

The Effects of Female Immigration on the U.S. Childcare Market: Evidence from Prices and Earnings

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Abstract: In a market-based childcare system with limited public support, many American families purchase formal childcare, bearing the full cost themselves. While previous studies show low-skill immigration helps U.S-born women outsource household labor, the mechanism through childcare prices is less clear. This paper examines this effect, focusing on female immigration and U.S. childcare prices and worker earnings from 2010 to 2019. Using a county-level fixed-effects model with data from the National Database of Childcare Prices (NDCP) and the Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC), the study analyzes how the female immigrant labor force share affects prices across center-based, family daycare, and private household settings. Findings indicate a 10% increase in the female immigrant share is associated with a small, significant decrease in family day care prices (0.17-0.22%) but not center-based care prices. The impact on worker earnings is more substantial: the same 10% increase is linked to a 4% reduction in family daycare worker earnings, with no significant effects in other settings. This finding suggests that the slight price reduction for family daycare, coinciding with significantly reduced worker earnings, may be insufficient to stimulate maternal employment or yield significant economic advantages for low-income families.

Keywords: Childcare Prices, Female Immigration, Care Work, Family Daycare

JEL Codes: J13, J15, J39

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1. Introduction

The dramatic rise in female labor force participation over the last fifty years has created a corresponding surge in the demand for non-parental childcare in the U.S. Unlike many other developed nations, the U.S. has not established a national childcare infrastructure. Instead, a decentralized, market-based system has emerged, where a mother's capacity to work is often directly tied to her ability to find and afford quality care. With childcare costs rising and public investment failing to keep pace, this system presents a substantial barrier to employment for mothers, who continue to bear a disproportionate share of childcare responsibilities (Araujo et al., 2025; Baum II, 2002; Kimmel, 1998; Morrissey, 2017; Pepin, 2025).

Existing federal programs, such as Head Start and the Child Care and Development Fund (CCDF), are intended to mitigate these challenges but are chronically underfunded, serving only a small fraction of eligible low-income families. Furthermore, these programs often have limitations, such as restricted hours or a focus on preschoolers, that leave significant gaps in care, particularly for infants and toddlers when costs are highest.

This paper seeks to investigate the following question: Can female immigration fill the childcare market void? Prior research suggests that an influx of immigrant labor impacts the economy through two primary channels. First, the inflow of low-skill immigrants can exert downward pressure on the prices of services in the sectors where they are concentrated, such as housekeeping and babysitting (Cortes, 2008). This is due to their lower wages than their native-born counterparts and their lower bargaining power (Peri & Sparber, 2009). Second, this price decline has a significant indirect effect on native-born, college-educated women, an effect that researchers hypothesize is driven by the outsourcing of household production, including childcare (Cortes & Tessada, 2011; Furtado & Hock, 2010).

However, few studies have directly examined the specific impact of immigration on childcare prices, a critical mechanism in this relationship. This paper seeks to fill that gap by estimating the effect of female immigrants, who are significantly more likely to work in childcare occupations than male immigrants, on childcare prices and worker earnings in center-based, family daycare, and private household settings from 2010 to 2019. Using a fixed-effects model with county-level data from the National Database of Childcare Prices (NDCP) and the Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC), I find that

Using a fixed-effects model with county-level data from the National Database of Childcare Prices (NDCP) and the Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC), I find that a 10% increase in the female immigrant share is associated with a statistically significant, albeit small, decrease of 0.17-0.22% in the price of family day care. No significant effect is found on the prices of center-based care. The analysis of worker earnings reveals a more substantial impact. The same 10% increase is linked to a 4% reduction in the earnings of family daycare workers. However, no significant effects were observed on the earnings of those working in private households or center-based settings.

This paper proceeds as follows. Section 2 provides an overview of the relevant policy background and discusses the intersection of immigration, childcare, and female labor supply. Section 3 describes the data sources and outlines the empirical strategy used to estimate the effect of female immigration on childcare prices. Section 4 presents the findings from the main analysis and the sensitivity checks. Finally, Section 5 discusses the implications of these results for social policy.

2. Background

The rise in women's labor force participation over the past half-century created a parallel, growing demand for non-parental childcare. In the U.S., this demand was met not with a national infrastructure, but with a decentralized, kin- and market-based system that makes a mother's ability to work contingent on her ability to find or afford care. As women disproportionately take on childcare responsibilities, policies designed to make care more affordable are crucial levers for supporting their employment. However, rapidly rising costs and insufficient public investment have created a significant barrier for mothers of young children.

2.1. Public childcare resources

Federal childcare policies have evolved to provide affordable, high quality childcare to low-income families through multiple programs such as Head Start and Early Head Start programs, Child Care and Development Fund (CCDF), and Child and Dependent Care Tax Credit (CDCTC). In the most recent period, the policies have been shifting towards improving the quality of care by requiring higher teacher qualifications, enforcing federal staff-to-child ratios,

mandating federal minimums for health, safety, background checks, and inspections for all subsidized providers.

This shift toward quality, however, has not been accompanied by the necessary public investment to make it accessible for low-income families. Many researchers point out the public support is severely under-resourced. Although CCDF subsidies are targeted at low-income families, the need for this assistance dramatically outpaces the program's limited resources, reaching only 15% of eligible families (Chien, 2024). The Head Start program is similarly insufficient as a comprehensive work support. Its hours are often limited; as of 2019, only 56% of programs offered full-week, full-day services, making it an incomplete solution for working parents (Landivar et al., 2022). Furthermore, a significant limitation is its focus on preschoolers (ages 3-5), which creates a service gap for younger children. Early Head Start (EHS), which serves children from birth to age 2, is a much smaller program that fails to meet the scale of need (Joshi et al., 2016).

Nationally, Head Start serves only 40-42% of eligible preschoolers, meaning the unmet need for infants and toddlers is even more severe (Landivar et al., 2022). This gap is critical, as it coincides with the period when care is most expensive, yet public investment is lowest. For example, a Brookings Institute report on federal funding in Early Care and Education shows that in 2019, government education spending per child was less than \$500 for the first three years of life, while it rose to about \$2,800 for preschoolers and \$12,800 for elementary-age children (Davis & Sojourner, 2021).

