Original Research Article

# The Impact of Undocumented Workers on U.S. Agriculture

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## ABSTRACT

Undocumented immigrants comprise a significant portion of the U.S. agricultural labor (42.03%). The Trump administration has emphasized its position on heightened enforcement and removals. These policy changes could reshape labor availability and costs across farm supply chains. A supplementary qualitative analysis traces supply-chain effects from farm to distribution. Supplementary findings indicate that undocumented agricultural labor associated with a greater state-level output and large-scale reductions in this workforce may correspond to lower domestic production and increased supply chain costs. Analysis of these results underscores the economic relevance of undocumented labor. This study employs a 2023/2025 state-level linear regression model for variables affecting agricultural output: population, per-capita income, total unemployment, and census-region indicators (N = 50 states; adjusted $R^2 = 0.773$; F = 13.28 (Equation 4). This manuscript's analytical data are sourced from the most recent 2023 and 2025 agricultural labor datasets to assess recent indicators of successful agriculture. While regression data is relatively current, it remains a retrospective analysis of indicators. The regression should be considered alongside 2025 immigration policy to contextualize potential future implications. Results show that population is a positive correlation of agricultural output ($\beta_1 = 1.3\times10^{-07}$; $p < 0.001$), while unemployment shows no significant effect, and several eastern regions display lower output relative to others.

**Keywords:** Undocumented; Immigration Policy; Agriculture; Labor Supply; Enforcement; Deportation; United States

## INTRODUCTION

The importance of undocumented labor to the United States economy remains a polarizing topic in debates over immigration policy, labor supply, and GDP. This paper seeks to answer the question: To what extent is the United States' agricultural economy reliant on undocumented labor? Furthermore, it will examine how border policy under Donald J. Trump may impact the economy, wages, and labor in the U.S. agricultural industry. Agriculture is vital to the U.S. as a food source and as a significant economic player in global markets. This study aims to inform policymakers and the general public, enabling individuals to form an informed opinion on the impact of undocumented migrants on the industry.

As of 2022, the Department of Homeland Security estimates that there are approximately 10.9 million undocumented individuals within the United States (1). This population, primarily composed of migrants from Mexico, Guatemala, El Salvador, and Honduras, is significant, accounting for 3.2% of the U.S.

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population. The agricultural sector is the most reliant on undocumented labor in the U.S. According to Department of Labor data from 2021-2022, 42.03% of crop workers in the U.S. are undocumented (1). For the past 15 years, the undocumented population has remained essentially unchanged, hovering between 10 and 12 million (1). This fact, paired with the U.S.'s shrinking labor supply, means that significant changes to this population would have a substantial impact on the labor supply (2). Donald J. Trump's first term focused on strengthening border enforcement to curb illegal immigration. This goal marked a shift away from the Obama administration's priority of internal security through deportation (3). Immigration policy under Trump's first term, therefore, decreased the rate at which immigrants entered the U.S. illegally, rather than the illegal population already in the U.S. (4).

Trump's reelection in 2024 established significant changes to his previous approach toward illegal migrants. On day one, his administration pledged to begin the most extensive deportation effort in United States history (5). The *One Big Beautiful Bill Act, 119th Congress (2025–2026)* increased U.S. Immigration and Customs Enforcement (ICE) by 260% from the Biden administration's $8 billion to $29.9 billion (6). Furthermore, Donald J. Trump used his executive power to end Biden's "catch and release" policy, which released undocumented immigrants awaiting trial (7). Since his inauguration, the Trump administration claims that these "tough on immigration" policies are responsible for over 100,000 deportations (7). However, the efficacy of this claim is called into question, as current ICE estimates place total deportations at around 75,000 (8). There is a significant disconnect between the White House's public-facing "milestone achievements" and the data reported by government agencies, such as the Department of Homeland Security (DHS) and Customs and Border Protection (CBP). The White House's milestone achievements have a stake in showing the effectiveness of federal immigration policy. These statistics aim to improve public perception of border control effectiveness. While the executive branches' DHS and CBP may be subject to similar biases, these are primarily data-collection agencies with transparent methodologies (8). White House "milestone achievements" are not considered in any other sections of this paper.

Undocumented immigration accounts for a significant share of low-skilled labor in the United States (9). Agriculture is particularly reliant on this work. The work availability and unreported nature of this industry allow undocumented persons to receive an income while avoiding deportation. However, due to this lack of regulation, estimating the impact of these workers on the sector is difficult, often requiring self-reported census data (4). This self-reported data serves only as a general census, as various factors may influence a migrant's decision to provide truthful information. Mass removals would significantly reduce the labor force in this industry.

