ASSESSING THE IMPACT OF IMMIGRATION POLICIES ON LABOR SHORTAGE IN THE US MEAT PROCESSING INDUSTRY.

by

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(Under the Direction of Genti Kostandini)

ABSTRACT

This study investigates the effects of intensified immigration enforcement policies, specifically the E-Verify mandates and 287(g) policy agreements, on labor market outcomes within the United States meat processing industry using Metropolitan Statistical Area (MSA) panel data spanning 2000-2013. We employ a difference-in-differences model approach to estimate the impact of E-Verify and 287(g) on employment levels and wages in meat processing occupations across US metropolitan areas. The U.S. meat Industry has heavily relied on immigrant labor for critical tasks and operations such as slaughtering, cutting, and packaging, rendering it vulnerable to workforce disruptions stemming from strict immigration policies. Our findings show that nationwide states with a high E-Verify enforcement level led to statistically significant reductions in meat processing employment, with estimates suggesting approximately a 36% decline following mandate implementation. We conclude that blanket E-Verify adoption could exacerbate prevailing labor shortages in the meat processing industry by directly restricting the employment of unauthorized workers. However, technological advances like automation that reduces human participation and alternative workforce strategies may have dampened anticipated wage pressures from reduced labor supply in the short run.

INDEX WORDS: Immigration Enforcement, Labor Shortage, E-Verify Program, 287(g) Agreements, Meat Processing Industry.

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DEDICATION

Firstly, I dedicate this thesis to the almighty God, from whom I consistently drew strength and inspiration, especially during moments when imposter syndrome loomed large. I am grateful for the gifts of my ever-supportive parents; it's not easy when you are far away from home for over 2 years and the only thing your parents can muster courage on is that *"it's for the greater good"*, their prayers and words of encouragement were my sanctuary; truly, there is nothing that beats family! They have set me on a path of quality education, and I will always be indebted to them! My journey here would have been significantly lonelier without my dear friend, Olanipekun Olanrewaju Adebayo, whose presence, and encouragement have been nothing short of inspirational. We embarked on this academic adventure together and your regular check-ins during the thesis writing process were a source of motivation that I deeply cherish. To my adorable and beloved wife, Oluwadamife Ogunola (Nee Olaseni), You have shown me what is it like to have a supportive wife and more like it, to have one who's smart and intelligent who's able to comprehend my econometrics musings and share in my frustrations, all the while believing in my potentials, has been a gift like no other! You have shown me the true meaning of support, trust, and companionship. This thesis, and indeed the culmination of this program, would not have been possible without you by my side. This dedication is epically for you, a testament to your profound impact on my journey.

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CHAPTER 1

INTRODUCTION

The meat processing and packing industry in the United States is highly labor-intensive, relying extensively on a large low-skilled workforce to conduct critical functions such as slaughtering, meat cutting, processing, inspection, and packaging (MacDonald and Hoppe, 2017). This reliance on manual workers makes the industry vulnerable to disruptions in labor supply and availability.

The U.S. economy's meat industry has benefited significantly over the past few decades from the labor of both documented and undocumented immigrants. It is estimated that over 30% of the meat processing workforce is foreign-born, with significant shares being undocumented immigrants (Kandel & Parrado, 2005). Access to this immigrant workforce has enabled the expansion of the industry across rural America. However, immigration policy changes can disrupt the labor supply for meat processors (Artz, Jackson & Orazem, 2010). This heavy reliance on immigrant workers is driven by the industry's difficulty in attracting and retaining domestic workers for the demanding, hazardous, and low-paid jobs in meat processing facilities (Hellerstein et al., 2021); the industry has encountered persistent challenges in maintaining an adequate labor force, which is crucial for its operational efficiency and overall productivity (Dan and Travis, 2017).

Research has clearly shown that implementation of immigration policies like E-Verify, and 287(g) agreements leads to statistically significant reductions in the local undocumented immigrant populations, often by 10% or more, driven both by direct deportations as well as "chilling effects" whereby potential immigrants are deterred and existing ones may leave due to increased perceived risk (e.g., Kostandini et al., 2013; Bohn, Lofstrom, and Raphael 2014).

As a result, industries like meat processing that rely heavily on immigrant labor have experienced critical worker shortages and recruitment difficulties in jurisdictions with active 287(g) programs and E-Verify.

Labor scarcity within the meat processing industry has profound economic implications, influencing various facets of the industry's functioning. Studies have indicated that reduced workforce availability can lead to diminished production capacities and operational inefficiencies (Brown, 2020). According to Flynn et al., (2015), the economic repercussions extend to increased production costs due to the potential need for higher wages to attract available workers. Additionally, labor shortages may lead to disruptions in production schedules, causing delays in meeting market demands and potentially affecting the industry's competitiveness. Understanding the economic implications of labor scarcity is essential for stakeholders within the meat processing industry and policymakers alike, as it informs decision-making processes aimed at addressing labor shortages while sustaining economic viability.

This research thesis aims to analyze how E-Verify and 287g immigration enforcement policies have affected the meat processing industry workforce and economic outcomes. More specifically we examine the impact of immigration enforcement policies (E-Verify and 287g agreements) on labor availability (Employment) and labor cost (wage) in the US meat processing industry. This study will provide insights into how localized and nationwide immigration crackdowns affect a vital industry and the economic health of rural communities hosted by meat processing plants. Findings can inform the policy debate on balancing immigration enforcement priorities with industry workforce needs.

Understanding the correlation between intensified immigration enforcement measures, exemplified by the E-Verify, 287g agreements, and other immigration policies and the exacerbation of labor shortage within the US meat processing industry holds significant importance. Exploring this relationship is crucial for policymakers, industry stakeholders, and the broader community to comprehend the multifaceted implications of immigration enforcement policies on labor dynamics within a critical sector of the economy.

The need to investigate the impact of immigration enforcement policies on labor shortages in the US meat processing industry stems from the critical need to comprehend the intricate relationship between immigration policies and workforce availability within this sector. By understanding the implications of enforcement measures on labor dynamics, it becomes imperative to develop informed strategies that mitigate potential disruptions to production, safeguard operational continuity, and ensure the industry's competitiveness in meeting market demands.

While several existing works of literature such as (Kostandini et al., 2012; Amuedo-Dorantes & Bansak, 2012; Crux et al., 2022), provide valuable insights into the broad consequences of immigration enforcement on agriculture, there remains a gap in our understanding of these effects on the meat processing industry specifically. This study aims to bridge this gap by delving into the interplay between historical reliance on immigrant labor, challenges in labor availability, and the implementation of stringent immigration enforcement measures like the E-Verify and 287(g) program has significantly impacted the US meat processing industry.

CHAPTER 2

BACKGROUND ON IMMIGRATION LAWS

Immigration enforcement agencies have targeted major meat processing companies more frequently over the past decades years, conducting high-profile raids that result in the deportation of hundreds of immigrant workers at a time. One of the major drivers of such immigration enforcement actions targeting the meat industry has been the 287(g) program, authorized under Section 287(g) of the Immigration and Nationality Act. The enactment of Section 287(g) within the Immigration and Nationality Act in 1996 has catalyzed significant debate and scrutiny regarding its impact on immigration enforcement practices. According to Randy et al., (2011) the provision, allowing the delegation of immigration enforcement powers to state and local officers, has sparked widespread attention, operating across 72 jurisdictions. Assessing its implementation, enforcement outcomes, associated costs, and community impacts becomes imperative in understanding the dynamic interplay between federal immigration policies and localized enforcement initiatives.

