Minimum Wage and SNAP Enrollment among Low-Wage Workers: Evidence from the U.S. Agricultural Sector*

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Abstract

Agricultural workers are among the lowest-paid workers in the United States, with many earning wages at or near the minimum wage. This paper examines the effects of minimum wage increases on their participation in the Supplemental Nutrition Assistance Program (SNAP), the largest federal initiative addressing food insecurity among low-income households. Using data from the 2005-16 American Community Survey, we find that a $1 increase in prevailing minimum wage increases SNAP participation among likely-eligible agricultural worker households by 1.4-1.6 percentage points on average. These gains are concentrated among households headed by Hispanic, immigrant, and non-managerial workers. Suggestive evidence indicates that these increases are driven by greater labor supply, enabling these groups to meet the minimum hours worked required to qualify for SNAP benefits.

Keywords: Agricultural labor, minimum wage, public assistance programs, SNAP

JEL Codes: I38, J38, J43

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1 Introduction

Agricultural workers are among the lowest-paid workers in the United States (Kiehne and Mendoza, 2015) and are more likely than workers in other sectors to earn incomes below the federal poverty line (Barham et al., 2020). Nearly 40% of U.S. agricultural workers earn an hourly wage no more than 10% above the state minimum wage (Kandilov and Kandilov, 2020), making them among the workers most sensitive to changes in minimum wage policy. As a result, many agricultural workers rely on means-tested public assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), to meet their basic needs.

The minimum wage is a widely used policy that aims to protect workers from exploitative wages and to help ensure a basic standard of living amid rising living costs. Minimum wage protections were formally extended to agricultural workers through the 1966 amendment to the Fair Labor Standards Act (FLSA) (U.S. Congress, 1966). The FLSA requires agricultural workers, including those without legal immigration status,[1] be paid at least the federal minimum wage.[2] Most agricultural workers are paid hourly. Some are paid by piece rate; nonetheless, under federal law, piece-rate workers must earn at least the equivalent of the hourly minimum wage (Ku, 2022).

Given the economic vulnerability agricultural workers face, an important policy question arises regarding how minimum wage laws affect material hardship for agricultural workers. While prior studies have examined the effects of minimum wage increases on employment and wages in the agricultural sector (Lianos, 1972; Buccola et al., 2012; Fan and Pena, 2019; Kandilov and Kandilov, 2020; Smith et al., 2022), less is known about the impact of minimum wages on participation in safety net programs. Despite playing a central role in the nation's food production, many agricultural workers and their families experience persistent

[1] Roughly 70% of hired farmworkers are foreign-born, and among them, nearly 70% are undocumented. Therefore, almost half of all crop workers lack legal status (U.S. Department of Labor, Employment and Training Administration, 2022).

[2] Some agricultural workers remain exempt. Small agricultural employers are not required to comply with minimum wage provisions if they employ fewer than 500 man-days of agricultural labor in any calendar quarter of the preceding year. A man-day is defined as any day during which an employee performs at least one hour of agricultural work (Kandilov and Kandilov, 2020).

food insecurity (Gundersen and Offutt, 2005; Kiehne and Mendoza, 2015). Survey evidence shows that more than one in four farmworker households and approximately 40% of all agricultural households receive SNAP benefits (Hill et al., 2025).

In this paper, we examine whether changes in the minimum wage affect agricultural workers' reliance on SNAP. While higher minimum wages may ease financial hardship and reduce public assistance reliance by raising incomes, they could also increase labor costs for employers, potentially reducing job opportunities for low-wage workers. At the same time, higher wages may encourage more workers to increase their labor supply and meet SNAP's work requirements, making them newly eligible for benefits. These conflicting theoretical pathways suggest that the overall effect is unclear and likely depends on worker preferences for consumption and leisure. By focusing on agricultural workers, a group underrepresented in the broader minimum wage and public assistance literature, this paper provides new insights into how wage policies interact with safety net participation in a sector marked by low pay and limited economic security.

To estimate the effects of minimum wage on SNAP participation among U.S. agricultural workers, we compile a comprehensive dataset from the 2005-16 American Community Survey, focusing on household heads employed in agriculture either at the time of the survey or prior to the unemployment period if they were unemployed during the survey. The ACS offers large sample sizes and detailed information on household demographics, labor market outcomes, and SNAP participation. We restrict the sample to heads from likely SNAP-eligible households by excluding high-income and legally ineligible households.

Our identification strategy exploits within-state, over-time variation in nominal minimum wages, controlling for state and year fixed effects. This approach isolates the effects of minimum wage changes from time-invariant state characteristics and national trends. We further control for individual, household, and state-level characteristics, including policy and economic conditions. The key identifying assumption is that, conditional on these controls, changes in the minimum wage are exogenous to unobserved factors affecting SNAP

participation among agricultural households. This is plausible given that recent minimum wage increases were largely driven by political factors and service-sector dynamics rather than changes specific to the agricultural sector (DePillis, 2019; Ashby, 2017).

Our results indicate that a $1 increase in the prevailing minimum wage increases SNAP participation among likely-eligible agricultural worker households by 1.4-1.6 percentage points on average. Minimum wage hikes disproportionately increase SNAP enrollment among certain sociodemographic groups, particularly households headed by Hispanic and immigrant workers, compared to those headed by White and U.S. citizen workers, respectively.[3] In particular, likely undocumented immigrant households, as well as Black and Hispanic agricultural workers, show the largest increases in SNAP participation, relative to their respective comparison groups, following minimum wage increases. We do not find any differential effects based on the household head's education level or the presence of children in the household. These patterns are particularly noteworthy given evidence from Gundersen and Offutt (2005) that low-income farm households are generally under-enrolled in SNAP despite being eligible. This may suggest that wage increases help reduce participation gaps among historically under-served groups in agriculture.

A key mechanism we explore is the interaction between minimum wage increases and SNAP work requirements. SNAP eligibility for able-bodied adults without dependents and specific working-age individuals is conditional on meeting minimum work thresholds, which are either 30 hours *per week* or 80 hours *per month*, depending on household composition and state-specific rules. A higher minimum wage may incentivize or enable individuals to increase their labor supply to meet these requirements, thereby making previously ineligible households newly eligible for SNAP. This mechanism is particularly relevant for certain groups of agricultural workers who are disproportionately concentrated near the minimum wage and may be on the margin of meeting SNAP work requirements, such as immigrants, minority-headed households, individuals with low education levels, and non-managerial work-

[3]Throughout the paper, we use the terms White, Black, and other race to refer to individuals of the respective racial categories who are non-Hispanic.

ers. However, higher earnings from minimum wage increases could also push some households above the income threshold for SNAP eligibility, even if they meet the work requirements. As a result, the overall effect of minimum wage changes on SNAP participation is theoretically ambiguous. In our analysis, we empirically explore these pathways as potential mechanisms.

We investigate several mechanisms that may explain the disproportionate increase in SNAP participation among certain sociodemographic groups. This increase could result from a rise in unemployment or an increase in working hours enabling individuals to meet the program's minimum work requirement. We find no evidence that an increase in the minimum wage affects unemployment among agricultural workers; in fact, they appear to increase employment for some subgroups. In contrast, we observe a differential increase in labor supply, measured by the number of hours usually worked, among the same groups that increase participation in SNAP. This finding is consistent with previous research showing that minimum wage increases can lead to higher work hours (Li and Reimer, 2021). Moreover, we find that minimum wage increases the likelihood that individuals in these groups meet the work-hour threshold required for SNAP eligibility. These results provide suggestive evidence that increased working hours may help explain the link between minimum wage increases and SNAP participation among specific sociodemographic groups.

Our paper falls into three broad areas of study: U.S. agricultural workers, the effects of minimum wage, and the determinants of public assistance program usage. The broader minimum wage literature highlights complex and often heterogeneous effects on employment, wages, and poverty, depending on industry, geography, and worker characteristics (Card and Krueger, 2000; Neumark, 2008; Dube et al., 2010; Schmitt et al., 2013; Clemens and Wither, 2019). Within agriculture, studies show that increase in minimum wage can reduce hired or seasonal employment (Kandilov and Kandilov, 2020; Lianos, 1972), while others find wage gains for hourly and nursery workers without major employment losses (Buccola et al., 2012; Moretti and Perloff, 2000; Smith et al., 2022).

The link between minimum wage and SNAP participation remains contested. Some

studies find that higher minimum wages reduce SNAP enrollment and expenditures (Reich and West, 2015; Snyder et al., 2019), while others argue that the negative SNAP participation effects goes away once local business cycle conditions are accounted for (Sabia and Nguyen, 2017). Other work cautions that wage mandates may exacerbate food insecurity for some low-skilled populations (Stansel and Wu, 2024).

Research on SNAP participation among agricultural workers is limited. Hill et al. (2025), the most relevant to our study, uses three national surveys to document low take-up rates across six safety net programs. Fewer than half of income-eligible farmworker households participate in most programs, including SNAP, due to barriers such as immigration status, language limitations, and survey underreporting. Similar findings in Gundersen and Offutt (2005) and Findeis et al. (2005) highlight the need for targeted outreach and improved data systems to capture and support this underserved population.

This paper contributes to the literature by examining how state-level minimum wage policies affect SNAP participation among U.S. households, with a particular focus on agricultural workers. While prior research has explored the effects of minimum wage increases on labor market outcomes and poverty, fewer studies have directly linked these policies to public assistance usage. Using nationally representative data and variation in minimum wage laws across states and time, this paper provides new evidence on whether higher minimum wages reduce SNAP reliance and how effects vary across key demographic groups.

In documenting this relationship, the paper highlights important distributional effects. The findings reveal heterogeneous impacts across race and ethnicity, citizenship and (likely) legal status, education level, household structure, and managerial status, highlighting the need to consider equity implications when designing wage and welfare policies. Finally, the paper investigates labor supply responses as a key potential mechanism, showing that increases in hours worked may help explain changes in SNAP eligibility and take-up. These findings offer new insights into the ways wage policy can influence public assistance program participation among low-income populations.

The remainder of the paper is organized as follows. Section 2 explains the context of this study, relating it to SNAP eligibility and work requirements. Section 3 describes the conceptual model. Section 4 describes the data, and Section 5 outlines the empirical framework. Section 6 explains the results before Section 7 concludes.

2 SNAP Eligibility and Work Requirements

The Supplemental Nutrition Assistance Program (SNAP) is the largest food assistance program in the United States. SNAP provides a monthly benefit in the form of an Electronic Benefit Transfer (EBT) card that can be used to purchase food and beverages from authorized retailers. SNAP is a means-tested program: households are eligible if their gross income is less than 130% of the Federal Poverty Line (FPL) before deductions and if their net income (after deductions) is less than 100% of the FPL. In addition, household assets must be less than $2250, or $3250 if a household has an elderly or disabled member.

Under the policy known as Broad Based Categorical Eligibility (BBCE), states are allowed to increase the gross income threshold up to 200% FPL and/or increase the asset limits (or exclude them all together). States can also implement other forms of eligibility criteria, such as finger printing, adjusting re-certification periods, allowing for online applications, and adjusting how vehicles are counted towards assets (see Ganong and Liebman (2018) for more details).

Maximum benefits amounts are set by the federal government and increase with household size. A household's benefit amount is this maximum amount, minus 30% of their net income. For example, in 2025, the maximum benefit for a household of four people is $975. The Center on Budget and Policy Priorities estimates a net income of about $830, implying a benefit of $726.

SNAP imposes different work requirements based on household composition and individual characteristics. Broadly, SNAP has a general work requirement that applies to most

adults aged 16–59, and an additional Able-Bodied Adults Without Dependents (ABAWD) requirement that applies more specifically to individuals aged 18-49.[4] Under the general work requirement, individuals must register for work, take suitable job offers, and not voluntarily quit a job. However, there are several exemptions, including being responsible for the care of a child under six. Using available variables in our dataset, we define the general sample as individuals aged 16–59, excluding those who report caring for a child under six, in line with one of the official exemptions.

