The Evolution of Economic and Welfare Gaps between Low-Skill Agricultural and Non-Agricultural Workers in the United States*

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Abstract

This paper investigates the evolution of economic and welfare gaps between low-skill agricultural and non-agricultural workers in the United States from 2001 to 2023. Using harmonized microdata from the American Community Survey, I construct a pooled cross-section of wage and salary workers aged 18-60 with a high school education or less, focusing on occupations with low educational requirements, a high share of immigrant labor, and physically intensive work. Even after accounting for observable worker characteristics and regional or time differences, agricultural workers consistently earned lower wages and faced higher poverty rates than their non-agricultural counterparts. However, the wage gap narrowed substantially, by roughly 35-40 percent, over the two decades. Decomposition analysis shows that the narrowing of the wage gap was not driven by changes in the demographic composition of the agricultural workforce, but rather by structural changes in how wages are determined across sectors. I discuss several institutional and market explanations. Agricultural workers also worked more weekly hours, though this difference has diminished since COVID-19. They had consistently lower health insurance coverage, and immigrant agricultural households continued to rely more heavily on SNAP than their non-agricultural peers. I show that these gaps cannot be attributed simply to agriculture's concentration in rural areas.

Keywords: Low-skill workers, agricultural labor, earnings inequality

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1 Introduction

The U.S. labor-intensive agricultural sector relies on a low-wage, low-skill workforce to produce fruits, vegetables, and horticultural crops. These jobs are often physically demanding, seasonal, and concentrated in rural areas, offering few benefits and limited protections. As a result, agricultural work has long been considered one of the least desirable forms of employment in the broader U.S. labor market (Martin, 2016; Luckstead et al., 2023). Despite their critical role in the nation's food system, farm workers consistently experience some of the lowest wages and highest poverty rates of any occupational group. The persistence of these outcomes raises important questions about how agricultural labor markets compare to other low-wage sectors over time.

A large share of the agricultural workforce is composed of immigrants, particularly from Mexico and Central America. However, demographic changes, tighter border enforcement, and improved economic conditions in Mexico have slowed the supply of new immigrant labor. At the same time, U.S.-born low-skill workers have increasingly sorted into other sectors such as construction, food service, and maintenance, where jobs often offer higher wages, better working conditions, or more consistent hours. These sectors frequently draw from the same pool of low-education workers as agriculture, making labor directly movable across sectors. This substitutability has contributed to persistent concerns about agricultural labor supply. Castillo and Charlton (2023), for instance, show that rising housing demand creates a direct competition for low-skill labor, increases employment in non-tradable sectors like construction, while reducing the local supply of farm labor.

While there have been ongoing discussions about labor shortages and wage adjustments in agriculture, it remains unclear whether the economic conditions of farm workers have improved in recent decades, particularly in comparison to workers in other low-skill sectors. Many farm jobs continue to be associated with long hours, limited access to benefits such as health insurance, and high poverty rates. These persistent challenges reflect what Barham et al. (2020) describe as the structural characteristics that continue to distinguish agricultural

labor from other low-wage work, even as farm and nonfarm sectors draw from overlapping labor pools.

This paper examines how the economic well-being of low-skill agricultural workers in the United States has evolved relative to workers in low-skill non-agricultural occupations over the past two decades. I use harmonized microdata from the American Community Survey covering the period 2001-2023. The sample is restricted to wage and salary workers aged 18–60 with no more than a high school education employed in low-skill, immigrant-intensive, and physically demanding occupations. I examine outcomes including hourly wages, weekly hours worked, income-to-poverty ratio, participation in the Supplemental Nutrition Assistance Program (SNAP), and health insurance coverage. To estimate adjusted sectoral differences, I run regression models with worker observable characteristics, and state and year fixed effects, and I disaggregate the analysis by immigrant status. I also employ Oaxaca-Blinder-inspired decompositions to distinguish between changes driven by worker characteristics and shifts in the structure of wage determination across sectors over time.

The analysis shows that agricultural workers consistently earned lower wages, had higher poverty rates, and were less likely to have health insurance coverage than their non-agricultural counterparts. Nevertheless, the agricultural-non-agricultural wage gap narrowed substantially, by about 35-40 percent, over the two decades, with decomposition results indicating that this convergence was driven by structural changes in wage-setting rather than shifts in workforce composition. Agricultural workers also tended to work more hours per week than non-agricultural workers, yet their income-to-poverty ratio remained comparatively low and their poverty rates higher. One possible explanation is the seasonality of agricultural work, which may limit the total number of weeks worked in a year and offset the effects of longer hours during peak periods. After Covid-19, the gap in weekly hours worked between agricultural and non-agricultural workers also declined, suggesting a shift in the relative intensity of farm employment.

Immigrant agricultural workers faced the largest disadvantages, with lower wages, higher

poverty rates, and weaker access to health insurance than both U.S.-born agricultural workers and non-agricultural immigrants. While U.S.-born agricultural workers experienced clearer improvements in wages and employment outcomes over time, immigrant agricultural workers saw slower progress and continued to bear the brunt of welfare and insurance gaps. Together, these findings show that although wage disparities between agricultural and non-agricultural workers have diminished, persistent poverty, heavy reliance on safety net programs, and limited insurance coverage underscore the enduring structural disadvantages faced by farmworker households, especially among immigrants.

The existing literature on earnings and wage disparities among agricultural workers has primarily focused on differences within the population itself, such as gender-based gaps (Fisher et al., 2022), the role of union membership (Fisher et al., 2024), and the effects of legal or citizenship status (Kandilov and Kandilov, 2010; Pena, 2010; Wang and Loduca, 2024). While these studies provide valuable insights into heterogeneity among farmworkers, there is comparatively little research on how the broader agricultural–non-agricultural economic and welfare gaps have evolved over time. This gap is striking given ongoing debates about how relatively lower farm wages limit producers' ability to compete for labor with sectors that offer higher pay and better conditions. The closest comparison is Barham et al. (2020), who examine differences using a cross-sectional snapshot from the 2016-17 ACS. In contrast, this paper contributes a temporal dimension, documenting how these gaps have persisted or narrowed across more than two decades. By decomposing changes into demographic shifts versus structural changes in wage-setting, the analysis further clarifies the forces driving convergence and persistence in sectoral inequality.

This paper also adds to the limited literature on health insurance coverage (Kandilov and Kandilov, 2010; Donkor and Perloff, 2022; Kandilov and Kandilov, 2022; Rutledge et al., 2023) and safety net participation (Findeis et al., 2005; Medel-Herrero and Leigh, 2018; Hill et al., 2025) among U.S. farmworkers. In addition to introducing a long-run perspective, the analysis situates agricultural workers relative to comparable non-agricultural workers and

distinguishes between immigrant and U.S.-born populations, offering a more comprehensive picture of well-being in low-skill labor markets.

The remainder of the paper is organized as follows. Section 2 discusses the economic well-being and safety net participation among agricultural workers. Section 3 describes the data and Section 4 discusses the methods. Section 5 presents the empirical findings before Section 6 concludes by discussing several policy recommendations.

2 Economic Well-Being and Safety Net Participation among Agricultural Workers

Despite the central role of agricultural labor in U.S. agriculture, hired agricultural workers remain concentrated at the bottom of the earnings distribution, characterized by low hourly pay, seasonal volatility, and limited non-wage benefits. Within low-skill labor markets, Barham et al. (2020) use ACS microdata from 2015-16 to compare agricultural and non-agricultural workers and find that agricultural workers earn less per hour but tend to supply more hours; and poverty rates remain higher for agricultural workers. Complementing this evidence, Pena (2010) show that farmworkers' poverty risk is closely linked to legal status and pay basis, with undocumented and piece-rate workers facing especially high rates of economic insecurity.

Minimum wage regulations under the Fair Labor Standards Act (FLSA) formally apply to agricultural and non-agricultural workers alike, yet the law has historically carved out numerous exemptions for agricultural labor. Small farms are often exempt altogether, and certain categories of agricultural workers, such as seasonal hand-harvest laborers paid on a piece-rate basis, or members of the same family working on a farm, may fall outside the coverage of federal wage standards. Undocumented workers, like authorized workers, are legally entitled to the federal minimum wage under the FLSA, but their immigration status often discourages them from pursuing claims, leaving violations underreported and

underenforced. Even when covered, enforcement of minimum wage rules in agriculture has been weaker than in other low-skill sectors, reflecting both the seasonal, dispersed nature of agricultural work and the vulnerability of its workforce. These institutional features have contributed to persistently lower pay floors in agriculture compared with other sectors drawing from the same pool of low-education workers, reinforcing the structural earnings disadvantage faced by hired agricultural labor.

On program participation, three facts recur. First, legal status and policy rules matter: Many non-citizen workers, including H-2A workers, are ineligible for SNAP and most means-tested benefits. This exclusion institutionalizes a gap where equally poor households are treated differently depending on immigration status, reinforcing disparities in food security and welfare access. Second, at the national level, safety net programs such as SNAP reaches a large share of income-eligible households, but participation is systematically lower among the 'working poor,' a group that includes many agricultural worker households (Cunnyngham, 2020; Hill et al., 2025). Third, among crop workers specifically, surveys show low employer insurance offers and substantial reliance on public coverage among those insured. Coverage gaps remain sizable, reflecting seasonal employment, immigration status, and residence in places with thinner safety-net infrastructure.

Beyond eligibility, 'chilling effects' reduce take-up among eligible immigrants. Empirical work around the 2019 public-charge rule links declines in Medicaid and SNAP enrollment among immigrant families to perceived status risks, even when family members (e.g., U.S.-citizen children). Evidence shows that many mixed-status households avoided enrolling in or recertifying for benefits out of fear or confusion, depressing participation relative to need (Touw et al., 2021; Alsan and Yang, 2024). These mechanisms are directly relevant for agricultural worker households, given their immigrant composition and frequent mixed-status structure.

3 Data

3.1 Sample Workers

To implement the analysis, I 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 detailed household characteristics, the ACS provides comprehensive information on labor market outcomes (such as employment status, industry, occupation, wages, and hours worked), participation in public assistance programs (including SNAP and Medicaid/Medicare), and additional socioeconomic indicators such as the income-to-poverty ratio and health insurance coverage. I use ACS data spanning from 2001 to 2023.[1]

I impose a series of sample restrictions to focus on comparable low-skill workers. Specifically, I retain individuals aged 18 to 60, exclude naturalized citizens, and keep U.S. citizens as well as non-citizen immigrants from Mexico and Central America, since these groups account for the majority of the hired agricultural workforce. I further restrict the sample to those with a high school education or less, employed as wage and salary workers (excluding the self-employed and the unemployed), and without any reported disability. Finally, to ensure a valid comparison between agricultural and non-agricultural work, I limit attention to a set of specific occupations, described in detail below.

3.2 Sample Occupations

The hired agricultural workforce is characterised by a high share of immigrants from Mexico and Central America and a relatively low average level of education. To construct a valid low-skill non-agricultural comparison group, it is necessary to identify occupations with similar

[1]The ACS replaced the long-form questionnaire of the decennial U.S. Census, which was last administered in 2000. Beginning in 2001, the ACS has collected these data on an annual basis.

characteristics. However, occupations commonly considered low-skilled vary considerably in both their skill requirements and their immigrant composition.

I identify sample occupations in three steps. First, I use the Occupational Information Network (O*NET), a comprehensive database of occupational characteristics maintained by the U.S. Department of Labor, to classify occupations according to their task content. I construct two measures from O*NET ratings: a physical demands index and a communication demands index. The physical index averages ratings for dexterity, strength, stamina, coordination, flexibility, and related hands-on requirements. The communication index is based on oral and written comprehension and expression. An occupation is labeled as manual if it falls in the top quartile of the physical index and the lower half of the communication distribution. This approach follows the task-content literature, especially Peri and Sparber (2009) and Ottaviano et al. (2013), which use O*NET to contrast physical and communication tasks and place occupations along a spectrum from cognitive and interactive to manual and routine. My goal is to capture hands-on, low-communication work typical of farm and similar manual jobs while excluding executive and analytic professions.

Second, I use the 2001-2003 ACS to identify occupations with a high share of low-educated workers and a high share of immigrant workers from Mexico and Central America.[2] In constructing these shares, I restrict the ACS sample to individuals who are (i) wage and salary workers, (ii) between the ages of 18 and 60, (iii) not naturalized citizens, and (iv) without reported disabilities. I collapse the data by occupation to compute two measures: the share of workers with a high school education or less, and the share of workers born in Mexico or Central America. I retain occupations where at least 20 percent of workers are born in Mexico or Central America, and at least 80 percent of workers have a high school education or less. This step is similar to Barham et al. (2020).

Third, I manually match the ACS occupations that satisfy these criteria with the set of highly manual occupations identified in O*NET. This ensures that the selected occupa-

[2]I focus on the 2001–2003 ACS because this period predates the major immigration policy shifts of the mid-2000s and provides a stable baseline for measuring the demographic composition of occupations.

tions are both empirically representative of low-educated immigrant labor and theoretically consistent with manual task requirements.

The final sample consists of 24 occupations, of which two are agricultural and the remaining are non-agricultural. Table A1 lists all occupations in the final sample along with their baseline characteristics and their O*NET-based physical and communication task measures. The agricultural categories cover both general farm labor (Agricultural workers, NEC) and post-harvest tasks (graders and sorters, agricultural products), while the non-agricultural group spans a diverse set of low-skill, immigrant-intensive jobs such as construction laborers, roofers, dishwashers, sewing machine operators, and maids and housekeeping cleaners.

The statistics show that the selected set of occupations are strongly concentrated among immigrant and low-educated workers. Both agricultural and non-agricultural jobs in the sample display very high shares of workers with a high school education or less, often above 85 percent, and immigrant shares that are substantially higher than the workforce as a whole. This highlights that the comparison group captures similarly low-skill, immigrant-intensive employment, providing a meaningful benchmark for agricultural occupations.

3.3 Outcome Variables

In order to evaluate the evolving divide between agricultural and non-agricultural workers, I focus on a set of outcome variables that capture both economic performance and welfare reliance. These measures are chosen to reflect core aspects of labor market participation (wages and hours), household well-being (income relative to poverty), and reliance on the social safety net (SNAP participation and health insurance coverage). Together, they provide a comprehensive view of how gaps across sectors manifest in terms of earnings, labor supply, and access to basic resources.

Wages. I measure wages as annual labor earnings divided by estimated weeks worked and usual weekly hours worked, yielding an hourly compensation measure that accounts for both weeks and hours of work. To ensure comparability across years, the wage variable is top-

and bottom-coded at the 1st and 99th percentiles within each survey year, and all monetary values are expressed in constant 2023 dollars using Consumer Price Index adjustment factors.

Weekly hours. I use the measure of usual weekly hours worked as an indicator of labor supply intensity.

Income-to-poverty ratio. I capture household economic well-being through the income-to-poverty ratio, which compares family income to the federally defined poverty threshold. A value below 100 indicates that the household is below the poverty line.

SNAP participation. The ACS includes a variable indicating whether any member of the household received SNAP benefits at any time in the past 12 months, providing an indicator of reliance on public assistance for food security.[3]

Health insurance coverage. I measure whether individuals are covered by any form of health insurance, capturing access to medical care and financial protection against health risks.