## LITERATURE REVIEW

### Wage Dynamics and the Role of Undocumented Immigration in U.S. Agriculture (2000–2024)

Undocumented labor forms the base of U.S. farm production. Federal data confirm that 42.03% of crop workers lack legal status (1). Studies show that this workforce stabilizes production and keeps costs low. Borjas finds that undocumented workers display distinct labor-supply behavior, complementing rather than displacing native workers (Table 1). Hill, Ornelas, and Taylor summarize empirical research showing that tighter immigration enforcement restricts labor availability and increases producer costs (10). The U.S. Department of Labor's NAWS and the USDA ERS Farm Labor Report document rising real farm wages and higher dependence on foreign labor (11). Together, these data show that undocumented labor holds down total payroll expenses and sustains farm profitability (12). Fayer finds agricultural jobs concentrated in crop and animal production at below-median wage levels (13). When combined, these studies indicate that large-scale removals would raise wage floors, compress margins, and lower total agricultural output (Table 1).

### Employment Dynamics and the Role of Undocumented Immigration in the U.S. Workforce (2000–2024)

Undocumented employment supports both direct farm jobs and related industries. Shrestha finds that immigration-enforcement shocks in labor-intensive agriculture reduce output and increase reliance on imports, thereby raising food prices (14). USDA ERS reports that tightening labor markets heighten wage pressures and limit expansion (11). Hill et al. link enforcement intensity to local job losses beyond farms (10). The Migration Policy Institute traces how the Trump administration's enforcement shifts magnified supply-chain disruptions (3). Charlton projects that the removal of undocumented labor decreases employment in transport, processing, and distribution, harming native workers in connected sectors (15). Collectively,

**Table 1.** Summary of empirical and policy literature relevant to undocumented agricultural labor in the United States

| Refrence | Study Focus | Methodology | Data Source | Main Findings |
|---|---|---|---|---|
| (3) | Changing immigration policy under the Trump administration's first term. | Implementation of policy analysis. | National policy records. | Details the changes in immigration enforcement from the Obama administration to the Trump administration. These shifts drive shocks in the labor force. |
| (4) | Labor supply of undocumented immigrants in the U.S. | Economic analysis measuring labor supply and documentation. | National population surveys. | Undocumented workers in the U.S. exhibit specific labor-supply patterns that affect labor type. A migrant's documented status is positively correlated with wage. |
| (13) | Occupations and accompanying wages in agriculture. | Bureau of Labor analysis. | Occupational employment/wage statistics + monthly labor review. | State differences in political ideation shift receptiveness to federal immigration enforcement. |
| (10) | Agricultural labor supply in the U.S. | Literature review of prior empirical research. | National Agricultural Workers Survey. | The U.S. has been shown to rely on the use of undocumented labor. U.S. immigration enforcement tightens labor availability and raises costs. |
| (14) | Trade/labor impacts of immigration enforcement, specifically in labor-intensive agriculture. | Literature review and economic analysis of enforcement. | Enforcement data + agricultural statistics. | Immigration enforcement reduces the local output of labor-intensive crops. Reduction increases reliance on crop imports, raising costs. |
| (15) | Broad implications of immigration enforcement for agriculture. | Policy and empirical analysis in agriculture. | Enforcement data + agricultural statistics. | Predicts agriculture-wide cost increases as a response to heightened documentation enforcement. |

This table synthesizes sources that examine agrarian labor markets, immigration enforcement, wage effects, and production trends from 2000-2025. Each entry lists the citation, focus, methodology, and key findings. This table provides contextual grounding for the regression analysis by summarizing established evidence on how labor shortages and enforcement shocks influence agricultural output and supply-chain stability.

these studies show that restricting undocumented labor reduces total employment rather than reallocating it to native workers (Table 1).

### Projected Economic Impacts of Mass Deportations on Long-Run U.S. Growth (2025–Beyond)

Future deportation programs, such as those found in the One Big Beautiful Bill Act, would deepen long-term shocks (6). Chishti and Bush-Joseph show that past federal-state coordination expands enforcement capacity and raises costs (16). Historical ICE data confirm that even smaller deportation waves produced measurable declines in farm output (8). Charlton and Shrestha claim that persistent shortages push production toward automation or relocation to lenient states, raising costs and unevenly redistributing growth (15). The Economic Research Service notes that higher wages and slower labor growth already limit competitiveness (11). Taken together, these findings imply that large-scale deportations shrink output, raise food prices, and shift agricultural growth geographically rather than restoring native employment.