For the ABAWD sample, we follow the SNAP definition of ABAWDs as adults aged 18–49 who are not disabled and do not live with dependents. ABAWDs are subject to an additional time limit unless they work or participate in a qualifying program for at least 80 hours per month. One of the key exemptions to the ABAWD work requirement is living in a household with someone under age 18. Since our dataset includes information on household composition, we construct the ABAWD sample by selecting individuals aged 18–49 and excluding those living in households with children under 18, consistent with this exemption.

These sample definitions allow us to approximate eligibility and exposure to work requirements in our empirical analysis of how minimum wage policies interact with SNAP participation across different subgroups.[5]

SNAP providers verify work hours through a combination of self-reported information, supporting documentation, employer contact, and administrative data checks. Applicants are typically required to submit recent pay stubs, employer statements, or work schedules to demonstrate that they meet the minimum hour thresholds. In cases where documentation is missing or unclear, caseworkers may contact employers directly or use standardized Employment Verification Forms. Some states also rely on third-party databases such as The

[4]The upper end of the age threshold was originally set at 49. It increased to 52 in October 2023 and again increased to 54 in October 2024. For our sample years, the upper age limit is 49.

[5]Concerning the income and asset eligibility criteria, Wei and Gundersen (2025) find using different gross income limits (e.g., 130% versus 200%) does not substantially affect the SNAP-eligible sample given that the net income limit is still binding across all states. Although they find incorporating the asset test does affect the SNAP-eligible sample, we don't have information on assets in our data. Wei and Gundersen (2025) further note that even if more precise eligibility criteria were implemented in these earlier studies to define the samples, the conclusions reached would likely remain similar.

Work Number or consult state wage reporting systems, although these sources often lag and may not reflect current employment status.[6]

3 Conceptual Framework

To analyze the effects of a minimum wage increase under SNAP work requirements, we model an individual's labor supply decision under a linear budget constraint, following the setup by Han (2022) and Gray et al. (2023). Figure 1 illustrates this graphically.

Consider a representative agent who maximizes utility over income I and leisure L, $U = U(I, L)$, subject to a time constraint $T = H + L$, where T is total available time, H is hours worked, and L is leisure. Income is given by $I = wH + B(H)$, where w is the wage rate and $B(H)$ denotes SNAP benefits as a function of hours worked. For our case, $B(H)$ represents total SNAP benefits.

The budget constraint, shown in income–leisure space, incorporates both labor earnings and SNAP benefits. The x-axis represents total leisure, with point A representing the (net) income of someone working all available hours. We start from the budget constraint before the minimum wage change, which is shown in black. Between points A and B, the individual earns above 130% of the Federal Poverty Line (FPL) in net income after SNAP-deductions (i.e., receiving only labor income). Once net income falls below 130% of the FPL, they become eligible for SNAP and can receive both earnings and benefits. SNAP benefits are phased out at a 30% rate: for each additional dollar of net income, benefits are reduced by 30 cents. This flattens the slope of the budget line between points B and C. The decline from point C to D reflects the loss of SNAP benefits due to not meeting the work requirement threshold. Individuals who do not meet this threshold are no longer eligible for SNAP and receive only earnings from work. Under these rules, the budget constraint traces out the

[6]For agricultural workers, verifying work hours is especially challenging due to the seasonal and informal nature of their employment. Irregular hours, lack of formal pay stubs, and employment through labor contractors can make it difficult to report and document hours worked in a way that satisfies SNAP eligibility requirements. As a result, these workers may face a higher risk of losing or being denied SNAP benefits despite being actively employed.

piecewise path $ABCDE$.

When the minimum wage increases, the entire budget constraint shifts upward and its slope becomes steeper, reflecting the higher opportunity cost of leisure. The new constraint, $A'B'C'D'E'$, shown in red, represents this change. The segment $A'B'$ is steeper due to the higher wage, while the segment $B'C'$ maintains the flatter slope relative to $A'B'$ because the 30% phase-out rate remains. However, $B'C'$ is still steeper than BC, as the same benefit reduction rate (30%) now applies to a higher wage. The decline from point C' to D' again reflects the loss of SNAP eligibility once work requirements are not met.[7]

This framework highlights the primary mechanisms through which minimum wage policy interacts with SNAP eligibility: (i) the income threshold for eligibility (100% FPL) and (ii) the work requirement (number of hours supplied to the labor market). In all cases, either the income effect may dominate, leading to reduced hours worked, or the substitution effect may dominate, encouraging increased labor supply due to the higher return to work.

For example, in case (i), individuals just below the income threshold (e.g. U^1) may lose all SNAP benefits if an increase in the minimum wage leads to more income. In Figure 1, the new optimal point for this person could be to the left or the right of B', depending on preferences. Similarly, those initially optimizing to the right of the work threshold (e.g. U^2) may increase hours in response to a minimum wage increase to become eligible for SNAP at point C'', or they could further reduce hours worked and remain ineligible for SNAP.

This framework is particularly relevant for agricultural workers, whose incomes and hours are often highly variable due to seasonality, and who are disproportionately clustered near SNAP eligibility thresholds. Consequently, the same minimum wage increase may produce heterogeneous behavioral responses across subgroups depending on their initial proximity to benefit cutoffs, their legal status, and their employment security. These predictions guide the empirical analysis we present in the following sections.

[7]The difference in income between point C and C' reflects both an increase in labor income ($H(w'-w)$) and a decrease in SNAP benefits ($.3H(w'-w)$).

4 Data

To investigate the relationship between minimum wage increases and SNAP participation, we compile a detailed dataset on household SNAP participation, minimum wage, and other relevant household characteristics. This section describes the data and reports the descriptive statistics.

4.1 Household Survey Data

To implement the analysis, we use the American Community Survey (ACS) extracted from the Integrated Public Use Microdata Series (IPUMS) (Ruggles et al., 2023). ACS is an annual cross-sectional survey conducted by the U.S. Census Bureau that collects detailed demographic, social, and economic data from a representative sample of U.S. households. Along with the detailed information about household characteristics, it provides comprehensive information on labor market participation (e.g., employment status, industry, wages, and hours worked) and enrollment in public assistance programs (e.g., SNAP, Medicaid/Medicare, and public housing).

4.1.1 Construction of the Analysis Sample

We use ACS data from 2005 to 2016. We restrict our sample to agricultural workers above the age of 16 who are household heads without a disability.[8,9] Our sample includes individuals who worked in agriculture at the time of the interview as well as those who were unemployed but whose last main profession was in agriculture prior to unemployment.

We remove ineligible households from our sample. Including these households would lead to an underestimation of the effects of the minimum wage on SNAP enrollment. SNAP

[8]Our agricultural worker sample covers farm owners and tenants, farm workers, supervisors of agricultural occupations, gardeners and groundskeepers, animal caretakers, graders and sorters of agricultural products, and inspectors of agricultural products. We do not include forestry and logging occupations, fishers, hunters, and trappers.

[9]We focus on household heads to avoid including multiple observations from the same household, which could inflate precision. This also ensures that our sample primarily includes workers in agricultural occupations and those most likely responsible for household financial decisions and program participation.

ineligibility arises due to several factors, but we primarily deal with ineligibility based on two criteria: household income and citizenship or legal status.

To identify households ineligible due to income, we exclude households with a total household income exceeding 200% of the federal poverty line (FPL), as published annually by the Assistant Secretary for Planning and Evaluation of the U.S. Department of Health and Human Services.

As mentioned in Section 2, under federal requirements, a household's gross income must be at or below 130% of the federal poverty line to qualify for SNAP. The FPL varies based on household size, meaning larger households have higher income thresholds to qualify. States can increase the gross-income threshold up to 200% using BBCE.

Second ineligibility criteria is citizenship or legal status. Undocumented immigrants are generally ineligible to receive SNAP benefits.[10] However, they may reside in eligible households if another immediate household member is eligible (Medel-Herrero and Leigh, 2018). Therefore, we restrict our sample to agricultural worker household heads who fall into one of the following three citizenship/legal categories: U.S. citizens, likely-documented immigrants, and likely-undocumented immigrants residing in households where at least one other member is either a U.S. citizen or a likely-documented immigrant.

The ACS data does not include a variable indicating the legal status of respondents. To address this, we impute legal status using an approach similar to the method by Bohn et al. (2014) and aligned in spirit with Kostandini et al. (2014), Borjas and Cassidy (2019), East et al. (2023), and Castillo et al. (2024).

We impute the legal status of immigrants based on their citizenship status, education level, and length of residence in the U.S. Among non-citizens, we use a combination of education and duration of stay to approximate legal status. Non-citizens with a college degree or higher or those who have lived in the U.S. for 20 years or more are classified as likely-legal

[10]Citizens and lawfully-present permanent residents are generally eligible for SNAP benefits. Relevant to the agricultural workforce, those who are not eligible for SNAP benefits include: (i) undocumented immigrants, (ii) temporary agricultural workers (H-2A visa holders), (iii) students, and (iv) lawful residents who have not lived in the US for 5 years (Hill et al., 2025).

immigrants, as long-term residence and higher education are often associated with legal pathways to remain in the U.S. In contrast, non-citizens with less than a college education who have lived in the U.S. for less than 20 years are categorized as likely-undocumented immigrants, reflecting the demographic characteristics commonly associated with undocumented populations. We consider naturalized citizens as legal immigrants.[11]

As discussed in Section 2, SNAP has certain work requirements that apply to specific age groups: the general work requirement (ages 16–59) and the ABAWD work requirement (ages 18–49). For most of our analysis, we present results for different samples: one for the full sample, one for individuals covered by the general work requirements, and another for those covered by the ABAWD work requirement.[12]

4.1.2 SNAP Participation

The ACS asks whether any member of the household received benefits from the Food Stamp Program or SNAP at any point in the last 12 months.[13] It is well known that SNAP is often misreported, particularly in the form of false negatives. Meyer et al. (2022) linked CPS-ACS and Survey of Income and Program Participation (SIPP) to administrative data in Illinois and Maryland over 2002-2005. They find that between 23% and 50% of true SNAP recipient households do not report receipt. They also find false negatives are associated with older,

[11] One particular group of documented immigrant agricultural workers ineligible to receive SNAP benefits is temporary agricultural guest workers under the H-2A Visa, who form a growing part of documented hired farm labor (Luckstead and Devadoss, 2019; Castillo and Charlton, 2023). In 2019, H-2A workers accounted for approximately 10% of all hired farm labor in the United States (Costa and Martin, 2020; Castillo and Charlton, 2023). However, similar to Smith et al. (2022), we do not expect a meaningful number of H-2A workers in the ACS, as these workers are difficult to capture in household surveys. The ACS excludes most individuals in employer-provided, group, or temporary housing, where H-2A workers typically reside, and their short stays further reduce the likelihood of inclusion (Hertz, 2019; Institute, 2020; Castillo and Charlton, 2023).

[12] For ABAWD, we include agricultural worker household heads who are between 18-49 year old without disability, who don't have a dependent. In SNAP, a dependent is generally defined as someone who is part of the same household and who is considered to be a member of the household due to sharing meals and living arrangements. This includes children under age 22, even if they buy their own food, and spouses. Additionally, elderly (60+) or disabled individuals may be considered dependents if they share meals and living arrangements with the household.

[13] In several years, the questionnaire specifically asks respondents to exclude WIC, the School Lunch Program, and assistance from food banks.

non-white household heads, but the results are mixed for other characteristics. Celhay et al. (2024) link administrative data from New York to the CPS December Supplement (i.e., the Food Security Supplement, FSS), the CPS-ACS, and the SIPP. Here, they find false negative rates were 25% and 18% in the ACS and SIPP, respectively, with false-negative rates reaching 37% in the CPS-FSS. The key determinants of false negatives in the CPS-ACS (NY sample) were income, gender, race, ethnicity, age, and other observable household characteristics that we include in our models.

As discussed in Celhay et al. (2025), the misreporting of SNAP differs from the decision not to participate in SNAP. In fact, this difference in reporting and participation is the key point made by Nguimkeu et al. (2019). Following the suggestion of these two papers, we include interview mode (i.e., in-person versus via phone or mail) as a proxy for stigma-induced misreporting. For example, if the interview mode influences unobserved stigma, which in turn affects the reporting of program participation, then the estimated coefficient on the minimum wage will be biased if stigma is not properly controlled for.

