$

Where Y_{it} is the outcome variable measured – log of employment, median home value, median household income, and poverty rate of the Commuting Zone in question. Similarly to the event study, the α_i term denotes state fixed effects while γ_t looks at time fixed effects. The ϕX_{it} term is again the vector of covariates, ϵ_{it} denotes the error term. Heteroskedastic robust standard errors are used as well. The β_1 term looks at the impact of a Commuting Zone being ever "treated" with the introduction of a detention center while the β_2 term looks at post treatment for all Commuting Zones regardless if a detention center was actually introduced. The coefficient of interest is β_3 – the interaction term between the previous two dummy variables. The coefficient on the interaction term examines the difference in changes over time – the treatment effect.

The regression results are as follows in the next section.

[1] Clustered standard errors would be the best choice for analyzing Commuting Zones. Clustering by Commuting Zones should be considered for further analysis.

5 Results

5.1 Event Study of Detention Center Effects on Employment

Tables 4-6 demonstrate estimated β coefficients for the balanced k lags and control variables for log employment, log employment for tradable sectors, and log employment for non-tradable sectors respectively.[2] Column (1) runs a simple OLS regression without covariates, column (2) runs an OLS regression with covariates, and column (3) adds in state and year fixed effects as discussed in the previous methodology section.[3]

[2]See Appendix D for unbalanced regression results for lags k = -15 through k = 14. These regressions were conducted as part of the methodology in order to see the impacts of detention centers further out, sample size decreases in the regression as the magnitude of k increases (data is not available for every Commuting Zone 15 years prior and 14 years after the opening detention center).

[3]R-squared values noticeably drop with the introduction of state and year fixed effects. This is likely due to limited within variation in time-variant predictors.

Table 4. Event Study Regression Outcomes on Log Employment: β Coefficients and Standard Errors For Lags k = -4, -2, . . . , 0, 1, 2 and Control Variables

Event Study, Log Employment

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -4	0.076	0.057	-0.001
	(0.372)	(0.172)	(0.025)
k = -3	0.094	0.083	-0.010
	(0.372)	(0.172)	(0.025)
k = -2	0.118	0.109	0.001
	(0.372)	(0.172)	(0.025)
k = -1	0.169	0.157	0.016
	(0.372)	(0.172)	(0.025)
k = 0	0.177	0.164	0.010
	(0.372)	(0.172)	(0.025)
k = 1	0.148	0.143	0.022
	(0.382)	(0.177)	(0.025)
k = 2		0.00000**	0.00000
		(0.00000)	(0.00000)
Population		0.0001***	0.012***
		(0.00001)	(0.004)
Area		0.00000*	0.00000**
		(0.00000)	(0.00000)
Race		0.0001***	0.00000
		(0.00001)	(0.00000)
Quarters		-0.00000***	-0.00000**
		(0.00000)	(0.00000)
High School Completion		10.525***	8.942***
		(0.049)	(0.042)
N	1,178	1,178	1,178
R^2	0.001	0.788	0.034
Adjusted R^2	-0.004	0.786	-0.035
Residual Std. Error	1.609 (df = 1171)	0.743 (df = 1166)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 5. Event Study Regression Outcomes on Log Employment for Traded Sectors: β Coefficients and Standard Errors For Lags k = -4, -2, . . . , 0, 1, 2 and Control Variables

Event Study, Log Employment (Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -4	0.159	0.213	0.001
	(0.369)	(0.224)	(0.036)
k = -3	0.140	0.164	-0.023
	(0.369)	(0.224)	(0.036)
k = -2	0.135	0.136	-0.018
	(0.369)	(0.224)	(0.036)
k = -1	0.142	0.106	-0.014
	(0.369)	(0.224)	(0.036)
k = 0	0.126	0.068	-0.022
	(0.369)	(0.224)	(0.036)
k = 1	0.072	0.017	-0.031
	(0.379)	(0.230)	(0.037)
k = 2		0.00000***	0.00000**
		(0.00000)	(0.00000)
Population		0.0001***	0.025***
		(0.00001)	(0.006)
Area		-0.353*	0.030
		(0.212)	(0.152)
Race		-5.502***	-0.948***
		(0.795)	(0.241)
Quarters		1.966***	-4.724***
		(0.409)	(0.309)
High School Completion		9.128***	7.699***
		(0.049)	(0.218)
N	1,178	1,178	1,178
R^2	0.001	0.635	0.242
Adjusted R^2	-0.005	0.631	0.188
Residual Std. Error	1.594 (df = 1171)	0.966 (df = 1166)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 6. Event Study Regression Outcomes on Log Employment for Non-Traded Sectors: β Coefficients and Standard Errors For Lags k = -4, -2, . . . , 0, 1, 2 and Control Variables

Event Study Results, Log Employment (Non-Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -4	0.044	0.056	-0.014
	(0.383)	(0.186)	(0.023)
k = -3	0.075	0.061	-0.018
	(0.383)	(0.186)	(0.023)
k = -2	0.102	0.060	-0.013
	(0.383)	(0.186)	(0.023)
k = -1	0.173	0.083	0.001
	(0.383)	(0.186)	(0.023)
k = 0	0.196	0.073	-0.0004
	(0.383)	(0.186)	(0.023)
k = 1	0.167	0.051	0.010
	(0.393)	(0.191)	(0.024)
k = 2		0.00000***	0.00000***
		(0.00000)	(0.00000)
Population		0.0001***	0.007*
		(0.00001)	(0.004)
Area		-0.847***	1.636***
		(0.176)	(0.100)
Race		0.562	0.525***
		(0.661)	(0.158)
Quarters		4.238***	1.573***
		(0.340)	(0.203)
High School Completion		10.201***	7.461***
		(0.051)	(0.181)
N	1,178	1,178	1,178
R^2	0.001	0.766	0.255
Adjusted R^2	-0.005	0.763	0.202
Residual Std. Error	1.655 (df = 1171)	0.803 (df = 1166)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

The event study regressions above for total, traded sector, and non-traded sector log employment all find significance at lag k = 2 despite the β coefficient essentially equal to 0. Such an effect is negligible when considering employment numbers (noting that the β coefficients look at the relationship for log employment).

Column (1) for Tables 4-6, the simple OLS regression without the addition of covariates, does not provide any statistically significant results. Column (2) adds in the covariates for this regression and does appear

to find statistical significance for many of the covariates across the various dependent variables: for log of employment, population, race, quarters, and high school completion are all found to be significant at the 1 percent level though the only coefficient of considerable magnitude is high school completion. Similarly for the log of traded sector employment the majority of covariates are statistically significant. The β coefficients with a substantially different magnitude than zero are race and high school completion. The race β coefficient is reported as -5.502, suggesting that about a one unit increase (i.e. a 100 percent increase) in the proportion of white individuals in a Commuting Zone actually results in a 5.5 percent decrease in employment. This effect is disputed in Column (3) with the addition of state and year fixed effects, flipping the coefficient to a statistically significant 0.948. Results of regressing on the log of non-traded sector employment do not find a statistically significant race β coefficient but rather a 1 percent statistically significant coefficient on quarters of 4.328. The magnitude of this coefficient is lessened in Column (3) with the addition of state and year fixed effects to 1.573 (meaning a one unit increase in the proportion of the population in group quarters results in a 1.6 percent increase in non-traded sector employment). A positive coefficient on quarters makes sense when following the theory that if more establishments such as detention centers, institutions, group homes, and nursing facilities exist then employment is likely to go up solely to serve these establishments. As the non-traded sector encompasses service industries such as caretaking, it is evident why group quarters play a larger role in the regression for non-traded employment levels versus traded. Further analysis on which group quarters contribute the most to an increase in employment in the non-traded sector could prove useful in determining if detention centers do boost employment for non-traded industries.

The β coefficients for high school completion for total, traded, and non-traded log of employment are respectively 10.525, 9.128, and 10.201 in Column (2). These results suggest that for a one unit increase in the proportion of individuals having completed high school, employment should increase by 10 percent. When adding state and year fixed effects in Column (3) the coefficients respectively decrease to 8.942, 7.699, and 7.461. The statistical significance of the coefficients for the proportion of the population having graduated high school makes intuitive sense – the National Center for Education Statistics cites that the employment rates for young adults having completed high school (68 percent) is greater than for young adults having not completed high school (53 percent).

Difference-in-differences yields similar results to the event study regressions demonstrating no significance in the treated, time, and interaction terms of the two. For full difference-in-differences results for both balanced and unbalanced panels, see Appendix E.

5.2 Event Study Graphs of β Variables Assessing Detention Center Effects on Employment

Event studies are best visualized in a scatter plot with error bars demonstrating standard deviation, as demonstrated for the outcome variables of total, traded sector, and non-traded sector employment below. Figures 2-4 showcases β coefficients for balanced panel regressions.[4]

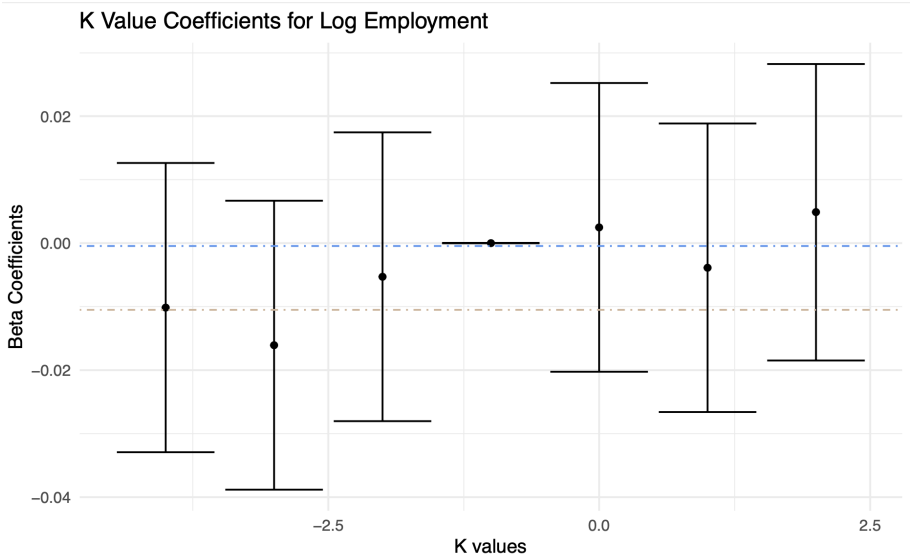

Figure 2. Event Study Graph β Coefficients for Log Employment With Introduction of Detention Center (k = 0)

