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Felipe A. Dias and Joseph Chance

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COVID-19, Public Charge Rules, and Immigrant Employment in the United States^{*}

Felipe A. Dias[†] Joseph Chance[‡]

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Abstract

This article examines the impact of the COVID-19 pandemic on immigrant employment in the United States using data from the Current Population Survey. It also provides the first evidence about the impact of the new public charge rules on the employment behavior of immigrants during the post-outbreak recovery. The authors find that among immigrants with household earnings at levels that make them susceptible to inadmissibility under the new rules, noncitizen status is associated with a 3.7% increase in employment among immigrant men. This effect is robust to inclusion of controls for socioeconomic characteristics and various fixed effects, and it is concentrated for men in states with below average unemployment benefit take-up. Findings also show that the differential employment effect is stronger in state-months with higher COVID-19 rates, suggesting that impacted workers may be increasing their workplace exposure to COVID-19.

JEL Classification: J2, J6

Keywords: Labor supply, COVID-19, Public Charge Rule, Immigration, Employment

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Please direct correspondence to Felipe Dias, Tufts University, Department of Sociology, Eaton Hall, Room 115, Medford, MA 02155. Email: felipe.dias@tufts.edu.

[†] Tufts University, Department of Sociology

[‡] Tufts University, The Fletcher School

Introduction

In this article we use data drawn from the Current Population Survey to examine the impact of the COVID-19 pandemic on the economic behavior of immigrants in the United States. A growing body of research shows significant impacts on U.S. workers: the pandemic has led to a loss of aggregate real labor earnings due to declines in employment, in particular among low-skilled workers (Cortes and Forsythe 2020); a decline in the labor supply of women (Amuedo-Dorantes et al. 2020; Dang and Nguyen 2020); and a broadening of the gaps in employment between fathers and mothers and between fathers and non-parents (Dias et al. 2020). The pandemic has also widened the racial and ethnic gaps in employment, as Black and Hispanic workers have become even more likely to face unemployment compared to whites in the post-outbreak period (Couch et al. 2020). As we move into a recovery period, however, little is known about how the pandemic has affected immigrant employment in the United States.

Prior research has shown that the economic disruption associated with the initial shock of the pandemic eliminated immigrant men's pre-outbreak employment advantage compared to U.S.-born men (Borjas and Cassidy 2020). Our analysis departs from the existing research in several regards. First, by focusing on the recovery period, we provide first evidence of differential rebounding in the labor supply of immigrants and U.S.-born workers. Then, to explain the patterns, we consider a mechanism that links new changes to the public charge rules and immigrant labor supply behavior during the recovery period.

We expand our analysis by examining the potential chilling effect of public charge rule revisions on noncitizen immigrants' rates of public benefits, using data drawn from the Annual Social and Economic Supplement (ASEC) of the Current Population Survey. Generally, public

charge rules determine visa issuance or permission to enter the country based on immigrants' employment, economic resources, and use of public benefits. Considering that a robust research literature reports that changes in the eligibility criteria to access public benefits after the enactment of the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) were associated with a decrease in public benefits use among noncitizens (Borjas 2002; Fix, Capps, and Kaushal 2009; Fix and Passel 1999), we expect more recent changes to the public charge rule will have further depressed immigrants' public benefits use during the COVID-19 pandemic. The avoidance of public benefits use may have incentivized noncitizens to seek out employment at higher rates than citizens, even if it meant putting noncitizens at higher risk of COVID-19 transmission.

New Changes to the Public Charge Rules

In October 2018, the Trump administration published a proposed rule altering public charge determinations and, by August 2019, the Department of Homeland Security (DHS) had published a final set of guidelines regarding the public charge rule. Multiple lawsuits and preliminary injunctions blocked the implementation of the new rules. Appeals reached the U.S. Supreme Court, which lifted two nationwide injunctions on January 27, 2020. The U.S. Citizenship and Immigration Services (USCIS) began implementing and enforcing the new rules on February 24, 2020 (Congressional Research Service 2020).

Prior to the implementation of the new rule, immigration officials used the definition of a “public charge to describe a person who has been dependent on the government for more than half of his or her income” (Haq et al. 2020). Under the new rule, the DHS defines public charge as “an alien who receives one or more public benefits for more than 12 months, in total, within

any 36-month period” (USCIS 2020a).¹ The eligibility criteria for receiving benefits did not change. Rather, the new rule expanded the types of benefits. The four benefits that were previously considered (Supplemental Security Income, Temporary Assistance for Needy Families, state assistance, and long-care benefits) were joined by five additional benefit categories: federal, state, and local cash benefit for income maintenance, non-emergency Medicaid, nutrition assistance, Section 8 housing assistance, and subsidized public housing.

Importantly, the new rules added several requirements that may *directly* impact the noncitizen labor supply, namely the ability to demonstrate current employment, recent employment history, or a reasonable prospect of future employment, and the ability to secure private health insurance.² These two factors may be particularly difficult to achieve during the COVID-19 outbreak, as labor demand has decreased significantly. The new rule also added heavily weighed positive factors in favor of a finding that an alien is not likely to become a public charge, such as household income and assets of at least 250 percent of the Federal Poverty Guidelines and having private health insurance (USCIS 2020a).

Naturalized and U.S.-born citizens are, of course, not subject to deportation or inadmissibility rules, and so the changes to the public charge rules are unlikely to impact their labor supply decisions. (Still, in some instances, legal permanent residents may be subject to the public charge ground of inadmissibility, such as if they are considered applicants for admission at a port of entry) (USCIS 2020b). Among noncitizens, those most affected by the revision of public charge

¹ Receipt of two benefits in one month counts as two months.

² Nearly half of the total U.S. population (49 percent) receive health employer-sponsored health insurance (The Kaiser Family Foundation, 2019).

rules of inadmissibility are immigrants seeking or holding lawful permanent resident status (LPR) based on a family relationship.

Analyzing data from the December 2018 Well-Being and Basic Needs Survey, the Urban Institute found a strong “chilling effect,” in which immigrant families who were aware of the proposed changes to public charge determination in October 2018 reported planning to avoid accessing non-cash government benefits. Among respondents who had heard “a lot” about the proposed rules, 31.1 percent of families reported such avoidance (or plans to begin avoiding), as they feared risking their legal permanent residency should the rules be implemented (Bernstein et al. 2019).

In other words, even before their implementation, the revisions to the U.S. public charge rules appeared ready to substantially impact the public benefit use of noncitizen immigrants— with enactment, such immigrants risk becoming inadmissible to the United States if they use public benefits.

Taken together, we predict that the new public charge rules will have a dual effect on noncitizen labor in the United States: the requirements to prove employment and private health insurance will incentivize the noncitizen labor supply during the recovery period, while at the same time discouraging noncitizens from utilizing much-needed public benefits. Lower-wage noncitizens are effectively bound by these rule changes, which force them to verify employment, pay for private health insurance, and try to survive without the support of public benefits to fill the gaps—or risk the consequences of deportation.

Data

Our analysis relies on the CPS Basic Monthly files, downloaded from the Integrated Public Use Microdata Series (IPUMS) (Flood et al. 2020). As in Borjas and Cassidy (2020), we perform all regressions using data for a subsample of individuals (those aged 18-64 who are not enrolled in school and not members of the armed forces). Our main outcome indicator variable for employment takes the value of 1 for an individual if that individual reports being “at work” in the past week. This measure excludes individuals classified as “has job, not at work last week,” following pandemic-era guidance from the Bureau of Labor Statistics on account of the unusual circumstances (BLS 2020).

Data on welfare use comes from the 2019 and 2020 Annual Social and Economic Supplement; data on vacancy postings come from Burning Glass; foreign-born shares by occupation come from the Census Bureau’s 2018 American Community Survey’s estimates; and unemployment claims data come from the Department of Labor Employment & Training Administration’s Characteristics of the Unemployment Insurance Claimants.

Labor Market Recovery from COVID-19 Shock by Immigrant Status

Figure 1 illustrates employment rates by gender and nativity over the period spanning November 2018 to October 2020. In the immediate aftermath of the onset of the COVID-19 pandemic in the United States, the employment rate for immigrant men, typically around 6 percentage points higher than that of native-born men, fell 8 percentage points, landing it 2 percentage points below the employment rate of native-born men. The employment rate for both dropped between February and April 2020 (21 points for immigrant men, but just 12 for their

citizen counterparts), then began rebounding in divergent ways: since the April 2020 employment trough, immigrant men's employment rate has risen 17 percentage points compared to 9 percentage points for native men. In terms of percent growth, immigrant men's employment rate grew 26% between April and October, outstripping the citizen rate by a factor of two.