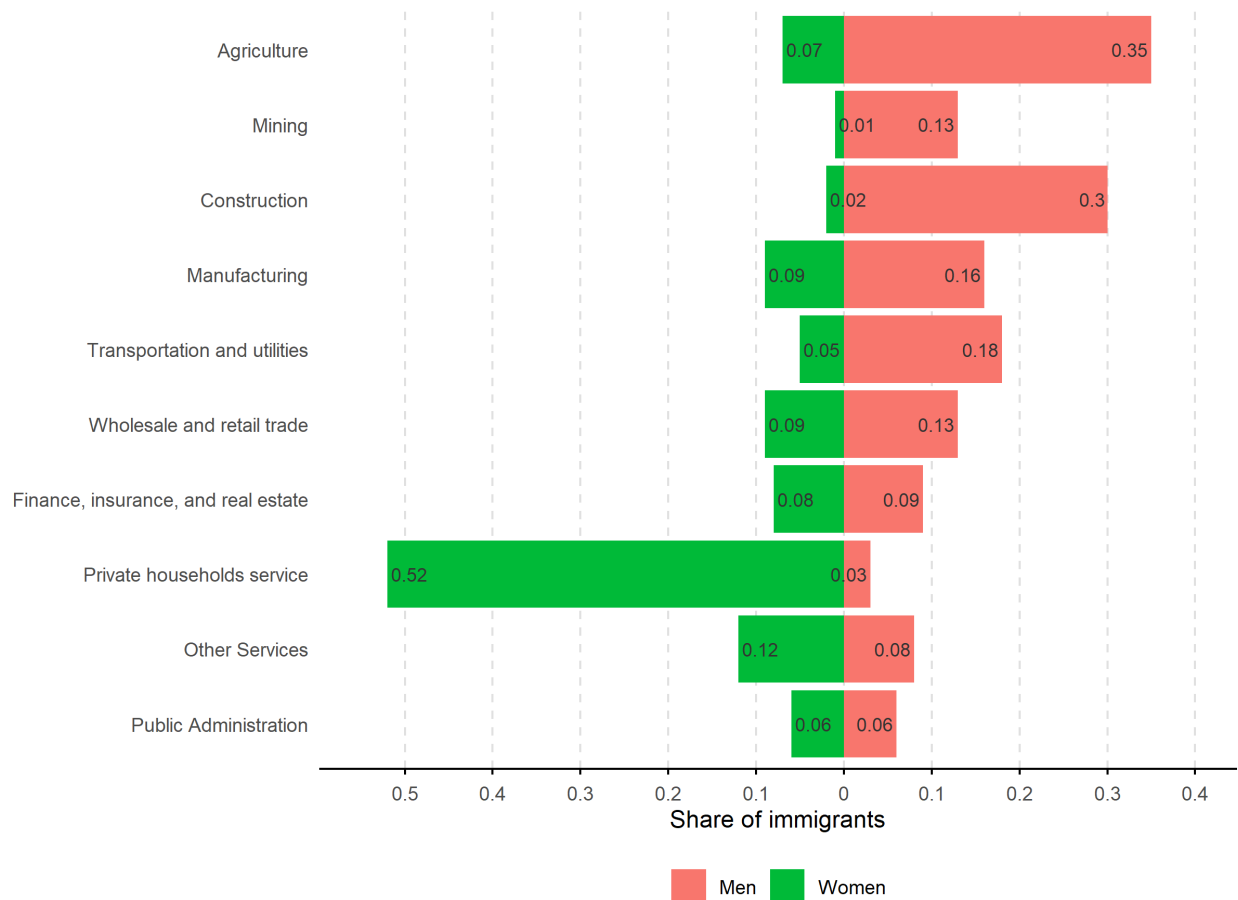
State-funded pre-kindergarten (pre-K) has expanded significantly, allowing more 3- and 4-year-olds to enroll. The percentage of the population enrolled in these programs increased from 4% of 3-year-olds and 24% of 4-year-olds in 2008 to 6% and 33%, respectively, by 2020 (Friedman-Krauss et al., 2020). However, significant variations exist across states. During the 2018-2019 school year, for example, five states (D.C., Vermont, Oklahoma, Florida, and Wisconsin) enrolled 70% or more of their 4-year-olds in state-funded preschool. In contrast, 18 states¹ had enrollment rates of 10% or lower, with six of those states having no children enrolled at all (Friedman-Krauss et al., 2020). This variation is even more dramatic for 3-year-olds: only

¹ Minnesota, Rhode Island, North Dakota, Alaska, Washington, Missouri, Nevada, Delaware, Mississippi, Arizona, Hawaii, Montana, Idaho, Indiana, New Hampshire, South Dakota, Utah, and Wyoming.

Washington D.C. had an enrollment rate of 70% or higher, while 26 states had rates of 1% or less (Friedman-Krauss et al., 2020). Previous studies have also documented these wide variations in state-level childcare policies and their subsequent impact on maternal employment (Landivar et al., 2021; Ruppanner et al., 2021).

With limited federal resources and state-funded programs concentrated in a small number of states, most U.S. families must rely on market-based childcare options. While many factors drive childcare costs, this scarcity of public funding means that the affordability of care is heavily influenced by the labor supply and earnings of childcare workers.

Figure 1. Share of immigrants by industry group



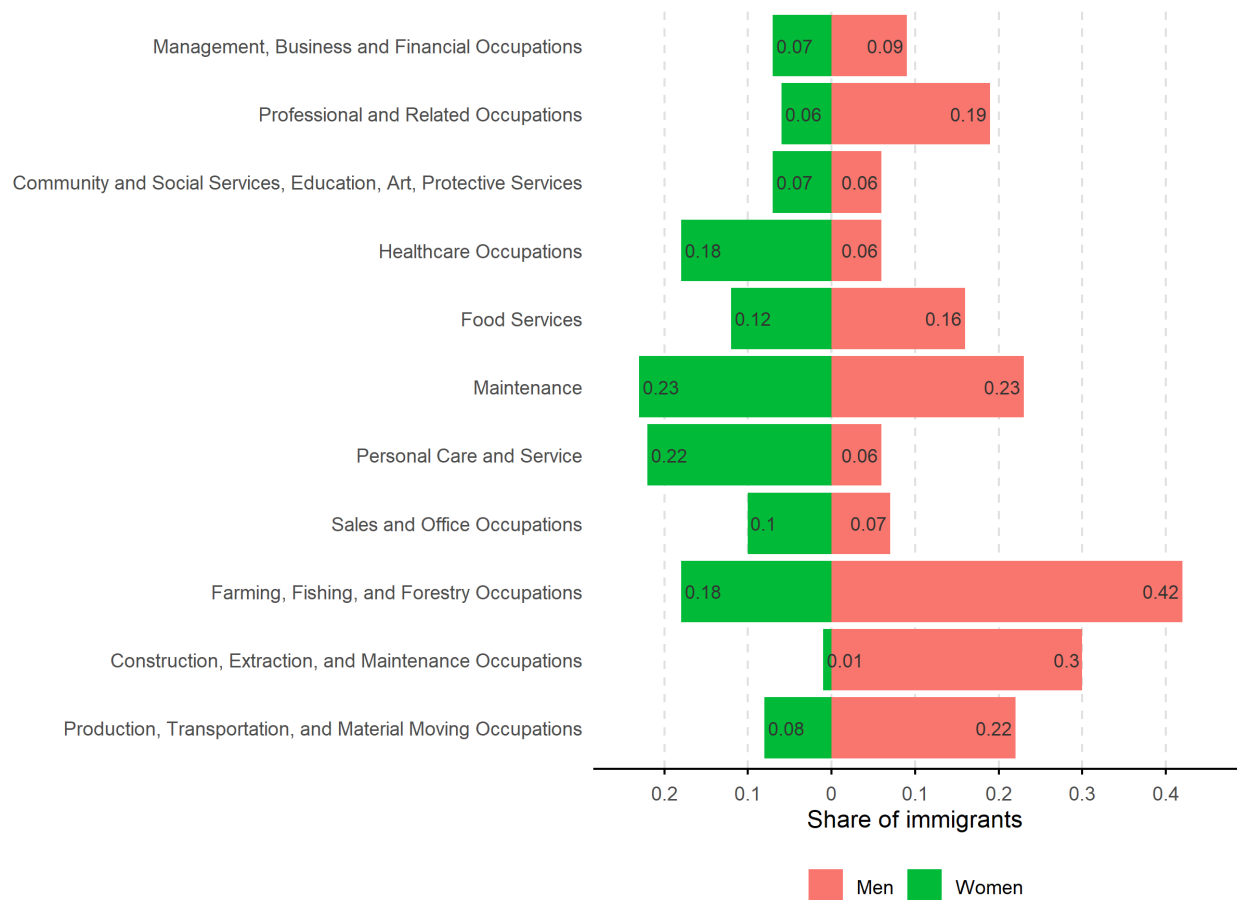
Source: Pooled 2010 – 2019 CPS-ASEC.

Notes: Sample includes all individuals in areas where county FIPS code is identifiable and in the labor force (aged 16-64). The shares of immigrants are calculated by industry group.

2.2. Immigrant workers in childcare services

In the structural voids left by federal and state childcare policies, the ability for parents with young children to participate in the labor depends on how expensive the childcare services are in the market. As in other care services in the U.S., the cost of childcare becomes more affordable for native families than it would be otherwise by immigrant workers who are often employed in positions with low pay and worse working conditions (Banerjee et al., 2022; Coleman-Castillo & Faison, 2025; Fintland et al., 2024; Harris & Marshall, 2024; Park & Pena, 2021).

Figure 2. Share of immigrants by occupation group



Source: Pooled 2010 – 2019 CPS-ASEC.

