

IMMIGRATION, UNEMPLOYMENT AND LABOR FORCE PARTICIPATION IN THE UNITED STATES

BY MADELINE ZAVODNY

**EXECUTIVE SUMMARY**

Critics of immigration often allege that immigration worsens US-born workers' labor market outcomes, such as their employment and earnings. A large body of economic research has examined how immigration has affected natives' wages. Most of these studies have concluded that immigration has little or no adverse effect on US natives' wages. However, few studies have examined other key dimensions of US natives' success in the labor market: unemployment and labor force participation.

Understanding how immigration affects unemployment and labor force participation among US natives is important for several reasons. The foreign-born share of the population is the highest in a century, and immigrants account for 1 in 6 workers. Although unemployment is currently near a record low, it soared during the Great Recession of 2007-2009 and was slow to return to pre-recession levels. Labor force participation, meanwhile, has been declining for years, a trend that accelerated with the recession and has yet to reverse. Unemployment and labor force participation are markedly worse among disadvantaged groups, such as less-educated workers, that may compete the most intensively with immigrants in the United States.

This study examines the relationship between immigrants' share of the labor force and US natives' unemployment and labor force participation rates using comprehensive data from 2005-2013. The study controls for economic conditions that may affect the number of immigrants in a state and presents two-stage least squares estimates that control for endogeneity. The results of the state-level analysis indicate that immigration does not increase US natives' unemployment or reduce their labor force participation. Instead, having more immigrants reduces the unemployment rate and raises the labor force participation rate of US natives within the same sex and education group. Specifically, this study finds:

- A 1 percentage point increase in the share of the labor force comprised of immigrants appears to reduce the unemployment rate of US natives in the same sex-education group by 0.062 percentage points, on average.
- A 1 percentage point increase in the share of the labor force comprised of immigrants appears to raise the labor force participation rate of US natives in the same sex-education group by 0.045 percentage points, on average.
- There is no evidence of significant adverse effects among less-educated US-born workers, while immigration appears to boost labor force participation among more-educated US-born workers.
- Having more immigrants overall does not significantly affect US natives' unemployment or labor force participation rate.

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The results may be surprising, but they are consistent with research that finds immigration has little adverse effect on native-born workers' wages and employment. The results do not deny, however, not all workers in America are doing well. The results simply point to the fact that immigrants are not to blame for deeper structural forces or circumstances that may have led to dim labor market prospects for some workers.

## **BACKGROUND**

Immigrants currently account for about 14 percent of the US population and 18 percent of the labor force. These numbers have increased tremendously over the last 45 years—in 1970, less than 5 percent of the US population was foreign born. As the number of immigrants in the United States has swelled, immigrants have spread out across the country. Many areas that had few immigrants as recently as a decade ago now have sizable immigrant populations, especially in the South and the Midwest.

The increase in the number of immigrants and the changes in their locations have given rise to concerns that immigration has negatively affected US-born workers. If immigrants and natives compete for jobs, basic economic theory of supply and demand predicts that natives' wages and employment will fall as a result of immigration. The validity of this prediction with regard to wages has become one of the most studied questions in labor economics. Perhaps surprisingly, most studies have concluded that immigration has had little effect on US natives' wages. David Card, one of the preeminent researchers on the effects of immigration, summarized the literature as:

The state of the evidence suggests that the overall impacts on native wages are small—far smaller than the effects of other factors like new technology, institutional changes, and recessionary macro conditions that have cumulatively led to several decades of slow wage growth for most US workers (2012: 215).

While the question of how immigration affects US natives' wages has received considerable attention, few studies have examined how immigration affects US natives' unemployment and labor force participation. If natives' wages do not change much in response to immigration, as suggested by many studies, other labor market outcomes may adjust instead. Looking at how immigration affects natives' unemployment and labor force participation can provide additional insight into how immigration affects natives in the labor market.

Indeed, analyzing the effect on wages while ignoring other labor market effects can be misleading. For example, immigrants might replace some natives in jobs without reducing wages among those who remain employed but simultaneously boost natives' unemployment. This is particularly likely if there are changes in the composition of natives who remain employed. If the least skilled—and lowest earning—natives lose their jobs because of immigration, average wages among employed natives could actually increase. Looking at how immigration affects unemployment then becomes vital to assessing the effects of immigration. In addition, immigration may lead to changes in natives' labor force participation that in turn influence how immigration affects natives' wages. In particular, labor force exit by some natives in response to immigration could cushion any negative effect of immigration on wages. Such reasons make it important to examine how immigration affects natives' unemployment and labor force participation.