In terms of the decision to participate in SNAP, we follow Ganong and Liebman (2018) who include state-level policies related to SNAP participation. For example, if a change in the minimum wage reduces (unobserved) stigma, and stigma affects program participation, then our coefficient on minimum wage will be biased.

4.1.3 Household/Head Characteristics

After constructing the analysis sample following the steps in Section 4.1.1, we have a final sample size of 66,990 households. We present statistics of our sample below.

Table 1 presents descriptive statistics for the primary independent variables in our estimation sample. Of the households in the final sample, 23% reported having received SNAP at any point in the last 12 months. Figure 2 shows the percentage of our sample households that received SNAP benefits at any point in a given year for 2005–16, along with heterogeneities by several sociodemographic characteristics. Appendix B discusses these trends in

detail.

The average age of our sample respondents is 42.12 years, with a range of 16–95 years. Eighteen percent are female. Of the total respondents, 49% are married, 4% are separated, 14% are divorced, 2% are widowed, and 31% have never married. The average household size is 1.20 members, which is largely driven by the fact that many hired agricultural workers are seasonal and temporary migrants. This also explains the substantially low percentage of respondents (2%) who reported having children in their household.

In terms of race/ethnicity, 50% of the sample is white, 8% Black, 39% Hispanic, and 3% of another race.[14] Seventy-six percent of the sample has less than high school education. In terms of citizenship/legal status, 66% of the sample are U.S. citizens, 24% are likely documented immigrants, and 10% are likely undocumented immigrants. In addition, 80% of the sample reported being non-managers.

In our sample, 39% identify as Hispanic, and 10% are likely-undocumented immigrants. According to the National Agricultural Worker Survey conducted annually by the U.S. Department of Labor, about 70% of foreign-born workers (and around half of all crop farm workers) are undocumented (Martin, 2017). The difference between our sample statistics and these estimates arises for two key reasons. First, our sample includes not only hired farm workers but also farm and livestock owners and operators, who are majority white,[15] which is reflected in the fact that over half of our sample is white. Second, in constructing our final sample, we exclude likely undocumented immigrants from households without members eligible for SNAP, thereby removing a large segment of immigrant agricultural workers.

In terms of work characteristics, 12% of the sample was unemployed (but previously involved in agriculture) during the survey period. On average, respondents worked almost 40 hours per week.

[14] We classify individuals of Hispanic ethnicity as Hispanic/Latino, and non-Hispanic individuals according to their reported race. For example, if an individual is racially white and Hispanic, we consider them Hispanic, and if an individual is racially white and non-Hispanic, we consider them white.

[15] The 2014 Tenure and Ownership Agricultural Land survey showed that in 2012–14, white farmers owned 98% and operated 94% of all farmland (Horst and Marion, 2019).

4.2 Minimum Wage Data

Minimum wage data come from the U.S. Department of Labor and reflect the higher of the state or federal minimum wage in effect each year. We use the nominal values of the prevailing state minimum wage. Additional details on the timing and distribution of minimum wage changes across states are provided in Section A.

5 Empirical Framework

As our primary regression specification, we estimate the linear probability model in equation (1). The variable y_{ist} is the outcome for individual i from state s and year t. MW_{st} is the continuous treatment variable that is the state-level nominal minimum wage for state s and year t. $\mathbf{X}_{ist}$ and $\mathbf{W}_{st}$ are vectors of individual/household and state controls, respectively. ϕ_s denotes state fixed effects that control for time-invariant characteristics specific to each state, and ψ_t are year fixed effects that control for time trends common across all states during year t.

$$y_{ist} = \beta_0 + \beta_1 MW_{st} + \mathbf{X}'_{ist}\alpha + \mathbf{W}'_{st}\gamma + \phi_s + \psi_t + \varepsilon_{ist} \tag{1}$$

As discussed in Section B, there are trends in SNAP participation during our sample years brought about by economic conditions and policy shifts. Year fixed effects help us control for these nationwide time-varying factors, such that our estimates capture the variation in minimum wage effects that is not driven by common shocks affecting all states in a given year. The term ε_{ist} is the independent and identically distributed error term clustered at the state level, the unit of variation of our treatment variable.

The $\mathbf{X}_{ist}$ vector includes years of education, marital status, age, race/ethnicity indicators, sex, household size, the presence of household members who are under 18 years, and the interview mode.[16] Likewise, $\mathbf{W}_{st}$ includes the SNAP policy index (Ganong and Liebman,

[16]Following the suggestion by Nguimkeu et al. (2019), we include the interview mode dummies as a proxy for stigma-induced misreporting.

2018), the housing price index, the proportion of households participating in SNAP at the PUMA level (Celhay et al., 2025), and a measure of local labor demand shocks, usually referred to as 'Bartik-style control'.

Some states expand eligibility using Broad-Based Categorical Eligibility (BBCE), allowing households with higher gross incomes (sometimes up to 200% of the FPL) to qualify if they have high expenses, such as housing or child care.[17] BBCE policies expand SNAP eligibility criteria, leading to state-level variation in program access. To account for this, Ganong and Liebman (2018) constructs a SNAP policy index by summing eight key state-level policies that affect program generosity, including asset limits, recertification frequency, and income thresholds. A higher index value reflects a more expansive or accessible SNAP program.

Following Clemens and Wither (2019), Agan and Makowsky (2023), and Fone et al. (2023), we control for the housing price index to control for time-varying macroeconomics conditions across states that can affect the cost of living.

We also control for the SNAP-participation ratio at the PUMA level,[18] which is defined as the number of households receiving SNAP benefits divided by the total population at the PUMA level.[19] This variable captures the local prevalence of SNAP participation and is a proxy for the availability or intensity of SNAP program usage in a given area following Celhay et al. (2025).

Finally, we include a state-level Bartik-style control to account for changes in economic conditions potentially influencing both the minimum wage and SNAP participation (Bartik, 1992; Goldsmith-Pinkham et al., 2020), as there is evidence that business cycle fluctuations

[17] As of early 2025, California, Delaware, Maine, Maryland, Massachusetts, New York, Oregon, Vermont, and Washington used this as the threshold.

[18] In the ACS, Public Use Microdata Areas (PUMAs) are geographic units with populations of at least 100,000, used for public-use microdata; a PUMA can include multiple counties, particularly in rural areas, and a county can be split across multiple PUMAs, especially in more populous regions. PUMA-county crosswalks were obtained from the Missouri Census Data Center. Link: https://mcdc.missouri.edu/

[19] County-level SNAP ratio data was obtained from the USDA Food and Nutrition Service. Link: https://www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap

affect SNAP participation (Ganong and Liebman, 2018).[20] As the sample period spans the Great Recession, the Bartik-style control helps to isolate the effects of the local economic shocks arising from the recession.

We weigh the observations using the survey weights to ensure that the analysis produces nationally representative estimates, accounting for the survey design, differential sampling probabilities, and non-response adjustments of the ACS.

The identifying assumption of our empirical strategy is that controlling for the observables and state and year fixed effects, the time-varying shocks, ε_{ist}, are orthogonal to the minimum wage variable, allowing us to identify the within-state effects of minimum wage changes on SNAP participation. The coefficient of interest, β_1 can be interpreted as the average change in the probability of households using SNAP over the last 12 months as a result of a nominal \$1 increase in binding minimum wage at the state level, controlling for individual/household characteristics, time-invariant differences across states, time-varying shocks, and yearly shocks common across all states.

A key challenge in studying the effects of minimum wage policies is that broader economic and employment trends can be intertwined with both minimum wage changes and the outcome variable. However, as Smith et al. (2022) suggests, recent shifts in minimum wage laws have largely been driven by activism within the fast food industry and other service-sector jobs, as well as political factors such as Democratic control in state governments (DePillis, 2019; Ashby, 2017). Agricultural labor dynamics or commodity markets did not primarily influence these changes. Given this context, our empirical framework treats these policy shifts as providing plausibly exogenous variation in agricultural wages. Moreover, prior research indicates that the farm sector has little to no significant spillover effects on non-farm

[20]The variable is equal to $\sum_k (s_{ik0} \times g_{kt})$, where s_{ik0} is the share of industry k in the baseline year, 2003, and g_{kt} is the national growth rate of industry k in year t with respect to the baseline year. The growth variable, g_{kt}, is equal to $\frac{Emp_{kt}}{Emp_{k0}}$ where Emp_{kt} and Emp_{k0} denote the total employment in industry k in year t and the total employment in industry k in the baseline year, 2003, respectively. We construct this variable using the County Business Patterns from the U.S. Census Bureau. As the Bartik measure is constructed using national industry trends and the state's initial industry structure, it acts as an exogenous source of variation in local labor demand. While traditionally, the Bartik measure is used as an instrument, several recent papers use it as a regression control variable (Beerli et al., 2021; East et al., 2023).

industries (Foster and Rosenzweig, 2004; Hornbeck and Keskin, 2014; Weber et al., 2015).

We also examine whether the effects of the minimum wage on SNAP participation evolve over time using equation (2).

$$y_{ist} = \beta_0 + \sum_k \beta_k \left(\text{MW}_s \times \mathbb{1}\{\text{Year} = k\}\right) + \mathbf{X}'_{ist}\alpha + \mathbf{W}'_{st}\gamma + \phi_s + \psi_t + \varepsilon_{ist} \tag{2}$$

The goal of equation (2) is to assess how the relationship between the minimum wage and SNAP participation changes over time by interacting the minimum wage with year indicators. This allows us to estimate a separate effect for each year, capturing potential shifts in responsiveness during different economic conditions.

Finally, we also disentangle the heterogeneity in the effects of minimum wage on SNAP participation based on various sociodemographic factors using equation (3).

$$y_{ist} = \beta_0 + \beta_1 MW_{st} + \beta_2 Z_i + \beta_3 MW_{st} \times Z_i + \mathbf{X}'_{ist}\alpha + \mathbf{W}'_{st}\gamma + \phi_s + \psi_t + \varepsilon_{ist} \tag{3}$$

In this specification, Z_i represents the dimension of heterogeneity. We explore heterogeneities across five dimensions: race/ethnicity, legal and citizen status, education level, whether they have children in the household, and managerial status.[21] The coefficient β_3 captures the interactional effect between a particular dimension and minimum wage compared to the base group. Our base groups are White for race/ethnicity, U.S. citizens for legal status, those with education at high school or less, households with no children for differential effects analysis based on whether a household has children, and owner/operator/manager for employment position.

We investigate heterogeneity in effects across racial and demographic dimensions, motivated by evidence from the economics literature showing persistent disparities in food security across racial and ethnic groups (Byrne et al., 2024). Prior research also documents differences in agricultural wages and income by citizenship and legal status, with undocumented im-

[21] Owner/operator/manager versus hired farm worker.

migrants earning less than citizens and documented workers (Kandilov and Kandilov, 2010; Fan and Pena, 2019), which may heighten their vulnerability to food insecurity. In addition, SNAP eligibility varies between households with and without children (U.S. Department of Agriculture, Food and Nutrition Service, 2025).

6 Results

In this section, we begin by showing the main effects across three samples defined by SNAP work requirements. We then explore temporal variation, subgroup heterogeneity, and potential mechanisms driving the observed effects. Together, these results demonstrate how minimum wage policies interact with SNAP eligibility rules and labor market behavior in low-wage agricultural settings.

6.1 Main Results

Table 2 presents estimates of the effect of the minimum wage on household SNAP participation. The dependent variable is a binary indicator for whether any member of the household received SNAP benefits in the past 12 months. Column (1) shows results for the full sample, column (2) restricts the sample to household heads who are working-age adult aged 16–59 who have the SNAP eligibility threshold of working at least 30 hours per week (the 'general' work requirement group), and column (3) focuses on ABAWDs aged 18–49 who have the SNAP eligibility threshold of working at least 80 hours per month. All regressions include individual and household-level controls, state and year fixed effects, and state-specific time trends. The results are weighted using ACS survey weights, and standard errors are clustered at the state level.