3.4 Summary Statistics

After applying all restrictions described above, the final sample consists of 677,565 workers observed between 2001 and 2023, of whom 100,543 are employed in agricultural occupations and 577,022 in non-agricultural occupations. Table 2 reports summary statistics separately for agricultural and non-agricultural workers.

Agricultural workers earn substantially lower wages on average: their mean real hourly wage is \$14.84 (2023 dollars) compared to \$18.57 for non-agricultural workers. Despite these lower earnings, agricultural workers supply more labor on average, reporting 43 usual weekly hours compared to 38 among their non-agricultural counterparts. These patterns are consistent with the view that agricultural jobs are more physically intensive and less remunerative than other low-skill occupations.

[3]In several survey years, the questionnaire specifically instructs respondents to exclude benefits from WIC, the School Lunch Program, and food banks.

Household well-being also differs across groups. Agricultural households have a significantly lower mean income-to-poverty ratio (211 versus 254) and a higher share living below the federal poverty line (23 percent versus 15 percent). In terms of safety net reliance, SNAP participation rates are similar across groups, but agricultural workers are less likely to be covered by any form of health insurance (54 percent versus 64 percent).

Sociodemographic characteristics reveal sharp differences. Agricultural workers are more likely to be male (77 percent), Latino (57 percent), and immigrants (49 percent), with much lower English proficiency than non-agricultural workers. They also have lower levels of formal education: nearly 30 percent of agricultural workers have less than a high school education compared to 14 percent of non-agricultural workers. Agricultural workers are concentrated in areas with higher rural population shares (average PUMA rural share of 35 percent compared to 21 percent for non-agricultural workers).[4]

Figure 3 plots long-run trends in economic and welfare outcomes for agricultural and non-agricultural workers. The panels highlight persistent disparities across sectors, though the magnitude of gaps has shifted over time. Real wages for agricultural workers remain lower throughout the period, but the gap narrows steadily, especially after 2010. In contrast, agricultural workers consistently supply more hours of labor, though this difference diminishes in the post-2020 period. Poverty rates remain substantially higher for agricultural households, while health insurance coverage lags behind non-agricultural workers even after 2008, when data become available. SNAP participation fluctuates, but agricultural households continue to rely on the program at comparable or slightly higher rates than their non-agricultural counterparts.

[4]The rural share variable is constructed by linking counties to Public Use Microdata Areas (PUMAs) using county-PUMA crosswalks and population weights. Each county is classified as rural or urban based on the USDA's Rural-Urban Continuum Codes (RUCC), with codes 4 through 9 considered rural. For each PUMA-year, we compute the total population living in RUCC-defined rural counties relative to the total population of that PUMA, producing a population-weighted measure of rurality. Different RUCC vintages are used for different periods (2003 for 2005-2008, 2013 for 2009-2018, and 2023 for 2019-2023) to reflect contemporary classifications. Since PUMAs are only consistently available in IPUMS beginning in 2005, we can only construct this measure from 2005 onward. To avoid losing the earlier years, we do not include the rural share variable in our main estimations.

4 Methods

I begin by estimating the average gap in socioeconomic outcomes between agricultural and non-agricultural workers using the following baseline regression:

$$y_{ist} = \beta Ag_i + x_i'\gamma + \delta_s + \omega_t + \varepsilon_{ist} \tag{1}$$

The outcome variable y_{ist} represents one of the five outcome variables for individual i in state s and year t. The variable Ag_i is a binary indicator for whether the individual is employed in the agricultural sector. Vector x_i includes individual-level controls for age and age squared, sex, educational attainment, race or ethnicity, marital status, English proficiency, immigrant status, and, for immigrants, years since arrival in the United States. State fixed effects δ_s control for time-invariant characteristics specific to each state, and year fixed effects ω_t control for time trends common across all states in year t. The error term ε_{ist} is clustered at the state level. Our coefficient of interest is β that captures the average agricultural versus non-agricultural gap for the given outcome over the full sample period.

To investigate how the agricultural–non-agricultural gap evolves over time, I estimate the following year-specific specification:

$$y_{ist} = \sum_k \beta_k \left(Ag_i \times \mathbb{1}\{\text{Year} = k\}\right) + x_i'\gamma + \delta_s + \omega_t + \varepsilon_{ist} \tag{2}$$

In this formulation, each coefficient β_k is the agricultural–non-agricultural difference in year k, conditional on x_i, δ_s, and ω_t. The year fixed effects ω_t absorb shocks common to all workers in year k, so the interactions $Ag_i \times \mathbb{1}\{\text{Year} = k\}$ capture how agricultural workers differ from non-agricultural workers within the same year. There is no omitted base year; plotting β_k therefore provides a year-specific time profile of the gap.

To examine whether this gap differs by immigration status, I estimate a fully interacted

model with sector, year, and immigrant status:

$$\begin{aligned} y_{ist} = \ & \alpha + \sum_k \beta_k (Ag_i \times Imm_i \times \mathbb{1}\{\text{Year} = k\}) + \sum_k \theta_k (Ag_i \times \mathbb{1}\{\text{Year} = k\}) \\ & + \sum_k \phi_k (Imm_i \times \mathbb{1}\{\text{Year} = k\}) + x_i'\gamma + \delta_s + \omega_t + \varepsilon_{ist} \end{aligned} \tag{3}$$

Here, Imm_i is an indicator for whether individual i is an immigrant. The coefficients θ_k capture the agricultural gap in year k for U.S.-born individuals, while ϕ_k captures the immigrant-native gap in non-agricultural sectors. The coefficients β_k measure the additional agricultural penalty or premium experienced by immigrants relative to the U.S.-born.

This structure allows for clear comparisons across subgroups and time. In particular, the following expressions recover interpretable gaps of interest:

$$\begin{aligned} \text{Immigrant Ag vs. U.S.-born Ag:} \quad & (\alpha + \beta_k + \theta_k + \phi_k) - (\alpha + \theta_k) = \beta_k + \phi_k \\ \text{Immigrant Non-Ag vs. U.S.-born Non-Ag:} \quad & (\alpha + \phi_k) - \alpha = \phi_k \\ \text{Ag vs. Non-Ag among Immigrants:} \quad & (\alpha + \beta_k + \theta_k + \phi_k) - (\alpha + \phi_k) = \beta_k + \theta_k \\ \text{Ag vs. Non-Ag among U.S.-born:} \quad & (\alpha + \theta_k) - \alpha = \theta_k \end{aligned}$$

This decomposition enables a full accounting of how agricultural outcomes differ from non-agricultural outcomes within and across immigrant groups. While θ_k traces the agricultural gap among U.S.-born individuals over time, the sum $\beta_k + \theta_k$ provides the corresponding measure for immigrants. Plotting these series reveals how the agricultural labor penalty or advantage evolves and whether it is disproportionately borne by immigrants.

Although the comparison between immigrants and U.S.-born workers within agriculture, and the analogous comparison within non-agriculture, has important policy implications, the focus of this paper is primarily on the latter two gaps: the agricultural–non-agricultural difference among immigrants and among U.S.-born workers.

5 Results

5.1 Pooled Regression Results

Table 2 provides an overview of economic and welfare gaps between agricultural and non-agricultural workers, based on pooled regression estimates for 2001-2023. Low-skill workers in agriculture earn materially less than their non-agricultural counterparts, about one-fifth lower hourly wages, and this gap remains even after accounting for immigrant status. Despite lower wages, agricultural workers report substantially more hours, roughly four to five additional hours per week relative to similar workers outside agriculture. Among immigrants, those in agriculture also tend to work slightly more hours than immigrant non-agricultural workers, reinforcing the picture of longer work time in agriculture without a corresponding earnings premium. Household economic conditions are weaker for agricultural workers. Income-to-poverty ratios are lower in agriculture, especially among immigrants, and these differences remain after adjusting for observable characteristics and fixed effects. Overall, the evidence points to an economic penalty associated with agricultural employment that is most pronounced for immigrants.

Program participation and coverage show mixed patterns. Agricultural workers are slightly less likely to receive SNAP when controlling for citizenship status, while immigrants overall are much less likely to participate. Within the immigrant population, agricultural workers are modestly more likely to receive SNAP than immigrant non-agricultural workers, though this does not offset the broader immigrant shortfall in participation. For health insurance (variable available from 2008 onward), agriculture is associated with lower coverage among U.S.-born workers, and immigrants have substantially lower coverage rates overall. Among immigrants, coverage rates are quite similar between agricultural and non-agricultural workers, yet immigrant coverage remains far below that of U.S.-born workers in either sector.

Overall, the results point to a consistent pattern: low-skill agricultural jobs are char-

acterized by lower wages and weaker household economic standing, alongside longer hours. Immigration status compounds disadvantages in economic resources and insurance coverage, while doing little to explain the core wage gap between agricultural and non-agricultural work.

5.2 The Evolution of Ag–Non-Ag Gaps

Low-skill agricultural workers earn systematically less than comparable non-agricultural workers throughout 2001–2023. The estimated wage gap (agriculture relative to non-agriculture) is largest in the early 2000s (about -0.26 log points in 2001-2002) and declines steadily through the 2010s, reaching roughly -0.13 by 2019. The gap temporarily widens in 2020 (-0.17) and then settles in a narrower band over 2021–2023 (-0.15). Overall, these estimates imply a reduction of roughly 35-40 percent in the agricultural wage penalty since the early 2000s.

The hours margin displays the opposite sign but similar persistence. Agricultural workers consistently report longer workweeks: the gap is on the order of 4-5 hours per week for most of the 2000s and 2010s (peaking around the mid-2010s), and then declines after 2020 to about 3-3.5 hours by 2021-2023. Thus, while wages converge, agriculture continues to be associated with longer work time, with some attenuation in the post-COVID period.

The income-to-poverty ratio are uniformly lower in agriculture, but the magnitude of the gap fluctuates. The disadvantage is pronounced in the mid-to-late 2000s and during the Great Recession (roughly -30 to -40 index points), narrows markedly during the pandemic years (about -20 in 2020 and -16 in 2021), and then widens again in 2022-2023 ($\approx$ -30 to -33). The recent pattern is therefore U-shaped: temporary convergence followed by partial reversal.

Differences in SNAP participation and health coverage are comparatively muted once covariates and fixed effects are included. Estimated SNAP gaps are small, often statistically indistinguishable from zero, with modest positives in the early 2000s and near-parity there-

after. Health insurance coverage (available 2008-2023) is lower for agricultural workers in the late 2000s to early 2010s (on the order of a few percentage points), but the gap narrows substantially in later years, with many estimates close to zero.

One potential concern is that the estimated gaps simply reflect the concentration of agricultural occupations in rural areas. In the main specifications, we did not control for the rural share of the PUMA because this variable is available in the public IPUMS data only from 2005 onward. To address this, we conduct two robustness checks. First, we re-estimate the regressions for the 2005–2023 sample including the rural share as a control. Second, we run year-specific regressions restricted to PUMAs where more than 50 percent of the population is classified as rural. The results, reported in Table X and Figure 4, closely match our main findings.

Therefore, overall, the data point to a persistent but narrowing wage penalty, a shrinking hours differential, and a poverty gap that compressed during COVID-19 and then widened again. The attenuation of the wage gap over time is consistent with the paper's decomposition results indicating that convergence reflects changes in wage determination across sectors rather than shifts in worker composition.

5.3 Heterogeneity between U.S. Citizens and Immigrants

Figure 1a shows that wage gaps were initially larger for U.S. citizens than for immigrants, with citizen gaps close to -0.30 log points in the early 2000s compared to around -0.20 for immigrants. Over time, the citizen gap narrowed substantially and converged with immigrant levels by the mid-2010s, whereas the immigrant gap fluctuated around -0.20 log points without a clear trend. In several later years, immigrant penalties even exceeded those for citizens. Similarly, Figure 1b indicates that agricultural workers in both groups consistently worked more hours, but the gap was larger for immigrants, averaging 3-6 extra hours per week, compared with slightly smaller gaps for citizens. Since 2010, the two series have moved closer together, and by the early 2020s both groups worked about 3-4 additional hours relative to

non-agricultural workers.

Figure 1c highlights that poverty gaps were markedly worse for immigrants. Their disadvantage frequently exceeded -30 percentage points and approached -60 during the late 2000s. U.S. citizens, by contrast, showed smaller but persistent gaps, generally around -20 points. The divergence widened after 2010, leaving immigrant agricultural workers in consistently deeper poverty than their citizen counterparts.

Figure 1d shows that immigrant agricultural workers were more likely to participate in SNAP than non-agricultural immigrants, with gaps ranging from 2 to 6 percentage points. For citizens, the SNAP gap was much smaller and often hovered around zero, occasionally turning negative. Figure 1e reveals an inverse pattern for health insurance: immigrant agricultural workers were 2-5 points less likely to be insured than non-agricultural immigrants, while citizen agricultural workers were 2-7 points less likely to be insured than non-agricultural citizens, suggesting a sharper coverage penalty among citizens.

5.4 Decomposing the Evolution of the Agricultural Wage Gap

While descriptive evidence documents that the gap changes over time, this does not by itself reveal the sources of the trend. Specifically, it remains unclear whether the changing gap reflects shifts in the composition of workers across sectors (for example, education, age, English ability, or immigration status) or shifts in the way the labor market rewards those characteristics. Recent demographic and behavioral patterns add to this complexity: fewer agricultural workers now migrate around the country following seasonal work, the farm workforce is aging, and net migration from Mexico has declined (with some workers even returning to Mexico), all of which alter the composition of the labor supply and the dynamics of sectoral gaps.

To address this problem, I apply a decomposition framework adapted from Oaxaca–Blinder methods to a time-series context. Using 2001 as the base year, I compare the agricultural versus non-agricultural wage gap in each subsequent year through 2023. For

each pair, I decompose the change in the gap into two components: (i) a composition effect, capturing how differences in observable characteristics across the two sectors evolved, and (ii) a coefficients effect, capturing how the relative returns to those characteristics changed. This approach follows the spirit of Fan et al. (2015), but extends the analysis to track long-run changes in the wage gap between sectors. The method allows me to attribute movements in the gap either to who the workers are or to how the market values them.

5.4.1 Method

Setup. Let y_{gt} denote log wages for group $g \in \{A, N\}$ (agricultural, non-agricultural) in year t. For each (g, t), estimate

$$y_{igt} = \alpha_{gt} + X_{igt}\beta_{gt} + \varepsilon_{igt}, \quad i = 1, \ldots, n_{gt},$$

using survey weights. Let $\bar{X}_{gt}$ be the (weighted) mean of X_{igt}. The fitted group mean is

$$\hat{\mu}_{gt} = \hat{\alpha}_{gt} + \bar{X}_{gt}\hat{\beta}_{gt}.$$

Gap and its change. Define the fitted wage gap (non-ag minus ag) in year t as

$$\hat{gap}_t = \hat{\mu}_{Nt} - \hat{\mu}_{At}.$$

Let 0 denote the base year (2001). The change in the gap relative to 2001 is

$$\Delta\hat{gap}_t = \hat{gap}_t - \hat{gap}_0.$$

Decomposition.

$$\Delta\widehat{\text{gap}}_t = \underbrace{(\bar{X}_{Nt} - \bar{X}_{N0})\,\hat{\beta}_{N0} - (\bar{X}_{At} - \bar{X}_{A0})\,\hat{\beta}_{A0}}_{\text{composition / demographics}}$$
$$+ \underbrace{(\hat{\alpha}_{Nt} - \hat{\alpha}_{N0}) + \bar{X}_{Nt}\,(\hat{\beta}_{Nt} - \hat{\beta}_{N0}) - \Big[(\hat{\alpha}_{At} - \hat{\alpha}_{A0}) + \bar{X}_{At}\,(\hat{\beta}_{At} - \hat{\beta}_{A0})\Big]}_{\text{structure / coefficients}}.$$

Interpretation. A positive $demo_t$ means that changes in worker characteristics since 2001 would have widened the wage gap; a negative value means they would have narrowed it. The $coeff_t$ term captures changes in returns (including intercepts) across sectors—that is, policy, market, or institutional forces that alter how the same characteristics are rewarded.