Immigration enforcement became a more important topic in US policy in the 1990s when the undocumented immigration population was growing at a very fast rate of about 500,000 people per year (Passel, 2002). The public saw population growth as a problem, with many believing that immigrants arrived in the United States to seek welfare and public assistance benefits (Pantoja, 2006). In response, the federal government enacted the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), strengthening the US immigration enforcement laws. The IIRIRA made the deportation of undocumented immigrants easier and made legal immigration more challenging. IIRIRA also strengthened the ability of local law enforcement at the county, city, and

state levels to pass and enforce immigration laws, enabling states, counties, and localities to enter 287(g) agreements with the US Immigration and Customs Enforcement (ICE) and enforce E-Verify. 287(g) agreements authorize trained law enforcement officers to enforce federal immigration laws such as detaining undocumented immigrants and investigating individuals to determine their legal status.

Although IIRIRA was enacted in 1996, the first 287(g) agreement was not signed until 2002, with the Florida Department of Law Enforcement. By 2010, there were 70 agreements between ICE and either state, city, or county law enforcement (Gelatt et al., 2017). 287(g) agreements intend to reduce the population of undocumented immigrants, with deportation, while E-Verify is used to reduce undocumented immigrants in the workforce. E-Verify is a federal program that allows employers to electronically verify whether their employees are legally able to work in the United States using a federal database of worker eligibility. Due to a lack of action or enforcement of immigration policies like E-Verify by the federal government, many states began to pass legislation to enforce immigration laws. In 2008, Arizona became the first state to enforce the use of E-Verify. It was required to be used by all employers, private or public without exception starting January 1, 2008. Arizona is considered to have one of the strictest states-level E-Verify laws (Bohn et.al, 2014). The Arizona law was challenged in the Supreme Court but was upheld in 2011 (Feere, 2013). After this ruling, many more states began to embrace the use of E-Verify and enacted laws to enforce it. It became a common policy method used by states wanting to limit the undocumented immigration population in the workforce, in hopes of improving the labor market for legal residents. By 2012, 20 states had some policy to require the use of E-Verify for employment of at least some employees in the public or private sector or both, but most states only require the use of E-Verify in the public sector (Feere, 2013).

2.1 287(g) Policy Agreements

Section 287(g) of the Immigration and Nationality Act was enacted as part of the 1996 Illegal Immigration Reform and Immigrant Responsibility Act. This provision authorized the federal government to partner with state and local law enforcement agencies to enforce immigration law under close federal supervision (ACLU, 2019). Through a signed Memorandum of Agreement (MOA), selected officers can be delegated authority to investigate immigration violations after receiving ICE training. 287(g) mandates reduce the immigrant population directly through deportations and indirectly by increasing fear of being racially targeted or fear of being deported in immigrant communities (Amuedo-Dorantes, Puttitanun, and Martinez-Donate 2019).

The 287(g) program has several models. The most common is the jail enforcement model where deputized officers identify potentially removable immigrants who have been arrested on state or local charges and are detained in jail facilities (ACLU, 2019). Once screened for immigration status, detainees can be issued a detainer to hold them for transfer to ICE custody rather than being released. The 287(g) program greatly expands the enforcement capacity of ICE given limited federal resources. Local agencies gain access to federal immigration databases to aid their efforts. The Illegal Immigration Reform and Immigrant Responsibility Act of 1996 emerged amid rising anti-immigrant sentiments in the U.S. and established a legal framework for increased border security and reduced employment opportunities for unauthorized workers (Lowell et al., 2008).

However, few jurisdictions took advantage of 287(g) authority in the first decade after passage. By 2005, only two MOAs existed in Florida and Alabama (Vaughn, 2009). However, the program grew rapidly starting in 2007, as local communities perceived inadequate federal enforcement and sought to reduce expenses associated with unauthorized immigrants (Coleman & Kocher, 2011).

By 2010, a total of 1,210 state and local officers had been trained and certified under 287(g) MOAs, operating in 71 jurisdictions across 24 states, and over 51 counties had adopted the 287(g) agreements (Capps et al., 2011). Figure 1 illustrates the landscape distribution of 287(g) agreements across counties in the United States over the period from 2005 to 2012. Each map represents a single year where the policy has been implemented over the years; 287(g) counties are red, showing the counties where 287g agreements were active.

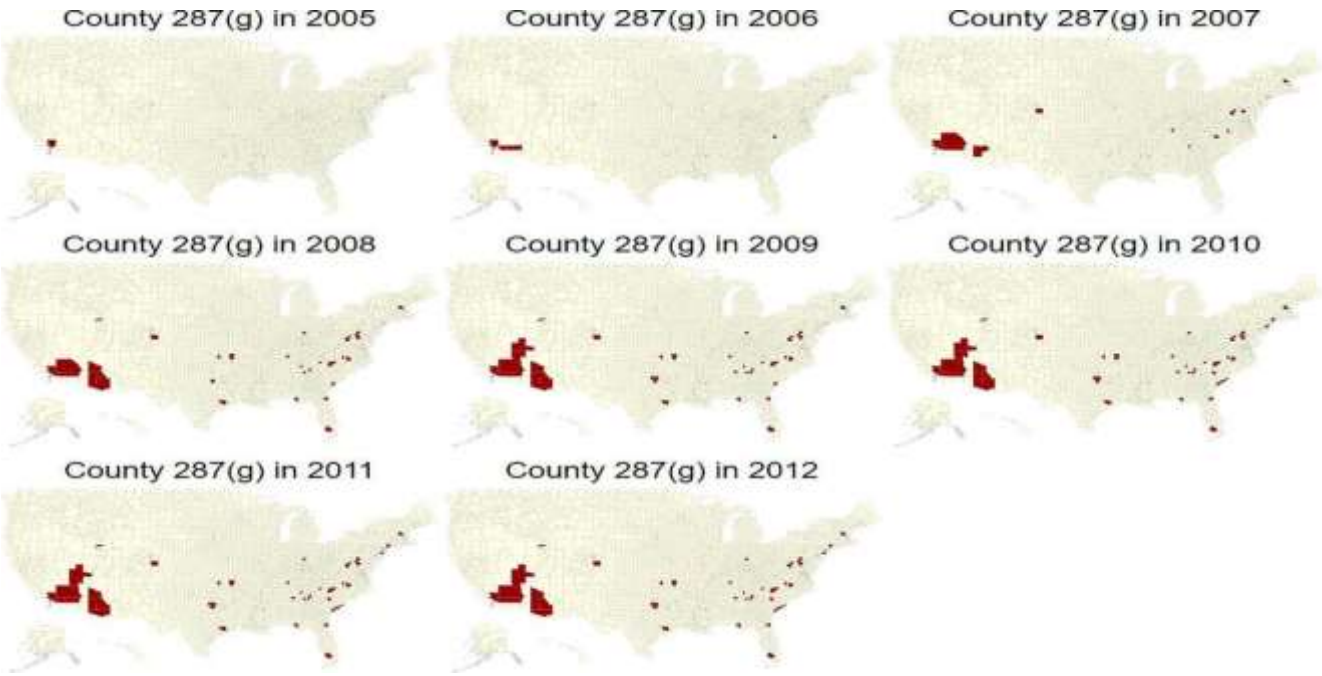


Figure 1. Implementation of county 287(g) policies over time, 287(g) counties are red (Source: Charlton and Kostandini, 2021)

Figure 1 provides visual insights into the regional dynamics of enforcement policies under 287g agreements. The priorities and structure of 287(g) partnerships were inconsistently implemented across jurisdictions. Some focused on serious criminals like drug traffickers as envisioned federally, while others targeted minor offenders like traffic violators based on local policy preferences (Liptak, 2009).