Table 2 presents consistent evidence of a positive relationship between minimum wage and SNAP participation across different samples. In the full sample, a $1 increase in the minimum wage is associated with a 1.5 percentage point increase in SNAP participation.

In the general work requirement sample, SNAP participation rises by 1.5 percentage points with a $1 increase in the minimum wage. The ABAWD sample yields a similar estimate, with a 1.6 percentage point increase.[22]

As a robustness check, we also report estimates for the sample restricted to farmworkers, excluding farm owners, who may not be directly or fully affected by changes in the minimum wage, in Tables B2 and B3. The results remain consistent across these specifications, except for those by managerial status.

6.2 Year-Specific Estimates

Table 3 reports the yearly estimates of the effect of a $1 increase in minimum wage on household SNAP participation, obtained from equation 2. The corresponding estimates are shown in Table B4.

In the years prior to 2013, the estimated effects are small in magnitude and statistically indistinguishable from zero. For example, the coefficients for 2005 through 2012 are close to zero, with relatively large standard errors, suggesting that earlier minimum wage increases, many of which were modest and limited in geographic scope, had little consistent effect on SNAP enrollment. Notably, there is no discernible pattern in the estimates during the 2007–2009 Great Recession, indicating that the minimum wage–SNAP relationship does not appear to follow the business cycle in any systematic way. These estimates come from a regression specification that controls for local labor demand shocks, which helps account for business cycle fluctuations.

A notable shift occurs starting in 2013. The estimated effect of a $1 increase in the minimum wage rises sharply to 0.065 and is statistically significant at the 1 percent level.

[22]Table B1 presents baseline estimates from variations of equation 1, each adding different controls for stigma and participation: ACS interview mode, PUMA-level SNAP participation ratio, and the SNAP Policy Index. The first two address potential stigma-related misreporting (Celhay et al., 2025), while the last captures policy generosity (Ganong and Liebman, 2018). Minimum wage effects on SNAP participation remain positive and significant across all specifications. Higher local SNAP participation is positively associated with individual participation, suggesting neighborhood or peer effects. Internet respondents were 2.7 percentage points less likely to report SNAP use than those interviewed by phone or in person, echoing findings from Celhay et al. (2025). The SNAP Policy Index shows no significant relationship with participation.

This is the first year in the sample where the effect is both large and precisely estimated. Although the estimate for 2014 drops back toward zero, the upward trend resumes in 2015 and 2016, with coefficients of 0.041 and 0.030, respectively, both significant at the 1 percent level. These later estimates coincide with a period when several large states, including California, New York, and Washington, enacted substantial increases in their minimum wage policies, often through multi-year legislative schedules. These reforms raised the wage floor well above the stagnant federal minimum of $7.25 and likely reached a broader segment of low-income workers.

The emergence of statistically significant effects during 2013–2016 likely reflects a combination of policy and program dynamics. As the minimum wage became more binding, it may have influenced labor market outcomes, such as altering work hours or job opportunities for some individuals, which in turn affected household income and SNAP eligibility. In addition, administrative factors, such as delayed income reporting and fixed certification cycles in the SNAP program, likely contributed to the lagged but noticeable response in participation rates.

6.3 Heterogeneity

Table 3 examines heterogeneous effects of minimum wage on SNAP participation across race and ethnicity, citizenship and legal status, education, the presence of children in the household, and managerial occupation status. Similar to our baseline results, we present heterogeneity results separately for the three samples.

Panel A presents results by race and ethnicity, where our base group for comparison is White-headed agricultural households. Overall, for White households, there is no statistically significant effect of the minimum wage on SNAP participation across the three samples (point estimates ranges from 0.6 to 0.8 percent). However, in the full sample (column 1), Hispanic-headed households are 1.5 percentage points more likely to participate in SNAP following a $1 minimum wage increase, relative to White-headed households. The magnitude remains

similar in the general work requirement sample (column 2) and in the ABAWD sample (column 3), at 1.7 and 1.6 percentage points, respectively. Black-headed households also show an increase in SNAP participation in the full sample and general sample of around 2.0 percentage points, relative to White households.[23] These patterns suggest that increases in the minimum wage may lead to larger increases in SNAP participation among Hispanic- or Black-headed agricultural households relative to White-headed agricultural households.

Panel B investigates heterogeneity by citizenship and legal status. The interaction between minimum wage and legal status suggests that minimum wage increases differentially affect SNAP participation for both likely undocumented and likely documented-headed households. Likely undocumented-headed households are 3.2-3.4% points more likely to participate in SNAP compared to citizen-headed households, based on the sample in use. For likely documented-headed agricultural households, they are bout 1.5-1.6% points more likely to participate in SNAP compared to citizen-headed households.

As explained in Section 4, we identify likely undocumented immigrants using three criteria: being foreign-born, having a high school education or less, and residing in the U.S. for fewer than 20 years. This approach is similar to those used by Bohn et al. (2014), Kostandini et al. (2014), and East et al. (2023). In Table B5, we disentangle which of these characteristics most strongly explain the relationship between minimum wage increases and SNAP participation. Compared to U.S. citizens, immigrants experience a differential increase in SNAP participation of approximately 3.2 to 3.4 percentage points in response to a $1 increase in the minimum wage. We also observe differential effects based on length of residence in the U.S.: individuals who have lived in the U.S. for fewer than 20 years show a sharper increase in SNAP participation by 1.8 to 2.1 percentage points, despite having a baseline participation rate that is 13.3 to 15 percentage points lower than those with longer residence. Education level does not explain the relationship between minimum wage and

[23]Taking into account the base-group effect, the overall effect of a $1 minimum wage increase leads to a 2.3 percent increase in SNAP for Hispanic households across all three groups. For Black households, we see a slightly larger effect in the full sample and general work requirement sample (2.8 percent) as compared to the ABAWD sample (2.3 percent).

SNAP participation among immigrants.

Tables B6 and B7 present the results after redefining likely undocumented immigrants by changing the length of residence in the U.S. from 20 years to 15 and 10 years, respectively. The results show very similar patterns in direction, magnitude, and statistical significance.

Panel C shows the heterogeneous effects by education. Regression estimates show that in general, households with a high school education or less are 7.1-9.8% points more likely to participate in SNAP. These coefficients are significant at 1% level. However, we do not find any economically or statistically significant heterogeneous effects of minimum wage on SNAP participation by education levels.

Panel D shows the estimates on whether the relationship between minimum wage and SNAP participation differs by the presence of children in the household. The ABAWD work requirement is not applicable to households with children, who count as dependents, and thus such households are exempt from the work requirement. Therefore, we show estimates only for the full sample and the general work requirement sample. We find that households with children show a modest increase in SNAP participation as a result of $1 minimum wage increase. However, the relationship is statistically insignificant for all samples.

Finally, Panel E shows heterogeneous results by managerial status within agriculture. While households headed by non-managers show higher SNAP participation, the difference is not statistically significant. The interaction term between minimum wage and non-managerial status indicates that agricultural workers in non-managerial roles are approximately 1.4-1.5% points more likely to participate in SNAP compared to agricultural managers as minimum wage increases across the three samples.

6.4 Potential Mechanisms

We investigate several mechanisms behind the disproportional increase in SNAP participation among certain sociodemographic groups. The increase could be driven either by an increase in unemployment or, as we discussed in the conceptual model, an increase in work-

ing hours, making them eligible for SNAP through the minimum working hour threshold. We analyze these various potential avenues.

6.4.1 Unemployment

Table 4 shows the relationship between the prevailing minimum wage and unemployment using the linear probability model in equation (1). The outcome variable is a binary indicator equal to one if the respondent was unemployed at the time of the survey. As in previous tables, column (1) uses the full sample of agricultural workers, column (2) uses the sample of agricultural workers within the general work requirement age group for SNAP eligibility, and column (3) uses the sample within the ABAWD work requirement age group for SNAP eligibility. As shown in the table, we do not find a significant relationship between state minimum wage and unemployment across the different samples. These results are consistent with other studies on the employment effects of minimum wage policies, which typically find overall null or very small negative impacts (Card and Krueger, 2000; Dube et al., 2010; Cengiz et al., 2019).

Table 5 presents heterogeneous effects of the minimum wage on unemployment across various sociodemographic characteristics. We report results across three samples defined by work requirement categories. Panel A explores heterogeneity by race and ethnicity, using White-headed agricultural workers as the reference group. In general, we do not observe differential adverse effects of the minimum wage on unemployment. One exception is Hispanic agricultural workers, who are 0.8 percentage points less likely to be unemployed as the minimum wage increases, though this effect is observed only in the ABAWD sample. Minimum wage changes do not have significant effects on unemployment among White, Black, or other racial/ethnic groups.

Panel B reports results by citizenship and legal status. Compared to citizen agricultural workers, likely undocumented immigrant workers show a decrease in unemployment as the minimum wage increases. Although the direction of the effect is consistently negative across

the three samples, the coefficient is statistically significant at the 10 percent level only in the ABAWD sample. Similarly, compared to citizen workers, likely documented immigrant workers show a 1.4 percentage point decrease in unemployment, significant at the 5 percent level. These findings suggest that SNAP work requirements may be more binding for immigrant workers, potentially pushing them to remain employed in order to retain benefit eligibility. The combination of higher minimum wages and stricter work requirements appears to increase labor force attachment among this group.

Panels C, D, and E examine heterogeneity by education level, presence of children in the household, and managerial status, respectively. The comparison groups are workers with more than a high school education, households without children, and workers in managerial roles, respectively. Across these dimensions, we do not find any statistically significant differences in the effects of minimum wage on unemployment across the three work requirement subgroups. This suggests that unemployment is unlikely to be the primary mechanism behind the observed differential increase in SNAP participation among certain sociodemographic groups.

6.4.2 Hours Worked

We now turn to another potential mechanism driving the heterogeneity in effects on household SNAP participation for certain sociodemographic groups, changes in hours worked. Our hypothesis is that agricultural workers may adjust their working hours to meet SNAP work requirements in response to minimum wage increases.

Table 6 presents the baseline results of this analysis. The dependent variable is the usual number of hours worked in the survey year, measured in levels. In the ACS data, this variable captures the number of hours per week the respondent usually worked, provided they worked at any time during the previous year.[24] This question refers to hours worked in a typical week over the past year, rather than hours worked in the prior week, which

[24]The survey question is worded as follows: 'During the past 12 months (52 weeks), in the weeks worked, how many hours did this person usually work each week?'

may have been atypical due to fluctuations. As per the coefficients in Table 6, we do not find any statistically significant effects of minimum wage on hours worked across all working requirement group samples.

Table 7 presents heterogeneous effects of minimum wage on hours worked by different demographic characteristics. We find that increases in the minimum wage lead to higher weekly hours worked among minority agricultural workers, particularly those subject to SNAP work requirements. A $1 increase in the minimum wage leads to an increase of 1.21-1.31 hours for Hispanic workers and 1.10-1.47 for workers of other races, relative to White workers, across all samples. Black workers also see a modest increase in hours worked; 0.67 hours in the general sample and 0.87 hours in the ABAWD sample. These findings suggest that higher minimum wages may strengthen labor supply among minority workers, especially in groups affected by SNAP work requirements.

Panel B presents the heterogeneous effects of minimum wage on SNAP participation by citizenship and legal status. Likely undocumented workers work almost 8 fewer hours per week than White workers, and likely documented workers about 5 fewer. However, a $1 minimum wage increase raises weekly hours worked among likely undocumented workers by roughly 1 hour and among likely documented workers by about 0.7 hours, across all samples. These results suggest that minimum wage increases raise labor supply among immigrant workers, potentially helping them meet SNAP work requirements and maintain eligibility.

