

A woman in the foreground is wearing a yellow protective suit with a repeating eagle logo, a blue surgical mask, and a black headscarf. She is also wearing white gloves and a white apron. In the background, other workers in similar protective gear are visible in a field under a clear sky.

Immigrant Essential Workers are Crucial to America's COVID-19 Recovery

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FWD.us Estimates Show
**Immigrant Essential
Workers are Crucial
to America's COVID-19
Recovery**

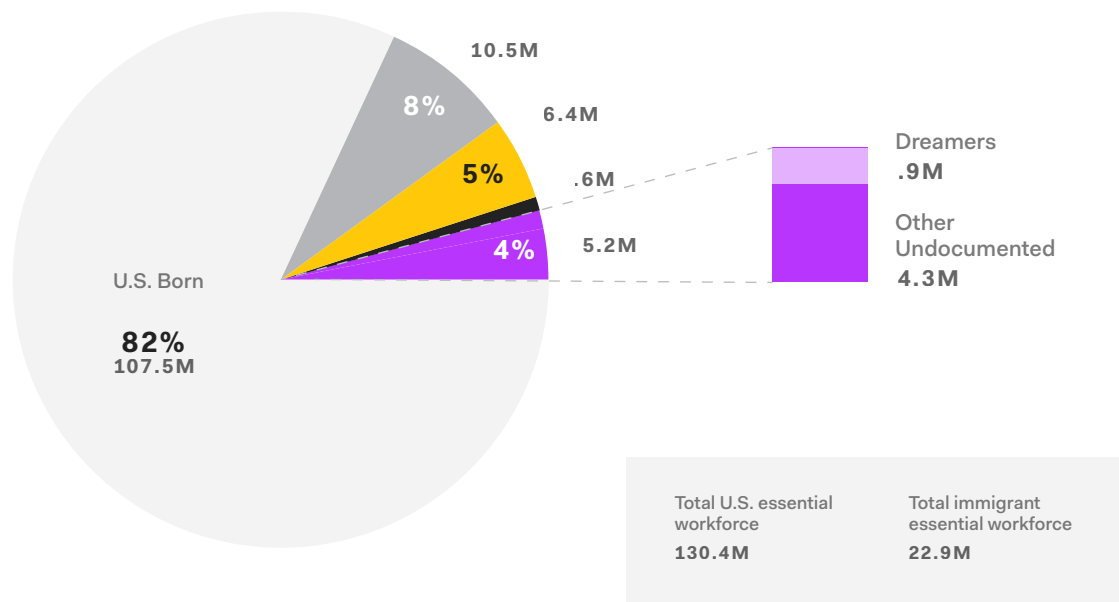
Their sacrifices have kept America going through the pandemic. It's time to provide legal certainty to those on the frontlines.

December 2020

New estimates from FWD.us show that immigrants represent a substantial, and thus critical, part of America's essential COVID-19 workforce combating the pandemic.

MORE THAN 5 MILLION ESSENTIAL WORKERS IN THE U.S. ARE UNDOCUMENTED IMMIGRANTS

U.S. essential workforce in millions, by immigration status



- Naturalized U.S. citizens
- Lawful permanent residents
- Temporary Immigrants
- Undocumented

Note: Naturalized U.S. citizens were born outside of the U.S., but have later naturalized as U.S. citizens. LPR are lawful permanent residents. Temporary immigrants include H-1B, H-2A, H-2B, H-4, J-1, J-2, L-1, L-2, R-1, O-1, and TN visa holders. Dreamer eligible undocumented immigrants are defined by the 2019 Dreamer and Promise Act passed by the U.S. House of Representatives. Other undocumented immigrants include Temporary Protected Status (TPS) holders Deferred Enforced Departure (DED) holders, asylum seekers, those waiting for an adjustment or change of status, and other undocumented immigrants. Essential workers are those in the essential industry labor force based on the Department of Homeland Security's (DHS) Cybersecurity and Infrastructure Security Agency's August 2020 memorandum defining America's essential workforce. Estimates are limited to those in the labor force. See methodology for more details.

Source: FWD.us analysis of 2019 American Community Survey augmented data.

Numbering nearly *23 million people*, these medical, agricultural, food service, and other *immigrant essential workers* make up nearly *1 in 5 individuals* in the *total U.S. essential workforce*.

Undocumented immigrants are one of the largest groups among the immigrant essential workforce, making up 5.2 million essential workers, of which nearly 1 million are Dreamers part of the 2019 [American Dream and Promise Act](#) who entered the U.S. as children. With relatively low unemployment in many essential sectors, the loss of the undocumented immigrant essential workforce would be particularly crippling for future COVID-19 economic recovery. Similarly, failing to address the lack of legal status of undocumented immigrants in the U.S. could endanger their lives, as well as the health and lives of Americans who rely on these essential workers every day. Importantly, it is also a moral failure to call undocumented immigrants “essential” while failing to provide them with legal status.

As more than two-thirds of all undocumented immigrant workers serve in frontline jobs in essential industries—a considerably higher share than among other immigrant groups or those individuals born in the U.S.—undocumented immigrants have been more likely to contract COVID-19. These frontline workers could not perform their essential jobs from home, and many have been hospitalized; thousands have died. Despite this, undocumented immigrants have continued to work on the front lines, delivering home healthcare services, cleaning medical facilities, building temporary hospitals and clinics, and other essential services. Also critical are the estimated million-plus farmworkers part of the [2019 Farm Workforce Modernization Act](#) providing food to America's tables during the pandemic.

