Minimum Wages and Low-Skilled Immigrants: New Evidence on Earnings, Employment and Poverty[*]

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Abstract

Raising the minimum wage has been advanced as complementary policy to comprehensive immigration reform to improve low-skilled immigrants' economic wellbeing. While adverse labor demand effects could undermine this goal, existing studies do not detect evidence of negative employment effects. We re-investigate this question using data from the 1994 to 2016 Current Population Survey and find that minimum wage increases reduced employment of less-educated Hispanic immigrants, with estimated elasticities of approximately -0.1. However, we also find that the earnings and employment effects of minimum wages on have diminished over the last decade. This finding is consistent with more restrictive state immigration policies and the Great Recession inducing (i) outmigration of low-skilled immigrants, and (ii) shifts of low-skilled immigrants into the informal sector where minimum wage effects are less likely to be bind. Finally, our results show that raising the minimum wage is an ineffective policy tool for reducing immigrant poverty.

Keywords: minimum wage; low-skilled immigrants; employment; **poverty**

1. Introduction

> *"Raising the minimum wage is a perfect complement to immigration reform and its promise of legalizing millions of undocumented workers. Many of them are working at wages below even the current $7.25 per hour minimum wage and cannot have amassed much in the way of savings. If they are to pay the penalties and back taxes [immigration reform] will require...they will need to be paid fairly for their work."*
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> - Economic Policy Institute, 2013

Over 42 million immigrants live in the United States, with approximately one million new immigrants arriving each year (Migration Policy Institute 2016). By 2023, one out of every seven US residents is projected to be foreign-born, a number that is expected to increase to one out of every five by 2060 (Colby and Ortman 2015). While the post-Great Recession recovery and increased border enforcement have led to an absolute reduction in the number of unauthorized persons in the US (Hanson et al. 2017), estimates place the size of this population from 11 million (Krogstad et al. 2016) to 20 million (Justich and Ng 2005).

There is substantial skill heterogeneity among immigrants to the US (Borjas 2015; Ehrlich and Kim 2015), with a sizable portion of the population drawn from the tails of the skill distribution. However, the median income of full-time employed foreign-born workers is 20 percent less than that of their native-born counterparts (Bureau of Labor Statistics 2016), a differential driven by Hispanics, who account for nearly half (49 percent) of all foreign-born workers. The concentration of immigrants in low-wage jobs is particularly acute among likely unauthorized migrants, whose representation in lower-skill sectors such as service and construction jobs is significantly larger than that of natives or authorized immigrants (Passel and Cohn 2015).

The 2016 presidential campaign and the first years of the Trump Administration have ushered in a fierce public debate about the future of US immigration policy. As part of that debate, some have called for minimum wage increases as a means of improving the economic well-being of low-skilled immigrants (Fiscal Policies Institute 2016). While a wide literature has examined the effects of minimum wages on teenage or restaurant employment (Neumark and Wascher 2008; Neumark et al. 2014a,b; Dube et al. 2010) and overall poverty (Sabia 2014b; Sabia and Burkhauser 2010), relatively less is known about the impact of minimum wages on immigrants. And next to nothing is known about how immigration reform and the changing composition of migrants have altered the effectiveness of the minimum wage.

One notable exception to this sparse literature is a high-quality study by Orrenius and Zavodny (2008). Using data from the Current Population Survey Outgoing Rotation Groups (CPS-ORG) from 1994 to 2005, Orrenius and Zavodny (2008) find that minimum wage increases boost the earnings of 20-to-54 year-old foreign-born workers without a high school degree. However, with regard to employment, the authors conclude:

> "Results…do not indicate that minimum wages had adverse employment effects among adult immigrants or natives who did not complete high school." (Orrenius and Zavodny, 2008, p. 544)

These authors argue that their failure to find evidence of adverse employment effects may be explained by low-skilled immigrants' mobility decisions. That is, otherwise unemployed workers may choose to locate in low minimum wage states with more job opportunities, a view which has been recently supported by Cadena (2014).

While this study is well-executed, developments in the minimum wage literature, shifts in the demographic characteristics of migrants, and changes in the policy environment for low-

skilled immigrants necessitate a new examination of this question. An important debate about how to empirically disentangle the economic impacts of state minimum wage increases from the effects of the business cycle and contemporaneously implemented low-skilled labor-related policies has intensified (Allegretto et al. 2011; Dube et al. 2010; Neumark et al. 2014a,b; Sabia 2014c; Allegretto et al. 2015; Sabia and Nguyen 2016; Clemens and Wither 2016). This discussion has important implications about the appropriate choice of economic and policy controls, as well as how to best control for unobservable spatial heterogeneity without contaminating minimum wage variation used for identification.

Moreover, disentangling the impacts of minimum wage increases from changes in state immigration policies – such as E-Verify, Secure Communities, 287(g) agreements, and issuance of drivers' licenses to undocumented immigrants – is important given that some of these policies were contemporaneously implemented with minimum wage changes and may impact immigrant employment. This is particularly true for the period after 2005, the last year available to Orrenius and Zavodny (2008), when there were over 200 state minimum wage increases, a large Federal minimum wage increase from $5.15 to $7.25 per hour, and an overall stagnation of low-skilled migration.

In addition, many immigration reform policies may have affected the bindingness of minimum wages for low-skilled immigrants and altered firms' ability to substitute unauthorized for authorized labor. Certain reforms, such as E-Verify, have been found to push some low-skilled immigrants into the "shadows" of informal work, where the minimum wage may have a smaller impact. Furthermore, examining low-skilled immigrants as a whole may mask

heterogeneous impacts of minimum wage increases on groups more likely than others to be unauthorized.[1]

Finally, no study of which we are aware has examined the impact of minimum wage increases on broader measures of low-skilled immigrants' economic wellbeing, such as household income or poverty. Examining such outcomes is important given that the resources earned by household members in the sharing unit are important determinants of both wellbeing and individual eligibility for a myriad of means-tested state and federal programs.

Using repeated cross-sections of Current Population Survey data from over two decades, the current study examines the effect of minimum wage increases on immigrants' economic wellbeing. We document three key findings. First, over the period from 1994 to 2016, we find that minimum wages increase the earnings of low-skilled Hispanic immigrants, but also decrease their employment. We estimate an employment elasticity of approximately -0.1, with the largest estimated impact for low-skilled immigrants of Mexican origin. A causal interpretation of our results is supported by their robustness to (i) controls for policy leads and state-specific time trends, (ii) the use of a post-least absolute shrinkage and selection operator (LASSO), and (iii) falsification tests on more highly educated immigrants.

Second, we uncover evidence that minimum wage-induced employment effects have been attenuated in the last decade, which may be explained by the enactment of more restrictive immigration policies such as E-Verify as well as the Great Recession. These conditions may induce outmigration among lower-skilled immigrants and shift some to the informal sector where the minimum wage is less likely to bind. Finally, our results provide little support for the claim that minimum wage increases alleviate poverty among low-skilled immigrants.

[1] For instance, Hispanic immigrants have been shown to earn less than non-Hispanic immigrants (Kochhar et al. 2010) and to have a higher likelihood of being undocumented than other immigrants (Passel and Cohn 2010).

2. Background and Prior Literature

2.1 Background and Policy Environment

The percentage of immigrant workers in the labor force has risen by 10 percent over the last decade (Bureau of Labor Statistics 2006, 2016). Though the population of low-skilled immigrants has remained stable (Hanson et al. 2017), on average adult immigrants to the U.S have fewer years of schooling than their native counterparts. Foreign-born residents over the age of 25 are three times less likely to have a high school diploma than natives, with approximately half designated as Limited English Proficiency (Zong and Batalova 2016). As such, immigrant workers are more likely to be found in low-skilled positions, such as the service industry, as well as in construction and maintenance occupations (Bureau of Labor Statistics 2016). Among unauthorized immigrants, there is evidence that over 60 percent are employed in the service, construction or production sectors (Passel and Cohn 2015).

As emphasized by Orrenius and Zavodny (2008), a considerable share of the immigrant population is less skilled than their native counterparts. Thus, immigrants may be more likely than natives to be bound by minimum wage increases, leading to a greater "bite," both in terms of increases in wages among workers and (potentially) adverse employment effects.[2] U.S. Department of Labor policy requires enforcement of minimum wage laws, independent of the whether an immigrant is legally authorized to work (U.S. Department of Labor 2016).[3]

[2] Of course, employment among higher-skilled natives not bound by higher minimum wages could also see their employment and wages affected by minimum wage increases if firms substitute away from low-skilled immigrants and toward higher-skilled natives.

[3] U.S. Department of Labor (2016) policy, publicly available as of February 2017 states:

> "Workers who lack work authorization are entitled to minimum wages and overtime pay for hours worked under the [Fair Labor Standards Act] to the same extent as other workers…These protections apply regardless of immigration status." (USDOL, 2016, https://www.dol.gov/dol/fact-sheet/immigration/RetaliationBasedExerciseWorkplaceRightsUnlawful.htm)

However, the weakening of immigrant labor rights under *Hoffman Plastic Compounds, Inc. v. NLRB,* non-compliance due to lack of strict enforcement (Lazar 2015; National Employment Law Project 2003), and greater participation in the informal sector could lead to minimum wages being less binding for unauthorized workers. On the other hand, the demand for unauthorized labor may change in response to higher minimum wages, if firms alter the composition of their labor force.

The impact of minimum wages on immigrants may also differ by macroeconomic conditions and across heterogeneous immigration policy regimes. Changes in economic conditions, the skill composition of immigrants, and the policy environment to which immigrants are exposed may each differentially impact both (i) the economic effect of minimum wages on immigrants, and (ii) the distribution of benefits/costs that fall to low-skilled immigrants and natives. With regard to economic conditions, the outflow of immigrants during economic recessions (and in-flow during expansions) may change the degree to which employers can substitute between immigrants and natives in response to minimum wage hikes, as well as the composition of those immigrants remaining in the country.

Meanwhile, policies related to immigration could (i) be implemented concurrently with minimum wage changes and (ii) play an important role in how minimum wages affect immigrants. Intensified border control and greater interior immigration enforcement through

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While *Hoffman Plastic Compounds, Inc. v. NLRB* limited the ability of the National Labor Relations Board to order back pay for an undocumented union employee, the Department of Labor still asserts its authority to enforce minimum wage laws for undocumented immigrants:

> "The Department's Wage and Hour Division will continue to enforce the FLSA and [Migrant and Seasonal Agricultural Worker Protection Act] without regard to whether an employee is documented or undocumented. Enforcement of these laws is distinguishable from ordering back pay under the NLRA." (USDOL, 2008, https://www.dol.gov/whd/regs/compliance/whdfs48.htm)

such programs as Secure Communities and the 287(g) partnership program may result in fewer unauthorized immigrants in the U.S., changing the fraction of the immigrant population bound by minimum wage changes. Along the same lines, stricter employment verification policies, such as E-Verify mandates, may affect the degree to which minimum wages bind for immigrants by pushing workers into the informal sector. Using CPS data, Amuedo-Dorantes and Bansak (2014) find that an E-Verify mandate reduces reported employment of likely unauthorized workers by 4.6 percentage-points, driving some into the informal sector,[4] and Orrenius and Zavodny (2015) find that E-Verify mandates improve the labor market outcomes of those who compete with likely unauthorized immigrants.