Panels C–E examine heterogeneity in hours worked by education, having children, and managerial status. Less-educated agricultural workers (high school or less) work fewer hours overall but respond more to minimum wage increases, with a significant increase of 0.46-0.49 hour depending on the sample. In contrast, having children under 18 in the household does not significantly alter hours worked or responsiveness to minimum wage changes. Finally, non-managerial workers supply significantly fewer hours, about 14–16.5 fewer per week, than managerial workers, but minimum wage increases lead to modest gains in hours worked (up to 1 hour), particularly among those in SNAP work requirement groups.

Li and Reimer (2021) find that minimum wage increases can lead to higher work hours. We observe that this is true only for specific sociodemographic groups. These findings suggest that minimum wage hikes can raise labor supply among more vulnerable subgroups, potentially helping them maintain SNAP eligibility.

6.4.3 SNAP Working Hour Thresholds

Table 8 presents the estimated effects of minimum wage increases on the likelihood of meeting SNAP's required work thresholds. The threshold is 30 hours per week for the general work requirement group and at least 80 hours per month for the ABAWD group. The coefficients are small and not statistically significant for either group, suggesting that minimum wage changes do not meaningfully affect the overall likelihood of meeting SNAP eligibility thresholds.

Table 9 explores heterogeneous effects. Panel A shows that Hispanic and other racial and ethnic groups are more likely than White workers to meet the threshold as the minimum wage increases. For instance, Hispanic workers are 2.3 percentage points more likely to meet the threshold in the general sample and 0.9 percentage points more likely in the ABAWD sample. Panel B shows that both likely undocumented and documented immigrant workers are more likely to meet the threshold as the minimum wage rises, with effects ranging from 0.6 to 2.0 percentage points. These findings are consistent with earlier results on hours worked, suggesting that minimum wage increases may encourage greater labor supply among immigrant and non-White workers.

Panels C through E examine differences by education level, presence of children, and managerial status. Less-educated workers are 6.8 percentage points less likely to meet the threshold in the general sample but respond more strongly to minimum wage increases, with increases of 1.4 and 0.5 percentage points, respectively, among those in the SNAP work requirement groups. Households with children under age 18 are overall less likely to meet the threshold, but a $1 increase in the minimum wage raises their likelihood by 1.6 percentage

points in the general sample, though the effect is not statistically significant. Finally, non-managerial workers are 8.6 percentage points less likely than managerial workers to meet the threshold and do not show a meaningful change in response to minimum wage increases.

Overall, these results suggest that rising minimum wages may help certain groups, particularly immigrants, racial minorities, and less-educated workers, satisfy SNAP work requirements by increasing their labor supply.

7 Conclusion

This paper examines whether state-level minimum wage increases affect SNAP participation among U.S. agricultural worker households. Despite the extension of minimum wage protections to agricultural workers through the Fair Labor Standards Act, many continue to earn near or below the legal threshold due to exemptions and inconsistent enforcement. Using nationally representative data from the American Community Survey and a fixed effects model, we find that a $1 increase in prevailing minimum wage increases SNAP participation among agricultural workers by 1.4-1.6 percentage points. We find important heterogeneity: minimum wage increases lead to higher SNAP participation among Black- and Hispanic-headed households, likely documented and undocumented immigrant-headed households, and households headed by non-managerial workers.

These effects appear to be mediated by changes in labor supply. Our results indicate that minimum wage increases elevate the probability that individuals in these groups satisfy SNAP's work-hour eligibility criteria, thereby expanding their eligibility for program participation. Rather than reducing SNAP participation through income gains, minimum wage increases may expand access among underrepresented groups by enabling compliance with eligibility requirements tied to work effort. Indeed, Hill et al. (2025) finds fewer than half of income-eligible agricultural households participate in programs such as SNAP due to barriers related to immigration status and language limitations.

These findings suggest several policy implications. First, minimum-wage policies are unlikely to reduce public assistance use uniformly across populations. In fact, for marginalized groups such as immigrants, Black or Hispanic agricultural workers, minimum-wage laws and SNAP program participation appear to be complements, rather than substitutes, whereby wage increases facilitate participation rather than reduce it. While this finding may be contrary to conventional wisdom, it follows straight from labor supply theory, whereby an increase in the wage rate has a stronger substitution effect than the income effect, especially for low-wage workers. Of course, the result will be an increase in overall household income, perhaps leading to a reduction in the per-household benefit level.

Second, SNAP eligibility rules could be reviewed to better accommodate the employment patterns of agricultural workers, who often face fluctuating schedules, seasonal work, and piece-rate pay structures. Simplifying documentation of work hours and providing more flexible verification mechanisms could help eligible households access benefits without undue burden.

Third, enforcement of minimum wage laws must be strengthened, particularly for piece-rate workers and those employed by small farms, to ensure that legal protections are meaningful in practice.

This study contributes to the literature by demonstrating how changes in wage policy influence engagement with the safety net among historically disadvantaged labor groups. Future research should continue to explore long-term impacts on household stability, food security, and economic resilience, as well as examine how policy coordination between labor and social protection systems can better support vulnerable agricultural workers.

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Figures and Tables

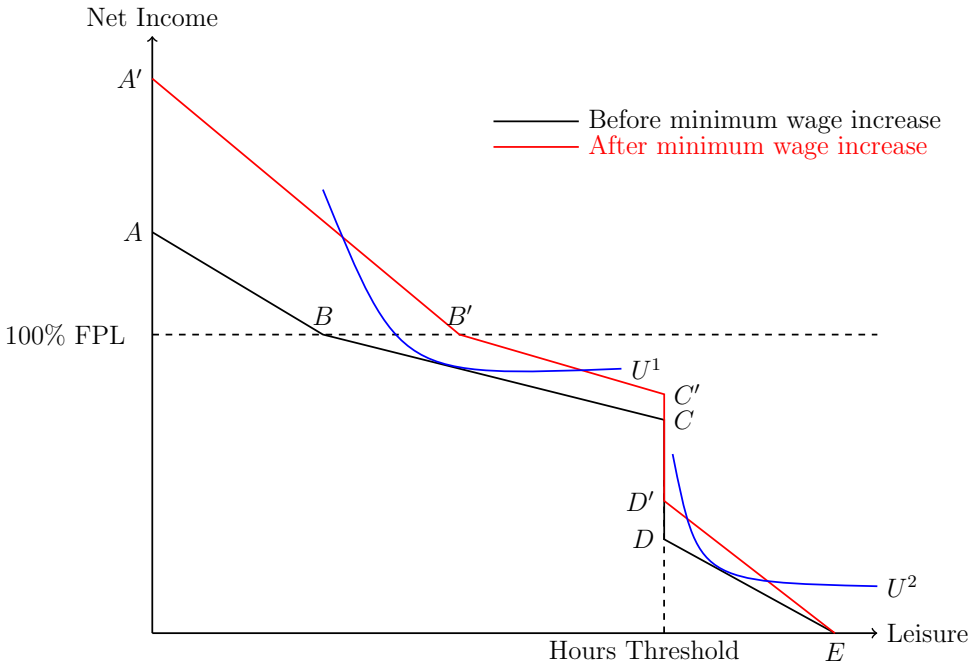
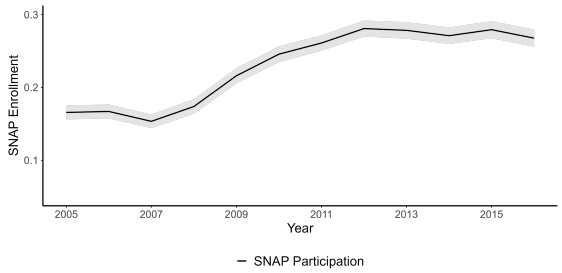
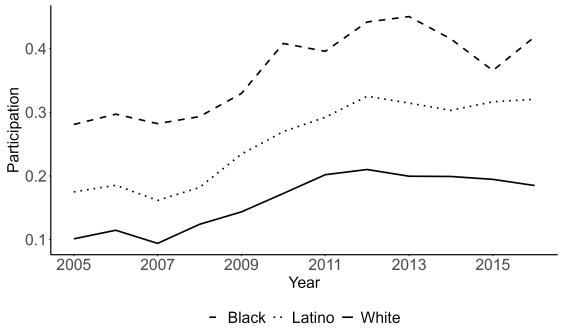


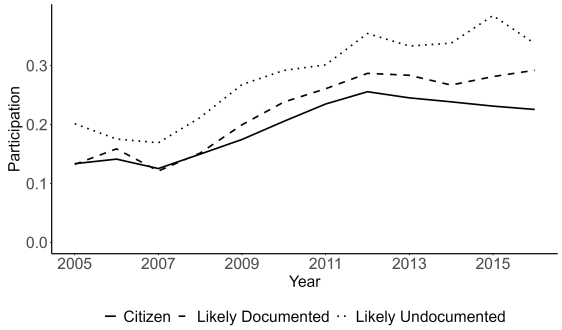
Figure 1: Budget constraints with SNAP work requirement before and after minimum wage increase



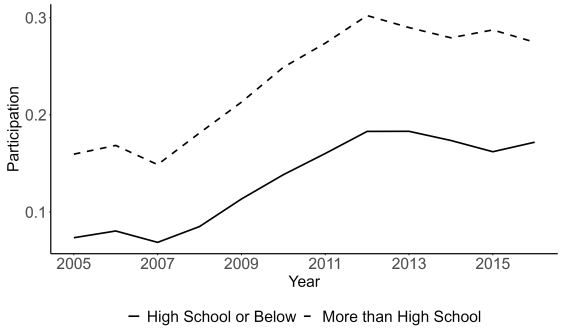
(a) Aggregate Rates



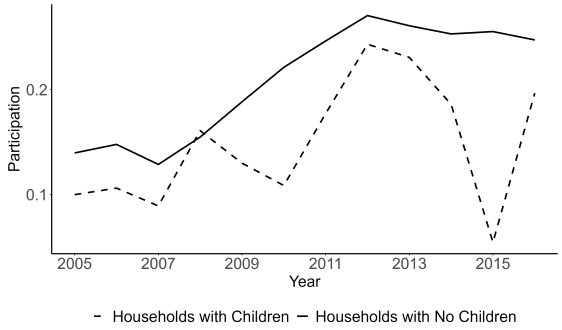
(b) By Race/Ethnicity



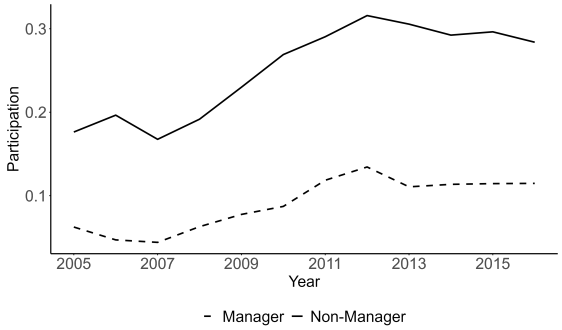
(c) By Legal Status



(d) By Education



(e) By Having Children



(f) By Managerial Status

Figure 2: SNAP Trends over Time by Sociodemographic Groups

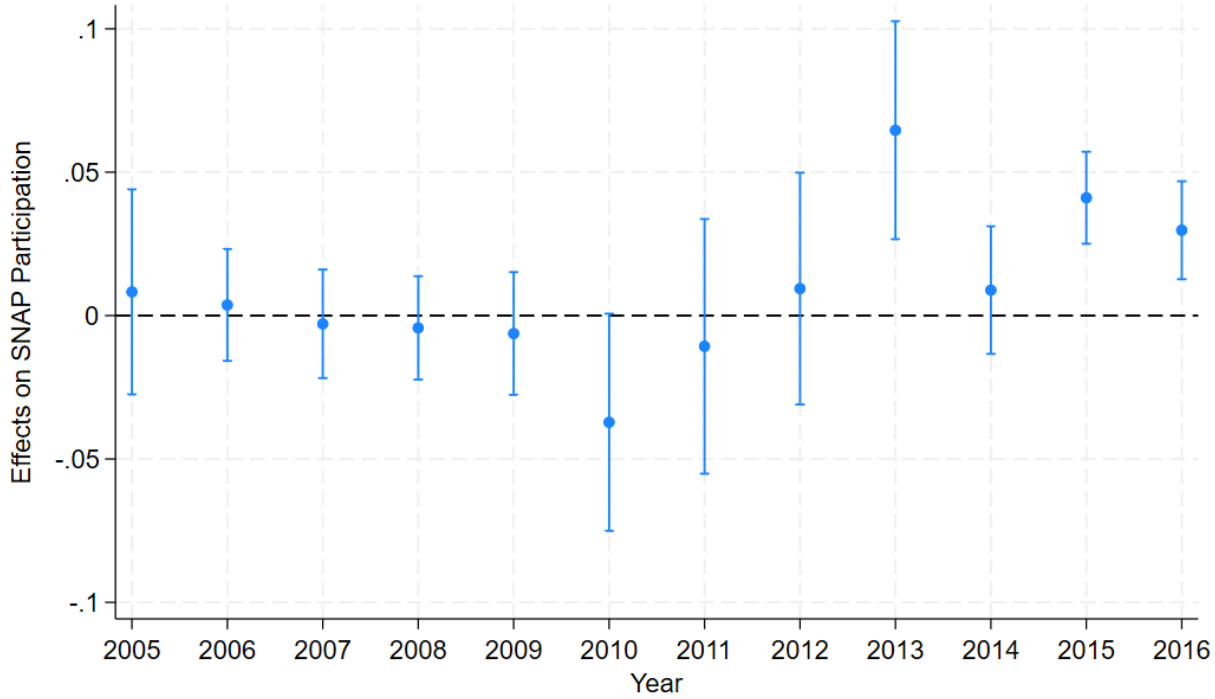


Figure 3: Evolution of the effects of minimum wage on SNAP participation by year over the sample period

Note: Created using the ACS data.