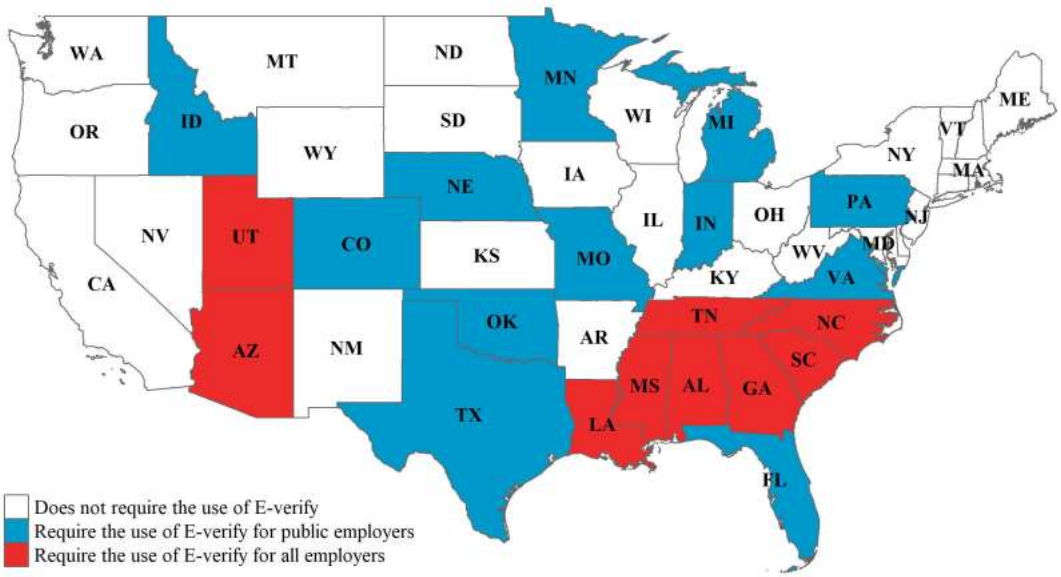
Critics argued many jurisdictions used the program to facilitate racial profiling against Hispanics rather than strictly public safety goals (Armenta, 2017). In 2012, U.S. Immigration and Customs Enforcement (ICE) instituted reforms to standardize and refocus 287(g) programs on serious offenders by setting priorities and strengthening oversight (ACLU, 2019). The Trump Administration later reinstated the flexibility and expanded the scope of the program. Currently, 67 law enforcement agencies across 21 states participate in 287(g) agreements, although far fewer focus on minor crimes than during the peak adoption period of the late 2000s which is the focus of this study (ICE, 2020).

In 2012, the Department of Homeland Security quit renewing agreements as they expired, and according to (Bohn and Santillano 2017) only six agreements were signed between 2012 and 2016. 287(g) partnerships have been controversial regarding their impact on immigrant communities and racial profiling concerns. Critics argue the program leads to pretextual arrests of Hispanics for minor offenses to process their immigration status once detained (Armenta, 2017). High-profile immigration raids on meat processing plants have also occurred, such as the 2008 Postville, Iowa raid disrupting production at a major kosher poultry processing facility (Liptak, 2009). The meat processing industry's reliance on immigrant labor makes it vulnerable to immigration enforcement efforts.

2.2 E-Verify Policy Program

E-Verify is an electronic verification system operated by the Department of Homeland Security (DHS) in partnership with the Social Security Administration (SSA) to confirm the work authorization status of employees (Bohn & Lofstrom, 2013). It provides access to federal databases for employers to cross-check the identity and employment eligibility information submitted on Form I-9 by new hires against government records (Amuedo-Dorantes & Bansak 2012). If a

discrepancy or tentative non-confirmation arises, the employer is required to notify the worker, who then has 10 days to contest the issue (Rosenblum, 2011). If the issue remains unresolved, the employer must terminate the worker to stay compliant with the mandate. E-Verify aims to curb the hiring of undocumented immigrants by enabling employers to easily verify the employment eligibility of candidates (Amuedo-Dorantes & Bansak, 2012).



Notes: Thirteen states require only public employers including state/local agencies, contractors, and/or subcontractors to use E-Verify, while nine states require all or nearly all public and private employers to enroll in the E-Verify system. Alaska and Hawaii, which do not require the use of E-Verify, are excluded in the figure.

Figure 2: E-Verify Mandatory States (Source: Lim and Paik, 2022)

Figure 2 showed several states have adopted laws mandating or strongly encouraging private employers to utilize E-Verify to check the work authorization status of new hires. Other states require it for public employers and government contractors. As of 2020, 12 states had implemented

universal E-Verify mandates applicable to all employers while 4 states had strict liability E-Verify laws applying steep penalties for violations (Yasenov, Hotchkiss & Rios-Avila, 2022). Research indicates that statewide implementation of E-Verify mandates tends to curb the hiring of undocumented immigrants significantly. A study by Bohn, Lofstrom & Raphael (2014) found that Arizona's 2007 Legal Arizona Workers Act (LAWA) requiring E-Verify checks led to a decline in Arizona's non-citizen Hispanic workforce by roughly 10% within two years; these measures led to significant unemployment among the undocumented population in the state. Similarly, research on Mississippi's 2008 universal E-Verify law found a 15% decrease in tax payments by the undocumented population, indicating reduced employment (Bohn & Santillano, 2021).

However, employers do not have to retrospectively check the eligibility of existing workers not hired after the law's effective date, limiting the impact. Some undocumented immigrants respond by transitioning from formal payroll jobs to informal contract work and self-employment arrangements not subject to verification (Amuedo-Dorantes & Bansak, 2012).

At the federal and state levels, the U.S. Department of Homeland Security (DHS) and U.S. Immigration and Customs Enforcement (ICE) can go ahead to impose fines and penalties on employers who are required to use E-Verify and do not comply. In some states that are heavy on the compliance of E-Verify; employers who do not use E-Verify may have all state contracts terminated and the state can become ineligible for public contracts for three years and have their license revoked; all these measures and more have made employers to sit up and see diligently to the compliance of E-Verify mandates because they know it can come back and hurt them.

CHAPTER 3

LITERATURE REVIEW

The US meat processing industry has historically relied on immigrant labor as a cornerstone of its workforce (Silva *et al.,* 2018). The origins of this reliance can be traced back to the early 20th century when the industry underwent significant expansion and transformation (Brown, 2020). Immigrant labor, predominantly composed of individuals from Latin America, Asia, and Eastern Europe, played a pivotal role in the industry's growth due to its willingness to undertake physically demanding roles often shunned by native-born workers (Kandel, 2008). Throughout its history, the meat processing sector has witnessed waves of immigrants seeking employment opportunities in abattoirs, packing plants, and processing facilities across the nation (James, 2000). The influx of foreign-born laborers, primarily driven by economic motives and job prospects, contributed significantly to the industry's productivity and expansion (Flynn, 2015).

The mid-20th century saw significant shifts in migration patterns, leading to a diversification of the immigrant workforce in the industry. This demographic transformation altered the composition of labor, introducing cultural diversity and impacting labor dynamics within meat processing plants (Brown, 2020).

The historical trajectory of the US meat processing industry has been marked by a transformative shift from urban centers to dispersed rural communities in the Midwest during the early 1960s. This migration, as documented by the Congressional Research Service (CRS), initiated substantial changes within the industry. According to Whitaker (2005), the transition from traditional urban packinghouses to decentralized facilities in rural areas was motivated by economic considerations, aiming to streamline operations by locating facilities closer to the source of livestock.

Simultaneously, it served as a strategy to break free from urban unions and collective bargaining agreements, fostering a union-free environment and lower labor costs.

One of the consequences of this migration was the alteration of the industry's labor composition. The shift to rural areas strained the availability of local labor, leading packers to rely on external sources, particularly recent immigrants increasingly. This practice, at times, extended to the employment of workers not authorized for employment in the United States. The CRS report highlights the complexity of the aftermath, with the emergence of new breed packers dominating the market through strategic consolidations, significantly impacting the trade union movement (Whitaker, 2005).