2.2 Minimum Wages and Immigrants

While there is a wide literature that has examined the impact of minimum wages on low-skilled individuals (Neumark and Wascher 2008; Dube et al. 2010; Neumark et al. 2014a,b; Sabia 2014), most studies have focused on teenagers, single mothers, or less-educated or experienced individuals. This literature suggests that minimum wage increases are associated with modest declines in employment for most low-skilled groups, with intent-to-treat elasticities in the range of -0.1 to -0.2, though these estimates have been found to be somewhat sensitive to controls for spatial heterogeneity.[5]

[4] The direction of the wage effects though is not uniform; female workers experienced wage increases, while men saw their wages fall. The authors argue that this is indicative of a reduction in labor demand for male immigrant workers and a reduction in the female labor supply, a phenomenon which may be driven by female workers largely being employed in private households and small food-related business.

[5] For instance, Dube et al. (2010) compare contiguous counties across state borders to estimate the effect of minimum wage increases on low-skilled employment and find no evidence of adverse employment effects. Along the same lines, Allegretto et al. (2011) find that adding state-specific linear time trends to canonical difference-in-difference models eliminates much of the adverse employment effect of minimum wages for teenagers, as does comparing treatment and control states within census divisions. However, Neumark et al. (2014a,b) and Sabia and

Despite the large prevalence of immigrants in positions traditionally affected by minimum wage increases, little empirical work has been done on the relationship between minimum wages and immigrants' earnings or employment. Orrenius and Zavodny (2008) find that changes in state minimum wages are associated with small and statistically insignificant declines in the employment of foreign-born 20-to-54 year-olds without a high school degree. Giullietti (2014) also finds no evidence of adverse employment effects.

One challenge with studies of the effects of minimum wages on immigrant employment is the possibility that immigrants' mobility decisions may be affected by higher minimum wages. Orrenius and Zavodny (2008) use data from the CPS' Outgoing Rotation Groups (ORG) and find that state minimum wage increases are associated with a reduction in the proportion of low-skilled immigrants in the state population, suggesting that the job-reducing effects of minimum wages may repel low-skilled immigrants. However, Giulietti (2014) finds that Federal minimum wage increases may serve as a pull for immigrants, particularly of Mexican origin. These findings, along with those of Cadena (2014) and Boffy-Ramirez (2013) [6], suggest that immigrants' location decisions are more responsive to labor market conditions than are those of natives (Borjas 2001; Jaeger 2007; Cadena 2014; Cadena and Kovak 2014).

A second challenge for estimating the immigrant employment effects of minimum wages is the changing policy environment faced by immigrants, particularly low-skilled immigrants. Following the year 2000, 20 states passed laws mandating the use of E-Verify among public or

Nguyen (2016) sharply criticize these identification strategies, arguing that they conflate minimum wage variation with the state business cycle and fail important falsification tests.

[6]Cadena (2014) argues that negative employment effects in part explain why minimum wage result in reduced growth to a state's immigrant population. In contrast to this argument, Boffy-Ramirez (2013) finds that low-skilled immigrants are attracted to states with higher minimum wages, though it is dependent upon their length of residence in the United States. The results are positive and significant for immigrants who have resided in the United States for between two and four years.

private employers. This system requires employers to check the work authorization status of recent hires. Using information submitted by the employer in Form I-9, E-Verify screens an employee's information against databases maintained by the Social Security Administration and the Department of Homeland Security (Stumpf 2012). If no match or a mismatch occurs, the employer is notified of the "tentative non-confirmation" and must inform the employee. The employee then has eight federal work days to contest the discrepancy, during which time the employee cannot be fired. If the issue has not been resolved at the end of the eighth day, the employee must be fired (Orrenius and Zavodny 2016). There is evidence that E-verify is associated with reduced employment for likely unauthorized immigrants (Amuedo-Dorantes and Bansak 2014), as well as improved labor market outcomes for non-Hispanic natives (Orrenius and Zavodny 2015).

Around the same time, a number of other restrictive enforcement policies were adopted. Six states enacted Omnibus Immigration legislation, which aim to curtail undocumented immigration by mandating immigrants carry federal identification and requiring law enforcement to verify status during lawful stops (NCSL 2012). U.S. Immigration and Customs Enforcement (ICE) also began entering in voluntary 287(g) agreements with state and local law-enforcement agencies, charging them with enforcing immigration legislation (Capps et al. 2011). As of 2017, 59 law enforcement agencies in 18 states had signed such agreements (ICE 2017).

In addition, the Department of Homeland Security launched its Secure Communities program in 2008. Under this program, fingerprint records from arrestees have their information forwarded onto the Department of Homeland Security, and are then checked against a database of legal immigrants, facilitating the arrest and deportation of unauthorized immigrants. The program was adopted county-by-county with nationwide coverage occurring in 2014 (Miles and

Cox 2014).[7] These restrictive immigration policies may have the effect of limiting firms' ability to substitute toward unauthorized labor in response to minimum wage changes and make the minimum wage more binding for those authorized low-skilled immigrants who are affected.

In contrast to these more restrictive policies, some states adopted laws designed to liberalize immigrants' access to state services. For example, 20 states began allowing unauthorized individuals to qualify for in-state tuition, and 13 states enacted laws permitting unauthorized immigrants to obtain drivers' licenses. Such liberalization of immigration laws could increase the supply of unauthorized immigrants in the state, which could provide a new pool of workers to whom employers could substitute in response to minimum wage increases, exacerbating employment effects for authorized immigrants.

Because many of these immigration policy changes were happening contemporaneously with minimum wage changes, disentangling their effects from those of minimum wage increases is critical, as is exploring any heterogeneous impacts of minimum wages across different policy regimes or macroeconomic conditions.

2.3 Minimum Wage vs Business Cycle Effects

Separating the impacts of minimum wage increases from spatial heterogeneity, including macroeconomic conditions, has been the subject of much controversy (see, for example, Burkhauser et al. 2000a; Sabia 2009, Dube et al. 2010; Allegretto et al. 2011; Neumark et al. 2014a,b; Allegretto et al. 2015). For instance, the post-2005 minimum wage literature has been filled with much debate about the appropriateness of including controls for state-specific time

[7] Though Secure Communities was replaced by the Priority Enforcement Program (PEP) in July of 2015, President Trump reinstated the program in January of 2017. In contrast to Secure Communities, PEP prioritized deportation of violent offenders.

trends and the functional form such time trends should take (Allegretto et al. 2011, 2015; Neumark et al. 2014a,b; Meer and West 2016).

More recently, Allegretto et al. (2015) argue for using a double selection post-LASSO approach (see Belloni et al. 2014) to select among observable controls, as well as the order of state-specific time trends. The post-LASSO approach selects controls based on the significance of their associations with both the "treatment" variable (the minimum wage) and the outcome (employment) in an attempt to reduce omitted variable bias while not reducing the amount of identifying variation available. However, this atheoretical approach cannot rule out unmeasured heterogeneity and is subject to the same falsification tests as more standard difference-in-difference models (Sabia and Nguyen 2016).

2.4 Minimum Wages and Poverty

While earnings and employment are the most commonly examined outcomes in the minimum wage literature, a growing body of scholarship has focused on the poverty and household income effects of minimum wages (Neumark and Wascher 2002; Burkhauser and Sabia 2007; Sabia 2008; Sabia and Burkhauser 2010; Dube 2013; Sabia 2014; Sabia et al. 2017). While proponents of minimum wage increases argue that such measures will help to alleviate poverty (Clinton 2016; Sanders 2016), the effects are theoretically ambiguous. Poor immigrants who do not work will not be helped by higher minimum wages, and may, in fact, be hurt if job opportunities become scarcer. While poor low-skilled immigrants who earn the minimum wage and keep their jobs will be lifted out of poverty, other near-poor workers may lose their jobs or have their hours substantially cut, which may plunge them into poverty. No study of which we

are aware has examined the effect of minimum wage increases on immigrants' household income or poverty.

3. Data, Measures and Methods

3.1 Data and Measures

Our analysis uses repeated cross-sectional data from the Current Population Survey (CPS) from 1994 to 2016. The Basic Monthly Data (BMD) of the CPS is a monthly household survey of approximately 55,000 households intended to gauge labor market activity common to the minimum wage literature (Bureau of Labor Statistics 2016). Households in the CPS are interviewed each month for four months, excluded for eight months, and then interviewed again for four additional months. Respondents in each household are asked questions about employment and other labor market characteristics. During their fourth and eighth interviews of the Basic Monthly Data, persons in households are asked more extensive questions about their earnings and hours. These surveys comprise the outgoing rotation groups (ORG), which are used to estimate the relationship between minimum wages and hourly earnings.

Individuals in the CPS during the month of March are also asked information pertaining to poverty status. This subset of the CPS, the Annual Social and Economic Supplement (ASEC), contains information on household income and poverty status of households and has been used extensively to estimate the poverty effects of minimum wages for working age individuals (Card and Krueger 1995; Burkhauser and Sabia 2007; Sabia and Burkhauser 2010; Sabia 2014b).

We define a low-skilled immigrant in the identical manner as Orrenius and Zavodny (2008): a foreign-born 20-to-54 year-old without a high school diploma or GED who is not a

U.S. citizen at birth.[8] It is important to note that though the CPS does not ask respondents about their legal status, it does include some unauthorized immigrants (Hanson 2006; Passel et al. 2013; Orrenius and Zavodny 2015). In order to capture potential heterogeneity in the minimum wage-employment relationship, we attempt to identify individuals who are likely unauthorized using a technique drawn from immigration enforcement literature. In particular, we consider individuals likely unauthorized if they are non-naturalized Hispanic immigrants with less than a high school degree (Lofstrom et al. 2011; Amuedo-Dorantes et al. 2015). We refine this further, by considering only low-skilled non-naturalized immigrants who report being born in Mexico. While not every individual in these groups is unauthorized, a large share of unauthorized immigrants fit these definitions. As such, they allow us to gauge the effects for a difficult-to-measure population. We also examine low-skilled non-Hispanic immigrants, natives, and native teens, in part, to compare our estimates to those obtained from existing literature.

We begin by examining outcomes identical to Orrenius and Zavodny (2008): *Wage*, *Employment* and *Hours*. First, for workers paid hourly, we have a direct report of the respondent's hourly *Wage*; for those not paid hourly, their wage rate is calculated as the ratio of the respondent's usual weekly earnings to usual weekly hours. We discard individuals with imputed earnings (see Bollinger and Hirsch 2006), but our results are robust to their inclusion. *Employment* is a measure of the employment-to-population ratio, available in both the BMD and the ORG, where employment is defined as currently working for pay. *Hours* of work are calculated using the ORG as the average hours of work among those who report employment.