5.4.2 Decomposition Results

Figure 5 plots the overall agricultural wage gap by year, benchmarked against its 2001 level. The dashed line shows the 2001 gap, while the solid line tracks the realized gap in each year. Figure 6 illustrates the cumulative change in the gap relative to 2001. The gap narrows substantially over the two decades, with the largest compression occurring between 2010 and 2019.

To understand the drivers of this trend, Figure 7 decomposes the change into composition and coefficients. The dotted black line is the observed change in the gap, while the solid lines show contributions from demographics and coefficients. Composition effects are generally small and sometimes positive, implying that worker characteristics would have widened the gap. By contrast, coefficients dominate the decomposition: the bulk of the narrowing comes from shifts in returns to characteristics, meaning that agricultural workers gained relative to non-agricultural workers not because they changed, but because the market valued their characteristics differently. This finding is reinforced by the stacked bar presentation in Figure 8, where the coefficients component accounts for nearly all of the long-run narrowing.

In short, this analysis shows that the decline in the agricultural wage gap since 2001 is

primarily a *market story*, not a *worker story*. Worker composition did little to explain the narrowing, while changes in how characteristics are rewarded across sectors explain nearly all of it.

5.5 Institutional and Structural Contributors

The narrowing of the agricultural–non-agricultural wage gap over the past two decades is consistent with several long-run structural and institutional changes in U.S. farm labor markets. In this section, we discuss several potential institutional and structural changes that have contributed to these dynamics.

A first and fundamental driver is the demographic and economic transformation occurring in Mexico and Central America, the primary sources of U.S. farm labor. Evidence from rural Mexico shows a secular decline in entry into agricultural work as fertility has fallen, schooling has expanded, and non-farm employment opportunities have become more widely available (Charlton and Taylor, 2016, 2020). This transformation has reduced the flow of potential migrants willing to accept seasonal farm employment in the United States. Charlton and Taylor (2016) estimate that rural Mexico lost over 150,000 agricultural workers annually between 1980 and 2010, while labor productivity per worker tripled. Because U.S. agriculture historically relied heavily on this migrant pipeline, these shifts tightened effective labor supply in agriculture far more than in non-agricultural low-skill sectors.

The reduced availability of new immigrant farmworkers has coincided with the aging and settlement of the existing workforce. Martin (2017) highlights that the U.S. farm workforce today is older, more settled, and less mobile than in previous decades. These demographic changes imply higher reservation wages and greater bargaining power among incumbent workers, which can contribute to faster wage growth in agriculture relative to other low-skill sectors. Immigration enforcement has reinforced these dynamics by restricting undocumented inflows. Programs such as E-Verify, Secure Communities, and 287(g) reduced the availability of unauthorized labor, and because agriculture employs a higher

share of Mexican- and Central-American–born workers than sectors such as construction, hospitality, or household services (refer to Table A1), the wage impacts are magnified in farm work. Even if similar enforcement policies touched other sectors, the concentrated exposure of agriculture meant that wages adjusted more rapidly within this sector.

At the same time, institutional wage-setting mechanisms have become more important in agriculture than in other low-skill niches. The rapid expansion of the H-2A guest worker program has meant that an increasing share of farm employment is directly or indirectly tied to the Adverse Effect Wage Rate (AEWR), which is a binding wage floor for H-2A guest workers. Between 2012 and 2023, H-2A certifications rose from fewer than 100,000 to over 370,000, covering nearly one-sixth of all full-time equivalent crop jobs. Recent evidence shows that increases in AEWR spill over to raise wages of non-H-2A farmworkers, with a 10% increase in AEWR associated with up to a 2.8% increase in domestic farmworker wages (Rutledge et al., 2024). Because AEWR applies specifically to agriculture and not to comparably low-wage non-farm jobs, its effect compresses the agricultural–non-agricultural wage gap.

Labor intermediation also plays a role. Historically, farm labor contractors (FLCs) often paid less than direct-hire farms, reflecting intense competition and weaker enforcement of labor standards. However, as contractors increasingly supply H-2A crews, wages in contractor-mediated employment are tied to AEWR, which has raised pay in regions where AEWR is binding. This shift in intermediation may have contributed to the upward drift in average agricultural wages relative to non-agricultural wages, though heterogeneity across states and commodities remains important.

Finally, broader macroeconomic conditions also matter. The historically tight U.S. labor markets of the 2010s, followed by pandemic-related disruptions, amplified wage pressures across low-skill sectors. Agriculture was designated an essential industry during the COVID-19 pandemic, which helped protect employment but also accentuated labor scarcity as mobility restrictions and health risks reduced worker availability. These dynamics likely

contributed to the elevated agricultural hours observed in our data prior to COVID-19 and the subsequent narrowing of the hours gap thereafter.

By contrast, the other gaps we examine, on poverty, health insurance coverage, and reliance on SNAP, show little sign of convergence. Despite higher wages, agricultural workers remain substantially more likely to live in poverty, to lack health insurance, and to depend on public assistance than their non-agricultural peers. These persistent disparities highlight that convergence in wages alone is insufficient to erase structural disadvantages tied to the nature of agricultural employment. Many farm jobs are seasonal, physically demanding, and lack employer-provided benefits, which leaves workers vulnerable even when hourly wages rise. In this respect, our results underscore a dual reality: while long-run market dynamics have pushed agricultural wages closer to those in comparable nonfarm jobs, the welfare gaps tied to poverty, benefits, and program participation have endured. This divergence suggests that institutional and policy factors outside the wage-setting process, such as access to health care, the portability of benefits, and the design of safety net programs, remain central in shaping inequality across sectors.

Taken together, these structural and institutional forces provide a coherent explanation for the narrowing of the agricultural–non-agricultural wage gap. Structural transformation in Mexico and Central America has reduced the migrant supply of farm labor, enforcement policies and demographic shifts have intensified scarcity, AEWR has introduced agriculture-specific wage floors with measurable spillovers, and mechanization and management strategies have raised productivity. At the same time, the persistence of poverty, low health insurance coverage, and higher SNAP reliance among agricultural households shows that wage convergence has not translated into welfare convergence. Agricultural workers have gained ground in relative pay, but remain disadvantaged in broader measures of well-being.

6 Conclusion and Discussion

This paper examined how economic and welfare disparities between low-skill agricultural and non-agricultural workers in the United States have evolved over the past two decades. The analysis shows that agricultural workers remain systematically disadvantaged in terms of earnings, household well-being, and access to health insurance. At the same time, some important changes have occurred: the wage gap between farm and non-farm workers has narrowed, and differences in work hours have also diminished in recent years. However, measures of poverty, safety net reliance, and insurance coverage continue to highlight persistent structural disadvantages for agricultural workers.

The findings suggest that wage convergence is primarily a result of long-run structural and institutional changes rather than shifts in the demographic composition of the agricultural workforce. Declining migrant inflows from Mexico and Central America, stronger immigration enforcement within the United States, and the growing role of institutional wage-setting mechanisms, especially the H-2A program and its binding wage floor, have reshaped the farm labor market in ways that raised wages relative to other low-skill sectors. Yet these forces have not alleviated deeper welfare disadvantages, which remain tied to the seasonal, physically demanding, and benefit-poor nature of farm employment.

This study's findings point to a set of important policy implications. First, there is a need to strengthen safety net access. Farmworkers, particularly those in immigrant households, face barriers that limit participation in public assistance programs. Simplifying eligibility rules, improving outreach, and ensuring that mixed-status households are not excluded would help reduce these barriers and improve food and income security.

A second recommendation concerns the expansion of health insurance coverage. Persistent disparities in coverage highlight the importance of targeted policies such as the development of portable benefit models, strong support for rural health infrastructure, and broader Medicaid eligibility for low-income workers in agricultural regions. These measures would help close one of the most enduring welfare gaps facing agricultural worker families. As Rut-

ledge et al. (2023) shows, when farm workers are offered a health insurance coverage, their work productivity improves, so this is beneficial both for workers and agricultural employers alike.

A third area for reform involves the H-2A program. Although the program has played a central role in raising wages, it remains administratively complex and uneven in implementation. Streamlining its procedures, improving oversight, and ensuring that protections extend to both guest and domestic workers would allow wage gains to be shared more broadly and fairly across the workforce.

Fourth, stronger enforcement of labor standards is essential. Agricultural workers continue to face risks of wage theft, unsafe conditions, and weak benefit provision. Enhanced monitoring, more consistent accountability mechanisms, and a focus on labor contractors in particular would help institutionalize recent wage gains and prevent exploitation.

Finally, there is a broader need to invest in rural development. Many agricultural regions are characterized by limited economic alternatives, leaving agricultural worker households with few opportunities outside of physically demanding, seasonal jobs. Investment in housing, transportation, and non-farm employment opportunities would not only support household well-being but also improve the resilience of rural labor markets over the long term.

Improvements in wages, benefits, and working conditions may also help address the long-standing difficulty of attracting U.S.-born workers into agricultural employment. As Luckstead et al. (2023) show, domestic workers are generally unwilling to take field jobs at prevailing farm wages but become more receptive when offered higher pay and non-wage benefits such as health insurance, housing, or transportation. Strengthening compensation and protections could therefore serve a dual role: improving conditions for current farm workers while making agricultural jobs a more viable option for potential domestic workers.

In a nutshell, these results point to a dual reality: while farm wages have grown closer to those in other low-skill jobs, agricultural work continues to leave households at a disadvantage

in terms of poverty risk, benefit access, and long-term security. Addressing these enduring welfare gaps requires policy interventions that go beyond wage regulation. Expanding safety nets, broadening access to health care, reforming labor institutions, and investing in rural communities are all essential steps to ensure that farmworkers share fully in the economic and social gains of the broader U.S. labor market.

While this paper documents the narrowing of the agricultural–non-agricultural wage gap and attributes much of it to structural and institutional forces, future research should examine these drivers more directly. Demographic shifts in Mexico, changes in U.S. immigration enforcement, the expansion of the H-2A program, and the role of the Adverse Effect Wage Rate all appear to have played important roles in shaping relative wages. However, their individual contributions to the gap, their interactions with each other, and their implications for long-run labor market dynamics remain less well understood. Future work that identifies the causal effects of these policies and structural changes on wage convergence would deepen understanding of sectoral inequality and guide more effective interventions for agricultural workers.

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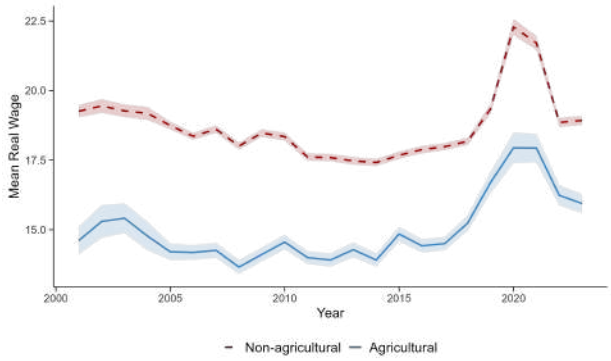
Figures and Tables



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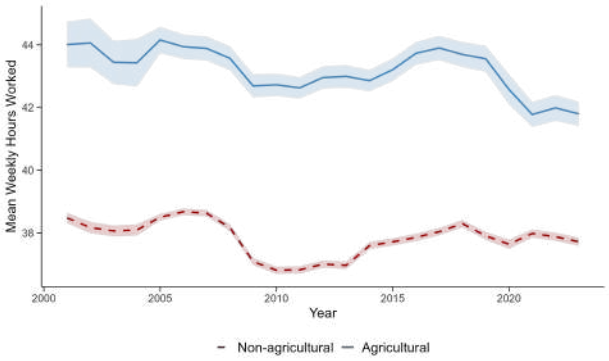
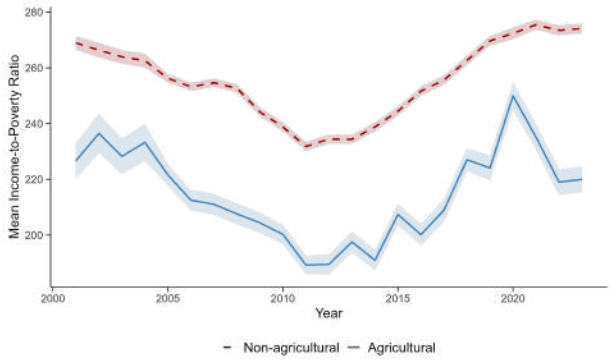
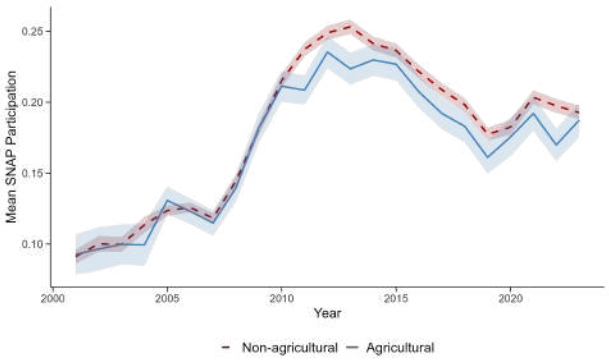


