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Evaluating the Impact of the Mariel Boatlift on Women's Labor Market Outcomes: A Synthetic Difference-in-Differences Analysis

Yifan Wang* Chunbei Wang† Chanita Holmes‡

Abstract

Immigration continues to shape labor market dynamics, yet its gender-specific effects remain understudied. This study revisits the Mariel Boatlift, when about 125,000 Cubans arrived in Miami in 1980, increasing the local labor supply by 7%, to examine its impact on native women's labor market outcomes. While previous studies have mainly focused on wage effects among low-skilled male workers and found limited effects, the consequences for native women have been largely overlooked. This research fills this gap by examining how the influx of low-skilled immigrants affected native women's labor force participation, unemployment, wages, and hours worked. Using data from the March Current Population Survey (CPS) and its Annual Social and Economic Supplement (ASEC) from 1976 to 1993, and applying the Synthetic Difference-in-Differences (SDID) method, we find substantial declines in labor force participation and notable increase in unemployment among native women, with both low- and high-educated women experiencing adverse effects. These findings provide new evidence that immigration shocks can have broad and heterogeneous impacts across genders, complementing the literature that has largely found minimal labor market effects, particularly among men.

Keywords: immigration, supply shock, labor force, native, gender, Mariel Boatlift, Synthetic Difference-in-Differences

JEL Codes: J15, J16, J21, J61

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1 Introduction

Immigration remains a central issue in global politics, particularly regarding its impact on native labor markets, as studies have debated potential job competition and wage suppression (Card, 1990; Borjas, 2017; Peri and Yasenov, 2019; Clemens and Hunt, 2019). As of 2020, the number of international migrants had reached 281 million, constituting 3.6% of the global population, highlighting the increasing scale and significance of migration worldwide (International Organization for Migration (IOM), 2024). The situation is further compounded by the rising number of refugees, which has reached an unprecedented 122.6 million by 2024, driven by global political and economic turmoil (United Nations High Commissioner for Refugees (UNHCR), 2024). These statistics highlight the urgency of understanding immigration's multifaceted impact on native labor markets. Yet, most research has focused on male workers or aggregate effects, leaving the consequences for women's labor market outcomes underexplored.

This paper addresses a relatively overlooked aspect: the impact of a large immigrant influx on native-born women's labor market outcomes, focusing on both the extensive margin (labor force participation and the probability of unemployment) and the intensive margin (hours worked and wages). Utilizing the well-documented Mariel Boatlift as a natural experiment, we explore this impact in depth. Between April and October of 1980, approximately 125,000 Cubans emigrated from Mariel Harbor in Cuba to Miami, Florida, increasing the city's labor supply by about 7 percent (Card, 1990). This large exogenous labor supply shock provides a compelling case to study the causal impact of immigration on native labor market outcomes.

Researchers have extensively studied the Mariel Boatlift, with Card (1990) as a landmark study finding that the influx of Marielitos did not affect the wage or unemployment rates of low-skilled workers, challenging the conventional view that immigrants harm native labor markets. Borjas (2017) revisits Card (1990) and refines the Difference-in-Differences (DID) model by specifically examining high school dropout males in Miami, finding a wage drop of 10–30 percent within this group. Peri and Yasenov (2019) utilize the Synthetic Control Method (SCM), and find no significant wage differences for the overall population. Clemens and Hunt (2019) reanalyze these conflicting results, finding a sharp increase of less-skilled Black workers in the data unrelated to the Mariel Boatlift that generate a spurious wage decline. They reinforce that immigration has little impact on native-born workers, including those with low education levels. While previous studies have mainly focused on wage differences, they have largely neglected broader aspects of labor supply such as labor force participation and hours worked, especially for women.

Marielitos may serve as substitutes for or complements to local female workers. As substitutes, immigrants might compete with low-skilled native labor, potentially displacing women from employment opportunities (Borjas, 2014). As complements, low-skilled immigrants are often employed in household service occupations, reducing the cost of services such as childcare and cleaning. This could influence native women's time allocation and increase their labor force participation (Cortes, 2008; Cortes and Tessada, 2011; East and Velásquez, 2024). In addition to these labor market roles, immigrants also represent a large consumer base. Their presence may stimulate demand for goods and services, which could indirectly shape labor market opportunities and decisions for native women. We elaborate on these mechanisms in the Theoretical Framework Section.

To explore this research question, we utilize data from the March Current Population Survey (CPS) spanning 1976 to 1993 and employ the Synthetic Differences-in-Differences (SDID) method developed by Arkhangelsky et al. (2021). SDID combines elements of the traditional Difference-in-Differences and Synthetic Control methods, addressing limitations of both by aligning pre-treatment trends through data-driven weighting without requiring exact matches. We define a donor pool of 32 metropolitan statistical areas (MSAs), from which SDID constructs a weighted synthetic control based on pre-treatment labor market trends.

The SDID results reveal intriguing insights into the impact of the Mariel Boatlift on female labor market outcomes. Non-Cuban women experienced a significant decline in labor force participation and a rise in unemployment. While there was no significant effect on wages or hours worked on average, our SDID event-study reveals a notable dip in wages in the year following the boatlift. We conduct several robustness checks by refining the donor pool, including the exclusion of spillover destinations, adjacent MSAs, and MSAs experiencing high immigrant growth. Additionally, we restrict the donor pool to MSAs with a population size similar to Miami. These results remain robust across these specifications, reinforcing the reliability of our estimates.

We then examine heterogeneous effects by race, age, marital status, parental status, and education to explore potential mechanisms. The negative impacts on labor force participation are most pronounced among women who were white, married, had children, were of prime working age (19–45), or had higher educational attainment (some college or more). In comparison, the rise in unemployment was concentrated among women who were white, non-married, with no children, were of prime working age, or had lower education levels (high school or less). These patterns suggest distinct mechanisms across groups. Among less-educated women, the increase in unemployment aligns with substitution effects. Despite job loss, their labor force participation remains stable, possibly due to financial necessity.

In contrast, highly educated women show a decline in labor force participation without a corresponding rise in unemployment. Drawing on labor supply theory, we explore potential explanations related to changes in wages, reservation wages, and the opportunity cost of time. Our findings suggest that decreased wages and increased non-labor income may have discouraged participation among this group.

This paper makes three key contributions to the literature on immigration and labor markets. First, we focus on the impact of the Mariel Boatlift on women's labor market outcomes, an area largely overlooked in previous research. While past studies have often found limited effects on male labor markets, our analysis reveals significant negative impacts on women, specifically in terms of labor force participation and unemployment. This underscores the importance of considering gender-specific responses to immigration, especially as women now represent a substantial portion of the labor market but continue to face structural vulnerabilities. According to International Labour Organization (ILO) (2024), women accounted for 51.6% of the global labor force in 2024, yet remain disproportionately represented in informal and vulnerable employment and are consistently paid less than men. They are also more likely to face workplace violence and harassment (UN Women, 2024). These findings point to the need for immigration and labor market policies that explicitly account for gendered labor dynamics.

Second, our findings contrast with a strand of literature suggesting that immigration facilitates native women's labor supply, particularly among highly educated mothers - by providing affordable household services such as childcare and cleaning (Cortes and Tessada, 2011; East and Velásquez, 2024). We show that in the context of a sudden influx of low-skilled immigrants, female labor force participation may instead decline even among more educated women. This highlights the need for a more nuanced understanding of the conditions under which immigrants act as complements versus substitutes in female labor supply, as well as the broader channels beyond the labor market that mediate these outcomes.

Third, our study has broader implications for understanding immigration's role during a period of rapid female labor force growth (U.S. Bureau of Labor Statistics, 2024). While most MSAs show sharp increases in female participation in the 1980s, Miami experienced an immediate decline that took years to recover. This case offers valuable insights for developing countries, where female labor force dynamics may mirror those of Miami at the time.

Finally, although the Marielitos were mostly low-skilled compared to today's immigrants (U.S. Census Bureau, 2023), the Boatlift provides a critical baseline for assessing the impact of large-scale immigration shocks on local labor markets. Given that 71% of refugees worldwide are hosted in low- or middle-income countries with constrained resources (United Nations High Commissioner for Refugees (UNHCR), 2024), understanding how immigration

affects labor force participation, particularly among women, is crucial. Our research highlights the importance of gender-specific analyisis in labor market research and encourage policymakers to adopt more inclusive strategies that account for both the challenges and opportunities immigration poses for host communities.

2 Theoretical Framework

Economic theories focusing on household production and females' labor supply decisions such as Becker (1993) and Mincer (1962) provide a framework to understand the determinants of female labor force participation by examining the interplay between market wages and the reservation wage, or the value of non-market time. According to the theory, an individual will participate in the labor force if the market wage exceeds the reservation wage, as this reflects greater economic benefits from market work. Conversely, if the reservation wage is greater than or equal to the market wage, the individual will drop out of the labor force and prioritize non-market activities, such as caregiving and household responsibilities.

Factors that raise the value of market time, such as better job opportunities or workplace flexibility, tend to encourage labor force participation. On the other hand, factors that increase the value of non-market time, such as caregiving responsibilities, household demands, or alternative sources of income, reduce the likelihood of participating in the labor force (Blau and Winkler, 2021).

For women, the traditional division of labor often assigns them primary responsibility for caregiving and household tasks. Ceteris paribus, the presence of small children or other factors that increase caregiving and housework burdens raise the value of non-market work, thereby significantly reducing their likelihood of participating in the labor force. Additionally, spousal income serves as an alternative source of financial support, further reducing the economic necessity for married women to work outside the home. Married women with a spouse present are less likely to engage in market work compared to never-married, divorced, separated, or widowed women, who often lack access to such income support (Blau and Winkler, 2021).

In the context of immigration shocks, such as the Mariel Boatlift, these dynamics become particularly relevant. On the one hand, a sudden influx of low-skilled immigrants can cause downward pressure on wages for native workers in similar occupations, effectively reducing the market wage. This potential wage compression and increased competition for jobs may increase the risk of job loss for native women. Women in vulnerable groups, such as those with lower education or married women with children, are particularly affected. When offered wages fall below their reservation wage, these women may even opt out of the labor force

altogether.

On the other hand, the arrival of disproportionately less-educated immigrants can also have an offsetting effect. The increasing supply of labor leads to lower prices in the household services sector, which is a close substitute for household production. With more affordable access to childcare, housekeeping, and other domestic services, the burden of household responsibilities on women may be alleviated. This reduction in the value of non-market work could encourage greater female labor force participation, particularly among higher-educated women who can reallocate their time from caregiving to market work. These contrasting mechanisms highlight the nuanced and heterogeneous impacts of immigration shocks on women's labor force decisions, where the net effect depends on the relative strength of these opposing forces.

Additionally, an immigration influx may increase women's non-labor income through higher spousal earnings, rental income, or business revenues. For example, if a spouse worked in a sector that benefited from the Marielitos' arrival, household income could rise. Property owners may have gained from increased rental demand, as rents in Miami rose 8 to 11 percent from 1979 to 1981 (Saiz, 2003). Small family-run businesses may also have seen higher demand. As non-labor income increases, women may exit the labor force due to a higher reservation wage.

The theoretical framework outlines how factors such as wages, household responsibilities, and access to alternative income sources influence women's labor market decisions. In the context of immigration shocks, such as the Mariel Boatlift, these considerations generate testable hypotheses regarding labor supply responses. Our empirical analysis builds on this framework to examine how the influx of low-skilled immigrants influenced female labor market outcomes in Miami.

3 Background

3.1 Historical Background

The Mariel Boatlift was one of the most significant immigration events in U.S. history, leading to the mass emigration of approximately 125,000 Cubans to the United States between April and October 1980. During this time, Cuba faced severe economic and political crises, which prompted many Cubans to leave the country. Tensions between those wishing to emigrate and the Cuban government reached a breaking point in April 1980, when around 10,000 Cubans stormed the Peruvian embassy in Havana, demanding asylum. In response to the diplomatic crisis, the U.S. government agreed to open the port of Miami to Cuban refugees.

On April 20, 1980, Fidel Castro announced that any Cuban who wished to leave could do so via the port of Mariel, near Havana. This led to a sudden and substantial influx of Cuban immigrants to Miami, increasing the city's labor supply by an estimated 7% in just a few months (Card, 1990).

The characteristics of Mariel immigrants, commonly referred to as Marielitos, sparked controversy. Approximately 60% of these new arrivals were high school dropouts (Borjas, 2017), and among them were criminals, political prisoners, and individuals released from mental institutions (Portes and Stepick, 1985). These factors contributed to widespread negative perceptions of the Marielitos, with many Americans viewing them as predominantly "young, Black, and unmarried," and associating them with marginalized and stigmatized groups such as prostitutes, homosexuals, and criminals, which intensified public anxiety (Aguirre, 1994). Such stereotypes fueled national debates over the social and economic impacts of the influx, particularly concerns about increased competition for low-skilled jobs, strain on public resources, and potential disruptions to community safety (Billy and Packard, 2022). Additionally, the sudden rise in Miami's population raised questions about the city's ability to absorb the newcomers without adversely affecting local labor markets and social structures.

