

THE IMPACT OF THE COVID-19 DROP IN
INTERNATIONAL MIGRATION ON
THE U.S. LABOR MARKET

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EXECUTIVE SUMMARY

The Covid-19 pandemic resulted in a sharp drop in international migration to the United States, but there is no evidence the entry of fewer foreign workers on temporary visas improved outcomes for U.S. workers. The research examined labor markets where more temporary foreign workers were employed prior to the pandemic and found the drop in H-2B program admissions did not boost labor market opportunities for U.S. workers but rather, if anything, worsened them. The results also do not indicate gains for similar U.S. workers in labor markets that had relied more on the H-1B and J-1 visa programs.

There is no evidence of improved labor market opportunities for U.S. workers in the leisure and hospitality sector during the summer months as a result of the virtual shutdown of the J-1 Summer Work Travel program. There is also no evidence of faster employment growth or lower unemployment rates for college graduate U.S. natives as a result of decreased admissions via the H-1B program. Instead, labor markets that had been more reliant on temporary foreign workers via the H-1B program before the pandemic appeared to have had more unfilled jobs during the pandemic. The large drop in new temporary foreign workers via the H-1B program thus does not appear to have led to better labor market outcomes for the U.S. natives who might compete with those workers for jobs.

The analysis compares employment changes and unemployment with the reliance on H-2B workers in the same state and industry, so it does not include other potential negative impacts of fewer foreign workers during the period. These include foregone complementarities with workers in other labor markets, such as fewer jobs for workers in another state or industry as a result of fewer admissions of temporary foreign workers via the H-2B program in a given state and industry. The same is the case in the analysis for J-1 and H-1B visas.

The research also presents new estimates of the decline in the number of working-age migrants coming from abroad, including:

- The U.S. received some 630,000 fewer working-age international migrants between mid-March 2020 and mid-March 2021 than at its peak during the corresponding period in 2014-2015, a drop of over 75 percent in inflows.¹
- Even if new arrivals in 2019-2021 had maintained just the average annual pace over 2010-2019, the U.S. would have received almost 600,000 more working-age international migrants than it actually did during that two-year period.

¹ Note: Some researchers have reported different shortfalls in foreign workers based on somewhat different time periods, categories or methodologies.

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- The decrease in working-age international migrants was similar for migrants who had at least a bachelor's degree and those who had at most a high school diploma, both down 75 percent in 2020-2021 from their peak year-to-year inflow during the previous decade.

The number of visas issued to temporary foreign workers also fell precipitously in visa programs aimed at non-agricultural workers:

- The number of J-1 exchange visitor visas issued plummeted from about 350,000 per fiscal year to about 100,000 in fiscal year 2020 and a similar level in fiscal year 2021. The drop in the Summer Work Travel (SWT) program within that visa category was even more precipitous, falling from over 100,000 annually to under 5,000 in fiscal year 2020.
- The number of H-1B specialty occupations visas issued fell from almost 190,000 in fiscal year 2019 to about 125,000 in fiscal year 2020 and under 62,000 in fiscal year 2021.
- The number of H-2B non-agricultural worker visas issued fell by almost half in fiscal year 2020 before returning to near its pre-pandemic level in fiscal year 2021.

U.S. labor markets have undergone tremendous change since the onset of the Covid-19 pandemic. With unemployment rates near record lows in many areas and wages rising at a brisk clip, particularly for entry-level jobs, some may be tempted to argue that the decrease in international migration led to better labor market opportunities for American workers. The analysis here gives little reason to believe any gains for U.S. workers are linked to lower admission of temporary foreign workers.

The ongoing shortages of workers in many labor markets reflect U.S. employers' need for additional workers from both domestic sources and abroad. The research also examines data on job postings and the results point to jobs, particularly highly skilled jobs, going unfilled when temporary foreign workers were unable to enter the country. The decrease in new temporary foreign workers in the U.S. as a result of the pandemic thus does not appear to have led to better labor market outcomes for U.S. natives but rather to jobs left unfilled.