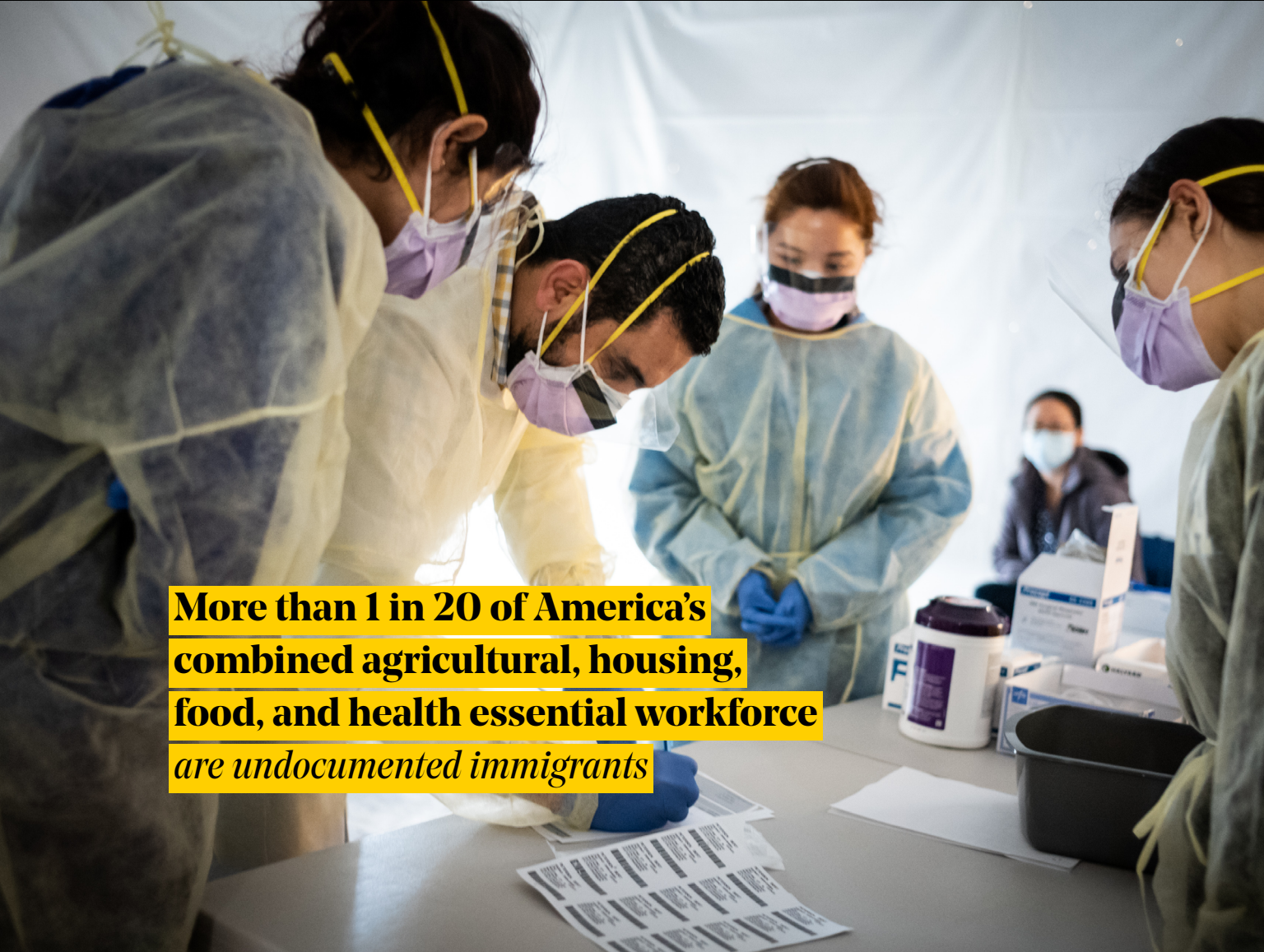
At the same time, undocumented immigrant essential workers live in well-established families, with most having lived in the U.S. for more than a decade, as well as living with

millions of U.S. citizen household members. Additionally, the earnings of most families with undocumented immigrant essential workers are twice the poverty level.

Undocumented immigrant essential workers, and other individuals living with temporary status, face an uncertain future in the United States, particularly given the onslaught of executive orders and policy changes made by the outgoing Trump Administration. Some essential workers have temporary nonimmigrant visas or limited protection from deportation like [DACA or TPS](#), while most have [no legal status](#) at all. Immigrant essential workers are indispensable; the United States continues to rely on them to fight the pandemic and contribute to a long-term recovery. Consequently, they should not be subject to deportation, but instead should be provided certainty over their future in the United States. By doing so, we would recognize the critical work that millions of immigrant essential workers perform every day, and thus secure all our futures.

Congress must include ALL essential workers, including lawful permanent residents, immigrants with temporary status, and undocumented immigrants in future COVID-19 legislation. This includes creating [lawful permanent residence pathways](#) for ALL immigrant essential workers, regardless of their immigration status. Given their personal sacrifice during the pandemic, it is the least Congress and President-elect Biden can do in helping them fight the pandemic alongside all Americans.

Immigrants are a critical part of America's *essential workforce*

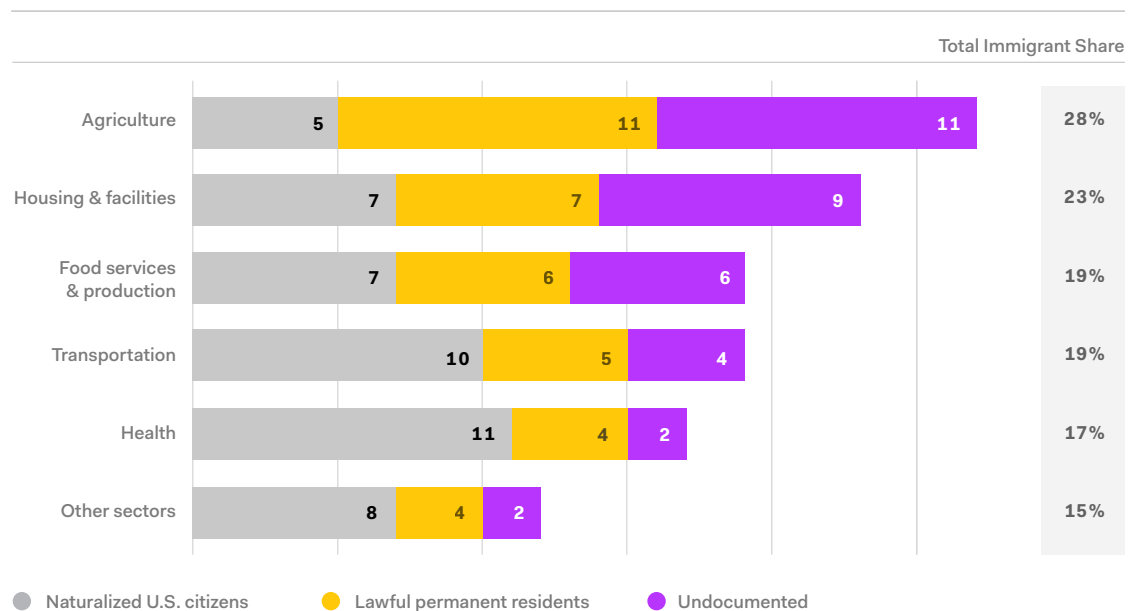
A group of healthcare workers in full PPE (gowns, masks, face shields) are working at a table in a clinical setting. They are looking at a document on the table. The background is a white tent-like structure.