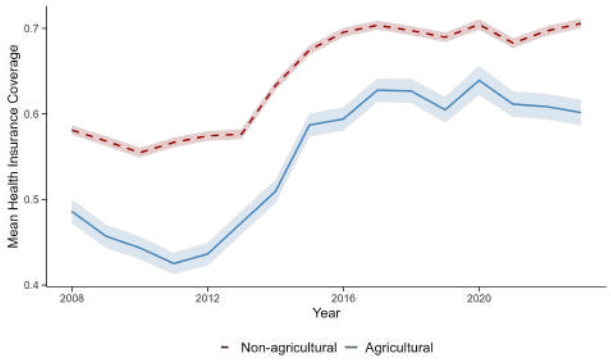
(b) Weekly Hours Worked



(c) Poverty Status

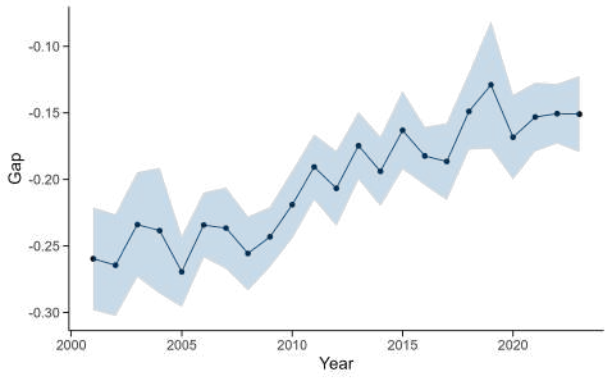


(d) SNAP

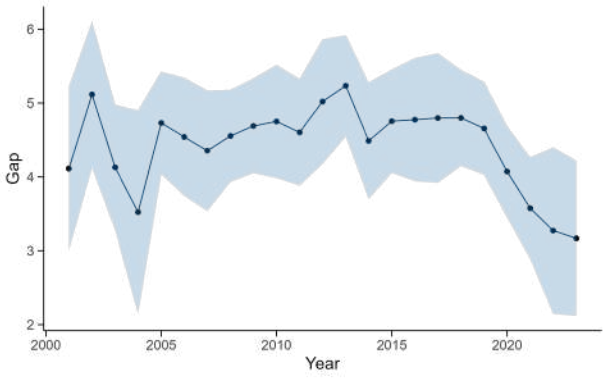


(e) Health Insurance

Figure 1: Trends for Economic and Welfare Variables between Agricultural and Non-Agricultural Workers



(a) Logged Real Wages



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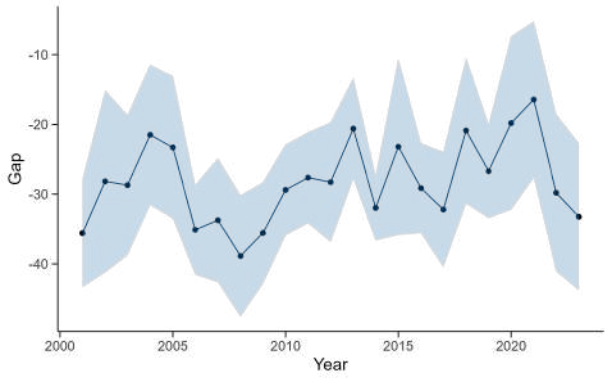

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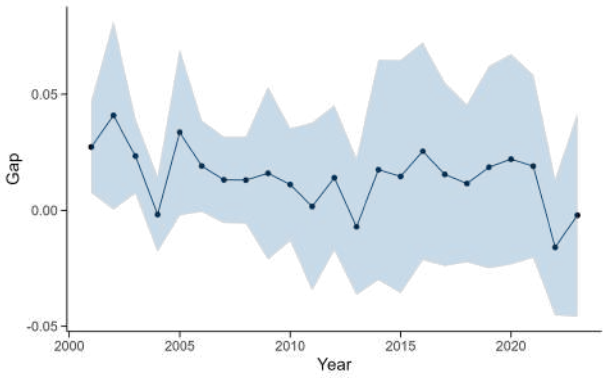

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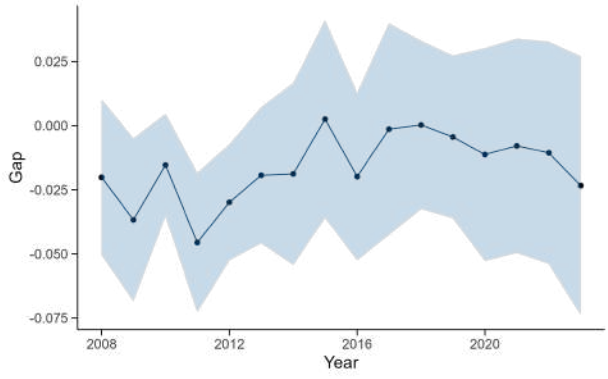
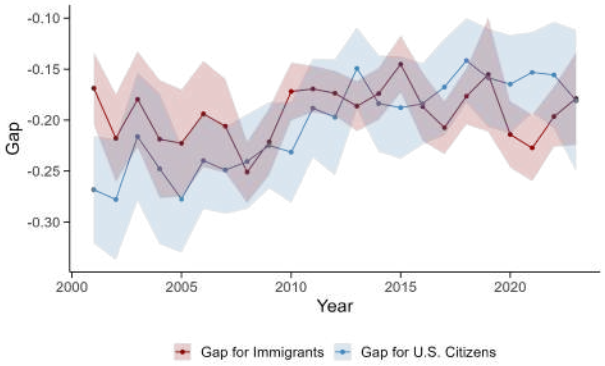
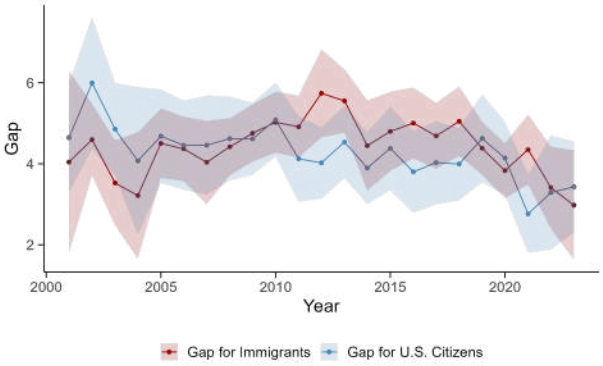


(e) Health Insurance

Figure 2: Economic and Welfare Gap between Agricultural and Non-Agricultural Occupations for Immigrant and U.S. Citizen Groups



(a) Logged Real Wages



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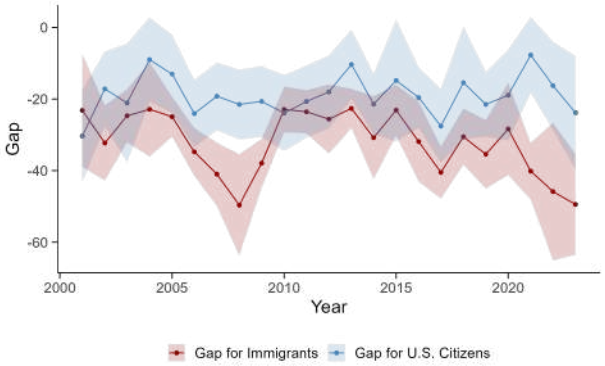

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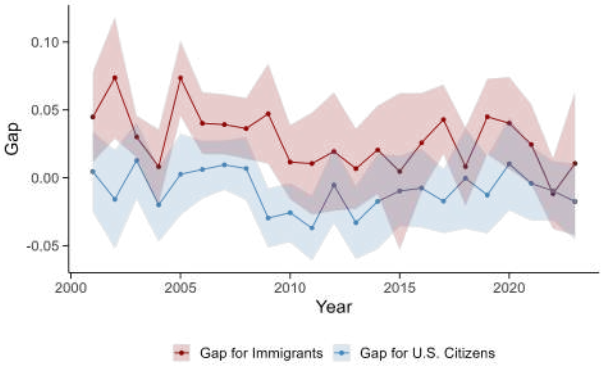

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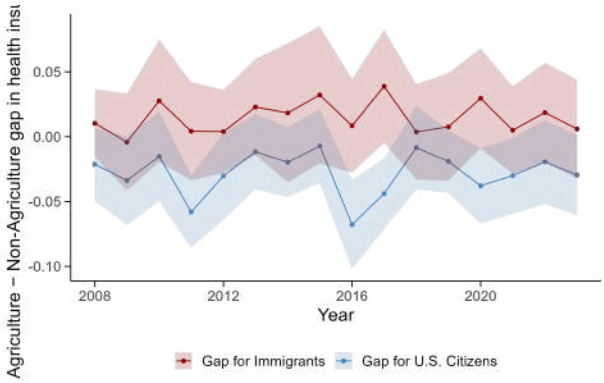


(e) Health Insurance

Figure 3: Economic and Welfare Gap between Agricultural and Non-Agricultural Occupations for Immigrant and U.S. Citizen Groups

Table 1: Summary Statistics by Agricultural Employment Status

	Agricultural Workers		Non-Agricultural Workers	
Variable	Mean	SD	Mean	SD
Outcome Variables:				
Real Wages (2023 U.S. Dollars)	14.84	10.61	18.57	13.31
Usual weekly Hours Worked	43.15	13.65	37.81	10.34
Household Income-to-Poverty Ratio	210.75	139.71	253.90	144.07
Under Federal Poverty Line	0.23	0.42	0.15	0.35
Received SNAP Last Year	0.18	0.38	0.19	0.39
Covered by Health Insurance	0.54	0.50	0.64	0.48
Sociodemographic Characteristics:				
Age	36.87	12.18	37.63	12.22
Female	0.23	0.42	0.32	0.47
No School	0.06	0.24	0.04	0.18
Less than High School	0.29	0.45	0.14	0.35
Some High School	0.16	0.37	0.17	0.37
High School	0.49	0.50	0.66	0.47
White	0.38	0.49	0.47	0.50
Black	0.03	0.18	0.11	0.31
Latino	0.57	0.50	0.38	0.49
Other Race	0.02	0.14	0.03	0.18
Single or Never Married	0.39	0.49	0.42	0.49
Married	0.44	0.50	0.40	0.49
Separated or Absent Spouse	0.09	0.29	0.07	0.25
Divorced or Widowed	0.08	0.27	0.11	0.32
Immigrant	0.49	0.50	0.29	0.45
Years in the U.S. (if Immigrant)	14.50	10.29	14.78	9.48
Little to No English	0.40	0.49	0.20	0.40
Well to Very Well English	0.16	0.36	0.16	0.37
Speaks only English	0.45	0.50	0.64	0.48
Rurality	0.35	0.44	0.21	0.38
N	100,543		577,022	

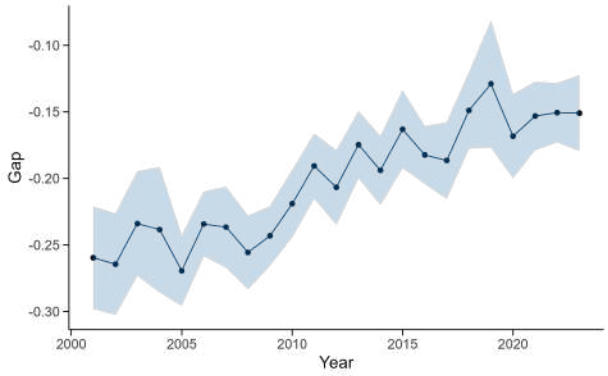
Table 2: Economic and Welfare Gaps between Low-Skill Workers in Agricultural and Non-Agricultural Sectors

	Logged Real Wages		Hours Worked		Income-to-Poverty Ratio		SNAP		Health Insurance	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Agriculture	-0.203***	-0.205***	4.462***	4.220***	-28.405***	-18.625***	0.014	-0.010*	-0.017	-0.031***
	(0.005)	(0.012)	(0.259)	(0.309)	(3.031)	(3.509)	(0.013)	(0.006)	(0.013)	(0.008)
Immigrant		-0.025***		0.556***		-24.951***		-0.093***		-0.350***
		(0.009)		(0.205)		(3.470)		(0.015)		(0.014)
Agriculture × Immigrant		0.004		0.450*		-18.209***		0.046***		0.033**
		(0.016)		(0.263)		(4.584)		(0.011)		(0.016)
Age	0.044***	0.044***	0.545***	0.541***	-5.944***	-5.781***	0.014***	0.015***	-0.020***	-0.017***
	(0.001)	(0.001)	(0.036)	(0.036)	(0.206)	(0.241)	(0.001)	(0.001)	(0.001)	(0.002)
Age Squared	-0.000***	-0.000***	-0.006***	-0.006***	0.094***	0.091***	-0.000***	-0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.289***	-0.289***	-4.406***	-4.398***	-31.096***	-31.426***	0.066***	0.064***	0.097***	0.093***
	(0.008)	(0.008)	(0.217)	(0.214)	(2.958)	(2.940)	(0.006)	(0.006)	(0.004)	(0.004)
Less than Highschool	0.028***	0.028***	0.251*	0.243*	-4.443***	-4.055***	-0.001	0.001	-0.047***	-0.041***
	(0.005)	(0.005)	(0.131)	(0.130)	(1.403)	(1.447)	(0.003)	(0.003)	(0.010)	(0.009)
Some High School	0.037***	0.036***	0.049	0.074	-4.245***	-5.314***	0.028***	0.027***	-0.029***	-0.035***
	(0.005)	(0.005)	(0.097)	(0.097)	(1.209)	(1.205)	(0.004)	(0.004)	(0.008)	(0.008)
High School	0.109***	0.109***	1.089***	1.121***	28.961***	27.552***	-0.045***	-0.047***	0.051***	0.039***
	(0.006)	(0.006)	(0.153)	(0.149)	(1.220)	(1.288)	(0.005)	(0.005)	(0.005)	(0.004)
Latino	-0.054***	-0.049***	0.861***	0.741***	-40.057***	-34.735***	0.043***	0.060***	-0.086***	-0.027**
	(0.008)	(0.008)	(0.158)	(0.174)	(2.888)	(3.294)	(0.010)	(0.011)	(0.010)	(0.011)
Black	-0.084***	-0.084***	0.046	0.013	-53.046***	-51.629***	0.134***	0.136***	0.035***	0.044***
	(0.007)	(0.007)	(0.107)	(0.108)	(2.006)	(1.989)	(0.007)	(0.005)	(0.006)	(0.008)
Other Race	-0.063***	-0.063***	-0.400**	-0.403**	-26.877***	-26.789***	0.072***	0.071***	-0.015	-0.019
	(0.010)	(0.010)	(0.177)	(0.178)	(3.403)	(3.369)	(0.008)	(0.008)	(0.012)	(0.012)
Married	0.130***	0.131***	1.474***	1.463***	10.688***	11.150***	-0.016**	-0.014**	0.117***	0.124***
	(0.006)	(0.006)	(0.135)	(0.135)	(2.793)	(2.740)	(0.006)	(0.006)	(0.006)	(0.006)
Separated or Absent Spouse	0.019***	0.020***	1.015***	0.988***	-14.686***	-13.506***	0.021***	0.025***	0.002	0.015**
	(0.004)	(0.004)	(0.110)	(0.106)	(2.005)	(1.961)	(0.005)	(0.005)	(0.005)	(0.006)
Divorced or Widowed	0.061***	0.061***	1.233***	1.229***	-20.169***	-19.998***	0.034***	0.034***	0.001	0.003
	(0.004)	(0.004)	(0.119)	(0.119)	(1.280)	(1.312)	(0.003)	(0.003)	(0.006)	(0.006)
Immigrant × Years in the U.S.	0.000	0.001***	-0.010**	-0.023***	-0.179**	0.422***	0.000	0.002***	-0.001**	0.007***
	(0.000)	(0.000)	(0.005)	(0.008)	(0.078)	(0.065)	(0.000)	(0.000)	(0.000)	(0.000)
Little to No English	-0.072***	-0.060***	0.910***	0.614***	-35.465***	-22.319***	-0.048***	-0.006	-0.274***	-0.116***
	(0.011)	(0.010)	(0.137)	(0.115)	(5.193)	(3.971)	(0.009)	(0.006)	(0.010)	(0.011)
Well to Very Well English	-0.001	0.004	0.910***	0.803***	-18.366***	-13.566***	-0.025***	-0.007	-0.130***	-0.066***
	(0.007)	(0.007)	(0.139)	(0.123)	(3.090)	(2.542)	(0.005)	(0.005)	(0.012)	(0.015)
N	677,475	677,475	677,475	677,475	677,475	677,475	677,475	677,475	512,751	512,751
Adjusted R^2	0.140	0.140	0.086	0.087	0.160	0.162	0.057	0.060	0.219	0.240