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Panel A: Sociodemographic characteristics				
SNAP participation	0.23	0.42	0.00	1.00
Age	42.12	13.10	16.00	95.00
Female	0.18	0.39	0.00	1.00
Ever married	0.69	0.46	0.00	1.00
Married	0.49	0.50	0.00	1.00
Separated	0.04	0.20	0.00	1.00
Divorced	0.14	0.34	0.00	1.00
Widowed	0.02	0.16	0.00	1.00
Never married	0.31	0.46	0.00	1.00
Household size	1.20	0.55	1.00	13.00
No. of children	0.02	0.16	0.00	3.00
White	0.50	0.50	0.00	1.00
Black	0.08	0.27	0.00	1.00
Hispanic	0.39	0.49	0.00	1.00
Other race	0.03	0.17	0.00	1.00
High school and less	0.76	0.43	0.00	1.00
No high school	0.37	0.48	0.00	1.00
High school	0.39	0.49	0.00	1.00
University	0.24	0.43	0.00	1.00
Likely-documented immigrant	0.24	0.43	0.00	1.00
Likely-undocumented immigrant	0.10	0.31	0.00	1.00
Non-Manager	0.80	0.40	0.00	1.00
Panel B: Work Characteristics				
Unemployed	0.12	0.32	0.00	1.00
Usual weekly hours worked	39.58	16.82	0.00	99.00
N	66,990			

Notes: This data comes from the American Community Survey (ACS) from 2005-16.

Table 2: Effects of Minimum Wage on SNAP Participation

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Minimum Wage	0.015**	0.015**	0.016*
	(0.007)	(0.007)	(0.008)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	66,990	58,254	42,539
R^2	0.085	0.082	0.082

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table 3: Effects of Minimum Wage on SNAP Participation

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Panel A: Heterogeneity by Race and Ethnicity			
Minimum Wage	0.008	0.006	0.008
	(0.007)	(0.007)	(0.009)
Black	0.009	0.004	0.045
	(0.057)	(0.059)	(0.060)
Hispanic	-0.035	-0.044	-0.044
	(0.046)	(0.048)	(0.054)
Other Race	0.187*	0.193*	0.208
	(0.096)	(0.101)	(0.127)
Minimum Wage × Black	0.020**	0.021**	0.015
	(0.009)	(0.009)	(0.010)
Minimum Wage × Hispanic	0.015**	0.017***	0.016**
	(0.006)	(0.006)	(0.007)
Minimum Wage × Other Race	-0.011	-0.011	-0.012
	(0.012)	(0.013)	(0.017)
N	66,990	58,254	42,539
R^2	0.086	0.082	0.083
Panel B: Heterogeneity by Legal Status			
Minimum Wage	0.008	0.007	0.008
	(0.006)	(0.007)	(0.008)
Likely-undocumented	-0.309***	-0.326***	-0.324***
	(0.080)	(0.085)	(0.093)
Likely-documented	-0.175***	-0.185***	-0.178***
	(0.040)	(0.042)	(0.054)
Minimum Wage × Likely-undocumented	0.032***	0.034***	0.034***
	(0.010)	(0.011)	(0.012)
Minimum Wage × Likely-documented	0.015***	0.016***	0.015**
	(0.005)	(0.005)	(0.007)
N	66,990	58,254	42,539
R^2	0.086	0.083	0.083
Panel C: Heterogeneity by Education			
Minimum Wage	0.013*	0.013	0.015
	(0.008)	(0.008)	(0.009)
High School and Less	0.071**	0.080**	0.098**
	(0.032)	(0.034)	(0.040)
Minimum Wage × High School and Less	0.003	0.003	0.002
	(0.004)	(0.004)	(0.005)
N	66,990	58,254	42,539
R^2	0.083	0.080	0.080
Panel D: Heterogeneity by Presence of Children in Household			
Minimum Wage	0.015**	0.015**	-
	(0.007)	(0.007)	-
Has Kids under 18	0.031	0.015	-
	(0.100)	(0.093)	-
Minimum Wage × Has Kids under 18	-0.004	-0.001	-
	(0.014)	(0.013)	-
N	66,990	58,254	-
R^2	0.085	0.082	
Panel E: Heterogeneity by Managerial Status			
Minimum Wage	0.004	0.003	0.005
	(0.009)	(0.010)	(0.010)
Non-Manager	-0.015	-0.010	-0.002
	(0.035)	(0.035)	(0.035)
Minimum Wage × Non-Manager	0.015***	0.014***	0.014**
	(0.005)	(0.005)	(0.005)
N	66,990	58,254	42,539
R^2	0.091	0.088	0.088

These results use the 2005-16 data from the American Community Survey data and the linear probability model outlined in equation (3). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table 4: Mechanism: Effects of Minimum Wage on Unemployment

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Minimum Wage	-0.005	-0.003	-0.001
	(0.004)	(0.004)	(0.006)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	66,990	58,254	42,539
R^2	0.040	0.042	0.047

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary dummy variable that equals one if the respondent was unemployed during the time of the survey. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table 5: Effects of Minimum Wage on Unemployment

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Panel A: Heterogeneity by Race and Ethnicity			
Minimum Wage	-0.004	-0.002	0.002
	(0.004)	(0.004)	(0.006)
Black	0.037	0.048	0.024
	(0.053)	(0.059)	(0.061)
Hispanic	0.040*	0.042*	0.069**
	(0.023)	(0.025)	(0.030)
Other Race	0.140**	0.117	0.195**
	(0.065)	(0.070)	(0.089)
Minimum Wage × Black	0.008	0.007	0.012
	(0.008)	(0.009)	(0.009)
Minimum Wage × Hispanic	-0.003	-0.003	-0.008*
	(0.004)	(0.004)	(0.004)
Minimum Wage × Other Race	-0.012	-0.008	-0.019
	(0.009)	(0.010)	(0.012)
N	66,990	58,254	42,539
R^2	0.041	0.042	0.048
Panel B: Heterogeneity by Legal Status			
Minimum Wage	-0.002	-0.000	0.004
	(0.004)	(0.004)	(0.006)
Likely-undocumented	-0.032	-0.028	-0.002
	(0.028)	(0.031)	(0.036)
Likely-documented	0.024	0.030	0.070**
	(0.024)	(0.027)	(0.029)
Minimum Wage × Likely-undocumented	-0.005	-0.005	-0.008*
	(0.004)	(0.004)	(0.005)
Minimum Wage × Likely-documented	-0.008***	-0.009***	-0.014***
	(0.003)	(0.003)	(0.004)
N	66,990	58,254	42,539
R^2	0.041	0.042	0.048
Panel C: Heterogeneity by Education			
Minimum Wage	-0.005	-0.002	0.001
	(0.004)	(0.005)	(0.006)
High School and Less	0.022	0.035	0.050*
	(0.022)	(0.023)	(0.029)
Minimum Wage × High School and Less	0.001	-0.001	-0.003
	(0.003)	(0.003)	(0.004)
N	66,990	58,254	42,539
R^2	0.040	0.042	0.047
Panel D: Heterogeneity by Presence of Children in Household			
Minimum Wage	-0.005	-0.003	-
	(0.004)	(0.004)	-
Has Kids under 18	0.050	0.023	-
	(0.090)	(0.091)	-
Minimum Wage × Has Kids under 18	-0.008	-0.004	-
	(0.012)	(0.013)	-
N	66,990	58,254	-
R^2	0.040	0.042	-
Panel E: Heterogeneity by Managerial Status			
Minimum Wage	-0.006	-0.004	-0.002
	(0.004)	(0.004)	(0.006)
Non-Manager	0.054**	0.060**	0.056*
	(0.022)	(0.023)	(0.029)
Minimum Wage × Non-Manager	0.001	0.001	0.001
	(0.003)	(0.003)	(0.004)
N	66,990	58,254	42,539
R^2	0.046	0.047	0.052

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (3). The outcome variable is a binary dummy variable that equals one if the respondent was unemployed during the time of the survey. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table 6: Mechanism: Effects of Minimum Wage on Hours Worked

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Minimum Wage	0.168	0.092	0.189
	(0.275)	(0.289)	(0.312)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	59,707	51,707	37,769
R^2	0.107	0.110	0.109

These results use the 2005-16 data from the American Community Survey and the fixed effects model outlined in equation (1). The outcome variable is the usual number of working hours per week in the survey year. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table 7: Effects of Minimum Wage on Working Hours

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Panel A: Heterogeneity by Race and Ethnicity			
Minimum Wage	-0.444	-0.590	-0.461
	(0.368)	(0.397)	(0.404)
Black	-6.961***	-7.879***	-8.782***
	(2.543)	(2.362)	(2.256)
Hispanic	-10.211***	-10.838***	-9.916***
	(1.605)	(1.410)	(1.376)
Other Race	-11.313***	-14.252***	-12.605***
	(3.660)	(3.597)	(3.874)
Minimum Wage × Black	0.532	0.670*	0.876**
	(0.371)	(0.344)	(0.339)
Minimum Wage × Hispanic	1.232***	1.313***	1.210***
	(0.241)	(0.221)	(0.214)
Minimum Wage × Other Race	1.102**	1.477***	1.200**
	(0.490)	(0.486)	(0.524)
N	59,707	51,707	37,769
R^2	0.108	0.112	0.110
Panel B: Heterogeneity by Legal Status			
Minimum Wage	-0.152	-0.238	-0.127
	(0.298)	(0.320)	(0.338)
Likely-undocumented	-7.838***	-7.872***	-7.544***
	(1.275)	(1.320)	(1.275)
Likely-documented	-4.664***	-5.196***	-5.268***
	(1.144)	(1.313)	(1.502)
Minimum Wage × Likely-undocumented	1.060***	1.089***	1.014***
	(0.160)	(0.167)	(0.159)
Minimum Wage × Likely-documented	0.732***	0.712***	0.657***
	(0.140)	(0.163)	(0.191)
N	59,707	51,707	37,769
R^2	0.107	0.111	0.109
Panel C: Heterogeneity by Education			
Minimum Wage	-0.212	-0.264	-0.173
	(0.303)	(0.311)	(0.326)
High School and Less	-3.223**	-2.926**	-2.762*
	(1.411)	(1.381)	(1.496)
Minimum Wage × High School and Less	0.492**	0.461**	0.473**
	(0.197)	(0.192)	(0.213)
N	59,707	51,707	37,769
R^2	0.107	0.110	0.109
Panel D: Heterogeneity by Presence of Children in Household			
Minimum Wage	0.165	0.088	-
	(0.275)	(0.289)	-
Has Kids under 18	1.906	1.474	-
	(6.273)	(5.901)	-
Minimum Wage × Has Kids under 18	0.386	0.399	-
	(0.877)	(0.811)	-
N	59,707	51,707	-
R^2	0.107	0.110	-
Panel E: Heterogeneity by Managerial Status			
Minimum Wage	-0.314	-0.656	-0.695
	(0.582)	(0.617)	(0.641)
Non-Manager	-14.350***	-16.253***	-16.520***
	(3.762)	(3.696)	(3.686)
Minimum Wage × Non-Manager	0.605	0.961*	1.110**
	(0.553)	(0.545)	(0.547)
N	59,707	51,707	37,769
R^2	0.163	0.163	0.155