[Figure 1 about here]

When we turn to the data on women, we start with typical employment rates: immigrant women in the United States typically have an employment rate lower than that of native women (averaging 61.3% and 69.2% in 2019, respectively). Scholars generally attribute the coupling of lower rates of employment among female immigrants and higher rates of employment among male immigrants to differences in gendered cultural norms. For instance, immigrants may bring with them dominant cultural beliefs about masculinity and breadwinner roles, whereby women are perceived as nurturers and caretakers, expected to prioritize family over paid work (Guttman 2007). Indeed, Blau (2015) found considerable evidence that traditional gender roles that exist in sending countries explain the labor supply of immigrant women in the United States. This tendency may be exacerbated by the unusual circumstances of the pandemic: traditional gender roles may become more salient in the context of school closures, for example, forcing immigrant women to shoulder a greater share of childcare responsibilities at home, while immigrant men seek out employment (in part to avoid the consequences of a public charge determination). Perhaps because these gendered effects are at least partially shared by dominant U.S. culture, female workers' declines in employment rates from February to April 2020 were more similar across immigrant status than men's: immigrant women's employment rate fell by 18 percentage points in this shock period, native-born women's fell by 14. The subsequent recovery saw

immigrant women’s employment rate rising 12 percentage points and native women’s 10. The gap in the employment rate between immigrant and native women grew slightly in the months following the COVID-19 shock.

To specify the difference in employment attributable to differences of nativity, we again follow Borjas and Cassidy (2020), pooling the April through October CPS Basic Monthly files to estimate the following OLS regression:

$$y_{it} = \mu_t + \iota_{it} + \beta x_{it} + u_{it} \tag{1}$$

where y_{it} is the employment status of individual i in month t ; μ_t is a vector of month fixed effects; ι_{it} is a vector of interactions between month fixed effects and an indicator variable for the individual’s status as an immigrant; and x_{it} is a vector of demographic and socioeconomic characteristics. The coefficient vector μ can be interpreted as the change in employment status of natives in month t relative to the employment trough in April 2020, and the coefficient vector ι can be interpreted as the difference in employment between immigrants and natives for a given month.

Table 1 reports the coefficient vectors from regressions estimated in the pooled April through October 2020 samples. The dependent variable in both columns is an indicator of whether the person i worked in the reference week of the CPS survey of month t . The first and third columns do not include control variables or fixed effects; the coefficient estimates are the differences in employment rates in the raw data. Columns 1 and 2 provide estimates for the regression over the sample of men. Compared to the baseline month of April, native men’s employment rate grew steadily, rising 9 percentage points by October. The month-by-immigrant interaction terms indicate that immigrant men were employed at a rate 2 percentage points below

native men in April, similar in May, and then held an employment advantage over native men that grew by 7.7 percentage points by September and October.

[Table 1 about here]

Column 2 of Table 1 provides the same estimates after including control variables and fixed effects. The control variables include educational attainment, age, age squared, the number of children in the individual's household, an indicator for nonwhite race, and an indicator for Hispanic ethnicity. The fixed effects include state, modal occupation for the individual across their appearances in the CPS, modal industry for the individual across their appearances in the CPS, and a cohort effect accounting for fixed effects attributable to the individual's first appearance in the CPS. The inclusion of these covariates does not substantially change the results from the first column. Native men's employment grew slightly faster over time, ending up 10 percentage points higher in October compared to the employment trough in April. The employment gap between immigrant and native men still grew by around 7.5 percentage points between April and October, though the gap starts lower and ends lower, with covariates from - 3.9 percentage points to 3.6 percentage points.

Columns 3 and 4 in Table 1 report the same coefficients estimated for the sample of only women. Native women's employment rates recovered from April lows in ways that paralleled, but were slower than, native men's (native women's employment rose by 2.6 percentage points from April through July, such that, in October, their employment rate was 10.2 and 9.9 percentage points higher than immigrant women's, with and without covariates, respectively). The employment gap between immigrant and native women is almost entirely explained by the inclusion of controls and fixed effects, and, with and without covariates, immigrant women's

employment rate catches up to native women by 2.1 percentage points (with covariates) or 2.6 percentage points (without covariates) between April and October. The interaction coefficient estimates for July and August indicated disproportionate growth in immigrant women's employment rate, but that was not sustained in September and October. Immigrant men's sustained employment advantage in the recovery is much clearer than that of immigrant women.

Employment Recovery within the Immigrant Workforce

To explore possible mechanisms for the faster employment growth among immigrant men, we investigate possible increases to labor demand or labor supply that would differentially affect the immigrant population. On the demand side, we compare changes in vacancy postings from Burning Glass by occupation between April and September 2020 with a historical average of each occupation's foreign-born share. For the supply side, we consider the potential impact of policies that incentivize work among the immigrant population—changes to public charge rules aimed at tightening requirements and more easily triggering the deportation immigrant workers.

Table 2 provides the number of job vacancy postings by occupation group from Burning Glass in the months of April and October 2020, as well as the foreign-born share of each occupation group (from the ACS) over the years 2014 to 2018. The correlation between an occupation group's percent growth in number of vacancies between April and October 2020 and its share foreign-born is -0.16, indicating that occupations with greater historical shares of immigrant workers saw less growth in vacancy postings over the recovery. The correlations of foreign-born occupation share and vacancy growth since April 2020 are provided in Appendix Table A1 and show that this correlation was negative throughout the April to October recovery period. The sum of the occupation groups' vacancy growth weighted by the occupation foreign-

born share yields an expected growth in demand of immigrant employment of 113,119 vacancies, or 13.0% of total vacancies, lower than if the total number of vacancies were weighted by the total historical immigrant share of workers (13.9%, yielding an expected increase of 120,827 vacancies for foreign-born workers). This negative correlation, coupled with lower expected vacancies for immigrants based on occupational vacancy growth, indicate that employers' overall changes in labor demand via vacancy postings by occupation over the recovery would not lead to differentially higher employment demand for immigrant workers.

[Table 2 about here]

We next discuss labor supply. The changes to the public charge rule incentivize green card applicants to seek employment at a higher rate change through four channels. Public charge rulings involve considering, first, employment (on its own, employment would likely weigh against determination of a public charge ruling); second, earnings (employment may place the applicant's annual household earnings above the threshold of 250% of the Federal Poverty Guidelines for the individual's household size, which would weigh against a public charge determination in a green card application, while earnings below this threshold weigh in favor of a public charge determination); third, benefits access (which may drop as earnings from employment may mitigate the impact of foregone social services and subsidy recipience, such as food stamps or housing assistance, which are penalized in the new rules); fourth, insurance status, with employer-provided private health insurance weighing particularly heavily against a public charge determination.

Although not all noncitizens are green card applicants, all applicants impacted by the new rules are noncitizens. Therefore, we compare immigrant employment by citizenship status in

Figure 2. Immigrant employment rates were comparable across citizenship status in 2019. Noncitizen employment grew more quickly than naturalized immigrant employment in the recovery from the initial COVID-19 shock. On average, through 2019, noncitizen immigrant men had an employment rate 1.5 percentage points higher than citizen immigrant men. The COVID-19 shock led both employment rates to fall precipitously, such that both rates were roughly 65% in April 2020. The unanticipated and historically high layoff rates in March and April 2020 are likely to have eradicated any pre-rule employment differences associated with anticipation of the rule change that would impact employment in the post-rule period.

In the recovery, however, employment growth among immigrant men was driven higher by noncitizens, whose employment rate rose to 83.7% in October 2020 (compared to 79.4% for citizen immigrant men). Noncitizen immigrant women have historically had a much lower employment rate than naturalized women, and the COVID-19 shock and subsequent initial recovery did little to change that difference. The employment rate of noncitizen women was 11.3 percentage points lower than citizen immigrant women, on average, in 2019. That gap slightly grew to 14.5 percentage points in June 2020 and return back to 11.8 percentage points by October 2020. These patterns in the raw data suggest that, at least among men, the immigrants who may be impacted by the new public charge rules are more likely to have differentially increased employment rates after the rules went into effect.

[Figure 2 about here]

We next estimate the difference in the employment rate associated with being susceptible to the public charge rule. As only noncitizens are potentially green card applicants and having earnings below the public charge threshold increases the likelihood that a green card application

would be denied, we are interested in how the combination of noncitizen status and earnings below the public charge threshold relates to employment before and after the rule changes came into effect. We pool an equal number of available CPS months before and after the rule implementation for a total sample period of July 2019 through October 2020. These earlier months of CPS data are also pooled to capture any employment differences attributable to noncitizen status that existed before the implementation of the new public charge rule.