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The trends in unemployment and labor force participation rates indicate why these measures merit attention. The overall unemployment rate rose from a low of 4.4 percent before the 2007-2009 Great Recession to hit 10 percent at the downturn's worst and has since slowly declined to 3.9 percent. Meanwhile, the overall labor force participation rate is below 63 percent, a level last seen in the late 1970s. And both measures' levels and trends are far worse among less-educated workers. In 2017, the unemployment rate among workers age 25 and older who have not completed high school was 6.5 percent, and only 45 percent of that group was in the labor force. Importantly, the least educated US workers potentially face the most competition from immigrants. Almost two-fifths of all adults age 25 and older who have not completed high school are immigrants.

This study uses data from the American Community Survey, a large-scale survey of the US population, during 2005-2013 to examine how immigration affects unemployment and labor force participation rates among US natives. The analysis is conducted at the state level. The results indicate that immigration does not adversely affect US natives' unemployment or labor force participation rates. Indeed, some estimates point to beneficial effects.

## **ANALYTIC METHOD**

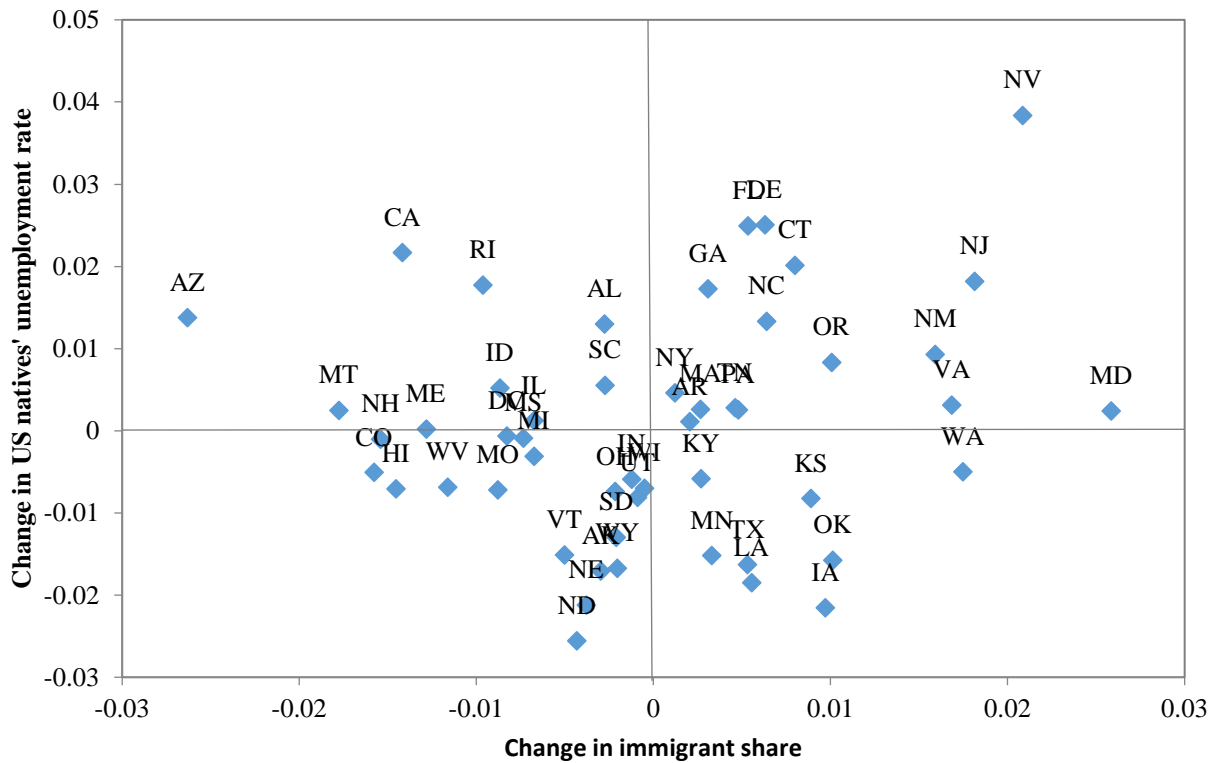
Ideally, we would like to know what US natives' unemployment and labor force participation rates would be in the absence of immigration and then compare those rates with the actual rates. The difference would be immigration's effect on US natives. Since it is not possible to know what would have happened without immigration, researchers typically rely either on models that simulate the impact of immigration based on assumptions about how substitutable foreign- and US-born workers are for one another or on models that compare groups experiencing large increases in the number of immigrants with groups experiencing small increases. This study takes the latter approach.