**More than 1 in 20 of America's
combined agricultural, housing,
food, and health essential workforce
*are undocumented immigrants***

Immigrants make up a critical part of the American essential workforce, consisting of nearly a fifth of all essential workers in the United States, according to new estimates from FWD.us.¹

IMMIGRANTS MAKE UP HIGH SHARES OF U.S. ESSENTIAL INDUSTRY WORKFORCES

% of U.S. essential industry workforce, by immigration status



Note: Naturalized U.S. citizens were born outside of the U.S., but have naturalized to become U.S. citizens. The row values may not equal totals due to rounding and that temporary nonimmigrants (not displayed), including H-1B, H-2A, H-2B, H-4, J-1, J-2, L-1, L-2, R-1, O-1, and TN visa holders, make up 1% of essential workers in agriculture, health and other essential sectors. Undocumented immigrants include Dreamers, including Deferred Action for Childhood Arrivals (DACA) recipients, Temporary Protected Status (TPS) holders, Deferred Enforced Departure (DED) holders, asylum seekers, those waiting for an adjustment or change of status and other undocumented immigrants. Essential industry sectors are based on the Department of Homeland Security's (DHS) Cybersecurity and Infrastructure Security Agency's August 2020 memorandum on America's essential workforce. Estimates are limited to those in the labor force. See methodology for more details.

Source: FWD.us analysis of 2019 American Community Survey augmented data.

In particular, undocumented immigrants make up more than 1 in 20 of America's combined agricultural, housing and facilities, food services, and health essential workforce. For example, some 400,000 agricultural workers², 400,000 cleaning staff; 300,000 packers, stockers, and shippers of essential goods; and 100,000 home health and personal care aides are undocumented immigrant essential workers.

Undocumented immigrant workers fill critical job openings that are not always filled by U.S.-born workers. In October 2020, for example, unemployment rates in several of these essential industries, including health (3.9%), agriculture (4.3%), and housing and facilities (5.7%), were near full-employment levels, despite the current economic climate.³ Many undocumented immigrant essential workers have worked in these essential industries for years, offering valuable and hard-to-replace skills that are critical in battling the COVID-19 pandemic.

And, as COVID-19 cases have increased dramatically in recent weeks for northern Midwest states such as Wisconsin, North Dakota, and Michigan, immigrant essential workers as a whole number some 7.6 million workers in the Midwest,⁴ of which 1.6 million are undocumented immigrant essential workers. These medical professionals, food service clerks, and agricultural workers, among others, in these states are crucial during this pandemic peak.

Immigrant essential workers have risked their personal health and that of their families in providing essential services. Immigrants are generally at [higher risk](#) of contracting COVID-19, in part because a larger share of immigrant workers (55%) than the U.S.-born (48%) have frontline jobs outside of the home in essential industries, with an even larger share among undocumented immigrant workers (69%). In fact, FWD.us estimates that immigrants have been 50% more likely to contract the virus than those born in the U.S.⁵ Essential workers on the front lines of the pandemic face an increased probability of exposure, as social distancing is not always possible and personal protective equipment may not always be available.

Immigrant essential workers contribute substantially to the U.S. economy. In 2019, immigrant essential workers are estimated to have had a combined \$860 billion of spending power—disposable income—after the payment of up to \$239 billion in federal and payroll taxes, and an additional estimated \$115 billion in state and local taxes.⁶ Undocumented immigrant essential workers alone had an estimated \$144 billion of spending power after the payment of up to \$48 billion in federal, state, and local taxes.

Defining immigrant essential workers

Essential workers

Essential workers are those in industry sectors deemed essential by the Department of Homeland Security's (DHS) Cybersecurity and Infrastructure Security Agency (CISA) in its [August 2020 memorandum](#).⁷ An additional way to refine the essential worker population is to break down those working in essential industries into **frontline workers** versus those who can work from home.⁸ Most figures in this report use the broader essential industry definition when describing essential workers. The subset of frontline workers is used only for noting COVID-19 infection rates.

Immigrants

Immigrants are defined as foreign-born persons.⁹ Naturalized U.S. citizens were born outside of the U.S., but have become U.S. citizens. Lawful permanent residents are those living in the country on a long-term basis with “green cards.” Nonimmigrants—or immigrants with temporary status—generally live in the U.S. on a shorter-term basis, for one or more years. For this report, these immigrants include the following visa holders in the labor force: H-1B (specialty occupation professionals), H-4 (spouses and children of H-1B holders), J-1 and J-2 (exchange visitors), L-1 and L-2 (intracompany transferees), O-1 (individuals with extraordinary ability or achievement), R-1 (religious workers), and TN (NAFTA professionals) nonimmigrants. Seasonal immigrants are nonimmigrants with H-2A and H-2B annual work visas.

Undocumented immigrants

Undocumented immigrants consist of immigrants susceptible to deportation, whether they entered the U.S. unlawfully or overstayed a visa.¹⁰ The undocumented immigrant population also includes several groups currently protected from deportation, but whose long-term status is precarious. Consequently, these groups are considered undocumented immigrants. Among them are [Dreamers](#), including [Deferred Action for Childhood Arrivals](#) (DACA) recipients, [Temporary Protected Status](#) (TPS) holders, Deferred Enforced Departure (DED) holders, asylum seekers waiting for a decision, and immigrants without lawful status waiting for an adjustment or change of status.

Millions of temporary, seasonal, and undocumented immigrant essential workers face an *uncertain future* in the U.S.



Nearly 6 million temporary, seasonal, and undocumented immigrant essential workers deserve immigration protections to live and work legally in the United States.