3.2 Literature Review

3.2.1 Mariel Boatlift

The Mariel Boatlift is a well-known natural experiment, allowing researchers to isolate the causal effects of immigration on native populations. The groundbreaking study by Card (1990) finds that the influx of Marielitos did not affect the wage or unemployment rates of low-skilled workers, establishing a foundation for subsequent research. Borjas (2017); Peri and Yasenov (2019); Clemens and Hunt (2019) revisit Card's findings and reach conflicting conclusions. Although they agree that there is no significant impact on overall or male unemployment, their results vary in terms of wage effects, especially for low-skilled workers. Borjas (2017) observes wage declines for male high school dropouts, while others find minimal wage effects. These differing results arise from variations in the samples and methodologies used. Card (1990); Borjas (2017) rely on March CPS data, while Peri and Yasenov (2019) uses the larger May-ORG CPS sample. Methodologically, Card (1990) and Borjas (2017) apply a traditional DID framework, whereas Peri and Yasenov (2019) employs SCM, and Clemens and Hunt (2019) compare these approaches.

In addition to wage and unemployment outcomes, researchers have explored broader labor market outcomes. Anastasopoulos et al. (2018) find that immigration reduces job vacancies

in affected labor markets, especially for low-skilled workers, highlighting its impact on labor market dynamics. On the demand side, Bodvarsson et al. (2008) examine how immigrants increase local labor demand by spending income on local goods and services, providing strong evidence that Mariel Boatlift increased labor demand.

More recently, researchers have extended the scope of the study beyond the labor markets to examine societal impacts. For instance, Gunadi (2023) examines both the short-term and long-term effects of immigration on the educational attainment of native-born individuals in Miami, finding a temporary decline of 1.6 percentage points but no significant long-term impact. Similarly, Chung and Partridge (2019) use the SCM and find that Miami experienced slower growth in average human capital compared to its synthetic control city following the Mariel Boatlift, highlighting potential long-term disparities in human capital development. Billy and Packard (2022) show that the Mariel Boatlift increased local crime rates in Miami, partially driven by the Marielitos' compositional features, including them being disproportionately young, male, and primarily driven by higher rates of incarceration and psychiatric hospitalization. This unique group's characteristics heightened public safety concerns, potentially influencing native perceptions and labor market decisions.

While prior research has used the Mariel Boatlift as a natural experiment to improve our understanding of the economic and social impacts of immigration, it has largely overlooked its labor market impacts on women. Our study addresses this gap by analyzing the effects of immigration on women's labor force participation, unemployment, hours worked, and wages following the Boatlift. To the best of our knowledge, the only paper that directly examines female labor market responses to the Mariel Boatlift is a recent working paper by Sakamoto and Sugiyama (2025), conducted contemporaneously with our own. They find no effects of the Mariel Boatlift on native women's labor market outcomes, except for working hours. Specifically, less-educated women reduced their hours worked, while more-educated women increased theirs. However, the study faces significant limitations due to its small sample size. Their sample used to analyze working hours includes only 17 to 39 observations per year, and this number is roughly halved when further broken down by skill level, raising concerns about the reliability of the estimates.[1] Additionally, their event study approach consistently reveals violations of the parallel trends assumption, casting doubt on the validity of their identification strategy and complicating the interpretation of their findings.

[1] Although Sakamoto and Sugiyama (2025) also use CPS data, the exact sample used in their analysis is unclear. Their description of using repeated cross-sectional data suggests they relied on the monthly CPS rather than the ASEC.

3.2.2 Effect of Immigration on Natives

To gain a more comprehensive understanding of the broader effects of immigration, it is crucial to look at the wider body of research on its influence on labor markets across different settings and contexts. Research on immigration's labor market impact is complex. Immigration can redistribute benefits, favoring complementary workers while disadvantaging those in direct competition. Additionally, demographic factors such as age and education play a significant role in shaping these outcomes. For instance, younger workers are more likely to experience wage reductions, whereas older workers may face higher risks of employment displacement (Dustmann et al., 2017).

The literature underscores the importance of considering both short and long-term effects, as labor markets take time to adjust. Short-term disruptions in wages and employment can be mitigated as native workers adapt, potentially shifting to different industries or skill levels (Edo, 2019). Several factors explain why the long-term effects of immigration are often insignificant: new immigrants may replace older immigrants (d'Amuri et al., 2010), or the effects may dissipate as native workers migrate to other labor markets (Monras, 2020).

Our study builds on this literature by shifting the focus to gendered impacts, an area that remains relatively underexplored. These gender-specific effects are both short- and long-lasting, and are not easily explained by general labor market adaptation mechanisms highlighted in previous studies. Our findings contribute new evidence that immigration shocks can produce persistent, adverse effects on particular demographic groups, underscoring the importance of considering gender heterogeneity in immigration research.

3.2.3 Effect of Immigration on Native Female Labor Force Participation

While extensive research exists on the general labor market effects of immigration, relatively few studies focus on female labor market outcomes. A recent strand of literature has examined immigration's impact on housework and labor market outcomes for highly skilled women. Cortes and Tessada (2011) address endogeneity in immigrant location choices by using the 1970 distribution of immigrants across U.S. cities as an instrument. They find that low-skilled immigration can reduce the cost of household services, allowing high-skilled women to work longer hours. Vice versa, East and Velásquez (2024) find that stricter immigration enforcement policies reduce immigration and increase household service costs, which reduces the labor supply of college-educated mothers of young children.

In contrast, Furtado (2015) show that increased inflows of low-skilled immigrants increases fertility among highly educated women and in turn leads to a temporary decrease in their labor force participation rates using the IV method. Borjas and Edo (2021) also finds

a negative impact of immigration on native women's labor force participation. They use French data to employ a Heckman selection correction to address bias in wage equations, with the near-zero wage impact explained by the exit of low-wage women.

Our paper adds to this literature by providing additional evidence based on a robust natural experiment design that focuses on the impact of a large immigration shock, and reveals negative effects on both high- and low-skilled native women.

3.2.4 Recent Refugee Literature on Labor Market Outcomes

A growing body of research has examined the labor market effects of recent refugee inflows across diverse national contexts, often using quasi-experimental strategies to identify causal impacts. Postepska and Voloshyna (2025) analyze the arrival of predominantly female Ukrainian refugees in Czechia using a difference-in-differences approach, finding no significant impact on local employment but a notable increase in working hours among native women. Similarly, Pedrazzi and Peñaloza-Pacheco (2023) study the Venezuelan exodus to Colombia using an IV strategy, showing that migration reduced labor force participation among less-skilled native women due to increased competition, while boosting participation among high-skilled mothers through improved access to affordable domestic help. In contrast, Ceritoglu et al. (2017) examine Syrian refugee inflows to Turkey and find substantial negative effects on native employment, particularly in the informal sector, but negligible effects on wages.

Although these studies offer valuable insights, many involve migration flows that are geographically dispersed or less clearly defined in terms of timing and treatment, which introduce complications for identification. In contrast, the Mariel Boatlift provides a concentrated and well-defined immigration shock that affected a single labor market, Miami, while leaving many other metropolitan areas unaffected and available to serve as comparisons. Furthermore, while some recent refugee flows, such as the Ukrainian case, are heavily skewed by gender, the composition of Marielitos was more balanced, with approximately 55% men and 45% women. This gender distribution allows for a more credible examination of how large-scale immigration affected the labor market outcomes of native women, including changes in labor force participation, unemployment, wages, and hours worked.

4 Data

To analyze the effects of the Mariel Boatlift on native females' labor market outcomes, we use data from the March Current Population Survey (CPS) and its Annual Social and Economic Supplement (ASEC), covering the period from 1976 to 1993. The March CPS is a nationally

representative household survey administered by the U.S. Census Bureau and the Bureau of Labor Statistics. It collects detailed information on labor market activity, demographics, and income.

Our analysis focuses on non-Cuban women ages 19–65 in Miami.[2] Since the historical CPS data lacks information on immigration status, we rely on the Hispanic origin variable to identify individuals of Cuban ethnicity. Following the literature, we exclude individuals of Cuban origin (including both immigrants and U.S.-born Cubans) from the analysis. (Borjas, 2017; Peri and Yasenov, 2019).

We select 1976 as the starting point for our analysis, given that Miami was consistently identified as a metropolitan statistical area (MSA) in the CPS starting in 1973, and key work-related variables became available in 1976.[3] To avoid contamination from the "Little Mariel" event of 1994, we restrict our sample period to 1976–1993.[4]

Our primary focus is on short-term effects, using data from 1976 to 1984. To justify this focus, we examine the educational composition of Miami's population during this period. Given that approximately 66% of Marielitos were high school dropouts, we classify them as less-educated and track their share in the Miami population over time. Following the Boatlift, the overall high school dropout rate in Miami increased, peaking in the early 1980s before declining. By 1984, the proportion of high school dropouts in the total population returned to pre-Boatlift levels, suggesting that the immigration surge created a temporary labor supply shock between 1980 and 1984.[5] Similarly, the Cuban dropout rate rose modestly post-Boatlift before stabilizing by the mid-1980s, further reinforcing the idea that the immediate educational impact of the Boatlift was short-lived (Figure A1).

Although the short-term effects are our primary interest, we also extend the analysis through 1993 to investigate potential long-term effects. As Edo (2019) suggests, labor markets may take time to adjust to immigration shocks, and understanding these dynamics is critical for assessing whether the labor market consequences of the Boatlift were temporary

[2]We follow Peri and Yasenov (2019) in selecting a sample age range of 19–65, focusing on working-age individuals most relevant to labor market analysis. This range excludes younger individuals who may still be in school and older individuals who are more likely to be retired. We refer to Miami as Miami-Fort Lauderdale-West Palm Beach, MSA code = 5000.

[3]Prior to 1973, Miami was not identified as a MSA in the CPS. From 1973 to 1976, the survey identified 33 MSAs, with the number increasing to 44 in 1977.

[4]In 1994 and 1995, there was a notable increase in Cuban migration, which Angrist and Krueger (1999) referred to as the "Mariel Boatlift That Did Not Happen." Census data reveal a smaller influx of Cubans during this period, known as "Little Mariel." Though smaller than the 1980 Mariel Boatlift, it still impacted the U.S. labor market (Borjas, 2017).

[5]The decline in the share of less-educated Cubans to pre-Boatlift levels by 1985 could be attributed to (1) the internal migration of many Marielitos out of Miami to other parts of the United States; (2) Marielitos pursuing further education or skill development, reducing the visible effect of the initial influx of low-educated workers in Miami's labor force.

or persistent.

Our primary outcome variables are labor force participation, measured as the labor force divided by the working age population and multiplied by 100. The unemployment-to-population ratio is calculated as total unemployment divided by the total population and multiplied by 100. We do not condition the unemployment rate on labor force participation, as the immigration shock may affect women's decisions to participate in the labor force. Total hours worked is defined as the product of the number of weeks worked and the usual hours worked per week during the previous year. The average hourly wage is computed as wage and salary income from the previous year divided by total hours worked.[6]

Since income and work-related variables reflect earnings from the previous year, we manually adjust the data by shifting these variables back by one year to ensure consistency with the CPS survey year. Following Borjas (2017), we merge the CPS data with the *GoodMSA* dataset to identify consistently defined MSAs, including Miami.[7] We then aggregate the data at the MSA level by year to construct a balanced panel and calculate the weighted average of female labor force participation, unemployment rates of the total population, hourly wage, and hours worked. Finally, we define post-1980 Miami as the treated group and construct a weighted control group from a donor pool of consistently defined MSAs across the U.S., with weights assigned based on their pre-treatment similarity to Miami's outcome variables. This weighting approach ensures comparability and provides a more accurate estimation of the treatment effects.

Our dataset offers greater reliability than prior literature. Borjas (2017) also used March-CPS data (1977-1993), but his annual sample size is approximately only 20 individuals in Miami due to the restriction to to non-Hispanic male high school dropout. Peri and Yasenov (2019) used the May CPS from 1973 to 1978, combined with the larger sample from the May Outgoing Rotation Groups (ORG) of the CPS from 1979 to 1985, resulting in approximately 40 observations per year before 1979 and about 150 observations per year thereafter for non-Cuban high school dropouts. In contrast, our analysis benefits from a total annual sample size between 200 and 340 observations in Miami (See Appendix Table A1 for details), providing greater statistical power and more precise estimation of treatment effects. Additionally, we take into considerations that CPS estimates for smaller MSAs (populations under 500,000) suffer from high sampling variability over time. While Borjas (2017) and Peri and Yasenov (2019) include 44 MSAs, the 11 newly added MSAs are relatively small, potentially introducing bias.[8]

[6]Wages are adjusted for inflation using the Consumer Price Index (CPI) and are reported in 1980 dollars.

[7]MSAs are not consistently identified in the CPS data.

[8]The 1977 CPS introduced 11 additional MSAs that were under 500,000: Akron, OH; Albany-Schenectady-Troy, NY; Birmingham, AL; Gary-Hammond-East Chicago, IN; Columbus, OH; Fort Worth-

5 Empirical Method

Methodologies such as Instrumental Variables (IV), Difference-in-Differences (DID), and the Synthetic Control Method (SCM) have been widely used to capture the nuanced impacts of immigration shocks, with the choice of method significantly influencing the accuracy and robustness of findings (Card, 1990; Borjas, 2017; Peri and Yasenov, 2019; Clemens and Hunt, 2019). Our study employs the recently developed SDID technique introduced by Arkhangelsky et al. (2021). This method constructs a synthetic control group using a weighted combination of outcomes from 32 donor MSAs to create a comparable control for Miami, accounting for differing trends between treated and control units. By integrating elements of DID and SCM, SDID addresses the limitations of both approaches, offering a more robust framework for estimating the causal impact of a treatment.