The transformation in the industry's structure had multifaceted effects on labor dynamics. The once predominantly high-wage, stable, and unionized workforce gave way to a lower-wage, often non-unionized, and highly transient workforce. The CRS report notes the challenges faced by unions in organizing a dispersed workforce, exacerbated by linguistic and cultural differences among workers. The demographic makeup of the workforce also underwent a significant shift with the introduction of a new racial/ethnic and gender.

As the industry faces ongoing challenges, including those related to immigration policies, it is essential to reflect on this historical evolution to comprehend the intricate interplay between labor, industry structure, and regulatory frameworks. This historical perspective provides valuable context for the examination of labor shortages within the US meat processing industry, especially in the context of contemporary immigration enforcement policies such as Section 287(g) and the E-Verify Policy Program.

Labor shortages have persistently plagued the US meat processing industry, posing significant challenges to its operational continuity (Rosson, 2009). These shortages stem from a convergence

of factors, with one of the primary contributors being the arduous nature of work in meat processing plants, often deterring native-born workers (Charlton and Kostandini, 2021). The demographic shifts in the US population have further exacerbated these shortages. The declining interest among younger generations in pursuing careers in meat processing, coupled with an aging workforce, has contributed to a diminishing pool of available workers willing to undertake these physically demanding and repetitive tasks. Moreover, the geographic concentration of meat processing plants in rural areas, distant from urban centers, adds another layer of complexity to the labor shortage issue (Julia and Neeraj, 2018). Limited access to potential labor pools in these regions exacerbates recruitment challenges, particularly when coupled with the industry's historically competitive but low-wage offerings. The complexity of labor shortages within the meat processing industry is further compounded by the industry's historical reliance on immigrant labor. The availability of foreign-born workers has historically supplemented these shortages, providing a critical labor force for sustaining day-to-day operations (Charlton and Kostandini, 2021).

Studies have documented the effect of immigration laws on the agricultural sector, for instance, a study by Kostandini et al. (2013) found that farmer revenue and expenditures decreased in counties with 287(g) programs due to reductions in labor availability. Specific to the meat industry, Stuesse and Helton (2013) documented worker shortages, production slowdowns, and plant relocations following immigration raids under 287(g) in Arkansas and Tennessee. In extreme cases, plants reliant on immigrant labor have been forced to close when local 287(g) programs created inhospitable environments for immigrant workers. For example, House of Raeford, a major poultry processor, shut down operations in South Carolina due to workforce issues after the implementation of 287(g) in that jurisdiction (Edwards and Baker, 2010).

The findings of Kostandini et al, (2013) underscore the intricate interplay between immigration laws and agricultural labor, particularly in counties that have entered 287(g) agreements or have been subject to ICE raids. Notably, the research revealed shifts in the composition of the workforce, wage adjustments, and indications of labor shortages in adopting counties. These nuanced outcomes prompt an exploration into the specific implications of 287(g) enforcement on labor shortages within the US Meat Processing Industry.

Complementing the examination of immigration enforcement initiatives like 287(g), it is also important to consider the impact of employment verification systems, such as E-Verify, on the agricultural sector, which contains the labor-intensive meat processing industry. E-Verify, While E-Verify aims to reduce unauthorized employment, its implementation has raised concerns regarding potential labor shortages in agriculture, a sector heavily reliant on immigrant labor.

Further research by Bohn et al. (2014) corroborated these concerns, estimating that a nationwide E-Verify mandate could reduce the crop worker population by approximately 50%, with varying impacts across different agricultural sectors, the study found that the number of non-US citizen Hispanics living in Arizona fell after the state adopted a universal mandate in 2007. The study highlighted the vulnerability of labor-intensive sectors, such as meat processing, to potential labor supply shocks resulting from stricter employment verification measures. Amuedo-Dorantes and Bansak (2012) examined the effects of mandatory employment verification programs on the labor market. Specifically, they assessed how state-level employment verification affected the employment and pay of individuals who were probably undocumented workers nationwide between 2004 and 2010. They discover that E-Verify requirements, particularly those that apply to all employers, have an impact on the employment of possibly undocumented male and female workers; however, their effects on wages seem to be mixed, and they may reallocate potentially

undocumented labor to sectors that frequently profit from exclusions, like food services or agriculture.

Lim and Paik (2021) show that the mandated use of employment verification policy worsens the ongoing farm labor shortage in the U.S. They used the universe of Temporary Agricultural Worker data from the U.S Department of Labor (DOL) along with the American Community Survey (ACS) to investigate the impact of E-Verify on the U.S farm labor employment at the county-level and found out that the implementation of the policy had curtail unauthorized agricultural employment by 20 percent at the county-level while there is no significant increase in domestic farm workers. Orrenius and Zavodny (2015), in their work on the Impact of E-Verify mandates on labor market outcomes, observed that while unlawful female immigrants were more likely to be in the labor force, unauthorized male immigrants made less money per hour on average. Improving job prospects for native Americans who might face competition from undocumented immigrants is one of the objectives of the E-Verify mandates. According to the study, E-Verify seems to improve labor market results for workers who may face competition from undocumented immigrants. This means that in places where E-Verify laws are implemented, employment of naturalized Mexican immigrants increases. The study argued that while some unauthorized workers were displaced, others found employment in sectors with lower E-Verify compliance.

While E-Verify's primary objective is to deter unauthorized employment, its implementation may have unintended consequences for industries reliant on immigrant labor, including the meat processing sector. The studies collectively suggest that while E-Verify mandates effectively reduce unauthorized employment, its impacts on labor markets, wages, and industries can’t be overemphasized, looking at the agricultural sector in particular, this industry faces significant challenges due to its reliance on immigrant labor.

CHAPTER 4

DATA AND METHODS

This research study utilizes MSA-level panel data on employment, wages, E-Verify, and 287(g) immigration enforcement status in the U.S. meat processing industry from 2000-2013. The meat processing industry is defined based on the Bureau of Labor Statistics (BLS) occupational classification codes for Butchers and Meat Cutters (51-3021), Meat, Poultry, and Fish Cutters and Trimmers (51-3022), and Slaughterers and Meat Packers (51-3023). These occupations represent the core production and processing roles within meat packing plants for each MSA and capture the segments of the workforce most likely impacted by immigration enforcement policies (ONET Online, 2023).

As mentioned, the analysis focuses on how the implementation of E-Verify and 287(g) programs affect labor market outcomes in counties with significant meat processing activity. This study adopts a Difference-in-Differences approach with multiple periods to compare changes in employment and wages in the meat processing industry before and after E-Verify and 287(g) adoption between Metropolitan Statistical Areas that implemented E-Verify and 287(g) and those that did not.

In our analysis, we specifically focus on total employment, mean wage, and hourly wage as our dependent variables and incorporate a set of control variables (poverty rate and median household income) at the MSA level to account for a variety of socioeconomic factors that could influence our dependent variables. The poverty rate serves as an essential control variable, which accounts for the percentage of the population living below the federally defined poverty line and provides insight into the economic well-being and need for support services within each county and MSA area. To assess

the general economic status of each county, we include data on median household income, which is a key measure of economic activity and financial health at the household level.

To examine the effect of E-Verify mandates and 287g on employment level and wage outcomes in the US meat processing industry from 2000-2013 on E-Verify Mandates and 2000-2012 for 287g agreements[1]. We use the Bureau Labor Statistics data (BLS) which provides annual MSA-level estimates of employment and average wages for detailed industries and occupations (Bureau of Labor Statistics, 2022a). This data enables construction panel datasets on total employment and average hourly and annual wages in the meat processing sector at the MSA-year level. The BLS collects the underlying establishment-level payroll data through state unemployment insurance reporting systems and publishes aggregated industry estimates for completeness and consistency (Bureau of Labor Statistics, 2022b). Using the BLS data provides standardized secreted MSA-level labor market measures capturing local variations across the study period.