COVID-RELATED REDUCTIONS IN FOREIGN WORKER INFLOWS

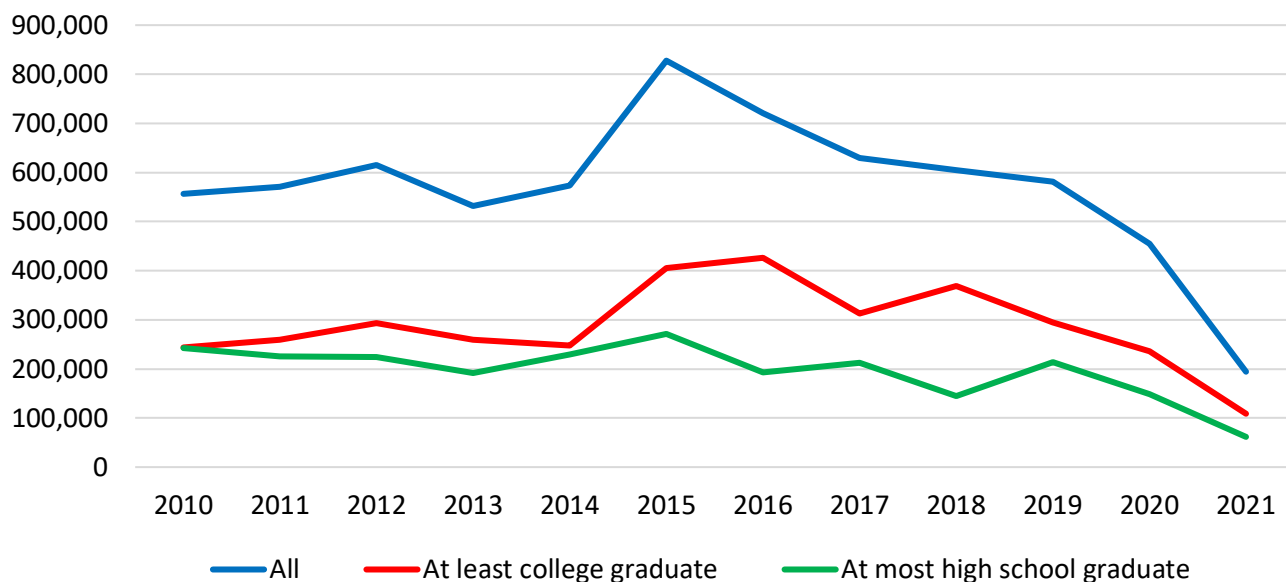
Border closures, flight cancellations, and suspended consular operations led to a dramatic decrease in the number of international migrants who entered the United States after the onset of the Covid-19 pandemic.² New foreign workers who would have been admitted with a temporary non-agricultural worker visa or a permanent resident visa were unable to enter the country during much of 2020 and early 2021. The borders reopened for most foreign workers after March 2021, but potential entrants still faced considerable challenges, including Covid-related regional travel restrictions and continued reduced operations and lengthy backlogs at consulates. While other reports have documented the Covid-induced drop in net international migration across all age groups, this report is the first to report estimates of the decrease in migration from abroad among likely workers and the magnitude of the decline in temporary foreign worker admissions.³ The sizable reduction in the number of new foreign workers during the pandemic has potentially large implications for the U.S. economy.

As Figure 1 shows, the pandemic accelerated an ongoing decline in the number of working-age people moving to the U.S. from abroad. The figure shows the number of foreign born moving to the U.S. over the twelve-month period ending in March of each year shown. The total number of new working-age international migrants, shown in blue, peaked in 2015 and fell considerably over the next two years. The decline eased between 2017 and 2019, with inflows near their pre-2015 levels, before resuming in earnest after 2019. The drop became even more precipitous with the onset of the pandemic. The U.S. received some 630,000 fewer working-age international migrants between mid-March 2020 and mid-March 2021 than in the corresponding period for 2014-2015, a drop of over 75 percent in inflows. Even if new arrivals in 2019-2021 had maintained just the average annual pace of 2010-2019, the U.S. would have received almost 600,000 more working-age international migrants than it actually did during that two-year period.

² The State Department suspended most of their in-person visa processing activities in late March 2020, making it difficult to obtain a visa. In April, the Trump administration suspended the issuance of legal permanent resident visas (“green cards”) abroad, citing high unemployment of U.S. workers. Two months later, the administration suspended entry into the United States by holders of most categories of temporary worker visas. The only large-scale exception was H-2A visas for temporary agricultural workers.

³ For an estimate of the drop in net international migration, see Jason Schachter, Pete Borsella, and Anthony Knapp, “New Population Estimates Show COVID-19 Pandemic Significantly Disrupted Migration Across Borders,” U.S. Census Bureau, December 21, 2021, <https://www.census.gov/library/stories/2021/12/net-international-migration-at-lowest-levels-in-decades.html>.

Figure 1
New Working-Age International Migrants, 2010-2021



Note: Based on 2010-2021 Current Population Survey ASEC data on number of foreign born ages 16-64 who were living abroad a year ago. The data are as of mid-March each year.