5.1 Model

The SDID method integrates elements of both the SCM and DID methods. It first constructs a synthetic control group that closely matches the treated unit's pre-treatment outcomes, and then applies a DID framework to estimate treatment effects. We implement this approach using a two-way fixed effects model to estimate the average causal effect of exposure, comparing post-treatment outcomes relative to the counterfactual synthetic control group while accounting for pre-treatment differences, as specified in the model below:

$$Y_{it} = \alpha + \tau D_{it} + \lambda_t + \mu_i + \epsilon_{it}$$

where:

- Y_{it} is one of four outcome variables for MSA i at time t, labor force participation rate, unemployment rate, hourly wage, and total hours worked.
- α is the constant term.
- τ is the treatment effect of interest, capturing the impact of the Mariel Boatlift on women's labor market outcomes.
- D_{it} is a binary treatment indicator, equal to 1 if MSA i is affected by the Mariel Boatlift at time t, and 0 otherwise.

Arlington, TX; Greensboro-Winston Salem, NC; Nassau-Suffolk, NY; Norfolk-Virginia Beach-Newport News, VA; Rochester, NY; and Sacramento, CA.

- λ_t represents time fixed effects, controlling for macroeconomic shocks and national trends affecting all MSAs equally, such as business cycle fluctuations or federal labor policies.

- μ_i represents unit fixed effects, accounting for time-invariant characteristics specific to each MSA, such as historical labor market conditions, industrial composition, or demographic structure.

- ϵ_{it} is the error term, capturing unobserved factors that vary across MSAs and over time.

This model assumes parallel trends, which SDID relaxes by reweighting. The following objective function defines the SDID estimator.

$$(\hat{\tau}^{\text{sdid}}, \hat{\alpha}, \hat{\mu}, \hat{\lambda}) = \arg\min_{\tau,\alpha,\lambda,\mu} \left\{ \sum_{i=1}^{N} \sum_{t=1}^{T} \left(Y_{it} - \alpha - \mu_i - \lambda_t - D_{it}\tau\right)^2 \omega_i^{\text{sdid}} \lambda_t^{\text{sdid}} \right\} \tag{1}$$

The method constructs the synthetic control group by utilizing 1) unit weights ω_i^{sdid} to align the pre-treatment outcome trends of control units with those of the treated unit, similar to SCM; and 2) time weights λ_t^{sdid} to balance pre-exposure and post-exposure periods, controlling for time-specific shocks and improving comparability across time. Together, the unit weights ensure that the synthetic control reflects Miami's pre-treatment labor market trends, while the time weights account for temporal shifts, providing a more precise estimate of the treatment effect. We employ the placebo method for standard error estimation due to the limited number of treated units in our study. Specifically, Miami (post-1980) serves as the treated unit, and placebo inference is better suited for contexts when there is more control than treated unit. By contrast, bootstrap or jackknife procedures require a large number of treated units to ensure valid statistical inference (Arkhangelsky et al., 2021).

For the SDID estimator to yield a valid causal estimate, three key assumptions must hold. First, we assume no interference, meaning the Mariel Boatlift in Miami does not affect the outcomes of other MSAs in the control group. Second, we rely on a weighted parallel trends assumption: in the absence of the Mariel Boatlift, the average outcomes for Miami would have followed the same trajectory as a weighted combination of control units and pre-treatment time periods. This assumption underpins the credibility of the synthetic comparison group. Third, the inclusion of unit and time fixed effects is assumed to sufficiently control for time-invariant differences across units and for shocks that are common to all units in a given period.

5.2 Advantages

In this section, we compare the SDID estimator with both DID and SCM, emphasizing the advantages of SDID. Specifically, we show how SDID integrates the strengths of both methods while addressing their key limitations related to parallel trends, subjectivity in control group selection, and sensitivity to pre-treatment imbalances.

The traditional DID estimator calculates the treatment effect using a two-way fixed effects model, without constructing a synthetic control group. It is estimated by solving the following objective function:

$$(\hat{\tau}^{\text{did}}, \hat{\alpha}, \hat{\mu}, \hat{\lambda}) = \arg\min_{\tau,\alpha,\lambda,\mu} \left\{ \sum_{i=1}^{N} \sum_{t=1}^{T} (Y_{it} - \alpha - \mu_i - \lambda_t - D_{it}\tau)^2 \right\} \tag{2}$$

As shown, DID assigns equal weight to all control units and time periods, and relies on researcher-specified control groups. Its identification strategy hinges on a strict parallel trends assumption between treated and control units. When pre-treatment trends diverge, this assumption may be violated, leading to biased estimates.

SCM offers an alternative approach by constructing a weighted combination of control units to approximate the level of pre-treatment outcomes for the treated unit. The SCM estimator is obtained by solving:

$$(\hat{\tau}^{sc}, \hat{\alpha}, \hat{\lambda}) = \arg\min_{\alpha,\lambda,\tau} \left\{ \sum_{i=1}^{N} \sum_{t=1}^{T} (Y_{it} - \alpha - \lambda_t - D_{it}\tau)^2 \omega_i^{sc} \right\} \tag{3}$$

While SCM improves upon DID by constructing a synthetic control group that better fits the treated unit's pre-treatment outcomes, it comes with limitations. Specifically, it emphasizes matching levels rather than trends, which can be restrictive when the outcome paths differ across units. Moreover, SCM does not include unit fixed effects or time weights, and it requires the researcher to manually select predictor variables, introducing subjectivity.

SDID combines the strengths of both DID and SCM while addressing their core limitations. From DID, it inherits the use of unit and time fixed effects, enabling valid inference in large panels and controlling for unobserved heterogeneity. From SCM, it adopts a data-driven approach to construct a synthetic control group that closely resembles the treated units in terms of pre-treatment outcome trends. Unlike DID, SDID reduces the risk of violating the parallel trends assumption by optimizing weights to match the pre-treatment trajectory of treated units. Unlike SCM, it avoids subjective covariate selection and incorporates unit fixed effects and time weights to enhance robustness.

In sum, SDID offers a flexible, transparent, and empirically robust approach to causal

inference in panel settings. By integrating the strengths of DID and SCM while mitigating their limitations, SDID has been shown to match or outperform both methods across a range of applications (Arkhangelsky et al., 2021).

6 Main Results

This section presents our empirical findings. First, we examine the short-term effects of the Mariel Boatlift on Miami's native female labor market outcomes. Second, we conduct robustness checks to validate our main results.

6.1 Short-term Effects

We first examine the short-term effects of the Mariel Boatlift. **Table 1** presents summary statistics for labor force participation, unemployment to population ratio, hourly wage, and hours worked among non-Cuban females in Miami before and after the Boatlift. While there is a slight decrease in the wage rate and increase in hours worked, our data show a substantial short-term negative impact on native female labor force participation (declining by 2.61 percentage points) and unemployment (increasing by 2.40 percentage points) within four years. These results suggest that the Boatlift may have had an immediate adverse effect on the labor market outcomes for this demographic.

To further investigate whether these negative impacts can be attributed directly to the Mariel Boatlift or if they reflect broader trends affecting other areas, we apply the SDID method to construct a synthetic control group. This approach allows us to compare Miami's outcomes with a weighted combination of MSAs selected from a donor pool of 32 MSAs, which exhibited similar labor market outcomes before the Boatlift. **Table 2** presents the estimated short-term treatment effects of the Mariel Boatlift on non-Cuban female labor market outcomes, focusing on labor force participation, unemployment rates, hours worked, and average wages, using SDID, DID, and SCM methods. In Panel A, the SDID results reveal a statistically significant reduction of labor force participation by approximately 4.85 percentage points, while unemployment rates increased by 2.59 percentage points, also statistically significant at the 5% level. The weights of the donor pool are presented in the Appendix Table A2.

Interestingly, women's wages and working hours do not show significant effects across any of the methods, suggesting that the intensive margin of labor supply remained stable despite notable changes in labor force participation and unemployment. One likely explanation is that adjustments occurred primarily at the extensive margin, with individuals entering or

exiting the labor force rather than modifying the number of hours worked. Both wages and hours may also reflect institutional rigidity because employed women may hold jobs with fixed schedules or be subject to contractual norms that limited flexibility in adjusting hours or compensation. Additionally, selection effects may mask the true impact: since wage and hours data are only available for individuals who remain employed, those most adversely affected may have exited the labor force altogether. As a result, observed averages could over-represent more resilient or higher-productivity workers. These mechanisms collectively underscore the complexity of interpreting intensive margin outcomes in the aftermath of immigration shocks like the Mariel Boatlift. Together, these mechanisms highlight the complexity of interpreting wage and hour outcomes in the context of labor market shocks like the Mariel Boatlift.

To compare SDID estimates with the traditional methods, we also produce DID and SCM estimates based on the same model specification (Panel B). When comparing across methods, DID produces similar estimates for labor force participation but lacks statistical significance for unemployment effects. SCM, on the other hand, yields estimates for both outcomes that are smaller in magnitude and less significant compared to SDID. These discrepancies emphasize the advantages of the SDID approach. Unlike DID, which relies heavily on the parallel trends assumption, and SCM, which does not incorporate time weights, SDID balances pre-treatment trends and accounts for time-varying confounders, resulting in more reliable causal estimates. In summary, SDID's advantages in accounting for both unit-level and time-specific shifts provide a clearer picture of the Mariel Boatlift's impact on female labor market outcomes, reinforcing the conclusion that the immigration shock caused a significant decline in labor force participation and an increase in unemployment for non-Cuban women in Miami.

Unlike the DID and SCM literature (Borjas, 2017; Peri and Yasenov, 2019; Billy and Packard, 2022), we do not include demographic controls to refine the donor pool further, as SDID does not depend on covariates for constructing the control group.[9] SDID matches pre-treatment outcome trends and ensures that the synthetic control group closely resembles the treated unit. This approach reduces subjective decision-making by basing the weighting process entirely on outcome trends rather than researcher-specified predictors.

The above DID and SCM estimates are generated using all non-Miami MSAs as control group and without control variables in DID and selecting synthetic control based on outcomes in SCM, which may not be fair to DID and SCM methods. To compare SDID with the more

[9]Even when we include demographic controls such as age, education levels, and race, the results remain similar in magnitude to our main findings and retain statistical significance, indicating that the treatment effect is robust even after controlling for demographic factors.

refined versions of DID and SCM, we re-estimate the DID and SCM models with demographic controls, as well as using Cards' placebo in DID estimation (Panel C). Notably, none of the models detect a significant impact on wages or hours worked. DID with demographic controls shows a significant negative effect on labor force participation, similar to SDID. However, unemployment becomes insignificant in this specification. SCM with demographic controls do not show any significant effects at all on all outcome variables. DID with Card's placebo shows similar estimates as in SDID. However, the impact on labor force participation is now weakly significant. Overall, SDID produces more precise estimates while maintaining statistical significance, suggesting that it effectively balances flexibility and robustness.

To further explore the dynamics underlying these estimated effects, **Figure 1** plots the SDID-estimated outcomes over time, allowing for a visual comparison of labor market trends between Miami and its synthetic counterpart. This figure clarifies whether the estimated treatment effects are driven by worsening outcomes in the treated unit or by improvements in the control group. In each panel, the red line represents labor market outcomes in Miami, while the blue dashed line depicts the trajectory of the synthetic control constructed from similar MSAs. The two groups exhibit parallel trends prior to the Boatlift, which supports that synthetic control as a valid counterfactual for Miami. After 1980, however, the trends diverge: Miami exhibits a pronounced drop in labor force participation and an increase in unemployment, while the control group remains relatively stable. This pattern reinforces the conclusion that the Mariel Boatlift led to a distinct and adverse shock to Miami's female labor market outcomes, rather than reflecting broader regional labor market shifts. While the average treatment effect on wages is not statistically significant, the event study suggests a temporary dip in wage rates in 1982, followed by a quick rebound in 1983. Total hours worked do not appear to diverge from the control group over the study period.

To complement the average treatment effects and the SDID figures, **Figure 2** presents event study SDID estimates for non-Cuban female labor outcomes. The figure plots the estimated coefficients on the treatment indicator interacted with each year, allowing us to examine the dynamic evolution of the Mariel Boatlift's effects and assess their statistical significance over time. Each panel displays yearly point estimates (blue dots) with 95% confidence intervals (shaded areas), allowing for a visual inspection of the timing, direction, and magnitude of the treatment effects. Panel (a) shows that labor force participation for non-Cuban females in Miami remained relatively stable before the Boatlift, followed by a clear downward trend after 1980. The effect becomes statistically significant in the second year post-treatment, indicating a substantial decline in women's labor force attachment. Panel (b) depicts an increase in unemployment in year 1 and peaking in year 2, and the estimates are statistically significant at conventional levels. Panel (c) reveals a temporary and

statistically significant decline in wages in year 1, suggesting that for women who remained employed, earnings were briefly affected during the early post-Boatlift years. However, this effect dissipates quickly, with no consistent wage impact observed in later periods. Panel (d) shows that total hours worked increased during the post-treatment years, though the estimates are noisy and not statistically different from zero. Together, these plots highlight that the Mariel Boatlift had the most pronounced short-term effects on women's labor force participation and unemployment and, to a lesser extent, wages, in the first two years after the shock. The full set of underlying estimates is reported in Appendix Table A3.

We conducted a similar analysis for the non-Cuban male group to compare with previous studies. The weights of the donor pool are presented in the Appendix Table A4. The regression results in Appendix Table A5 show that only total working hours increase significantly, while the effects on labor force participation, unemployment, and average wages are not statistically significant across all methods (SDID, DID, and SCM). This is consistent with Card (1990); Peri and Yasenov (2019); Clemens and Hunt (2019). This lack of effects on native men suggests that Mariel Boatlift's labor market impacts were primarily concentrated on women, highlighting the unique vulnerabilities and challenges faced by female workers in the labor market during this period.