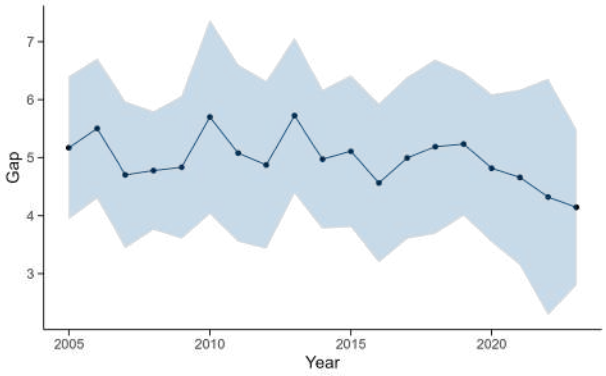
Notes: All models contain state and year fixed effects. Outcome variables are: logged hourly wage for columns (1)-(2), usual weekly hours worked for columns (3)-(4), household-income-to-poverty ratio for columns (5)-(6), household SNAP participation for columns (7)-(8), and whether they are covered by any health insurance for columns (9)-(10). Regressions in columns (1) through (8) uses the ACS data from 2001-23. Regressions in columns (9) and (10) use the ACS data from 2008-23 due to the unavailability of the health insurance variable before 2008. The omitted categories are no school for education, White for race and ethnicity, single/unmarried for marital status, and speaks only English for English proficiency. Standard errors are clustered at the state level. Asterisks denote significance levels: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

APPENDICES

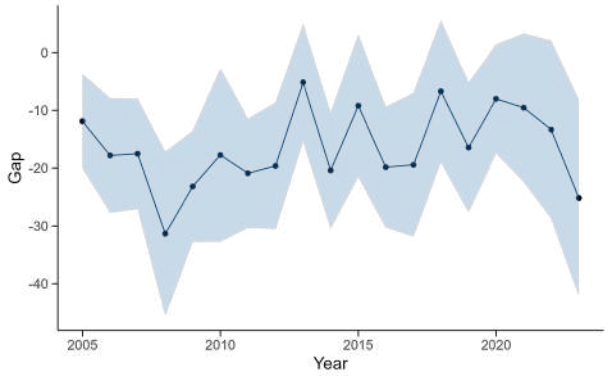
A Other Figures and Tables



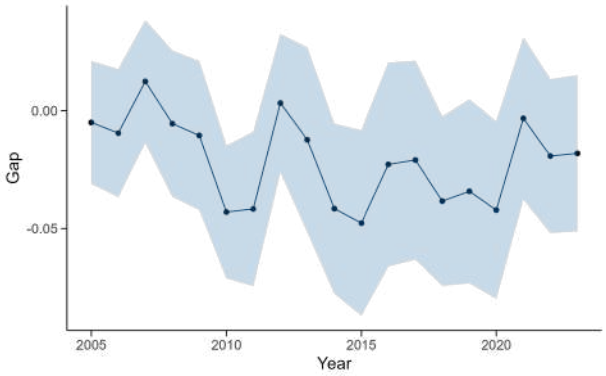
(a) Logged Real Wages



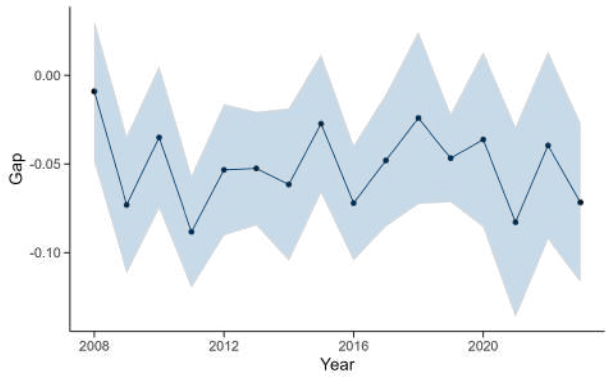
(b) Weekly Hours Worked



(c) Poverty Status



(d) SNAP



(e) Health Insurance

Figure 4: Economic and Welfare Gap between Agricultural and Non-Agricultural Occupations for Immigrant and U.S. Citizen Groups from Majority-Rural PUMAs

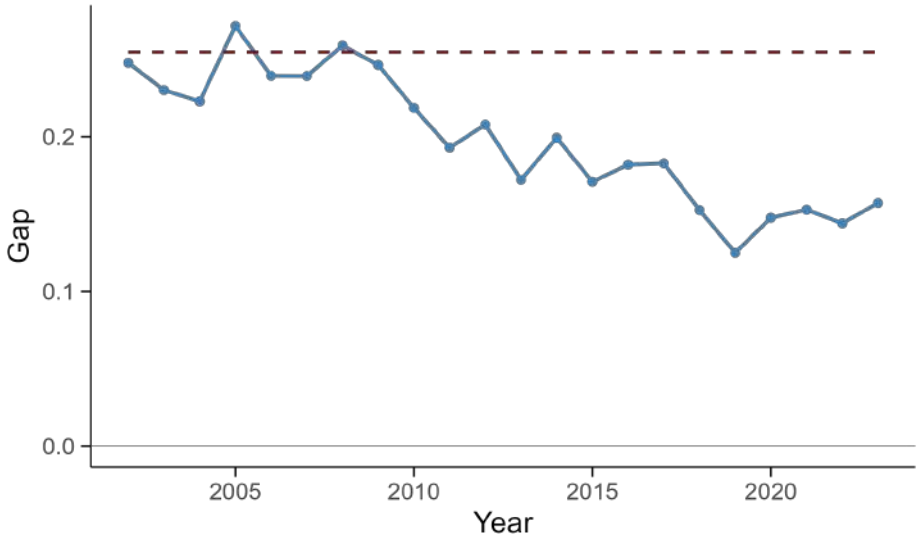


Figure 5: Agricultural vs. non-agricultural wage gap (log points). The solid line shows the wage gap in each year; the dashed line shows the 2001 gap held constant for reference. Larger values indicate a wider wage advantage for non-agricultural workers.

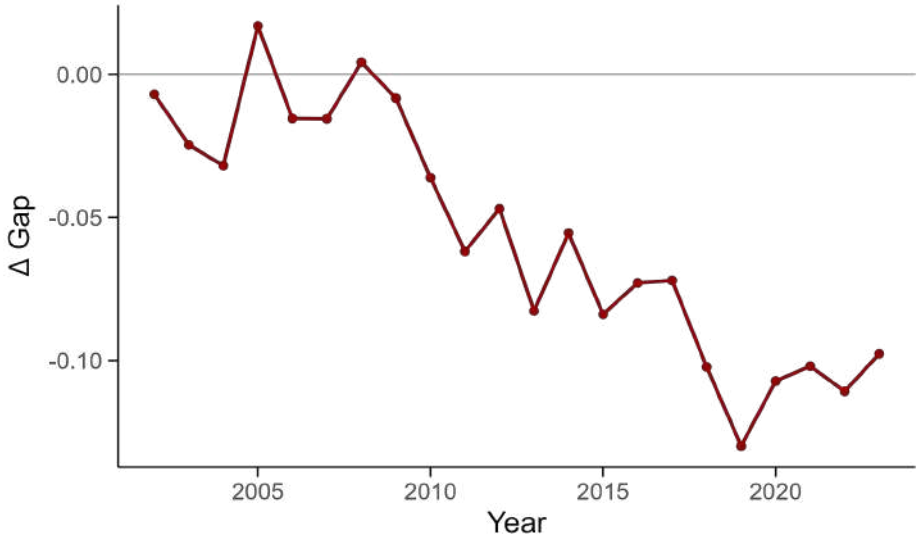


Figure 6: Change in the agricultural wage gap relative to 2001. Positive values indicate the gap in the given year is larger than in 2001; negative values indicate narrowing relative to 2001.

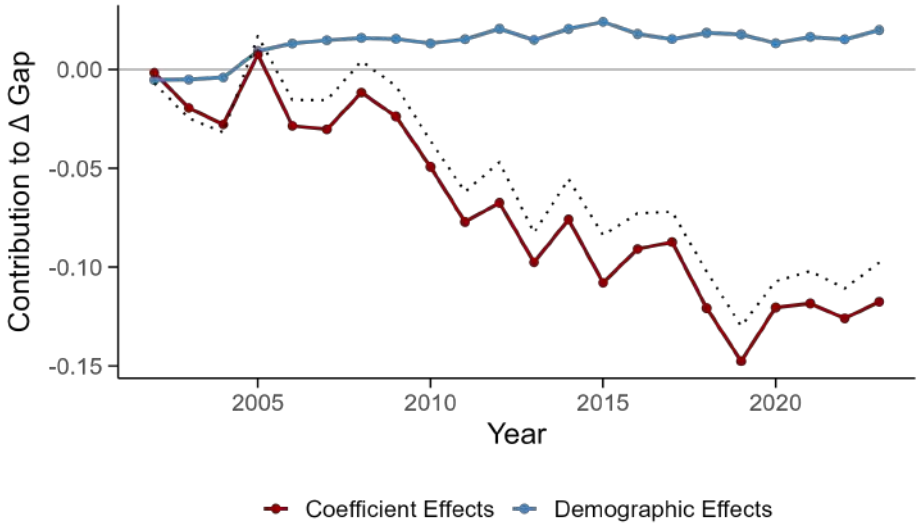


Figure 7: Decomposition of the change in the agricultural wage gap since 2001. The Coefficient Effects line captures changes in returns/coefficients and the Demographic Effects line captures changes in worker composition across sectors. The black dotted line plots the total observed change (Δ Gap).

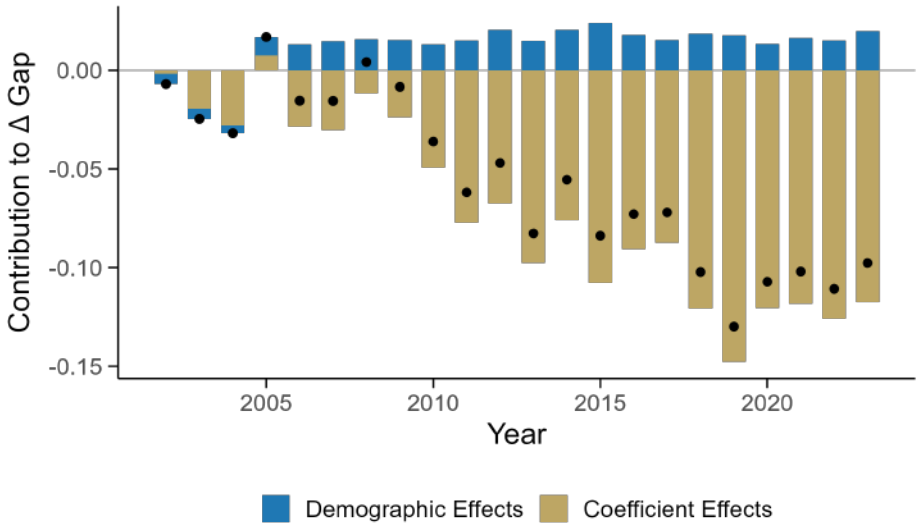
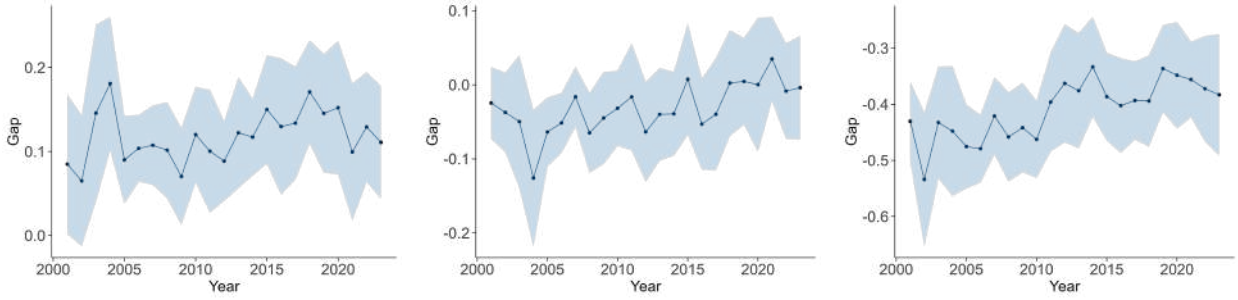
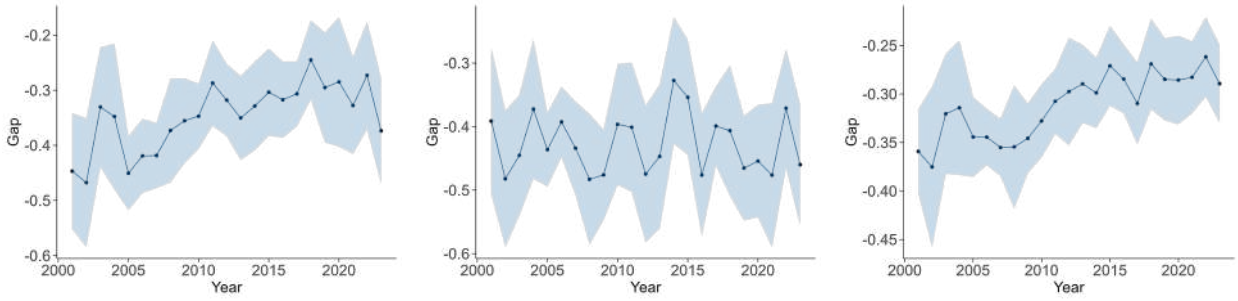


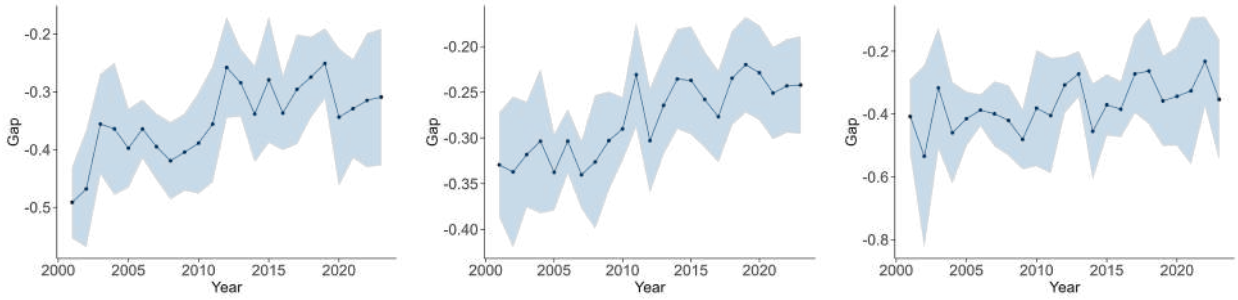
Figure 8: Stacked decomposition of the change in the agricultural wage gap relative to 2001. Black dots mark the observed Δgap.