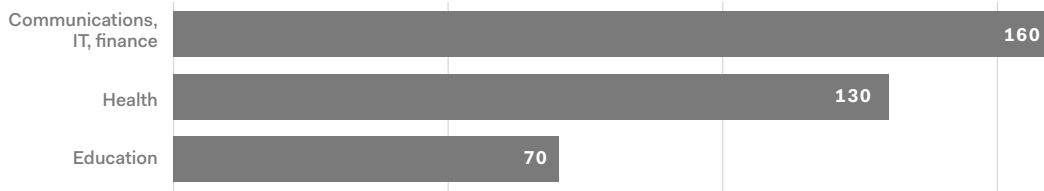
In all, nearly 6 million essential immigrant workers do not have certainty about their future ability to reside in the United States. Some are working in the U.S. as temporary workers, while others have a protected status. Still others, however, have no lawful status.

HUNDREDS OF THOUSANDS OF TEMPORARY AND SEASONAL NONIMMIGRANTS WORK IN ESSENTIAL INDUSTRIES

Population estimates for the top three essential industry sectors in each immigration status, in thousands

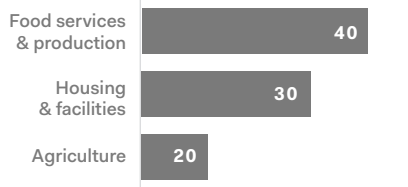
TEMPORARY NON-IMMIGRANTS

Total: 480,000



SEASONAL NON-IMMIGRANTS

Total: 90,000



Note: Estimates rounded to 10,000. Estimates are for an "average" day in 2019; consequently, temporary and seasonal immigrants in the U.S. for less than a year are likely underestimated. Temporary immigrants include H-1B, H-4, J-1, J-2, L-1, L-2, R-1, O-1, and TN visa holders. Seasonal immigrants include H-2A and H-2B visa holders. Dreamers are defined by the 2019 American Dream and Promise Act passed by the U.S. House of Representatives. Other undocumented immigrants include Temporary Protected Status (TPS) holders, Deferred Enforced Departure (DED) holders, asylum seekers waiting on a decision, those waiting for an adjustment or change of status and other undocumented immigrants. Essential industry sectors are based on the Department of Homeland Security's (DHS)'s Cybersecurity and Infrastructure Security Agency's August 2020 memorandum on America's essential workforce. See methodology for more details.

Source: FWD.us analysis of 2019 American Community Survey augmented data.

Nonimmigrant temporary workers with H-1B, H-4, J-1, J-2, L-1, L-2, O-1, R-1, and TN visas work in various skilled and professional occupations, with many holding visas for one to three years, but with limited opportunities for renewal. Estimates show that nearly half a million immigrants with temporary status work in essential industries, including 160,000 in essential telecommunications, information technology, and financial fields. An additional 130,000 provide medical services, including 30,000 physicians and 20,000 life scientists. And 70,000 provide educational services, including 20,000 professors. Although these temporary immigrant essential workers live lawfully in the U.S., their temporary visas are subject to renewal and not always guaranteed, especially given the [changing legal landscape](#) of nonimmigrant visas.

Seasonal nonimmigrants working in essential industries, such as those on H-2A and H-2B visas, number about 40,000 people in food services and production, 30,000 in housing and facility services, and 20,000 in agricultural production. Although their visas are at the most a year in length, many return each year—or have their status renewed stateside—to provide this essential work. Estimates are that some 90,000 seasonal nonimmigrants work in essential industries.¹¹

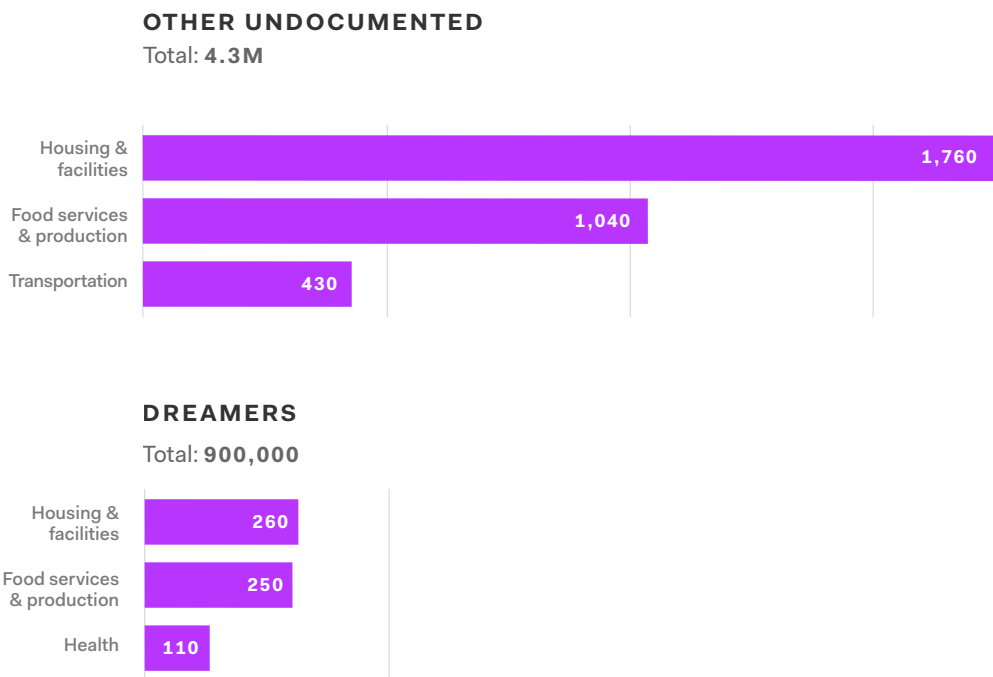
Some 250,000 Dreamers, as defined by the [2019 American Dream and Promise Act](#), provide essential work in food services and production. About the same number work in housing and facilities industries, including construction and landscaping services, and an additional 110,000 work in health industries. Across all essential sectors, an estimated 1 million Dreamers work in essential industries, making up nearly half of the total Dreamer population.

Finally, an estimated 4.3 million undocumented immigrants, besides Dreamers, work in essential industries, including nearly 1.8 million working in housing and facilities, an additional 1 million providing food services, and more than 400,000 transporting and distributing these materials, among other products.