6.2 Robustness checks

SDID relies on the Stable Unit Treatment Value Assumption (SUTVA) that there is no interference between units (i.e., no spillover effects from Miami to other MSAs). To validate these findings, we conduct several robustness checks in **Table 3** by implementing several restrictions on our donor pool. Since neither wages nor hours worked show large or significant effects, our subsequent analysis focuses on labor force participation and unemployment.

First, to mitigate potential spillover effects from the Mariel Boatlift, we exclude MSAs that may have received Marielitos. We adopt Card (1990)'s method by identifying these MSAs using the 1985 March Current Population Survey (CPS), which provides data on foreign immigrants aged 19–65 who resided abroad prior to March 1980 and their location as of 1985—a proxy for post-Boatlift migration to the U.S.[10] We acknowledge that this approach only captures immigrants' locations as of 1985, and some may have moved elsewhere during the analysis period. The detailed distribution of these immigrants across MSAs is presented in Appendix Table A6. Excluding potentially affected MSAs from our donor pool helps isolate the treatment effect by minimizing contamination from secondary migration patterns. As shown in Panel A(1) of **Table 3**, the estimated effects remain qualitatively

[10]While we do not observe immigrants' specific countries of origin, this serves as a reasonable proxy.

and quantitatively similar to our baseline specifications, with comparable magnitudes and statistical significance.

Additionally, we exclude MSAs in states adjacent to Florida (specifically, those in Alabama and Georgia) from the donor pool to address potential spatial spillovers. Given the geographic proximity and lower migration costs, Marielitos could plausibly relocate to these nearby labor markets, which would violate the SUTVA and contaminate our control group. After implementing these geographic restrictions, our estimates again remain similar (Panel A (2)).

Given the significant labor market impact of the foreign immigrant influx in Miami, it is important to rule out the possibility that other MSAs experienced similarly high levels of immigration, which could confound our analysis. To address the potential presence of substantial foreign immigration in other MSAs during this period, we impose restrictions on the donor pool based on immigrant supply shock levels. Using 1985 CPS data, we identify the number of foreign immigrants who arrived in each MSA between 1980 and 1985.[11] Following Borjas et al. (1997); Peri (2012); Peri et al. (2015); Dustmann et al. (2017); Zuchowski (2023), we define the immigrant supply shock as immigration relative to the initial workforce, measured as the percentage of newly arrived immigrants over the pre-existing population:

$$\Delta m_i^{1980-1985} = \frac{\text{New Immigrants}_i^{1980-1985}}{\text{Total Population}_i^{1980}}$$

This measure allows us to identify MSAs that experienced significant immigration inflows, ensuring that Miami's labor market changes were not merely part of a broader national trend. As reported in Appendix Table A7, Miami exhibited the highest immigrant supply shock, at 9.16%, confirming that it was uniquely affected by immigration during this period. To mitigate the risk of contamination from concurrent immigration events, we impose exclusion thresholds of 4%, 3%, and 2% on immigrant supply shock, systematically removing MSAs with relatively high levels of immigration from the donor pool. This approach ensures that the control group is composed of MSAs with relatively low immigration inflows, enhancing the validity of our counterfactual and isolating the effects of the Mariel Boatlift on Miami's labor market. Across all specifications, our results remain consistent in both sign and statistical significance, demonstrating the robustness of our findings to different donor pool restrictions (Panel B).

To further assess the robustness of our results, we refine our donor pool selection by considering population size comparability between Miami and other MSAs. To construct a more comparable donor pool, we restrict our control group to include only MSAs with

[11] This is the only CPS dataset that includes immigration information before and after the Mariel Boatlift.

population sizes closest to Miami. Appendix Table A8 Panel C shows the MSAs ranking by population size, where Miami ranks 23rd. We restrict the donor pool to the 10 MSAs ranked immediately above and below Miami, ensuring that our synthetic control is constructed from cities of similar scale. This restriction does not alter our main results, which remain statistically significant and consistent, reinforcing the causal interpretation of the impact of Mariel Boatlift on Miami's labor market.

7 Heterogeneity Analysis

To gain a deeper understanding of the Mariel Boatlift's impact, we conduct a heterogeneity analysis in **Table 4** by dividing the sample into subgroups based on race, education, marital status, parental status, and age. This approach allows us to identify which demographic groups among the female population were most affected by the influx of immigrants.

7.1 Race

We first examine heterogeneity by native racial subgroups - non-Hispanic White, non-Hispanic Non-White, and Hispanics as shown in Panel A.[12]The results show that Non-Hispanic White women experienced the largest and statistically significant decline in labor force participation (-5.80 percentage points) and an increase in unemployment (1.94 percentage points) after the Mariel Boatlift. In contrast, the Non-Hispanic Non-White and Hispanic groups showed no statistically significant changes in either labor force participation or unemployment. This finding aligns with earlier research suggesting that native Hispanics were not negatively affected by the Mariel Boatlift (Clemens and Hunt, 2019).

While Clemens and Hunt (2019) argue that the observed effects of the Boatlift may be driven by an increase in Black workers that shifted the post-Boatlift racial composition in the Current Population Survey (CPS), our findings suggest otherwise. Even when restricting the analysis to Non-Hispanic White workers, excluding Black workers from the sample, the estimates remain significant, reinforcing that Mariel Boatlift's effects are not solely attributable to racial composition shifts but reflect true labor market dynamics.

7.2 Marital Status and Parental Status

We next examine heterogeneity in treatment effects by household structure, focusing on marital and parental status. We find that negative impacts of the Mariel Boatlift on labor

[12]Due to small sample sizes for certain racial groups, such as Black women, we aggregate them into a broader Non-White category to ensure sufficient statistical power.

force participation and unemployment are most pronounced for married women (Panel B) and women with children (Panel C). Both groups experienced significant declines in labor force participation and increases in unemployment following the Boatlift. In contrast, non-married women and women without children did not leave the labor force, even though they experienced increased unemployment. These patterns suggest that caregiving responsibilities and access to spousal income play important roles in shaping women's labor market responses to immigration shocks.

Economic theory helps explain this divergence. According to Becker (1993), household production theory implies that women, particularly married women and mothers, must allocate time between market work and non-market responsibilities such as childcare and domestic labor. When economic conditions worsen or job opportunities become scarce due to increased competition from immigrants, these women may prioritize home production and exit the labor force. This is further supported by labor supply theory, which emphasizes the income effect (Mincer, 1962). In dual-income households, married women may withdraw from paid employment if the household can be sustained on the spouse's income alone.

These responses are also consistent with the social context of the early 1980s. At that time, traditional gender roles were more prominent; census data from U.S. Census Bureau (1981) report that half of all married women were not in the labor force, many serving as full-time homemakers. As a result, married women and mothers—already positioned closer to the labor force margin—were more likely to respond to an immigration shock by leaving the workforce. In contrast, non-married women and those without children, lacking alternative sources of household income or caregiving constraints, were more likely to stay in the labor force despite facing higher unemployment.

Together, these findings underscore the importance of household structure in shaping how native women respond to large immigration shocks. Marital and parental responsibilities not only influence labor supply decisions, but also amplify economic vulnerability during periods of disruption.

7.3 Age

To better understand age-specific responses to the Mariel Boatlift to see if the results are driven by older women leaving the labor force, we examine heterogeneous effects by age group - younger working-age women (age 19-45) and older working-age women (age 46-65). Panel D presents the results, showing that the negative labor market impacts are concentrated among younger women, who experienced significant declines in labor force participation and increases in unemployment. This group is typically in the early or middle stages of their

careers and may face greater employment instability or weaker labor market attachment, making them more vulnerable to immigration shocks.

In contrast, women over the age of 45 may be more likely to be in stable jobs, which may insulate them from short-term economic disruptions. These findings suggest that the labor market exits observed are unlikely to be driven by retirement decisions, but rather reflect younger women's heightened exposure to labor market competition and displacement. Their limited work experience and weaker labor market bargaining power may contribute to their sensitivity to sudden changes in labor demand.

7.4 Education

We then examine the effects by education - high school dropouts, high school graduates, some college or higher (Panel E). The analysis reveals a significant increase in unemployment for lower-educated groups, particularly high school dropouts and those with only a high school diploma. This supports the hypothesis that these groups faced direct competition from the incoming Marielitos, who were largely low-skilled, leading to unemployment. However, we do not observe a significant change in labor force participation for this group, indicating that unemployed individuals remained active in the labor force, continuing to seek employment. By examining occupational patterns in Appendix Table A9, we find that less-educated native females primarily held clerical, operative, and service jobs, similar to those of female Marielitos. This created competition for native females in approximately 68% of jobs held by high school dropouts and 34% by high school graduates. Moreover, male Marielitos, particularly those with lower education levels, also take similar roles, with 65% of high school dropouts and 43% of high school graduates occupying positions in these sectors. The influx of Marielitos, therefore, intensified labor market pressures for native women in these job categories, likely contributing to increased unemployment among less-educated native females.

In contrast to less-educated groups, the decline in labor force participation was more pronounced among highly educated women, although this group did not experience a corresponding increase in unemployment. This pattern suggests limited direct job displacement, pointing instead to other mechanisms driving labor force exit. Appendix Table A9 shows that native college-educated women were primarily employed in professional and clerical occupations: about 29% worked as professors, nearly 40% in clerical roles and 13% as managers. Female Marielitos had minimal representation in these occupations, with only about 14% overlap with the jobs held by native college-educated women. However, male Marielitos were more likely to enter these higher-skilled occupations, with 59% employed as managers, clerical workers, or professors, covering roughly 82% of the occupational categories held by

highly educated native women. This substantial overlap suggests the potential for indirect competition, even if it is not reflected in higher unemployment.

7.5 The Decline of High-skilled Native Women's Labor Force Participation

To understand why high-skilled native women are exiting the labor force, we examine several potential factors based on the labor supply theory as a result of immigrant influx. Specifically, we evaluate if there is a 1) decrease in wage rate; 2) increase in non-labor income; 3) increase in the value of non-market time; 4) preference change.

First, we test whether wage rates declined among high-skilled women due to increased immigrant labor supply. If market wages fall below high-skilled women's reservation wages, defined as the minimum compensation they are willing to accept for market work, this could lead to voluntary withdrawal from the labor force, as predicted by the theory. We explore this wage-based mechanism in **Figure 3**, which presents event study SDID estimates of short-term treatment effects. Panel (a) shows a significant wage decline in the first year after the Boatlift, followed by a return to baseline levels. This temporary drop in earnings provides empirical support for the hypothesis that some highly educated women exited the labor market in response to reduced wage offers, consistent with the theory that participation decisions hinge on the trade-off between market wages and the value of non-market time.

Second, we examine potential alternative sources of income that may influence labor force participation. As discussed in (Blau and Winkler, 2021), increases in non-labor income can reduce individuals' incentives to participate in the labor market. The influx of immigrants may stimulate demand for goods and services and provide a supply of low-cost labor, enabling firms to expand and increase profits, as well as increasing rental income for property owners. These dynamics could disproportionately benefit well-off households, where highly skilled native women are more likely to originate, potentially raising their non-labor income and contributing to reduced labor force attachment.

In particular, we focus on three alternative income sources that may influence women's labor supply decisions: spousal wages, total family income, and non-labor income. Spousal wage reports the total wage and salary income earned by the respondent's spouse in the previous calendar year, based on the attached characteristics file. Total family income is calculated as the total income of all adult household members, excluding the respondent. Non-labor income captures income not derived from wages, salaries, or self-employment.

Given that approximately 89% of highly educated women in our sample are married, spousal income represents a particularly relevant factor. As shown in Panel (b) of **Figure 3**,

there is no statistically significant change in spousal wages following the Mariel Boatlift. We next examine total family income in Panel (c), which shows a temporary and statistically significant increase in year 0 but no persistent effects in subsequent years. This spike may reflect short-term adjustments rather than sustained changes in household earnings. Finally, Panel (d) shows the trend in non-labor income, which reveals a significant increase in year 3. Together, these results suggest that alternative income sources may play a role in the observed labor force exit among highly educated women.

Third, we discuss if immigration may have led to changes in life decisions of native women that increases their value of non-market time. Furtado (2015) examines the impact of low-skilled immigration on highly educated native women's labor supply and fertility decisions by using variation in immigrant inflows across U.S. MSAs between 1980 and 2000. Using a bivariate probit model and an IV strategy based on historical immigrant settlement patterns, she finds that the increased availability of affordable household services, driven by low-skilled immigration, is associated with higher fertility among highly educated women and a temporary decline in their labor force participation. We try to evaluate this channel by examining the fertility rate among highly educated native women in Miami. However, the sample size is too small to explore further.[13] Regardless, recent literature suggests that this is a possible factor.

Fourth, beyond labor market mechanisms such as wage competition or alternative income sources, changes in preferences and perceived community conditions may also help explain the labor force exit among highly educated women. One plausible explanation is the phenomenon of "white flight" documented in Miami during the early 1980s (Billy and Packard, 2022).[14] Sociologist Aguirre (1994) noted that public concerns about the Marielitos were amplified by negative stereotypes, describing them as "young, Black, unmarried, shiftless, and dangerous." These perceptions were further fueled by reports of rising crime, with news outlets highlighting that Miami's 1980 murder rate was 25% higher than that of any other major U.S. city (United Press International, 1981). Marielitos entered the United States with a growing anti-immigrant movement that contributed to a largely hostile reception (Stephens, 2021). This likely exacerbates public fears and prompts females, particularly those with higher education levels, to exit the labor force. This phenomenon aligns with findings by Borjas (2006), who showed that immigration can increase native out-migration

[13]Seah (2018) shows that Mariel Boatlift reduced overall fertility rates in Miami, but the sample size was rather small. With an average annual sample size of approximately 160 women aged 15 to 44 in Miami, and a fertility rate ranging from 0.033 to 0.093 over time, this translates to only about 5 to 14 births per year in the sample. Additionally, it does not account for heterogeneous effects by education level.