As our outcome variable of employment is determined by time and a policy impacting immigrants along lines of noncitizen status and their earnings, we employ a three-way interaction strategy. With the pooled data, we estimate an OLS regression of employment on an indicator for the survey month being in the post-rule time period, on an indicator for being a noncitizen, on being below the public charge rule's earnings threshold, and on interaction terms between each of these factors:

$$y_{it} = \alpha + \beta_r r_t + \beta_c c_i + \beta_p p_{it} + \beta_{rc} r_t \times c_i + \beta_{cp} c_i \times p_{it} + \beta_{rp} r_t \times p_{it} + \beta_{rcp} r_t \times c_i \times p_{it} + \gamma x_{it} + \epsilon_{it} \quad (2)$$

where y_{it} again indicates employment status of individual i in month t , r_t is an indicator that takes the value 1 if month t is March 2020 or later and 0 otherwise, c_i is an indicator that takes the value 1 if individual i is a noncitizen and 0 otherwise, p_{it} is an indicator that takes the value 1 if individual i 's household had annual earnings below the 250% of Federal Poverty Guidelines for their household size in month t , and x_{it} is a vector of socioeconomic characteristics and fixed effects for 562 occupations, 273 industries, 50 states and the District of Columbia, and 24 survey cohorts. The fixed effects for occupation and industry take advantage of the panel nature of the CPS to measure an individual's modal industry and occupation over the 1 to 8 months of the

CPS that each respondent appears in the CPS during the January 2018 to October 2020 time period. We include separate pre-rule and post-rule fixed effects for modal occupation and industry as COVID-19 contemporaneously impacted employment differentially along these dimensions, and these effects capture any employment differences correlated with differences in jobs between noncitizens and citizen immigrants. Similar to the analysis presented in Table 1, socioeconomic characteristics include controls for educational attainment, an age quadratic, number of children in household, an indicator for nonwhite race, and an indicator for Hispanic ethnicity.

The three-way interaction form of equation 2 is useful for identifying the difference in employment associated with susceptibility to the new public charge rules. The coefficient estimates for β_c , β_p , and β_{cp} will capture any employment differences explained by noncitizen status, the earnings threshold, and their interaction over the entire time period, such as any potential anticipatory effects that occur before the rules' implementation. Temporal estimates for β_r , β_{rc} , and β_{rp} control for the large aggregate employment impact of COVID-19 as well as the disparate impacts for noncitizens and for workers below earnings threshold.

[Table 3 about here]

The first column of Table 3 provides the coefficient estimates for the two-way interaction regression between the post-rule period and noncitizen status estimated on the sample of immigrant men pooled over the July 2019 through October 2020 CPS. The main effect estimate for the post-rule period is positive because the time variant occupation and industry effects capture the negative employment impact of COVID-19. In the post-rule period, noncitizens have 2.1 percentage point higher employment rates. The second column of Table 3 shows three-way

interaction estimates for equation 2 on the same sample. Over the whole sample, workers whose household earnings are below 250% of the Federal Poverty Guidelines threshold have an employment rate 3.1 percentage points lower than otherwise, and their employment rate relative to higher earners fell by another 6.1 percentage points in the post-rule, COVID-19 period. Noncitizen workers below the earnings threshold did not face as a significant employment downturn in the post-rule period as did their similar citizen immigrant workers. The three-way interaction estimate for β_{rpc} indicates that, when the public charge rule was implemented, immigrant workers below the earnings threshold became 3.7 percentage points more likely to be employed *if* they were noncitizens. Notably, there is no employment difference attributable to being a noncitizen alone, before or after the rule was implemented. The employment difference associated with noncitizen status only exists among workers whose earnings levels increase the likelihood of a public charge determination in a green card application.

The third column of Table 3 provides two-way interaction estimates on the sample of immigrant women and does not indicate evidence of a differential increase in employment associated with the public charge rules. In the three-way interaction results for women in the fourth column, the estimated post-rule effect of noncitizen status for individuals below the earnings threshold is a 1.9% increase in the employment rate and is not statistically significant. These estimates suggest a null effect of the policy on the employment rate of potential female green card applicants.

Given the presence of the indicator variable p_{it} for contemporaneous household earnings below the 250% FPG threshold, there is likely endogeneity in equation 2. The use of the three-way interaction form helps to reduce resulting bias in the key estimator of interest, β_{rpc} , as β_{rpc}

captures the difference of employment behavior among workers with similar household earnings levels as well as within noncitizens and within the post-rule period. Furthermore, the employment behavior measured by y_{it} is that only of individual i , whereas the earnings threshold indicator p_{it} is a function of total earnings in individual i 's household and the size of their household, reducing the simultaneity between y_{it} and p_{it} . To address these concerns, the two-way interaction results in columns 1 and 3 of Table 3 without any earnings variables provide an estimate of the differential effect of the post-rule period across all noncitizens. In Appendix Table A3, we instrument for an individual's status below the earnings threshold (and its interaction with noncitizen status) using socioeconomic control variables (and their interactions with noncitizen status)³ and find that neither the pre-rule nor post-rule estimates for the interaction of threshold with noncitizen are statistically significant from zero. However, the magnitudes of the coefficients are similar to in Table 3, and a Z-test indicates the post-rule effect is statistically significantly larger than the pre-rule effect at the 0.05 level.

To monitor the difference in employment rates by noncitizen status over time, we modify equation 1 and estimate the equation

$$y_{it} = \mu_t + c_{it} + \beta x_{it} + u_{it} \quad (3)$$

where c_{it} is a vector of interactions between an indicator variable for immigrant i status as a noncitizen and month fixed effects. The coefficient vector c_{it} can be interpreted as the difference in employment between noncitizens and citizen immigrants for a given month. We divide the pooled July 2019 to October 2020 CPS samples of immigrant men into two subsamples of

³ The variables p_{it} ("Below 2.5xFPG") and $c_i \times p_{it}$ ("Below 2.5xFPG interacted with Noncitizen") are instrumented with the controls of number of children in household, nonwhite, Hispanic, years of education, age and age-squared and each of these controls' interactions with noncitizen status. Head of household is included as control.

individuals below and above the earnings threshold and estimate equation 3 separately on the two subsamples. This approach allows us to estimate the impact of noncitizen status separately in samples of immigrants above and below the earnings threshold and avoid issues of simultaneity between the threshold variable and employment. Results are presented in Table A4. In Figure 3, we illustrate the coefficient point estimates for c_{it} with 95% confidence intervals, plotted separately for subsamples of immigrant men below and above the earnings threshold.

[Figure 3 about here]

The coefficient plot in Figure 3 shows that the association of higher employment rates with noncitizen status only occurs in the post-rule period among immigrants whose earnings are below the public charge earnings threshold. Among immigrant men below the earnings threshold, the noncitizen employment gap over citizen immigrants appeared in May 2020 when the initial labor market recovery from the COVID-19 shock began, peaked in the summer months, and maintained a positive and statistically significant magnitude through October. For immigrant men above the earnings threshold, noncitizen status had a null effect on employment across each month in the sample period.

In Appendix Table A5, we add the variables indicating the public charge earnings threshold and noncitizen status and their interaction to Table 1. The inclusion of the variables related to public charge rules leads to smaller point estimates for the month by immigrant status coefficients than seen in Table 1. The estimates for the interaction between the months of July through October and immigrant status in Table 1 indicate an average increase of 3.6% in employment rate associated with immigrant status in those months. When the variables for earnings threshold, noncitizen status, and their interaction are included in Table A5, the same

point estimates for immigrant effects in those months only average 2.5%, a decline of about a third. Variables indicating susceptibility to public charge rules help to explain about a third of the faster employment rebound for immigrant men.

Employment Effects by Imputed Lawful Immigrant Status

The results in Table 3 and Figure 3 do not distinguish whether the effect of the new public charge rules is driven by the behavior of lawful permanent residents or by potential applicants for lawful permanent resident (LPR) status. As the Basic Monthly CPS does not provide immigration status within the noncitizen group, we follow the imputation algorithm of lawful immigrant status from Passel and Cohn (2014), using the available variables in the Basic Monthly CPS to consider this question. An immigrant is defined as a “lawful immigrant” if any of the following conditions hold: the person arrived in the United States before 1980, the person is a veteran, the person works in the government sector, the person was born in Cuba, the person’s occupation requires licensing, or the person’s spouse is considered a lawful permanent resident. We also add immigrants born in Afghanistan or Iraq to the group of lawful immigrants from the Passel-Cohn methodology, as high shares of these immigrants are exempt from the new public charge rule as refugees or under Special Immigrant Visas.

[Table 4 about here]

With this imputed lawful immigration status, we divide the main sample into immigrants who definitely have lawful immigration status and those who potentially do not, then re-estimate equation 2 in the new subsamples in Table 4. The first column of Table 4 of immigrant men indicates that, among low-earnings households in the post-rule period, noncitizen status is

associated with a 3.4% higher employment rate when restricted to immigrants with definite LPR status, but this effect is not statistically significant. The second column, restricted to men who have only potential LPR status, shows an employment rate increase for noncitizens susceptible to the new public charge rules of 3.9% compared to citizen immigrants with below-threshold earnings. While the coefficient estimate of interest is only statistically significant for the potential LPR sample, the significance is likely due to a larger sample size and the magnitude of estimates in both samples are nearly identical. A Z-test between the two coefficient estimates does not indicate a statistically significant difference. Among immigrant women, neither immigrant status has a statistically significant effect on employment for female immigrants potentially susceptible to the new rule, but the magnitudes differ. The estimate is negative and very likely null among definite LPR women but is around 2.9% for potential LPR women and statistically significant at the 10% level. These results indicate that among men the effect of the new public charge rules is not clearly driven by either group of LPR status, but an effect may be concentrated in non-LPR women. The effect is more strongly seen among individuals susceptible to denial of a green card application for potential LPRs, but is not clearly different from mechanisms for definite LPRs, which could include potential denial for re-entry or a more general chilling effect.