The future ability of immigrant essential workers to reside in the U.S. is uncertain. Many of these immigrant essential workers, even facing their own uncertain futures, continue to serve on the front lines combating the pandemic. They work despite not knowing whether they will be able to continue living in the United States next year, next month, or even tomorrow.

MILLIONS OF UNDOCUMENTED IMMIGRANTS WORK IN ESSENTIAL INDUSTRIES

Population estimates for the top three essential industry sectors in each immigration status, in thousands



Note: Estimates rounded to 10,000. Estimates are for an "average" day in 2019; consequently, temporary and seasonal immigrants in the U.S. for less than a year are likely underestimated. Temporary immigrants include H-1B, H-4, J-1, J-2, L-1, L-2, R-1, O-1, and TN visa holders. Seasonal immigrants include H-2A and H-2B visa holders. Dreamers are defined by the 2019 American Dream and Promise Act passed by the U.S. House of Representatives. Other undocumented immigrants include Temporary Protected Status (TPS) holders, Deferred Enforced Departure (DED) holders, asylum seekers waiting on a decision, those waiting for an adjustment or change of status and other undocumented immigrants. Essential industry sectors are based on the Department of Homeland Security's (DHS)'s Cybersecurity and Infrastructure Security Agency's August 2020 memorandum on America's essential workforce. See methodology for more details.

Source: FWD.us analysis of 2019 American Community Survey augmented data.

Most undocumented essential workers have lived in the U.S. for more than a decade, live with U.S. citizen household members, and are financially stable

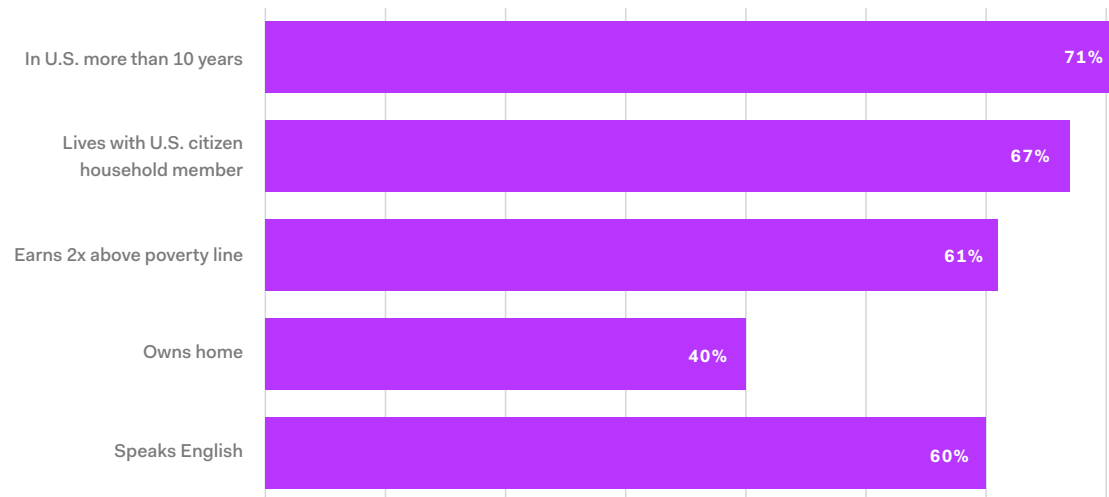


Some 7 million U.S. citizens, including 4 million minor U.S. citizen children, live with undocumented immigrant essential workers.

Undocumented immigrant essential workers, including Dreamers, are well established in U.S. communities, with most (71%) living in the U.S. for ten years or longer. They have built their lives here, and their communities have come to rely on them.

UNDOCUMENTED IMMIGRANT ESSENTIAL WORKERS ARE HIGHLY INTEGRATED INTO U.S. SOCIETY

% of undocumented immigrant essential workers



Note: "Speaks English" refers to a self description of English ability and includes those stating they speak English well or very well or speak only English. Undocumented immigrants consist of Dreamers, including Deferred Action for Childhood Arrivals (DACA) recipients, Temporary Protected Status (TPS) holders, Deferred Enforced Departure (DED) holders, asylum seekers waiting on a decision, those waiting for an adjustment or change of status and other undocumented immigrants. Essential workers are based on the Department of Homeland Security (DHS)'s Cybersecurity and Infrastructure Security Agency's August 2020 memorandum on America's essential workforce. Estimates are limited to those in the labor force. See methodology for more details.

Source: FWD.us analysis of 2019 American Community Survey augmented data

At the same time, about half (52%) of undocumented immigrant essential workers are married and have their spouse living with them. More than half (57%) have at least one child living in the household. The majority (67%) live with at least one U.S. citizen household member. In fact, estimates show some 7 million U.S. citizens, including 4 million minor U.S. citizen children, live with undocumented immigrant essential workers.

Most undocumented immigrant essential worker families (61%) live at two times or higher than the poverty level in their communities. Nearly 4 in 10 (40%) undocumented immigrant essential worker families own their own home. Consequently, most undocumented immigrant essential workers are financially stable and they are, on average, at a similar economic standing as lawful permanent resident essential workers.

Meanwhile, most (60%) undocumented immigrant essential workers say they speak English well, very well, or speak only English. Also, the majority (60%) of undocumented immigrant essential workers have completed a high school or higher level of education.

With their unique and essential work skills, their integral role in U.S. communities, and their financial stability, these undocumented immigrant essential workers are vital to the COVID-19 economic recovery. They have been an integral part of the U.S. economy for many years, and will remain so in the years ahead.

Methodology

Methodology for estimating the number and characteristics of immigrant essential workers in the U.S. by their immigration status

Estimating the number and characteristics of immigrant essential workers by their immigration status in the U.S. involves three major steps:

1. Determining immigrant status groups and their population sizes, using both survey and administrative data
2. Assigning respondents in [American Community Survey \(ACS\)](#) data belonging to each immigrant status group
3. Assigning respondents in the ACS to essential and non-essential worker categories

Each step involves several tasks and assumptions in providing the most reliable statistics on the number and characteristics of immigrant essential workers in the U.S., including expected undercount adjustments.