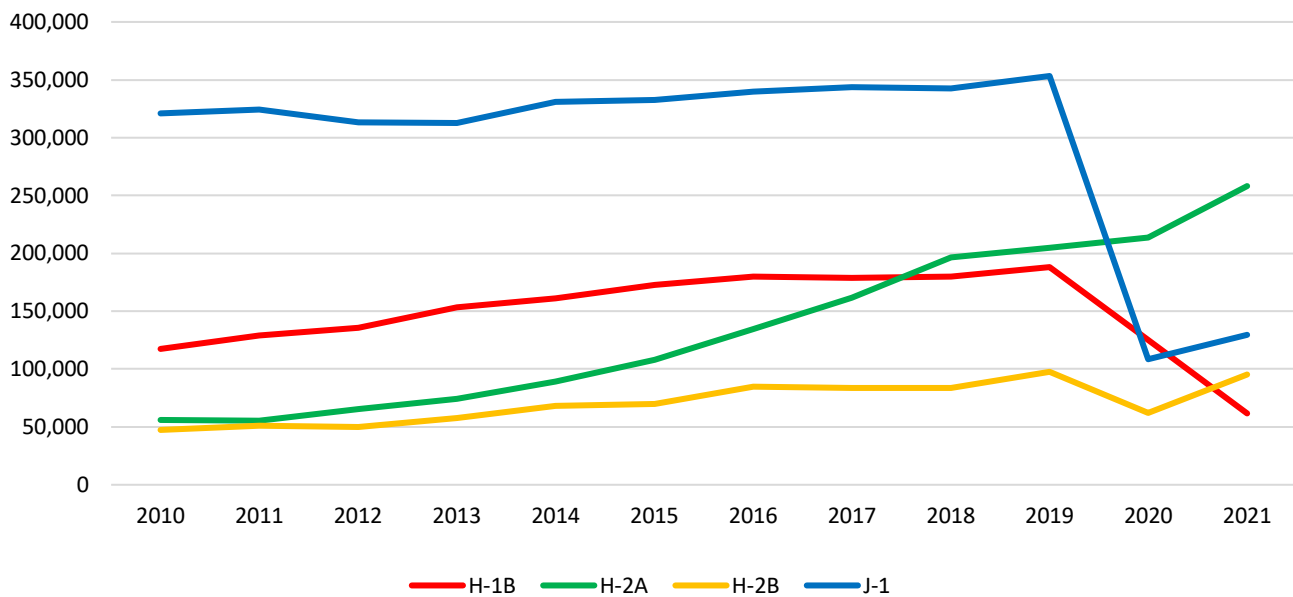
The drop in new working-age international migrants occurred in all education groups. As Figure 1 shows, the numbers of new working-age international migrants who have at least a bachelor’s degree (in red) and who have at most a high school diploma (in green) were already trending down, but the declines accelerated. The number of college graduate new international migrants between mid-March 2020 and mid-March 2021 was some 315,000 below the 2015-2016 peak, and the number of new international migrants who have at most finished high school was almost 210,000 below the 2014-2015 peak. Both are equivalent to a 75 percent drop in inflows, the same as the drop in total inflows by working-age international migrants.

The data underlying Figure 1 include international migrants entering the U.S. under all visa categories – permanent and temporary, family-sponsored, employment-based, and refugees – and those entering without legal status. The number of foreign born entering the U.S. under various visa programs or without a visa is difficult to ascertain, as is the number of people in each category living and working in the country. The State Department does release data on the number of temporary foreign worker visas issued by program, which provides a proxy for the number of new foreign workers arriving under those programs. (Some of the visas are issued to people already living and working in the U.S., such as workers adjusting from F-1 student visas to H-1B visas.)

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The number of temporary worker visas issued under most programs fell during the pandemic. As Figure 2 shows, the number of J-1 exchange visitor visas (in blue) issued plummeted from about 350,000 per fiscal year to about 100,000 across the different programs encompassed under that visa category. The drop in the Summer Work Travel (SWT) program within that visa category was even more precipitous, falling from over 100,000 annually to under 5,000 in fiscal year 2020.⁴ The number of H-1B specialty occupations visas (in red) issued also fell sharply, from almost 190,000 in FY2019 to about 125,000 in FY2020 and under 62,000 in FY2021.⁵ The number of H-2B non-agricultural worker visas (in yellow) issued fell in FY2020 before returning to its pre-pandemic level in FY2021.⁶ The number of H-2A agricultural worker visas (in green) issued continued to rise during the pandemic, in contrast; that program was the only major exception to the border closures for new foreign workers.

Figure 2
Temporary Foreign Worker Visas Issued, by Program, FY2010-FY2021



Note: Based on State Department nonimmigrant visa issuances. Data for FY2020 and FY2021 are preliminary.

⁴ Most categories of the J-1 exchange visitor visa program allow participants to work for a short time period. The Summer Work Travel program, which is the largest category within the J-1 visa program, allows foreign university students to work and travel in the U.S. during their country’s summer.