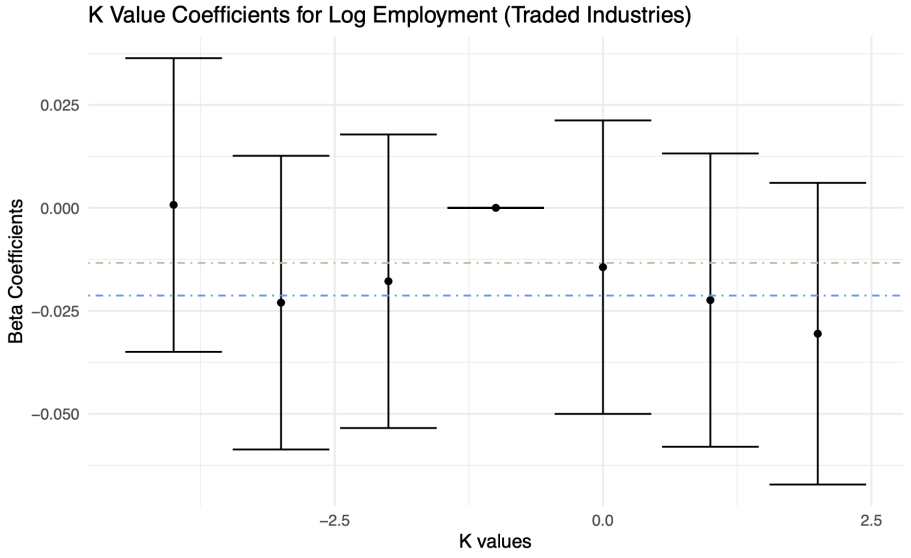

Figure 3. Event Study Graph β Coefficients for Log Employment of Traded Sectors With Introduction of Detention Center(k = 0)

[4]Similarly to the results tables, see Appendix D for unbalanced panel event study graphs.

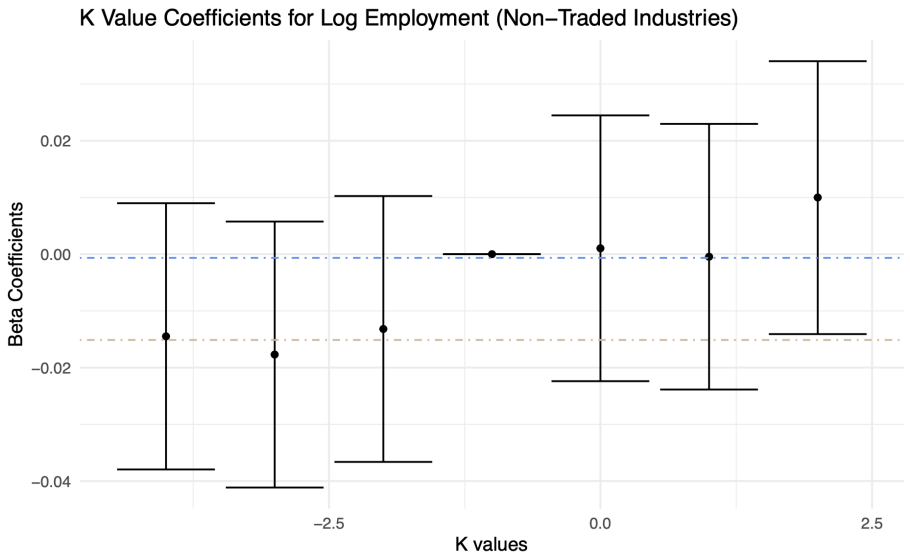

Figure 4. Event Study Graph β Coefficients for Log Employment of Non-Traded Sectors With Introduction of Detention Center (k = 0)

Figures 2 and 4 appear to show that the overall post-treatment average (blue line) log of employment (respectively total and non-traded) is higher than pre-treatment levels (beige line) though post-treatment averages are fairly close to 0. It appears that for these two categories the β coefficients increase after the introduction of a detention center, suggesting that there is some effect on log employment though this effect is small. For log employment in traded sectors, β coefficients post treatment appear to decrease (dropping from -0.025 to around -0.030 from k = 1 to k = 2) suggesting a negative effect on log employment due to the introduction of a detention center. Again these effects are small and not significant as shown in the regression tables in Section 5.1.

Conventional parallel trends assumptions (where β coefficients pre-treatment equal 0) hold when considering confidence intervals (plus or minus one standard deviation). We note that for all β values in the graphs above the confidence intervals are quite large and upper ranges for the β coefficients of the intervals fall above zero while the lower ranges all fall below zero. These ranges coupled with the k > 0 values failing to be statistically significant suggest that the results are not causal.

5.3 Difference-in-Differences Assessment of Detention Center Effects on Median Home Value, Median Household Income, Poverty Rate

Tables 6-8 demonstrate the results of the difference-in-differences regressions ran on median home value, median household income, and poverty rate. Similarly to the event study column (1) runs a simple OLS regression without covariates, column (2) runs an OLS regression with covariates, and column (3) adds in

state and year fixed effects.

Table 7. Difference-in-Differences Regression Outcomes on Median Household Income Including Covariates

Difference-in-Differences, Median Home Value

	Median Home Value		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	11,449.660**	2,717.312	2,664.250
	(5,535.805)	(3,112.379)	(1,973.350)
Treated	-3,184.293	9,617.630**	
	(7,054.754)	(3,925.371)	
Time x Treated	14,192.320*	-1,711.452	-252.826
	(7,832.249)	(4,293.674)	(2,327.544)
Population		0.033***	0.038***
		(0.002)	(0.008)
Area		1.747***	0.654
		(0.341)	(25.066)
Race		-26,897.970***	-14,006.570
		(5,843.527)	(12,639.930)
Quarters		-54,228.460**	-48,872.790**
		(21,210.960)	(24,825.660)
High School Completion		220,369.600***	-7,037.987
		(14,522.270)	(27,678.630)
Constant	84,703.430***	-21,547.640***	
	(4,988.464)	(8,217.234)	
N	530	530	530
R^2	0.059	0.728	0.077
Adjusted R^2	0.054	0.724	-0.035
Residual Std. Error	35,273.770 (df = 526)	19,059.660 (df = 521)	
Notes:		***Significant at the 1 percent level.	
		**Significant at the 5 percent level.	
		*Significant at the 10 percent level.	

The OLS regression without covariates in column (1) in Table 1 appears to yield a β coefficient for the Time x Treated term of 14,192.32 at the 10 percent level of significance though this is quickly reversed in columns (2) and (3) with negative (albeit statistically insignificant) β coefficients on the Time x Treated terms. In column (2) the population, area, race, quarters, and high school completion variables are all found to be statistically significant at the 5 percent level though these effects lessen (and in the case of high school completion switch signs) in column (3) with the addition of state and year fixed effects. Population and area have fairly small effects on median home value while race, quarter, and high school completion are more sizable. From column (2) we note race appears to have a negative effect on median home value with a drop of about 27,000 dollars in median home value for a unit increase of the proportion of white individuals living in a Commuting Zone. A unit increase in the proportion of individuals living in group quarters in a Commuting Zone results in about a 50,000 decrease in home value. Without state and year fixed effects, a

one unit increase in the proportion of the population having completed high school increases home values by over 200,000 dollars – likely a combination of high school graduates being wealthier over their lifetimes than non-graduates and the idea that property values increase when located near better systems of education.

Table 8. Difference-in-Differences Regression Outcomes on Median Household Income Including Covariates

Difference-in-Differences, Median Household Income

	Median Household Income		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	-928.471	-2,888.206***	-333.534
	(1,123.182)	(686.393)	(377.740)
Treated	-291.033	1,144.477	
	(1,431.368)	(865.831)	
Time x Treated	1,709.097	-236.752	129.040
	(1,588.419)	(946.770)	(445.443)
Population		0.008***	-0.007***
		(0.0004)	(0.002)
Area		-0.012	-0.061
		(0.075)	(4.798)
Race		15,913.290***	19,943.610***
		(1,287.426)	(2,417.288)
Quarters		2,690.395	16,512.730***
		(4,678.273)	(4,753.208)
High School Completion		36,727.770***	-23,834.590***
		(3,200.994)	(5,299.367)
Constant	39,779.270***	6,974.284***	
	(1,012.130)	(1,812.261)	
N	532	532	532
R^2	0.008	0.661	0.212
Adjusted R^2	0.002	0.656	0.117
Residual Std. Error	7,156.838 (df = 528)	4,204.056 (df = 523)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

No statistical significance is found in the DID-interaction term for any of the regressions for median household income. The statistically significant covariates include population and area (though again the effects are quite small), race, quarters, and high school completion (though the β coefficient on high school completion again switches signs after the introduction of state and year fixed effects). The race coefficient demonstrates that for a one unit increase in the proportion of white individuals in a Commuting Zone median household income increases between about 15,000-20,000 USD. The quarters coefficient found to be significant in column (3) with the addition of fixed effects also suggests an increase of about 16,000 USD in median household income when the proportion of individuals living in group quarters increases by one unit. Perhaps this has to do with institutions such as care facilities and college dorms signaling communities with

higher incomes, though detention facilities could certainly factor in as well – more research into the quarters variable is needed to make a definitive conclusion.