The use of ORG files to estimate the effect of minimum wages on low-skilled employment, the strategy pursued by Orrenius and Zavodny (2008), has been subject to

[8] Following Orrenius and Zavodny (2008), we exclude individuals born in outlying US territories.

criticism.[9] Hoffman (2016) argues that for smaller low-skilled sub-groups, state employment-to-population ratios are measured with more error in the ORG files, as compared to the "full" CPS Basic Monthly Data, and that this error may be related to state minimum wage changes. He suggests using the ORG to measure earnings effects of minimum wages, but the Basic Monthly Data to measure employment effects (see also Sabia et al. 2016 for a response). Thus, we examine the robustness of our employment estimates across both the ORG and the BMD.

Next, we measure poverty using information on household income, household size, and the household-size specific Federal poverty level (FPL). For instance, in 2014, the FPL for a household of size three with one child was $19,055. Thus, a household of that size and composition with income of $38,110 would have an income-to-needs ratio of 2.0. We measure the share of low-skilled immigrants who live in households with incomes less than 100, 150, and 200 percent of the FPL, as well a continuous measure of the household income-to-needs ratio

Following Orrenius and Zavodny (2008), we aggregate weighted individual-level variables to the state-level such that the number of observations is equal to the product of the number of states and years in our sample. In Table 1, we present means of our outcomes over the 1994-2005 period and the extended 1994-2016 period. Means are shown for all low-skilled immigrants, low-skilled Hispanic, low-skilled non-Hispanic, and low-skilled Mexican immigrants, separately. We also show means for low-skilled natives and native teens. During the 1994-2005 period, we estimate the average low-skilled immigrant employment rate to be 0.679. Over both the 1994-2005 and 1994-2016 periods, we find that less-educated Hispanic immigrants earn hourly wages that are less than their non-Hispanic counterparts, with natives

[9] OZ are not alone in this regard. Use of the ORG files to estimate the impact of minimum wages on low-skilled employment has been the strategy of many others in the literature, including Burkhauser et al. (2000), Sabia (2009), Allegretto et al. (2011), and Sabia et al. (2016).

earning higher wages than their immigrant counterparts. Employment rates for low-skilled immigrants are consistently higher than employment rates for low-skilled natives.

3.2 Empirical Strategy

We begin by using a parsimonious difference-in-difference model:

$$E_{st} = \alpha + \beta MW_{st} + \theta_s + \tau_t + \varepsilon_{st} \quad (1)$$

where E_{st} measures the natural log of the average wage rate, average hours of work, and employment-to-population ratio of low-skilled immigrants in state *s* in year *t*, MW_{st} is the natural log of the higher of the state or Federal real minimum wage (in 2016 dollars), θ_s is a time-invariant state effect, and τ_t is a state-invariant year effect. The key parameter of interest, β, is the elasticity of wages/hours/employment with respect to the minimum wage. Identification of β comes from within-state variation in binding minimum wages. Over the 1994 to 2005 period, the period examined by Orrenius and Zavodny (2008), 39 states changed their minimum wages 120 times. Between 2006 and 2016, there were a total of 210 state minimum wage increases, which we leverage as an additional source of identifying variation.

Given evidence that minimum wage increases may be implemented pro-cyclically, we add business cycle controls to the right hand-side of equation (1):

$$E_{st} = \alpha + \beta MW_{st} + \mathbf{X}'_{st}\boldsymbol{\delta} + \theta_s + \tau_t + \varepsilon_{st} \quad (2)$$

where $\mathbf{X}_{st}$ includes the natural log of per capita real gross state product, initial unemployment insurance claims, and the real value of privately-owned residential construction permits, the identical business cycle controls used by Orrenius and Zavodny (2008). We also test the sensitivity of estimates to the inclusion of additional business cycle controls commonly employed in the literature: the prime-age (ages 25-to-54) male unemployment rate and the

prime-age wage rate, both for more highly educated (high school degree or greater) natives (Sabia 2015). The means of these control variables are shown in Appendix Table 1.

Next, we add a set of immigration reform policies, $\mathbf{Z}_{st}$, as additional controls to disentangle the effects of minimum wages from contemporaneously implemented immigration reform policies:

$$E_{st} = \alpha + \beta MW_{st} + \mathbf{X}'_{st}\boldsymbol{\delta} + \mathbf{Z}'_{st}\boldsymbol{\lambda} + \theta_s + \tau_t + \varepsilon_{st} \quad (3)$$

where $\mathbf{Z}_{st}$ includes (i) the fraction of the year the state has mandated any use of E-Verify by public or private employers, (ii) the portion of the state's population covered by the Secure Communities, (iii) an indicator for whether the state had adopted an Omnibus Immigration Law (OIL), (iv) the fraction of the state's population covered by a 287(g) agreement, (v) an indicator variable for whether an unauthorized immigrants to receive can receive in-state college tuition, and (vi) an indicator for whether the state allows undocumented individuals to acquire a driver's license. Each of these measures was collected from the National Conference of State Legislatures and U.S. Immigration and Customs Enforcement.[10,11]

An important concern with estimating the impact of state minimum wage changes on immigrant wellbeing is endogenous mobility of immigrants. Thus, we follow add an additional set of controls measuring the share of (i) low-skilled Hispanic immigrants, (ii) low-skilled non-Hispanic immigrants, and (iii) low-skilled natives residing in the state in each year ($\mathbf{M}_{st}$) to

[10] Information on OILs, E-Verify, Tuition, and Licenses is available from the National Conference on State Legislatures at the following link: http://www.ncsl.org/research/immigration.aspx. Information on Secure Communities was collected from ICE's list of activated jurisdictions. Note that the Secure Community program ended in 2014 and was replaced with the Priority Enforcement Program (PEP). The latter program prioritized the deportation of violent criminals. We treat PEP as an extension of Secure Communities, though our results are robust to differentiating between the two. Finally, information on the 287(g) program is available at the ICE website which lists participating entities: https://www.ice.gov/factsheets/287g#wcm-survey-target-id.

[11] Data are assembled at the county level by month. We collapse down into annual state level observations by weighting the respective county-data by the percent of the state population residing in a particular county at that point in time. E-Verify mandates, OILs, tuition benefits, and access to a driver's license are all state level policies. 287(g) agreements and Secure Communities are county specific.

account for immigrant and native mobility that may be occurring concurrently with minimum wage increases:

$$E_{st} = \alpha + \beta MW_{st} + \mathbf{X}'_{st}\boldsymbol{\delta} + \mathbf{Z}'_{st}\boldsymbol{\lambda} + \mathbf{M}'_{st}\boldsymbol{\phi} + \theta_s + \tau_t + \varepsilon_{st} . \quad (4)$$

We explore heterogeneity in the impacts of minimum wages across the 1994-2005 and 2006-2016 periods; this latter era characterized by substantial changes in composition of the immigrant population, as legal low-skilled immigration stagnated and the unauthorized immigrant population experienced an absolute decline (Hanson et al. 2017). We also interact the minimum wage with E-verify and state macroeconomic conditions to explore heterogeneity in impacts across policy regimes and economic health. Finally, we extend our analysis to the ASEC to estimate the effects of minimum wage increases on household income and poverty.

3.3 Parallel Trends Assumption

As noted above, there is much controversy in the literature as to whether the difference-in-difference approaches outlined above will generate an unbiased estimate of β. Allegretto et al. (2011) and Dube (2013) argue for including state-specific linear time trends to capture spatial heterogeneity. However, Neumark et al. (2014a,b) argue that the inclusion of state-specific linear time trends may "throw the baby out with the bathwater" in terms of credible identifying variation, arguing that the inclusion of state-specific time trends as additional controls on the right hand side of equation (2) actually conflates minimum wage effects with the business cycle such that minimum wages appear more benign than they actually are in reducing employment.

Recent studies by Sabia (2014) and Sabia and Nguyen (2016) find that the Dube- and Allegretto-preferred specification fails a number of falsification tests.[12]

We take a number of tacks to explore the sensitivity of results to unmeasured spatial heterogeneity. First, we examine the sensitivity of estimated employment elasticities to controls for state-specific linear time trends (Allegretto et al. 2011) and state-specific time trends of higher-order polynomial functional form (Neumark et al. 2014a,b). Second, we use the post-least absolute shrinkage and selection operator (LASSO) method developed by Belloni et al. (2014), a "data-driven" approach that chooses the set of right-hand side controls based on their importance in predicting low-skilled immigrant employment or state minimum wages. Allegretto et al. (2015) recommend this strategy to obtain an unbiased estimate of the effect of minimum wage increases while not reducing the amount of credible identifying variation. In the context of this study, the potential pool of controls includes all state-level controls, as well as state-specific linear and higher-order polynomial trends.[13] Third, we examine leads of minimum wages to ensure that low-skilled employment does not trend differently prior to the adoption of minimum wage changes (Sabia et al. 2016). And fourth, we conduct falsification tests on more highly educated individuals for whom minimum wages are less likely to bind.

4. Results

[12] These authors find that specifications that include state-specific linear time trends would suggest that higher minimum wages reduce poverty and means-tested public participation among single adult households without any workers.

[13] We also experimented with the alternate identification approach of Clemens and Wither (2016), who use Federal minimum wage changes to identify minimum wage effects, using differences in state minimum wage levels at the time of the Federal change to generate identifying variation. Results from this approach generated imprecisely estimated employment effects. However, Clemens and Wither (2016) use panel data and exploit differences in initial wage levels among low-skilled workers to generate further heterogeneity in bindingness of the minimum wage.

Our main results are shown in Tables 2 through 9. All regressions are weighted by the relevant state population (from the CPS surveys) and standard errors are corrected for clustering on the state.

4.1 Earnings, Employment, and Hours Effects

We begin by examining the 1994 to 2005 period, the precise window examined by Orrenius and Zavodny. In the column (1), we show estimates of β from equation (1) for less-skilled immigrants. We find that a 10 percent increase in the minimum wage is associated with a 2.5 percent increase in their hourly earnings (row 1). However, there is no evidence of adverse labor demand effects, either on the extensive margins in (rows 2 and 3) or on the intensive margin (row 4). These findings are consistent with Orrenius and Zavodny (2008). Estimates of β from equation (1) show little difference whether the ORG (row 2) or BMD (row 3) is used.

In column (2), we include the business cycle controls used by Orrenius and Zavodny. Relative to column (1), the estimated wage elasticity falls by approximately 25 percent to 0.18 and the estimated employment elasticities in both the ORG and BMD rise sharply (in absolute magnitude). This pattern of results is consistent with the hypothesis that minimum wage increases are enacted pro-cyclically, a result that has been identified in the prior literature (Sabia 2014).[14] While imprecisely estimated, the magnitude of the employment effect is approximately 33 percent larger in the BMD relative to the ORG, and approaches -0.1. We find no evidence that minimum wage increases affect hours of work among those who remain employed.

[14] Note that our estimated employment effect using the ORG (row 2) is slightly larger than that reported in OZ (-0.060, Table 3, column 2, p. 553), which may be explained, in part, by updated/corrected state GDP data, which occurs quite frequently (Broda and Tate 2014).