Notes: Sample includes all individuals in areas where county FIPS code is identifiable and in the labor force (aged 16-64). The shares of immigrants are calculated by occupation group.

Economic research indicates that an inflow of immigrant workers tends to have a downward effect on the prices of services, particularly in industries where their labor is concentrated. For

example, research by Patricia Cortes (2008) found that a 10 percent increase in the share of low-educated immigrants in the labor force was associated with a 2 percent decrease in the price of "immigrant-intensive" services, such as housekeeping, gardening, and private household childcare.

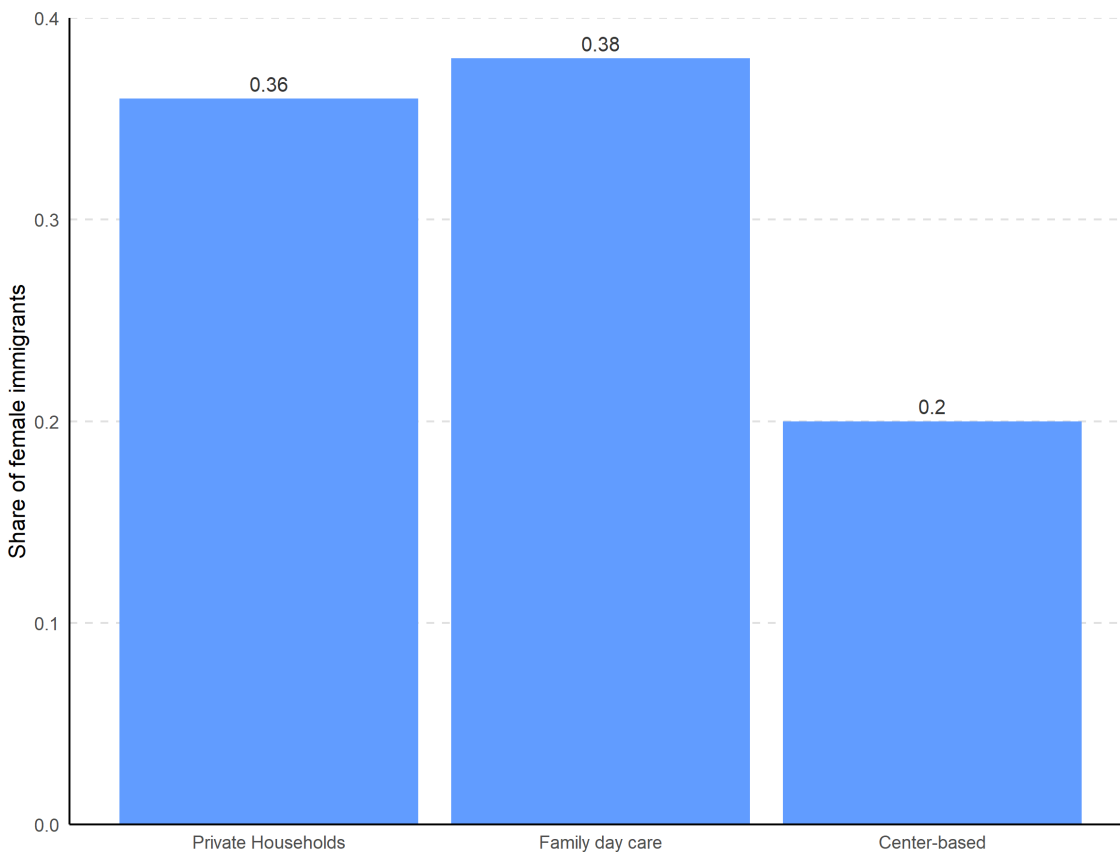
Indeed, the U.S. care industry heavily depends on its immigrant workforce, and immigrant inflow improves the affordability and quality of care. Furtado and Ortega (2023) found that the inflow of immigrants increases the supply of immigrants in low-skill nursing occupations (nursing aides), implying lower prices or improved quality of care in nursing homes by lowering labor costs for healthcare providers (Furtado & Ortega, 2023). Cortes and Pan (2014) investigated the nursing occupations and found the negative association between the number of immigrant nurses and their wages; no significant association with native wages (Cortés & Pan, 2014).

Shares of immigrants in the labor force vary by gender. Figure 1, which uses the Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC) data from 2010 to 2019, shows the composition of the workforce by industry. For instance, the top two bars show that the agriculture industry is composed of 35% immigrant men and 7% immigrant women, with the remaining 58% being U.S.-born workers. While agriculture relies heavily on male immigrant workers (35%), private household services -- which include nannies, babysitters, and housekeepers -- rely on female immigrant workers (52%). Figure 2 further illustrates the reliance of U.S. care occupations on female immigrant labor. Immigrant women constitute 22% of personal care and service occupations and 18% of healthcare occupations. While immigrant men are concentrated in farming, fishing, and forestry, immigrant women are more prevalent in maintenance and care service occupations.

Figures 1 and 2 show that the private household service industry and the personal care and service occupations heavily rely on female immigrant labor. Then, how much of childcare occupations are made up by immigrants in the private households and other settings? Figure 3 details the reliance of specific childcare occupations on female immigrant workers. A total of 36% of childcare workers in private household settings (e.g., babysitters, nannies) are immigrant women. The share of immigrant women is even higher in family day care (38%). The share is lowest in center-based settings (20%), likely for two reasons. First, center-based services often

require higher levels of education and training. Not solely because immigrant childcare workers are less educated, due to limited transferability of educational degrees internationally and work experiences are a barrier for immigrant workers to apply for the center-based staff positions (Fintland et al., 2024). Second, this dataset (2010-2019) includes the period when the Secure Communities program, which resulted in almost half a million deportations of undocumented immigrants between 2008 and 2014, was implemented. Ali et al. (2022) suggests this program had a larger price effect on center-based care and that its generalized “chilling effect” -- a tendency for immigrants to avoid public resources and formal settings for fear of encountering immigration enforcement -- had a greater impact on immigrant workers in those environments. The statistical evidence showing how Secure Communities induced immigrant women to move to jobs with lower pay and educational requirements to avoid detection of their spouses by the law enforcement (Bansak et al., 2025).

Figure 3. Share of female immigrants by childcare setting



Source: Pooled 2010 – 2019 CPS-ASEC.

Notes: Sample includes all individuals in areas where county FIPS code is identifiable and in the labor force (aged 16-64). The shares of immigrants are calculated by childcare setting.

The higher share of immigrants in service occupations has led many economists to investigate the association between low-educated immigrants and the labor market outcomes of college-educated, U.S.-born women. Cortes (2008) shows that the presence of low-skilled immigrants (LSI) increases the earnings of U.S.-born, college-educated women in the top earnings quartile through indirect channels. She focuses on LSI-intensive household services, such as babysitting, that affluent consumers are most likely to purchase. Since these services are close substitutes for household production, Cortes argues that LSI inflows lowered their prices, allowing college-educated women to outsource household work and increase their paid work hours.

Additional research confirms these positive impacts on the employment and earnings of college-educated, U.S.-born women in metropolitan areas (Cortes, 2023; Cortes & Pan, 2016; Cortes & Tessada, 2011; Furtado & Hock, 2008, 2010). For example, Cortes & Tessada (2011) found a significant, yet limited effect of LSI on the weekly paid hours of U.S.-born, college-educated women at the top wage quartile: a 10% increase in the LSI share was associated with an increase of about 20 minutes per week. Further extensions of this research emphasize how LSIs reduce gender wage gaps by helping college-educated, U.S.-born women enter occupations that reward long working hours (Cortes, 2023; Cortes & Pan, 2016, 2019). Similarly, statistical evidence supports that LSI inflows increase the chances of having children for higher-educated women (Furtado, 2016; Furtado & Hock, 2010).

In a related literature, research on the Secure Communities program, which resulted in almost half a million deportations of undocumented immigrants between 2008 and 2014, found that it led to a small decrease in the employment of college-educated, U.S.-born mothers with young children (East & Velásquez, 2022).