The CARES Act and Impact on Labor Supply

One possible confounding factor is the synchronous implementation of the CARES Act and its potentially differential use by citizenship status. The Federal Pandemic Unemployment Compensation (FPUC) program provided an additional \$600 a week to state unemployment benefits from the first week of April 2020 to the last week of July 2020. Most workers became

eligible to receive total unemployment benefits that exceeded their weekly wages. Although a growing body of evidence indicates that FPUC did not depress employment rates in the aggregate (Scott and Finamor 2020; Bartik et al. 2020; Dube 2020; Petrosky-Nadeau and Valletta 2020; Tedeschi 2020), little is known about the impact of FPUC on employment among U.S. immigrants, specifically. Noncitizens may have avoided use of unemployment benefits out of system avoidance, whether spurred by the perceived risk of deportation or the perceived risk of a public charge determination, or because they had been working in informal employment ineligible for unemployment benefits. If so, the increased employment rate of noncitizens among especially hard hit lower-income workers may be due to a decreased labor supply of citizens, who were more freely utilizing the relatively generous unemployment benefits in the COVID-19 economic shock and early recovery periods.

To address this, we use variation in the implementation of FPUC across states to separate our sample of immigrants. U.S. states diverge substantially when it comes to their provision and administration of unemployment benefits; this includes substantial discrepancies in states' unemployment benefit claimant share, plausibly due to differences in eligibility rules and system capacities. In states with lower unemployment benefit claimant shares, it is reasonable to expect FPUC to have a weaker effect on employment rates, as a smaller share of nonemployed individuals actually receive the additional benefits.

To measure the unemployment benefit claimant share by state, we divide the number of continued-claims of unemployment benefits from the U.S. Department of Labor's Employment & Training Administration by the contemporaneous total number of unemployed from the Bureau of Labor Statistics using CPS data. In March, the latest month before the FPUC program

began, the lowest unemployment claimant rate was Florida's (7.6%) and the highest was in Massachusetts (65.9%). The CARES Act greatly expanded eligibility for federally funded benefits to many workers considered outside the labor force, which allowed benefits to be received to workers not considered unemployed, pushing the claimant share above 100% in many states. Over the FPUC period, the lowest unemployment claimants share belonged to South Dakota (52.6%) and the highest was in Washington, D.C. (180.1%).

As the effect of the CARES Act is likely smaller in states where the claimant share is lower, we perform the regression from Table 3 again, in separate subsamples of states with below or above median unemployment benefit claimant shares during the April through July period. If the relatively higher employment rate associated with noncitizens below the earnings threshold in the May through October 2020 months is due to a decrease in labor supply among citizen immigrants receiving FPUC, then the coefficient estimate for noncitizen status for workers below the earnings threshold should be lower in states with lower FPUC take-up.

[Table 5 about here]

Table 5 presents results for estimating equation 2 in separate samples for low and high FPUC claimant shares. The low FPUC claimant share subsample includes individuals in states with claimant shares below-average claimant share during the April through July 2020 months when FPUC was available, and the high FPUC claimant share subsample includes individuals in states with above-average claimant shares over the same time period. In states with low FPUC take-up, noncitizen status on below-threshold workers in the post-rule period increases the probability of employment by 5.5 percentage points, a more positive effect than in the full male immigrant sample. However, in states with high FPUC take-up, this noncitizen effect is smaller

and statistically insignificant. For women immigrants, there is no differential impact on noncitizens by earnings threshold in either group of states. These results provide evidence that the relative increase in employment for men susceptible to the public charge rule change is not due to decreased labor supply from FPUC for similar workers not susceptible to the rule change.

Changes in Public Charge Determinations and Public Benefits Use

In addition to incentivizing employment participation, we use data drawn from the Annual Social and Economic Supplement (ASEC) to examine whether the changes in the public charge rules may be associated with a decline in public benefits use in the post-outbreak period. We find evidence of changes in Supplemental Nutrition Assistance Program (SNAP) use associated with noncitizen status after implementation of the new public charge rules. As the new public charge rule was announced in September 2018, and the ASEC survey is taken annually in March, each year represents a different period of policy implementation. In March 2019, the rule was only proposed. There were no final details or clear timelines. In March 2020, by contrast, the revised rule was being implemented.

[Table 6 about here]

In Table 6, we use annual data on immigrant use of welfare, housing assistance, and food stamps (SNAP), from the 2019 and 2020 ASEC supplements and regress use of any new public charge factors, SNAP, Medicaid, housing assistance, and any past public charge determining factor on year, noncitizen status, year interacted with noncitizen status, and a vector of socioeconomic and geographic controls. Use of factors considered under public charge rules is included as a placebo test and did not differentially change along noncitizen status between the

March 2019 and March 2020 samples, though use of factors added to the rule in 2020 did. Noncitizens use of new public charge factors fell by 1.8 percentage points relative to citizen immigrants between 2019 and 2020, and this decrease is mostly due to disuse of SNAP (noncitizens' SNAP usage fell by 1.3 percentage points compared to citizen immigrants in this period). Medicaid use fell differentially for noncitizens, but not by a statistically significant amount. Use of housing assistance did not change differentially along noncitizen status among immigrants, although housing behavior may take a longer time to change due to the combination of high switching costs, low housing stock, and the implementation of eviction moratoriums. These results suggest that individuals susceptible to the new public charge rule changed their SNAP use upon its implementation.

Employment Behavior of Noncitizens and COVID-19 Exposure

Publicly available data on the setting for likely source of exposure for COVID-19 cases is scant, though there is evidence that a significant share of infection is occurring in the workplace. In King County, WA between February and November 2020 where settings of virus exposure have been identified for 72% of cases through the pandemic, 28% of cases had a non-healthcare workplace exposure, and Hispanics were the racial or ethnic group most likely to have had one (Public Health, 2020). In Utah, 12% of COVID-19 cases through June 2020 were associated with workplace outbreaks, and Hispanic workers made up 73% of workplace outbreak-associated cases (Bui et al., 2020). New questions on teleworking added to the CPS in May 2020 indicate that while 27% of U.S. workers were working remotely, this was true for only 17% of Hispanic workers and only 4% of employed Hispanic noncitizens below the public charge earnings threshold.

The U.S. has not provided data on COVID-19 cases by immigration or citizenship status, but case by ethnicity data indicates that Hispanic people have experienced disproportionately high rates of COVID-19. In all 45 states that report COVID-19 cases by ethnicity, the proportion of COVID-19 cases among Hispanic people is greater than expected based on population. In 20 of those states, the share of COVID-19 patients who are Hispanic is double the Hispanic population, and in 11 states, that rate is tripled (www.covidtracking.com). For example, in Massachusetts, where the population is 12% Hispanic, 30% of those who have tested positive for COVID-19 are Hispanic. When we begin to extrapolate to the national level, where Hispanics are 14.5% of the total U.S. population, we note they are also 46.2% of the U.S. immigrant and 56.7% of U.S. noncitizen populations. These high shares suggest that the differential impacts of the pandemic on the immigrant and noncitizen population are likely to disproportionately impact Hispanic populations.

[Table 7 about here]

Outbreak severity is another important factor here. To estimate whether the new public charge rules led to differentially higher employment rates for impacted individuals in states and months with higher exposure to COVID-19, we estimate a modified regression of equation 2. We replace the post-rule indicator variable in equation 2 with a log of state COVID-19 cases per 100,000 population in a given month, then estimate the model on the CPS months of March 2020 to October 2020, a period in which COVID-19 was spreading in the U.S. and in which the new public charge rules were in place. The results are reported separately for immigrant men and women in Table 7. The triple interaction coefficient estimate indicates that, among immigrants with earnings below the public charge threshold, a 1% increase in their state's COVID-19 case

rate is correlated with a 2.5 percentage point increase in relative employment for noncitizen men and 1.8 percentage point relative increase for noncitizen women. These results suggest that in state-months with higher case rates, the workforce was especially populated with individuals susceptible to the rule change. Risk not only accrued but was amplified for this already precarious group.