This study uses the fact that the percentage of the labor force comprised of immigrants varies across states, over time, and within education and experience groups to examine the relationship between immigration and US natives' unemployment and labor force participation rates. Specifically, it asks how the share of the labor force comprised of immigrants is related to US natives' unemployment and labor force participation rates. A positive relationship indicates that more immigration boosts US natives' unemployment or labor force participation rate, while a negative relationship indicates that more immigration reduces US natives' unemployment or labor force participation rate.

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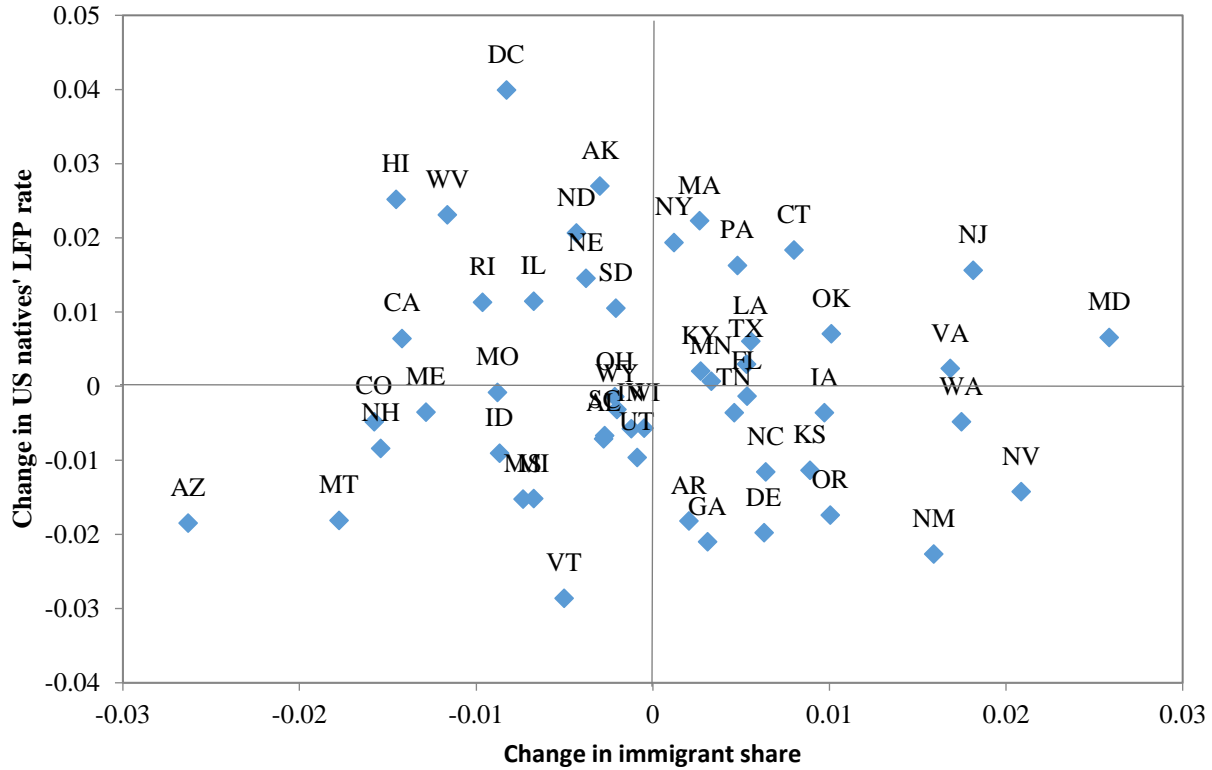
Figures 1 and 2 give a first look at these relationships. The figures show the change in the share of the labor force comprised of immigrants and the change in US natives' unemployment rate or labor force participation rate for each state between 2005 and 2013.<sup>1</sup> The data points are truly scattered, with similar numbers of states in each of the four quadrants of the diagrams. If immigration boosts natives' unemployment, we'd expect to see most of the data points in Figure 1 in the northeast and southwest quadrants; if immigration reduces natives' labor force participation, we'd expect most of the points in Figure 2 to be in the northwest and southeast quadrants. Instead, there is no clear relationship between the change in the immigrant share of the labor force and the unemployment rate or the labor force participation rate among US natives.