⁵ The H-1B visa program allows visa holders to work in specialty occupations that require at least a bachelor’s degree. The visas are valid for three years and can be renewed once; after that, a foreign worker can continue to work in the U.S. only if the worker has an approved application for a permanent resident visa and is waiting for a visa to become available.

⁶ The H-2B visa program allows employers to hire foreign workers to fill non-agricultural jobs when their need for the workers is temporary and they cannot find U.S. workers. The visas are valid for up to one year. The program is capped at 66,000 visas per fiscal year, but Congress and the White House have made an additional allotment of visas available several times. The H-2A program has similar rules for agricultural jobs but is uncapped and the visas are valid for up to ten months.

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With the exception of the H-2A program, Figure 2 likely underestimates the pandemic-induced drop in the number of new foreign workers entering the U.S. Some workers who were issued a visa were not able to travel to the U.S. because of flight cancellations and other obstacles related to the pandemic. Anecdotes abound of employers whose applications for temporary foreign workers were approved but who were still awaiting their workers weeks or even months after they were expected to arrive, and similarly of would-be foreign workers unable to enter the U.S. because of inability to access a vaccine or other travel barriers.⁷ Visa problems at U.S. consulates affected both new workers seeking an H-1B visa and workers who had been working in H-1B status but were unable to return to the United States in a timely manner due to visa processing or other issues and as a result could not work in the U.S. during that time. The same may have been true to a lesser degree for H-2B visa holders.

IMPACTS ON THE U.S. LABOR MARKET

The sharp, sudden reduction in new foreign workers may have resulted in both challenges and opportunities in the labor market. Employers who traditionally relied on a steady stream of workers from abroad had to quickly pivot and try to hire workers already present in the country. Of course, some of those employers needed fewer workers, particularly businesses with customer-facing operations during intense waves of the pandemic. Other businesses, however, needed more workers than ever as they scrambled to meet rising demand for delivered goods. As the pandemic entered its second year, employers in most sectors and geographic areas faced tight labor markets due to a combination of early retirements, limited childcare, and low international migration.

The pandemic offers an opportunity to examine what happens to U.S. labor markets when there is an unanticipated substantial decrease in international migration. This study examines whether labor markets that were more reliant on temporary foreign workers right before the pandemic evolved differently during 2020 and 2021 than labor markets that were less reliant on temporary foreign workers. Did the drop in temporary foreign worker inflows lead to more jobs for U.S.-born workers during the pandemic? Or did jobs traditionally filled by temporary foreign workers remain unfilled, perhaps even leading to job losses for U.S. natives as businesses that relied on temporary foreign workers reduced or ceased operations?

To examine these questions, this study combines data on employer demand for temporary foreign workers via the H-2B, J-1, and H-1B visa programs with employment, unemployment, and job postings data. The data for the H-2B and H-1B programs are from the Department of Homeland Security's Employer Data Hub, which records employers who have submitted applications to U.S. Citizenship and Immigration Services to hire temporary foreign workers

⁷ See, for example, Patricia Cohen and Sydney Ember, "Lack of Foreign Workers Has Seasonal Businesses Scrambling," *New York Times*, August 3, 2021 (<https://www.nytimes.com/2021/08/02/business/economy/seasonal-foreign-guest-workers.html?smid=url-share>).

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through those visa programs. Specifically, this study uses the number of approved initial petitions by program, state, and industry for fiscal year 2020.⁸ The counts are a good indicator of how many workers employers expected to receive via the H-2B and H-1B visa programs and, more broadly, indicate employers' typical reliance on temporary foreign workers. Some of those workers were already in the country or able to enter the U.S. before travel was suspended and borders were closed, but some were not. The counts are likely a good proxy for how many new foreign workers employers would have demanded through those programs in fiscal year 2021 as well.⁹ Data on applications for temporary foreign workers through the J-1 visa program are not available, so this study uses the number of participants in the J-1 Summer Work Travel (SWT) program in fiscal year 2019 by state. Those counts reflect how much employers in each state relied on temporary foreign workers via the SWT program.

Temporary foreign workers are highly concentrated in certain industries. Temporary foreign workers in the H-2B program are concentrated in administrative and support and waste management and remediation services (35% of approved applications in fiscal year 2020; this sector includes groundskeeping and landscaping); agriculture (16%); arts, entertainment, and recreation (15%); manufacturing (15%); accommodation and food services (10%); and construction (5%). Temporary foreign workers in the H-1B program are concentrated in professional, scientific, and technical services (54% of approved initial applications in fiscal year 2020); educational services (10%); manufacturing (10%); information (7%); retail trade (5%); and finance and insurance (5%). The J-1 Summer Work Travel data do not include industry, but most of those temporary foreign workers are employed in the leisure and hospitality sector.¹⁰ The analysis of employment and unemployment here focuses on those key industries, but the results are robust to including all industries.