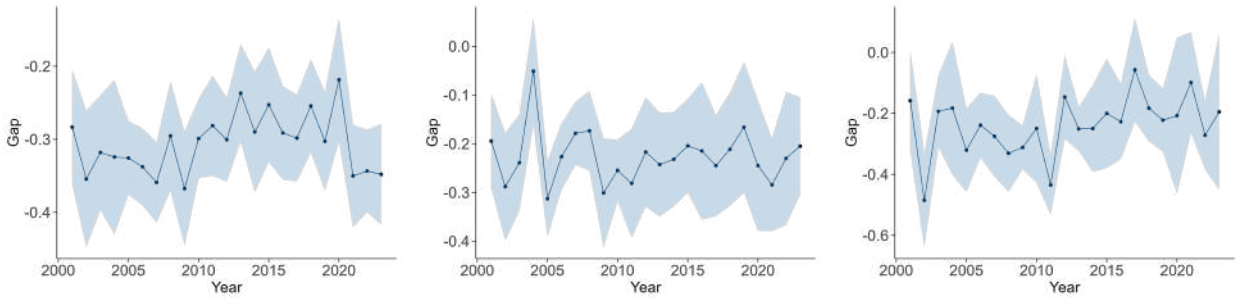
(a) Dishwashers (b) Maids and Housekeeping Cleaners (c) Brickmasons, Blockmasons



(d) Carpet and Floor Installers (e) Cement Masons (f) Construction Laborers

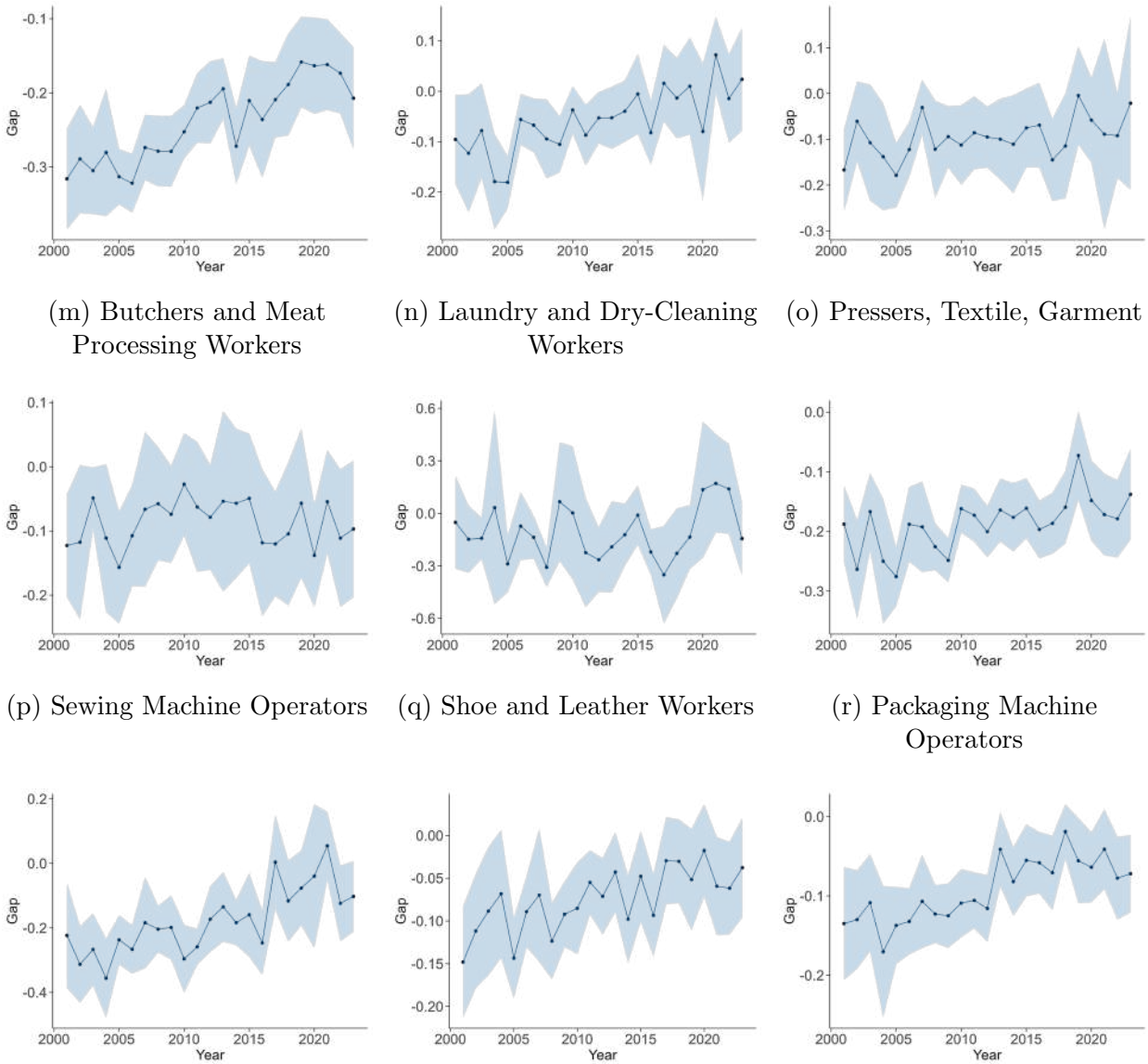


(g) Drywall and Ceiling Tile Installers (h) Painters and Paperhangers (i) Plasterers



(j) Roofers (k) Construction Trade Helpers (l) Fence Erectors

Figure 9: Wage gaps: agriculture vs. selected non-ag occupations



(m) Butchers and Meat Processing Workers

(n) Laundry and Dry-Cleaning Workers

(o) Pressers, Textile, Garment

(p) Sewing Machine Operators

(q) Shoe and Leather Workers

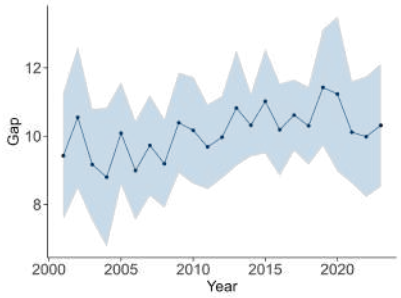
(r) Packaging Machine Operators

(s) Production Work Helpers

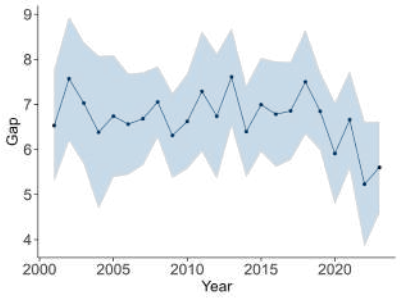
(t) Cleaners of Vehicles

(u) Packers and Packagers, Hand

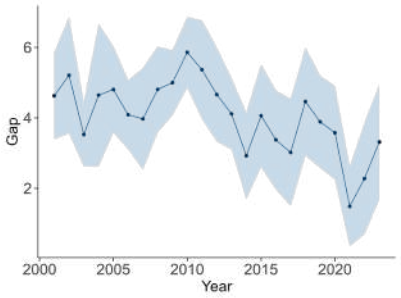
Figure 9: Wage gaps: agriculture vs. selected non-ag occupations (continued).



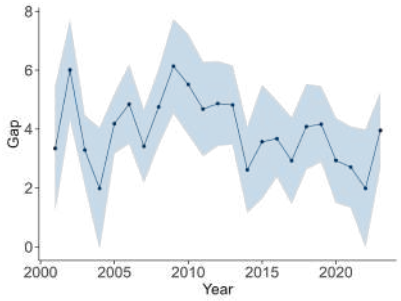
(a) Dishwashers



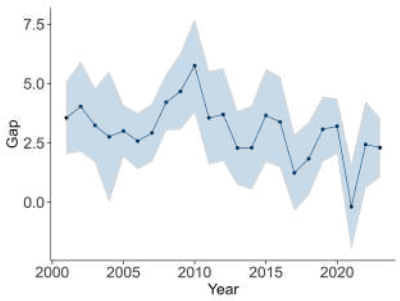
(b) Maids and Housekeeping Cleaners



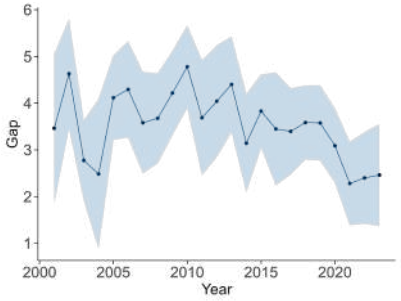
(c) Brickmasons, Blockmasons



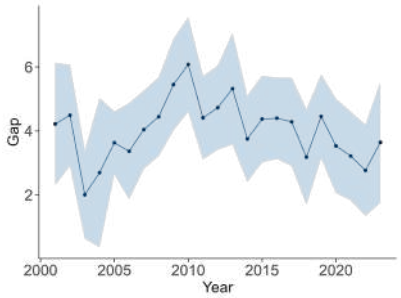
(d) Carpet and Floor Installers



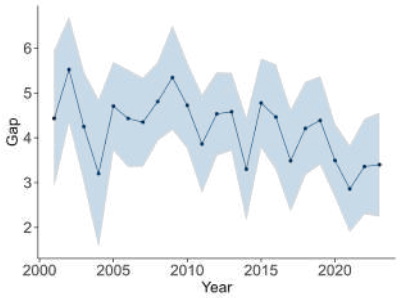
(e) Cement Masons



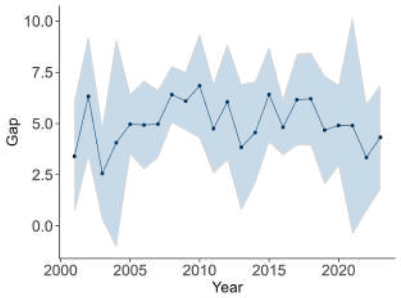
(f) Construction Laborers



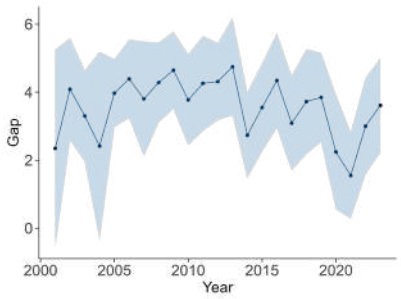
(g) Drywall and Ceiling Tile Installers



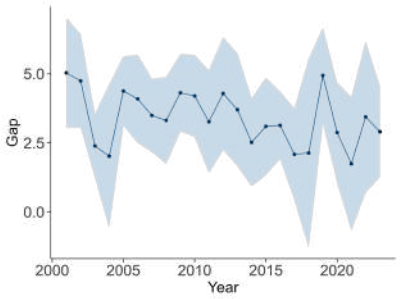
(h) Painters and Paperhangers



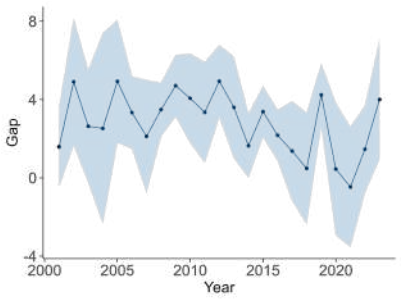
(i) Plasterers



(j) Roofers

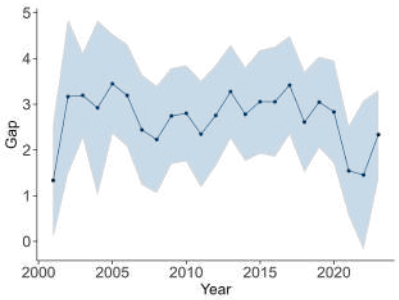


(k) Construction Trade Helpers

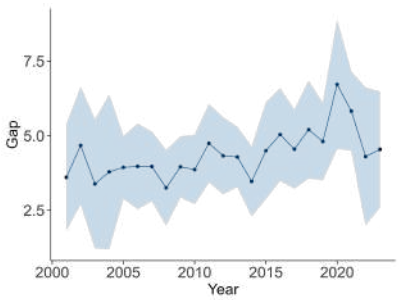


(l) Fence Erectors

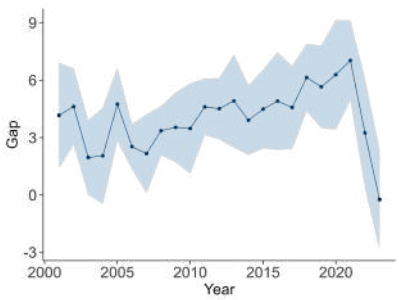
Figure 10: Hours worked gap: agriculture vs. selected non-ag occupations



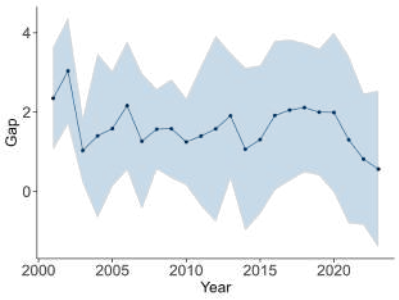
(m) Butchers and Meat Processing Workers