While these studies, except for Cortes (2008), do not explore the price effect of LSIs on household services directly, they provide a strong basis for examining the association between LSIs and household services that mothers are most likely to purchase. What, then, are the effects of immigrants on childcare services, including those provided in private households as well as formal settings like centers and family daycares? This is the question that animates my research.

2.3. Mechanism

I expect that a higher share of female immigrants is associated with the prices of childcare services. One channel would be lower wages of immigrants that are less than their native counterparts. Thus, their lower wage can contribute to lower the price in the service sector they are concentrated in. The effect of immigrant inflows on the earnings of immigrants themselves and the persistent native-immigrant wage gaps are documented (Borjas, 1987; Butcher & Dinardo, 2002; Hermansen et al., 2025). A recent study by Hermansen and colleagues (2025) explains that much of the immigrant-native pay gap is attributable to between-job inequality, therefore, the main reason for the pay gap between immigrants and native-born workers can be seen as unequal access to human capital development opportunity, job-relevant networks, and restricted recognition of educational qualifications obtained abroad. The lower pay of immigrants can lower the price of immigrant-intensive services. As seen previously, Cortes (2008) shows the causal relationship between the share of LSI and the LSI-intensive household services.

In our context, given higher shares of female immigrants in family day care businesses and private household childcare services, I expect that the immigrant share is negatively associated with prices of such services. The effect on the price of center-based childcare would be smallest, because the female immigrants make up only 20% of the workforce versus 38% of the family day care businesses and 36% of the private household childcare. It is also unlikely that immigrant childcare workers would bring native workers' wages down if they are imperfect substitutes. This is because first, the childcare settings — center-based, family day care, and private household — differ substantially in terms of types of families served and worker qualifications. Center-based care demands the highest education (like a college degree) and is the most expensive. Family day care requires less education (often a high school diploma), is cheaper, less regulated, and tends to serve low-income families. Private household care is the least regulated, with qualifications set by the family, and typically serves higher-income families. Therefore, immigrant workers, who may be less-educated or face difficulties transferring foreign-obtained degrees, may find it easier to gain employment in family day care or private households, which serve different families.

Second, even if immigrant and U.S.-born workers are employed in the same setting, immigrants are more likely to get assigned in classrooms with a greater share of Hispanic and

non-English language children and for programs in high-poverty, urban neighborhoods (Ali et al., 2024). Immigrant and U.S.-born childcare workers serving different clientele limit substitutability.

2.4. Hypotheses

Building on the results of previous studies, I offer two hypotheses regarding the impact of female immigrants on the prices of childcare services and earnings of childcare workers:

1. An increase in the share of female immigrants lowers the prices of family day care businesses but have no significant effect on the prices of center-based childcare services.
2. An increase in the share of female immigrants lowers the earnings of childcare workers in private households and family day care settings, but not the earnings of center-based childcare workers.

3. Data and Measures

I use the National Database of Childcare Prices (NDCP) for the prices of center- and family-based daycare, and the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS) for the prices of childcare in private households. To analyze the most recent trends while avoiding the influence of major external shocks to the immigration and childcare markets, I focus on the period from 2010 to 2019, which falls after the Great Recession and before the COVID-19 pandemic. The 2010-2019 NDCP provides childcare prices collected from a market rate survey administered to a representative sample of regulated childcare centers and regulated family day care businesses by county. The unit of analysis is county-year.

Unfortunately, this data does not cover the unregulated portion of family day care businesses, which likely represent a large portion of the total. Therefore, I complement the analysis using the 2010-2019 CPS-ASEC with an analysis of earnings of the full-time employed childcare workers in childcare settings, defined in the following subsection. I construct a county-year level dataset, taking the median values of full-time working childcare workers' earnings by county and year.

3.1. Defining Childcare Settings

I define three different institutional settings: private household services, family day care businesses, and center-based care. The first two settings are sometimes combined and

categorized under the “home-based” setting because the former takes place in the child’s home (babysitters, nannies, or au pairs) and the latter takes place in the provider’s home or family day care. However, I consider this aggregation to be somewhat misleading because they serve very different clienteles. Low-income families are far less likely to purchase private household services and tend to rely heavily on family day care businesses. Census industry codes for 2000 and later assign them two different industry codes: private household service industry and child day care industry.

Distinguishing family day care businesses from center-based care is empirically challenging because the latest industry code system (2000 or later) merged previously distinguished workers in “family childcare homes” (863 in 1990 industry code) and those in “center-based care” (862 in 1990 industry code). Researchers utilizing the recent data commonly leverage self-employment status to differentiate these groups. They identify family day care workers as self-employed workers, distinguishing them from the wage-and-salary employees who constitute the majority of the center-based workforce (Ali et al., 2024; Bassok et al., 2013; Herbst, 2018a, 2018b).

This methodology is well-supported by historical data. My own calculations using the 1990 Decennial Census show that only 11.4% of workers in the “child day care services” industry were self-employed. In stark contrast, 99.6% of workers in the “family childcare homes” industry were self-employed in non-incorporated businesses. This significant disparity provides a solid empirical foundation for using self-employment as a proxy to identify family day care providers in modern datasets.²

Based on this, I use industry, class of worker, and occupation to identify three distinct institutional settings: (1) private household providers, (2) family daycare providers, (3) center-based employees. First, private household providers are defined as wage-and-salary employees working in the private household industry. This group primarily consists of nannies, babysitters, or au-pairs who provide care within a child’s own home. Second, family daycare providers are defined as self-employed workers in non-incorporated businesses within the child day care industry. Following the 1990 evidence, this category is expected to primarily capture owners of family daycare businesses. Third, center-based providers are defined as wage-and-salary

² A complete list of the relevant historical and current industry and occupation codes is provided in the Appendix.

employees within the child day care industry. This group includes a mix of occupations, such as childcare workers, teacher assistants, and preschool/kindergarten teachers, reflecting the composition historically found in centers. The requirement that they work in the “child day care industry” is necessary to exclude the large number of teachers now employed in public school-based preschool programs.

These definitions of institutional settings are not perfectly matched with the “home-based” and center-based childcare services in the NDCP), which includes only data on regulated childcare centers and family day care businesses. As a result, NDCP price estimates for the family day care services provided by the self-employed may be biased upward (Herbst, 2022).

Note that, defining workers in family daycare businesses as only those who report as self-employed may underestimate employment in this institutional setting. Family daycare business owners can hire staff to increase enrollment and meet recommended child-to-staff ratios. However, their capacity is still smaller than that of center-based facilities. State regulations set the maximum capacity for this type of childcare home, ranging from 4 to 12 children for small or regular family daycare homes and 7 to 16 children for large or group child daycare homes.³ This implies that the number of staff is also limited in this childcare setting.

This distinction could be an alternative way to define family daycare and center-based care. For example, we could capture additional childcare workers in the family daycare setting by including employees who are (1) childcare workers, (2) in the child daycare industry, and (3) employed in firms with fewer than 10 employees.⁴ In the results section, I will compare the earnings regression results using this alternative definition to those from the originally proposed definition.

³ For detailed licensing regulations for family child care homes, see *Caring for our Children*, National Health and Safety Performance Standards Guidelines for Early Care and Education Programs (National Center on Early Childhood Quality Assurance, 2025).

⁴ The smallest firm size category in the Current Population Survey (CPS) is ‘less than 10 employees.’ This may lead to the misclassification of employees at smaller center-based care facilities as working in family day care.

3.2. Variables

3.2.1. Dependent Variables

The first set of dependent variables is drawn from the NDCP) from 2010 to 2019. The NDCP dataset contains weekly prices of licensed child day care centers and family day care businesses from 2010 through 2019, but does not include unregulated day care businesses or childcare in private households (nannies, au pairs). Using the 2010-2019 NDCP, I draw information on weekly full-time median prices of center-based and family day care prices for infants (aged 0 through 23 months), toddlers (aged 24 through 35 months), and preschoolers (aged 36 through 54 months) by county and year. I adjust these prices to 2019 dollars using the Consumer Price Index (CPI). The unit of analysis is county-year. After removing the observations that have missing values in price information and independent variables that I will describe in the next section, the total number of county-year observations is 551 (Table 1).