These results use the 2005-16 data from the American Community Survey and the fixed effects outlined in equation (3). The outcome variable is the usual number of working hours per week in the survey year. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table 8: Mechanism: Effects of Minimum Wage on Working Threshold

	General	ABAWD
	(1)	(2)
Minimum Wage	0.002	-0.002
	(0.004)	(0.003)
Individual/Household controls	Yes	Yes
State controls	Yes	Yes
State fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	51,707	37,769
R^2	0.060	0.024

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary variable that equals one if the worker satisfied the working hours requirement under the SNAP working hour eligibility rule for the given eligibility group in a typical week of the given survey year. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table 9: Effects of Minimum Wage on Working Hour Threshold

	General	ABAWD
	(1)	(2)
Panel A: Heterogeneity by Race and Ethnicity		
Minimum Wage	-0.009	-0.006
	(0.006)	(0.004)
Black	-0.022	-0.028
	(0.068)	(0.058)
Hispanic	-0.112***	-0.038
	(0.036)	(0.023)
Other Race	-0.216**	-0.000
	(0.104)	(0.103)
Minimum Wage × Black	0.001	0.002
	(0.010)	(0.009)
Minimum Wage × Hispanic	0.023***	0.009**
	(0.006)	(0.004)
Minimum Wage × Other Race	0.024*	-0.005
	(0.014)	(0.014)
N	51,707	37,769
R^2	0.061	0.025
Panel B: Heterogeneity by Legal Status		
Minimum Wage	-0.004	-0.004
	(0.005)	(0.003)
Likely-undocumented	-0.108***	-0.051**
	(0.035)	(0.022)
Likely-documented	-0.027	-0.034*
	(0.028)	(0.018)
Minimum Wage × Likely-undocumented	0.020***	0.008***
	(0.005)	(0.003)
Minimum Wage × Likely-documented	0.010**	0.006**
	(0.004)	(0.002)
N	51,707	37,769
R^2	0.060	0.025
Panel C: Heterogeneity by Education		
Minimum Wage	-0.009*	-0.006
	(0.005)	(0.004)
High School and Less	-0.068**	-0.026
	(0.026)	(0.022)
Minimum Wage × High School and Less	0.014***	0.005*
	(0.004)	(0.003)
N	51,707	37,769
R^2	0.060	0.024
Panel D: Heterogeneity by Presence of Children in Household		
Minimum Wage	0.002	-
	(0.004)	-
Has Kids under 18	-0.111	-
	(0.103)	-
Minimum Wage × Has Kids under 18	0.016	-
	(0.013)	-
N	51,707	-
R^2	0.060	-
Panel E: Heterogeneity by Managerial Status		
Minimum Wage	0.001	-0.003
	(0.006)	(0.004)
Non-Manager	-0.086**	-0.030
	(0.042)	(0.020)
Minimum Wage × Non-Manager	0.002	0.002
	(0.006)	(0.003)
N	51,707	37,769
R^2	0.066	0.025

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (3). The outcome variable is a binary variable that equals one if the worker satisfied the working hours requirement under the SNAP working hour eligibility rule for the given eligibility group in a typical week of the given survey year. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Appendices

A Minimum Wage Data

Our minimum wage data comes from the Department of Labor.[25] We use the nominal value[26] of the effective minimum wage for the state, which is the higher value between the federal and the state minimum wage. Minimum wage increases are generally implemented on January 1. However, there have been exceptions, most notably the federal minimum wage increases between 2007 and 2009, which took effect on July 24 for each of those years. We use the higher of the two minimum wage values for the given year in such cases.

During the sample period, there were 311 state-level effective minimum wage changes across 51 states. Figure A1 shows the annual mean minimum wage for our sample years, in both nominal and real (2020 dollars) values, as well as in population-weighted form. The average state-level binding minimum wage was \$5.48 in 2003 (also \$5.48 in population-weighted terms), which increased to \$9.06 in 2019 (\$9.28 in population-weighted terms). The steep increase in the average minimum wage between 2006 and 2009 was driven by three successive increases in the federal minimum wage: from \$5.15 to \$5.85 in July 2007, to \$6.55 in July 2008, and to \$7.25 in July 2009. The figure also shows that, while the nominal minimum wage increased on average during our sample years, the average real minimum wage decreased between 2003 and 2006, increased from 2007 to 2010 due to the federal minimum wage changes, and remained relatively constant throughout the 2010s, with some fluctuation.

Figure A2 shows the state-level difference in nominal minimum wage between 2003 and 2019. The District of Columbia experienced the largest increase in nominal minimum wage at \$7.85, followed by Arizona and Colorado at \$6.85 each. The lowest increase was \$2.1 shared

[25] Link: https://www.dol.gov/agencies/whd/state/minimum-wage/history

[26] We use nominal instead of the real value of the minimum wage because minimum wages are legislated and enforced in nominal terms, as policymakers and employers operate based on nominal values rather than real adjustments. Mention several recent papers that use nominal minimum wage. As we will discuss later, the inclusion of year fixed effects in the regression models also accounts for country-wide inflation.

by 22 states. Vermont had the largest number of increases, with 15 (experiencing an effective minimum wage increase in 15 out of 16 years), followed by Oregon and Washington with 14 each, and Colorado and Florida with 12 each. Iowa had the fewest number of changes, with just one, which comes from their increase in the minimum wage from $5.15 to $7.25 in 2007.

In years with a non-zero change, the average increase was $0.58. There were four instances where the nominal minimum wage increased by more than $2: Iowa by $2.10 in 2008, and New Jersey by $2.40, as well as Washington and Maine by $2.00 each, in 2019.

In 2003, the first year of our sample, seven states did not have a minimum wage, and 13 states had a minimum wage below the federal minimum. By 2019, the final year of our sample, five states still lacked a minimum wage, and eight states had a minimum wage lower than the federal minimum.[27]

[27] Alabama, Arizona, Florida, Louisiana, Mississippi, South Carolina, and Tennessee did not have a state minimum wage in 2003. Among these, Florida adopted a state minimum wage in 2004, and Arizona followed in 2007.

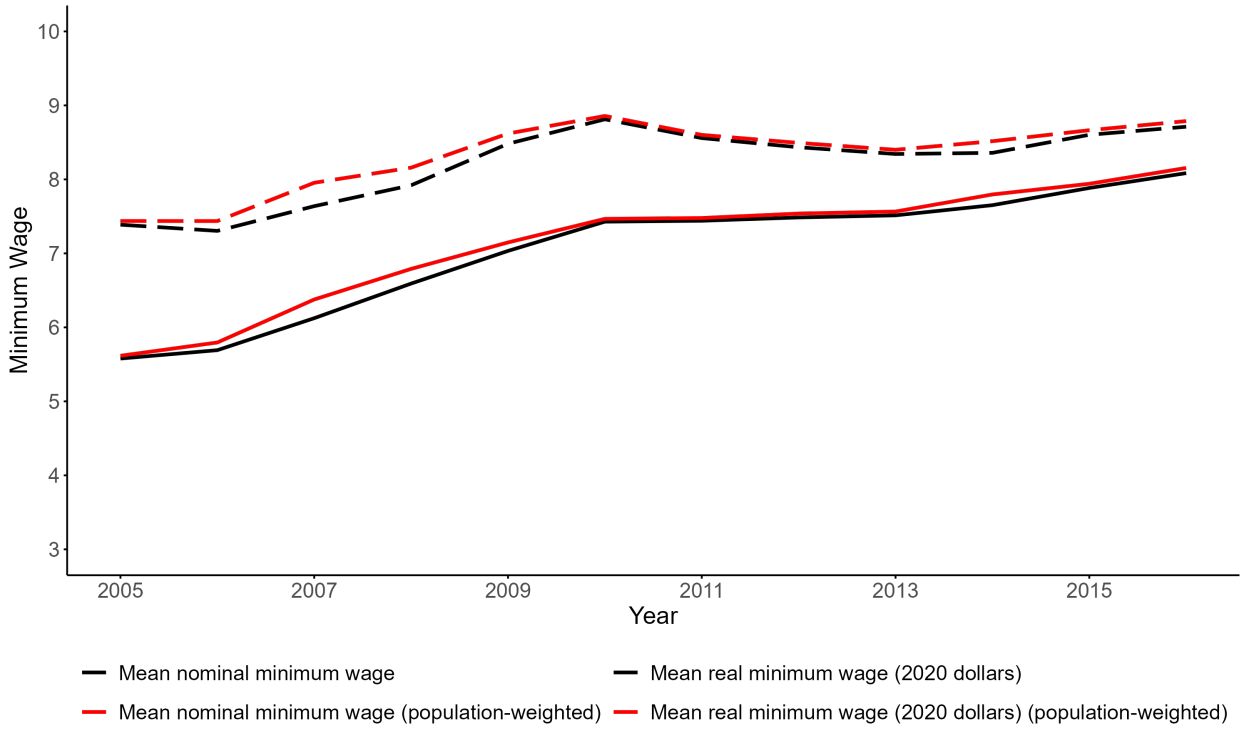


Figure A1: Mean minimum wage by year (2003-19)

Note: Created using the Department of Labor data. Population-weighted means use state population for the particular year as the weight to created the weighted average.