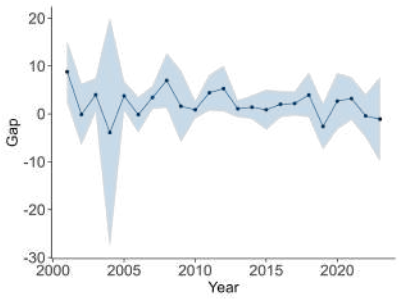
(n) Laundry and Dry-Cleaning Workers



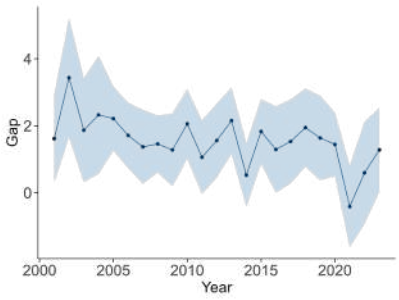
(o) Pressers, Textile, Garment



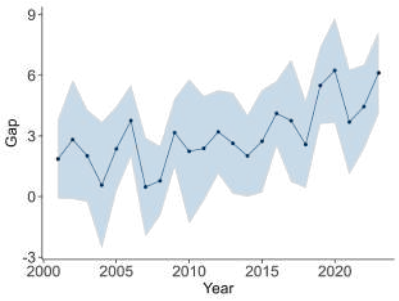
(p) Sewing Machine Operators



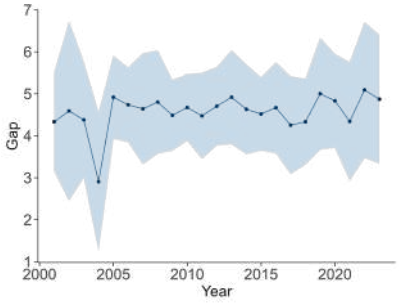
(q) Shoe and Leather Workers



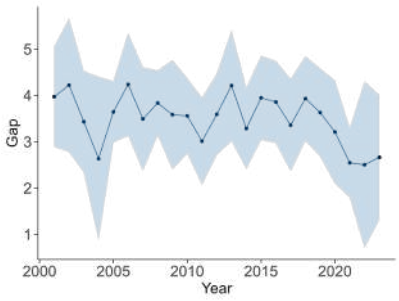
(r) Packaging Machine Operators



(s) Production Work Helpers

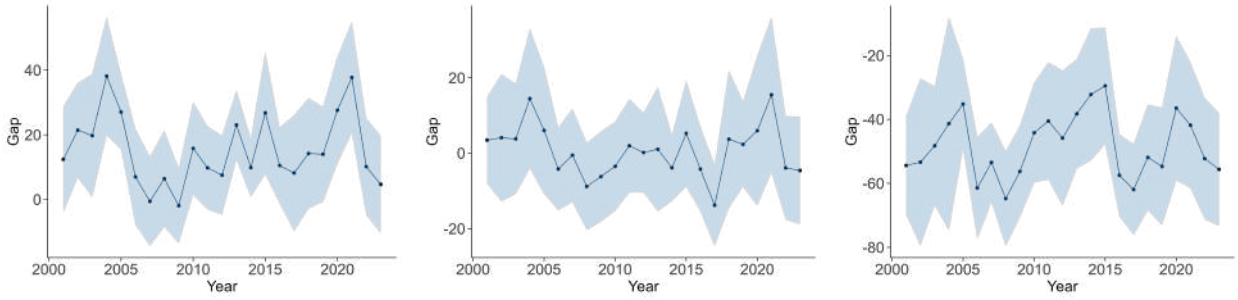


(t) Cleaners of Vehicles

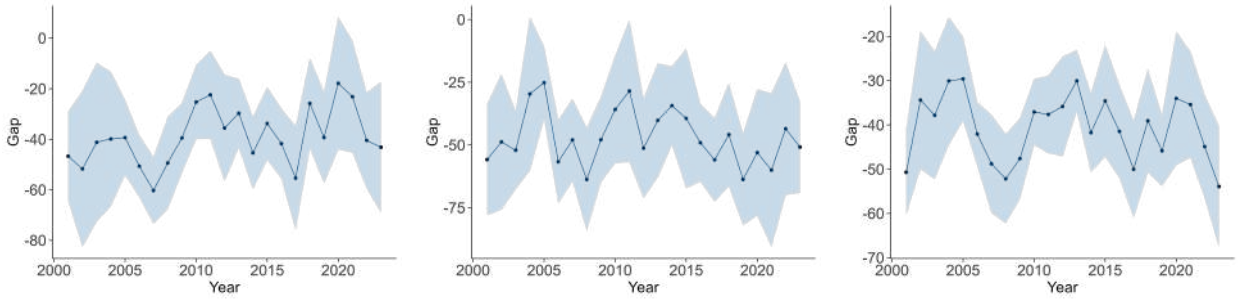


(u) Packers and Packagers, Hand

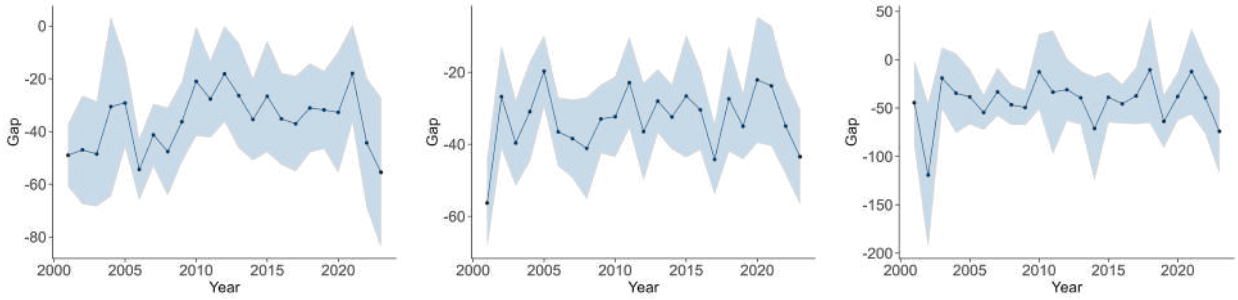
Figure 10: Hours worked gap: agriculture vs. selected non-ag occupations (continued).



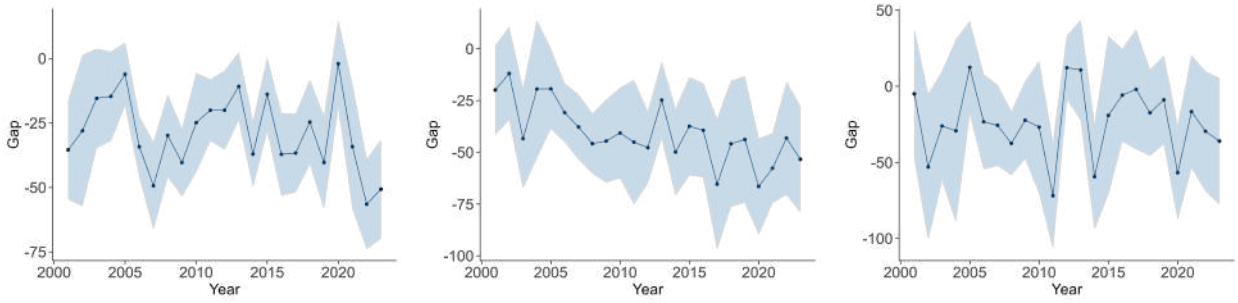
(a) Dishwashers (b) Maids and Housekeeping Cleaners (c) Brickmasons, Blockmasons



(d) Carpet and Floor Installers (e) Cement Masons (f) Construction Laborers

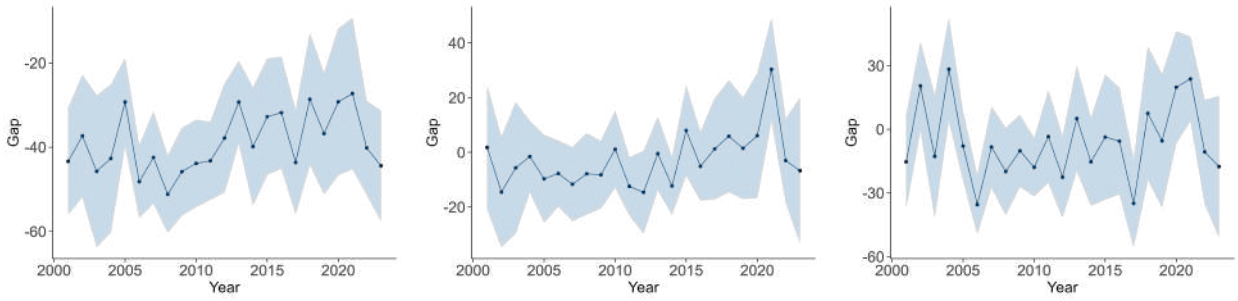


(g) Drywall and Ceiling Tile Installers (h) Painters and Paperhangers (i) Plasterers



(j) Roofers (k) Construction Trade Helpers (l) Fence Erectors

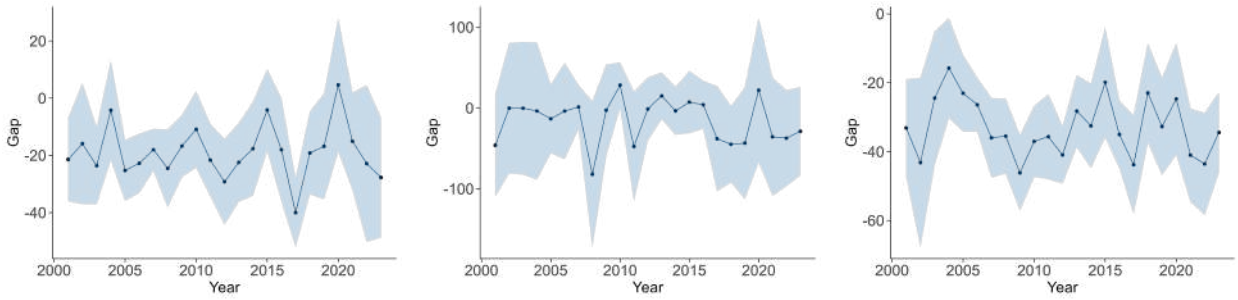
Figure 11: Income-to-Poverty gaps: agriculture vs. selected non-ag occupations



(m) Butchers and Meat Processing Workers

(n) Laundry and Dry-Cleaning Workers

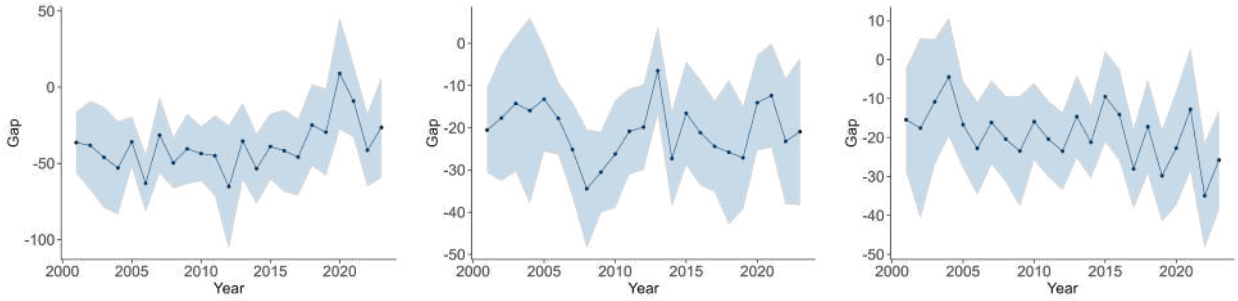
(o) Pressers, Textile, Garment



(p) Sewing Machine Operators

(q) Shoe and Leather Workers

(r) Packaging Machine Operators

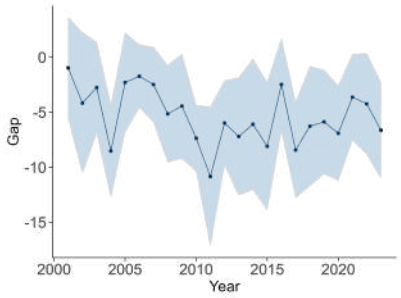


(s) Production Work Helpers

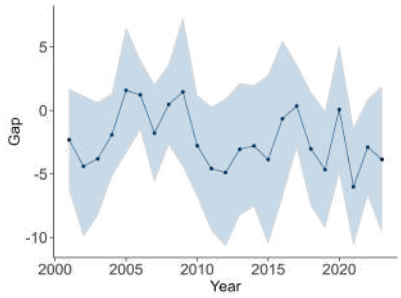
(t) Cleaners of Vehicles

(u) Packers and Packagers, Hand

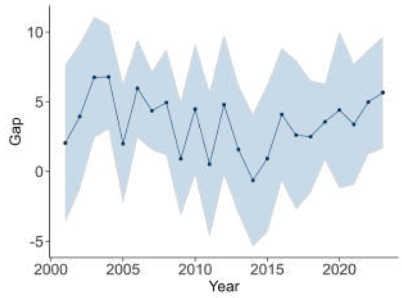
Figure 11: Income-to-Poverty gaps: agriculture vs. selected non-ag occupations (continued).



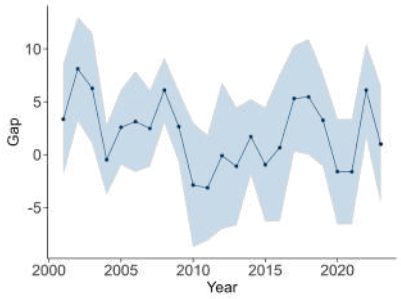
(a) Dishwashers



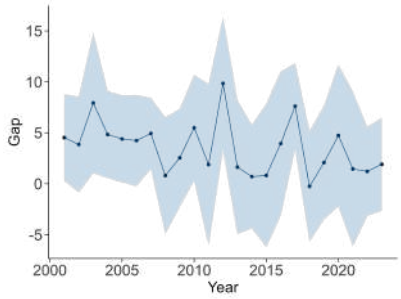
(b) Maids and Housekeeping Cleaners



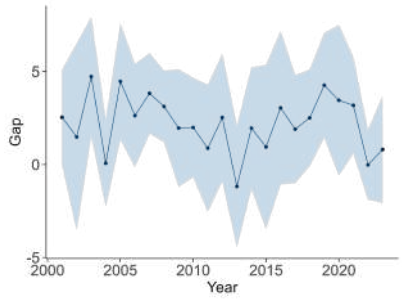
(c) Brickmasons, Blockmasons



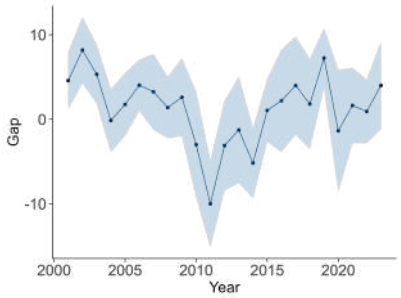
(d) Carpet and Floor Installers



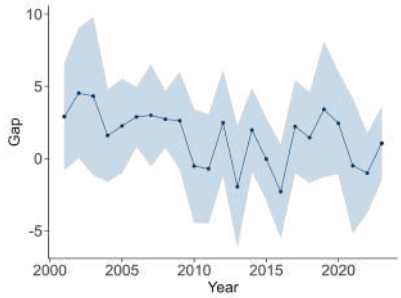
(e) Cement Masons



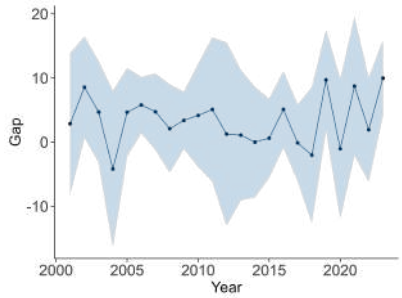
(f) Construction Laborers



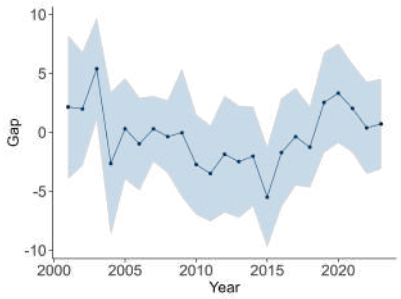
(g) Drywall and Ceiling Tile Installers



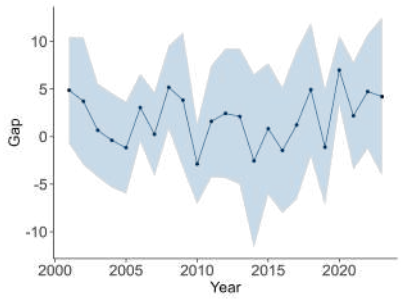
(h) Painters and Paperhangers



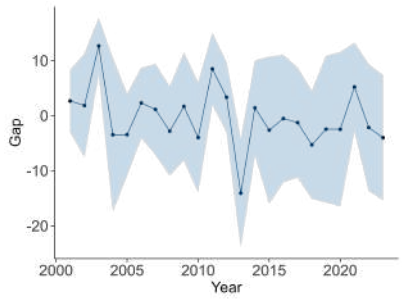
(i) Plasterers



(j) Roofers

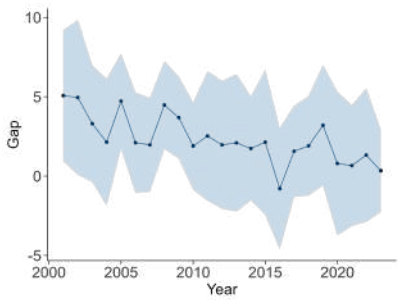


(k) Construction Trade Helpers

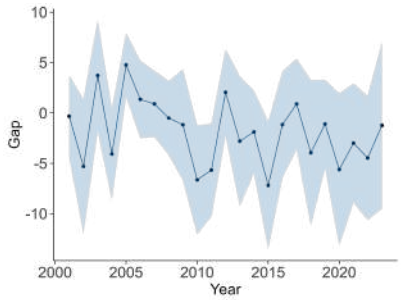


(l) Fence Erectors

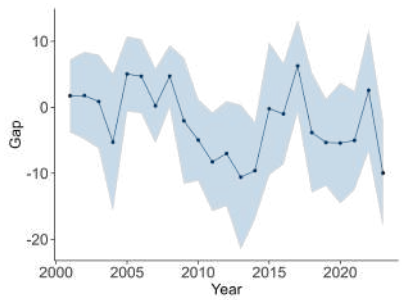
Figure 12: SNAP gaps: agriculture vs. selected non-ag occupations