Temporary foreign workers may be concentrated in certain industries, but they nonetheless account for a small share of workers within most of those industries. Temporary foreign workers in the H-2B visa program accounted for less than 1 percent of workers within the six industries listed above, on average, while approved initial applications in the H-1B visa program were only about 0.1 percent of workers.¹¹ J-1 SWT program participants accounted for about 1.5 percent of people working in the leisure and hospitality sector during the summer months the year before the pandemic began. Although these shares are small, employers of temporary foreign workers depend on those workers to help alleviate labor market shortages. These shortages arise due to geographic

⁸ The data for the H-1B program are initial applications. The data for the H-2B program include returning workers.

⁹ Since most applications for temporary foreign workers were submitted before the onset of the pandemic, the counts are exogenous to pandemic-induced labor market shocks.

¹⁰ The analysis here combines the arts, entertainment, and recreation industry and the accommodation and food services industry to create the leisure and hospitality sector when analyzing the J-1 SWT program.

¹¹ The share of workers is the number of approved initial applications for FY2020 for the H-2B and H-1B programs by state and industry relative to FY2019 employment by state and industry. The share of workers for the J-1 SWT program is the number of 2019 participants relative to employment in May through September 2019 by state for the leisure and hospitality sector.

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constraints, such as resort areas where few local workers are available; due to seasonal swings, like in agriculture, construction, and landscaping, that make those jobs unattractive to workers seeking year-round jobs; and due to specialized skill requirements that workers have certain educational credentials or work experience that takes years to acquire, resulting in slow changes in labor supply when labor demand increases.¹²

Temporary foreign workers are concentrated in certain geographic areas as well as in certain industries. The analysis of employment and unemployment below examines labor markets as state and industry combinations in order to take advantage of geographic and industry variation in employers' reliance on temporary foreign workers. The regression models, which are explained in more detail in the appendix, exploit differences across labor markets in employers' reliance on temporary foreign workers in the H-2B and H-1B programs. Importantly, the regression models that examine employment and unemployment in relation to employers' reliance on the H-2B and H-1B programs are able to control for the underlying strength of states' economies and for industry-specific factors. Because the J-1 SWT data do not include industry, the analysis of that program is only able to examine labor market differences across states.

The first portion of the analysis here examines whether differences in employment growth and unemployment across labor markets in fiscal years 2020 and 2021 are related to differences in employers' reliance on temporary foreign workers before the pandemic. If employers were able to turn to U.S.-born workers to fill jobs that otherwise would have been held by temporary foreign workers, then the change in total employment and the overall unemployment rate in a labor market should be unrelated to the pre-pandemic share of temporary foreign workers in that labor market. Further, the change in U.S.-born workers' employment should be positively related to the pre-pandemic share of temporary foreign workers, and their unemployment rate should be negatively related to the pre-pandemic share of temporary foreign workers. In essence, smaller numbers of new temporary foreign workers because of the pandemic should benefit U.S. natives if the two groups are close substitutes.

If temporary foreign workers and U.S. natives are not close substitutes, then employment should fall more in labor markets that relied more on temporary foreign workers prior to the pandemic. Further, U.S.-born workers' employment and unemployment should be unrelated to the pre-pandemic share of temporary foreign workers if U.S. workers did not step in to fill the jobs typically held by temporary foreign workers. And if temporary foreign workers are complements for U.S. natives within the same labor market, then U.S.-born workers' employment might

¹² For a discussion of employer demand for temporary foreign workers via these programs, see, for example, Pia M. Orrenius and Madeline Zavodny, "Help Wanted: Employer Demand for Less-Skilled Temporary Foreign Worker Visas in an Era of Declining Unauthorized Immigration," *RSF: The Russell Sage Foundation Journal of the Social Sciences* 6 (November 2020) 45-67, <https://doi.org/10.7758/RSF.2020.6.3.03>; Madeline Zavodny, "The Impact of H-1B Visa Holders on the U.S. Workforce," National Foundation for American Policy policy brief, May 2020, <https://nfap.com/wp-content/uploads/2020/05/The-Impact-of-H-1B-Visa-Holders-on-the-U.S.-Workforce.NFAP-Policy-Brief.May-2020.pdf>.

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fall, and their unemployment rise, in labor markets that relied more on temporary foreign workers. Impacts in either direction are likely to be magnified among workers with similar education: workers who have at most completed high school when analyzing the H-2B and J-1 SWT programs, and workers who have at least a bachelor's degree when analyzing the H-1B program.