Population estimates are for immigrants—those individuals not born in the U.S. or its territories, or to U.S. citizens living abroad—living in the 50 states and the District of Columbia. The estimates are for an average day in the study's year.

Although many immigrant essential worker groups may be of interest to policymakers, the only ones that can be estimated are those that meet scientifically sound eligibility requirements in the data, and are sufficiently large in population size (often greater than 10,000).

U.S. Naturalized Citizens

Immigrants include those individuals who were not born in the U.S. or its territories, or to U.S. citizens living abroad. Immigrants living in the U.S. with U.S. citizenship are naturalized citizens.

Population figures for this group among immigrants were estimated by those entering the U.S. before 1980 and in 1980 and later.¹² The population estimate of those arriving prior to 1980 is based on [American Community Survey \(ACS\)](#) data drawn from [IPUMS](#),¹³ with adjustments for [known undercounting](#) of ethnic and racial groups.¹⁴ Population estimates for immigrants with U.S. citizenship arriving in 1980 or later are drawn from U.S. government immigration records presented in the Department of Homeland Security's (DHS) annual [report](#) on the size of the immigrant population living legally in the United States.

Within ACS data, any married respondents entering the U.S. within the past five years are not considered U.S. citizens; unmarried respondents entering the U.S. within the past seven years are also not considered U.S. citizens. These immigrants are ineligible to apply for and receive U.S. citizenship given the short time they have lived in the U.S. (They would be eligible to apply three years after receiving legal permanent residency with a spouse as immediate relative, and five years without a spouse as immediate relative; more time was added in the ACS to allow for arrival in the U.S. and time to process a citizenship application.) Also, citizenship levels found in [survey data](#)

compared with recorded naturalizations in [DHS data](#) among Mexican, Salvadoran, Guatemalan, and Honduran immigrants indicate that many immigrants from these countries, particularly those who have arrived recently, falsely report in the ACS that they are U.S. citizens.¹⁵ Consequently, immigrants from these countries arriving in the U.S. in 2000 or later are not considered U.S. citizens.¹⁶

Finally, the relative size of U.S. citizen and non-U.S. citizen immigrant populations living in the United States are adjusted in the ACS data to reflect the U.S. citizen population estimate drawn from the ACS (pre-1980) and DHS report (1980 and later).

Lawful Permanent Residents (LPR)

Immediate relative spouse arriving previous three years. The population size is based on the number of respondents in the ACS arriving during the past three years who are living with a U.S. citizen spouse.¹⁷ The population size is drawn from ACS data and is consistent with the number of new LPR arrivals under the immediate relative spouse category during the previous three years, according to [DHS statistics](#).¹⁸

Refugees arriving in the previous six years. Resettled refugees are eligible for lawful permanent residency within one year of living in the United States. Five years later, resettled refugees are eligible to apply for U.S. citizenship. The population size is drawn from ACS data by including all newly arrived immigrants for six years from top countries of birth of refugees resettled in the U.S. during the same period. The population estimate is consistent with the number of new refugee arrivals during the previous six years, according to [DHS statistics](#).¹⁹

Other LPR. The population estimate is drawn from a [DHS report](#) on estimating the size of the LPR population in the U.S. after subtracting population estimates for LPR among immediate relative spouses and resettled refugees. Additionally, this LPR population estimate includes resettled refugees and those granted asylum in the U.S. during the current year.²⁰ Within the ACS, all immigrants arriving before 1980 and who are not U.S. citizens are assumed to have LPR status. Also, immigrants arriving before 2002, except for those from Mexico and other Central American countries (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama) are also considered lawful permanent residents, as [estimates](#) of undocumented immigrants from the 1990s and early 2000s indicate few undocumented immigrants from countries besides Mexico and Central American countries. Based on the [Cuban Adjustment Act of 1966](#), all those born in Cuba and who are not U.S. citizens are considered to have lawful permanent residency.

Non-U.S. citizens working in occupations that require lawful status due to official licensure, such as certain medical professionals, transportation workers (for example, railway engineers, pilots), and government workers, are considered to have lawful permanent residency. Non-U.S. citizen veterans and those using government health insurance and/or social welfare programs (for example, Social Security, TANF, Supplemental Security Income) are also assumed to be lawful permanent residents.

Spouses and children of adult family members with LPR are also assumed to have lawful permanent residency. Finally, the remaining ACS respondents are considered to have lawful permanent residency, after all other immigrant status classifications, including undocumented immigrants (see undocumented immigrants section below) are assigned.

Nonimmigrants (temporary immigrants)

F-1 and M-1 international students. Population estimates are based on the number of immigrants in the ACS ages 17 to 35, arriving in the U.S. ten or fewer years earlier, attending school, and having a high school diploma or other post-secondary education. The estimates are similar to the number of international students in [DHS 2014-2016 nonimmigrant population reports](#).²¹ *International student dependents* include non-working spouses (ages 17 to 35) and children (21 years or younger) living in the household of international students. (International students are not mentioned in reporting on immigrant essential workers as they are not in the labor force. Nonetheless, international students are estimated as part of the ACS assignment exercise.)

Optional Practical Training (OPT). [OPT](#) is a professional training opportunity for international students in the U.S. It offers those with F-1 student nonimmigrant status a job experience for up to three years. OPT population estimates are based on the number of respondents in the ACS ages 18 to 30, arriving seven or fewer years earlier, are employed, and hold a bachelor's degree or higher education. To differentiate this group from newly arrived immigrants starting their careers under a different, less-temporary visa, those assigned an OPT status in the ACS do not own their home. OPT population estimates are similar to [Student and Visitor Exchange Program](#) (SEVIS) data from a FWD.us FOIA request.²² *Optional Practical Training (OPT) dependents* include non-working spouses (ages 17 to 30) and children (21 years or younger) living in the household of OPT-status individuals. (International students with OPT are not mentioned in reporting on immigrant essential workers as they do not have a work visa like other nonimmigrant statuses. Nonetheless, OPT visa holders are estimated as part of the ACS assignment exercise.)