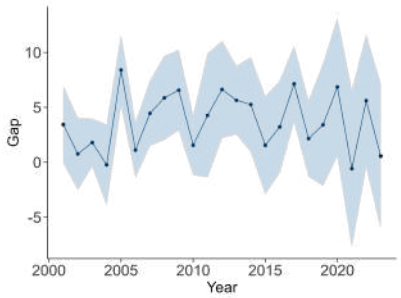
(m) Butchers and Meat Processing Workers



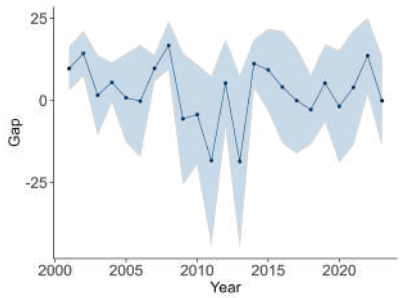
(n) Laundry and Dry-Cleaning Workers



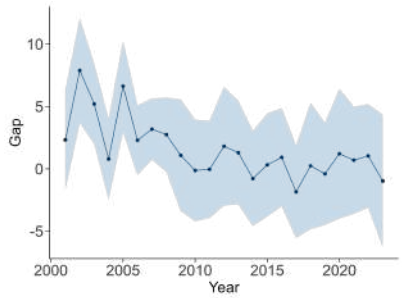
(o) Pressers, Textile, Garment



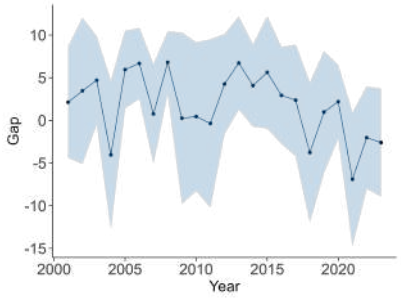
(p) Sewing Machine Operators



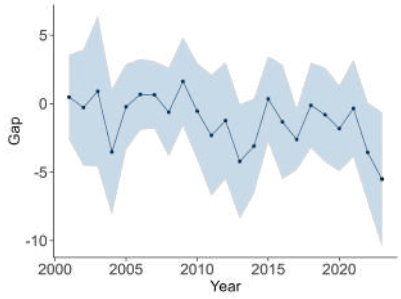
(q) Shoe and Leather Workers



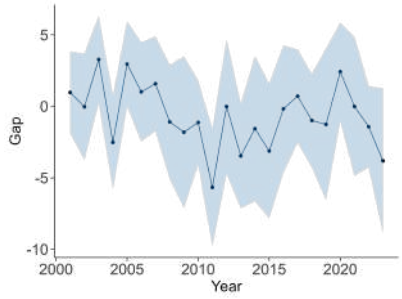
(r) Packaging Machine Operators



(s) Production Work Helpers

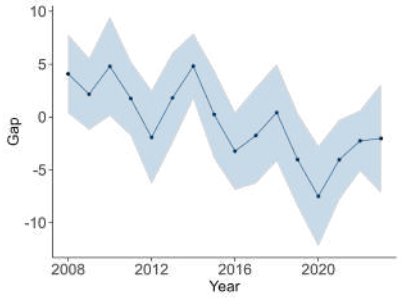


(t) Cleaners of Vehicles

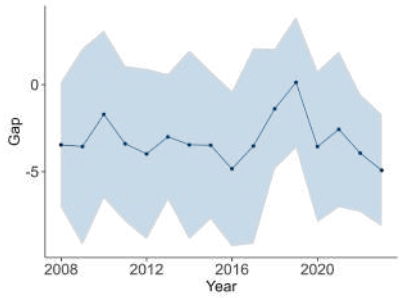


(u) Packers and Packagers, Hand

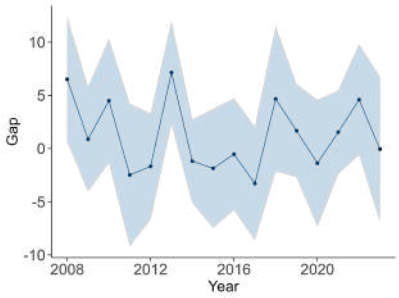
Figure 12: SNAP gaps: agriculture vs. selected non-ag occupations (continued).



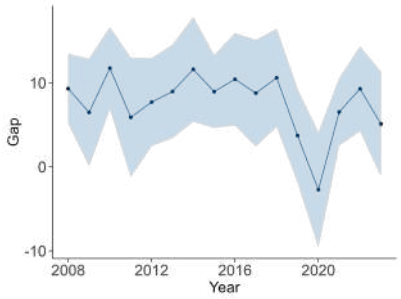
(a) Dishwashers



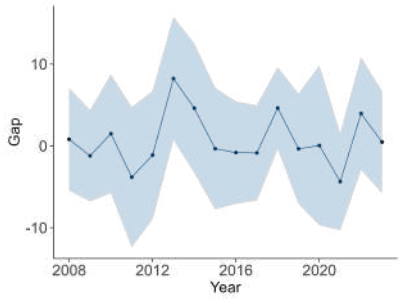
(b) Maids and Housekeeping Cleaners



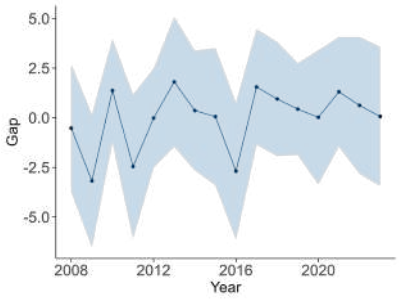
(c) Brickmasons, Blockmasons



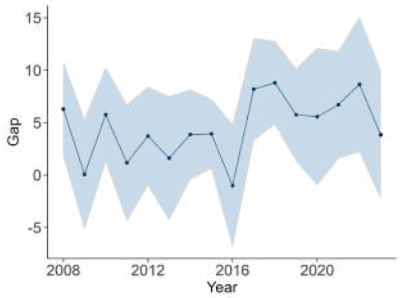
(d) Carpet and Floor Installers



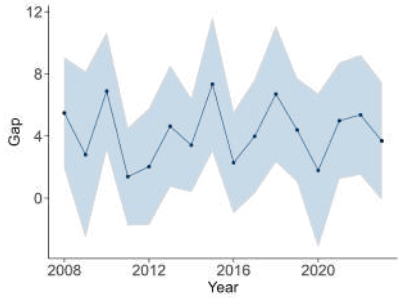
(e) Cement Masons



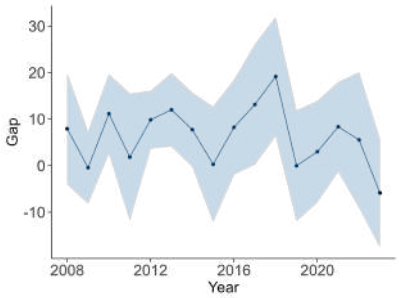
(f) Construction Laborers



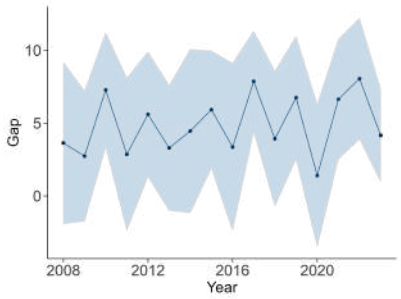
(g) Drywall and Ceiling Tile Installers



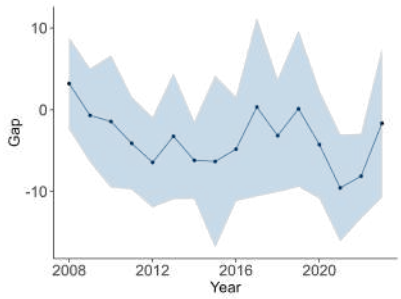
(h) Painters and Paperhangers



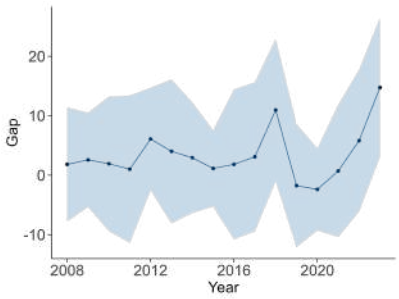
(i) Plasterers



(j) Roofers

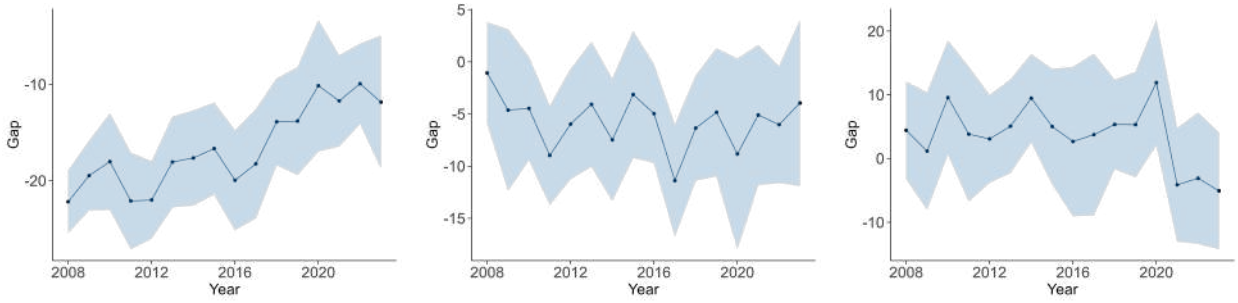


(k) Construction Trade Helpers



(l) Fence Erectors

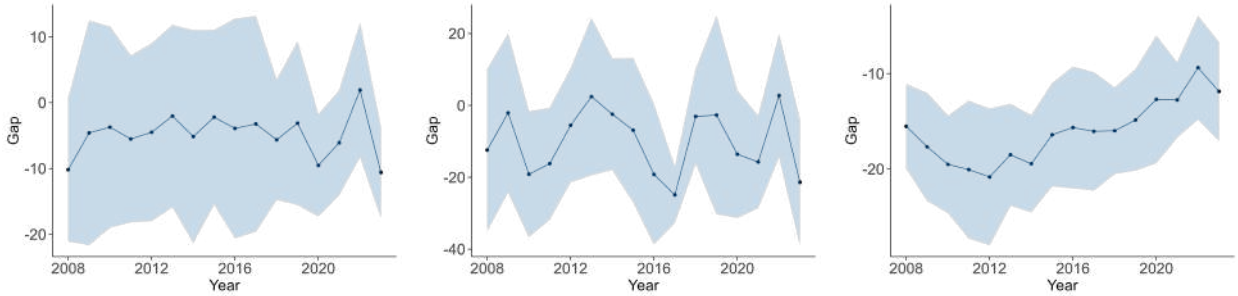
Figure 13: Health insurance gaps: agriculture vs. selected non-ag occupations



(m) Butchers and Meat Processing Workers

(n) Laundry and Dry-Cleaning Workers

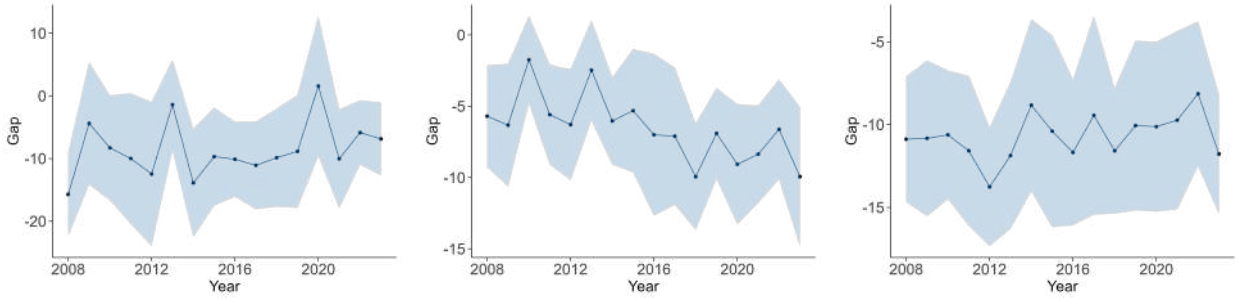
(o) Pressers, Textile, Garment



(p) Sewing Machine Operators

(q) Shoe and Leather Workers

(r) Packaging Machine Operators



(s) Production Work Helpers

(t) Cleaners of Vehicles

(u) Packers and Packagers, Hand

Figure 13: Wage gaps: agriculture vs. selected non-ag occupations (continued).

Table A1: Share of immigrants and low-educated workers by occupation

Occupation	Share of Immigrants (2001–03)	Share of Low Educated Workers (2001–03)	Share (Full Sample)
Agricultural occupations			
Agricultural workers, NEC	0.45	0.85	0.14
Graders and sorters, agricultural products	0.48	0.94	0.01
Non-agricultural occupations			
Brick masons, block masons, and stonemasons	0.23	0.89	0.02
Butchers and other meat, poultry, and fish processing workers	0.23	0.85	0.04
Carpet, floor, and tile installers and finishers	0.27	0.86	0.02
Cement masons, concrete finishers, and terrazzo workers	0.30	0.89	0.01
Cleaners of vehicles and equipment	0.20	0.86	0.05
Construction laborers	0.23	0.85	0.22
Dishwashers	0.27	0.88	0.04
Drywall installers, ceiling tile installers, and tapers	0.40	0.88	0.02
Fence erectors	0.21	0.87	0.01
Helpers, construction trades	0.22	0.86	0.01
Helpers–production workers	0.25	0.85	0.01
Laundry and dry-cleaning workers	0.21	0.87	0.02
Maids and housekeeping cleaners	0.23	0.88	0.15
Packaging and filling machine operators and tenders	0.25	0.88	0.04
Packers and packagers, hand	0.26	0.86	0.07
Painters, construction and maintenance	0.25	0.82	0.06
Plasterers and stucco masons	0.37	0.86	0.01
Pressers, textile, garment, and related materials	0.29	0.89	0.01
Roofers	0.29	0.91	0.03
Sewing machine operators	0.28	0.89	0.03
Shoe and leather workers and repairers	0.31	0.92	0.01