Table 1
Relationship between Change in Employment and Reliance on Temporary Foreign Workers

	H-2B		J-1 SWT		H-1B	
	FY19-FY20	FY19-FY21	FY19-FY20	FY19-FY21	FY19-FY20	FY19-FY21
All workers	-0.213*** (0.025)	0.011 (0.027)	1.492* (0.862)	0.594 (0.717)	3.750 (2.316)	3.270 (1.979)
All U.S.-born workers	-0.245*** (0.028)	-0.128*** (0.026)	1.339 (0.936)	0.465 (0.760)	2.926* (1.240)	2.181 (1.372)
U.S.-born workers with similar education	-0.260*** (0.045)	-0.202*** (0.065)	1.969 (1.542)	0.262 (1.082)	1.780 (2.045)	2.571 (2.420)

* p < 0.1; ** p < 0.05; *** p < 0.01

Note: Each entry shows the results of a separate OLS regression, where the dependent variable is the percentage change in employment for a state and industry combination between the fiscal years indicated. Only May through September are included in the J-1 SWT analysis. Robust standard errors clustered on state are in parentheses. Workers with similar education have at most finished high school for the H-2B and J-1 SWT regressions, and have at least a bachelor's degree for the H-1B regressions. See the appendix for details.

The empirical analysis generally does not indicate that the drop in the number of temporary foreign workers entering the U.S. resulted in better labor market outcomes for U.S. workers. If anything, the opposite is the case with respect to the H-2B program. As shown in the first two columns of Table 1, employment growth was smaller – or employment losses bigger – in labor markets that were more reliant on temporary foreign workers via the H-2B program. Between fiscal year 2019 and fiscal year 2020, for example, total employment growth rate in a labor market was about 0.2 percentage points lower for a one percentage point increase in the share of workers who were requested via the H-2B program. A similar result holds when looking at employment growth among U.S.-born workers or among U.S.-born workers who have at most a high school diploma. When comparing fiscal years 2019 and 2021, total employment growth was not significantly related to employers' earlier reliance on the H-2B program, but employment growth among U.S.-born workers and U.S.-born workers who have at most a high school diploma remained lower in labor markets that were more reliant on the H-2B program.

Unemployment rates show a similar pattern with respect to the H-2B program: Unemployment rates were higher in both fiscal years 2020 and 2021 in labor markets in which employers relied more on temporary foreign workers via the H-2B program, as shown in the first two columns of Table 2. Even though entries resumed through the H-2B program in the second half of the 2021 fiscal year, employment growth was depressed and unemployment was

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elevated for the year as a whole in labor markets that were more reliant on the program. In short, the drop in H-2B program admissions did not boost U.S. natives' employment or lower unemployment but rather, if anything, worsened their labor market outcomes. Further, the analysis here only compares employment changes and unemployment with reliance on H-2B workers in the same state and industry, so it misses any complementarities with workers in other labor markets, such as fewer jobs for workers in another state or industry as a result of fewer admissions of temporary foreign workers via the H-2B program in a given state and industry.

Table 2
Relationship between Unemployment and Reliance on Temporary Foreign Workers

	H-2B		J-1 SWT		H-1B	
	FY2020	FY2021	FY2020	FY2021	FY2020	FY2021
All workers	0.037*** (0.008)	0.077*** (0.008)	-0.206 (0.330)	-0.232 (0.176)	-0.785* (0.399)	-0.728*** (0.213)
All U.S.-born workers	0.055*** (0.009)	0.099*** (0.007)	-0.153 (0.340)	-0.323 (0.210)	-0.398 (0.453)	-0.453 (0.277)
U.S.-born workers with similar education	0.095*** (0.012)	0.141*** (0.008)	0.046 (0.606)	-0.145 (0.355)	0.481 (0.528)	-0.170 (0.478)

* p < 0.1; ** p < 0.05; *** p < 0.01

Note: Each entry shows the results of a separate OLS regression, where the dependent variable is the unemployment rate in a state and industry combination for the fiscal year indicated. Only May through September are included the J-1 SWT analysis. Robust standard errors clustered on state are in parentheses. Workers with similar education have at most finished high school for the H-2B and J-1 SWT regressions, and have at least a bachelor's degree for the H-1B regressions. See the appendix for details.

The analysis of the J-1 SWT program indicates little impact of the drop in program participants on U.S. natives' employment or unemployment in the leisure and hospitality sector. The J-1 SWT program virtually shut down with the onset of the pandemic and, unlike the H-2B program, did not return to anywhere near its previous level by the end of fiscal year 2021. Of course, concerns about Covid-19 may have reduced demand in the leisure and hospitality sector, particularly in summer 2020. The cross-state comparison, however, implicitly controls for the average change in employment or the average unemployment rate. If the absence of J-1 SWT workers led to more jobs for U.S.-born workers, all else equal, the regressions should show a positive effect on employment growth and a negative effect on unemployment for U.S. natives, especially those who have at most completed high school. However, most of the results for the J-1 SWT analysis show no impact on employment changes or unemployment, and no evidence of a significant positive impact on U.S.-born workers' labor market outcomes in the leisure and hospitality sector.