**Figure 1**  
**Changes in immigrant share and US natives' unemployment rate, 2005-2013**



<sup>1</sup> The changes are shown relative to the average change across states (or, as deviations from the mean).

**Figure 2**  
**Changes in immigrant share and US natives' labor force participation rate, 2005-2013**



Of course, many other factors may confound the relationship between immigration and natives' unemployment and labor force participation rates. The next sections explain the data and methodology used to more closely examine the relationship between immigration and natives' labor market outcomes.

**DATA**

The American Community Survey (ACS) is a large-scale survey of the US population conducted by the US Bureau of the Census.<sup>2</sup> The survey encompasses about 1 percent of the US population each year. Participants are asked about their demographic characteristics, such as their age, education, and place of birth, and about their employment status and earnings. The Bureau of the Census assigns weights to ensure the data are representative of the US population.

<sup>2</sup> The data used here are from Ruggles et al. (2010) and are available at <https://usa.ipums.org/usa/>.

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This study includes all people age 16 and older. The ACS classifies people as unemployed if they do not currently have a job and they have actively searched for a job within the last four weeks. The labor force is comprised of the employed and the unemployed; people who are not in the labor force include discouraged workers, retirees and stay-at-home parents, among others. The unemployment rate is the fraction of the labor force that is unemployed. The labor force participation rate is the fraction of the population age 16 and older that is in the labor force.

This study classifies everyone who reports not being born a US citizen as an immigrant.<sup>3</sup> “Immigrant” thus encompasses the foreign born regardless of whether they are naturalized US citizens, permanent or temporary visa holders, or unauthorized immigrants. The immigrant share of the labor force—the variable used to measure immigrant intensity in the analysis below—is the fraction of the labor force comprised of immigrants.

Part of the analysis below examines the effect of immigration within sex and education groups. Four education groups are studied: non-high school graduates; high school graduates; people who have attended college but do not have a bachelor’s degree; and college graduates. The part of the analysis that separates workers into the various sex and education groups assumes that US natives are affected only by immigrants who in the same sex and education group. This ignores any competition or complementarity between immigrants and natives across education groups or sexes. For example, female immigrants who have completed high school might compete for jobs with male US natives who have not completed high school while complementing—or making more productive—female US natives who have completed college. Although such “cross effects” are interesting and may be important, they are difficult to identify. Economists therefore typically focus on “within group” effects. This analysis also presents results for all workers as a whole, which will capture the net effect of competition and complementarity across the sexes and education groups.

## EMPIRICAL MODEL

This study uses regression models to estimate the relationship between the immigrant share and US natives’ unemployment rate or labor force participation rate. The basic regression model is

$$\text{US Native Rate}_{it} = \alpha + \beta \text{Immigrant Share}_{it} + \gamma \text{Business Cycle}_{it-1} + \delta \text{Demographics}_{it} + \varepsilon_{it}$$

where the subscript  $i$  indexes groups, which includes state, sex, and education groups, and  $t$  indexes years. *US Native Rate* is the unemployment rate or labor force participation rate among US natives in a given group and year. *Immigrant Share* is the fraction of the labor force in a given group comprised of immigrants in year  $t$ . *Business Cycle* is a set of variables that control for economic conditions the previous year. *Demographics* is a set of variables that

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<sup>3</sup> Survey participants who report being born abroad to US citizen parents are not included in this study; they account for less than 1 percent of the US population.

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control for the age and racial/ethnic makeup of US natives in a given group.<sup>4</sup> The error term,  $\varepsilon_{it}$ , is clustered on the group to control for within-group heteroscedasticity.<sup>5</sup> Observations are weighted using the fraction of the native-born population in the group under examination.