[14]White flight refers to the large-scale migration of white residents from racially diversifying areas, particularly urban centers, to suburban or less diverse regions. This phenomenon primarily affected middle-class white individuals with higher incomes and levels of education, who had the financial means to relocate.

rates, leading to a decline in the growth of the native workforce. The labor force participation rate of more educated women could be negatively impacted if there is a positive selection in out-migration. Prior studies support this trend, showing that educated individuals are more likely to migrate due to their transferable skills and adaptability (Haapanen and Böckerman, 2017; Greenwood, 1997).

To complement our analysis of highly educated women, we apply the same set of event study analyses to low-skilled women, specifically those with only a high school diploma or who did not complete high school, as shown in **Figures 4 and 5**. This comparison helps us understand why these groups, despite experiencing rising unemployment, do not exit the labor force in significant numbers. Panel (a) in both figures shows an upward trend in wages following the Boatlift, with a significant increase for high school graduates. One possible explanation is a selection effect, where only the most employable or productive individuals remained in the labor market, leading to higher observed average wages. Alternatively, if market wages exceeded the reservation wages, defined as the minimum compensation individuals are willing to accept for paid work, these women would have been more likely to remain in the labor force despite broader labor market disruptions.

Another potential explanation lies in their limited access to alternative income sources. For high school dropouts (**Figure 4**), spousal wages, family income, and non-labor income remain relatively flat throughout the post-Boatlift period. In contrast, high school graduates (**Figure 5**) experience a significant decline in non-labor income. These findings suggest that, unlike their highly educated counterparts, low-skilled women may not have had the financial flexibility to voluntarily withdraw from the labor market. The decline in non-labor income in particular may have reinforced the need to remain in the labor force, even in the face of worsening employment conditions.

8 Long-term Results

Finally, we analyze the long-term impacts of the immigration shock. Although the percentage of less-educated individuals in Miami returned to pre-Boatlift levels by 1985, it is important to examine whether the labor market effects of the Mariel Boatlift were temporary or enduring. Using data from 1976 to 1993, one year before the Little Mariel Boatlift of 1994, we estimate the long-term effects on female labor force participation and unemployment rates. **Table 5** presents the SDID results for the long-term analysis. The findings indicate that the negative impact on female labor force participation persisted well beyond the short-term period. Specifically, SDID estimates a 6.58 percentage points decline in labor force participation and an increase of 2.47 percentage points in unemployment rates, which

are statistically significant. The magnitudes of these effects are comparable to the short-term results, suggesting that the Mariel Boatlift had lasting implications for the local labor market.

Figure 6 provides visual evidence of these long-term effects. In Panel (a), we observe that labor force participation among the treated group consistently underperforms the synthetic control group, with the gap widening after 1980 and persisting through the early 1990s. Panel (b) displays a similar trend for unemployment, with a noticeable divergence emerging in the mid-1980s.

To further investigate the dynamic evolution of these effects, we present the event study SDID estimates in **Figure 7**. Panel (a) reveals a statistically significant lower female labor force participation in Miami compared to the synthetic control throughout most of the treated periods, except for 1987–1989. In Panel (b), we observe a significant higher unemployment rate in Miami compared to the control group for a majority of the treated period as well. The full set of underlying estimates is reported in Appendix Table A10. In the years that the effects are not statistically significant, the signs of the effects are mostly consistent with other years. These patterns suggest that the labor market did not fully recover from the initial shock, and the disruption caused by the Boatlift had long-lasting implications for female employment outcomes.

Together, these findings emphasize that labor markets may not fully adjust to large-scale immigration shocks in the long run. The persistence of adverse effects highlights the need to consider both immediate and extended consequences when evaluating the impacts of immigration. Policymakers should take these long-term dynamics into account, especially when crafting responses aimed at supporting vulnerable groups affected by such demographic shifts.

9 Conclusion

Our study revisits the Mariel Boatlift and employs the Synthetic Difference-in-Differences (SDID) method to generate robust causal estimates of immigration's impact on native women's labor market outcomes, offering a renewed perspective on this historic event. While previous Mariel Boatlift research has primarily focused on men or the general population, our analysis contributes to the literature by emphasizing the understudied effects on women. Specifically, we examine both the extensive and intensive margins of labor market activity, including labor force participation, unemployment, wages, and hours worked.

Our results show that the Mariel Boatlift led to a significant decline in female labor force participation and an increase in unemployment, with these effects remaining substantial in

both the short and long run. These patterns align with findings from recent refugee studies. For instance, Ceritoglu et al. (2017) report adverse employment effects but limited wage changes following the Syrian refugee inflow to Turkey, suggesting that immigration shocks often affect employment more than earnings—especially among vulnerable groups.

Our heterogeneity analysis further identifies the most adversely affected groups, including non-Hispanic white women, married women, women with children, and younger women, who experienced negative impacts on both labor force participation and unemployment. For education-level subgroups, our analysis shows a significant substitution effect for less-educated women, with substantial increases in unemployment among this group. However, highly educated women do not experience unemployment. Instead, they drop out of the labor force, potentially because of a decrease in wage rate, an increase in non-labor income and the value of non-market time, or out-migration patterns.

Our results offer a different perspective from the existing literature that suggests immigrant inflows increase highly educated women's labor force participation (Cortes and Tessada, 2011; East and Velásquez, 2024; Pedrazzi and Peñaloza-Pacheco, 2023). Instead, we find evidence that immigration can discourage participation, adding a second voice to this debate and encouraging future research to explore the nuanced impacts of immigration on native women using alternative methods, datasets, and contexts. Moreover, the Mariel Boatlift provides important lessons for the refugee influx in some developing countries, where female labor force participation and socioeconomic conditions are comparable to Miami during this period.

These findings highlight the importance of considering gender-specific labor market responses when designing immigration policies. Women constitute a significant and growing portion of the labor force but often face unique labor market barriers, making them more vulnerable to immigration shocks. Our results suggest that married women and women with children were disproportionately impacted by the Boatlift, indicating that family or childcare responsibilities amplified their vulnerability. To mitigate such vulnerabilities, policymakers may wish to explore interventions aimed at supporting women's re-entry into the labor market following economic disruptions. Expanding access to affordable childcare and promoting family-friendly workplace policies could help women balance work and caregiving responsibilities.

Finally, while the Marielitos were predominantly low-skilled compared to today's immigrant populations, the Boatlift offers a valuable baseline for understanding the impact of large-scale immigration shocks. Our findings provide insights that can inform contemporary immigration policy, emphasizing the need for inclusive, gender-aware approaches to managing immigration and its labor market effects.

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Tables

Table 1: Summary Statistics of Labor Market Outcomes for Non-Cuban Females in Miami Pre and Post the Mariel Boatlift

Dependent Variables	**Pre-Boatlift**	**Post-Boatlift**
Labor force Participation (%)	63.62	61.01
Unemployment (%)	3.17	5.57
Average Wage ($)	5.53	5.48
Total Hours Worked	1609.24	1688.03

Notes: Data are from the March 1976–1984 Current Population Survey (CPS). The sample is restricted to female respondents (`sex == 2`), non-Cuban individuals (`hispan != 300`), and residents of Miami (`metarea == 5000`). The years 1976–1980 correspond to the pre-Boatlift period, capturing labor market conditions prior to the arrival of Mariel Cubans in April 1980, while 1981–1984 correspond to the post-Boatlift period. The 1976–1980 CPS includes 1,112 individuals in Miami, and the 1981–1984 CPS includes 913 individuals. We report the average values of the outcome variables across individuals. All wage values are adjusted for inflation and expressed in 1980 dollars. Our labor force participation rate is higher than the 51% documented by the St. Louis Fed for that period (Federal Reserve Bank of St. Louis, 2023). The reason is because our sample is restricted to non-Cuban women aged 19–65. Removing the age and non-Cuban filters drops the LFP to 51.85%, which aligns with that reported by the St. Louis Fed.

Table 2: Estimated Short-term Treatment Effects on Non-Cuban Female Labor Market Outcomes

Methods	Labor Force Participation (%)	Unemployment (%)	Wage ($)	Hours Worked	N
Panel A:					
SDID	-4.84*	2.59**	-0.06	27.38	297
	(2.55)	(1.14)	(0.27)	(39.13)	
Panel B:					
DID	-7.11***	1.54	-0.05	29.85	297
	(2.63)	(1.18)	(0.25)	(39.37)	
SCM	-4.50*	2.16	-0.109	-7.633	297
	(2.93)	(1.34)	(0.37)	(42.84)	
Panel C:					
DID with demographic controls	-5.11**	1.76	-0.04	12.42	297
	(3.09)	(1.10)	(0.21)	(48.00)	
DID with Card's placebo	-4.57*	2.19***	-0.22	48.57	45
	(2.74)	(0.60)	(0.20)	(31.97)	
SCM with demographic controls	-2.75	1.83	-0.07	27.68	297
	(2.63)	(1.28)	(0.20)	(59.37)	

Notes: Data are from the 1976–1984 March CPS. The sample includes non-Cuban women aged 19–65. The treatment group consists of Miami residents observed after 1980. The sample size (N) represents the number of MSAs 33 $\times$ 9 years. In Panel A, estimates are derived using SDID methods. The donor pool comprises 32 metropolitan areas included in the 1976 CPS. Panel B presents different model specifications for DID and SCM in estimating the impact of the Mariel Boatlift on female labor market outcomes. In Panel C, the DID and SCM models with controls incorporate demographic variables such as age and race. Card's placebo specification follows Card (1990), which computes group-level averages (e.g., wages, unemployment) by demographic group, year, and city, using four cities—Atlanta, Los Angeles, Houston, and Tampa-St. Petersburg—as the control group. We replicate this structure by aggregating CPS microdata to the MSA-year level to obtain the DID estimates. Standard errors computed via the placebo method with 1000 repetitions, are reported in parentheses. Significance levels are denoted as follows: * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 3: Robustness Check on Estimated Treatment Effects on Female Labor Market Outcomes Using SDID

Robustness Checks	**Labor Force Participation (%)**	**Unemployment (%)**	**N**
Panel A: Spillover			
(1) Exclude Spillover Destinations	-5.25**	2.39*	225
	(2.29)	(1.24)	
(2) Exclude Adjacent MSAs	-5.70**	2.68**	279
	(2.65)	(1.16)	
Panel B: Immigrant growth			
(1) Exclude Immigrant growth $> 4\%$	-4.73*	2.64**	225
	(2.69)	(1.19)	
(2) Exclude Immigrant growth $> 3\%$	-5.62*	2.77**	198
	(2.96)	(1.30)	
(3) Exclude Immigrant growth $> 2\%$	-4.98*	3.00**	162
	(3.03)	(1.43)	
Panel C: Population			
(1) Refine Population Ranking	-4.96*	2.74**	189
	(2.76)	(1.40)	

Notes: Data are from the 1976-1984 March CPS, with a sample of non-Cuban females aged 19-65. The sample size (N) represents the number of MSAs $\times$ 9 years. The treatment group comprises individuals in Miami after 1980. The donor pool consists of 32 MSAs from the 1976 CPS. To refine the donor pool for more precise estimates, we implement multiple restrictions. In panel A, spillover Exclusion removes MSAs that received Marielitos to isolate the treatment effect; adjacent MSA Exclusion (Table A4) removes MSAs neighboring Florida to control for regional spillover effects. In panel B, immigrant shock restrictions (Table A5) exclude MSAs with similar immigration influx levels at 2%, 3%, and 4% thresholds. In panel C, population size restrictions (Table A6) limit the donor pool to the 10 MSAs ranked immediately above and below Miami to ensure comparability. Regression estimates are obtained using Synthetic Difference-in-Differences (SDID). Standard errors computed via the placebo method with 1000 repetitions, are reported in parentheses. Significance levels: * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 4: Heterogeneous Effects of Demographics on Market Outcomes for Non-Cuban Women Using SDID

Subgroup: Non-Cuban	**Labor Force Participation (%)**	**Unemployment (%)**	**N**
A: Race			
Non-Hispanic White	-5.80**	1.94*	297
	(2.91)	(1.01)	
Non-Hispanic Non-White	-3.51	-0.79	297
	(8.14)	(4.64)	
Hispanic	-5.82	6.61	225
	(12.36)	(4.70)	
B: Marital Status			
Married	-9.18***	1.79*	297
	(3.19)	(1.05)	
Non-Married	-2.19	3.89**	297
	(4.25)	(1.71)	
C: Parental Status			
Children	-9.94***	2.62*	297
	(3.48)	(1.51)	
No Children	1.50	3.27**	297
	(3.44)	(1.33)	
D: Age			
Age 19-45	-5.51**	2.89**	297
	(2.87)	(1.29)	
Age 46-65	-5.12	0.14	297
	(4.54)	(1.63)	
E: Education			
High School Dropouts	-3.06	6.10***	297
	(4.89)	(2.06)	
High School Degree	0.53	2.48*	297
	(3.70)	(1.42)	
Some College or Higher	-11.19**	0.35	297
	(4.59)	(1.32)	