The results for the H-1B program suggest some positive impacts of the reduction in the number of new H-1B program participants, but the positive impact is not among U.S.-born workers who have at least a bachelor's degree

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and therefore might be substitutable with program participants. Employment growth was higher among U.S.-born workers across all education levels in fiscal year 2020 in labor markets that were more reliant on the H-1B program (Table 1, second row, column 5), and total unemployment rates were lower in both fiscal years 2020 and 2021 (Table 2, first row, columns 5 and 6). However, there is no evidence of a significant impact among U.S.-born workers with similar education levels. This pattern suggests strong labor markets during the pandemic in labor markets that relied more on temporary foreign workers via the H-1B program, but those strong labor markets did not translate into gains for U.S.-born college graduates even at a time when few new temporary foreign workers were able to enter the country via the H-1B program. The large drop in new temporary foreign workers via the H-1B program thus does not appear to have led to better labor market outcomes for the U.S. natives who might compete with those workers for jobs. One potential reason for the null effect may be the low unemployment rates among occupations typically held by temporary foreign workers in the H-1B program – there may have been little slack among U.S. college graduates in these labor markets even during the pandemic.¹³

Job postings offer another window into how employers and U.S. labor markets responded to the sharp drop in the number of temporary foreign workers entering the U.S. If employers were able to hire U.S. workers to fill jobs that those temporary foreign workers otherwise would have held, job postings in a state should be unrelated to pre-pandemic reliance on temporary foreign workers in that state. If jobs went unfilled, the job postings should be positively related to the pre-pandemic share of new temporary foreign workers in a state. The analysis here examines job postings for jobs that require low preparation when examining reliance on the H-2B and J-1 SWT programs and for jobs that require extensive preparation when examining reliance on the H-1B program. One potential limitation of the analysis is that the job postings data are based on online job boards, which may be less commonly used for jobs that require low preparation than for those that require extensive preparation.

Table 3
Relationship between Job Postings and Reliance on Temporary Foreign Workers

	H-2B		J-1 SWT		H-1B	
	FY2020	FY2021	FY2020	FY2021	FY2020	FY2021
Job postings for similar skill zone	0.012 (0.012)	0.048 (0.029)	0.010 (0.006)	0.028** (0.012)	0.364*** (0.064)	0.210*** (0.057)

* p < 0.1; ** p < 0.05; *** p < 0.01

Note: Each entry shows the results of a separate OLS regression, where the dependent variable is a weekly measure of job postings, indexed relative to January 2020, at the state level from Burning Glass Technologies via Opportunity Insights. Data for FY2020 begin in January of that year. Only May through September are included the J-1 SWT analysis. Robust standard errors clustered on state are in parentheses. Job postings are for job zones 1 and 2 (jobs that require low preparation) for the H-2B analysis and for job zone 5 (jobs that require extensive preparation) for the H-1B analysis. See the appendix for details.

¹³ See, for example, “Employment data for Computer Occupations from January 2020 to March 2021,” National Foundation for American Policy policy brief, March 2021, <https://nfap.com/wp-content/uploads/2021/03/Employment-Data-for-Computer-Occupations-From-January-2020-to-March-2021.NFAP-Policy-Brief.March-2021-1.pdf>.

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The results point to jobs, particularly highly skilled jobs, going unfilled when temporary foreign workers were unable to enter the country. Online job board postings for positions requiring low preparation were not related to pre-pandemic reliance on the H-2B program across states. The same holds for the J-1 SWT program in summer 2020, but job postings in summer 2021 were positively related to the pre-pandemic share of workers in leisure and hospitality jobs via the J-1 SWT program. As demand returned to pre-pandemic levels, employers appear to have had more unfilled low-preparation jobs in states that relied more on temporary foreign workers via the J-1 SWT program. In both fiscal years 2020 and 2021, online job board postings were considerably higher for jobs that required extensive preparation in states that relied more on temporary foreign workers via the H-1B program. This suggests that many of the jobs that otherwise might have been filled via the H-1B program remained vacant. This result is consistent with the increase in job vacancies in computer-related occupations during the pandemic.¹⁴

DISCUSSION AND CONCLUSION

The onset of the Covid-19 pandemic accelerated an ongoing decline in the number of working-age international migrants entering the United States. International migration fell sharply between mid-March 2019 and mid-March 2020 and then even more precipitously through mid-March 2021. The suspension of most temporary foreign worker programs contributed to the drop in international migration. With the exception of agricultural workers, few new temporary foreign workers were allowed to enter the U.S. between June 2020 and March 2021. Even though most temporary foreign worker programs officially resumed after March 2021, issuances of J-1 and H-1B visas in fiscal year 2021 remained far below pre-pandemic levels.