The study employs two key binary treatment variables: one for E-Verify and another for the 287(g) program. These variables serve to distinguish between MSAs with and without these policies, enabling us to interpret their effects.

The E-Verify treatment indicates the implementation status of the E-Verify enforcement policy at the state level within MSAs. Specifically, this variable is assigned a binary variable of 1 for each year, an MSA, at the state level, has implemented E-Verify, and a value of 0 for each year it has not. The adoption date of when each MSA area at the state level implemented E-Verify is used to code this variable. Control group (No E-Verify) Indicator for MSA area at the state level that did not implement E-Verify, providing a baseline for comparison.

[1] We restricted our data for 287g to 2012 because the Department of Homeland Security quit renewing the 287(g) agreements as they expired and changed the 287(g) model after 2012. In addition, according to (Bohn and Santillano 2017) only six agreements were signed between 2012 and 2016. Thus, we used data from 2000-2012.

Information on which local jurisdictions entered 287(g) agreements with Immigration and Customs Enforcement (ICE) to gain immigration enforcement powers comes from published ICE records (Immigration and Customs Enforcement, 2022). ICE provides annual listings of active 287(g) entities and agreement details. This data enables construction panel indicators to track whether each county had an active 287(g) agreement in effect each year. The immigration enforcement data is merged with the BLS labor market data at the county-year level, with the 287(g)-indicator serving as the key policy variable.

This research utilizes the E-Verify participation data, systematically merging it with labor market statistics from the Bureau of Labor Statistics (BLS) at the MSA-year level. Participation of the MSA areas in the E-Verify program, a web-based system that allows enrolled employers to confirm the eligibility of their employees to work in the United States, is derived from official records published by the Department of Homeland Security (DHS) and U.S Citizenship and Immigration Services (USCIS).

The Census Bureau's Small Area Income and Poverty Estimates program provides annual MSA-level estimates of population size and poverty rates (U.S. Census Bureau, 2022a). The population data help capture the local economic scale and changes, while poverty rates proxy for social and economic conditions. These contextual factors may influence labor market trends in the meat processing sector and are included as control variables.

The Bureau of Economic Analysis Local Area Personal Income series supplies annual county-level estimates of median household income levels (Bureau of Economic Analysis, 2022). BLS data offers standardized, high-quality measures of employment levels and compensation in the meat processing sector. Using BLS data will help to identify the indicator before versus after 287(g) and E-Verify adoption which will help identify immigration enforcement impacts. Median household income is an

additional control for overall economic conditions that may shape local labor market dynamics surrounding meat processing.

These datasets are combined into a metropolitan-year panel database covering 381 MSA areas containing significant meat processing employment from 2000-2013 based on BLS data. 50 MSA areas had at least one county that adopted the 287(g) program in the sample period offering variation in immigration enforcement status over time to identify causal effects using the difference-in-differences strategy and 7 states across the MSA areas adopted the E-Verify program. The MSA areas panel data allows leveraging both geographic disparities in 287(g) adoption across meat processing areas and temporal differences as jurisdictions implemented 287(g) in different years. The final dataset comprises 5,029 observations of MSA areas in the meat processing industry.

Table 1 summarizes the BLS data in the sample. We are making use of annual total employment in meat processing occupations which indicates the total estimated number of workers employed in meat processing occupations in the MSA over the 2000 - 2013 period. The mean across the sample is 187 employees per MSA year. However, there is considerable variation ranging from just 30 to over 5,029 workers reflecting the industry's geographic concentration and local scale. The hourly mean wage variable captures the estimated average hourly wage for meat processing occupations in each MSA for the same period. The average is $12.87 with a standard deviation of $2.73 that stretches from as low as $5.98 to as high as $25.86, which highlights the wage disparity within the industry, indicating the relative and prevalence of low-skilled positions dominating the industry’s employment sector (Hertz, 2018). Lastly, the data on the annual mean wage captures the overall distribution of income in the meat processing industry. It accounts for an average annual wage of $26,780 with a standard deviation of $5,691 ranging from a minimum of $12,430 to a maximum of $53,800.

Table 1: Summary Statistics of Employment, Wages, and Agricultural Census data in the Meat Processing Industry.

Variable	Observation	Mean	Std. Dev	Year
Total Employment	4,779	187.64	306.94	2000-2013
Hourly Mean Wage ($/hour)	5,017	12.88	2.73	2000-2013
Annual Mean Wage ($/year)	5,017	26,780.9	5,691.07	2000-2013
287 (g) County	5,029	0.03	0.16	2000-2012
State Level 287 (g)	5,029	0.11	0.31	2000-2012
E-Verify Law	5,029	0.04	0.18	2000-2013
Poverty (all ages)	4,285	97111.45	195353	2000-2013
Median Household Income ($)	4,296	47604.53	8508.709	2000-2013

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

Table 1 also includes summary statistics from E-Verify and 287(g) Immigration Enforcement Data. E-Verify is a binary indicator equal to 1 if the MSA, at the state level, has implemented E-Verify, and a value of 0 for each year it has not. 287(g) is a binary indicator equal to 1 if the MSA has at least one county with an active 287(g) agreement in effect that year and zero otherwise.

4.1 Research Methodology

This study employs a difference-in-differences approach to estimate the impact of E-Verify and 287g enforcement on MSA-level employment and wages in the meat processing sector. The county panel data offers plausibly exogenous geographic and temporal variation in 287(g) and E-Verify adoption to identify its effects on labor market outcomes. The empirical methodology involves comparing changes in meat processing employment and wages before versus after the implementation of the immigration policies between MSAs that did and did not adopt the E-Verify policy program and 287(g) agreements.

This difference-in-differences strategy relies on the parallel trend's assumption that in the absence of treatment, employment, and wage trajectories would be similar in MSAs that did and did not adopt the E-Verify policy during the sample period (Lechner, 2010). While this can be partially assessed by testing leads and lags of 287(g) effects, there also must be no anticipation effects with MSAs altering

behaviors before actual E-Verify adoption. The MSAs and year-fixed effects along with MSAs-specific trends help account for differences in time-invariant MSA attributes and unique paths that may violate parallel trends (Wolfers, 2006). Additionally, there cannot be spillovers whereby E-Verify affects outcomes in non-adopting MSAs. Limiting the sample only to MSA areas with meat processing plants makes spillovers less likely since immigration flows tend to be localized.

The baseline difference-in-differences specification takes the following form:

$$Y_{it} = \beta_0 + \beta_1 E\text{-}Verify_{it} + \beta_2 287(g)_{it} + \beta_3 X_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (i)$$

here: - i index MSAs, t indexes years, Y_{it} is the outcome (employment or wages),

β_1E-Verify$_{it}$ is a treatment binary variable indicating whether the MSAs are subject to the E-Verify policy (All the MSAs are subject to binary 0 under the control variable and 1 if an MSA is under the E-Verify policy). $\beta_2$287(g) is a treatment binary variable indicating whether the MSAs are subject to the 287(g) policy (All the MSAs are subject to binary 0 under the control variable and 1 if an MSA is under the 287g agreements). X_{it} contains control variables like poverty rate and median household income; to account for other factors that might influence employment/wage in the meat processing industry. γ_t MSA fixed effects to control common shocks or trends affecting all MSAs in a specific year. αi Year fixed effects to control for unobserved, time-invariant characteristics within each MSA. ε_{it} is the error term. In addition to the variables, we included MSA-fixed effects which control for unobserved, time-invariant characteristics within each MSA, and year-fixed effects which control for common shocks or trends affecting all MSAs in a specific year and common temporal effects, respectively. The interaction between the E-Verify variable and a post-period indicator yields the difference-in-difference estimate of the policy's treatment effect within the regression model.