The regressions also include fixed effects as appropriate. All regressions include year fixed effects, which control for economic conditions or immigration policies that affect natives' labor market outcomes and are shared across groups. For example, unemployment rates were higher for all groups during the Great Recession. All regressions also include state fixed effects, which control for time-invariant differences across states that affect natives' labor market outcomes, such as location and climate. In addition, all regressions include state-specific linear time trends, which control for linear trends in natives' labor market outcomes specific to each state. Regressions that use data stratified by sex and education include sex and education fixed effects and an interaction of those fixed effects. This controls for sex- and education-specific differences in unemployment or labor force participation.<sup>6</sup>

A crucial issue when examining the effects of immigration is endogeneity, or bias arising from a correlation between an independent variable—the immigrant share of the labor force—and the error term. There are at least two potential sources of endogeneity bias here. One is that better economic conditions are likely to reduce unemployment and boost labor force participation among US natives as well as attract immigrants. This problem is of particular concern for state-level analyses like those presented here. Left uncorrected, this endogeneity leads to overly optimistic estimates of the relationship between the immigrant share and US natives' labor market outcomes. Another potential source of endogeneity bias is that only people who find it worthwhile to remain in the labor force are included in the measure of the immigrant share of the labor force.

To address endogeneity, this study controls for economic conditions and presents two-stage least squares (2SLS) estimates. The regressions control for three measures of economic conditions: the log of real GDP per capita, housing starts, and housing permits. The latter two variables control for activity in the housing construction sector, which was very volatile during the period examined and which employs a large share of immigrants. All of the measures of economic conditions are lagged one year to capture their likely effect on immigrants' location choices. 2SLS regressions use an exogenous source of variation to identify variation in a variable that is believed to be endogenous. This study follows previous research by George Borjas, Jeffrey Grogger, and Gordon Hanson (2010) in using the immigrant share of the adult population as an instrument for the immigrant share of the labor force.

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<sup>4</sup> The demographic control variables are the fraction of US natives in 11 of 12 age groups, non-Hispanic white, non-Hispanic black and Hispanic.

<sup>5</sup> Clustering is a conservative approach that tends to result in larger standard errors and lower significance levels.

<sup>6</sup> Specifically, the regressions reported in Table 1 include female\*year, education\*year and female\*education\*state fixed effects. The regressions reported in Table 2 include female\*year and female\*state fixed effects.



## RESULTS

This study examines the relationship between immigration and US natives' unemployment and labor force participation at several levels. The first is within sex-education groups. The regression models pool observations for the various state-year-sex-education groups, and the results give the average effect within those groups.

**Table 1**  
**Estimated within-group effect of immigration on US natives' unemployment and labor force participation rates**

	All US natives
Unemployment rate	-0.062* (0.034)
Labor force participation rate	0.045** (0.020)

\* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01. N = 3672

The results, shown in Table 1, indicate that the immigrant share of the labor force is negatively related to US natives' unemployment rate and positively related to US natives' labor force participation rate. In other words, the results do not indicate that immigrants adversely affect natives within state-year-sex-education groups—instead, immigration appears to benefit US natives. Specifically, a 1 percentage point increase in the share of the labor force comprised of immigrants appears to reduce natives' unemployment rate by 0.062 percentage points and to raise natives' labor force participation rate by 0.045 percentage points. Both estimates are statistically different from zero with at least 90 percent confidence. Again, the regressions control for economic conditions and are estimated using 2SLS in order to control for endogeneity bias that might lead to overly optimistic estimates.

Table 1 presents the average effect across sex and education groups at the state level. Such estimates may mask differences across education groups. In recent decades, immigrants to the United States have been overrepresented at the top and bottom of the education distribution, whereas US natives tend to be overrepresented in the middle of the education distribution. US natives who have not completed high school or who are college graduates thus may have been more adversely affected by immigration than people who are high school graduates or who have some college education. The next set of results is therefore based on regressions stratified by education. Each regression model pools observations for the various state-year-sex groups.

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**Table 2**  
**Estimated within-group effect of immigration on US natives' unemployment and labor force participation rates, by education group**

	Non-HS grads	HS grads	Some college	College grads
Unemployment rate	-0.078 (0.053)	0.020 (0.042)	-0.053 (0.067)	-0.044 (0.032)
Labor force participation rate	-0.004 (0.027)	0.046 (0.042)	0.157*** (0.055)	0.072* (0.043)

\* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01; N = 918

The results, shown in Table 2, indicate that immigration does not affect US natives' unemployment rate, while immigration boosts labor force participation among relatively highly educated US natives. None of the regressions indicate a significant relationship, either positive or negative, between the immigrant share in the labor force and the unemployment rate among natives in the same sex-education-state-year group.<sup>7</sup> A higher immigrant share of the labor force appears to boost labor force participation among US natives who have at least attended college. Specifically, a 1 percentage point increase in the immigrant share appears to raise labor force participation by 0.16 percentage points among US natives who have some college education, and by 0.07 percentage points among US natives who have at least a bachelor's degree. Meanwhile, immigration has no significant effect on relatively less-educated natives' labor force participation.