Table 1. Number of observations in the NDCP sample

Year	Number of counties
2010	54
2011	60
2012	52
2013	54
2014	58
2015	49
2016	60
2017	66
2018	51
2019	47
Total	551

Table 2 displays the average median prices of center-based and family day care prices (weekly, full-time) by child's age (infant, toddler, preschool). In general, the childcare prices for infants are the most expensive and the prices for preschoolers are the least. The family day care business prices are about 62% to 77% of center-based care prices. Inflation-adjusted prices rose from 2010 to 2019: the center-based care rose about 15% and the family day care businesses rose about 14%.

Table 2. Means and standard errors of childcare prices in NDCP

	Infant		Toddler		Preschool	
	Center-based	Family day care	Center-based	Family day care	Center-based	Family day care
2010	243.98 (9.26)	171.60 (4.84)	201.32 (6.61)	158.24 (4.14)	191.56 (6.50)	154.30 (4.25)
2011	243.22 (8.97)	166.41 (4.52)	200.58 (6.47)	154.92 (3.97)	188.01 (6.55)	150.14 (4.09)
2012	242.13 (9.55)	165.64 (4.80)	200.53 (6.76)	153.11 (4.18)	188.23 (7.01)	148.62 (4.33)
2013	244.53 (10.01)	167.65 (5.16)	206.84 (7.20)	157.30 (4.40)	191.19 (6.69)	152.06 (4.50)
2014	255.39 (10.48)	171.46 (5.49)	215.61 (7.93)	159.44 (4.53)	196.76 (6.73)	154.78 (4.61)
2015	276.67 (12.28)	190.54 (8.01)	234.03 (10.43)	177.87 (7.34)	212.40 (8.18)	172.54 (7.46)
2016	262.35 (11.42)	182.71 (7.31)	226.49 (9.28)	171.85 (6.80)	205.69 (7.70)	167.56 (6.72)
2017	277.79 (11.13)	188.67 (6.08)	235.07 (9.22)	177.06 (5.73)	213.77 (7.91)	170.64 (5.60)
2018	284.85 (11.73)	197.09 (6.99)	245.27 (9.28)	185.44 (6.33)	221.34 (7.62)	180.12 (6.20)
2019	279.54 (13.71)	194.80 (8.24)	236.99 (11.34)	180.86 (7.47)	213.71 (9.83)	175.84 (7.40)

Note: Prices are averaged across counties' median weekly prices for full-time enrollment.

To compensate for the lack of information on the prices of unregulated childcare services in the NDCP data, I use CPS to construct the county-year datasets with the median yearly earnings of full-time working childcare workers in all three settings -- center-based, family day care, private households -- as defined previously. I exclude six county-years where the median earnings for self-employed family day care workers are negative. I also exclude observations if it has missing values in dependent and independent variables. I adjust the earnings to 2019 dollars using the CPI.

Table 3. Number of observations in the CPS-ASEC samples

	Number of counties		
	Private HH	Family day care	Center-based care
2010	18	45	67
2011	11	44	71
2012	18	44	64
2013	22	35	62
2014	21	38	56
2015	15	34	51
2016	12	28	65
2017	14	31	60
2018	18	18	46
2019	21	17	44
Total	170	334	586

Table 4. Means and standard errors of childcare workers annual earnings

	Private HH	Family day care	Center-based care
2010	24657.57 (3827.67)	30603.18 (3745.19)	29025.55 (1614.45)
2011	17914.78 (4011.59)	24139.93 (2084.37)	28059.83 (2123.57)
2012	23466.97 (2413.11)	24325.56 (3008.36)	26845.96 (1775.58)
2013	17011.46 (2340.17)	23666.06 (2890.33)	27475.19 (2573.54)
2014	20001.39 (2937.08)	24941.94 (2767.76)	44339.16 (20894.43)
2015	22537.99 (2169.95)	24382.63 (2487.98)	27120.87 (2220.35)
2016	26106.22 (3315.04)	28147.73 (3061.20)	29293.51 (3115.05)
2017	24578.32 (3381.72)	28436.17 (5373.28)	45943.70 (13688.57)
2018	23169.85 (3955.80)	32227.56 (5369.58)	30846.44 (2855.54)
2019	23203.14 (3011.31)	31035.00 (5542.81)	33359.86 (3298.94)
Total	170	334	586

Note: Earnings are from childcare workers who work full-time only. Means are weighted using the ASEC weights.

Table 3 reports the total number of county-years in the CPS available for earnings data: 170 for private household workers, 334 for family day care workers, and 586 for center-based care workers. The number of counties in the analysis differs by dependent variable due to a lack of reported earnings for full-time childcare workers in particular settings. The significantly smaller amount of data on the earnings of private household workers compared to those in other settings may reflect a smaller number of full-time employees in this setting. It could also indicate that earnings often go unreported, potentially because of a worker's undocumented status. Omitting these workers, who likely have lower earnings, would likely lead to an underestimation of the magnitude.

Table 4 reports the means and standard errors of median annual earnings by provider type. Private household childcare workers earned the least in 2019 (\$23,203), followed by family day care workers (\$31,035) and then center-based workers (\$33,360). On average, this order of earnings remains the same.

3.2.2. Independent Variables

My key independent variable is the ratio of female immigrants in the county's labor force. I first draw a sample of individuals from the CPS who are female civilians and in the labor force, then identify immigrants as those who are born outside the U.S. and outlying U.S. areas or territories and are either naturalized citizens or non-citizens. The non-citizens' portion is likely to include undocumented immigrants, but distinguishing between documented and undocumented is beyond the scope of this paper. Surveys are unlikely to fully capture undocumented workers who are, for obvious reasons, wary of being identified. This could lead to an underestimate of the immigrant effects on both prices and earnings. The analytic sample is restricted to counties in metropolitan areas since the county FIPS codes in CPS in non-metropolitan areas are unavailable due to confidentiality reasons. The CPS notes that the county codes of only about 45 percent of households in recent years are identified. This results in 97.6% of identified counties being metropolitan areas.

Table 5 reports the immigrant shares in both NDCP and CPS samples and compares how they are different from the share in all identifiable counties in CPS. The average shares of female immigrant workers in the county labor force in my NDCP sample ranged from 9 to 12%, which

is 0.2 to 0.4 percentage points higher than the average for all identifiable counties in CPS. The female immigrant shares in the CPS sample also ranged from 9% to 12%, similar to the NDCP sample. Recall that my NDCP and CPS samples require observations to have valid records of childcare prices of center-based and family day care, or earnings records of workers in each provider type. Thus, my analytic samples are likely to include metropolitan areas with established childcare markets, which explains the higher female immigrant shares.

I also use county-year-specific independent variables to control for labor market conditions, especially the factors that are likely to affect childcare demands. Included are unemployment rate, labor force participation rate of women aged 20 to 64, labor force participation rate of women aged 20 to 64 with children under 6, mean wages of college-educated men, and share of women in management, business, and financial occupations. These variables are calculated with the CPS dataset. Additionally, I draw the number of removed immigrants by state from the Transactional Records Access Clearinghouse (TRAC) to address time-varying impacts of the Secure Communities program. I apply an inverse hyperbolic sine (IHS) transformation to the number of removed immigrants to make coefficients interpretable as percentage changes. This transformation is chosen over a standard logarithmic transformation to accommodate the presence of zero values for some state-years, for which the logarithm is undefined. Table 6 reports the means and standard errors of these variables.