Similarly, the treatment variable for the 287 (g) program is the indicator of whether a county in the MSA area has implemented the 287(g)-immigration enforcement policy.

The key coefficients β_1 and β_2 represent the average treatment program effect. MSA and year-fixed effects control for time-invariant differences across MSA areas and common shocks, respectively.

4.2 Event Study Model

To further assess pre-trends and dynamic effects, an event study version of the difference-in-differences model is estimated for both employment and wages. This flexible specification replaces the single E-Verify binary indicator with a series of leads and lags of E-Verify policy adoption (Autor, 2003; Goodman-Bacon, 2021)

The model is specified as:

$$Y_{it} = \sum_j \beta_j E\text{-}Verify(g)_{i+t+j} + \beta_k X_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (ii)$$

here:

- Y_{it} represents the outcome variable (either total meat processing employment or average wages) for MSA i in year t. E-Verify$(g)_{i,t+j}$ denotes the leads (for $j < 0$) and lags (for $j > 0$) of the E-Verify adoption. Each lead and lags capture the effect of the E-Verify program j periods before or after its adoption. βj coefficients capture the impact of the E-Verify program on each lead or lag.

The leads E-Verify$_{i,t-j}$ test for pre-adoption trends, while the lags E-Verify$_{i,t+j}$ trace out post-adoption effects over time. Finding no significant leads provides evidence of parallel pre-trends, a key identification assumption. The lags reveal if and how quickly program impacts materialize and evolve. This event study approach provides an important robustness check and a detailed view of program dynamics ensuring that observed effects are truly so because of policy intervention.

4.3 Robustness Checks

To validate the reliability and generalizability of our findings, this study incorporates one additional robustness check. These checks are designed to scrutinize the causal inferences drawn from difference-in-differences (DiD) estimates regarding the impact of the E-Verify and 287(g) programs on employment and wage outcomes within the meat processing industry. The principal robustness check employed is the placebo law implementation.

4.3.1 Placebo Law Implementation

To check for robustness, a placebo test is done to involve artificially reassigning treatment to non-treated units to check if false effects arise (Bertrand et al., 2004). This is implemented by randomly assigning placebo E-Verify 287(g) and adoption years to MSA areas that never adopted any of the policies. The models are re-estimated to see if placebo adoption wrongly predicts changes in outcomes. The lack of significant placebo effects supports inference from our main baseline model.

CHAPTER 5

RESULTS AND DISCUSSION

5.1 Immigration Policies (E-Verify and 287g) Impact on Employment Levels.

The regression results that estimate the impact of the E-Verify and 287 (g) agreements on total employment in the meat processing industry are presented in Table 2 and Table 3 respectively. Our findings in Table 2 suggest that stricter immigration enforcement through E-Verify is associated with a statistically significant reduction in total employment within the meat processing industry. The impact of the E-Verify policy program (poste) on total employment is -66.83 and it's significant at the 1% confidence level. This statistically significant negative coefficient for the E-Verify policy implies that the enforcement of the policy has an average impact of 35.6% on employment in the meat processing industry. This outcome aligns with the conclusions by Crux et al. (2022), who observed a shift away from labor-intensive crops to capital-intensive crops in response to stringent E-Verify laws, suggesting a broader impact on industries reliant on immigrant labor. Our findings are also in line with Lim and Paik (2022), who report a significant reduction in the availability of undocumented farmworkers. More importantly, their research highlights the absence of a labor substitution effect which indicates that the domestic labor force did not fill the vacancies left by undocumented workers. This lack of substitution may be due to the intensity of work required in this industry and the lack of technology to substitute for labor or a mismatch in the labor needs of the industry with the skill set of the domestic workforce; workers in the meat processing industry for example have been reported to have the highest rates of occupational injury and illness in the United States.

This aligns with this research study's hypothesis that mandating E-Verify would negatively impact labor availability in immigrant-heavy industries like meat processing that rely extensively on undocumented workers. E-Verify requirements appear to discourage the hiring of unauthorized workers, constricting the labor pool.

Table 2: Impact of Immigration Policies (**E-Verify**) on Selected BLS Variables (Total Employment, Hourly Mean, and Annual Mean) in Meat Processing Industry from **2000-2013**

	All Sample (with no controls)		
Variables	**Total employment**	**Annual mean**	**Hourly Mean**
E-Verify	- 66.83 ***	28.76	0.03
	(28.26)	(373.88)	(0.165)
287 (g)	- 64.13	31.17	0.07
	(84.83)	(414.23)	(0.196)
State Level 287 (g)	- 39.79 ***	197.81	
	(15.61)	(285.69)	
Constant	321.96 ***	26,935.54 ***	13.57 ***
	(30.040)	(157.83)	(0.107)
Observations	4,779	5,017	5,017
R-squared	0.5683	0.6734	0.6734
Adj R-squared	0.4886	0.6160	0.6160
Year Fixed Effect	YES	YES	YES
MSA Fixed Effects	YES	YES	YES

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

The regression results in Table 3 indicate the impact of 287(g) agreements on employment outcomes show that 287g agreements are also associated with a decrease in total employment (though the coefficient estimate is not statistically significant at conventional levels) indicating that the introduction of the 287 (g) agreements is associated with a reduction in total employment within the meat processing industry following the adoption of this policy. However, the lack of statistical significance (as indicated by the absence of asterisks next to the coefficient) suggests that this result is not significantly different from zero. This implies that the data doesn't provide strong evidence that the 287 (g) agreements significantly impact employment in meat processing industries at the

usual levels of statistical confidence. The small and insignificant employment effects imply that enhanced immigration screening and deportations under 287(g) do not lead to uniform employment declines across adopting MSA areas and since our data is at the MSA level, some of these MSAs have non-287g counties and 287g counties. The evidence that universal E-Verify mandates lower meat processing employment aligns with and suggests that strict immigration restrictions entail non-trivial costs for certain industries reliant on immigrant workforces.

Table 3: Impact of Immigration Policies **(287g)** on Selected BLS Variables (Total Employment, Hourly Mean, and Annual Mean) in Meat Processing Industry from **2000-2012.**

	All Sample (with no controls)		
Variables	**Total employment**	**Annual mean**	**Hourly Mean**
287 (g)	- 33.83	- 254.31	-0.01
	(80.71)	(423.77)	(0.20)
State Level 287 (g)	- 30.88	191.16	0.09
	(15.15)	(297.61)	(0.14)
E-Verify	- 65.80 ***	516.40	0.25
	(23.11)	(463.71)	(0.22)
Constant	187.01 ***	26,691.93***	12.83 ***
	(8.06)	(164.69)	(0.79)
Observations	4,276	4,442	4,442
R-squared	0.6352	0.7118	0.7118
Adj R-squared	0.5585	0.6535	0.6535
Year Fixed Effect	YES	YES	YES
MSA Fixed Effects	YES	YES	YES

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

5.2 Immigration Policies (E-Verify and 287g) Impact on Wage Outcomes

The regression results that estimate the impact of the E-Verify and 287g agreements post-policy on annual and hourly wages in the meat processing industry are presented in Table 2 and Table 3 respectively. Neither E-Verify nor 287(g) shows a statistically significant impact on the hourly mean wages within our sample, this indicates that while employment levels are affected, the wage outcomes in the implementation of the E-Verify and 287(g) immigration policy remain stable; the evidence is not

strong enough to confirm that there is a direct link between these immigration policies and wage increase within the meat processing industry, which means stricter immigration enforcement does not translate into substantive wage gains for remaining immigrant workers in meat processing in the short run. The study's findings on the non-significant impact on wages resonate with existing literature indicating that immigration policies can lead to adjustments in labor supply without necessarily affecting wage rates, particularly in the short run (Watson, 2013; East et al., 2023). Multiple factors could offset expected wage pressure from reduced labor supply, including automation of machinery that can do human work, expansion of guest worker programs, recruiting alternative labor pools, offshoring production, and fear of policy reversals. The lack of wage impacts contrasts with research finding sizable wage gains for low-skilled native workers after the 1980s immigration reform which granted amnesty while restricting new unauthorized entries (LaLonde & Topel, 1991). Today, this divergence suggests the meat processing industry has more options to absorb immigration restrictions without raising pay, unlike past periods. Our findings are like Clemens et.al (2018) who found a no-wage change in agriculture after the termination of the Bracero program in 1974.