The above results examine the effect of immigrants on natives in the same sex-education group. This ignores the possibility of competition or complementarities between immigrants and natives in different education groups or of the opposite sex. The next set of results is based on regressions that pool all workers in a state and year into a group. As noted above, these estimates capture the net effect of competition and complementarity of immigrant workers across all native-born workers within a state and year.

<sup>7</sup> A natural question when comparing the results in Tables 1 and 2 is why the immigrant share is significantly negatively related to unemployment when the regression is estimated with all of the groups (Table 1) but not significantly so when separate regressions are estimated for each group (Table 2). The pooled regression reported in Table 1 has 4 times the number of observations, which automatically results in smaller standard errors and hence higher significance levels. It may be worth noting that 3 of the 4 estimates reported for the unemployment rate in Table 2 are negative, although not statistically significant. In addition, the pooled regression in Table 1 implicitly restricts the coefficients on the state-specific time trends to be the same across groups, whereas they vary across groups in the separate regressions reported in Table 2.

**Table 3**  
**Estimated effect of immigration on US natives' unemployment and labor force participation rates**

	All US natives
Unemployment rate	-0.043 (0.105)
Labor force participation rate	0.073 (0.051)

\* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01; N = 459

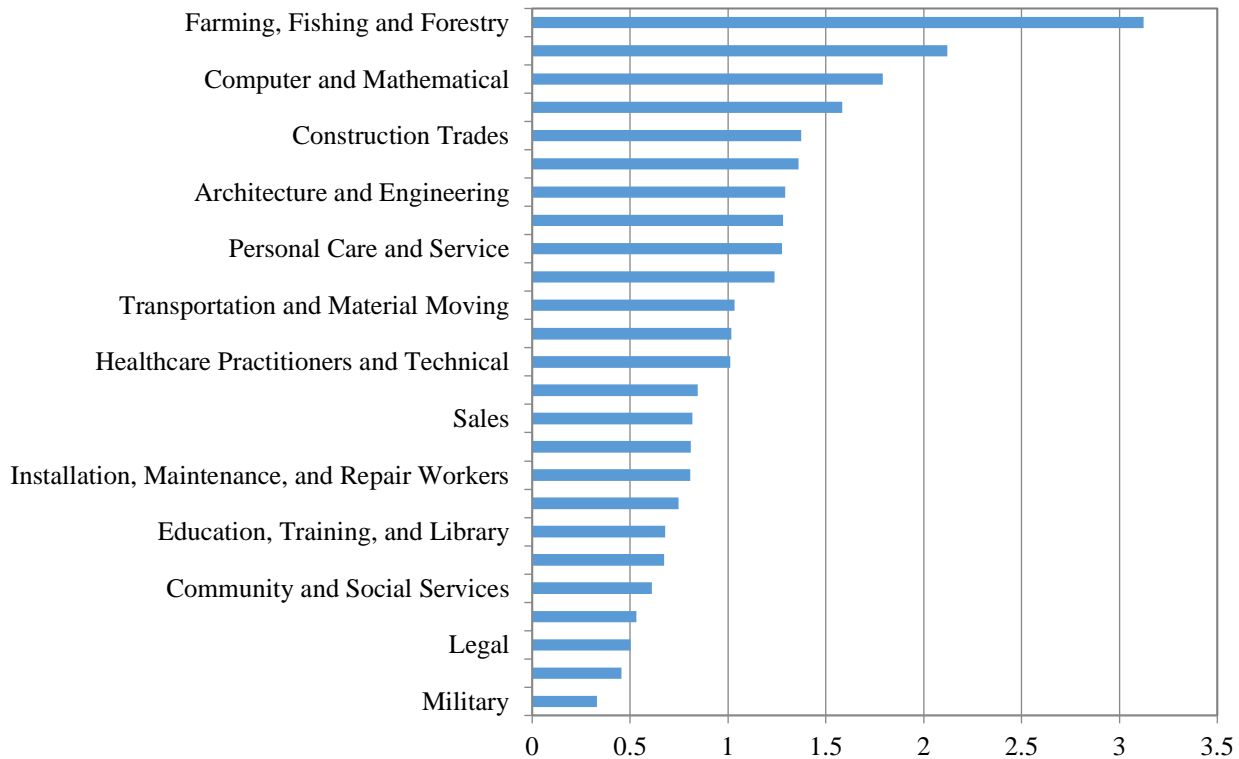
The results, shown in Table 3, indicate that immigration has no appreciable effect on US natives' unemployment or labor force participation within states; neither coefficient is statistically significant at conventional levels. There is no evidence here that an increase in the immigrant share of the labor force harms US natives in terms of higher unemployment rates or lower labor force participation rates.