Table 9. Difference-in-Differences Regression Outcomes on Poverty Rate Including Covariates

Difference-in-Differences, Median Household Income

	Median Household Income		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	-928.471	-2,888.206***	-333.534
	(1,123.182)	(686.393)	(377.740)
Treated	-291.033	1,144.477	
	(1,431.368)	(865.831)	
Time x Treated	1,709.097	-236.752	129.040
	(1,588.419)	(946.770)	(445.443)
Population		0.008***	-0.007***
		(0.0004)	(0.002)
Area		-0.012	-0.061
		(0.075)	(4.798)
Race		15,913.290***	19,943.610***
		(1,287.426)	(2,417.288)
Quarters		2,690.395	16,512.730***
		(4,678.273)	(4,753.208)
High School Completion		36,727.770***	-23,834.590***
		(3,200.994)	(5,299.367)
Constant	39,779.270***	6,974.284***	
	(1,012.130)	(1,812.261)	
N	532	532	532
R^2	0.008	0.661	0.212
Adjusted R^2	0.002	0.656	0.117
Residual Std. Error	7,156.838 (df = 528)	4,204.056 (df = 523)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

No statistical significance is found in the DID-interaction term for any of the regressions for poverty status. Race, quarters, and high school completion are again statistically significant at the 5 percent level for the OLS regression in column (2) with covariates; race and quarters are statistically significant with the introduction of fixed effects in column (3). Race (specifically the proportion of white individuals) appears to have a negative relationship with poverty rate with a one unit increase in the proportion of white individuals resulting in a 0.130 and 0.189 (respectively for columns 2 and 3) decrease in poverty rates. The group quarters variable also has a negative relationship with poverty rate – column (3) essentially finds that for a one unit increase in the proportion of individuals living in quarters the poverty rate drops by 0.268. High school completion rate appear to be negatively correlated with poverty rate in column (2) but is positively correlated (though not statistically significant) with the addition of state and year fixed effects.

6 Robustness Check

6.1 Reversing Assumption for SIC, NAICS Tradable and Non-Tradable Categories

Appendix A categorizes SIC and NAICS codes into tradable and non-tradable categories. Not all of these categorizations are fully certain – some industries could fall into either tradable or non-tradable sectors. For example, broadcasting and telecommunications could be considered non-tradable if locally oriented but tradable if meant to be utilized as a product to be distributed. Similarly some newspapers such as *The New York Times* are printed in one location but distributed all across the country and could be considered tradable while some newspapers are solely for local purposes. Such categories are not infrequent and comprise around 16 percent of the total dataset. Thus in order to determine how robust the results are for tradable and non-tradable log employment it is beneficial to run a regression reversing the baseline assumptions made in the main regression on tradable versus non-tradable categories. Also noted in Appendix A, below is a full list of categories for assumptions to be reversed:

Table 10. SIC/NAICS Categories – Base Assumptions and Reasoning

SIC Code	Industry	Base Assumption	Reasoning
"270"	Printing and Publishing	T	Could be for local purposes or for shipping elsewhere
"460"	Pipelines, except Natural Gas	NT	Pipeline maintenance local, pipeline as a whole spans across regions
"480"	Communication	T	Could be for local purposes or across the nation/world introducing non-regional competition
"490"	Electric, Gas, and Sanitary Services	T	Electricity tradable, sanitary services non-tradable
"590"	Misc. Retail	NT	Unspecified (likely NT but included for robustness)
"630"	Insurance Carriers	NT	Local versus nationwide insurance carriers
"780"	Motion Pictures	T	Production of motion pictures local, the product of motion pictures could be tradable
"890"	Services not elsewhere classified	NT	Not specific – included in robustness check
NAICS Code	**Industry**	**Base Assumption**	**Reasoning**
"221"	Utilities (Power Distribution and Generation)	NT	Power generation is local while distribution doesn't necessarily have to be
"323"	Printing and Related Support Activities	T	Could be for local purposes or for shipping elsewhere
"454"	Non-store Retailers	NT	Unspecified (likely NT but included for robustness)
"486"	Pipeline Transportation	NT	Pipeline maintenance local, pipeline as a whole spans across regions
"492"	Couriers and Messengers	NT	Small local purposes versus conglomerate couriers such as DHL (could be considered tradable)
"511"	Publishing Industries	T	Could be for local purposes or for shipping elsewhere
"512"	Motion Picture and Sound Recording Industries	T	Production of motion pictures local, the product of motion pictures could be tradable
"513"	Broadcasting and Telecommunications	T	Could be for local purposes or across the nation/world introducing non-regional competition
"514"	Information and Data Processing Services	T	Virtual versus local in-person establishments
"515"	Broadcasting (except Internet)	T	Local broadcasting versus national purposes introducing competition
"516"	Internet Publishing and Broadcasting	T	Similar reasoning to broadcasting
"517"	Telecommunication	T	Could be for local purposes or across the nation/world introducing non-regional competition
"518"	Data Processing, Hosting, and Related Services	T	Virtual versus local in-person establishments
"519"	Other Information Services (News Syndicates, Libraries)	NT	Local broadcasting versus national purposes introducing competition
"524"	Insurance Carriers and Related Activities	NT	Local versus nationwide insurance carriers

Event study regressions for tradable and non-tradable categories are conducted. The results for the balanced panels are as follows below in Tables 11 and 12.

Table 11. Event Study Regression Outcomes on Log Employment for Traded Sectors, SIC/NAICS Assumptions Reversed

Event Study, Log Employment (Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -4	0.159	0.144	0.009
	(0.369)	(0.226)	(0.039)
k = -3	0.140	0.108	-0.012
	(0.369)	(0.226)	(0.039)
k = -2	0.135	0.100	0.001
	(0.369)	(0.226)	(0.039)
k = -1	0.142	0.086	-0.002
	(0.369)	(0.226)	(0.039)
k = 0	0.126	0.074	-0.012
	(0.369)	(0.226)	(0.039)
k = 1	0.072	0.010	-0.026
	(0.379)	(0.232)	(0.040)
k = 2		0.00000***	0.00000***
		(0.00000)	(0.00000)
Population		0.0001***	0.023***
		(0.00001)	(0.006)
Area		-0.065	0.050
		(0.195)	(0.061)
Race		-5.422***	-0.784***
		(0.808)	(0.197)
Quarters		0.326	-0.925***
		(0.340)	(0.134)
High School Completion		9.128***	8.206***
		(0.049)	(0.205)
N	1,178	1,178	1,178
R^2	0.001	0.627	0.108
Adjusted R^2	-0.005	0.623	0.045
Residual Std. Error	1.594 (df = 1171)	0.976 (df = 1166)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 12. Event Study Regression Outcomes on Log Employment for Non-Traded Sectors, SIC/NAICS Assumptions Reversed

Event Study Results, Log Employment (Non-Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -4	0.044	-0.081	-0.013
	(0.383)	(0.195)	(0.027)
k = -3	0.075	-0.066	-0.017
	(0.383)	(0.195)	(0.027)
k = -2	0.102	-0.057	-0.013
	(0.383)	(0.195)	(0.027)
k = -1	0.173	0.029	0.007
	(0.383)	(0.195)	(0.027)
k = 0	0.196	0.037	0.008
	(0.383)	(0.195)	(0.027)
k = 1	0.167	0.024	0.023
	(0.393)	(0.200)	(0.027)
k = 2		0.00000***	-0.00000
		(0.00000)	(0.00000)
Population		0.0002***	0.002
		(0.00001)	(0.004)
Area		-0.487***	0.190***
		(0.168)	(0.042)
Race		0.984	0.484***
		(0.695)	(0.136)
Quarters		1.917***	0.295***
		(0.292)	(0.092)
High School Completion		10.201***	8.168***
		(0.051)	(0.176)
N	1,178	1,178	1,178
R^2	0.001	0.744	0.041
Adjusted R^2	-0.005	0.741	-0.027
Residual Std. Error	1.655 (df = 1171)	0.840 (df = 1166)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

The event study regressions with SIC/NAICS category assumptions reversed for traded and non-traded sector log employment find significance at lag k = 2 despite the β coefficient essentially equating to 0,

similarly to main regression results.

Column (1) for Tables 11 and 12, the simple OLS regression without the addition of covariates, does not provide any statistically significant results. The event study regressions for both traded and non-traded sectors find significance in the race, quarters, and high school completion covariates. The race β coefficient for OLS in the traded sector is reported as -5.422, suggesting that about a one unit increase in the proportion of white individuals in a Commuting Zone results in a 5.4 percent decrease in employment – this is not so different from the 5.5 percent decrease found in main regression results. In the non-traded sector the addition of fixed effects yields a statistically significant race β coefficient of 0.484, though the effect of this coefficient is small.

The quarters covariate coefficient is found to be significant for the non-traded sector at 1.917 for OLS and 0.295 when state and year effects are added for non-traded sector regressions. The magnitudes of these coefficients is less than the 4.328 OLS and 1.573 state and year effects coefficients obtained from the main regression though there is still a positive correlation between group quarters and log employment.

The β coefficients for high school completion for traded and non-traded log employment are respectively 9.128 and 10.201 in column (2) and 8.206 and 8.168 in column (3) with statistical significance for all of these coefficients. These results are similar to the results of the main regression in that high school completion and log employment for the two sectors are positively associated and have similar sized effects.

As the results demonstrated in Tables 11 and 12 follow closely to that of the main results, the assumptions made in the categorizing the SIC/NAICS codes do not have a large impact on the regression results. Thus it is plausible to accept the baseline case of SIC/NAICS code assumptions when considering the analysis in this paper.

7 Conclusion

This study examined the impact of the introduction of immigration detention centers on economic variables such as the log transformation of employment, median home value, median household income, and poverty rate for select Commuting Zones across the United States. Specifically detention centers were selected from the ICE over 72-hour facility list that were opened between the years 1990 and 2016. Commuting Zones with detention centers were paired with Commuting Zones never to have had a detention center introduced during this time period utilizing a propensity score matching procedure. From an event study regression analyzing balanced panels of four years prior and two years after the introduction of the detention center, no statistically significant impacts of detention centers on any of the economic health measures were found for any of the time periods. The variables that did demonstrate some statistical significance included the

proportion of individuals having graduated high school, the proportion of white individuals (the measure of race), and the proportion of individuals living in group quarters.

For the logarithmic transformations of employment outcomes, group quarters and high school completion proportions appear to be the most significant at the 5 percent level. For state and year fixed effects log of non-traded employment yields a positive group quarters coefficient of 1.573 – a one unit increase in the proportion of the population in group quarters results in a about a 1.6 percent increase in non-traded sector employment. This result suggests that employment in human services such as nursing facilities, college dormitories, and detention facilities does increase when the population of these establishments increase. Further analysis would prove useful in determining if the introduction of new detention centers increases the population of group quarters enough to impact employment. The coefficients for high school completion for a regression with state and year effects number 8.942, 7.699, 7.461 for total, traded, and non-traded employment signaling a positive relationship in both traded and non-traded employment sectors between high school graduate proportion in a Commuting Zone and a Commuting Zone's employment.