In our analysis, to ensure the robustness of our findings and to avoid the influence of confounding socio-economic factors, we have followed the precedent set by studies like Peri and Yasemov (2019), which control for median and poverty levels. These controls are helpful and instrumental in distinguishing the direct impact of immigration policies from underlying economic trends that may independently affect labor market dynamics. We control for median income and poverty level to account for broader factors that may influence labor market outcomes within U.S. meat processing beyond immigration enforcement policies.

Table 4: Impact of Immigration Policies **(E-Verify)** on Selected BLS Variables (Total Employment, Hourly Mean, and Annual Mean) in the Meat Processing Industry from **2000-2013**

All Sample (with controls)			
Variables	**Total employment**	**Annual mean**	**Hourly Mean**
E-Verify	- 39.74 **	202.24	0.09
	(26.74)	(396.14)	(0.19)
287 (g)	- 65.82	29.62	0.14
	(78.865)	(415.85)	(0.19)
State Level 287 (g)	- 35.12	369.86	0.18
	(16.80)	(292.02)	(0.14)
Median Income	- 0.0005	0.05	0.00002
	(0.00166)	(0.043)	(0.00002)
Poverty	- 0.0004	0.009	4.38e-06
	(0.00044)	(0.003)	(1.60e-06)
Constant	229.38 **	23753.81 ***	11.10 ***
	(103.45)	(2178.34)	(0.972)
Observations	4,057	4,273	4,273
R-squared	0.6263	0.6488	0.6488
Adj R-squared	0.5551	0.5855	0.5855
Year Fixed Effect	YES	YES	YES
MSA Fixed Effects	YES	YES	YES

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

The regression results with controls are presented in Table 4 for E-Verify and Table 5 for 287(g) agreements, they demonstrate that the implementation of immigration policies like E-Verify and 287(g) are associated with a decrease in total employment, reinforcing our regression results in Table 2 and 3 and the notion that stringent immigration policies can directly affect labor availability in industries with a high reliant on immigrant labor. It is worth noting that the median income and poverty variables included as controls do not exhibit a significant influence on total employment within the meat processing industry which points towards the specific influence of immigration policies over general economic conditions in affecting employment levels. Findings from Tables 3 and 4 allowed us to conclude that immigration enforcement policies, especially E-Verify, have a robust negative effect on employment in the meat processing industry. This effect persists even after controlling for other relevant economic factors. The addition of controls does not alter the direction

of the policy's impact. However, the coefficients are smaller, suggesting a smaller but still considerable effect.

Table 5**:** Impact of Immigration Policies **(287g)** on Selected BLS Variables (Total Employment, Hourly Mean, and Annual Mean) in the Meat Processing Industry from 2000-2012

All Sample (with controls)			
Variables	**Total employment**	**Annual mean**	**Hourly Mean**
287 (g)	- 28.55	-165.94	-0.079
	(81.94)	(428.79)	(0.20)
State Level 287 (g)	- 36.58	418.84	0.20
	(16.44)	(306.08)	(0.14)
E-Verify	- 64.87 ***	809.95	0.40
	(24.30)	(499.09)	(0.23)
Median Income	- 0.0003	0.05	0.00002
	(0.0016)	(0.043)	(0.00002)
Poverty	- 0.0004	0.002	1.14e-06
	(0.0004)	(0.003)	(1.59e-06)
Constant	233.33 **	23788.67 ***	11.43 ***
	(101.46)	(2180.25)	(1.05)
Observations	3,619	3,770	3,770
R-squared	0.6187	0.6863	0.6863
Adj R-squared	0.5377	0.6223	0.6223
Year Fixed Effect	YES	YES	YES
MSA Fixed Effects	YES	YES	YES

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

Next, we conduct lead and lags analysis for E-Verify States, which serves as a robustness check for our DiD analysis, examining the pre-trends for E-Verify states which is important to validate the parallel trends assumption that in the absence of the policy change i.e E-Verify mandates, the treated and control groups would have followed similar trends over time. The pre-trends regression results are presented in Table 6 indicate that in the years leading up to the implementation of E-Verify mandates, the estimate coefficients were not statistically significant across the total employment (tot_emp) and hourly mean variables (a_mean) which suggests that there was no systematic trend that differentiates the treatment group from the control group. The years before implementation also do not follow a

uniform pattern which could have helped to predict any changes after E-Verify. The insignificance of coefficients of interest in the years leading up to the E-Verify mandates implementation suggests that the employment trends in treatment and control groups were indeed parallel before the policy's implementation (Autor, 2003). This provides additional evidence for attributing post-implementation effects of immigration policies as highlighted by Angrist and Pischke (2008). The years following the implementation of E-Verify laws reveal a decline in total employment, particularly five years after the policy was enacted. This post-treatment effect is consistent with the negative impact of E-Verify mandates on labor market outcomes found in related literature (Amuedo-Dorantes & Bansak, 2012). The results of our pre-trend analysis amplify the reliability of our findings by verifying the parallel trends assumption. This helped to lend weight to our conclusion that E-Verify mandates are one of the immigration policies linked to the observed reduction in employment within the meat processing industry.

Table 6: Robustness Checks Pre-Trends for all E-Verify states.

	All Samples		
Variables	**Total employment**	**Annual mean**	**Hourly Mean**
5+ Years before E-Verify	3.01	-130.16	- 0.063
	(20.16)	(388.37)	(0.19)
4 years prior	- 0.11	- 993.09 **	- 0.48 **
	(21.13)	(508.42)	(0.24)
3 years prior	17.71	- 975.98 **	- 0.05 **
	(28.11)	(472.73)	(0.22)
2 years prior	5.94	- 544.06	- 0.26
	(24.51)	(404)	(0.19)
Year of Implementation	- 77.37 ***	- 235.39	- 0.11
	(31.04)	(478.25)	(0.23)
1 Year Post	- 12.88	- 481.92	- 0.23
	(68.24)	(532.56)	(0.25)
2 years Post	- 76.91	-777.37	- 0.37
	(66.46)	(606.09)	(0.29)
3 years Post	-53.02	- 394.22	- 0.19
	(70.82)	(586.19)	(0.28)
4 years Post	- 51.73	- 671.41	- 0.32
	(79.75)	(681.06)	(0.33)
5 years Post	-248.98 ***	- 3392.39 **	- 1.63 **
	(71.72)	(1978.81)	(0.95)
6 years Post	- 312.33 ***	-4862.49***	- 2.33 ***
	(92.57)	(1430.65)	(0.69)
7 years Post	- 278.40 **	- 4521.84 ***	- 2.17***
	(85.11)	(1924.66)	(0.93)
8 years Post	- 190.53 **	- 3506.35 **	- 1.68 **
	(114.44)	(1691.10)	(0.81)
287 (g)	-101.06	0.15	310.14
	(90.87)	(0.19)	(398.41)
State Level 287 (g)	-32.25	0.136	282.51
	(15.63)	(0.14)	(280.15)
R-squared	0.5862	0.6615	0.6619
Adj R-squared	0.5155	0.6073	0.6069

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

To quantify the effect of the 287(g) agreements policy on employment levels and wage outcomes more accurately, we distinguished between MSAs with the strong presence of the agreements i.e counties with at least 50% and more of the MSA population covered by the 287g agreements and the rest of the MSAs. We used the variable “strong 287g” to capture a more intense treatment effect where policy is likely to have a more noticeable impact due to its broader population reach. This result presented in Table 7 suggests the agreement's effects on total employment to be more negative, though not

statistically significant. This suggests a potential, yet not measurable impact of 287(g) agreements on employment within the meat processing industry. Our assumption follows the logic that in MSA's areas where 287g agreements have a significant portion of the population (at least more than 50% of the MSA's population is in counties actively participating in the program), the impact of the agreements would be more pronounced due its broader reach and has a potentially greater influence on the local labor market. This follows the findings of Rugh and Hall (2016), where local-level immigration enforcement policies were linked to negative economic outcomes for certain communities. These findings contribute to the understanding of how intensive enforcement of immigration policies may influence market dynamics, particularly in areas that have a high immigrant population.