## METHODS AND MATERIALS

### Data Sources

Data were obtained from multiple United States government and nonprofit databases. Deportation statistics were drawn from the Department of Homeland Security [8]; agricultural demographics and employment information were obtained from the U.S. Department of Labor [9]; and immigration policy data were collected

from Congressional legislation summaries [6]. State-by-state immigration enforcement data were sourced from the Immigrant Legal Resource Center [17]. These datasets collectively provided a foundation for estimating undocumented labor contributions to the agricultural sector.

**Empirical Approach**

To evaluate these dynamics quantitatively, here is an estimated linear regression model of agricultural output on state economic indicators (Equation 1). This approach shows the factors that contribute to a strong agricultural output. State-by-state survey statistics of documentation in the farm industry were not included in this regression. As described by Borjas, documented status affects behavior, making these individuals a group that is particularly hard to measure (4). Legal implications and cultural factors often skew survey results in small-scale surveys (4). Instead, this paper examines state population broadly, as a leading indicator of high agricultural output. The overall 42.03% undocumented figure is supported by nationally standardized data sources and the survey's large-scale nature (1). The proportion of undocumented labor within the national agrarian workforce is significant, and population levels show a positive correlation with overall agricultural output (Equation 1). These two conditions imply that direct mass removals of agricultural workers would correlate with a decline in agricultural production. Agricultural output is measured by a state's yearly agricultural income in USD. The model uses a state-year panel (Year 2023 and 2025) for a retrospective linear model (Equation 1). The independent variables in the regression are population size, per-capita income, and total unemployment (Table 2). The findings from this regression are used as supporting evidence for the results, providing guidance for future policy recommendations. Adjusted $R^2$ was used as a more realistic indicator of the model's fit:

Equation 1: Regression Model

$$l\_agr\_output = \beta_0 + \beta_1 (Population) + \beta_2 (Income\_per\_cap) + \beta_3 (Unemployment\_total) + \beta_4 (Census\_Region\ dummies) + e$$

N = 50; Adjusted $R^2$ = 0.7731; F-statistic = 13.28 (Equation 4), $p<0.001$.

**Supplementary analysis**

A qualitative literature analysis complemented the quantitative findings by examining wage effects, labor substitution, and supply-chain tracing across farm, transportation, and distribution sectors (Table 1).

**Analytical Tools and Regional Dummy Variables**

All data synthesis, model specification, and diagnostics were performed using R/RStudio. Regional dummy variables were incorporated to control for variation in climate, soil quality, crop type, and agricultural policy across states. This adjustment minimized omitted-variable bias when comparing states with similar non-environmental characteristics (Table 3).

**Table 2.** Definition and measurement of variables used in the state-level regression model

| Variable | Definition | Source | Unit/Data Type |
|---|---|---|---|
| Agricultural Output (Dependent) | Total state-level value of agricultural production | U.S. Department of Labor, Wage and Hour Division (19) | USD (millions) |
| Population (Independent ) | Total state population (2023) | U.S. Department of Agriculture, Economic Research Service (USDA ERS State Fact Sheets) (2) | Persons (entered raw) |
| Per-Capita Income (Independent ) | State per-capita personal income | USDA ERS State Fact Sheets (2) | USD (entered raw) |
| Unemployment Rate (Independent ) | Total unemployed as a percent of the labor force | USDA ERS State Fact Sheets (2) | Percent |
| Census Region (Independent ) | The nine U.S. census regions | U.S. Census Bureau (20) | 0 or 1 |

This table lists the dependent and independent variables used in the regression, including measurement units, data sources, and any transformations applied. The table allows readers to interpret each coefficient and understand the dataset's structure.

**Table 3.** Ordinary Least Squares (OLS) regression results for agricultural output. Regional dummies are based on the U.S. Census framework

| Variable | Coefficient | Standard error |
|---|---|---|
| Intercept | 23.08 | 1.347 |
| Population | *** | 2.114 |
| Income_per_cap | 2.806 | 1.662 |
| Unemployment total | -0.0768 | 0.203 |
| East South Central | -0.278 | 0.499 |
| Middle Atlantic | -1.496 * | 0.553 |
| Mountain | -0.0100 | 0.486 |
| New England | -2.847 *** | 0.502 |
| Pacific | -0.567 | 0.540 |
| South Atlantic | -1.034 * | 0.438 |
| West North Central | 1.150 * | 0.490 |
| West South Central | 0.156 | 0.523 |

Positive coefficients indicate an increase in agricultural output. Population can be interpreted as semi-elastic; in this specification, an increase of 1 million people is associated with a 13.1% increase in agricultural production, holding other factors constant. Model statistics include the adjusted $R^2$, F-statistic, and significance levels.