Table 5. Shares of female immigrant workers in CPS-ASEC and NDCP samples

	CPS-ASEC			CPS-ASEC Sample (N=745)			NDCP sample (N=551)		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
2010	244	0.07	0.05	92	0.09	0.07	54	0.09	0.07
2011	238	0.07	0.05	91	0.11	0.08	60	0.10	0.08
2012	244	0.07	0.05	83	0.10	0.08	52	0.10	0.09
2013	239	0.08	0.06	82	0.10	0.08	54	0.10	0.07
2014	238	0.08	0.06	74	0.10	0.09	58	0.10	0.09
2015	298	0.08	0.06	67	0.10	0.09	49	0.09	0.09
2016	254	0.08	0.06	75	0.10	0.09	60	0.09	0.08
2017	243	0.08	0.06	74	0.11	0.08	66	0.11	0.09
2018	248	0.08	0.06	55	0.12	0.10	51	0.12	0.10
2019	254	0.08	0.06	52	0.12	0.10	47	0.12	0.11

Note: means and medians are weighted using ASEC weights.

Table 6. Means and standard errors of independent variables

	CPS (N=745)	NDCP (N=551)
Unemployment rates 16 years and older	0.07 (0.00)	0.07 (0.00)
Female labor force participation rate, ages 20-64	0.72 (0.00)	0.72 (0.00)
Female labor force participation rate, ages 20-64, has child under 6	0.67 (0.00)	0.67 (0.01)
College educated men's annual earnings	38298.86 (1305.86)	37568.57 (1412.26)
Share of female employed in management, business, and financial occupations	0.15 (0.00)	0.15 (0.00)
Number of removed immigrants (by state)	16008.07 (1308.02)	21006.54 (1717.70)

Note: Data are from the 2010-2019 Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC) and the 2010-2019 National Database of Childcare Prices (NDCP). Means are weighted using the ASEC weights.

3.3. Empirical Strategy

First, I estimate county-level childcare prices as a function of the female immigrant share of the labor force and local labor market conditions. This analysis is conducted separately for specific child age groups (infants, toddlers, and preschoolers) and daycare settings (family daycare and center-based). Second, I use the same model to estimate the effect on the earnings of childcare workers across three settings: private households, family daycares, and center-based setting. Taking the log of the dependent variables (Y) in county c in year t , the OLS estimator can be obtained as follows:

$$\ln Y_{ct} = \beta_1 \ln Imm_{ct} + \beta_2 X_{ct} + \gamma A_c + \eta P_t + \epsilon_{ct}$$

Where $t = 2010, \dots, 2019$.

Imm_{ct} denotes the share of female immigrant workers in the labor force in county c in year t . Taking logs of it allows me to interpret β_1 as the percentage change in Y per one percent change in the share of female immigrants, holding everything else equal. X is a vector of county-specific conditions. A_c and P_t are county and year fixed effects, respectively. Robust errors are clustered by county.

The OLS estimator may be biased if there are unobservable, county-specific factors that contribute to the prices of childcare services. For example, counties in Los Angeles and Denver are inherently different culturally, historically, and economically, which shape childcare markets differently, but are unobservable or unquantifiable. The fixed effects (FE) model removes this unobserved, stable variation between counties and therefore allows me to focus on changes within county over time, rather than to differences between counties.

While the FE estimator can control for time-invariant unobserved factors, it is vulnerable to time-varying ones. In this analysis, changes in childcare policy that roll out differently by county may affect the validity of the FE estimates. As discussed in the background, the Head Start program for preschoolers grew significantly between 2010 and 2019, with dramatic variations by state. This expansion, which entailed increased educational requirements for childcare workers, could lower the demand for immigrant workers, thus lowering the female immigrant share. It could also reduce the demand for childcare services in private households or daycare centers, particularly in areas where preschool programs are provided at schools. Consequently, the FE estimates may be positively biased, given a potential negative association between the program's growth and both the female immigrant share and childcare prices.

The FE model is:

$$\ln Y_{ct} = \beta_1 \ln Imm_{ct} + \beta_2 X_{ct} + \alpha_c + \epsilon_{ct}$$

Where $t = 2010, \dots, 2019$.

α_c is a county-specific intercept that controls for heterogeneities across counties.

4. Results

4.1. NDCP result

Table 7. OLS regression: childcare prices in NDCP

	Infant		Toddler		Preschool	
	Center-based	Family day care	Center-based	Family day care	Center-based	Family day care
$\ln(\text{female immigrants})$	-0.0124	-0.0203	-0.0066	-0.0202	-0.0079	-0.0277+
	(0.0130)	(0.0196)	(0.0170)	(0.0150)	(0.0177)	(0.0163)

Unemployment rates 16 years and older	-0.0503 (0.1645)	-0.0407 (0.1429)	-0.0208 (0.2451)	0.0708 (0.1419)	0.1116 (0.2149)	0.0860 (0.1528)
Female labor force participation, ages 20-64	-0.0277 (0.1071)	0.0635 (0.0966)	0.0606 (0.1444)	0.0485 (0.0876)	0.1285 (0.1364)	0.0178 (0.0966)
Female labor force participation, ages 20-64, has child under 6	0.0153 (0.0463)	-0.0567 (0.0375)	0.0044 (0.0551)	-0.0121 (0.0372)	-0.0017 (0.0503)	0.0060 (0.0394)
College educated men's wage	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Share of women employed in management, business, and financial occupations	0.1653+ (0.0923)	0.1132 (0.0967)	0.2042 (0.1243)	0.1083 (0.0925)	0.1406 (0.1306)	0.0860 (0.1027)
Inverse hyperbolic sine of removed immigrants	0.0128 (0.0084)	0.0071 (0.0107)	0.0184+ (0.0105)	0.0080 (0.0072)	0.0264* (0.0117)	0.0132 (0.0084)
N	551	551	551	551	551	551

*p < .05, + < .10

Note: Data are from the 2010-2019 National Database of Childcare Prices (NDCP). All regressions include county and year fixed effects. Standard errors are clustered by county.

Table 7 presents the coefficients on the female immigrants' share from OLS. While none of the coefficients on the log female immigrant share are statistically significant at 5%, the results suggest a negative association between female immigrant share and childcare prices, with a larger negative effect for family day care.

Table 8 presents the FE estimators that control for county-specific unobserved heterogeneity. The share of female immigrants seems to have no statistically significant effect on the prices of center-based care for infant, toddler, or preschool children. In contrast, it shows a negative and statistically significant effect on family day care prices. A 10% increase in the share of female immigrants is associated with a 0.18% decrease for infants, a 0.17% decrease for toddlers, and a 0.22% decrease for preschoolers in family day care. As the average share of female immigrants in the NDCP sample was between 9% to 12%, a 10% change would mean about a one percentage point change in the share, for example, from 10% to 11%. These effects are very small, yet consistent with hypothesis 1: that increases in the share of female immigrants are associated only with family day care prices and not with center-based care prices.

Table 8. FE regression: childcare prices in NDCP

	Infant		Toddler		Preschool	
	Center-based	Family day care	Center-based	Family day care	Center-based	Family day care
ln(female immigrants)	-0.0068 (0.0071)	-0.0183+ (0.0104)	-0.0004 (0.0086)	-0.0171* (0.0085)	-0.0018 (0.0093)	-0.0218* (0.0091)
Unemployment rates 16 years and older	-0.5023* (0.1476)	-0.5138* (0.1556)	-0.4091* (0.2027)	-0.3959* (0.1467)	-0.2704 (0.1896)	-0.4128* (0.1539)
Female labor force participation, ages 20-64	0.0275 (0.0898)	0.1304 (0.0867)	0.1019 (0.1186)	0.1055 (0.0788)	0.1693 (0.1127)	0.0864 (0.0870)
Female labor force participation, ages 20-64, has child under 6	0.0097 (0.0384)	-0.0531 (0.0324)	-0.0027 (0.0461)	-0.0109 (0.0322)	-0.0060 (0.0414)	0.0088 (0.0332)
College educated men's wage	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Share of women employed in management, business, and financial occupations	0.1929* (0.0812)	0.1407 (0.0924)	0.2286* (0.1031)	0.1439 (0.0879)	0.1740 (0.1087)	0.1229 (0.0956)
Inverse hyperbolic sine of removed immigrants	-0.0008 (0.0052)	-0.0025 (0.0087)	0.0047 (0.0074)	-0.0048 (0.0059)	0.0115 (0.0075)	0.0000 (0.0072)
N	551	551	551	551	551	551

*p < .05, + < .10

Note: Data are from the 2010-2019 National Database of Childcare Prices (NDCP). Standard errors are clustered by county.