In the remaining columns, we test the sensitivity of the baseline specification to additional economic controls (column 3), controls for immigration policies (column 4), and endogenous immigrant mobility (column 5). First, we augment the set of business cycle controls with the prime-age male unemployment rate and prime-age male wage rate for more highly educated natives (Burkhauser et al. 2000; Sabia 2009). The magnitude of the estimated employment elasticity remains largely unchanged, though the precision improves such that the BMD estimate is now statistically significant.

In column (4), we find controlling for state immigration policies does not alter the earnings estimate, though the estimated employment elasticity rises (in absolute magnitude) to -0.124 in the ORG (row 2) and to -0.141 in the BMD (row 3). An analysis of the immigration policy changes enacted during this period suggests that the adoption of the 287(g) agreements in California and in-state tuition policies are the primary policy changes that drive the increase in the absolute magnitude of the employment effect.[15]

Finally, in column (5), we add controls for the share low-skilled Hispanic immigrants, low-skilled non-Hispanic immigrants, and low-skilled native individuals in the state population to account for endogenous mobility of immigrants. The findings continue to show that minimum wage increases reduce employment of low-skilled immigrants.[16] Together the findings in Table

[15] From 1994 to 2005, 8 states enacted legislation providing in-state tuition to unauthorized individuals: CA, IL, KS, NM, NY, TX, UT, and WA. Over this same time period, 2 states (NM and WA) enacted legislation providing driver's licenses to unauthorized immigrants. Moreover, several counties—the most notable being L.A. county in California—began entering into 287(g) agreements with ICE. Appendix Table 2 shows coefficient estimates on these policies.

[16] Consistent with OZ, we also find evidence that immigrant mobility decision may be affected by minimum wage policy, which underscores the importance of controlling for the share of low-skilled immigrants and natives in the state. The results shown in Appendix Table 3 indicate that minimum wage increases are associated with declines in the share of the state population who are low-skilled and foreign born and a modest increase (in some specifications) for low-skilled natives.

2 provide stronger evidence for minimum wage-induced adverse employment effects than found by prior authors.

In Table 3, we examine whether there are differential effects across low-skilled immigrant groups of heterogeneous ethnicity and/or country of origin.[17] For example, Lofstrom et al. (2011) and Amuedo-Dorantes et al. (2015) use country of origin and education measures as proxies for likely undocumented status. Our results suggest that the employment effects found in Table 2 are driven by the low-skilled Hispanic (Panel I) and, more specifically, Mexican (Panel II) immigrants, rather than low-skilled non-Hispanic immigrants (Panel III). This may suggest that less educated Hispanic immigrants are, on average, of lower skill than their less educated non-Hispanic immigrant counterparts.

Next, in Table 4, we expand the analysis period by a decade (1994-2016) and include the full set of controls employed in column (5) of Table 2.[18] We continue to find evidence that low-skilled Hispanic and Mexican immigrants experience earnings gains and employment losses as a result of minimum wage increases. For low-skilled Mexican immigrants (column 2), we find that a 10 percent increase in the minimum wage is associated with a 1.65 percent increase in hourly wages and a 1.1 percent decline in employment, statistically distinguishable from zero at the 5 and 1 percent levels, respectively.[19] Interestingly, the magnitudes of these estimates are somewhat smaller than for the 1994-2005 period, suggesting a reduced bindingness of the minimum wage over time(see *Section 4.3* below). The effects are also more precisely estimated.

[17] During the period under study, the unauthorized immigrant population was growing by 510,000 individuals per year and accounted for two-thirds of the low-skilled immigrant population (Borjas 2016; Passel and Cohn 2016). While the CPS does not explicitly identify unauthorized immigrants, much of the immigration enforcement literature uses ethnicity and country of origin to proxy for legal status (Lofstrom et al. 2011; Amuedo-Dorantes et al. 2015), though we acknowledge that this demographic data cut may also capture skill-level.

[18] Results using the four specifications in Table 3 are shown in Appendix Table 4.

[19] As noted above, we consider whether the state has mandated the use of E-Verify for any employers (public, private, or contractors) and utilize the implementation date of the law. When we restrict attention to only those mandates which apply to private employers, we find a similar pattern of results.

In column (3) of Table 4 we estimate effects for non-Hispanic immigrants and find no evidence that these individuals, or low-skilled natives (column 4), experience wage gains or suffer adverse employment effects from minimum wage increases. Moreover, when we compare employment findings for low-skilled Mexican immigrants to teenagers (column 5), the population most commonly explored in the US minimum wage literature, we find that while wage effects are largely similar, estimated employment elasticities are three to four times larger for Mexican immigrants than teens. [20]

4.2 Sensitivity Tests

In Tables 5 and 6, we conduct a series of sensitivity tests of the estimated employment effects we obtain using the BMD. In order to determine if employment prospects were differentially trending in states enacting minimum wage increase, Panel I of Table 5 explores the sensitivity of our estimates to controls for leads (two years) of the minimum wage. The results show little evidence that low-skilled employment was trending differently prior to minimum wage changes, consistent with a causal interpretation of our results. Thereafter, the groups affected by minimum wage increases in Table 3 experienced contemporaneous employment reductions of -0.1.

In Panel II, we explore whether the employment results are sensitive to the inclusion of controls for state-specific time trends. While the estimated employment effects are smaller with the inclusion of linear time trends, we continue to find evidence that minimum wage increases are associated with a statistically significant decline in employment of low-skilled Mexican immigrants. Moreover, higher-order polynomial trends continue to point to negative employment

[20] In Appendix Table 5, we explore the robustness of our estimates to controls for employment shocks to the construction, agriculture, and manufacturing sectors. Our findings are robust to the inclusion of these controls.

effects of higher minimum wages for Hispanic immigrants and those of Mexican origin (columns 1 and 2). This pattern of results is consistent with Neumark et al. (2014a), who show that controlling for higher-order state-specific time trends generates employment elasticities that are less likely to be confounded by the state business cycle.

In Panel III, we follow the approach of Allegretto et al. (2015) and apply a double-selection post-least absolute shrinkage and selection operator (LASSO) estimation strategy. As noted above, this approach uses a regression approach to select only those factors that are significant predictors of either the outcome (employment) or treatment of interest (minimum wage) from a pool of potential control variables. In our case, these controls will include the full set of right-hand side variables, including state-specific time trends (including higher-order polynomial trends). A traditional two-way fixed effects regression specification (of the form shown in column 1 of Table 2) is then complemented with the subset of variables that are selected as the most important predictors. This approach offers the advantage of reducing model dimensionality and preserving identifying variation. However, this approach eschews theoretical considerations for the inclusion of appropriate controls. Results from this post-LASSO estimation continue to show evidence of earnings gains for low-skilled Hispanic and Mexican immigrants. For these subsets, we also find evidence of adverse employment effects of higher minimum wages, with estimated employment elasticities remaining approximately -0.1. Consistent with our previous estimates, we do not find any wage gains for low-skilled non-Hispanic immigrants or natives.

In Table 6, we conduct falsification tests on more highly-educated (completed high school or attended college) and more highly experienced (ages 55-to-64) immigrants and

natives.[21] We find no evidence that higher minimum wages are associated with changes in employment of these groups, nor do we find evidence that effects for highly educated immigrants vary by ethnic status. Since we posit that differential results for subgroups of the low-skilled immigrant population are driven by differences in the fractions comprised of unauthorized immigrants, we would not expect to find a similar pattern for those with higher levels of education. Overall, estimated employment elasticities are generally small and statistically insignificant, consistent with the hypothesis that the estimated minimum wage effects we uncover for low-skilled immigrants are not contaminated by state-specific shocks that affect both low- and high-skilled immigrants.

4.3 Heterogeneity in Minimum Wage Effects Over Time and Policy Regimes

The evidence presented in the prior tables indicates that minimum wage increases induce modest adverse employment effects for low-skilled immigrants of Hispanic background and Mexican origin, but that the effect may be declining over the latter time period, which includes the Great Recession and the adoption of restrictive immigration policies such as E-verify. We next test whether the employment effects of minimum wages differ over the state business cycle (Table 7, Panel I) or immigration policy environment (Table 7, Panel II). In Panel I, we interact the minimum wage with indicators of the prime-age native male state unemployment rate. In particular, we examine three phases of the state business cycle constructed from the distribution of the prime-age male unemployment rate: *expansionary* periods (lower 50th percentile), *weakly recessionary* periods (50th to 75th percentile), and *recessionary periods* (upper 75rd percentile).[22]

[21] For this specification, we omit controls for the native prime-age male unemployment rate and the native prime-age wage rate, as these controls are constructed from data on these higher educated individuals.
[22] This corresponds to prime-age male unemployment rates for more highly educated natives of less than 3.38 percent, between 3.38 and 4.9 percent, and greater than 4.9 percent.

Previous results indicate that minimum wage increases have larger adverse employment effects during relative downturns in the state business cycle (Addison et al. 2008; Sabia 2015), a pattern reflected in the results for native teens (column 5). In contrast to teens, we find that low-skilled Mexican immigrants experience the strongest adverse employment effects during economic expansions.[23] This may be explained by outmigration of the least skilled immigrants or by their shifting into the informal sector (where the minimum wage is less likely to bind) during slack labor market conditions.

Next, we explore whether minimum wages have heterogeneous effects in different immigration policy environments. In Panel II of Table 7 we focus on the E-Verify mandate, given its direct impact on immigrants' employment.[24] We find that E-Verify is negatively related to the employment of low-skilled Mexican immigrants, consistent with prior work (Amuedo-Dorantes and Bansak 2014; Orrenius and Zavodny 2015), and also consistent with an important fraction of this group being comprised of unauthorized individuals. Moreover, we find that E-Verify is associated with increases in employment for low-skilled natives. This result suggests that the marginal low-skilled native may serve as a substitute for a likely unauthorized immigrant who moves into the informal sector (or out of the state labor force).

Turning to the interaction of E-verify with the minimum wage, we find that an E-Verify mandate dramatically reduces the minimum wage's adverse employment effects for low-skilled Mexican immigrants. This finding is consistent with E-Verify inducing some Hispanic immigrants into informal work (Bohn and Lofstrom 2013; Amuedo-Dorantes and Bansak 2014), where the minimum wage is less likely to bind. E-Verify could also incentivize the least skilled Mexican immigrants to exit the state labor force (Bohn, Lofstrom, and Raphael 2014; Amuedo-

[23] Alternative cutoffs to the state business cycle produce a similar pattern of results.
[24] Appendix Table 6 shows the interacted effects of each state immigration policy with the minimum wage/

Dorantes and Bansak 2014; Orrenius and Zavodny 2015), resulting in a smaller minimum wage impact for the individuals who remain.