## **WHY DOESN'T IMMIGRATION HARM US NATIVES IN THE LABOR MARKET?**

The above results provide no evidence that immigration harms US natives in the labor market. If anything, immigration appears to have a positive effect when looking within sex and education groups. How can this result be reconciled with standard economic models that predict adverse effects? One potential answer is, many immigrants do not compete directly with many US natives for jobs because they work in different sectors and live in different parts of the country.

One way to look at whether immigrants and natives work in similar sectors is to look at the share of immigrants working in an occupation relative to the share of natives working in that occupation. If immigrants and natives were distributed the same across sectors, these ratios would equal 1. Figure 3 shows these ratios for 25 occupation groups using 2013 ACS data. The longer the bar, the more immigrants are overrepresented in that occupation group; the shorter the bar, the more US natives are overrepresented. For example, immigrants are more than three times as likely as US natives to work in farming, forestry and fishing occupations, while US natives are more than twice as likely as immigrants to work in protective service occupations. Immigrants and US natives clearly tend to work in different occupations.

**Figure 3**  
**Ratio of share of immigrants working in an occupation to share of US natives, 2013**



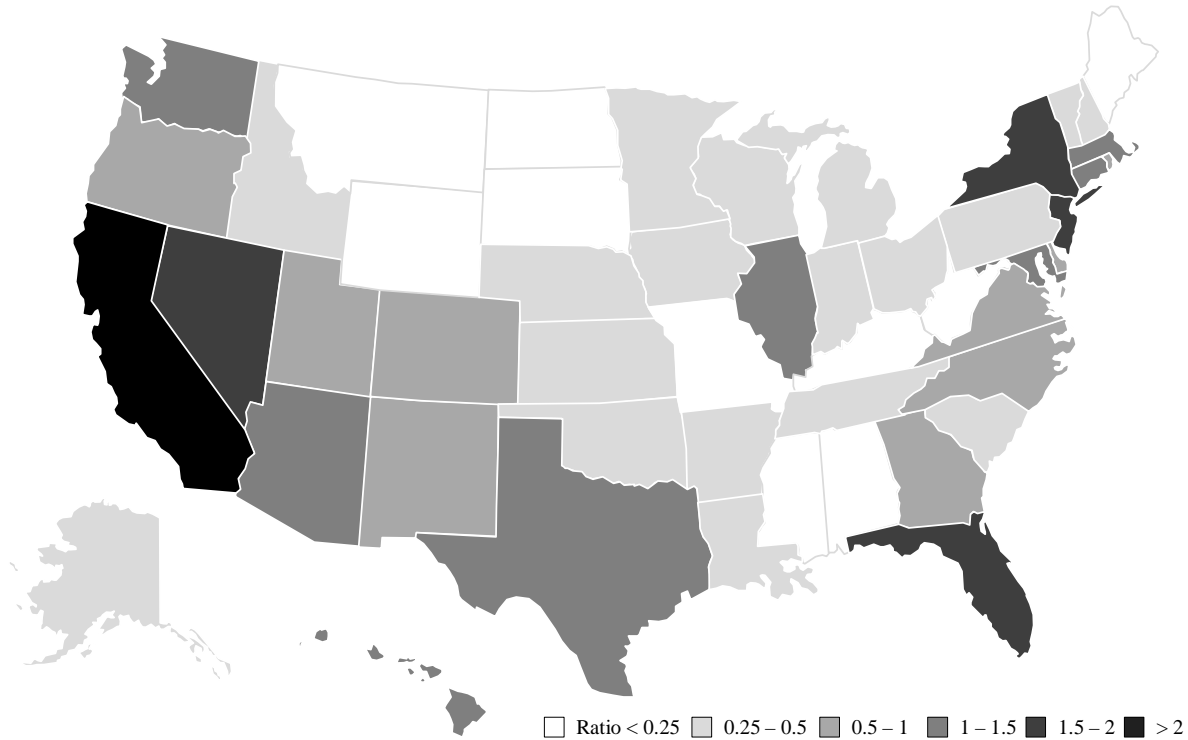
A similar calculation for place of residence shows that immigrants and US natives tend to live in different states. Figure 4 shows the ratio of the share of immigrants who live in a given state to the share of US natives living there, using 2013 ACS data on people age 16 and older. The darkest states are ones where immigrants disproportionately live, while the lightest states have relatively few immigrants compared with their share of US natives. For example, immigrants are more than two and a half times as likely as US natives to live in California, but less than one-tenth as likely as US natives to live in West Virginia. In addition, immigrants and US natives often live in different geographic labor markets within states, further reducing competition among them.