**Data standardization**

All monetary variables were adjusted to 2023 U.S. dollars. Coefficients for population, per-capita income, and employment were entered raw, while agricultural output was log-transformed to stabilize variance and for output interpretation (18). Unemployment rates and dummy variables remained on their original scales (Table 3).

**Limitations**

This model analyzes only two years of data (2023 and 2025), limiting its ability to infer causation or detect temporal dynamics. Future studies should expand this analysis into a multi-year panel to confirm the robustness of observed relationships and identify potential long-run effects of labor force changes on agricultural productivity.

## RESULTS AND DISCUSSION

The results of the regression (Equation 1) show that population is the most consistent indicator of a state with high agricultural output. A larger population, regardless of other agricultural characteristics, increases production capacity (11). Regional differences are similarly shown to affect this capacity (Table 3). The states in New England, the Middle Atlantic, and the South Atlantic have lower agricultural output (Table 3). Contrarily, a state's unemployment rate has little to no statistical impact on this output, suggesting that broader economic conditions may not impact on agricultural production (Table 3).

Agricultural output was log-transformed, while population data were unadjusted. To account for this difference, the coefficient for population ($\beta_1 = 1.31e^{-07}$) can be interpreted as semi-elastic. Agricultural output's percent change was calculated per person (Equation 2) and per million people (Equation 3) to yield more interpretable percent values. The results indicate a 13.1% increase in state agricultural output for every million-person rise in population (Equation 3).

Equation 2: Agricultural $\%\Delta$ Increase Per-person

$$100 \times \beta_1 \times 1 = \%\Delta\ 1.31 \times 10^{-05}$$

Equation 3: Agricultural $\%\Delta$ Increase Per-million (people)

$$100 \times 1.313 \times 10^{-07} \times 1{,}000{,}000 = \%\Delta 13.1$$

The model's result showed that the coefficients for unemployment rate and per-capita income were not statistically significant. The model accounts for substantial variance in its output (Adjusted $R^2 = 0.7731$) and yields an F-statistic of 13.28 ($p < 0.001$), confirming the joint significance of the independent variables (Equation 4).

Equation 4: F-Statistic

$$F = \frac{(0.7731 \div 10)}{(1 - 0.7731) \div (50 - 10 - 1)} = 13.28$$

Undocumented immigrants are vital to sustaining the U.S. agricultural economy through their significant contributions to the workforce and their impact on supply chains, labor costs, and market conditions. The primary concern with a strict future migration policy is its impact on the supply of fresh food. Fresh food is essential to maintaining public health, and a significant decline in the United States' farm labor force would severely disrupt the nation's fresh food supply. In the regression analysis of retrospective indicators of thriving agriculture, a reduced population is associated with lower agricultural output (Table 3).

Proponents of deportation argue that U.S. natives

will fill these agricultural positions, but this is unlikely. Agricultural work is often undesirable due to low wages and poor working conditions. Even if U.S. citizens filled some jobs, it would be impossible for farms to pay legal salaries. Not only would Trump's position on immigration likely reduce the food supply for U.S. communities, but it would also affect sectors of the U.S. economy beyond agriculture. Industries such as transportation and equipment also rely on a fully functioning agricultural market position in the global economy.

## CONCLUSION

In conclusion, anti-immigration policies, specifically the Trump administration's aim to deport one million undocumented residents a year, pose a threat to U.S. agriculture and food supply. United States agriculture relies heavily on undocumented labor. In turn, agriculture is susceptible to shocks given the recent broad use of ICE enforcement. A secondary governing body that oversees ICE alongside the executive branch would reduce economic repercussions. Evidence indicates that undocumented immigrants, rather than displacing native-born workers, actually increase employment opportunities. While it is unlikely that the Trump administration will scale back its anti-immigration policies, removal tactics do not have to be economically detrimental. ICE raids should not target workplaces, as they disrupt labor supply (4). The Department of Homeland Security should instead reduce the flow of undocumented migrants at the border, avoiding a sector-wide population reduction of U.S. agricultural labor (Table 3). The third conclusion is that a decline in agricultural output negatively impacts employment in other industries. Future research should analyze the viability of mechanization as a supplement for decreasing labor in agriculture.

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## CONFLICT OF INTEREST

The author declares that there are no conflicts of interest related to this work.

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