Given the findings in Table 7, we might also expect that the impact of minimum wages on low-skilled immigrants has dissipated in the time since the OZ study. In Table 8, we consider minimum wage effects for the 2006-2016 period. For low-skilled Hispanic immigrants, we find that the magnitude of the estimated wage elasticity with respect to the minimum wage declines by almost an order of magnitude (see Panel I, column 4 of Table 3 vs column 1 of Table 8), and is not statistically different from zero. Moreover, the adverse employment for low-skilled Hispanic immigrants falls by over 50 percent. This result suggests that the composition of low-skilled Hispanic immigrants has changed over time such that the minimum wage is much less binding (for both positive earnings and negative employment) effects. This may be due to outmigration, shifts into the informal sector due to changes in macroeconomic conditions, or immigration policies such as E-verify. The largest positive wage and negative employment effects remain for Mexican immigrants, though these estimates remain statistically indistinguishable from zero. We also find that the adverse labor demand effects of minimum wages are much smaller and, if they exist at all, appear to be concentrated on the intensive margin over the latter period..

4.3 Poverty

Finally, for the first time in this literature, we examine poverty, a broader measure of economic well-being. We measure poverty using the household as the resource sharing unit and examine the impact of minimum wages on household poverty rates using different household-size specific household income cutoffs. Panel I of Table 9 shows estimates from equation (2)

using our four measures of poverty rates (measured for individuals): whether household income falls below 100 percent (row 1), 150 percent (row 2), or 200 percent (row 3) of the Federal Poverty Threshold, as well as the continuous household income-to-needs ratio (row 4). In Panel II, we repeat the exercise using the post-LASSO technique described above.

Our results provide little evidence that minimum wage increases are associated with reductions in poverty for immigrants. In fact, estimated poverty elasticities with respect to the minimum wage are uniformly *positive* for immigrants. There is only weak evidence of redistributive effects of the minimum wage, as we do find that minimum wage increases are associated with a decline in the probability that low-skilled natives live in households with incomes over 150 percent of the Federal poverty threshold. These results are likely explained by adverse labor demand effects of higher minimum wages as well as poor target efficiency of minimum wage increases to the working poor.

5. Conclusions

Advocates of comprehensive immigration reform argue that minimum wage increases could lead to greater integration into the formal labor market, and prior studies suggest that the employment effects of minimum wages for low-skilled immigrants are close to zero. Our results provide evidence that minimum wage increases are associated with an increase in earnings but also a decline in the employment-to-population ratio of low-skilled immigrants of Hispanic ethnicity and Mexican origin during the 1994 to 2016 period. We estimate an employment elasticity with respect to the minimum wage of approximately -0.1, a finding which is robust to controls for policy leads, state-specific time trends, and endogenous immigrant mobility. They also persist after using a double selection post-LASSO approach and survive falsification tests.

However, our results also suggest that minimum wage increases have had little effect on low-skilled immigrants' economic well-being in the post-2005 period. This may be explained by the Great Recession changing the composition of low-skilled immigrants in the US, as well as the enactment of more restrictive state immigration policies. For example, we find some evidence that minimum wage-induced adverse employment effects are smaller when E-Verify, a policy designed to directly affect employment opportunities for immigrants, is enacted. This result is consistent with E-Verify inducing more informal work, where minimum wages have smaller effects. Moreover, during economic recessions, the adverse employment effects of minimum wages are also muted, consistent with an increase in informal work or outmigration of the least skilled. Finally, our findings provide little support for the claim that minimum wage increases alleviate poverty or increase household income among low-skilled immigrants, in part due to adverse employment effects.

Finally, from a policy perspective, job loss among immigrants may not be viewed entirely negatively by the Trump Administration. President Trump, in fact, signaled support for a $10 per hour Federal minimum wage during his presidential campaign (CNN 2016) and 2016 Republican Senatorial candidate, Ron Unz from California was particularly candid in expressing his reasons for supporting higher state minimum wage:

> "The automatic rejoinder to proposals for hiking the minimum wage is that "jobs will be lost." But in today's America a huge fraction of jobs at or near the minimum wage are held by immigrants, often illegal ones. Eliminating those jobs is a central goal of the plan, a feature not a bug."

Thus, in contrast to being a "perfect complement" to comprehensive immigration reform (Economic Policy Institute 2014), higher minimum wages may, in fact, serve the policy goals of anti-immigration policymakers.

References

Addison, John T., McKinley L. Blackburn, and Chad D. Cotti. 2013. Minimum wage increases in a recessionary environment. *Labour Economics* 23(4): 30-39.

Allegretto, Sylvia A., Arindrajit Dube, and Michael Reich. 2011. Do minimum wages really reduce teen employment? Accounting for heterogeneity and selectivity in state panel data. *Industrial Relations* 50(2): 205-40.

Allegretto, Sylvia, Arindrajit Dube, Michael Reich, and Ben Zipperer. 2015. Credible research designs for minimum wage studies: a response to Neumark, Salas, and Wascher. *IZA Discussion Paper* 7638.

Amuedo-Dorantes, and Catalina, Cynthia Bansak. 2014. Employment verification mandates and the labor market of likely unauthorized and native workers. *Contemporary Economic Policy* 32(3): 671-80.

Belloni, Alexandre, Victor Chernozhukov, and Christian Hansen. 2014. High-dimensional methods and inference on structural and treatment effects. *Journal of Economic Perspectives* 28(2): 29-50.

Boffy-Ramirez, Ernest. 2013. Minimum wages, earnings, and migration. *IZA Journal of Migration* 2(17).

Bohn, Sarah and Magnus Lofstrom. 2013. Employment effects of state legislation. In Immigration, poverty, and socioeconomic inequality, edited by David Card and Steven Raphael. New York: Russell Sage Foundation, 282–314.

Bohn, Sarah, Magnus Lofstrom, and Steven Raphael. 2014. Did the 2007 Legal Arizona Workers Act reduce the state's unauthorized immigrant population? *The Review of Economics and Statistics* 96(2): 258-69.

Rev Econ Stat. 2014;96:258–69.

Bollinger, Christopher R. and Barry T. Hirsch. 2006. Match bias from earnings imputation in the current population survey: They case of imperfect matching. *Journal of Labor Economics* 24(3): 483-519.

Borjas, George J. 2001. Does immigration grease the wheels of the labor market? Brookings Paper on Economic Activity 1: 69-133.

Borjas, George J. 2015. The slowdown in the economic assimilation of immigrants: aging and cohort effects revisited again. *Journal of Human* 9(4): 483-517.

Broda, John E., and Robert P. Tate. 2014. Comprehensive revision of gross domestic product by state: advance statistics for 2013 and revised statistics for 1997-2012. Bureau of

Economic Analysis. Accessed at http://www.bea.gov/scb/pdf/2014/07%20July/0714_gdp_by_%20state.pdf (November 2016).

Bureau of Labor Statistics. 2006. Foreign- born workers: labor force characteristics in 2005. Accessed at http://www.bls.gov/news.release/archives/forbrn_04142006.pdf (October 2016).

Bureau of Labor Statistics. 2016. Labor force characteristics of foreign-born workers summary. Accessed at http://www.bls.gov/news.release/forbrn.htm (October 2016).

Burkhauser, Richard V., and Joseph J. Saba. 2007. The effectiveness of minimum wage increases in reducing poverty: past, present, and future. *Contemporary Economic Policy* 25(2): 262-81.

Burkhasuer, Richard V., Kenneth A. Couch, and David C. Wittenburg. 2000a. A reassessment of the new economics of the minimum wage literature using monthly data from the CPS. *Journal of Labor Economics* 18(4): 653-80.

Burkhasuer, Richard V., Kenneth A. Couch, and David C. Wittenburg. 2000b. Who minimum wage increases bite: an analysis using monthly data from the SIPP and CPS. *Southern Economic Journal* 67(1): 16-40.

Cadena, Brian C. 2014. Recent immigrants as labor market arbitrageurs: evidence from the minimum wage. *Journal of Labor Economics* 80: 1-12

Cadena, Brian C., and Brian K. Kovak. 2014.Immigrants equilibrate local labor markets: evidence from the Great Recession. *American Economic Joural: Applied Economics* 8(1): 257-90.

Camarota, Steven A. 2015. Welfare use by legal and illegal immigrant households. Center for Immigration Studies. Accessed at http://cis.org/Welfare-Use-Legal-Illegal-Immigrant-Households (October 2016).

Capps, Randy, Marc R. Rosenblum, Cristina Rodríguez, and Muzaffar Chishti. 2011. Delegation and divergence: a study of 287(g) state and local immigration enforcement. Migration Policy Institute.

Card, David and Alan B. Krueger. 1995. Time-series minimum-wage studies: A meta-analysis. *American Economic Review* 85(2): 238-43.

Clemens, Jeffrey and Michael Wither. 2016. The minimum wage and the Great Recession: Evidence of effects on the employment and income trajectories of low-skilled workers. NBER 21830.

Clinton, Hillary R. 2016. Raising the minimum wage to combat poverty. Campaign site on the issues. Accessed at https://www.hillaryclinton.com/issues/poverty/ (October 2016)

CNN. 2016. Donald Trump says he'd support $10 minimum wage. Accessed at http://www.cnn.com /2016/07/27/politics/donald-trump-minimum-wage/ (February 2017)

Colby, Sandra L., and Jennifer M. Ortman. 2015. Projections of the size and composition of the U.S. population: 2014 to 2060. *Current Population Reports: Population Estimates and Projections.*

Dube, Arindrajit T. 2013. Minimum wages and the distribution of family incomes. IZA Discussion paper 10572.

Dube, Arindrajit T., William Lester, and Michael Reich. 2010. Minimum wage effects across state borders: estimates using contiguous counties. *Review of Economics and Statistics* 92(4): 946-64.

Ehrlich, Isaac, and Jinyoung Kim. 2015. Immigration, human capital formation, and endogeneous economic growth. *Journal of Human Capital* 9(4): 518-563.

Fiscal Policy Institute. 2016. $15 minimum wage would raise earnings for 1.1 million immigrants: gains to immigrants, U.S.-born workers, and small businesses. Accessed at http://fiscalpolicy.org/wp-content/uploads/2016/03/15-minimum-wage-and-Immigrants-Brief.pdf (October 2016).

Giulietti, Corrado. Is the minimum wage a pull factor for immigrants? *Industrial & Labor Relations Review* 67(3): 649-74.

Hanson, Gordon H. 2006. Illegal migration from Mexico to the United States. *Journal of Economic Literature* 44(4): 869-924.

Hanson, Gordon H., Chen Liu, and Craig McIntosh. 2017. The rise and fall of U.S. low-skilled immigration. *Brookings Papers on Economic Activity* Spring 2017

Hoffman, Saul D. 2016. Are the effects of minimum wage increases always small? A reanalysis of Sabia, Burkhauser, and Hansen. *Industrial & Labor Relations Review* 69(2): 295-311.

Jaeger, David A. 2007. Green cards and the location choices of immigrants in the United States, 1971-2000. *Research in Labor Economics* 27: 131-83.

Justich, Robert, and Betty Ng. 2005. The underground labor force is rising to the surface. Bear Stearns. Accessed at http://www.steinreport.com/BearStearnsStudy.pdf (October 2016).

Kochhar, Rakesh, C. Soledad Espinoza, and Rebecca Hinze-Pifer. 2010. Earnings of native-born and foreign-born workers. Pew Hispanic Center.