H-1B specialty occupations. Professional, skilled workers with [H-1B](#) status can generally live and work in the U.S. for up to six consecutive years. H-1B population estimates are based on the number of immigrants in the ACS who are older than 21, hold a bachelor's degree or higher education, arrived within the previous seven years, and are working in a top occupation of H-1B visa holders according to [Department of Labor](#) data. H-1B population estimates are similar to U.S. Citizenship and Immigration Services (USCIS) [estimates](#). *H-1B specialty occupations dependents* include spouses (older than 21) and children (21 years or younger) living in the household of H-1B visa holders, and entering the U.S. within the previous seven years.

H-2A agricultural workers. Population estimates are based on the number of respondents in the ACS from H-2A eligible countries ages 18 through 64 working in agricultural occupations. H-2A population estimates are similar to the annual number of H-2A workers certified to work in the U.S., with downward adjustments, as all workers do not remain in the U.S. for the entire year.

H-2B non-agricultural workers. Population estimates are based on the number of respondents in the ACS from H-2B eligible countries ages 18 through 64 working in top, selected H-2B occupations, according to [Department of Labor](#) data. Population estimates are similar to the annual number of H-2B workers certified to work in the U.S., with downward adjustments as all workers do not remain in the U.S. for the entire year.

Diplomats. Population estimates are based on the number of respondents in the ACS older than 21, holding a high school diploma or higher education, and working in international government service industries. *Diplomat dependents* are non-working spouses (older than 21 years) and children (21 years or younger) living in the household. Diplomatic visa population estimates are similar to figures in [DHS 2014-2016 nonimmigrant population reports](#) and [Department of State](#) visa approvals for nonimmigrants with A, G, and N visas. (Diplomats are not mentioned in reporting on immigrant essential workers as they are not essential to the U.S. workforce. Nonetheless, diplomats are estimated as part of the ACS assignment exercise.)

L intracompany transferees. Population estimates are based on the number of respondents in the ACS older than 21, holding a high school diploma or higher education, and working in managerial/chief executive occupations. *L intracompany transferee dependents* are spouses (older than 21 years) and children (21 years or younger) living in the household. [L visa](#) population estimates are in line with [Department of State](#) visa approvals for nonimmigrants L visas.

J cultural exchange visitors. Population estimates are based on the number of respondents in the ACS that make up the majority of J visa holders who live in the U.S. for a year or longer, including au pairs ages 19 to 25 arriving within the previous three years, secondary school students ages 16 to 18 arriving within the previous two years, and physicians and professors arriving within the previous three years.

J cultural exchange visitor dependents include non-working spouses (older than 21) and children (21 years or younger) living in the household of physician and professor J visa holders, and entering the U.S. within the previous three years.

O extraordinary ability workers and P athletes. Population estimates are based on the number of respondents in the ACS that work in entertainment or professional sports industries entering the U.S. within the previous six years. *O and P visa (extraordinary abilities and athletes) dependents* include non-working spouses (older than 21) and children (21 years or younger) living in the household of O and P visa holders, and entering the U.S. within the previous six years.

R religious workers. Population estimates are based on the number of respondents in the ACS working in religious professions with some college or higher education entering the U.S. during the previous six years. *R religious worker visa dependents* include non-working spouses (older than 21) and children (21 years or younger) living in the household of R religious workers, and entering the U.S. within the previous six years.

TN NAFTA professionals. Population estimates are based on the number of respondents in the ACS working in professional occupations, holding a bachelor's degree or higher, and entering the U.S. during the previous six years. *TN NAFTA professional dependents* include non-working spouses (older than 21) and children (21 years or younger) of TN visa holders living in the household and entering the U.S. within the previous six years.

Undocumented Immigrants

The number of undocumented immigrants is the residual of *lawful* immigrants—U.S. citizens, LPRs, and nonimmigrants listed above—from the *total* number of immigrants living in the U.S., per the ACS. The undocumented immigrant estimate is adjusted for known undercounting of immigrants and undocumented immigrants more specifically.²³ These adjustments are in line with those made by multiple research and policy organizations, including [Pew Research Center](#), [Migration Policy Institute](#), and [Center for Migration Studies](#).²⁴

The number of undocumented immigrants consists of immigrants susceptible to deportation, but includes several immigrant groups that may currently have lawful status but whose long-term status is precarious, such as Temporary Protection Status ([TPS](#)) holders and Deferred Action for Childhood Arrivals ([DACA](#)) recipients. When these additional groups are included in the estimate, the total number of undocumented immigrants estimated to live in the United States is comparable to the 10 million to 11 million undocumented immigrants living in the U.S. estimated by other policy and research organizations. Consistent with [reporting](#) by these organizations, the total number of undocumented immigrants has decreased in recent years.

Temporary Protected Status (TPS). Several hundred thousand immigrants from countries such as El Salvador, Honduras, Haiti, among others, are protected from deportation based on natural disasters and security issues that do

not permit immigrants to return safely to their home countries. Population estimates are based on annual [CRS reports](#) for the number of TPS holders expected to renew their status each year.

Immigrants eligible for this protected status by their country of birth and their entry date into the U.S. are assigned TPS status in the data. Since a larger number of immigrants in the data meet this group criteria than is indicated by the population estimate, immigrant respondents meeting TPS criteria are randomly assigned, with a specific population target for Salvadorans, the largest of TPS country beneficiaries. Spouses and children of adult TPS holders who also qualify for TPS are assumed to also have this status.

Dreamers, as defined by the 2019 American [Dream and Promise Act](#) passed by the U.S. House of Representatives, are a broader yet similar group of undocumented immigrants. Dreamers, in this study, consist of undocumented immigrants who entered the U.S. in 2017 or earlier below the age of 18 and are either in school or have the equivalent of a high school diploma. *Deferred Action for Childhood Arrivals (DACA)*, an executive order from President Obama in 2012, allowed those with certain criteria who entered the U.S. as children, but have no current, lawful status, to apply for protection from deportation. The population estimate is based on the annual number of valid DACA recipients from [USCIS](#).

Immigrants eligible for DACA status by their entry date (before 2008), age (less than 37 years old), education level (high school diploma or equivalent), or who are studying full-time are assigned this status in the ACS data. Since a larger number of immigrants in the data meet this group criteria than is indicated by the population estimate, immigrants are randomly assigned, with a specific population target for Mexican DACA recipients, the largest of DACA recipient countries. DACA spouses eligible for DACA are also assigned this status.