Conclusion

In this paper, we have conducted an initial analysis of the effects of the COVID-19 outbreak on the employment behavior of immigrants and U.S.-born workers in the United States. The initial shock associated with the outbreak had a significant impact on the employment rate of immigrant men compared to U.S.-born men. The existing evidence about the impact of the outbreak on immigrants is, however, limited to the initial shock of the pandemic. We use data drawn from the Current Population Survey to provide first evidence that the labor supply of immigrant men increased more rapidly compared to native-born men. To explore the possible mechanisms behind this trend, we investigated the effect of changes to the immigration system's public charge rules, enacted on February 24th, 2020, shortly before the first confirmed case of COVID-19 in the United States. Our findings indicate that the public charge rules are associated with an increase in the labor supply of noncitizen men, in particular lower-income workers, who became most susceptible to public charge determination under the new rules. Positive but smaller and statistically insignificant effects are found for susceptible immigrant women.

Our findings complement a growing body of research linking public benefits eligibility to the labor supply of immigrants (Borjas 2011; Horta and Tienda 2015; Kaushal 2010). Unlike the existing studies, however, which focus on public benefits targeted to elderly immigrants (e.g.,

Social Security and Supplemental Security Income), our study is first to examine the impact of the public charge rules on the labor supply of prime-age immigrant workers (18-64 years old). A distinctive feature of the new public charge determination, compared to Social Security and SSI benefits, is that immigrants are still eligible for the same benefits as before the implementation of the new rules. Our findings suggest it is not the changes in eligibility that are associated with an increase in labor supply among noncitizens (noncitizens are still eligible to receive benefits under the new rules). Rather, our results suggest that public charge changes, including the 12-month limit on use of public benefits; the addition of food stamps, housing subsidies, and Medicaid (none of which were previously included in public charge determination) as determining factors; and the requirements for proof of employment and private health insurance have directly incentivized those workers more susceptible to deportation and inadmissibility (low-wage, noncitizens seeking adjustment of status as a legal permanent resident) to seek out employment at higher rates during the outbreak.

We also found evidence that the new public charge rules had a chilling effect on eligible noncitizens' use of public benefits. Our analysis complements an extensive body of research showing that public benefit use among legal immigrants declines after the implementation of more strict requirements, such as provisions in the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (Borjas 2002; Fix, Capps, and Kaushal 2009; Fix and Passel 1999). Although scholars disagree on which factors might explain the decrease in public benefits use among immigrants following the implementation of the 1996 provisions, three have been closely considered: economic expansion, changes in eligibility criteria, and chilling effects. Since the pandemic generated an economic recession, it is reasonable to rule out economic expansion as a cause for the declines in public benefits use among noncitizens seeking to adjust legal status.

We can also rule out changes in eligibility criteria, because noncitizens are still eligible to use public benefits. This leaves us with *chilling effects*, or the fear of being considered a public charge susceptible to deportation under the new rules, as a likely explanatory factor for the decrease in noncitizens' public benefits use during the outbreak.

Our findings are also relevant to understanding how employment might be a mechanism for the spread of the COVID-19 virus. The evidence implies that, in states with higher COVID-19 case rates, individuals more susceptible to the new rules are also more likely to be working. Further, given that low-wage immigrants are less able to work remotely than workers in white-collar sectors (Borjas and Cassidy 2020), they are more likely to be exposed to and may be contributing to the spread of the novel coronavirus.

Finally, our first-evidence look at public charge rule changes suggests a long-term effect on immigrant incorporation. Prior research shows that more generous benefit policies, not less generous, are associated with better economic integration (Van Hook, Brown, and Bean 2006). Therefore, in addition to the obvious public health implications, the new public charge rules may also have long-term consequences for immigrants and their ability to become integrated into American society.

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Table 1: Regressions estimated in Pooled CPS Cross-Sections (April - October 2020), Immigrant and Native Workers

	(1) Men	(2) Men	(3) Women	(4) Women
May	0.033*** (0.004)	0.033*** (0.003)	0.031*** (0.004)	0.030*** (0.003)
June	0.045*** (0.005)	0.055*** (0.004)	0.038*** (0.005)	0.037*** (0.004)
July	0.042*** (0.005)	0.052*** (0.005)	0.021*** (0.005)	0.026*** (0.005)
August	0.065*** (0.005)	0.073*** (0.005)	0.057*** (0.005)	0.063*** (0.005)
September	0.077*** (0.005)	0.087*** (0.005)	0.085*** (0.005)	0.092*** (0.005)
October	0.090*** (0.005)	0.100*** (0.006)	0.099*** (0.005)	0.102*** (0.006)
April x Immigrant	-0.020** (0.009)	-0.039*** (0.008)	-0.126*** (0.009)	-0.022*** (0.007)
May x Immigrant	-0.002 (0.009)	-0.019*** (0.007)	-0.125*** (0.009)	-0.021*** (0.007)
June x Immigrant	0.025*** (0.009)	0.009 (0.007)	-0.097*** (0.009)	-0.001 (0.007)
July x Immigrant	0.046*** (0.008)	0.036*** (0.007)	-0.061*** (0.009)	0.030*** (0.007)
August x Immigrant	0.051*** (0.008)	0.031*** (0.007)	-0.078*** (0.009)	0.015** (0.007)
September x Immigrant	0.061*** (0.007)	0.040*** (0.006)	-0.102*** (0.008)	0.000 (0.006)
October x Immigrant	0.057*** (0.007)	0.036*** (0.006)	-0.100*** (0.008)	0.006 (0.006)
Obs.	187535	187533	196339	196330
R-squared	0.007	0.466	0.011	0.533
State FE	No	Yes	No	Yes
Occupation FE	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes
Survey Cohort FE	No	Yes	No	Yes

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Robust standard errors clustered at individual level are in parentheses. Dependent variable in all columns is whether or not an individual is at work in the previous week. Control variables in columns 2 and 4 include education, age and age-squared, number of children in household, race and ethnicity. No control variables are included in columns 1 and 3. The baseline observation in both columns is native-born in April 2020. Samples restricted to adults ages 18 to 64, excluding students and members of the military.

Table 2: Occupational Foreign-born Shares and Changes in Burning Glass Vacancies

Occupation Group	April 2020 Vacancies	October 2020 Vacancies	Apr. to Oct.. % Δ	Percent Foreign Born (ACS)
Management Business and Financial Operations	238,521	308,023	29.1%	12.0%
Computer and Mathematical	127,335	171,803	34.9%	12.5%
Architecture and Engineering	273,089	248,462	-9.0%	22.3%
Life, Physical, Social Sciences	63,045	70,397	11.7%	18.3%
Community and Social Services	25,393	30,429	19.8%	19.4%
Legal	30,594	42,191	37.9%	9.4%
	13,782	19,745	43.3%	7.7%
Education Instruction and Library	64,736	73,688	13.8%	10.3%
Arts, Design, Entertainment, Sports, and Media	50,982	63,791	25.1%	12.0%
Healthcare Practitioners and Technical Occupations	295,435	386,297	30.8%	13.9%
Healthcare Support	51,388	93,953	82.8%	19.0%
Protective Services	33,166	44,185	33.2%	6.8%
Food Preparation and Serving Related	71,517	136,819	91.3%	16.5%
Building and Grounds Cleaning and Maintenance	47,218	64,822	37.3%	24.6%
Personal Care and Service	49,684	67,841	36.5%	16.0%
Sales and Related	204,957	340,596	66.2%	11.6%
Office and Administrative Support	197,005	350,036	77.7%	9.9%
Farming, Fishing, and Forestry	2,288	3,130	36.8%	30.0%
Construction and Extraction	31,201	44,533	42.7%	16.7%
Installation, Maintenance, and Repair	68,213	112,322	64.7%	11.4%
Production	68,425	102,008	49.1%	17.5%
Transportation and Material Moving	161,569	265,529	64.3%	14.1%
All Occupations	2,169,543	3,040,600	40.1%	13.9%
Sum of Share-weighted Totals				13.2%

Note: Vacancy posting data by occupation from Burning Glass. Foreign born share is the fraction of workers in each occupation who are foreign born averaged over the 2014 to 2018 rounds of the American Community Survey.

Table 3: Linear Probability Estimates for Public Charge Earnings Factors on Employment among Immigrants, Pooled July 2019 to October 2020 CPS

	Employment Rate			
	Immigrant Men		Immigrant Women	
	(1)	(2)	(3)	(4)
Post-Rule=1	0.004 (0.008)	0.034*** (0.010)	0.022*** (0.006)	0.035*** (0.007)
Non-Citizen=1	0.000 (0.004)	0.002 (0.004)	-0.009** (0.004)	-0.005 (0.005)
Post-Rule=1 x Non-Citizen=1	0.021*** (0.007)	0.008 (0.008)	-0.010 (0.007)	-0.017* (0.009)
Below 2.5xFPL=1		-0.031*** (0.006)		-0.020*** (0.005)
Post-Rule=1 x Below 2.5xFPL=1		-0.061*** (0.011)		-0.029*** (0.009)
Below 2.5xFPL=1 x Non-Citizen=1		-0.000 (0.007)		-0.007 (0.007)
Post-Rule=1 x Below 2.5xFPL=1 x Non-Citizen=1		0.037*** (0.014)		0.019 (0.013)
Observations	74213	74213	80559	80559
R^2	0.455	0.458	0.632	0.633

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors clustered at individual level are in parentheses. Dependent variable in both columns is whether or not an individual is at work in the previous week. The first column is immigrant men, and the second column is immigrant women. Post-Rule indicates that the month of the survey responses was after the imposition of the new public charge rule on February 24, 2020. Below 2.5xFPL is an indicator for whether the individual's household earnings were below the 250% of the federal poverty line threshold factored into public charge determinations. Control variables in both columns include education, age and age-squared, number of children in household, head of household, race and ethnicity. Fixed effects in both columns include state, pre-rule modal occupation, post-rule modal occupation, pre-rule modal industry, post-rule modal industry, and survey cohort. Both subsamples restricted to adults ages 18 to 64, excluding students and members of the military, with column 1 restricted to men and column 2 restricted to women.