Krogstad, Jens Manuel, Jeffrey S. Passel, and D'Vera Cohn. 2016. 5 facts about illegal immigration in the US. Pew Hispanic Center. Accessed at http://www.pewresearch.

org/fact-tank/2016/ 11/03/5-facts-about-illegal-immigration-in-the-u-s/ (November 2016)

Lazar, Wendi S. 2015. Undocumented immigrant workers: enforcing rights. *The New York Law Journal* 254(82)

Lofstrom, Mangus, Sarah Bohn, and Steven Raphael. 2011. Lessons from the 2007 Legal Arizona Workers Act. Public Policy Institute of California.

Meer, Jonathan and Jeremy West. 2016. Effects of the minimum wage on employment dynamics. *Journal of Human Resources* 51(2): 500-22.

Migration Policy Institute. 2016. Unauthorized immigrant population profiles. Accessed at http://www.migrationpolicy.org/programs/us-immigration-policy-program-data-hub/unauthorized-immigrant-population-profiles (October 2016)

Miles, Thomas J., and Adam B. Cox. 2014. Does immigration enforcement reduce crime? Evidence from Secure Communities. *Journal of Law and Economics* 57(5): 937-973

National Employment Law Project. 2003. Undocumented workers: preserving rights and remedies after Hoffman Plastic Compounds v. NLRB. Accessed at http://www.nelp.org/content/uploads/2015/03/wlghoff040303.pdf (February 2017)

Neumark, David, and William Wascher. 2002. Do minimum wages fight poverty? *Economic Inquiry* 40(3): 315-33

Neumark, David, and William Wascher. 2008. Minimum wages and low-wage workers: how well does reality match the rhetoric? *Minnesota Law Review* 92(5): 1296-316.

Neumark, David, J.M. Ian Salas, and William Wascher. 2014a. Revisiting the minimum wage-employment debate: throwing out the baby with the bathwater? *Industrial & Labor Relations Review* 67(3): 608-48.

Neumark, David, J.M. Ian Salas, and William Wascher. 2014b. More on recent evidence on the effects of minimum wages in the United States. *IZA Journal of Labor Policy* 3-24.

Orrenius, Pia M., and Madeline Zavodny. 2008. The effect of minimum wages on immigrants. *Industrial & Labor Relations Review* 61(4): 544-63.

Orrenius, Pia M., and Madeline Zavodny. 2011. The minimum wage and Latino workers. *Latinos and the Economy: Integratino and Impact in Schools, Labor Markets, and Beyond.*

Orrenius, Pia M., and Madeline Zavodny. 2015. The impact of e-verify mandates on labor market outcomes. *Southern Economic Journal* 81(4): 947-59.

Orrenius, Pia M., and Madeline Zavodny. 2016. Do state work eligibility verification laws reduce unauthorized immigration? *IZA Journal of Migration* 5(5).

Passel, Jeffrey S., and D'Vera Cohn. 2010. U.S. unauthorized immigration flows are down sharply since mid-decade. Pew Hispanic Center.

Passel, Jeffrey S., and D'Vera Cohn. 2015. Share of unauthorized immigrant workers in production, construction jobs fell since 2007. Pew Hispanic Center.

Passel, Jeffrey S., D'Vera Cohn, and Ana Gonzalez-Barrera. 2013. Population decline of unauthorized immigrations stalls, may have reversed. Pew Hispanic Center.

Sabia, Joseph J. 2008. Minimum wages and the economic well-being of single mothers. *Journal of Policy Analysis and Management* 27(4): 848-66.

Sabia, Joseph J. 2009. Identifying minimum wage effects in state panels: evidence from the current population survey. *Industrial Relations* 48(2): 311-28.

Sabia, Joseph J. 2014a. Minimum wages: an antiquated and ineffective antipoverty tool. *Journal of Policy Analysis and Management* 33(4): 1028-36.

Sabia, Joseph J. 2014b Minimum wages: no features, all bugs. *Journal of Policy Analysis and Management* 33(4): 1043-46.

Sabia, Joseph J. 2014c. The effect of minimum wages over the business cycle. *Journal of Labor Research* 35(3): 227-45.

Sabia, Joseph J. 2015. Minimum wages and gross domestic product. *Contemporary Economic Policy* 33(4): 587-605.

Sabia, Joseph J., and Richard V. Burkhauser. 2010. Minimum wages and poverty: will a $9.50 federal minimum wage really help the working poor?. *Southern Economic Journal* 76(3): 592-623

Sabia, Joseph J., Richard V. Burkhauser, and Benjamin Hansen. 2016. When good measurement goes wrong: new evidence that New York State's minimum wage reduced employment. *Industrial & Labor Relations Review* 69(2): 312-319.

Sanders, Bernie. 2016. Raising the minimum wage to combat poverty. Campaign site on the issues. Accessed at https://berniesanders.com/issues/a-living-wage/ (October 2016).

Stumpf, Juliet P. 2012. Getting to work: Why nobody cares about E-Verify (And why they should). *UC Irvine Law Review* 2: 381-414.

Unz, Ron. 2011. Immigration, the Republicans, and the end of white America. *The American*

Conservative. Accessed at http://www.theamericanconservative.com/articles/immigration-republicans-and-the-end-of-white-america-singlepage/ (October 2016).

United States Citizenship and Immigration Services. 2016. What is e-verify? Accessed at https://www.uscis.gov/e-verify/what-e-verify (October 2016).

Zong, Jie, and Jeanne Batalova. 2016. Frequently requested statistics on immigrants and immigration in the United States. Migration Policy Institute. Accessed at http://www.migrationpolicy.org/article/frequently-requested-statistics-immigrants-and-immigration-united-states (October 2016).

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Table 1. Means of Dependent Variables for Individuals Ages 20-to-54 without HS Degree, CPS

	Wages (2016$)	Hours	Employment-ORG	Employment-BMD	< 100% Poverty	< 150% Poverty	< 200% Poverty	HH INR
	Panel I: 1994-2005							
Low-Skilled Immigrants	11.99 (1.12)	39.66 (1.14)	0.679 (0.058)	0.679 (0.054)	0.253 (0.088)	0.447 (0.109)	0.609 (0.115)	1.969 (0.393)
Low-Skilled Hispanic Immigrants	11.83 (1.08)	39.58 (1.14)	0.687 (0.058)	0.688 (0.053)	0.261 (0.092)	0.466 (0.112)	0.637 (0.113)	1.873 (0.357)
Low-Skilled Mexican Immigrants	11.84 (1.20)	39.80 (1.36)	0.681 (0.058)	0.682 (0.051)	0.275 (0.099)	0.490 (0.111)	0.661 (0.111)	1.799 (0.330)
Low-Skilled Non-Hispanic Immigrants	12.95 (2.09)	40.08 (2.75)	0.638 (0.115)	0.637 (0.107)	0.217 (0.135)	0.356 (0.155)	0.479 (0.162)	2.420 (0.787)
Low-Skilled Natives	13.86 (1.51)	39.27 (1.11)	0.576 (0.066)	0.577 (0.065)	0.225 (0.069)	0.364 (0.081)	0.487 (0.085)	2.355 (0.374)
Teens	9.40 (0.75)	24.71 (1.98)	0.423 (0.083)	0.429 (0.083)	0.118 (0.049)	0.205 (0.067)	0.298 (0.081)	3.744 (0.575)
	Panel II: 1994-2016							
Low-Skilled Immigrants	12.13 (1.08)	39.20 (1.32)	0.683 (0.054)	0.682 (0.051)	0.255 (0.087)	0.445 (0.108)	0.602 (0.111)	1.969 (0.385)
Low-Skilled Hispanic Immigrants	12.01 (1.08)	39.15 (1.32)	0.693 (0.055)	0.692 (0.050)	0.259 (0.089)	0.458 (0.110)	0.621 (0.113)	1.901 (0.370)
Low-Skilled Mexican Immigrants	12.03 (1.17)	39.79 (1.39)	0.685 (0.061)	0.685 (0.051)	0.273 (0.094)	0.484 (0.110)	0.646 (0.110)	1.822 (0.347)
Low-Skilled Non-Hispanic Immigrants	13.01 (2.20)	39.49 (2.96)	0.631 (0.112)	0.629 (0.103)	0.235 (0.152)	0.378 (0.174)	0.502 (0.175)	2.333 (0.760)
Low-Skilled Natives	13.83 (1.54)	38.90 (1.35)	0.544 (0.077)	0.545 (0.075)	0.233 (0.069)	0.372 (0.083)	0.310 (0.081)	2.327 (0.395)
Teens	9.41 (0.77)	24.11 (2.16)	0.359 (0.104)	0.366 (0.102)	0.124 (0.048)	0.215 (0.067)	0.328 (0.082)	3.788 (0.589)

Sources: Current Population Survey Basic Monthly Data (BMD), Outgoing Ration Groups (ORG), and Annual Social & Economic Supplement (ASEC), 1994-2016.

Table 2. Estimated Effect of Minimum Wage Increases on Low-Skilled Immigrants' Earnings and Employment, 1994-2005

	(1)	(2)	(3)	(4)	(5)
Wages	0.250***	0.182**	-0.188**	0.219**	0.333***
	(0.070)	(0.081)	(0.082)	(0.093)	(0.100)
Employment (MORG)	0.014	-0.077	-0.078	-0.124*	-0.127*
	(0.052)	(0.060)	(0.060)	(0.069)	(0.069)
Employment (BMD)	-0.023	-0.103	-0.104*	-0.141*	-0.141*
	(0.060)	(0.063)	(0.061)	(0.071)	(0.077)
Hours	-0.001	-0.014	-0.014	0.003	-0.005
	(0.022)	(0.027)	(0.027)	(0.028)	(0.033)
State and Year FE?	X	X	X	X	X
OZ Economic Controls?		X	X	X	X
Additional Economic Controls?			X	X	X
Immigration Policies?				X	X
Immigrant/Native Population Shares?					X

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Outgoing Rotation Group (ORG) and Basic Monthly Data (BMD), 1994-2005

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. OZ economic controls include real gross state product per capita, the real value of permits issued for privately owned residential construction, and the number of initial unemployment claims. Additional economic controls add on the prime-age wage rate, and the prime-age unemployment rate. Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 612, representing the 50 states and District of Columbia for the period 1994 to 2005.