Not many coefficients on other independent variables are statistically significant. One exception is the unemployment rate. The negative association between unemployment rates and childcare prices might be obvious because unemployed parents can take care of their children instead of enrolling them in formal childcare. Additionally, looser labor market conditions tend to reduce the bargaining power of workers, leading to lower wages. The share of women employed in management, business, and financial occupations is positively associated with the center-based care prices for infants and toddlers. It also makes sense that a larger share of higher-earning women in the labor force would indicate greater demand for childcare, and higher-earning, higher-educated women are more likely to use center-based than family day care.

4.2. CPS result

Table 9 presents the coefficients on the female immigrants' share from OLS. Similar to the NDCP analysis, the coefficients on key variables are not statistically meaningful, although their magnitudes vary.

Table 9. OLS regression: childcare workers' earnings in CPS-ASEC

	Private Household	Family day care	Center-based
ln(female immigrants)	0.4683 (0.5803)	-0.4475 (0.3009)	-0.1042 (0.1557)
Unemployment rates 16 years and older	5.0137 (10.4209)	-0.2502 (4.4901)	-2.0941 (2.4824)
Female labor force participation, ages 20-64	2.0410 (3.8294)	-1.6792 (3.2530)	0.3895 (1.1293)
Female labor force participation, ages 20-64, has child under 6	2.1060 (1.7317)	-0.0362 (1.2385)	-0.1401 (0.4755)
College educated men's wage	-0.0000 (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
Share of women employed in management, business, and financial occupations	5.1082 (3.4236)	1.2447 (2.4722)	-1.9397* (0.9235)
Inverse hyperbolic sine of removed immigrants	-0.0170 (0.2907)	-0.2653+ (0.1455)	-0.0153 (0.0753)
N	170	334	586

*p < .05, + < .10

Note: Data are from the 2010-2019 Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC). All regressions include county and year fixed effects. Standard errors are clustered by county.

Table 10 presents the FE results. An increase in the share of female immigrants has no statistically significant effect on the earnings of childcare workers in private household and center-based settings. However, a 10% increase in the female immigrants' share is associated with a 4% decrease in earnings in the family day care business. This is consistent with my expectation that an inflow of immigrants is driving wages down where they are concentrated.

It is a notable finding that the observed decline in family day care worker earnings did not translate into a corresponding decrease in family day care prices, as seen in the NDCP result. This apparent paradox may be explained by significant, concurrent shifts in the broader childcare market towards higher quality, characterized by reduced child-to-staff ratio and group size. This shift over time might impose operational and competitive challenges on small family daycare owners and counteract any potential price reductions that would otherwise stem from the decline in labor earnings associated with an increased share of female immigrant labor.

The result is partially consistent with hypothesis 2, which predicts a significant negative effect on the earnings of workers in the private household setting. Although it is not statistically significant, the effect for private households is second largest: a 3.4% decrease in earnings per 10% increase in the female immigrants' share. I suspect the small sample size for this group (N=170) is the culprit for the reduced statistical power.

Table 10. FE regression: childcare workers' earnings in CPS-ASEC

	Private Household	Family day care	Center-based
ln(female immigrants)	-0.3445 (0.2329)	-0.4027* (0.1506)	-0.0283 (0.1074)
Unemployment rates 16 years and older	2.5468 (4.5494)	-0.5657 (2.7655)	-3.4190* (1.5295)
Female labor force participation, ages 20-64	0.7798 (2.6616)	-0.8972 (2.5044)	0.7230 (0.8938)
Female labor force participation, ages 20-64, has child under 6	2.4520+ (1.4040)	0.2977 (0.8515)	-0.1423 (0.3747)
College educated men's wage	-0.0000+ (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
Share of women employed in management, business, and financial occupations	4.2987+ (2.4411)	1.4765 (1.7487)	-1.6820* (0.7696)
Inverse hyperbolic sine of removed immigrants	0.0455 (0.1963)	-0.2893* (0.1357)	0.0132 (0.0431)
N	170	334	586

*p < .05, + < .10

Note: Data are from the 2010-2019 Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC). Standard errors are clustered by county.

Similar to the NDCP results, the unemployment rate has a strong, negative effect on center-based childcare workers' earnings. The share of women in management, business, and financial occupations also has a strong, negative effect on center-based childcare workers' earnings. This seems incompatible with the NDCP finding that a higher share of these higher-earning women is associated with higher center-based care prices.

4.3. Immigration by Education Level

Previous studies that examine the immigrant effect on college-educated, U.S.-born women seek explanations from the low wages of immigrant high-school dropouts. It is worthwhile to explore how the effects obtained above change if I change the key variable to female immigrants without a high school diploma.

Table 11 presents coefficients on the share of female immigrants without a high school diploma from the FE models. The negative effect on family daycare prices for all three children's age groups becomes slightly more prominent. Table 12 presents the FE results on childcare workers' earnings. Although the effect is only significant at the 10% level, the coefficient on female immigrants without a high school diploma becomes significant. This is perhaps because childcare workers in private households, which tend to have less strict educational requirements than other settings, consist more of lower-educated female immigrants.

Table 11. FE regression: the effect on childcare prices by immigrants' education

	Infant		Toddler		Preschool	
	Center-based	Family day care	Center-based	Family day care	Center-based	Family day care
Without high school diploma						
ln(female immigrants without high school)	-0.0054 (0.0052)	-0.0225* (0.0084)	-0.0036 (0.0066)	-0.0220* (0.0087)	-0.0098 (0.0076)	-0.0260* (0.0094)
N	486	486	486	486	486	486

*p < .05, + < .10

Note: Data are from the 2010-2019 National Database of Childcare Prices (NDCP). Regressions include all control variables (unemployment rate for 16+, female labor force participation rates for 20-64, female labor force participation rates for 20-64 with children under 6, college-educated men's annual earnings, share of women employed in management, business, and financial occupations, and inverse hyperbolic sine of removed immigrants). Standard errors are clustered by county.

Table 12. FE regression: the effect on childcare workers' earnings by immigrants' education

	Private Household	Family day care	Center-based
Without high school diploma			
ln(female immigrants without high school)	-0.3131+ (0.1615)	-0.1192 (0.1361)	-0.0709 (0.0774)
N	161	295	527

*p < .05, + < .10

Note: Data are from the 2010-2019 Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC). Regressions include all control variables (unemployment rate for 16+, female labor force participation rates for 20-64, female labor force participation rates for 20-64 with children under 6, college-educated men's annual earnings, share of women employed in management, business, and financial occupations, and inverse hyperbolic sine of removed immigrants). Standard errors are clustered by county.

Table 13. FE regression: the effect on childcare workers' earnings (alternative definition)

	Private Household	Family day care	Center-based
ln(female immigrants)	-0.3445 (0.2329)	-0.2987* (0.1276)	-0.0204 (0.1195)
N	170	454	492

*p < .05, + < .10

Note: Data are from the 2010-2019 Annual Social and Economic Supplements of the Current Population Survey (CPS-ASEC). Regressions include all control variables (unemployment rate for 16+, female labor force participation rates for 20-64, female labor force participation rates for 20-64 with children under 6, college-educated men's annual earnings, share of women employed in management, business, and financial occupations, and inverse hyperbolic sine of removed immigrants). Standard errors are clustered by county.