Difference-in-difference regressions do not show statistical significance for the DID or Time x Treated term concerning the introduction of a detention center on the outcome variables of median home value, median household income, and poverty rate. Race, group quarters, and high school completion rates are statistically significant for these three outcome variables. Median household income rises by about 15,000-20,000 USD with a one unit increase in the proportion of white individuals in a Commuting Zone and poverty rate has a negative relationship with this measure of race with a one unit increase resulting in a decrease in poverty rate of 0.189 (with state and year effects). A one unit increase in group quarters coincides with a 50,000 USD decrease in home value and a 16,000 USD increase in median household income. As group quarters population does encompass those in immigration detention centers, analysis into the proportion of group quarters population having to do with said detainees could prove useful in analyzing the variable's impact on measures of economic health. High school completion has the largest effect on home values of an increase of 200,000 USD for a one unit increase in the proportion (or 100 percent increase) of the population having completed high school.

To further improve this research I can utilize micro-data to fill in the gaps of the ACS survey in order to increase the number of observations and sample size for difference-in-difference regressions on median home value, median household income, and poverty rate. In order to improve CBP Data estimates, a means to better deal with masked employment numbers would prove useful in providing more accurate and potentially conclusive results. Imputing data as laid out and done in Eckert et al. (2021) via a linear programming method exploiting adding-up constraints present in the hierarchical arrangement of CBP data could prove useful in providing a better estimate of employment for masked observations. Looking into more specific data

for detention centers and U.S. Census definitions of group quarters, if available, could also help in bridging the link between detention centers and economic health outcomes as group quarters demonstrated some statistical significance in the regressions performed in this study. The statistical significance of the group quarters variable proves interesting as it was designed as a control for the size of a detention center. Thus looking into the average number of jobs a detention center brings with its construction, what kind of workers are getting employed by these facilities, and the level of partnership with the surrounding Commuting Zone's businesses could all aid in exploring the expected size effect of adding a new detention center.

Current proposed projects in rural communities in states such as Wyoming estimate detention centers of about 1,000 detainees and approximately 300 employment opportunities associated with the center. Such communities prone to economic underdevelopment and declining economic growth due to old industries such as fossil fuels dying out face a moral dilemma about choosing a proposed economic boost despite a multitude of ethical concerns in constructing an immigration detention center in place of other non-detention alternatives. Further conclusive research should be conducted concerning quantifying the economic benefits of a detention center, if any, to aid rural communities in making decisions on whether or not to allow construction of these facilities.

8 References

Autor, D., & Dorn, D. (2013). The Growth of Low Skill Service Jobs and the Polarization of the U.S. Labor Market. *The Growth of Low Skill Service Jobs and the Polarization of the U.S. Labor Market., 103*(5), 1553-1597.

Besser, Terry, and Margaret Hanson. 2004. The Development of Last Resort: The Impact of New Prisons on Small Town Economies. *Journal of the Community Development Society, 35*(1), 1-16.

Congressional Research Service. (2021, May 3). *Introduction to U.S. Economy: Housing Market.* CRS Reports.

Cuauhtemoc, C., & Hernandez, G. (2019). *Migrating to prison : America's obsession with locking up immigrants.* New Press.

Glasmeier, A. K., & Farrigan, T. (2007). The Economic Impacts of the Prison Development Boom on Persistently Poor Rural Places. *International Regional Science Review, 30*(3), 274–299.

Fabian Eckert, Teresa C. Fort, Peter K. Schott, and Natalie J. Yang. Imputing Missing Values in the US Census Bureau's County Business Patterns. NBER Working Paper No. 26632, 2021

Hegyi, N. (2020, March 10). *Can A Private ICE Detention Center Save A Rural Town's Economy?* Colorado Public Radio. Retrieved May 13, 2022.

Hlavac, M. (2018). *stargazer: Well-Formatted Regression and Summary Statistics Tables.* Central European Labour Studies Institute (CELSI).

Hooks, G., Mosher, C., Genter, S., Rotolo, T., & Lobao, L. (2004). The Prison Industry: Carceral Expansion and Employment in U.S. Counties, 1969-1994, *Social Science Quarterly, 85*(1), 37–57.

Hooks, G., Mosher, C., Genter, S., Rotolo, T., & Lobao, L. (2010). Revisiting the Impact of Prison Building on Job Growth: Education, Incarceration, and County-Level Employment, 1976-2004. *Social Science Quarterly, 91*(1), 228–244.

Messacar, D., & Oreopoulos, P. (2013). Staying in School: A Proposal for Raising High-School Graduation Rates. *Issues in Science and Technology, 29*(2), 55–61.

National Center for Education Statistics. (2022). Employment and Unemployment Rates by Educational Attainment. *Condition of Education.* U.S. Department of Education, Institute of Education Sciences. Retrieved June 23, 2022.

OECD Regional Development Studies. (2018). *Productivity and Jobs in a Globalised World: (How) Can All Regions Benefit?* OECD Publishing.

Over-72-Hour Facility List [Fact sheet]. (n.d.). U.S. Immigration and Customs Enforcement. Retrieved May 13, 2022.

Redmon, J., & Grinspan, L. (2001, September). *Closing an ICE jail in South Georgia would cheer activists but harm a rural community's economy.* Atlanta Journal Constitution. Retrieved May 13, 2022.

Social Explorer, U.S. Census Bureau. *U.S. Decennial Censuses on 2010 Geographies.*
Retrieved from https://www.socialexplorer.com/tables/RC2000/R13254987

Social Explorer, U.S. Census Bureau. *2005-2009 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2009_5yr/R13254846

Social Explorer, U.S. Census Bureau. *2006-2010 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2010_5yr/R13254852

Social Explorer, U.S. Census Bureau. *2007-2011 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2011_5yr/R13254861

Social Explorer, U.S. Census Bureau. *2008-2012 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2012_5yr/R13254876

Social Explorer, U.S. Census Bureau. *2009-2013 ACS 5-year Data Releases.*

Retrieved from https://www.socialexplorer.com/tables/ACS2013_5yr/R13254889

Social Explorer, U.S. Census Bureau. *2010-2014 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2014_5yr/R13254893

Social Explorer, U.S. Census Bureau. *2011-2015 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2015_5yr/R13254909

Social Explorer, U.S. Census Bureau. *2012-2016 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2016_5yr/R13254920

Social Explorer, U.S. Census Bureau. *2013-2017 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2017_5yr/R13254925

Social Explorer, U.S. Census Bureau. *2014-2018 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2018_5yr/R13254934

Social Explorer, U.S. Census Bureau. *2015-2019 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2019_5yr/R13254945

Social Explorer, U.S. Census Bureau. *2016-2020 ACS 5-year Data Releases.*
Retrieved from https://www.socialexplorer.com/tables/ACS2020_5yr/R13254951

U.S. Census Bureau. (n.d.). *County Business Patterns, 1986-2020.*
Retrieved Dec, 2022, from https://www.census.gov/programs-surveys/cbp/data/datasets.html