Table 3. Heterogeneous Effects of Minimum Wages on Immigrants, by Ethnicity and Country of Origin, 1994-2005

	(1)	(2)	(3)	(4)
	Panel I: Low-Skilled Hispanic Immigrants			
Wages	0.223***	0.235***	0.301***	0.349***
	(0.062)	(0.062)	(0.086)	(0.094)
Employment (MORG)	-0.094	-0.098	-0.167**	-0.146
	(0.064)	(0.065)	(0.082)	(0.092)
Employment (BMD)	-0.110	-0.114	-0.163*	-0.144
	(0.070)	(0.070)	(0.089)	(0.101)
Hours	-0.014	-0.013	-0.006	-0.010
	(0.032)	(0.032)	(0.030)	(0.030)
	Panel II: Low-Skilled Mexican Immigrants			
Wages	0.174**	0.191**	0.319***	0.375***
	(0.081)	(0.077)	(0.095)	(0.114)
Employment (MORG)	-0.090*	-0.087	-0.164**	-0.106
	(0.049)	(0.054)	(0.061)	(0.067)
Employment (BMD)	-0.083*	-0.083*	-0.123**	-0.052
	(0.048)	(0.044)	(0.058)	(0.065)
Hours	0.020	0.021	0.036	-0.000
	(0.038)	(0.037)	(0.032)	(0.044)
	Panel III: Low-Skilled Non-Hispanic Immigrants			
Wages	0.182	0.134	0.177	0.350**
	(0.189)	(0.173)	(0.157)	(0.153)
Employment (MORG)	-0.006	-0.006	-0.023	0.000
	(0.127)	(0.126)	(0.118)	(0.114)
Employment (BMD)	-0.032	-0.040	-0.064	-0.051
	(0.115)	(0.120)	(0.109)	(0.112)
Hours	0.014	0.011	0.059	0.070
	(0.061)	(0.059)	(0.064)	(0.070)
State and Year FE?	X	X	X	X
OZ Economic Controls?	X	X	X	X
Additional Economic Controls?		X	X	X
Immigration Policies?			X	X
Immigrant/Native Population Shares?				X

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Outgoing Rotation Group (ORG) and Basic Monthly Data (BMD), 1994-2016
Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. OZ economic controls include real gross state product per capita, the real value of permits issued for privately owned residential construction, and the number of initial unemployment claims. Additional economic controls add on the prime-age wage rate, and the prime-age unemployment rate. Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression of Panel I is a maximum of 612, representing the 50 states and District of Columbia for the period 1994 to 2005. The number of observations in each regression of Panel II is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Table 4. Estimated Effects of Minimum Wage Increases on Low-Skilled Immigrants' Earnings and Employment, 1994-2016

	Low-Skilled Hispanic Immigrants	Low-Skilled Mexican Immigrants	Low-Skilled Non-Hispanic Immigrants	Low-Skilled Natives	Teens
	(1)	(2)	(3)	(4)	(5)
Wages	0.113**	0.165**	-0.153	-0.040	0.183***
	(0.051)	(0.062)	(0.144)	(0.053)	(0.036)
Employment – ORG	-0.087*	-0.110**	-0.068	-0.015	-0.023
	(0.045)	(0.052)	(0.092)	(0.066)	(0.107)
Employment – BMD	-0.089**	-0.111***	-0.022	0.025	-0.033
	(0.036)	(0.033)	(0.097)	(0.065)	(0.089)
Hours	-0.007	0.003	0.051	-0.014	-0.039
	(0.029)	(0.043)	(0.054)	(0.022)	(0.040)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Outgoing Rotation Group (ORG) and Basic Monthly Data (BMD), 1994-2016.

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. All columns use controls employed in column 5 of Table 2 (real value of permits issued for privately owned residential construction, the number of initial unemployment claims, real state product per capita the prime-age wage rate, and the prime-age unemployment rate, immigration policies, and population shares). Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Table 5. Examining Sensitivity of Estimated Employment Effects to Policy Leads, State-specific Time Trends, and Falsification Tests, 1994-2016, Basic Monthly Data

	(1)	(2)	(3)	(4)	(5)
	Low-Skilled Hispanic Immigrants	Low-Skilled Mexican Immigrants	Low-Skilled Non-Hispanic Immigrants	Low-Skilled Natives	Teens
	Panel I: Policy Leads				
Minimum Wage$_{st-2}$	-0.036 (0.039)	-0.063 (0.069)	0.036 (0.121)	-0.006 (0.055)	-0.108 (0.084)
Minimum Wage$_{st-1}$	0.005 (0.058)	0.021 (0.083)	0.031 (0.129)	0.027 (0.042)	-0.007 (0.061)
Minimum Wage$_{st}$	-0.102* (0.060)	-0.098* (0.057)	-0.065 (0.112)	0.032 (0.064)	0.023 (0.103)
	Panel II: Add Controls for State-Specific Time Trends				
State Linear Time Trends	-0.078 (0.049)	-0.078* (0.046)	0.002 (0.104)	0.025 (0.065)	-0.007 (0.076)
State 2nd order polynomial trends	-0.083* (0.045)	-0.081 (0.055)	-0.143 (0.140)	0.031 (0.077)	0.018 (0.071)
State 3rd order polynomial trends	-0.142*** (0.048)	-0.120** (0.053)	-0.119 (0.156)	0.053 (0.095)	0.017 (0.076)
State 4th order polynomial trends	-0.091 (0.068)	-0.076 (0.083)	-0.181 (0.219)	0.058 (0.093)	-0.047 (0.093)
State 5th order polynomial trends	-0.117* (0.068)	-0.106 (0.080)	-0.285 (0.205)	0.036 (0.092)	-0.023 (0.117)
	Panel III: Double Selection Post-LASSO				
Wage Effect	0.091* (0.048)	0.133** (0.048)	-0.059 (0.128)	-0.011 (0.056)	0.181*** (0.031)
Employment Effect	-0.083* (0.047)	-0.090** (0.038)	0.016 (0.113)	0.003 (0.061)	-0.045 (0.090)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Basic Monthly Data (BMD), 1994-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. All columns use controls employed in column 5 of Table 2 (real value of permits issued for privately owned residential construction, the number of initial unemployment claims, real state product per capita the prime-age wage rate, and the prime-age unemployment rate, immigration policies, and population shares). Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Table 6. Falsification Tests on More Highly Educated Individuals, Basic Monthly Data, 1994-2016

	(1)	(2)	(3)	(4)
	Highly Educated Hispanic Immigrants	Highly Educated Mexican Immigrants	Highly Educated Non-Hispanic Immigrants	Highly Educated Natives
25-to-54 year-olds with ≥ HS Diploma	0.001 (0.037)	-0.037 (0.046)	-0.019 (0.025)	0.007 (0.009)
25-to-54 year-old with ≥ Some College	0.032 (0.040)	0.016 (0.074)	-0.020 (0.019)	-0.004 (0.008)
55-to-64 year-olds with ≥ HS Diploma	-0.051 (0.120)	-0.147 (0.185)	0.004 (0.071)	0.013 (0.017)
55-to-64 year-old with ≥Some College	-0.129 (0.168)	-0.232 (0.229)	-0.010 (0.056)	-0.003 (0.019)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Basic Monthly Data (BMD), 1994-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions and include the full set of controls in column (5) of Table 2. However, the prime-age unemployment and prime-age wage rate are excluded, since they were created from the groups being examined here. Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Table 7. Heterogeneity in Employment Effects of Minimum Wages, by State Business Cycle and State Immigration Policy, 1994-2016, Basic Monthly Data

	(1)	(2)	(3)	(4)	(5)
	Low-Skilled Hispanic Immigrants	Low-Skilled Mexican Immigrants	Low-Skilled Non-Hispanic Immigrants	Low-Skilled Natives	Teens
	Panel I: State Business Cycle on Employment				
Minimum $Wage_{st}$	-0.069 (0.046)	-0.124** (0.050)	-0.045 (0.092)	0.028 (0.078)	0.041 (0.085)
Minimum $Wage_{st}$* *Weak Expansion*	-0.053 (0.038)	-0.060 (0.040)	-0.091 (0.098)	-0.000 (0.042)	-0.127** (0.060)
Minimum $Wage_{st}$* *Recessionary*	-0.002 (0.070)	0.122** (0.052)	0.290* (0.153)	0.049 (0.077)	-0.171** (0.084)
	Panel II: E-Verify on Employment				
Minimum $Wage_{st}$	-0.098*** (0.036)	-0.122*** (0.035)	-0.015 (0.098)	0.045 (0.066)	-0.031 (0.092)
E-Verify	-0.377 (0.261)	-0.550* (0.301)	0.214 (0.746)	0.715* (0.369)	0.042 (0.389)
Minimum $Wage_{st}$* *E-Verify*	0.190 (0.130)	0.277* (0.148)	-0.137 (0.371)	-0.352* (0.183)	-0.030 (0.190)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Basic Monthly Data (BMD), 1994-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. All columns use controls employed in column 5 of Table 2 (real value of permits issued for privately owned residential construction, the number of initial unemployment claims, real state product per capita the prime-age wage rate, and the prime-age unemployment rate, immigration policies, and population shares). Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Table 8. Estimated Effect of Minimum Wage Increases on Low-Skilled Immigrants' Earnings and Employment, 2006-2016

	Low-Skilled Hispanic Immigrants	*Low-Skilled Mexican Immigrants*	*Low-Skilled Non-Hispanic Immigrants*	*Low-Skilled Native*	*Teen*
	(1)	(2)	(3)	(4)	(5)
Wages	0.037 (0.072)	0.156 (0.094)	-0.558*** (0.113)	0.215** (0.083)	0.165** (0.060)
Employment	-0.067 (0.079)	-0.062 (0.101)	0.094 (0.164)	0.059 (0.109)	0.055 (0.092)
Hours	-0.013 (0.040)	0.272 (0.386)	0.056 (0.080)	0.020 (0.030)	-0.089 (0.070)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Outgoing Rotation Group (ORG) and Basic Monthly Data (BMD), 2006-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. All columns use controls employed in column 5 of Table 2 (real value of permits issued for privately owned residential construction, the number of initial unemployment claims, real state product per capita the prime-age wage rate, and the prime-age unemployment rate, immigration policies, and population shares). Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 561, representing the 50 states and District of Columbia for the period 2006 to 2016. Employment regressions are estimated using the Basic Monthly Data.