Table 7: Impact of 287(g) Immigration Policies on Selected BLS Variables (Total Employment, Hourly Mean, and Annual Mean) in Meat Processing Industry with more than 50% shared population in the counties.

	50% or more Shared Population Regression		
Variables	**Total employment**	**Annual mean**	**Hourly Mean**
Strong 287g	-116.66	810.27	0.39
	(127.55)	(816.39)	(0.39)
Rest of 287 (g) MSAs	43.14	- 785.61	-0.37
	(49.99)	(658.34)	(0.31)
State Level 287 (g)	- 31.24	190.80	0.09
	(15.08)	(297.98)	(0.14)
Constant	187.09 ***	26691.56 ***	12.83 ***
	(8.09)	(164.74)	(0.08)
Observations	4,276	4,442	4,442
R-squared	0.6357	0.7118	0.7118
Adj R-squared	0.5589	0.6534	0.6534
Year Fixed Effect	YES	YES	YES
MSA Fixed Effects	YES	YES	YES

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

5.3 Robustness Checks

5.3.1 Placebo Test

We carried out a placebo test to strengthen the credibility of our DiD estimates. We randomly assign placebo E-Verify and adoption years to MSA areas that never adopted the policy. The regression results from Table 8 show an insignificant coefficient for Placebo Poste on total employment which suggests that false effects do not arise when treatment is artificially reassignment. This supports the validity of the actual E-Verify policy's significant and negative impact on employment, reinforcing the result drawn from our main analysis in Table 2. When we compare the coefficient of the E-Verify policy (-66.06) with a 5% level of significance, it's clear that the policy implementation has a significant negative impact on employment which is not captured in the placebo test, the difference between the actual E-Verify and the Placebo E-Verify is important for this research because it confirms that the negative significant effects associated with the E-Verify policy are not a function of certain MSAs or by mere chance. Instead, they are likely due to the enforcement of the E-Verify policy.

Table 8: Placebo Test Estimation Results on the Impact of Immigration Policies (**E-Verify**) on Selected BLS Variables (Total Employment, Hourly Mean, and Annual Mean) in Meat Processing Industry from 2000-2012 period.

	All Sample		
Variables	**Total employment**	**Annual mean**	**Hourly Mean**
Placebo Poste	6.33	208.90	0.10
(Pseudo E-Verify)	(10.13)	(189.26)	(0.09)
E-Verify	- 66.06 ***	53.19	0.03
	(28.50)	(375.13)	(0.18)
287 (g)	- 64.21	28.89	0.009
	(84.83)	(413.49)	(0.14)
State Level 287 (g)	- 39.67 ***	200.93	0.01
	(15.62)	(285.77)	(0.19)
Constant	285.08 ***	26,926.39 ***	13.95 ***
	(15.19)	(158.03)	(0.08)
Observations	4,779	5,017	5,017
R-squared	0.5683	0.6734	0.6734
Adj R-squared	0.4885	0.6160	0.6160
Year Fixed Effect	YES	YES	YES
MSA Fixed Effects	YES	YES	YES

*Notes: In all tables, standard errors are in parentheses, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

CHAPTER 6

CONCLUSION

The study examined the impact of immigration policy enforcement, specifically through the E-Verify mandates, and its impact on labor shortage in the US meat processing industry, a sector that historically relied heavily on immigrant labor for tasks such as slaughtering, cutting, and packaging, with over 30% of its workforce comprised of foreign-born workers, the sector faces vulnerability due to workforce disruptions triggered by strict immigration policies. We focused on the impact of the E-Verify mandates and 287(g) agreements on employment levels and wage outcomes within this sector. We utilized Metropolitan Statistical Area (MSA) panel data from 2000-2013 and employed a difference-in-differences model approach to analyze the profound effects that intensified immigration policies have had on the labor supply within crucial sectors like the Meat Processing Industry. We found out that implementing universal E-Verify requirements to verify employees' work eligibility status caused a substantial reduction in total employment at meat processing facilities. Adopting an E-Verify mandate resulted in an estimated 35.6% decline in meat processing employment in MSA areas with high enforcement levels. Despite the low labor supply caused by E-Verify mandates, we didn’t detect an increase in wages for workers remaining in meat processing roles. Neither hourly nor annual wages showed meaningful growth in response to adopted E-Verify or 287(g) policies during our study period from 2000 - 2013. We anticipated that a low labor supply in the meat sector would have an upsurge increase in wage outcomes, potential explanations are that meat processors possess some ability to adapt to immigration restrictions through mechanisms like automation, offshoring production, or expanding temporary worker programs through alternative

labor pools rather than raising their wages. Our findings indicate that while E-Verify fulfills its objective of limiting employment opportunities for unauthorized immigrants in sectors like meat processing, it has not yet generated wage increases that would theoretically accompany labor supply shortages. This absence of wage effects differentiates the short-term impacts observed from research documenting wage growth for low-skilled natives following major restrictive immigration policies in prior periods. The study's insights into the lack of significant wage outcomes post-policy implementation follow with the study by Bohn and Lofstrom (2013) suggesting that while employment levels are affected by immigration policies, wage outcomes remain largely unchanged in the short term.

Taken together, our findings suggest E-Verify mandates have been largely successful so far in achieving the goal of worsening labor market outcomes among unauthorized immigrants employed in the meat processing industry and labor-intensive sectors reliant on immigrant workforces. This implies E-Verify can serve as a powerful interior immigration enforcement tool. However, depressed wages and limited employment options could elevate poverty levels and social assistance needs within unauthorized populations.

Policymakers should carefully consider the weight of curbing unauthorized employment against unintended consequences like depressed incomes, increased poverty, and expanded social assistance burdens arising from universal verification policies. A comprehensive immigration reform package where employment verification serves to reduce immigrant labor rather than marginalize existing unauthorized residents integrated into key industries could prove a more balanced approach. Such measured steps may mitigate harmful economic dislocations while upholding enforcement priorities. This study adds value and lays the groundwork for further research in different areas, future studies could explore the long-term effects of immigration policies on the meat processing industry,

including the impact of immigration policies on meat production and market prices. Additionally, further research can examine the effectiveness of heavily labor-reliant industries' response to labor shortages through technological innovation and other alternative labor pools.

In conclusion, this study offers valuable insights into the intricate connection between immigration enforcement policies and labor market outcomes in the meat processing sector. Our findings of a decrease in employment levels of unauthorized immigrant workers due to E-Verify contribute to ongoing policy discussions about reforming E-Verify implementation in the US. There must be an emphasis on the necessity of deliberate policy decisions and provide insights for policymakers to consider unique labor needs in heavy labor-reliant industries while deliberating on the future of employment verification policy.

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