If temporary foreign workers fill jobs that might otherwise be held by U.S. natives, the abrupt drop in new temporary foreign workers should have led to stronger employment gains and lower unemployment rates among U.S. natives in labor markets that relied more on temporary foreign workers prior to the pandemic. Few of the results here indicate that occurred. On the contrary, employment gains were smaller – or employment losses bigger – and unemployment rates higher for U.S. natives who have at most a high school diploma in labor markets that relied more on temporary foreign workers via the H-2B program. There is no evidence of improved employment or unemployment during the summer months for U.S. natives who have at most a high school diploma in states that relied more on the J-1 SWT program. Likewise, there is no evidence of improved employment or unemployment for U.S. natives who have at least a bachelor's degree in labor markets that relied more on the H-1B program. Online job board postings were higher for jobs requiring extensive preparation in both fiscal years 2020 and 2021 in states that relied more on the H-1B program, and higher for jobs requiring low preparation in summer 2021 in states that

¹⁴ See "Employment data for Computer Occupations from January 2020 to March 2021," National Foundation for American Policy policy brief, March 2021, <https://nfap.com/wp-content/uploads/2021/03/Employment-Data-for-Computer-Occupations-From-January-2020-to-March-2021.NFAP-Policy-Brief.March-2021-1.pdf>.

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relied more on the J-1 SWT program. The decrease in new temporary foreign workers in the U.S. as a result of the pandemic thus does not appear to have led to better labor market outcomes for U.S. natives but rather to jobs left unfilled.

APPENDIX: DATA SOURCES AND ANALYTICAL METHODS

This study uses publicly available data from the Current Population Survey (CPS) via IPUMS (available at <https://cps.ipums.org/cps/>) to estimate the number of working-age international migrants, employment, and unemployment. The number of working-age international migrants is based on the CPS's Annual Social and Economic Supplement, which is conducted primarily in March and asks where survey participants lived a year ago. Data from the CPS's basic monthly data are used to create employment levels and unemployment rates by state and industry.

The data on temporary foreign worker visa issuances are from the U.S. State Department (available at <https://travel.state.gov/content/travel/en/legal/visa-law0/visa-statistics/nonimmigrant-visa-statistics.html>). The data on employers' approved applications for temporary foreign workers via the H-1B and H-2B visa programs used to create the measures of reliance on those programs are from the Department of Homeland Security (available at <https://www.uscis.gov/tools/reports-and-studies/h-1b-employer-data-hub> and <https://www.uscis.gov/tools/reports-and-studies/h-2b-employer-data-hub>). Only initial applications are included in analysis that uses the H-1B program data. The data on the J-1 SWT program are from the U.S. State Department (available at <https://j1visa.state.gov/basics/facts-and-figures/>).

The data on online job board postings are from Burning Glass Technology via Opportunity Insights (available at <https://github.com/OpportunityInsights/EconomicTracker>).

The measures of reliance on the H-1B and H-2B temporary foreign worker programs are based on the number of approved applications for those programs for fiscal year 2020 by state and 2-digit NAICS code industry, divided by average monthly employment in fiscal year 2019 in that state and industry, based on CPS data. The measure of reliance on the J-1 SWT program participants is based on the number of program participants by state for 2019, divided by average monthly employment in the leisure and hospitality sector in May through September of 2019 in the CPS data. The job postings data are not by industry, so reliance on temporary foreign workers is measured relative to average monthly employment within a state in fiscal year 2020 (or 2019 for the J-1 SWT program) in that analysis.

The measures of reliance on temporary foreign workers are included in regressions of the basic form

$$\text{Labor market outcome}_{ist} = \alpha + \beta \text{TFW}_{is} + \text{Industry}_i + \text{State}_s + \text{Time}_t + \epsilon_{ist},$$

where i indexes industries, s indexes states, and t indexes time. The dependent variable is the percentage change in employment, the unemployment rate, or job postings. TFW is a measure of reliance on temporary foreign workers in an industry and state (only in a state for the J-1 SWT analysis and the job postings analysis since no industry-

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level variation is available). Regressions that include multiple observations across industries, states, or time include fixed effects for industry, state, and time as applicable. As noted in the main text, the industry and state fixed effects control for the underlying strength of states' economies and for industry-specific factors since the fixed effects capture the average level of the dependent variable within an industry or a state in the analysis of the H-1B and H-2B program and the percentage change in employment or the unemployment rate. Regressions that examine the percentage change in employment in a state and industry also control for the average percentage change in employment in that state not including that industry to further control for the underlying strength of states' economies. Standard errors, represented by ε in the regression model, are robust and clustered on the state to further control for state-specific heterogeneity.

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