A SIC/NAICS Codes Tradable vs. Non Tradable Assumptions

SIC Code	Industry	Traded / Non-Traded	NAICS Code	Industry	Traded / Non-Traded
"070"	Agricultural Services	Non-Traded	"113"	Forestry and Logging	Non-Traded
"080"	Forestry	Non-Traded	"114"	Fishing and Hunting	Non-Traded
"090"	Fishing, Hunting, Trapping	Non-Traded	"115"	Support Activities for Agriculture and Forestry	Non-Traded
"100"	Metal Mining	Non-Traded	"211"	Oil and Gas Extraction	Non-Traded
"110"	Anthracite Mining	Non-Traded	"212"	Mining (Except Oil and Gas)	Non-Traded
"120"	Coal Mining	Non-Traded	"213"	Support Activities for Mining	Non-Traded
"130"	Oil and Gas Extraction	Non-Traded	"221"	Utilities (Power Distribution and Generation)	Non-Traded*
"140"	Nonmetallic Minerals, Except Fuels	Non-Traded	"233"	Building, Developing, General Contracting	Non-Traded
"150"	General Contractors & Operative Builders	Non-Traded	"234"	Heavy Construction	Non-Traded
"160"	Heavy Construction, Except Building	Non-Traded	"235"	Special Trade Contractors	Non-Traded
"170"	Special Trade Contractors	Non-Traded	"236"	Construction of Buildings	Non-Traded
"200"	Food and Kindred Products	Traded	"237"	Heavy and Civil Engineering Construction	Non-Traded
"210"	Tobacco Products	Traded	"238"	Specialty Trade Contractors	Non-Traded
"220"	Textile Mill Products	Traded	"311"	Food Manufacturing	Traded
"230"	Apparel and Other Textile Products	Traded	"312"	Beverage and Tobacco Product Manufacturing	Traded
"240"	Lumber and Wood Products	Traded	"313"	Textile Mills	Traded
"250"	Furniture and Fixtures	Traded	"314"	Textile Product Mills	Traded
"260"	Paper and Allied Products	Traded	"315"	Apparel Manufacturing	Traded
"270"	Printing and Publishing	Traded*	"316"	Leather and Allied Product Manufacturing	Traded
"280"	Chemicals and Allied Products	Traded	"321"	Wood Product Manufacturing	Traded
"290"	Petroleum and Coal Products	Traded	"322"	Paper Manufacturing	Traded
"300"	Rubber and Misc. Plastics	Traded	"323"	Printing and Related Support Activities	Traded*
"310"	Leather and Leather Products	Traded	"324"	Petroleum and Coal Products Manufacturing	Traded
"320"	Stone, Clay, and Glass Products	Traded	"325"	Chemical Manufacturing	Traded
"330"	Primary Metal Industries	Traded	"326"	Plastics and Rubber Product Manufacturing	Traded
"340"	Fabricated metal Products	Traded	"327"	Nonmetallic Mineral Product Manufacturing	Traded
"350"	Industrial Machinery and Equipment	Traded	"331"	Primary Metal Manufacturing	Traded
"360"	Electronics and Other Electronic Equipment	Traded	"332"	Fabricated Metal Product Manufacturing	Traded
"370"	Transportation Equipment	Traded	"333"	Machinery Manufacturing	Traded
"380"	Instruments and Related Products	Traded	"334"	Computer and Electronic Product Manufacturing	Traded
"390"	Misc. Manufacturing Industries	Traded	"335"	Electrical Equipment, Appliance, and Component Manufacturing	Traded
"410"	Local and Interurban Passenger Transit	Non-Traded	"336"	Transportation Equipment Manufacturing	Traded
"420"	Trucking and Warehousing	Non-Traded	"337"	Furniture and Related Product Manufacturing	Traded
"440"	Water Transportation	Non-Traded	"339"	Miscellaneous Manufacturing	Traded
"450"	Transportation by Air	Non-Traded	"421"	Wholesale Trade, Durable Goods	Traded
"460"	Pipelines, except Natural Gas	Non-Traded*	"422"	Wholesale Trade, Nondurable Goods	Traded
"470"	Transportation Services	Non-Traded	"423"	Merchant Wholesalers, Durable Goods	Traded
"480"	Communication	Traded*	"424"	Merchant Wholesalers, Nondurable Goods	Traded
"490"	Electric, Gas, and Sanitary Services	Traded*	"425"	Wholesale Electronic Markets and Agents and Brokers	Traded
"500"	Wholesale Trade -- Durable Goods	Traded	"441"	Motor Vehicle and Parts	Non-Traded
"510"	Wholesale Trade -- Nondurable Goods	Traded	"442"	Furniture and Home Furnishings Stores	Non-Traded
"520"	Building Materials and Garden Supplies	Traded	"443"	Electronics and Appliance Stores	Non-Traded
"530"	General Merchandise Stores	Non-Traded	"444"	Building Material and Garden Equipment and Supplies Dealers	Non-Traded
"540"	Food Stores	Non-Traded	"445"	Food and Beverage Stores	Non-Traded
"550"	Automotive Dealers and Service Stations	Non-Traded	"446"	Health and Personal Care Stores	Non-Traded
"560"	Apparel and Accessory Stores	Non-Traded	"447"	Gasoline Stations	Non-Traded
"570"	Furniture and Homefurnishings Stores	Non-Traded	"448"	Clothing and Clothing Accessories Stores	Non-Traded
"580"	Eating and Drinking Places	Non-Traded	"451"	Sporting Goods, Hobby, Musical Instrument, and Book Stores	Non-Traded
"590"	Misc. Retail	Non-Traded*	"453"	Miscellaneous Store Retailers	Non-Traded
"600"	Depository Institutions	Non-Traded	"454"	Non-store Retailers	Non-Traded*
"610"	Nondepository Institutions	Non-Traded	"481"	Air Transportation	Non-Traded
"620"	Security and Commodity Brokers	Non-Traded	"483"	Water Transportation	Non-Traded
"630"	Insurance Carriers	Non-Traded*	"484"	Truck Transportation	Non-Traded
"640"	Insurance Agents, Brokers, and Service	Non-Traded	"485"	Transit and Ground Passenger Transportation	Non-Traded
"650"	Real Estate	Non-Traded	"486"	Pipeline Transportation	Non-Traded*
"660"	Combined Real Estate, Insurance	Non-Traded	"487"	Scenic and Sightseeing Transportation	Non-Traded
"670"	Holding and Other Investment Offices	Non-Traded	"488"	Support Activities for Transportation	Non-Traded
"700"	Hotels and Other Lodging Places	Non-Traded	"492"	Couriers and Messengers	Non-Traded*
"720"	Personal Services	Non-Traded	"493"	Warehousing and Storage	Non-Traded
"730"	Business Services	Non-Traded	"511"	Publishing Industries	Traded*
"750"	Auto Repair, Services, and Parking	Non-Traded	"512"	Motion Picture and Sound Recording Industries	Non-Traded*
"760"	Misc. Repair Services	Non-Traded	"513"	Broadcasting and Telecommunications	Traded*
"780"	Motion Pictures	Non-Traded*	"514"	Information and Data Processing Services	Traded*
"790"	Amusement and Recreation Services	Non-Traded	"515"	Broadcasting (except Internet)	Traded*
"800"	Health Services	Non-Traded	"516"	Internet Publishing and Broadcasting	Traded*
"810"	Legal Services	Non-Traded	"517"	Telecommunication	Traded*
"820"	Educational Services	Non-Traded	"518"	Data Processing, Hosting, and Related Services	Traded*
"830"	Social Services	Non-Traded	"519"	Other Information Services (News Syndicates, Libraries)	Non-Traded*
"840"	Museums, Botanical, Zoological Gardens	Non-Traded	"521"	Monetary Authorities (Central Bank)	Non-Traded
"860"	Membership Organizations	Non-Traded	"522"	Credit Intermediation and Related Activities	Non-Traded
"870"	Engineering and Management Services	Non-Traded	"523"	Securities, Commodity Contracts, and Other Financial Investments	Non-Traded
"890"	Services not elsewhere classified	Non-Traded*	"524"	Insurance Carriers and Related Activities	Non-Traded*
			"525"	Funds, Trusts, and Other Financial Vehicles	Non-Traded
			"531"	Real Estate	Non-Traded
			"532"	Rental and Leasing Services	Non-Traded
			"533"	Nonfinancial Intangible Assets (except Copywrighted Works)	Non-Traded*
			"541"	Professional, Scientific, and Technical Services	Non-Traded
			"551"	Management of Companies and Enterprises	Non-Traded
			"561"	Administrative and Support Services	Non-Traded
			"562"	Waste management and Remediation Services	Non-Traded
			"611"	Educational Services	Non-Traded
			"621"	Ambulatory Health Care Services	Non-Traded
			"622"	Hospitals	Non-Traded
			"623"	Nursing and Residential Care Facilities	Non-Traded
			"624"	Social Assistance	Non-Traded
			"711"	Performing Arts, Spectator Sports, and Related Industries	Non-Traded
			"712"	Museums, Historical Sites, and Similar Institutions	Non-Traded
			"713"	Amusement, Gambling, and Recreation Industries	Non-Traded
			"721"	Accommodation	Non-Traded
			"722"	Food Services and Drinking Places	Non-Traded
			"811"	Repair and Maintenance	Non-Traded
			"812"	Personal and Laundry Services	Non-Traded
			"813"	Religious, Grantmaking, Civic, Professional Organizations	Non-Traded

Figure 2: SIC/NAICS Codes, Tradable vs. Non-Tradable Assumptions; (*) refers to disputable categories

B Logistic Regression Results for Propensity Score Matching Commuting Zones

Logistic Regression for Propensity Score

	P(Introduction of Detention Center)
Population	-0.00000
	(0.00000)
Race	0.461
	(2.681)
Quarters	-1.251
	(13.677)
High School (Completion)	-4.470
	(4.952)
Area	0.0001
	(0.0001)
Constant	1.672
	(2.782)
N	38
Log Likelihood	-25.759
Akaike Inf. Crit.	63.517

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

C Graphed Employment Trends for Paired Commuting Zones: Employment, and Log of Employment for Total, Traded, and Non-Traded Levels