Table 9. Effect of Minimum Wage Increases on Poverty of Low-Skilled Immigrants and Natives, Annual Social & Economic Supplement, 1994-2016

	(1)	(2)	(3)	(4)	(5)
	Low-Skilled Hispanic Immigrants	Low-Skilled Mexican Immigrants	Low-Skilled Non-Hispanic Immigrants	Low-Skilled Natives	Teens
	Panel I: Baseline Difference-in-Difference				
HH Income < 100% of Federal Poverty Line	0.015 (0.355)	0.252 (0.451)	0.362 (0.353)	-0.141 (0.215)	0.013 (0.202)
HH Income < 150% of Federal Poverty Line	0.105 (0.201)	0.223 (0.214)	0.420 (0.299)	-0.260* (0.136)	0.002 (0.158)
HH Income < 200% of Federal Poverty Line	0.077 (0.170)	0.227 (0.176)	0.383* (0.220)	-0.217* (0.110)	0.042 (0.107)
HH Income-to-Needs Ratio	-0.106 (0.220)	-0.279 (0.282)	-0.079 (0.483)	0.478** (0.223)	0.111 (0.243)
	Panel II: Double Selection Post-LASSO				
HH Income < 100% of Federal Poverty Line	0.154 (0.292)	0.343 (0.354)	0.332 (1.172)	-0.268 (0.202)	0.037 (0.160)
HH Income < 150% of Federal Poverty Line	-0.223 (0.337)	0.126 (0.137)	0.460 (0.836)	-0.310** (0.124)	0.099 (0.141)
HH Income < 200% of Federal Poverty Line	-0.154 (0.195)	0.154 (0.157)	0.507 (0.718)	-0.257*** (0.095)	0.175 (0.114)
HH Income-to-Needs Ratio	-0.271 (0.249)	-0.326 (0.273)	0.052 (0.321)	0.559** (0.253)	-0.056 (0.246)

***Significant at 1% level **at 5% level *at 10% level

Sources: Annual Social & Economic Supplement (ASEC), March CPS, 1994-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. All columns use controls employed in column 5 of Table 2 (real value of permits issued for privately owned residential construction, the number of initial unemployment claims, real state product per capita the prime-age wage rate, and the prime-age unemployment rate, immigration policies, and population shares). Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Appendix Table 1. Means of Control Variables, 1994-2016

Minimum Wage in 2016 $	7.48 (0.73)
Prime Age Male Unemployment Rate for ≥ HS	0.042 (0.017)
Prime Age Wage Rate for ≥ HS in 2016 $	25.79 (3.13)
Real Permit Value for Construction in 2016 $	4,508,196 (6,130,154)
Real State Gross Product Per Capita in 2016 $	52,205.47 (19,349.98)
First-Time Unemployment Insurance Claims	361,699.80 (472,453.80)
Tuition Benefits	0.156 (0.363)
Driver's License	0.061 (0.238)
287 g	0.016 (0.064)
Omnibus Immigration Law	0.030 (0.167)
Secure Communities	0.246 (0.413)
E-Verify	0.126 (0.328)
Strict Immigration Index	2.199 (0.792)
Share of Low-Skilled Hispanic Immigrants	0.017 (0.019)
Share of Low-Skilled Non-Hispanic Immigrants	0.004 (0.005)
Share of Low-Skilled Natives	0.054 (0.023)

Appendix Table 2. Immigration Policies and the Impact of Minimum Wages on Low-Skilled Immigrant Employment, 1994-2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Minimum Wage	-0.104*	-0.124*	-0.110*	-0.104*	-0.140*	-0.125*	-0.111*	-0.141*
	(0.061)	(0.066)	(0.064)	(0.062)	(0.071)	(0.066)	(0.064)	(0.071)
In State Tuition?		0.013			0.016	0.013		0.016
		(0.013)			(0.014)	(0.013)		(0.014)
Fraction Covered by 287(g)?			-0.039		-0.070		-0.040	-0.072
			(0.079)		(0.086)		(0.079)	(0.086)
License?				-0.018*		-0.020**	-0.020*	-0.022**
				(0.010)		(0.010)	(0.011)	(0.010)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Basic Monthly Data (BMD), 1994-2005

Notes: Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects, as well OZ economic controls (real gross state product per capita, the real value of permits issued for privately owned residential construction, and the number of initial unemployment claims) and additional business cycle controls (prime-age unemployment rate and the prime-age wage rate). Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 612, representing the 50 states and District of Columbia for the period 1994 to 2005.

Appendix Table 3. Effect of Minimum Wages on Share of Population Who Are Low-Skilled Immigrants and Natives, 1994-2016

	(1)	(2)	(3)	(4)	(5)
	Baseline	State Linear Time Trends	State 3rd-Order Polynomial Trends	State 4th-Order Polynomial Trends	Post-LASSO
Low-Skilled Hispanic Immigrants	-0.031*** (0.008)	-0.012* (0.007)	-0.003 (0.005)	0.002 (0.006)	-0.019*** (0.005)
Low-Skilled Mexican Immigrants	-0.033*** (0.007)	-0.016** (0.007)	-0.006 (0.006)	-0.007 (0.007)	-0.020*** (0.005)
Low-Skilled Non-Hispanic Immigrants	-0.007** (0.003)	-0.004* (0.002)	-0.005** (0.002)	-0.005** (0.002)	-0.003 (0.002)
Low-Skilled Natives	0.023*** (0.007)	-0.001 (0.004)	-0.004 (0.004)	-0.001 (0.004)	0.019** (0.007)
Teens	0.012*** (0.004)	0.007* (0.004)	0.008* (0.005)	0.010* (0.006)	0.008** (0.003)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Basic Monthly Data (BMD), 1994-2016

Notes: Dependent variable is the share of the population defined in the far-left column. All models include state and year fixed effects, business cycle controls (OZ+Alternative), and state immigration policies. Estimates shown above are minimum wage impacts obtained via weighted least squares regressions. Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Appendix Table 4. Heterogeneous Effects of Minimum Wages Across Immigrant Groups, 1994-2016

	(1)	(2)	(3)	(4)
	Panel I: Low Skilled Hispanic Immigrants			
Wages	0.149**	0.141**	0.156***	0.112**
	(0.063)	(0.059)	(0.055)	(0.051)
Employment (MORG)	-0.050	-0.063	-0.081*	-0.087*
	(0.040)	(0.039)	(0.042)	(0.045)
Employment (BMD)	-0.053	-0.069**	-0.091**	-0.089**
	(0.034)	(0.032)	(0.036)	(0.036)
Hours	-0.010	-0.014	-0.017	-0.007
	(0.030)	(0.029)	(0.030)	(0.029)
	Panel II: Low-Skilled Mexican Immigrants			
Wages	0.186**	0.173**	0.206***	0.163**
	(0.082)	(0.073)	(0.063)	(0.062)
Employment (MORG)	-0.105**	-0.103**	-0.152***	-0.110**
	(0.046)	(0.045)	(0.044)	(0.052)
Employment (BMD)	-0.080***	-0.098***	-0.128***	-0.111***
	(0.027)	(0.025)	(0.029)	(0.033)
Hours	0.020	0.018	0.025	0.003
	(0.042)	(0.040)	(0.035)	(0.043)
	Panel II: Low-Skilled Non-Hispanic Immigrants			
Wages	-0.096	-0.115	-0.173	-0.156
	(0.141)	(0.137)	(0.142)	(0.143)
Employment (MORG)	-0.039	-0.037	-0.050	-0.068
	(0.099)	(0.102)	(0.094)	(0.092)
Employment (BMD)	-0.018	-0.015	-0.004	-0.022
	(0.100)	(0.101)	(0.093)	(0.097)
Hours	0.022	0.020	0.037	0.051
	(0.052)	(0.054)	(0.053)	(0.054)
State and Year FE?	X	X	X	X
OZ Economic Controls?	X	X	X	X
Additional Economic Controls?		X	X	X
Immigration Policies?			X	X
Immigrant/Native Population Shares?				X

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Outgoing Rotation Group (ORG) and Basic Monthly Data (BMD), 1994-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. OZ economic controls include real gross state product per capita, the real value of permits issued for privately owned residential construction, and the number of initial unemployment claims. Additional economic controls add on the prime-age wage rate, and the prime-age unemployment rate. Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression of Panel I is a maximum of 612, representing the 50 states and District of Columbia for the period 1994 to 2005. The number of observations in each regression of Panel II is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Appendix Table 5. Robustness of Results for Low-Skilled Immigrants to the Inclusion of Controls for Low-Skilled Industry (Agriculture, Manufacturing, Construction) Employment Shocks

	1994-2016			
	(1)	(2)	(3)	(4)
Wages	0.099 (0.068)	0.092 (0.069)	0.114** (0.056)	0.093* (0.054)
Employment (MORG)	-0.047 (0.032)	-0.056* (0.031)	-0.072* (0.037)	-0.087** (0.043)
Employment (BMD)	-0.049 (0.033)	-0.059* (0.031)	-0.079** (0.036)	-0.086** (0.041)
Hours	-0.001 (0.028)	-0.005 (0.027)	-0.009 (0.028)	0.002 (0.028)
OZ BC Controls?	X	X	X	X
Immigration Policies?		X	X	X
Additional BC Controls?			X	X
Immigrant/Native Population Shares?				X

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Outgoing Rotation Group (ORG) and Basic Monthly Data (BMD), 1994-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. Additional BC controls add the prime-age wage rate, the prime-age employment rate, and the shares of the state population employed in construction, manufacturing, and agriculture sectors. Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.

Appendix Table 6. Heterogeneity in Employment Effects of Minimum Wages, by State Immigration Policy, 1994-2016, Basic Monthly Data

	(1)	(2)	(3)	(4)
	Low-Skilled Hispanic Immigrants	Low-Skilled Mexican Immigrants	Low-Skilled Non-Hispanic Immigrants	Low-Skilled Natives
Minimum $Wage_{st}$	-0.117**	-0.187***	-0.083	-0.004
	(0.046)	(0.068)	(0.101)	(0.066)
287(g)	0.460	-0.083	-1.180	-0.404
	(0.538)	(0.383)	(2.072)	(0.750)
Minimum $Wage_{st}$* *287(g)*	-0.252	-0.003	0.665	0.175
	(0.256)	(0.181)	(0.962)	(0.352)
Secure Communities	0.008	0.109	-0.128	0.395
	(0.165)	(0.178)	(0.391)	(0.315)
Minimum $Wage_{st}$* *Secure Communities*	-0.001	-0.033	0.051	-0.201
	(0.076)	(0.082)	(0.188)	(0.147)
Tuition	-0.066	-0.159	-0.187	-0.366***
	(0.113)	(0.140)	(0.212)	(0.106)
Minimum $Wage_{st}$* *Tuition*	0.037	0.083	0.098	0.199***
	(0.056)	(0.069)	(0.101)	(0.053)
License	-0.087	-0.151	-0.756	0.260
	(0.166)	(0.185)	(0.494)	(0.315)
Minimum $Wage_{st}$* *License*	0.036	0.069	0.371	-0.125
	(0.079)	(0.084)	(0.235)	(0.151)
OIL	0.450	0.731	2.878*	0.113
	(0.511)	(0.566)	(1.656)	(1.178)
Minimum $Wage_{st}$* *OIL*	-0.228	-0.366	-1.430*	-0.055
	(0.251)	(0.276)	(0.813)	(0.582)
E-Verify	-0.452*	-0.676*	0.220	0.515
	(0.264)	(0.337)	(0.750)	(0.439)
Minimum $Wage_{st}$* *E-Verify*	0.227*	0.340**	-0.134	-0.254
	(0.131)	(0.166)	(0.371)	(0.215)

***Significant at 1% level **at 5% level *at 10% level

Sources: Current Population Survey Basic Monthly Data (BMD), 1994-2016

Notes: Coefficient estimates reported in the table can be interpreted as elasticities. Estimates are obtained via weighted least squares regressions. All models include state and year fixed effects. All columns use controls employed in column 5 of Table 2 (real value of permits issued for privately owned residential construction, the number of initial unemployment claims, real state product per capita the prime-age wage rate, and the prime-age unemployment rate, immigration policies, and population shares). Standard errors corrected for clustering on the state are shown in parentheses. The number of observations in each regression is a maximum of 1173, representing the 50 states and District of Columbia for the period 1994 to 2016.