Notes: Data are from the 1976-1984 March CPS. The sample consists of non-Cuban females aged 19-65. Subgroups are defined by various demographic characteristics, such as race, marital status, parental status, age groups, and education levels. The sample size (N) represents the number of MSAs 33 $\times$ 9 years. Regression estimates are obtained using the Synthetic Differences-in-Differences (SDID). The donor pool consists of 32 metropolitan areas from the 1976 CPS. Standard errors computed via the placebo method with 1000 repetitions, are reported in parentheses. Significance levels are denoted as follows: * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

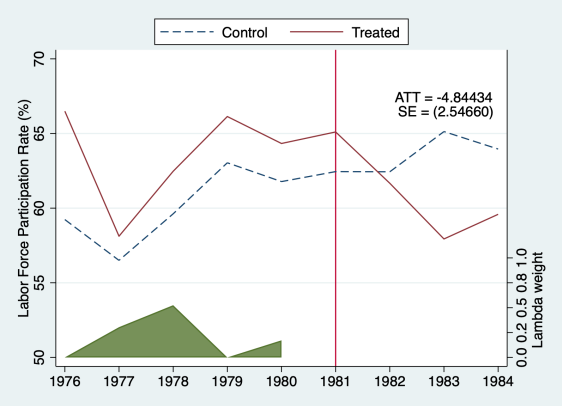
Table 5: Estimated Long-term Treatment Effects on Female Market Outcomes Using Different Estimators

Methods	**Labor Force Participation (%)**	**Unemployment (%)**
SDID	-6.58**	2.47***
	(2.69)	(0.81)

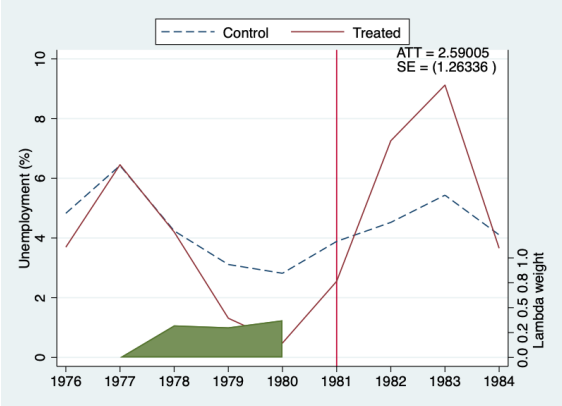
Notes: Data are from the 1976-1993 March CPS. Sample includes non-Cuban women aged 19–65, with a sample size of 594. The treatment group includes individuals in Miami after 1980. Regression estimates are obtained using the Synthetic Differences-in-Differences (SDID). The donor pool consists of 32 metareas from the 1976 CPS. Standard errors computed via the placebo method with 1000 repetitions, are reported in parentheses. Significance levels are denoted as follows: * p<0.10, ** p<0.05, *** p<0.01.

Figures

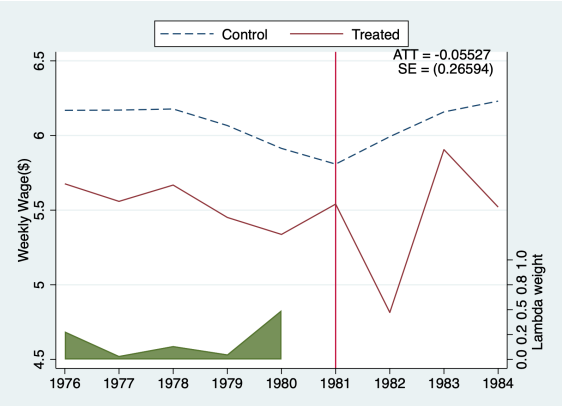
Figure 1: SDID: Short-term Treatment Effect on Non-Cuban Female Labor Outcomes



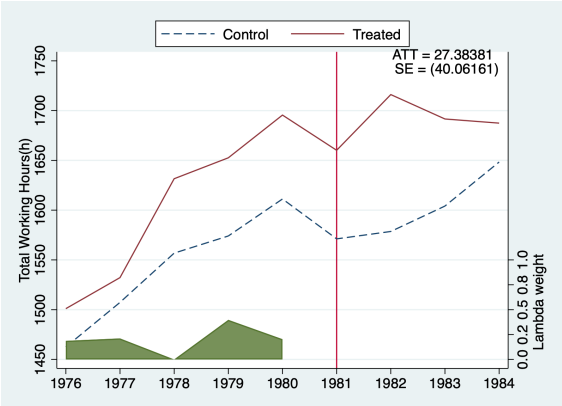
(a) Labor Force Participation



(b) Unemployment



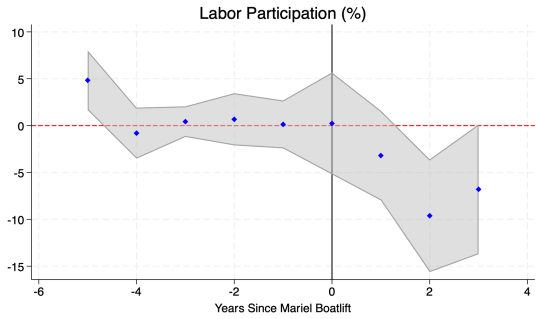
(c) Wage



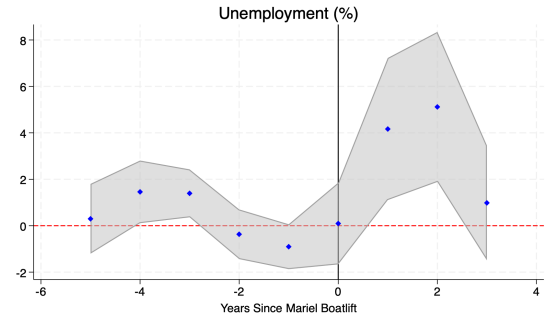
(d) Total Hours Worked

Notes: Data are from the 1976–1984 March CPS, restricted to Non-Cuban women aged 19–65. In each panel, the blue dashed line represents the synthetic control group, while the red line represents Miami. The synthetic control is constructed from 32 MSAs based on pre-treatment outcomes. The vertical black line at 1980 marks the start of the Mariel Boatlift. Shaded areas indicate time weights (λ). Sampling weights (`asecwt`) are applied.

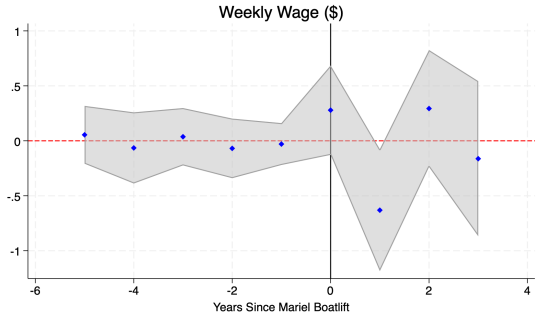
Figure 2: Event Study SDID: Short-term Treatment Effect on Non-Cuban Female Labor Outcomes



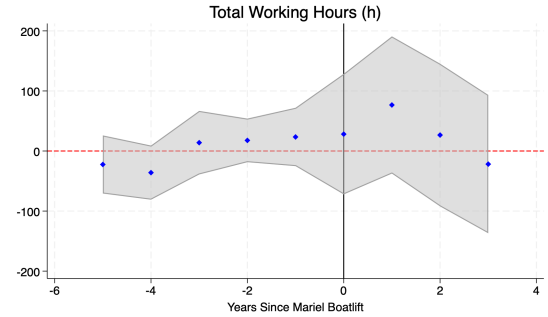
(a) Labor Force Participation



(b) Unemployment



(c) Wage



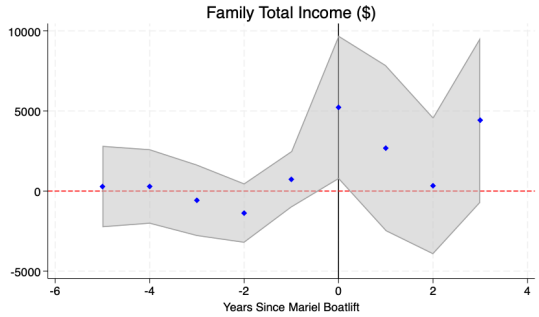
(d) Total Hours Worked

Notes: Data are from the 1976–1993 March CPS, restricted to Non-Cuban women aged 19–65. Each panel reports dynamic treatment effects estimated using the event study extension of the Synthetic Difference-in-Differences (SDID) method. The blue dots traces the estimated treatment effect of the Mariel Boatlift on Miami relative to a synthetic control group, constructed from 32 metropolitan statistical areas (MSAs) matched on pre-treatment outcomes. The vertical black line at event time 0 corresponds to the year 1981, marking the onset of the Mariel Boatlift. Shaded regions represent 95% confidence intervals based on placebo-based inference. Sampling weights (`asecwt`) are applied.

Figure 3: Event Study SDID: Short-term Treatment Effect on Non-Cuban Highly Educated Female Labor Outcomes

(a) Wage

(b) Spousal Wage



(c) Family Income

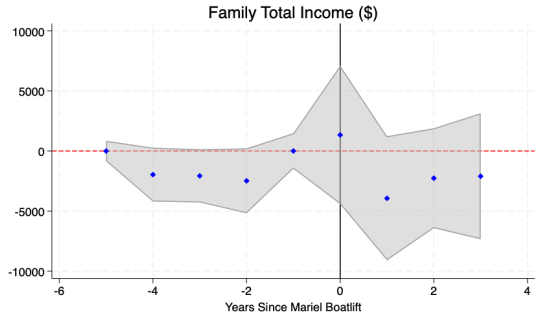
(d) Non-labor Income

Notes: Based on the 1976–1984 March CPS, the sample includes non-Cuban women aged 19–65 with a BA or higher. Each panel reports dynamic treatment effects estimated using the event study extension of the Synthetic Difference-in-Differences (SDID) method. The blue dots traces the estimated treatment effect of the Mariel Boatlift on Miami relative to a synthetic control group, constructed from 32 metropolitan statistical areas (MSAs) matched on pre-treatment outcomes. The vertical black line at event time 0 corresponds to the year 1981, marking the onset of the Mariel Boatlift. Shaded regions represent 95% confidence intervals based on placebo-based inference. Sampling weights (`asecwt`) are applied.

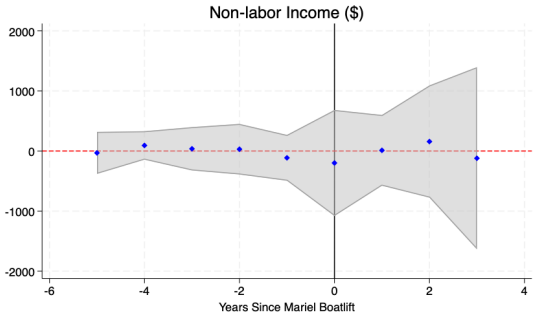
Figure 4: Event Study SDID: Short-term Treatment Effect on Non-Cuban High School Dropout Female Labor Outcomes

(a) Wage

(b) Spousal Wage



(c) Family Income



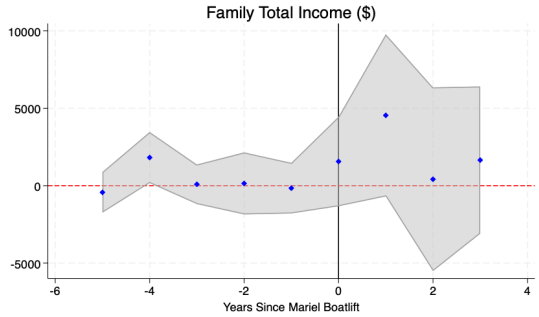
(d) Non-labor Income

Notes: Based on the 1976–1984 March CPS, the sample includes non-Cuban women aged 19–65 high school dropout. Each panel reports dynamic treatment effects estimated using the event study extension of the Synthetic Difference-in-Differences (SDID) method. The blue dots traces the estimated treatment effect of the Mariel Boatlift on Miami relative to a synthetic control group, constructed from 32 metropolitan statistical areas (MSAs) matched on pre-treatment outcomes. The vertical black line at event time 0 corresponds to the year 1981, marking the onset of the Mariel Boatlift. Shaded regions represent 95% confidence intervals based on placebo-based inference. Sampling weights (`asecwt`) are applied.