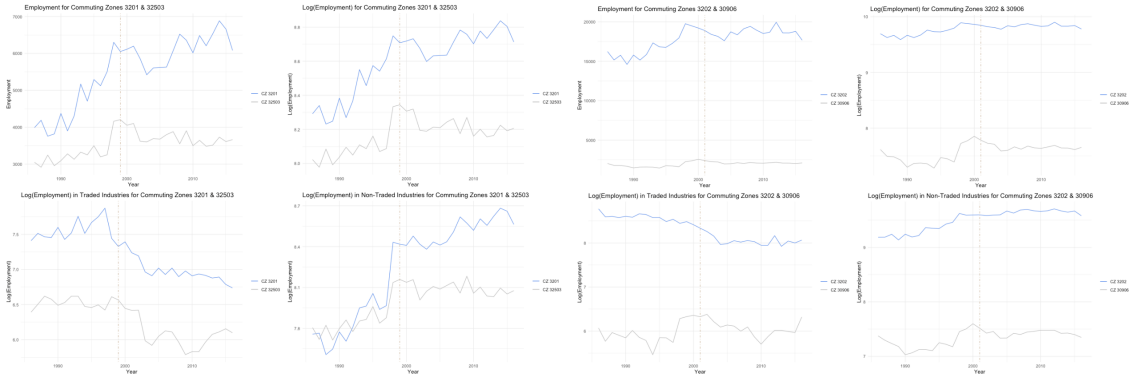

Figure 3: Commuting Zones 3201 & 32503, 3202 &30906

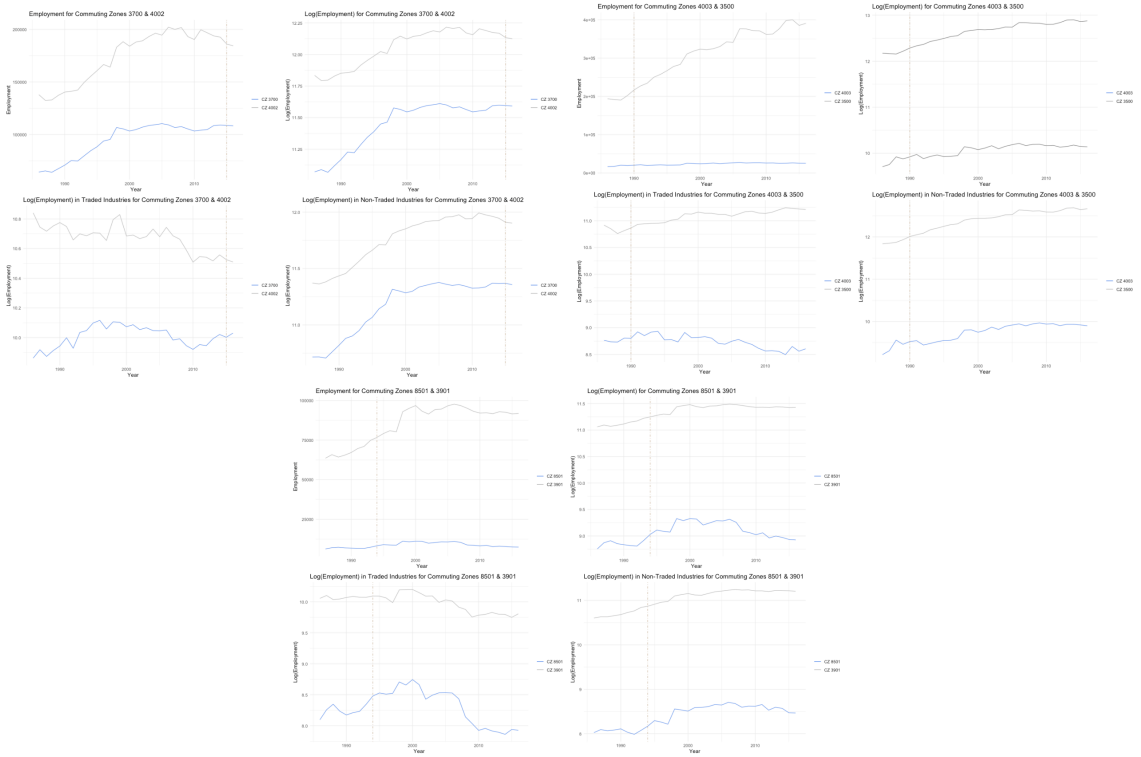

Figure 4: Commuting Zones 3700 & 4002, 4003 & 3500, 8501 & 3901

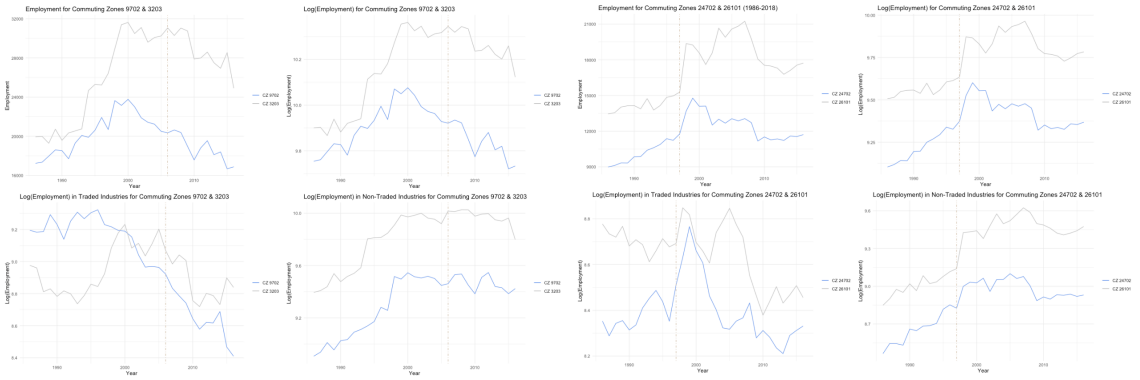

Figure 5: Commuting Zones 9702 & 3203, 24702 & 26101

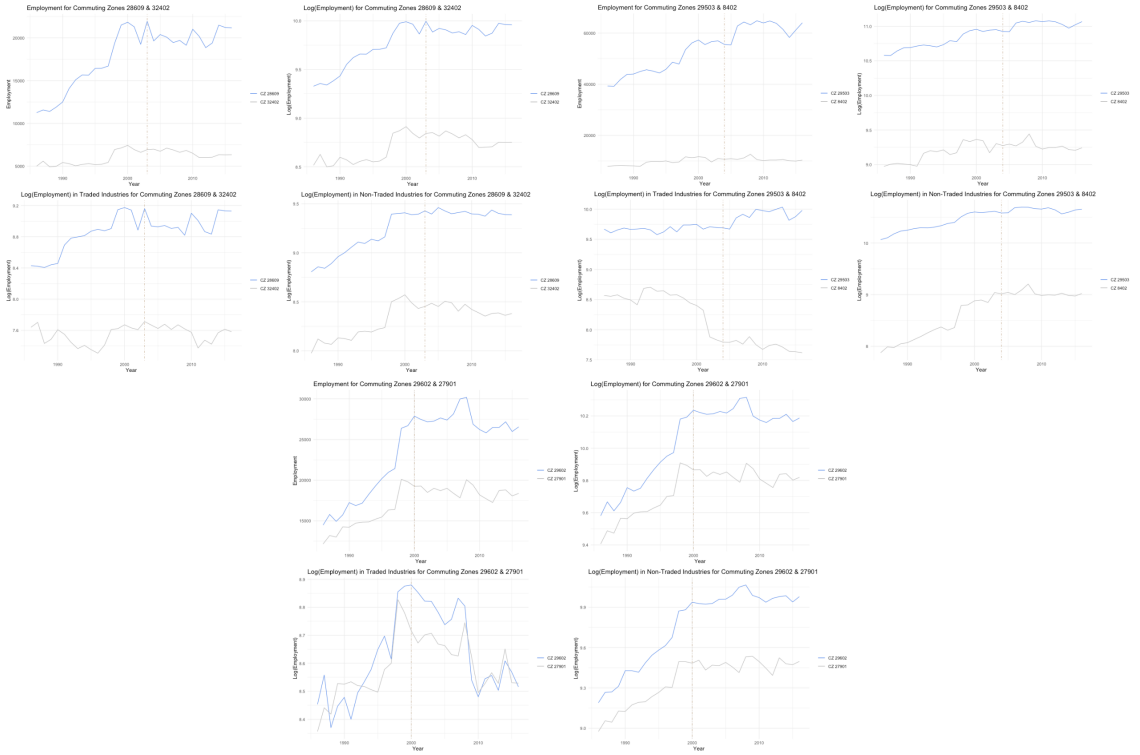

Figure 6: Commuting Zones 28609 & 32402, 29503 & 8402, 29602 & 27901

Note: Graphs for Commuting Zones 7100 & 7900 (FL), 7600 & 24701 (GA, MO), and Commuting Zones 28202 & 6800 (NE, FL) can be found in section 3.7.

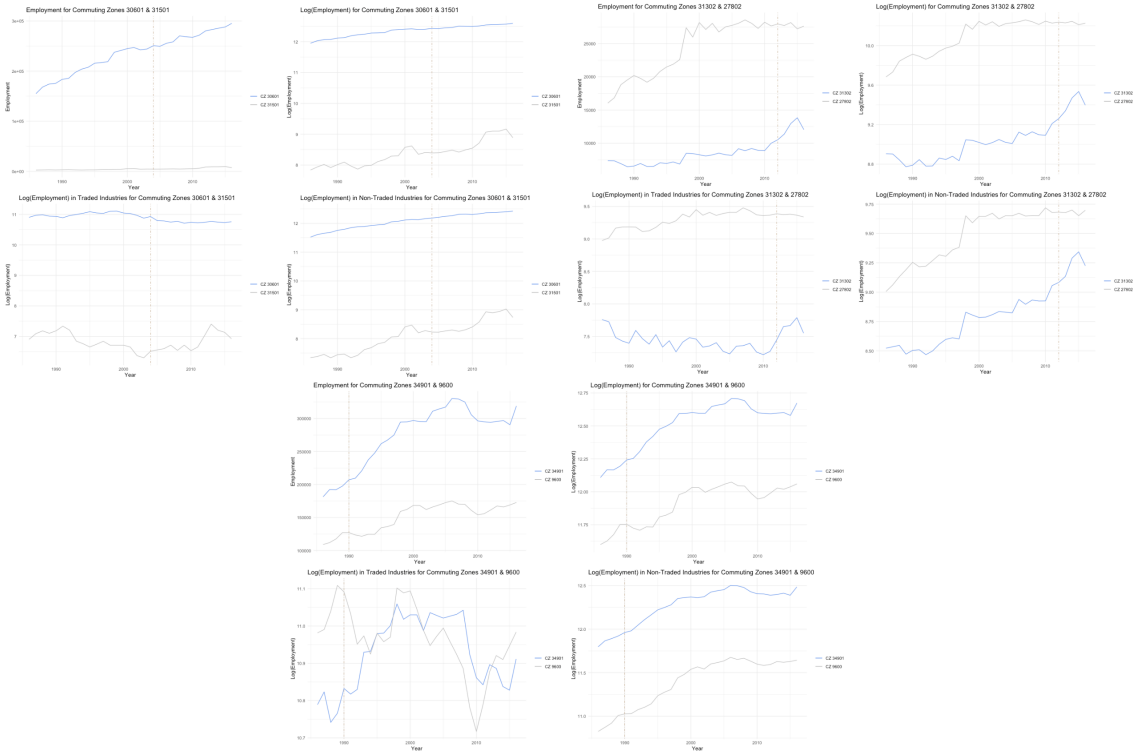

Figure 7: Commuting Zones 30601 & 31501, 31302 & 27802, 34901 & 9600

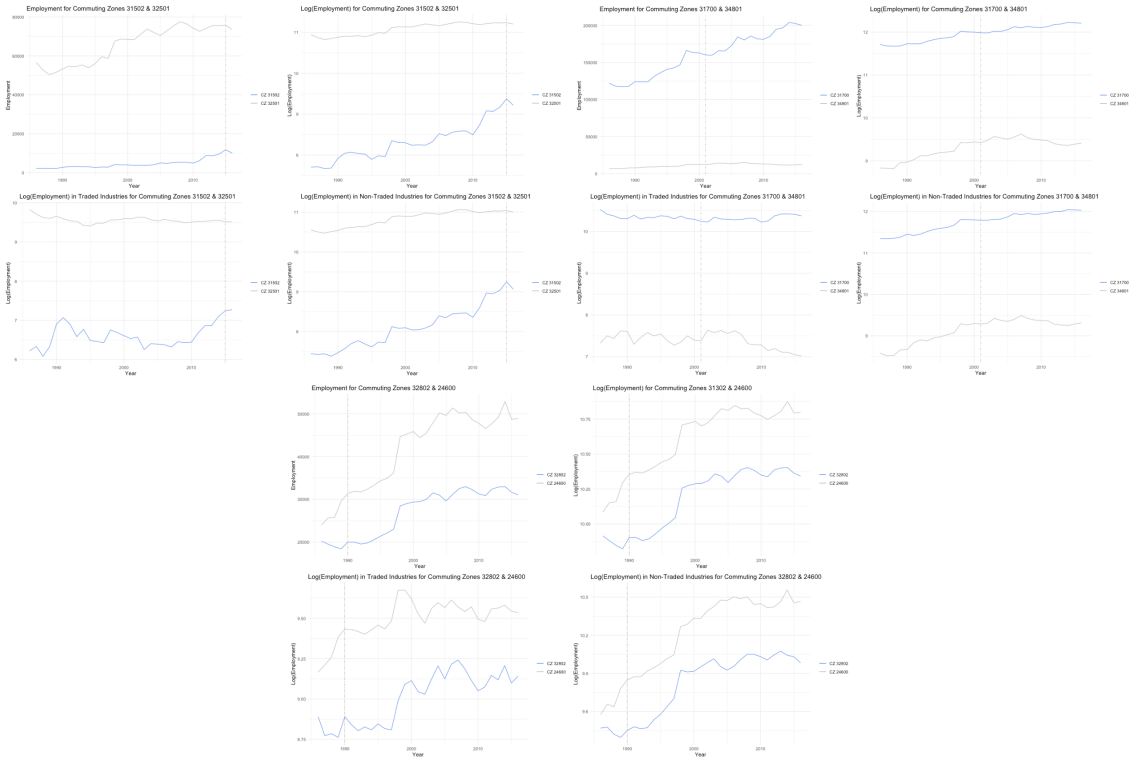

Figure 8: Commuting Zones 31502 & 32501, 31700 & 34801, 32802 & 24600

D Event Studies of Log(Employment): Unbalanced Panel Results)