4.4. Alternative definition of childcare settings

Using self-employment to define childcare settings (family daycare vs. center-based) has a potential shortcoming: it mistakenly categorizes wage-earning employees in family daycare businesses as center-based workers. To overcome this, I employ an alternative definition based on the number of staff (firm size). This approach is based on the fact that family daycare homes consist of a smaller number of employees, as state regulations cap the maximum number of children they can serve. Therefore, I identify family daycare providers as wage-earning childcare workers in firms with fewer than 10 staff members, in addition to self-employed childcare workers.

Table 13 shows the fixed-effects (FE) results using this alternative definition. The estimated effect of an increase in share of female immigrants on family daycare workers is smaller (-0.2987*) than the result shown in Table 10 (-0.4027*). I suspect this difference is driven by the income of childcare business owners, who are more directly affected by changes in the share of female immigrant workers.

5. Conclusion

With the exception of Cortes (2008), existing studies have primarily focused on the effect of low-skilled immigration on the labor supply of native-born, college-educated women. However, the specific channels through which low-skilled immigrants exert this effect remain underexplored. In the U.S., where public childcare support is severely lacking, most families depend on market-based childcare services. The non-parental, formal childcare workforce is predominantly female, with immigrant women constituting a significant portion, especially in low-wage positions. In this context, it is important to understand the role of female immigrants in shaping childcare prices. This paper contributes to this literature by examining the childcare channel directly and providing estimates by childcare setting.

I find a negative association between the share of female immigrants in the county labor force and the price of family day care, but not the price of center-based care. However, the magnitude is very small: a 10% increase in the share of female immigrants is associated with a less than 1% decrease in family day care prices. The negative effect was larger on the earnings of female immigrant workers in family day care: a 10% increase in the female immigrants' share is associated with a 4% decrease in earnings from family day care businesses. My results suggest that while female immigrants may help low-income parents afford childcare, the magnitude of this effect may be too small to influence the labor supply of parents, especially mothers.

One of the shortfalls of this study is that it does not consider the family, friend, and neighbor (FFN) care providers. These FFN care providers are often invisible in quantitative databases and policy conversations, while their contributions are not trivial. FFN care providers are disproportionately immigrants and undercompensated or not compensated (Coleman-Castillo & Faison, 2025; Fintland et al., 2024; Miller & Schulman, 2021; Park & Pena, 2021). According to the National Women's Law Centers' report, 64% of FFN childcare providers who responded to

their survey were Spanish speakers (Miller & Schulman, 2021). Future research that includes them in the analysis would be a valuable contribution.

While this paper discusses the intersection between immigration and childcare workforce, nonetheless, I believe it has greater implications for childcare policy than for immigration policy. My findings underscore that relying on immigrant labor is not a substitute for robust public investment in childcare. Meaningful solutions to the nation's childcare crisis will require direct policy interventions to improve affordability and quality for families. The broader investments in childcare accompanied by the recognition of educational credentials and related experiences obtained abroad will be an important next step.

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Appendix. Definition of Childcare Workers

Distinguishing family day care businesses from center-based care is empirically challenging because the latest industry code system (2000 or later) merged previously distinguished workers in “family childcare homes” (863 in 1990 industry code) and those in “center-based care” (862 in 1990 industry code). Researchers utilizing the more recent data use the self-employment status of workers to distinguish family day care business owners (self-employed) from employees in center-based care (who work for wages) (Ali et al., 2024; Bassok et al., 2013; Herbst, 2018a, 2018b).

Appendix Table 1. Class of childcare workers in 1990 American Community Survey (ACS)

	1990 industry code				Total
	Child day care (862)		Family childcare homes (863)		
Self-employed, not incorp.	2,800	11.4%	22,879	99.6%	25,679
Self-employed, incorp.	242	1.0%	6	0.0%	248
Wage/salary, private	13,263	54.0%	74	0.3%	13,337
Wage/salary at non-private	6,328	25.7%	0	0.0%	6,328
Federal govt employee	500	2.0%	0	0.0%	500
State govt employee	474	1.9%	0	0.0%	474
Local govt employee	881	3.6%	0	0.0%	881
Unpaid family worker	92	0.4%	2	0.0%	94
Total	24,580	100%	22,961	100%	47,541

Source: ACS 1990

Notes: Numbers and percentages are not weighted. Childcare workers are defined as those with childcare occupations: childcare workers (4600), preschool and kindergarten teachers (2300), teacher assistants (2540), and special education teachers (2330) (2010 Census occupation codes).

There is a clear contrast in self-employment status between those reporting their industry as “child day care” and those reporting their industry as “family childcare” in the 1990 Decennial Census. While there have been changes in the childcare industry since 1990, the last Census before this coding change might provide some insights. A majority of workers (regardless of occupation) in the child day care industry in the 1990 Decennial Census were workers who worked for wages/salaries (79.7%) and only about 11.4% were self-employed in non-incorporated businesses (Appendix Table 1). In contrast, 99.6% of workers in family childcare homes were self-employed in non-incorporated businesses and only 0.3% were waged/salaried

workers. Although family day care business owners may hire one or more employees depending on their group size, child's age, and their state or local licensing regulations, it is interesting that only 0.3% in this industry were employees in 1990. To see if there are any differences in occupational composition between family childcare homes and child day care industries in the 1990 data, I look at the occupations that workers in each industry are most likely to report. Nearly 97% of those in the family childcare homes report themselves as childcare workers (1990 occupation code: 468; 2010 occupation code: 4600). In contrast, the child day care service industry was comprised of only 3.5% childcare workers, 43.7% teacher assistants, and 31.7% preschool or kindergarten teachers.

In this paper, I use 2010 occupation codes, 2008 industry codes (the same industry classification for childcare industries as the 2000 version), and class of worker to identify three institutional settings in 2010-2019 CPS: (1) employees in the private household service industry, (2) self-employed workers in the child day care industry (primarily in family day care businesses), and (3) employees in child day care industry (in center-based employment). These codes and employment class by setting are reported in Appendix Table 2.

Those in the first category, childcare providers in private household settings, are those in the private household industry (code 9290) and whose occupations are childcare workers (code 4600) or preschool and kindergarten teachers (code 2300). This group of childcare workers is likely to be nannies, babysitters, and au-pairs who provide care in a child's home. This category is relatively small compared to center-based and family day care and due to its informal nature, the size of the workforce may be underestimated.

Those in the second category, working in family day care businesses, are those who are self-employed in non-incorporated businesses, whose industry is child day care (code 8470), and whose occupations are childcare workers (code 4600) or preschool and kindergarten teachers (code 2300). As mentioned previously, almost all family childcare home providers are self-employed based on the 1990 Decennial Census, thus I expect that this category comprises those who run family day care businesses and a small number of self-employed center-based providers.

Those in the third category include center-based employees in the child day care services industry (code 8470) and whose occupations are childcare workers (code 4600), teacher assistants (code 2540), special education teachers (code 2330), or preschool and kindergarten

Appendix Table 2. Industry and occupation codes of the childcare workers

Setting	Class of worker	Industry codes (2008 onward)	Industry title	Occupation codes (2010)	Occupation title
Private household employee	Wage employee	9290	Other services, private household	4600	Childcare workers
				2300	Preschool and kindergarten teachers
		8370	Individual and family services	4600	Childcare workers
				2300	Preschool and kindergarten teachers
Family day care businesses	Self-employed, non-incorporated	9290	Other services, private household	4600	Childcare workers
				2300	Preschool and kindergarten teachers
		8470	Child day care services	4600	Childcare workers
				2300	Preschool and kindergarten teachers
		8370	Individual and family services	4600	Childcare workers
				2300	Preschool and kindergarten teachers
Center-based	Wage-employee	8470	Child day care services	4600	Childcare workers
				2540	Teacher Assistants
				2330	Special Education Teachers
				2300	Preschool and kindergarten teachers

teachers (code 2300). Some states are now providing preschool services as an extension of public education. Since these employees would be reported in the primary/secondary education industry rather than the childcare industry, they are not included here (the childcare industry criterion is necessary to exclude the large number of kindergarten teachers now employed in public schools.