Table 4: Linear Probability Estimates by Imputed Legal Permanent Resident Status

	Employment Rate			
	Definitely LPR Immigrant Men	Possible non-LPR Immigrant Men	Definitely LPR Immigrant Women	Possible non-LPR Immigrant Women
	(1)	(2)	(3)	(4)
Post-Rule=1	0.024* (0.015)	0.045*** (0.013)	0.031*** (0.010)	0.040*** (0.009)
Below 2.5xFPG=1	-0.039*** (0.008)	-0.019** (0.008)	-0.023*** (0.008)	-0.016** (0.007)
Post-Rule=1 x Below 2.5xFPG=1	-0.064*** (0.016)	-0.062*** (0.014)	-0.021 (0.014)	-0.031*** (0.012)
Noncitizen=1	-0.002 (0.007)	0.012** (0.006)	-0.018** (0.009)	0.006 (0.006)
Post-Rule=1 x Noncitizen=1	0.000 (0.013)	0.007 (0.011)	0.007 (0.015)	-0.028*** (0.011)
Below 2.5xFPG=1 x Non-Citizen=1	0.006 (0.013)	-0.015 (0.009)	0.006 (0.014)	-0.016* (0.009)
Post-Rule=1 x Below 2.5xFPG=1 x Noncitizen=1	0.034 (0.025)	0.039** (0.017)	-0.016 (0.025)	0.029* (0.016)
Observations	30008	49446	33011	52342
R ²	0.514	0.459	0.606	0.650

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors clustered at individual level are in parentheses. Dependent variable in all columns is whether or not an individual is at work in the previous week. Definite LPR refers to imputation of legal permanent resident status-based Pew immigration status imputation methods. Below 2.5xFPG is an indicator for whether the individual's household earnings were below the 250% of the federal poverty guideline threshold factored into public charge determinations. Control variables in both columns include education, age and age-squared, number of children in household, head of household, race and ethnicity. Fixed effects in both columns include state, pre-rule modal occupation, post-rule modal occupation, pre-rule modal industry, post-rule modal industry, and survey cohort. All subsamples restricted to adults ages 18 to 64, excluding students and members of the military, with columns 1 and 2 restricted to men and columns 3 and 4 restricted to women.

Table 5: State FPUC Claimant Share Differences in Linear Probability Estimates for Immigrants, Pooled July 2019 to October 2020 CPS

	Immigrant Employment Rate			
	Men		Women	
	Low FPUC Claimant Share States (1)	High FPUC Claimant Share States (2)	Low FPUC Claimant Share States (3)	High FPUC Claimant Share States (4)
Post-Rule=1	0.038*** (0.014)	0.028** (0.014)	0.036*** (0.011)	0.034*** (0.010)
Below 2.5xFPL=1	-0.030*** (0.008)	-0.029*** (0.008)	-0.013* (0.008)	-0.027*** (0.007)
Post-Rule=1 x Below 2.5xFPL=1	-0.075*** (0.016)	-0.047*** (0.014)	-0.029** (0.014)	-0.025** (0.013)
Noncitizen=1	0.005 (0.007)	-0.002 (0.006)	-0.007 (0.007)	-0.002 (0.007)
Post-Rule=1 x Noncitizen=1	0.002 (0.012)	0.014 (0.011)	-0.012 (0.013)	-0.023* (0.012)
Below 2.5xFPL=1 x Noncitizen=1	-0.000 (0.010)	0.000 (0.010)	-0.019* (0.010)	0.003 (0.010)
Post-Rule=1 x Below 2.5xFPL=1 x Noncitizen=1	0.055*** (0.020)	0.018 (0.018)	0.015 (0.019)	0.026 (0.018)
Observations	33485	40668	35762	44737
R ²	0.473	0.487	0.652	0.641

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors clustered at individual level are in parentheses. Dependent variable in both columns is whether or not an individual is at work in the previous week. The first column is immigrant men in states with low FPUC claimant shares, and the second column is immigrant men in states with high FPUC claimant shares. Post-Rule indicates that the month of the survey responses was after the imposition of the new public charge rule on February 24, 2020. Below 250%FPG is an indicator for whether the individual's household earnings were below the 250% of the federal poverty guideline threshold factored into public charge determinations. Control variables in both columns include education, age and age-squared, number of children in household, race and ethnicity. Fixed effects in both columns include state, pre-rule modal occupation, post-rule modal occupation, pre-rule modal industry, post-rule modal industry, and survey cohort. All subsamples restricted to adults ages 18 to 64, excluding students and members of the military.

Table 6: Changes in Use of Other Factors Contributing to Public Charge Determination, Immigrants, ASEC 2019 and 2020

	Any New Public Charge Factors (1)	SNAP (2)	Medicaid (3)	Housing Assistance (4)	Any Old Public Charge Factors (5)
Survey Year=2020	0.005 (0.005)	-0.002 (0.004)	0.007 (0.004)	-0.033*** (0.005)	-0.005** (0.002)
Noncitizen=1	0.007 (0.005)	0.001 (0.004)	-0.006 (0.004)	0.161*** (0.006)	-0.013*** (0.002)
Survey Year=2020 x Noncitizen=1	-0.018* (0.008)	-0.013* (0.006)	-0.010 (0.007)	0.010 (0.008)	0.004 (0.002)
Observations	36212	36212	36212	36212	36212
R ²	0.148	0.069	0.132	0.136	0.021

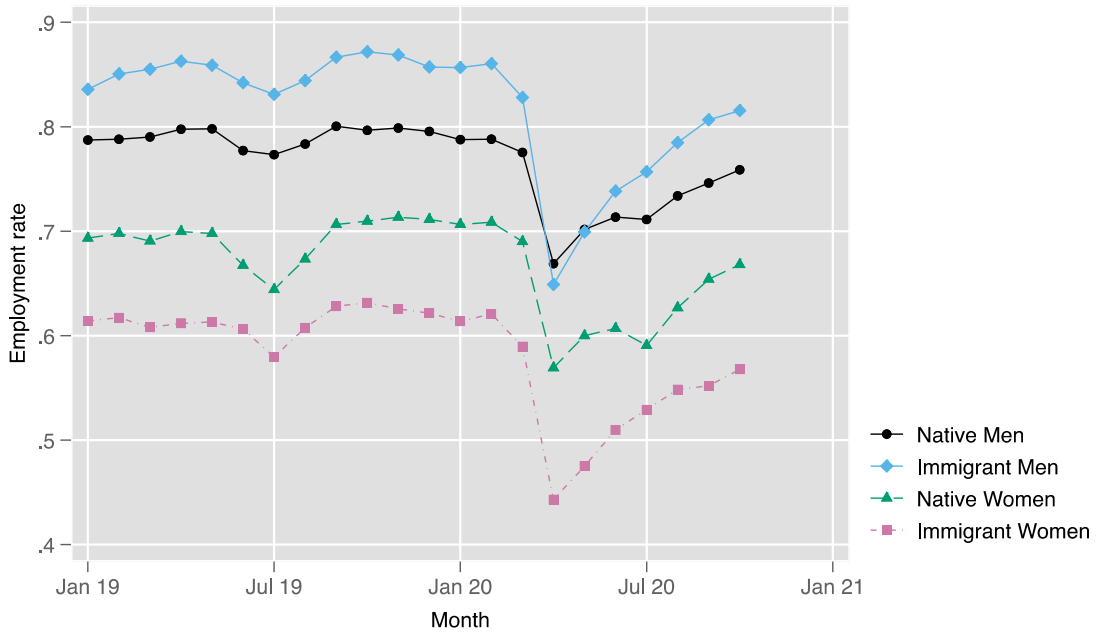
*** p<0.001, ** p<0.01, * p<0.05. Robust standard errors clustered at individual level are in parentheses. Baseline is 2019 citizen immigrants. Dependent variable is use of factor. Control variables in all columns include total household income, education, age, age-squared, number of children race, ethnicity, state fixed effects, metropolitan status, and survey cohort effects. Both subsamples restricted to immigrants ages 18 to 64, excluding students and members of the military.