D.1 Event Study Outcomes of Log of Employment

Table 13. Event Study Regression Outcomes on Log Employment for Lags k = -15 Through k = 15: β Coefficients and Standard Errors (Unbalanced)

Event Study Results, Log Employment

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -15	-0.042	0.073	-0.010
	(0.438)	(0.223)	(0.028)
k = -14	-0.004	0.105	-0.020
	(0.410)	(0.209)	(0.026)
k = -13	0.043	0.127	-0.004
	(0.410)	(0.209)	(0.027)
k = -12	0.085	0.144	0.004
	(0.410)	(0.209)	(0.027)
k = -11	0.096	0.131	-0.003
	(0.410)	(0.209)	(0.027)
k = -10	0.115	0.126	0.003
	(0.377)	(0.193)	(0.025)
k = -9	0.133	0.117	-0.003
	(0.377)	(0.192)	(0.024)
k = -8	0.157	0.114	0.008
	(0.377)	(0.192)	(0.024)
k = -7	0.208	0.121	0.017
	(0.377)	(0.192)	(0.024)
k = -6	0.217	0.099	0.010
	(0.377)	(0.192)	(0.024)
k = -5	0.187	0.075	0.019
	(0.387)	(0.197)	(0.025)
k = -4	0.188	0.046	0.012
	(0.387)	(0.197)	(0.025)
k = -3	0.207	0.036	0.008
	(0.387)	(0.197)	(0.025)
k = -2	0.287	0.015	-0.002
	(0.398)	(0.203)	(0.026)
k = -1	0.314	0.013	0.019
	(0.398)	(0.203)	(0.026)
k = 0	0.350	0.012	0.058**
	(0.398)	(0.203)	(0.026)

Event Study Results, Log Employment (Cont.)

	(1)	(2)	(3)
k = 1	0.225	0.040	0.056**
	(0.410)	(0.209)	(0.026)
k = 2	0.219	0.009	0.045*
	(0.410)	(0.209)	(0.026)
k = 3	0.055	0.102	0.058**
	(0.424)	(0.216)	(0.027)
k = 4	0.116	0.115	0.077***
	(0.438)	(0.224)	(0.028)
k = 5	0.229	0.120	0.033
	(0.454)	(0.232)	(0.029)
k = 6	0.027	0.058	0.022
	(0.493)	(0.252)	(0.031)
k = 7	0.078	0.055	0.010
	(0.517)	(0.264)	(0.033)
k = 8	0.068	0.019	0.005
	(0.517)	(0.264)	(0.033)
k = 9		0.00000***	0.00000***
		(0.00000)	(0.00000)
k = 10		0.0001***	0.016***
		(0.00001)	(0.004)
k = 11		-0.761***	1.390***
		(0.183)	(0.097)
k = 12		-1.185*	0.477***
		(0.687)	(0.161)
k = 13		3.628***	-0.722***
		(0.363)	(0.199)
k = 14		10.485***	8.161***
		(0.061)	(0.190)
N	1,178	1,178	1,178
R^2	0.003	0.743	0.197
Adjusted R^2	-0.023	0.735	0.121
Residual Std. Error	1.624 (df = 1147)	0.826 (df = 1142)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 14. Event Study Regression Outcomes on Log Employment for Traded Industries for Lags k = -15 Through k = 15: β Coefficients and Standard Errors (Unbalanced)

Event Study, Log Employment (Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -15	0.098	0.199	0.054
	(0.434)	(0.263)	(0.044)
k = -14	0.138	0.221	0.012
	(0.407)	(0.246)	(0.041)
k = -13	0.148	0.221	0.011
	(0.407)	(0.246)	(0.042)
k = -12	0.186	0.252	0.050
	(0.407)	(0.246)	(0.042)
k = -11	0.154	0.211	0.021
	(0.407)	(0.246)	(0.042)
k = -10	0.197	0.259	0.038
	(0.374)	(0.227)	(0.038)
k = -9	0.178	0.209	0.014
	(0.374)	(0.226)	(0.038)
k = -8	0.173	0.180	0.019
	(0.374)	(0.226)	(0.038)
k = -7	0.180	0.149	0.022
	(0.374)	(0.226)	(0.038)
k = -6	0.164	0.110	0.014
	(0.374)	(0.226)	(0.038)
k = -5	0.110	0.059	0.006
	(0.384)	(0.232)	(0.039)
k = -4	0.107	0.040	0.021
	(0.384)	(0.232)	(0.039)
k = -3	0.090	0.008	0.006
	(0.384)	(0.232)	(0.039)
k = -2	0.191	-0.016	-0.002
	(0.395)	(0.239)	(0.040)
k = -1	0.215	-0.010	0.038
	(0.395)	(0.239)	(0.040)
k = 0	0.230	-0.014	0.066
	(0.395)	(0.239)	(0.040)

Event Study Results, Log Employment Traded Industries (Cont.)

	(1)	(2)	(3)
k = 1	0.105	0.019	0.067
	(0.407)	(0.246)	(0.041)
k = 2	0.065	-0.031	0.043
	(0.407)	(0.246)	(0.041)
k = 3	-0.083	0.086	0.068
	(0.420)	(0.254)	(0.043)
k = 4	0.013	0.145	0.151***
	(0.434)	(0.263)	(0.044)
k = 5	0.141	0.158	0.074
	(0.450)	(0.273)	(0.046)
k = 6	-0.065	0.097	0.078
	(0.489)	(0.296)	(0.049)
k = 7	-0.089	0.019	0.027
	(0.512)	(0.311)	(0.051)
k = 8	-0.099	-0.019	0.025
	(0.512)	(0.311)	(0.051)
k = 9		0.00000***	0.00000*
		(0.00000)	(0.00000)
k = 10		0.0001***	0.024***
		(0.00001)	(0.006)
k = 11		-0.411*	0.030
		(0.215)	(0.153)
k = 12		-5.678***	-1.149***
		(0.809)	(0.252)
k = 13		2.177***	-4.750***
		(0.428)	(0.312)
k = 14		9.090***	7.617***
		(0.060)	(0.223)
N	1,178	1,178	1,178
R^2	0.003	0.637	0.258
Adjusted R^2	-0.023	0.626	0.187
Residual Std. Error	1.609 (df = 1147)	0.973 (df = 1142)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 15. Event Study Regression Outcomes on Log Employment for Non-Traded Industries for Lags k = -15 Through k = 15: β Coefficients and Standard Errors (Unbalanced)

Event Study Results, Log Employment (Non-Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
k = -15	-0.090	0.034	-0.039
	(0.451)	(0.219)	(0.029)
k = -14	-0.057	0.065	-0.034
	(0.422)	(0.206)	(0.027)
k = -13	0.0004	0.091	-0.014
	(0.422)	(0.206)	(0.027)
k = -12	0.040	0.099	-0.021
	(0.422)	(0.205)	(0.027)
k = -11	0.071	0.100	-0.017
	(0.422)	(0.205)	(0.027)
k = -10	0.084	0.078	-0.013
	(0.388)	(0.189)	(0.025)
k = -9	0.115	0.083	-0.016
	(0.388)	(0.189)	(0.025)
k = -8	0.142	0.082	-0.011
	(0.388)	(0.189)	(0.025)
k = -7	0.213	0.105	0.004
	(0.388)	(0.189)	(0.025)
k = -6	0.236	0.094	0.003
	(0.388)	(0.189)	(0.025)
k = -5	0.207	0.072	0.014
	(0.398)	(0.194)	(0.026)
k = -4	0.209	0.037	-0.003
	(0.398)	(0.194)	(0.026)
k = -3	0.241	0.036	-0.0004
	(0.398)	(0.194)	(0.026)
k = -2	0.319	0.020	-0.007
	(0.410)	(0.199)	(0.027)
k = -1	0.351	0.018	0.012
	(0.410)	(0.199)	(0.027)
k = 0	0.388	0.012	0.050*
	(0.410)	(0.199)	(0.027)

Event Study Results, Log Employment Non-Traded Industries (Cont.)