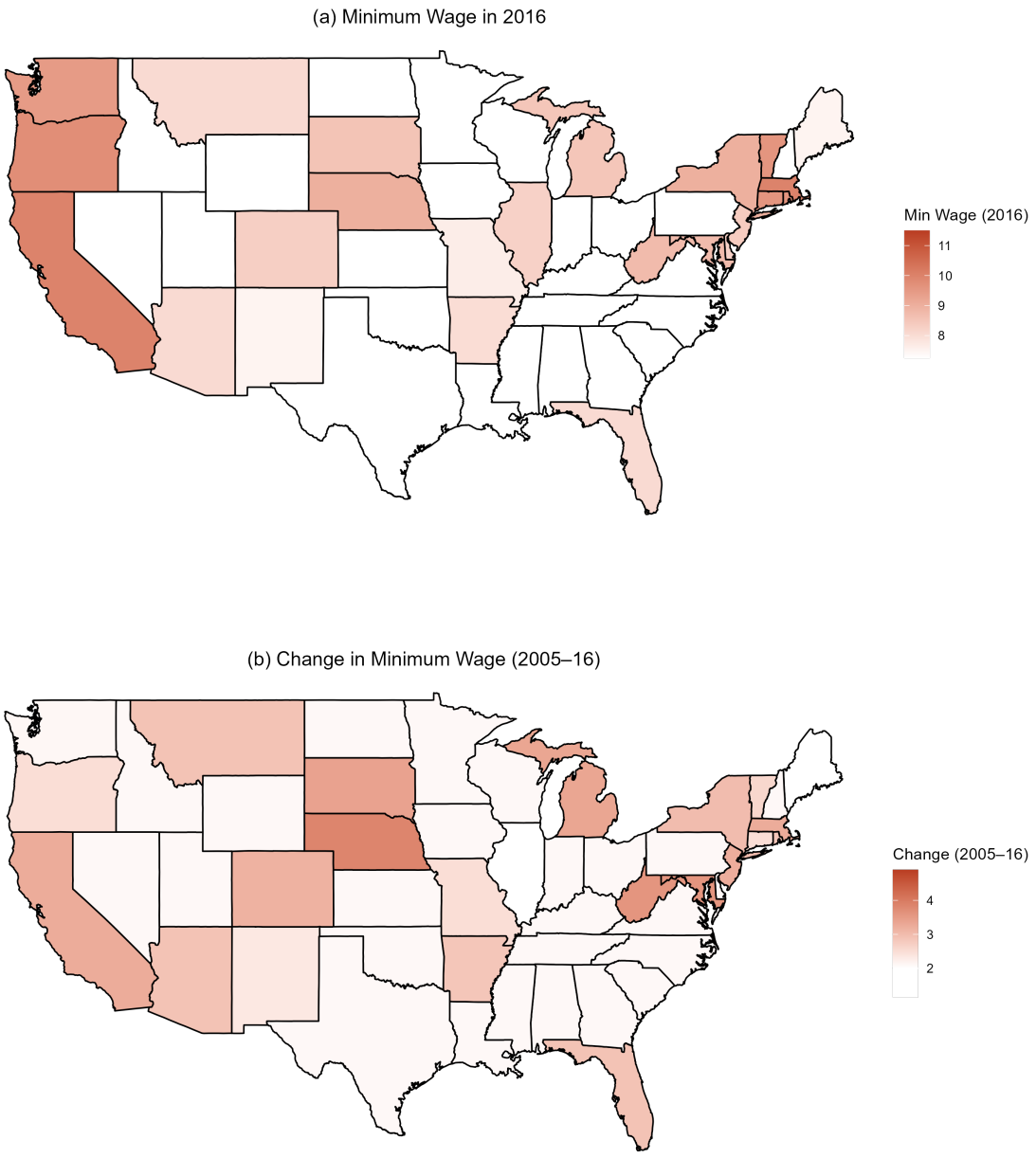


Figure A2: 2019 State-level Minimum Wage and Increases Since 2003

Note: Created using the Department of Labor data.

B SNAP Enrollment Trends

Figure 2 shows the percentage of our sample households that received SNAP benefits at any point in a given year for 2005–16. Figure 2a shows that the share of eligible agricultural households receiving SNAP increased rapidly between 2007 and 2012, possibly due to the negative economic shocks of the Great Recession and its lagged effects. At its peak, the share reached 28% in 2012, after which it remained relatively constant for a few years until 2016, when it began to decline steadily. The decline could be driven by several factors, including the tightening of SNAP eligibility rules and the aging of the farm population, leading to a larger share of agricultural households opting for Social Security and Medicare eligibility instead of SNAP reliance (Center on Budget and Policy Priorities, 2016; Congressional Budget Office, 2016).[28]

Figures 2b through 2f show SNAP participation trends by race/ethnicity, citizenship/legal status, education level, presence of children, and managerial status. While the pattern of increase (2008–2011) is consistent across groups, there are significant differences in participation levels. For example, Black agricultural workers have the highest participation rate, while White workers have the lowest. Workers with low education (up to grade 12) report higher participation than those with high education (university and above). Similarly, U.S. citizens have the lowest participation rate by legal status, while likely undocumented households have the highest, a gap that appears to widen over time. Participation among households with children is more volatile, likely due to their small share in the sample.

[28] Center on Budget and Policy Priorities (2016) stated that the reinstatement of the three-month time limit on benefits for unemployed, non-disabled childless adults in 2016 contributed to the decline, as many states lost their waivers for this requirement, which limits benefits to three months within three years unless recipients meet work requirements. As a result, approximately 500,000 to 1 million individuals lost SNAP benefits that year.

C Other Tables

Table B1: Regression with Permuted Control Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Minimum Wage	0.015**	0.017**	0.018**	0.015**	0.016**	0.018**	0.015**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
SNAP Ratio (PUMA Level)	0.203***			0.203***	0.203***		0.203***
	(0.056)			(0.056)	(0.056)		(0.056)
Mail		-0.006		-0.006		-0.006	-0.006
		(0.005)		(0.005)		(0.005)	(0.005)
Internet		-0.027**		-0.027**		-0.027**	-0.027**
		(0.012)		(0.012)		(0.012)	(0.012)
SNAP Policy Index			-0.022		-0.014	-0.022	-0.014
			(0.030)		(0.032)	(0.030)	(0.032)
Individual/Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	66,990	66,990	66,990	66,990	66,990	66,990	66,990
R^2	0.085	0.082	0.082	0.085	0.085	0.082	0.085

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table B2: Effects of Minimum Wage on SNAP Participation among Farmworkers

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Minimum Wage	0.016**	0.016*	0.017*
	(0.007)	(0.008)	(0.009)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	53,213	47,387	35,718
R^2	0.075	0.074	0.076

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table B3: Effects of Minimum Wage on SNAP Participation among Farmworkers

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Panel A: Heterogeneity by Race and Ethnicity			
Minimum Wage	0.010	0.008	0.011
	(0.008)	(0.008)	(0.009)
Black	0.027	0.021	0.064
	(0.054)	(0.055)	(0.056)
Latino	-0.025	-0.037	-0.037
	(0.046)	(0.048)	(0.054)
Other Race	0.219*	0.227*	0.217
	(0.111)	(0.115)	(0.135)
Minimum Wage × Black	0.015*	0.016*	0.009
	(0.008)	(0.009)	(0.009)
Minimum Wage × Latino	0.011*	0.013**	0.012*
	(0.006)	(0.006)	(0.007)
Minimum Wage × Other Race	-0.017	-0.017	-0.015
	(0.014)	(0.015)	(0.018)
N	53,213	47,387	35,718
R^2	0.075	0.074	0.077
Panel B: Heterogeneity by Legal Status			
Minimum Wage	0.009	0.008	0.009
	(0.007)	(0.007)	(0.009)
Likely-undocumented	-0.291***	-0.310***	-0.306***
	(0.081)	(0.085)	(0.093)
Likely-documented	-0.157***	-0.171***	-0.169***
	(0.040)	(0.043)	(0.054)
Minimum Wage × Likely-undocumented	0.028***	0.031***	0.030**
	(0.010)	(0.011)	(0.012)
Minimum Wage × Likely-documented	0.011**	0.013**	0.013*
	(0.005)	(0.005)	(0.007)
N	53,213	47,387	35,718
R^2	0.075	0.074	0.077
Panel C: Heterogeneity by Education			
Minimum Wage	0.017*	0.017*	0.018*
	(0.008)	(0.009)	(0.010)
High School and Less	0.110***	0.119***	0.125***
	(0.035)	(0.036)	(0.043)
Minimum Wage × High School and Less	-0.001	-0.002	-0.001
	(0.005)	(0.005)	(0.005)
N	53,213	47,387	35,718
R^2	0.072	0.071	0.073
Panel D: Heterogeneity by Presence of Children in Household			
Minimum Wage	0.016**	0.016*	-
	(0.007)	(0.008)	-
Has Kids under 18	0.084	0.077	-
	(0.132)	(0.137)	-
Minimum Wage × Has Kids under 18	-0.007	-0.007	-
	(0.018)	(0.018)	-
N	53,213	47,387	-
R^2	0.075	0.074	
Panel E: Heterogeneity by Managerial Status			
Minimum Wage	0.018*	0.015	0.023*
	(0.010)	(0.011)	(0.013)
Non-Manager	0.065	0.050	0.095*
	(0.041)	(0.044)	(0.050)
Minimum Wage × Non-Manager	-0.002	0.000	-0.007
	(0.006)	(0.007)	(0.008)
N	53,213	47,387	35,718
R^2	0.075	0.074	0.077

These results use the 2005-16 data from the American Community Survey data and the linear probability model outlined in equation (3). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table B4: Effects of Minimum Wage on SNAP Participation by Year

	Full Sample	General	ABAWD
	(1)	(2)	(3)
2005 × Minimum Wage	0.008	0.010	0.014
	(0.018)	(0.019)	(0.019)
2006 × Minimum Wage	0.004	0.003	0.004
	(0.010)	(0.011)	(0.012)
2007 × Minimum Wage	-0.003	-0.003	0.002
	(0.010)	(0.010)	(0.012)
2008 × Minimum Wage	-0.004	-0.007	-0.008
	(0.009)	(0.010)	(0.013)
2009 × Minimum Wage	-0.006	-0.008	-0.003
	(0.011)	(0.011)	(0.015)
2010 × Minimum Wage	-0.037*	-0.035	-0.021
	(0.019)	(0.021)	(0.027)
2011 × Minimum Wage	-0.011	-0.006	0.006
	(0.023)	(0.024)	(0.031)
2012 × Minimum Wage	0.009	0.012	0.015
	(0.021)	(0.020)	(0.028)
2013 × Minimum Wage	0.065***	0.070***	0.073***
	(0.019)	(0.019)	(0.019)
2014 × Minimum Wage	0.009	0.011	0.011
	(0.011)	(0.012)	(0.015)
2015 × Minimum Wage	0.041***	0.037***	0.039***
	(0.008)	(0.009)	(0.013)
2016 × Minimum Wage	0.030***	0.032***	0.036***
	(0.009)	(0.009)	(0.010)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	66,990	58,254	42,539
R^2	0.086	0.083	0.083

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (2). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table B5: Effects of Minimum Wage on SNAP Participation by Various Characteristics

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Minimum Wage	-0.009	-0.011	-0.011
	(0.009)	(0.010)	(0.012)
Immigrants	-0.291***	-0.307***	-0.305***
	(0.073)	(0.076)	(0.087)
High School and Less	0.103***	0.115***	0.132***
	(0.031)	(0.033)	(0.040)
Living in the U.S. for less than 20 years	-0.133***	-0.138**	-0.150**
	(0.049)	(0.052)	(0.059)
Minimum Wage × Immigrant	0.032***	0.034***	0.034***
	(0.009)	(0.010)	(0.011)
Minimum Wage × High School and Less	-0.001	-0.002	-0.003
	(0.004)	(0.004)	(0.005)
Minimum Wage × Living in the U.S. for less than 20 years	0.018***	0.019***	0.021***
	(0.006)	(0.007)	(0.008)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	66,990	58,254	42,539
R^2	0.084	0.081	0.081

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table B6: Robustness Check: Likely Undocumented Immigrant Variable using 15-Year Residence in the U.S.

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Minimum Wage	0.008	0.007	0.008
	(0.006)	(0.007)	(0.008)
Likely-undocumented	-0.340***	-0.365***	-0.363***
	(0.079)	(0.083)	(0.095)
Likely-documented	-0.168***	-0.176***	-0.167***
	(0.044)	(0.047)	(0.059)
Minimum Wage × Likely-undocumented	0.033***	0.036***	0.037***
	(0.010)	(0.011)	(0.013)
Minimum Wage × Likely-undocumented	0.015***	0.016***	0.015**
	(0.005)	(0.006)	(0.007)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	66,990	58,254	42,539
R^2	0.086	0.083	0.083

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.

Table B7: Robustness Check: Likely Undocumented Immigrant Variable using 10-Year Residence in the U.S.

	Full Sample	General	ABAWD
	(1)	(2)	(3)
Minimum Wage	0.008	0.007	0.008
	(0.006)	(0.007)	(0.008)
Likely-undocumented	-0.319***	-0.351***	-0.333***
	(0.089)	(0.090)	(0.093)
Likely-documented	-0.185***	-0.195***	-0.193***
	(0.048)	(0.052)	(0.066)
Minimum Wage × Likely-undocumented	0.028**	0.032***	0.030**
	(0.012)	(0.012)	(0.012)
Minimum Wage × Likely-documented	0.017***	0.018***	0.018**
	(0.006)	(0.006)	(0.008)
Individual/Household controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	66,990	58,254	42,539
R^2	0.086	0.083	0.084

These results use the 2005-16 data from the American Community Survey and the linear probability model outlined in equation (1). The outcome variable is a binary dummy variable indicating whether any member of the household received SNAP at any point in the past 12 months. All equations use individual/household controls, state controls, state fixed effects, and year fixed effects. All regressions are weighted by the ACS survey weights. Robust standard errors clustered at the state level. *** 0.01, ** 0.05, * 0.1.