Table 7: Linear Probability Estimates for Interactions of Public Charge Factors and COVID-19 Case Rates, March 2020 to October 2020 CPS

	Employment	
	Immigrant Men (1)	Immigrant Women (2)
Ln(COVID-19 Case Rate)	-0.019*** (0.004)	-0.010** (0.004)
Below 250% of FPG=1	0.015 (0.036)	0.042 (0.031)
Below 250% of FPG=1 x Ln(COVID-19 Case Rate)	-0.020** (0.007)	-0.017** (0.006)
Noncitizen=1	0.028 (0.029)	0.064* (0.030)
Noncitizen=1 x Ln(COVID-19 Case Rate)	-0.004 (0.005)	-0.016** (0.006)
Below 250% of FPG=1 x Noncitizen=1	-0.101* (0.049)	-0.086 (0.045)
Below 250% of FPG=1 x Noncitizen=1 x Ln(COVID-19 Case Rate)	0.025** (0.009)	0.018* (0.008)
Observations	33876	36687
R^2	0.402	0.558

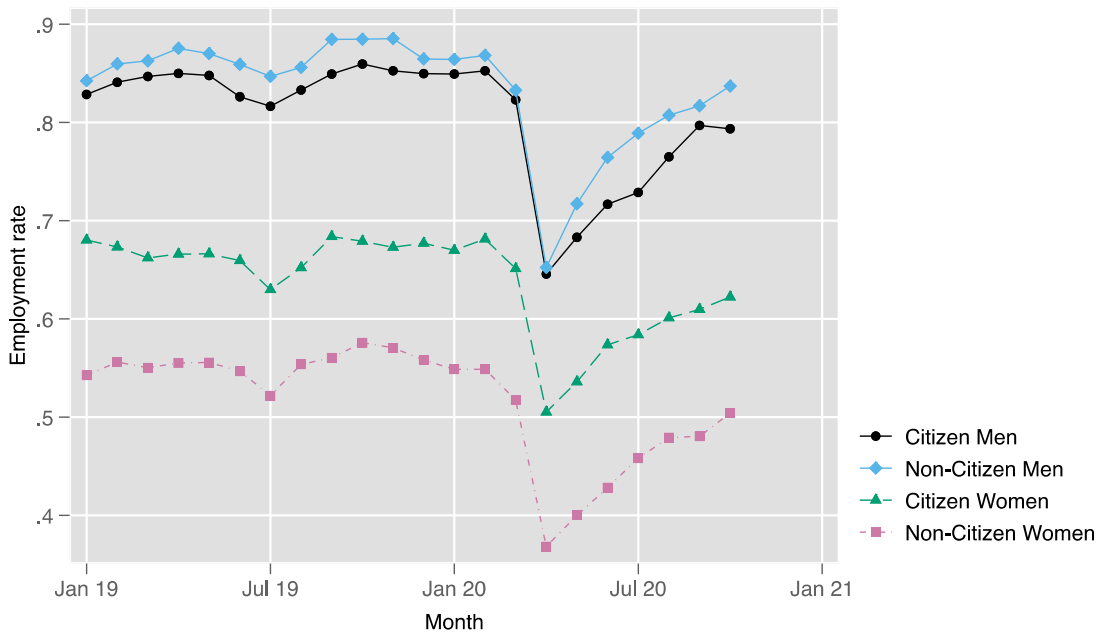
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Robust standard errors clustered at individual level are in parentheses. Dependent variable in both columns is whether or not an individual is at work in the previous week. The first column is immigrant men, and the second column is immigrant women. Ln(COVID-19 Case Rate) indicates that the log of the number of COVID-19 cases per 100,000 population in the immigrant's state. Below 2.5x FPG is an indicator for whether the individual's household earnings were below the 250% of the federal poverty guideline threshold factored into public charge determinations. Control variables in both columns include education, age and age-squared, number of children in household, head of household, race and ethnicity. Fixed effects in both columns include state, occupation, industry, and survey cohort. Both subsamples restricted to adults ages 18 to 64, excluding students and members of the military, with column 1 restricted to men and column 2 restricted to women.

Fig. 1 Employment Rate by Immigrant Status



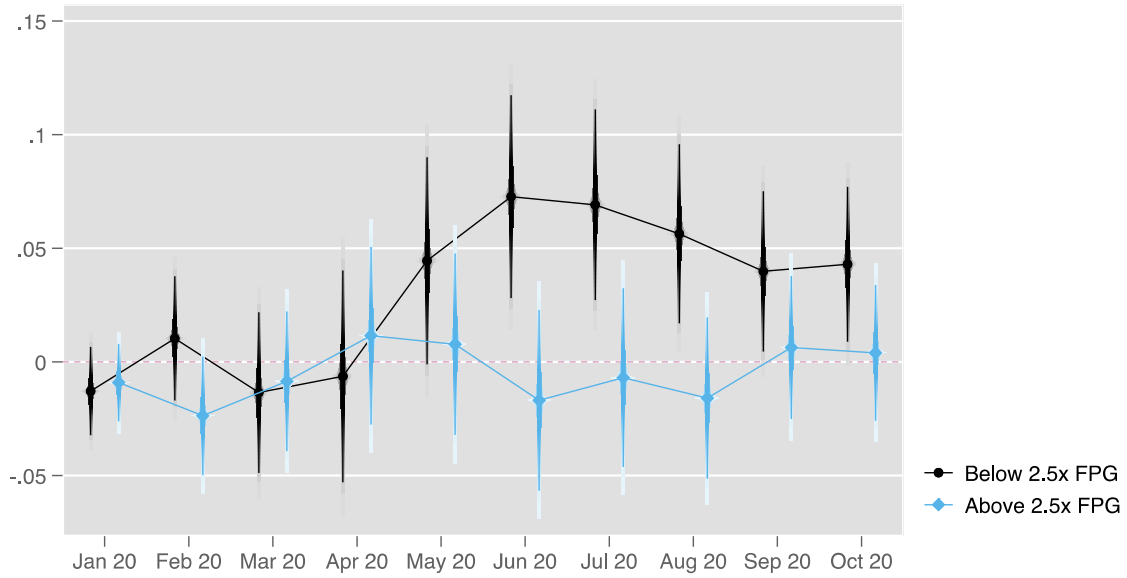
Source: CPS Basic Monthly files January 2019 to October 2020.
 Note: Samples consist of individuals ages 18-64, excluding students. Employment rate is the fraction of subpopulation at work in the past week.

Fig. 2 Employment Rate by Citizenship Status among Immigrants



Source: CPS Basic Monthly files January 2019 to October 2020.
 Note: Samples consist of immigrants ages 18-64, excluding students. Employment rate is the fraction of subpopulation at work in the past week.

Fig. 3 Coefficient Estimates of Noncitizen Status on Employment, Immigrant Men, January through October 2020



Source: CPS Basic Monthly Survey. Coefficients and CIs are for interaction between month and noncitizen status relative to July through December 2019 baseline in regression of employment on month fixed effects, month fixed effects interacted with noncitizen status, quartic age, education, number of children, head of household, and fixed effects for state, metropolitan area, and occupation. Regression sample restricted to US immigrant men age 18-64, excluding students or members of military. Estimates are of monthly employment rate gap associated with noncitizen status relative to second half of 2019.

Appendix

Table A1 Summary Statistics for Table 1

	N	Mean	St.Dev
Native Men			
Employed	158,043	0.73	0.45
Below 2.5xFPG	158,043	0.27	0.44
Years Education	158,043	130.88	20.47
Age	158,043	430.04	130.25
No. Children	158,043	0.73	10.12
Non-white	158,043	0.22	0.42
Hispanic	158,043	0.08	0.27
Native Women			
Employed	164,301	0.62	0.49
Below 2.5xFPG	164,301	0.3	0.46
Years Education	164,301	140.28	20.46
Age	164,301	430.67	130.04
No. Children	164,301	0.86	10.16
Non-white	164,301	0.24	0.43
Hispanic	164,301	0.08	0.27
Immigrant Men			
Employed	29,492	0.75	0.43
Below 2.5xFPG	29,492	0.4	0.49
Years Education	29,492	130.25	30.87
Age	29,492	44	110.54
No. Children	29,492	10.13	10.28
Non-white	29,492	0.8	0.4
Hispanic	29,492	0.46	0.5
Immigrant Women			
Employed	32,038	0.53	0.5
Below 2.5xFPG	32,038	0.42	0.49
Years Education	32,038	130.4	30.7
Age	32,038	440.31	110.42
No. Children	32,038	10.23	10.25
Non-white	32,038	0.81	0.4
Hispanic	32,038	0.44	0.5