	(1)	(2)	(3)
k = 1	0.272	0.047	0.052*
	(0.422)	(0.205)	(0.027)
k = 2	0.274	0.017	0.045*
	(0.422)	(0.205)	(0.027)
k = 3	0.107	0.106	0.053*
	(0.436)	(0.212)	(0.028)
k = 4	0.154	0.101	0.050*
	(0.451)	(0.220)	(0.029)
k = 5	0.265	0.104	0.016
	(0.467)	(0.228)	(0.030)
k = 6	0.064	0.042	0.005
	(0.507)	(0.247)	(0.032)
k = 7	0.146	0.072	0.008
	(0.532)	(0.259)	(0.034)
k = 8	0.141	0.039	0.006
	(0.532)	(0.259)	(0.034)
k = 9		0.00000***	0.00000***
		(0.00000)	(0.00000)
k = 10		0.0001***	0.008**
		(0.00001)	(0.004)
k = 11		-0.862***	1.634***
		(0.179)	(0.100)
k = 12		0.459	0.484***
		(0.675)	(0.166)
k = 13		4.275***	1.639***
		(0.357)	(0.205)
k = 14		10.161***	7.442***
		(0.062)	(0.186)
N	1,178	1,178	1,178
R^2	0.004	0.766	0.272
Adjusted R^2	-0.022	0.759	0.203
Residual Std. Error	1.670 (df = 1147)	0.811 (df = 1142)	

Notes:

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

D.2 Event Study Graphs of Unbalanced Panels for Log of Employment in Total, Traded, and Non-Traded Sectors

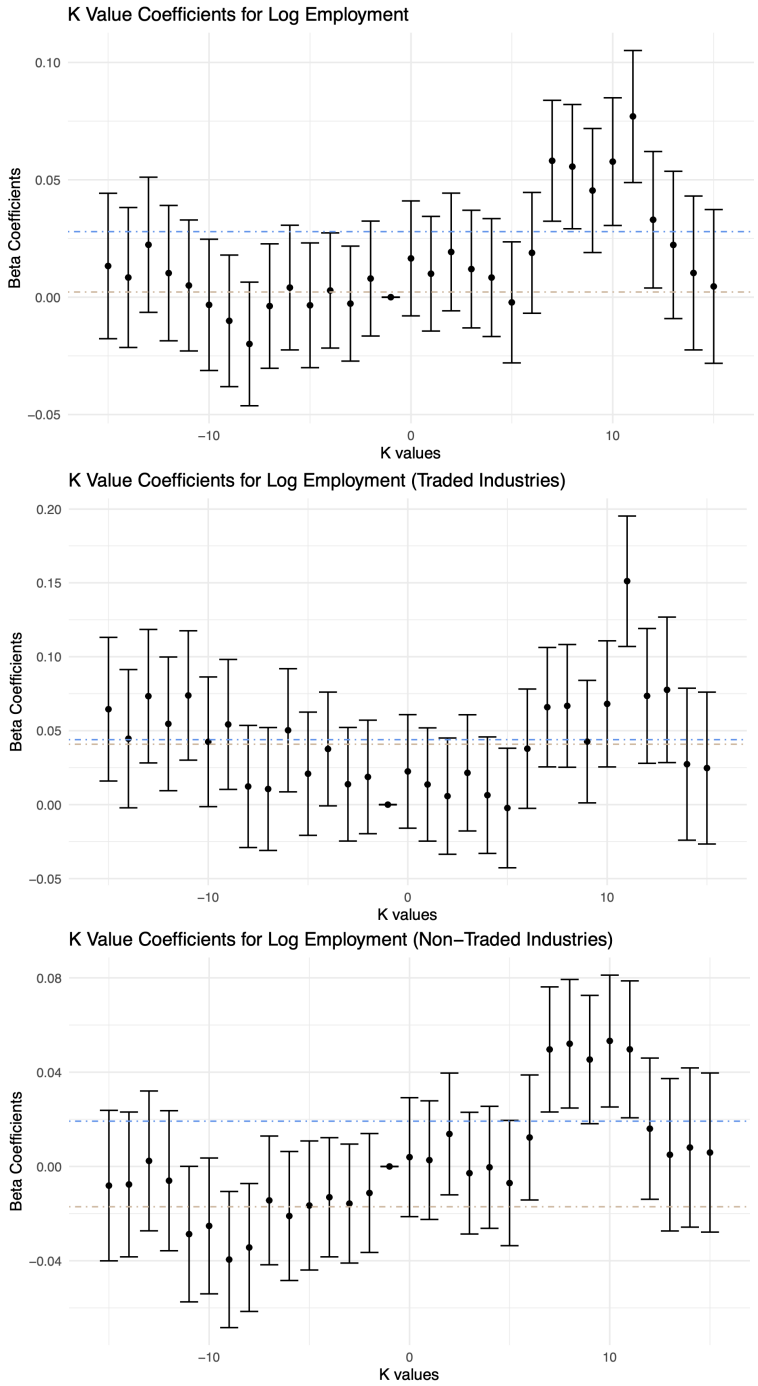

Figure 9: Event Study Graph β Coefficients for Log Employment for Total, Traded, and Non-Traded Sectors With Introduction of Detention Center (k = 0) at Lags k = -15 through k = 15

E Difference-in-Differences Results for Log Employment Outcomes

E.1 Difference-in-Differences for Unbalanced Panels

Table 16. Difference-in-Differences Regression Outcomes on Log Employment (Unbalanced)

Difference-in-Differences, Log Employment

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	0.217	0.081	-0.020*
	(0.132)	(0.071)	(0.012)
Treated	0.204	0.180***	
	(0.131)	(0.068)	
Time x Treated	0.034	-0.144	0.021
	(0.186)	(0.095)	(0.013)
Population		0.00000***	0.00000***
		(0.00000)	(0.00000)
Area		0.0001***	0.016***
		(0.00001)	(0.004)
Race		-0.758***	1.414***
		(0.182)	(0.097)
Quarters		-1.292*	0.508***
		(0.679)	(0.155)
High School Completion		3.562***	-0.710***
		(0.392)	(0.198)
Constant		10.319***	8.136***
		(0.093)	(0.190)
N	1,178	1,178	1,178
R^2	0.010	0.744	0.182
Adjusted R^2	0.008	0.742	0.127
Residual Std. Error	1.600 (df = 1174)	0.815 (df = 1169)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 17. Difference-in-Differences Regression Outcomes on Log Employment for Traded Industries (Unbalanced)

Difference-in-Differences, Log Employment (Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	-0.076	-0.146*	-0.032*
	(0.131)	(0.084)	(0.019)
Treated	0.131	0.167**	
	(0.130)	(0.080)	
Time x Treated	0.178	0.019	0.040*
	(0.185)	(0.112)	(0.021)
Population		0.00000***	0.00000*
		(0.00000)	(0.00000)
Area		0.0001***	0.024***
		(0.00001)	(0.006)
Race		-0.437**	0.050
		(0.214)	(0.152)
Quarters		-5.834***	-1.045***
		(0.799)	(0.243)
High School Completion		2.463***	-4.628***
		(0.462)	(0.311)
Constant		9.068***	7.555***
		(0.092)	(0.223)
N	1,178	1,178	1,178
R^2	0.006	0.638	0.244
Adjusted R^2	0.003	0.636	0.193
Residual Std. Error	1.588 (df = 1174)	0.960 (df = 1169)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 18. Difference-in-Differences Regression Outcomes on Log Employment for Non-Traded Industries (Unbalanced)

Difference-in-Differences, Log Employment (Non-Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	0.331**	0.164**	-0.028**
	(0.135)	(0.070)	(0.013)
Treated	0.235*	0.189***	
	(0.135)	(0.067)	
Time x Treated	-0.018	-0.203**	0.034**
	(0.191)	(0.094)	(0.014)
Population		0.00000***	0.00000***
		(0.00000)	(0.00000)
Area		0.0001***	0.007*
		(0.00001)	(0.004)
Race		-0.848***	1.664***
		(0.178)	(0.100)
Quarters		0.352	0.439***
		(0.665)	(0.160)
High School Completion		4.073***	1.647***
		(0.385)	(0.204)
Constant		9.936***	7.431***
		(0.095)	(0.186)
N	1,178	1,178	1,178
R^2	0.014	0.767	0.259
Adjusted R^2	0.012	0.766	0.209
Residual Std. Error	1.642 (df = 1174)	0.799 (df = 1169)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

E.2 Difference-in-Differences for Balanced Panels

Table 19. Difference-in-Differences Regression Outcomes on Log Employment (Balanced)

Difference-in-Differences, Log Employment

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	0.217	0.089	
	(0.134)	(0.085)	
Treated	0.231	0.127	0.010
	(0.206)	(0.121)	(0.098)
Time x Treated	0.045	-0.019	0.081
	(0.319)	(0.186)	(0.132)
Population		0.00000***	0.00000***
		(0.00000)	(0.00000)
Area		0.0001***	0.0001***
		(0.00002)	(0.00001)
Race		-1.056***	-1.430***
		(0.256)	(0.281)
Quarters		0.764	3.732***
		(1.228)	(1.047)
High School Completion		3.269***	3.960***
		(0.564)	(0.624)
Constant		10.319***	8.525***
		(0.095)	(0.277)
N	721	721	721
R^2	0.008	0.673	0.679
Adjusted R^2	0.004	0.670	0.648
Residual Std. Error	1.631 (df = 717)	0.939 (df = 712)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 20. Difference-in-Differences Regression Outcomes on Log Employment for Traded Industries (Balanced)

Difference-in-Differences, Log Employment (Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	-0.076	-0.152	
	(0.137)	(0.099)	
Treated	0.079	0.094	0.160
	(0.210)	(0.141)	(0.113)
Time x Treated	0.344	0.218	0.150
	(0.325)	(0.217)	(0.152)
Population		0.00000***	0.00000***
		(0.00000)	(0.00000)
Area		0.00002	0.00000
		(0.00002)	(0.00002)
Race		-0.621**	-2.003***
		(0.300)	(0.323)
Quarters		-4.480***	-0.043
		(1.436)	(1.201)
High School Completion		2.339***	4.163***
		(0.659)	(0.715)
Constant		9.068***	7.860***
		(0.096)	(0.323)
N	721	721	721
R^2	0.004	0.569	0.605
Adjusted R^2	0.0002	0.564	0.567
Residual Std. Error	1.662 (df = 717)	1.097 (df = 712)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 21. Difference-in-Differences Regression Outcomes on Log Employment for Non-Traded Industries (Balanced)

Difference-in-Differences, Log Employment (Non-Traded Industries)

	Log(Employment)		
	OLS		*panel linear*
	(1)	(2)	(3)
Time	0.331**	0.175**	
	(0.137)	(0.083)	
Treated	0.285	0.136	-0.062
	(0.210)	(0.118)	(0.097)
Time x Treated	-0.060	-0.098	0.064
	(0.325)	(0.181)	(0.131)
Population		0.00000***	0.00000***
		(0.00000)	(0.00000)
Area		0.0001***	0.0001***
		(0.00002)	(0.00001)
Race		-1.198***	-1.217***
		(0.250)	(0.277)
Quarters		2.684**	5.130***
		(1.196)	(1.032)
High School Completion		3.740***	4.193***
		(0.549)	(0.615)
Constant	9.936***	7.854***	
	(0.096)	(0.269)	
N	721	721	721
R^2	0.012	0.703	0.697
Adjusted R^2	0.008	0.699	0.667
Residual Std. Error	1.660 (df = 717)	0.914 (df = 712)	

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.