Figure 5: Event Study SDID: Short-term Treatment Effect on Non-Cuban High School Degree Female Labor Outcomes

(a) Wage

(b) Spousal Wage

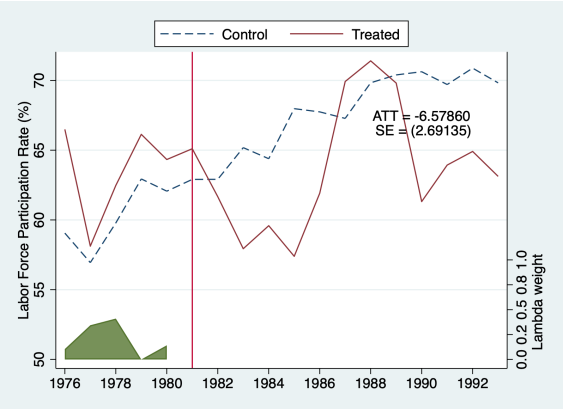


(c) Family Income

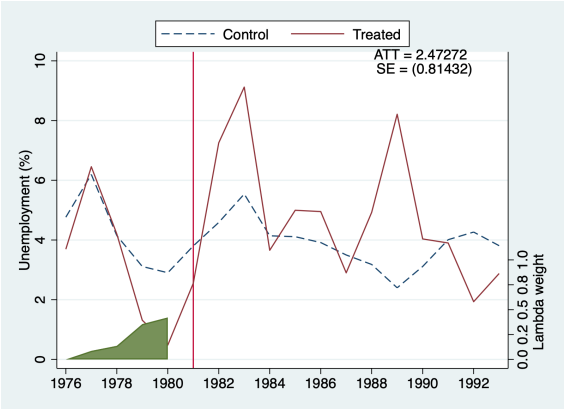
(d) Non-labor Income

Notes: Based on the 1976–1984 March CPS, the sample includes non-Cuban women aged 19–65 with a high school degree. Each panel reports dynamic treatment effects estimated using the event study extension of the Synthetic Difference-in-Differences (SDID) method. The blue dots traces the estimated treatment effect of the Mariel Boatlift on Miami relative to a synthetic control group, constructed from 32 metropolitan statistical areas (MSAs) matched on pre-treatment outcomes. The vertical black line at event time 0 corresponds to the year 1981, marking the onset of the Mariel Boatlift. Shaded regions represent 95% confidence intervals based on placebo-based inference. Sampling weights (`asecwt`) are applied.

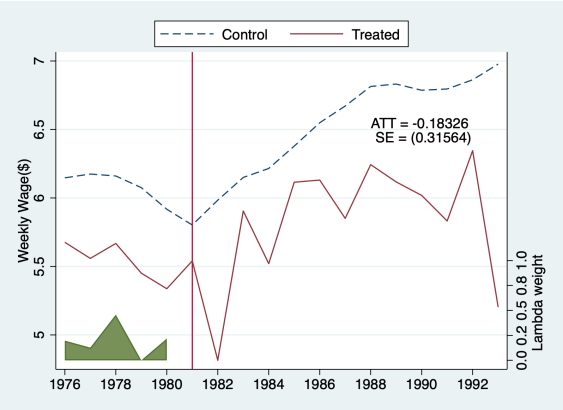
Figure 6: SDID: Long-term Treatment Effect on Non-Cuban Female Labor Outcomes



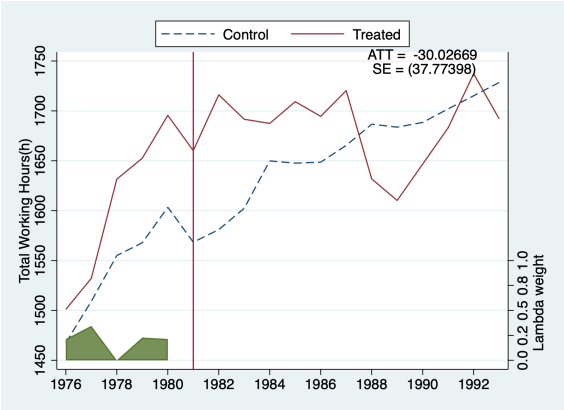
(a) Labor Force Participation



(b) Unemployment



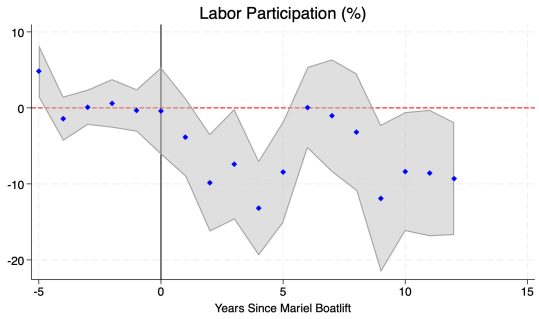
(c) Wage



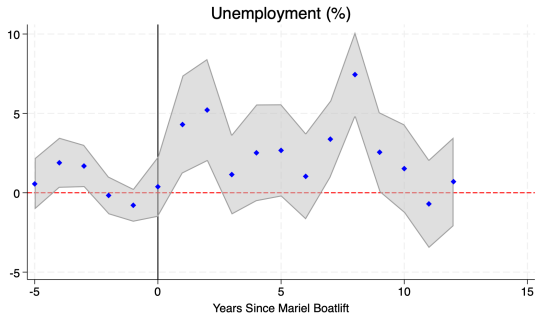
(d) Total Hours Worked

Notes: Data are from the 1976–1993 March CPS, restricted to Non-Cuban women aged 19–65. In each panel, the blue dashed line represents the synthetic control group, while the red line represents Miami. The synthetic control is constructed from 32 MSAs based on pre-treatment outcomes. The vertical black line at 1980 marks the start of the Mariel Boatlift. Shaded areas indicate time weights (λ). Sampling weights (`asecwt`) are applied.

Figure 7: Event Study SDID: Long-term Treatment Effect on Non-Cuban Female Labor Outcomes

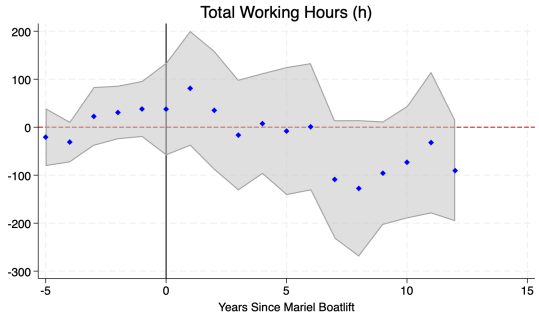


(a) Labor Force Participation



(b) Unemployment

(c) Wage



(d) Total Hours Worked

Notes: Data are from the 1976–1993 March CPS, restricted to Non-Cuban women aged 19–65. Each panel reports dynamic treatment effects estimated using the event study extension of the Synthetic Difference-in-Differences (SDID) method. The blue dots traces the estimated treatment effect of the Mariel Boatlift on Miami relative to a synthetic control group, constructed from 32 metropolitan statistical areas (MSAs) matched on pre-treatment outcomes. The vertical black line at event time 0 corresponds to the year 1981, marking the onset of the Mariel Boatlift. Shaded regions represent 95% confidence intervals based on placebo-based inference. Sampling weights (`asecwt`) are applied.

Appendix

Table A1: Sample Sizes for Non-Cuban Females in Miami

Year	Total Sample	Employed Sample
1976	236	145
1977	214	108
1978	199	115
1979	221	139
1980	242	151
1981	230	141
1982	228	121
1983	212	108
1984	243	142
1985	262	134
1986	266	152
1987	293	196
1988	304	203
1989	322	200
1990	341	193
1991	331	200
1992	292	184
1993	298	176

Notes: Data source: March CPS (1976-1993). Labor force participation and unemployment rates are calculated using the total sample, which includes all non-Cuban females aged 19-65 in the Miami, whereas wages and hours worked are analyzed using the employed sample.

Table A2: SDID Donor Weights for Labor Market Outcomes of Non-Cuban Female

Labor Force Participation (%)		Unemployment Rate (%)		Average Wage ($)		Total Working Hours	
Metropolitan Area	**Weight**	**Metropolitan Area**	**Weight**	**Metropolitan Area**	**Weight**	**Metropolitan Area**	**Weight**
Atlanta, GA	0.1745	Bergen-Passaic, NJ	0.2027	Atlanta, GA	0.0813	San Francisco-Oakland-Vallejo, CA	0.1341
San Jose, CA	0.1423	Newark, NJ	0.1390	Chicago-Gary-Lake, IL	0.0624	Seattle-Everett, WA	0.1229
Cincinnati-Hamilton, OH-KY-IN	0.1121	Seattle-Everett, WA	0.1258	Philadelphia, PA-NJ	0.0553	Anaheim-Santa Ana-Garden Grove, CA	0.1179
Indianapolis, IN	0.0848	Riverside-San Bernardino, CA	0.1031	Dallas-Fort Worth, TX	0.0535	San Jose, CA	0.1133
Pittsburgh, PA	0.0808	Buffalo-Niagara Falls, NY	0.0935	Detroit, MI	0.0524	Dallas-Fort Worth, TX	0.0885
Portland-Vancouver, OR-WA	0.0718	New Orleans, LA	0.0917	Kansas City, MO-KS	0.0485	Milwaukee, WI	0.0830
Houston-Brazoria, TX	0.0686	Minneapolis-St. Paul, MN	0.0834	Los Angeles-Long Beach, CA	0.0470	Tampa-St. Petersburg-Clearwater, FL	0.0631
Denver-Boulder-Longmont, CO	0.0618	San Francisco-Oakland-Vallejo, CA	0.0539	Bergen-Passaic, NJ	0.0468	Cleveland, OH	0.0597
Seattle-Everett, WA	0.0470	Boston, MA	0.0503	Buffalo-Niagara Falls, NY	0.0462	Kansas City, MO-KS	0.0438
New Orleans, LA	0.0450			Newark, NJ	0.0453	Portland-Vancouver, OR-WA	0.0357
Chicago-Gary-Lake, IL	0.0369			San Jose, CA	0.0394	Detroit, MI	0.0320
				Anaheim-Santa Ana-Garden Grove, CA	0.0386	Washington, DC-MD-VA	0.0283
				San Francisco-Oakland-Vallejo, CA	0.0365		
				New York, NY	0.0353		
				Portland-Vancouver, OR-WA	0.0349		
				Houston-Brazoria, TX	0.0328		
				Boston, MA	0.0320		
				Tampa-St. Petersburg-Clearwater, FL	0.0293		
				Indianapolis, IN	0.0291		
				Baltimore, MD	0.0285		
				Minneapolis-St. Paul, MN	0.0247		
				Milwaukee, WI	0.0241		

Notes: Sample includes non-Cuban women aged 19–65 from the 1976–1984 March CPS, with a sample size of 297. Donor weights represent the relative contribution of each MSA to the SDID for labor force participation, unemployment, average wage, and total working hours during 1976–1984.

Table A3: Event Study SDID: Short-term Treatment Effects on Non-Cuban Female Labor Outcomes

Effect	**Labor Force Participation (%)**	**Unemployment (%)**	**Wage ($)**	**Hours Worked**
t = -5	4.833***	0.297	0.055	-22.394
	(1.624)	(0.767)	(0.134)	(24.667)
t = -4	-0.806	1.458**	-0.065	-35.995
	(1.390)	(0.688)	(0.165)	(22.992)
t = -3	0.425	1.394***	0.037	13.863
	(0.833)	(0.526)	(0.133)	(26.993)
t = -2	0.672	-0.368	-0.069	17.669
	(1.421)	(0.546)	(0.138)	(18.508)
t = -1	0.128	-0.905*	-0.029	23.402
	(1.304)	(0.493)	(0.097)	(24.775)
t = 0	0.231	0.095	0.279	28.118
	(2.773)	(0.899)	(0.208)	(51.207)
t = 1	-3.195	4.165***	-0.631**	76.642
	(2.442)	(1.561)	(0.283)	(58.270)
t = 2	-9.618***	5.117***	0.294	26.588
	(3.069)	(1.649)	(0.272)	(60.605)
t = 3	-6.796	0.983	-0.163	-21.812
	(3.533)	(1.262)	(0.360)	(58.762)

Notes: Sample includes non-Cuban women aged 19–65 from the 1976–1984 March CPS, with a sample size of 297. Each row corresponds to an event-time effect estimated using the SDID method. Standard errors computed via the placebo method with 1000 repetitions, are reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table A4: SDID Donor Weights for Labor Market Outcomes of Non-Cuban Male

Labor Force Participation (%)		Unemployment (%)		Wage ($)		Hours Worked	
Metropolitan Area	**Weight**	**Metropolitan Area**	**Weight**	**Metropolitan Area**	**Weight**	**Metropolitan Area**	**Weight**
Tampa-St. Petersburg-Clearwater, FL	0.2075	Kansas City, MO-KS	0.1245	Baltimore, MD	0.1858	Atlanta, GA	0.1799
Riverside-San Bernardino, CA	0.1706	Portland-Vancouver, OR-WA	0.1057	New York, NY	0.1711	Portland-Vancouver, OR-WA	0.1166
Seattle-Everett, WA	0.1180	San Diego, CA	0.1016	Boston, MA	0.0836	Minneapolis-St. Paul, MN	0.1157
Atlanta, GA	0.0827	New Orleans, LA	0.0994	Washington, DC-MD-VA	0.0824	Newark, NJ	0.0927
Cincinnati-Hamilton, OH-KY-IN	0.0812	Newark, NJ	0.0729	Newark, NJ	0.0764	Cincinnati-Hamilton, OH-KY-IN	0.0923
Denver-Boulder-Longmont, CO	0.0754	Riverside-San Bernardino, CA	0.0663	Portland-Vancouver, OR-WA	0.0727	New Orleans, LA	0.0911
Cleveland, OH	0.0666	Bergen-Passaic, NJ	0.0539	New Orleans, LA	0.0664	Anaheim-Santa Ana-Garden Grove, CA	0.0692
Pittsburgh, PA	0.0513	Buffalo-Niagara Falls, NY	0.0532	Pittsburgh, PA	0.0660	Bergen-Passaic, NJ	0.0639
San Jose, CA	0.0475	St. Louis, MO-IL	0.0517	Chicago-Gary-Lake, IL	0.0604	Kansas City, MO-KS	0.0470
		Atlanta, GA	0.0494	Detroit, MI	0.0528	San Francisco-Oakland-Vallejo, CA	0.0425
		Milwaukee, WI	0.0397				
		Cleveland, OH	0.0317				
		Tampa-St. Petersburg-Clearwater, FL	0.0311				
		Denver-Boulder-Longmont, CO	0.0287				

Notes: Sample includes non-Cuban men aged 19–65 from the 1976–1984 March CPS, with a sample size of 297. Donor weights represent the relative contribution of each MSA to the SDID for labor force participation, unemployment, average wage, and total working hours during 1976–1984.