In addition, native-born workers respond to immigration in a number of ways that reduce the competition for jobs between immigrants and natives. One way is that natives may move into different jobs when immigration occurs. Research shows that US natives tend to move into communications-intensive jobs in response to an inflow of immigrants (Peri and Sparber, 2009, 2011). This occurs at both the top and bottom of the skill distribution. Further, the jobs that US natives move into tend to be higher paying than the jobs disproportionately filled by immigrants. US natives also may respond to immigrant inflows by moving to different parts of the country. Empirical evidence is

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mixed on whether this actually occurs (e.g., Card and DiNardo, 2000; Borjas, 2006), but such migration would cushion any adverse impact of immigration on US-born workers.

**Figure 4**  
**Ratio of share of immigrants to share of US natives, 2013**



Immigration also may have little adverse effect on natives because immigrants may actually create or preserve jobs. Immigrants may boost consumer demand, start their own businesses, and reduce offshoring, among other channels. Recent research concludes that each additional immigrant creates 1.2 local jobs for local workers, most of them US natives, by increasing consumer demand for local services (Hong and McLaren, 2015). Immigrants are more likely than US natives to start or own a company (Hunt, 2011; Fairlie and Lofstrom, 2014). In particular, immigrants have played a key role in founding a number of high-tech US companies (e.g., Wadhwa et al., 2007). Relatedly, inflows of highly educated immigrants boost patent activity and productivity (Hunt and Gauthier-Loiselle, 2010; Kerr and Lincoln, 2010). Immigration may have reduced offshoring of manual-labor intensive jobs in the US (Ottaviano, Peri, and Wright, 2013).

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Immigration may create other benefits to US natives as well. Immigration may reduce the price of immigrant-intensive goods and services. Research suggests that an increase in the share of low-skilled immigrants in the labor force decreases the price of immigrant-intensive services, such as housekeeping and gardening, primarily by decreasing wages among immigrants (Cortes, 2008). The lower price and greater availability of private household workers—nannies, housecleaners, gardeners, and the like—as a result of immigration has allowed highly educated US-born women to increase their hours of work (Cortes and Tessada, 2011). Another obvious benefit is that immigration increases restaurant diversity (Mazzolari and Neumark, 2012).

## **CONCLUSION**

Critics of immigration frequently allege that immigration harms US natives in the labor market by reducing their wages, boosting their unemployment, or decreasing their incentive to participate in the labor market at all. Using data from the 2005-2013 American Community Survey—the most recent and comprehensive data available—this study shows that there is no evidence that immigration leads to higher unemployment rates or lower labor force participation rates among US natives. On the contrary, sex-education groups with a higher immigrant share have lower unemployment rates and higher labor force participation rates. Combined with the sizable literature that concludes that immigration has little effect on natives' wages, this suggests that immigration has not had an appreciable adverse impact on US natives overall in the labor market.

This is not to say that the labor market picture is rosy for all US workers. Inflation-adjusted wages have risen little for many workers even though the overall economy has been growing for a decade, and the labor force participation rate remains stubbornly low, particularly among the less-educated. But focusing on immigration distracts attention from more important economic forces, including the minimum wage, the structure of government transfer programs, and the failures of the education system, that affect the US labor market.

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