Source: CPS Basic Monthly files for April through October 2020

Table A2 Summary Statistics for Table 3

	N	Mean	St.Dev
Native Men			
Employed	15,810	0.74	0.44
Below 2.5xFPG	15,810	0.33	0.47
Years Education	15,810	140.01	30.37
Age	15,810	460.44	110.25
No. Children	15,810	10.09	10.24
Non-white	15,810	0.75	0.43
Hispanic	15,810	0.36	0.48
Native Women			
Employed	17,843	0.58	0.49
Below 2.5xFPG	17,843	0.34	0.47
Years Education	17,843	140.07	30.20
Age	17,843	460.31	110.20
No. Children	17,843	10.14	10.19
Non-white	17,843	0.77	0.42
Hispanic	17,843	0.36	0.48
Immigrant Men			
Employed	13,682	0.77	0.42
Below 2.5xFPG	13,682	0.49	0.50
Years Education	13,682	120.37	40.22
Age	13,682	410.18	110.21
No. Children	13,682	10.16	10.33
Non-white	13,682	0.86	0.35
Hispanic	13,682	0.57	0.49
Immigrant Women			
Employed	14,195	0.46	0.50
Below 2.5xFPG	14,195	0.53	0.50
Years Education	14,195	120.56	40.09
Age	14,195	410.79	110.19
No. Children	14,195	10.35	10.30
Non-white	14,195	0.86	0.35
Hispanic	14,195	0.53	0.50

Source: CPS Basic Monthly files for July 2019 through October 2020

Table A3. 2SLS Results for Instrumental Variable for Below 2.5xFPG

	Dependent Variable = Employment Rate	
	(1)	(2)
	Oct 2019 to Feb 2020 Men	Mar 2020 to Oct 2020 Men
Below 2.5xFPG	0.027* (0.014)	-0.019 (0.025)
Below 2.5xFPG x Noncitizen	-0.015 (0.016)	0.041 (0.027)
Noncitizen	0.012 (0.008)	0.006 (0.012)
Observations	40315	33918
Number of Endogenous Variables	2	2
Number of Instruments	12	12
Kleibergen-Paap LM test (p-value)	<0.0001	<0.0001
Hansen J test (p-value)	<0.0001	<0.0001

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors clustered at individual level are in parentheses. Dependent variable in all columns is whether or not an individual is at work in the previous week. The variables “Below 2.5xFPG” and “Below 2.5xFPG x Noncitizen” are instrumented with the controls of number of children in household, nonwhite, Hispanic, years of education, age and age-squared and their interactions with noncitizen status. Head of household is included as control. Fixed effects in both columns include state, 270 industries, metropolitan area and survey cohort. Both subsamples restricted to immigrant men ages 18 to 64, excluding students and members of the military. Pre-Rule refers to the months July 2019 to February 2020, and Post-Rule refers to the months March 2020 to October 2020.

Table A4. Results for Two-way Interaction of 2020 Month and Noncitizen Status by Earnings Group

	Dependent Variable = Employment Rate			
	Men		Women	
	(1) Below 2.5xFPG	(2) Above 2.5xFPG	(3) Below 2.5xFPG	(4) Above 2.5xFPG
Jan x Noncitizen	0.011 (0.015)	-0.004 (0.010)	-0.021* (0.013)	-0.023* (0.012)
Feb x Noncitizen	0.011 (0.014)	0.001 (0.010)	-0.031** (0.013)	-0.021* (0.011)
Mar x Noncitizen	-0.015 (0.018)	0.011 (0.012)	-0.013 (0.015)	-0.004 (0.013)
Apr x Noncitizen	-0.005 (0.024)	0.020 (0.018)	0.005 (0.019)	-0.008 (0.017)
May x Noncitizen	0.045** (0.023)	0.006 (0.016)	-0.002 (0.020)	-0.002 (0.016)
Jun x Noncitizen	0.073*** (0.023)	0.001 (0.015)	-0.023 (0.020)	-0.020 (0.015)
Jul x Noncitizen	0.070*** (0.021)	0.022 (0.014)	-0.008 (0.019)	-0.023 (0.016)
Aug x Noncitizen	0.056*** (0.020)	0.023* (0.013)	-0.020 (0.018)	-0.017 (0.015)
Sep x Noncitizen	0.040** (0.018)	-0.017 (0.012)	0.007 (0.016)	-0.040*** (0.014)
Oct x Noncitizen	0.043** (0.017)	0.020* (0.011)	0.002 (0.015)	-0.020 (0.013)
Observations	31225	42963	35406	45139
R ²	0.477	0.409	0.608	0.613

*** p<0.01, ** p<0.05, * p<0.10. Robust standard errors clustered at individual level are in parentheses. Dependent variable in all columns is whether or not an individual is at work in the previous week. Baseline employment rates are compared to second half of 2019. Below 2.5xFPG is an indicator for whether the individual's household earnings were below the 250% of the federal poverty line threshold factored into public charge determinations. Month effects and main effect for noncitizen status not shown. Control variables in all columns include educational attainment, age and age-squared, number of children in household, head of household, race and ethnicity. Fixed effects in both columns include state, occupation, industry, and survey cohort. All subsamples restricted to immigrants ages 18 to 64, excluding students and members of the military, with columns 1 and 2 restricted to men, and columns 3 and 4 restricted to women.

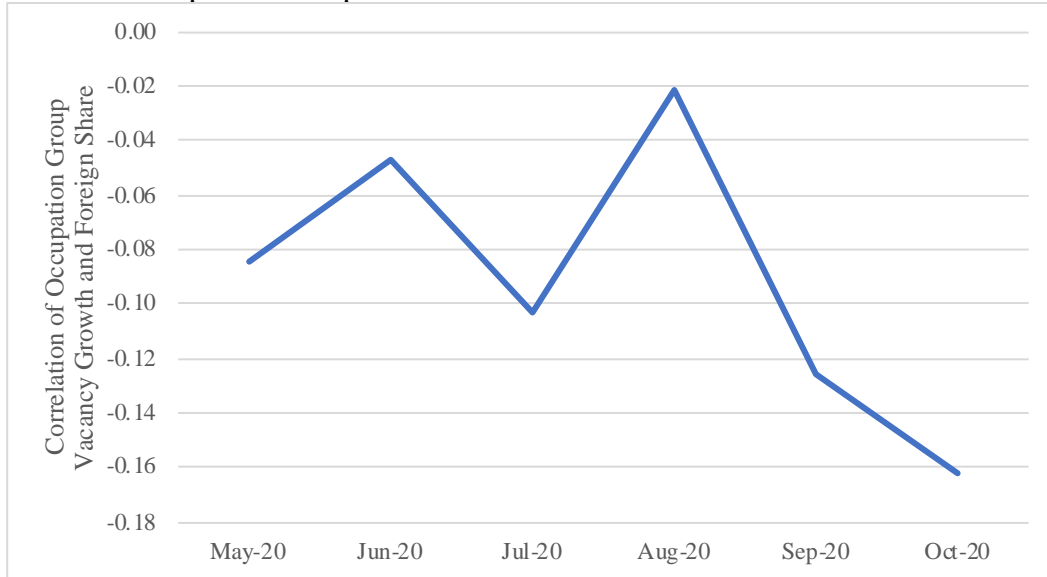
Table A5. Immigrant and Native Employment in the Recovery with Public Charge Coefficients, Apr – Oct 2020

	Men (1)	Women (2)
April x Immigrant	-0.050 ^{***} (0.008)	-0.017 ^{**} (0.007)
May x Immigrant	-0.030 ^{***} (0.008)	-0.016 ^{**} (0.007)
June x Immigrant	-0.001 (0.008)	0.004 (0.007)
July x Immigrant	0.026 ^{***} (0.007)	0.035 ^{***} (0.007)
August x Immigrant	0.020 ^{***} (0.007)	0.020 ^{***} (0.007)
September x Immigrant	0.028 ^{***} (0.006)	0.005 (0.006)
October x Immigrant	0.024 ^{***} (0.006)	0.011 [*] (0.006)
Noncitizen=1	0.021 ^{***} (0.007)	-0.027 ^{***} (0.007)
Below 2.5xFPG=1	-0.084 ^{***} (0.004)	-0.060 ^{***} (0.003)
Noncitizen=1 x Below 2.5xFPG=1	0.026 ^{***} (0.010)	0.027 ^{***} (0.010)
Observations	187533	196330
R ²	0.471	0.535

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Robust standard errors clustered at individual level are in parentheses.

Dependent variable in all columns is whether or not an individual is at work in the previous week. Individual month coefficients not shown. Control variables include education, age and age-squared, number of children in household, race and ethnicity. The baseline observation in both columns is native-born in April 2020. Samples restricted to adults ages 18 to 64, excluding students and members of the military.

Figure A1. Correlation of Occupational Vacancy Growth Since April 2020 and Foreign-Born Share of Occupation Group



Note: Correlation is of group's percent growth in vacancy postings since April 2020 of major occupation groups and the 2014-2018 ACS foreign born share of workers in major occupation groups. Vacancy growth data come from Burning Glass.