Table A5: Estimated Short-term Treatment Effects on Male Labor Market Outcomes

Methods	**Labor Force Participation (%)**	**Unemployment (%)**	**Wage ($)**	**Hours Worked**
SDID	-0.953	-2.275	-0.354	117.336**
	(1.866)	(1.797)	(0.379)	(53.138)
DID	-0.760	-1.488	-0.314	117.584**
	(1.700)	(1.818)	(0.392)	(56.449)
SCM	0.151	-2.491	-0.641	74.048
	(2.123)	(1.880)	(0.418)	(58.555)

Notes: Sample includes non-Cuban men aged 19–65 from the 1976–1984 March CPS, with a sample size of 297. The treatment group includes individuals in Miami after 1980. Regression estimates are obtained using the Synthetic Differences-in-Differences (SDID), Differences-in-Differences (DID), and Synthetic Control Method (SCM). The donor pool consists of 32 metropolitan areas from the 1976 CPS. Standard errors computed via the placebo method with 1000 repetitions, are reported in parentheses. Significance levels are denoted as follows: * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table A6: Destination MSA of Marielitos

Metropolitan Area	**Number of Marielitos in Sample**
Chicago-Gary-Lake, IL	1
Houston-Brazoria, TX	2
Los Angeles-Long Beach, CA	6
Miami-Hialeah, FL	24
New Orleans, LA	3
Nassau-Suffolk, NY	1
Bergen-Passaic, NJ	2
New York, NY	2
San Francisco-Oakland-Vallejo, CA	1
Washington, DC-MD-VA	1

Notes: Data are from the 1985 March Current Population Survey (CPS), identifying foreign immigrants aged 19–65 who lived abroad before March 1980 (`migsta5 == 00`). The MSAs listed corresponds to their current location as of 1985.

Table A7: Immigrant Shock in Each MSA

Metropolitan Area	Immigrant Shock (%)
Miami-Hialeah, FL	**9.16**
Los Angeles-Long Beach, CA	7.39
Dallas-Fort Worth, TX	7.00
New York, NY	6.31
Fort Worth-Arlington, TX	5.91
Riverside-San Bernardino, CA	5.62
Tampa-St. Petersburg-Clearwater, FL	5.53
San Francisco-Oakland-Vallejo, CA	4.43
Anaheim-Santa Ana-Garden Grove, CA	4.30
San Diego, CA	4.15
Bergen-Passaic, NJ	4.15
Houston-Brazoria, TX	4.11
Washington, DC-MD-VA	3.64
Atlanta, GA	3.24
San Jose, CA	3.19
Sacramento, CA	3.10
Milwaukee, WI	2.66
Chicago-Gary-Lake, IL	2.24
Portland-Vancouver, OR-WA	2.12
Seattle-Everett, WA	2.05
Columbus, OH	1.74
New Orleans, LA	1.67
Baltimore, MD	1.54
Albany-Schenectady-Troy, NY	1.54
Newark, NJ	1.31
Philadelphia, PA-NJ	1.29
Denver-Boulder-Longmont, CO	1.19
Boston, MA	1.11
Buffalo-Niagara Falls, NY	1.10
Minneapolis-St. Paul, MN	1.09
Indianapolis, IN	0.94
Detroit, MI	0.81
Norfolk-Virginia Beach-Newport News, VA	0.75
Rochester, NY	0.67
Kansas City, MO-KS	0.61
Nassau-Suffolk, NY	0.48
St. Louis, MO-IL	0.43
Cleveland, OH	0.30
Cincinnati-Hamilton, OH-KY-IN	0.25
Pittsburgh, PA	0.10
Akron, OH	0.00
Birmingham, AL	0.00
Gary-Hamond-East Chicago, IN	0.00
Greensboro-Winston Salem, NC	0.00

Notes: Data are from the 1985 March CPS, which identifies foreign immigrants aged 19–65 who lived abroad before March 1980 (`migsta5 == 00`). The immigrant shock is percentage change in immigrant population in each MSA from 1980 to 1985, calculated as the ratio of the change in immigrant population from 1980 to 1985 to the total population in each MSA in 1980.

Table A8: Metropolitan Area Rankings by Population Size

Rank Population	**MSA**
1	Los Angeles-Long Beach, CA
2	Chicago-Gary-Lake, IL
3	Philadelphia, PA/NJ
4	Detroit, MI
5	San Francisco-Oakland-Vallejo, CA
6	Washington, DC/MD/VA
7	Dallas-Fort Worth, TX
8	Houston-Brazoria, TX
9	Nassau County, NY
10	Boston, MA
11	Pittsburgh-Beaver Valley, PA
12	Baltimore, MD
13	St. Louis, MO/IL
14	Minneapolis-St. Paul, MN
15	Anaheim-Santa Ana-Garden Grove, CA
16	Newark, NJ
17	San Diego, CA
18	Cleveland, OH
19	Atlanta, GA
20	Seattle-Everett, WA
21	Denver-Boulder-Longmont, CO
22	Tampa-St. Petersburg-Clearwater, FL
23	**Miami-Hialeah, FL**
24	Milwaukee, WI
25	San Jose, CA
26	Kansas City, MO/KS
27	Portland-Vancouver, OR
28	Buffalo-Niagara Falls, NY
29	Cincinnati, OH/KY/IN
30	Indianapolis, IN
31	Columbus, OH
32	New Orleans, LA
33	Sacramento, CA
34	Riverside-San Bernardino, CA
35	Birmingham, AL
36	Albany-Schenectady-Troy, NY
37	Rochester, NY
38	Greensboro-Winston Salem-High Point, NC
39	Akron, OH
40	Gary-Hammond-East Chicago, IN
41	Bergen-Passaic, NJ

Notes: Data are from the 1980 Census. The sample includes individuals aged 19-65 from various MSAs. These areas are ranked by population count to generate the final rankings. We test the robustness of our analysis by using these MSA rankings to refine our donor pool.

Table A9: Occupational Characteristics by Education Level

Characteristic	Female Native Pre-boatlift	Female Marielitos	Male Marielitos
Panel A: High School Dropouts			
Percent Technical	0.00	0.00	0.00
Percent Professors	0.00	0.00	0.00
Percent Farmers	0.00	0.00	0.00
Percent Managers	0.00	0.00	7.70
Percent Clerical	26.76	0.00	1.66
Percent Sales	5.26	0.00	0.00
Percent Craftsmen	0.00	0.00	27.00
Percent Operatives	16.23	68.56	29.17
Percent Service Household	8.33	19.09	0.00
Percent Service	43.43	12.35	34.47
Percent Farm Laborers	0.00	0.00	0.00
Percent Laborers	0.00	0.00	0.00
Sample Size	58	13	14
Panel B: High School Degree			
Percent Technical	0.00	0.00	0.00
Percent Professors	0.00	0.00	0.00
Percent Farmers	1.93	0.00	0.00
Percent Managers	4.90	0.00	0.00
Percent Clerical	47.81	0.00	0.00
Percent Sales	4.82	0.00	0.00
Percent Craftsmen	2.21	0.00	56.92
Percent Operatives	9.88	59.40	43.08
Percent Service Household	1.43	0.00	0.00
Percent Service	22.60	40.60	0.00
Percent Farm Laborers	1.76	0.00	0.00
Percent Laborers	2.65	0.00	0.00
Sample Size	101	3	4
Panel C: College Degree or Higher			
Percent Technical	1.60	0.00	13.83
Percent Professors	28.95	0.00	17.60
Percent Farmers	0.00	0.00	0.00
Percent Managers	13.60	57.78	20.54
Percent Clerical	39.80	0.00	20.82
Percent Sales	12.67	0.00	0.00
Percent Craftsmen	1.42	0.00	0.00
Percent Operatives	0.00	0.00	27.21
Percent Service Household	0.00	42.22	0.00
Percent Service	1.95	0.00	0.00
Percent Farm Laborers	0.00	0.00	0.00
Percent Laborers	0.00	0.00	0.00
Sample Size	83	4	5

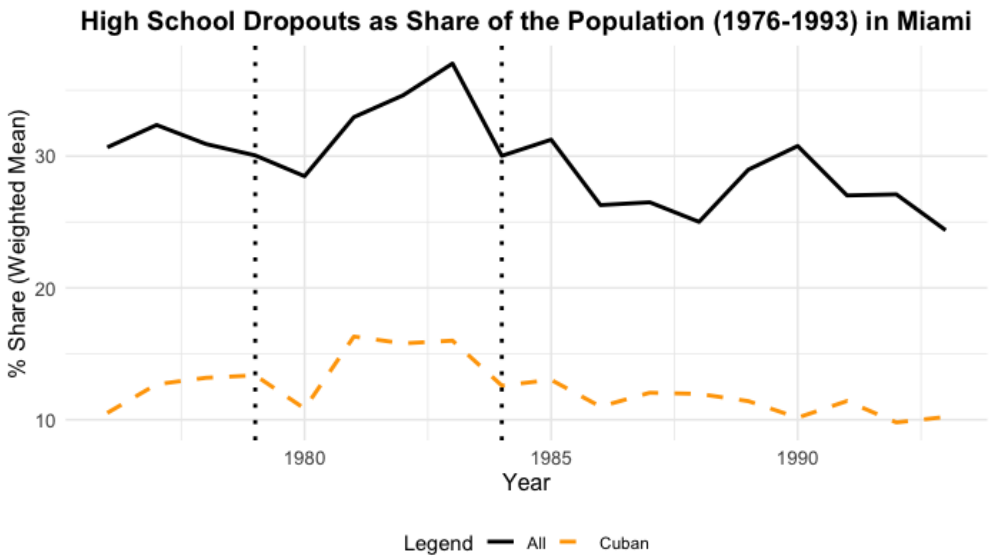
Notes: Data from the March 1980 CPS reflect pre-Boatlift conditions, while the March 1985 CPS identifies Marielitos as Cuban immigrants (`hispan == 300`) who lived abroad prior to March 1980 (`migsta5 == 91`). The sample includes natives and Marielitos aged 19–65 in 1980. Natives are defined as non-movers (`migsta5 == 00`), non-Cubans (`hispan != 300`), and residents of Miami (`metarea == 5000`) in the 1985 CPS. The table uses the variable `asecwt` to calculate weights for each individual, with the sample size representing the sum of these weights.

Table A10: Event Study SDID: Long-term Treatment Effects on Non-Cuban Female Labor Outcomes

Effect	Labor Force Participation (%)	Unemployment (%)	Wage ($)	Hours Worked
t=-5	4.829***	0.559	0.053	-20.708
	(1.764)	(0.823)	(0.145)	(30.827)
t=-4	-1.426	1.889**	-0.093	-30.989
	(1.488)	(0.804)	(0.175)	(21.587)
t=-3	0.082	1.685**	0.030	22.474
	(1.180)	(0.678)	(0.109)	(31.247)
t=-2	0.591	-0.169	-0.101	30.656
	(1.629)	(0.604)	(0.164)	(28.423)
t=-1	-0.338	-0.790	-0.057	37.977
	(1.418)	(0.528)	(0.157)	(29.796)
t=0	-0.409	0.380	0.261	37.673
	(2.923)	(0.965)	(0.227)	(49.220)
t=1	-3.853	4.298***	-0.646**	81.010
	(2.640)	(1.570)	(0.287)	(61.093)
t=2	-9.853***	5.212***	0.278	35.103
	(3.279)	(1.642)	(0.289)	(63.323)
t=3	-7.409**	1.147	-0.172	-16.503
	(3.713)	(1.284)	(0.364)	(58.902)
t=4	-13.190***	2.516	0.259	7.505
	(3.186)	(1.553)	(0.319)	(53.558)
t=5	-8.441**	2.668*	0.105	-8.107
	(3.416)	(1.482)	(0.450)	(68.046)
t=6	0.040	1.033	-0.297	0.882
	(2.731)	(1.384)	(0.366)	(67.649)
t=7	-1.035	3.377***	-0.048	-108.913*
	(3.781)	(1.236)	(0.440)	(62.955)
t=8	-3.188	7.443***	-0.191	-127.561*
	(3.943)	(1.373)	(0.533)	(72.547)
t=9	-11.916**	2.553**	-0.245	-95.835*
	(4.946)	(1.279)	(0.432)	(55.003)
t=10	-8.381**	1.520	-0.441	-73.053
	(3.993)	(1.421)	(0.443)	(59.720)
t=11	-8.578**	-0.701	0.005	-32.026
	(4.240)	(1.418)	(0.422)	(75.357)
t=12	-9.310**	0.699	-1.251**	-90.523*
	(3.784)	(1.426)	(0.511)	(53.854)

Notes: Sample includes non-Cuban women aged 19–65 from the 1976–1993 March CPS, with a sample size of 594. Each row corresponds to an event-time effect estimated using the SDID method. Standard errors computed via the placebo method with 1000 repetitions, are reported in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Figure A1: Trends in High School Dropout Rates as a Share of the Population (1976–1993) in Miami



Notes: This figure shows the percentage of high school dropouts in Miami from 1976 to 1993, with a distinction between the total population (black solid line) and the Cuban population (orange dashed line). The vertical dotted lines mark significant years: 1979, before the Mariel Boatlift occurred, and 1984, when the share of less-educated individuals in Miami returned to pre-Boatlift levels. Data source: March CPS.