The remaining number of the undocumented immigrant population, and the majority, represents immigrants living in the U.S. after all previously mentioned undocumented immigrants are subtracted from the total undocumented immigrant estimate. The undocumented immigrant estimate includes asylum seekers (affirmative and defensive) waiting for a decision, those waiting for an adjustment or change of status, and a small number of other waiting immigrants (parole, DED, T, VAWA, U, NACARA, K).

Since a larger number of respondents in the ACS meet the criteria of undocumented immigrants without TPS or DACA, respondents are randomly assigned as part of the undocumented immigrant population or the alternative, lawful permanent resident. Family members arriving in the U.S. the same year as one family member with an undocumented immigrant status are also assumed to be undocumented immigrants. Remaining immigrants without immigrant status in ACS data are assumed to be lawful permanent residents (see Other LPR described earlier).

Essential Worker and Frontline Job Classifications

The classification of *essential worker* status is based on the industry of employment for respondents in the labor force found in the ACS. Most recent estimates of U.S. essential workforce for 2020 are based on data from the Bureau of Labor Statistics' (BLS) [Current Population Survey \(CPS\)](#) conducted monthly by the U.S. Census Bureau.²⁵

Essential industries follow the classification schema provided by DHS's Cybersecurity and Infrastructure Agency's (CISA) [memorandum](#) on essential crucial infrastructure workers published August 18, 2020. CISA's narrative description of essential workers by industry sector is applied to the North American Industry Classification System ([NAICS](#)) in the ACS.²⁶ A complete list of NAICS codes assigned to essential industry sectors is below.²⁷

All those working in essential industries are not frontline workers. *Frontline* classification is based on the Standard Occupational Classification (SOC) in the ACS. The selection of frontline occupations is based on an analysis of surveys from U.S. Department of Labor's (DOL) Occupational Information Network (O*NET) as occupations that require working outside of the home.²⁸ Frontline occupations are listed below.²⁹

Immigrants considered part of the U.S. essential workforce are those who are 16 years and older and part of the labor force.

NAICS Essential Sectors and Codes—Communications, Information Technology and Finance

Banking and related activities	52M1
Broadcasting (except internet)	515
Communications, audio, and video equipment	334M1
Computer and peripheral equipment manufacturing	3341
Data processing, hosting, and related services	5182
Electronic and precision equipment repair and maintenance	8112
Electronic components and products, NEC	334M2
Electronic shopping and mail-order houses	454110
Electronics stores	443142
Insurance carriers	5241
Internet publishing and broadcasting and web search portals	51913
Miscellaneous paper and pulp products	3222M
Navigational, measuring, electromedical, and control instruments	3345
Newspaper publishers	51111
Nondepository credit and related activities	522M
Other information services, except libraries and archives, internet publishing and broadcasting web search portals	5191ZM
Paper and paper products merchant wholesalers	4241
Periodical, book, and directory publishers	5111Z
Printing and related support activities	3231
Pulp, paper, and paperboard mills	3221
Savings institutions, including credit unions	5221M
Securities, commodities, funds, trusts, and other financial investments	52M2
Telecommunications, except wired telecommunications carriers	517Z
Wholesale electronic markets, agents and brokers	4251
Wired telecommunications carriers	517311

NAICS Essential Sectors and Codes—Community and Other Government

Administration of economic programs and space research	92M2
Administration of environmental quality and housing programs	92M1
Administration of human resource programs	923
Child day care services	6244
Executive offices and legislative bodies	9211MP
Other administrative, and other support services	561M
Other general government and support	92119
Public finance activities	92113
Religious organizations	8131

NAICS Essential Sectors and Codes—Education

Business, technical, and trade schools and training	611M2
Colleges, universities, and professional schools, including junior colleges	611M1
Elementary and secondary schools	6111
Other schools and instruction, and educational support services	611M3

NAICS Essential Sectors and Codes—Energy and Public Works

Coal mining	2121
Commercial and industrial machinery and equipment repair and maintenance	8113
Electric and gas, and other combinations	221MP
Electric lighting, and electrical equipment manufacturing, and other electrical component manufacturing, NEC	335M
Electric power generation, transmission and distribution	2211P
Industrial and miscellaneous chemicals	325M
Metal ore mining	2122
Miscellaneous petroleum and coal products	3241M
Natural gas distribution	2212P
Nonmetallic mineral mining and quarrying	2123
Not specified utilities	22S
Oil and gas extraction	211
Petroleum and petroleum products merchant wholesalers	4247
Petroleum refining	32411
Resin, synthetic rubber, and fibers and filaments	3252
Sewage treatment facilities	22132
Support activities for mining	213
Waste management and remediation services	562
Water, steam, air-conditioning, and irrigation systems	2213M

NAICS Essential Sectors and Codes—Food and Agriculture

Agricultural chemicals	3253
Agricultural implements	33311
Alcoholic beverages merchant wholesalers	4248
Animal food, grain and oilseed milling	311M1
Animal production and aquaculture	112
Animal slaughtering and processing	3116
Bakeries and tortilla manufacturing, except retail bakeries	3118Z
Beer, wine, and liquor stores	4453
Beverage	3121
Community food and housing, and emergency services	6242
Convenience Stores	44512
Crop production	111
Dairy products	3115
Department stores	45221
Farm product raw materials, merchant wholesalers	4245
Farm supplies merchant wholesalers	42491
Fishing, hunting, and trapping	114
Forestry, except logging	113M
Fruit and vegetable preserving and specialty foods	3114
General merchandise stores, including warehouse clubs and supercenters	4523
Grocery and related product merchant wholesalers	4244
Logging	1133
Miscellaneous nondurable goods merchant wholesalers	4249Z
Not specified food industries	311S
Other direct selling establishments	45439
Restaurants and other food services	722Z
Retail bakeries	311811
Seafood and other miscellaneous foods, NEC	311M2
Specialty food stores	4452
Sugar and confectionery products	3113
Supermarkets and grocery (except convenience) stores	44511
Support activities for agriculture and forestry	115
Tobacco	3122

NAICS Essential Sectors and Codes—Health

Drugs, sundries, and chemical and allied product merchant wholesalers	424M
Funeral homes, cemeteries, and crematories	8122
General medical and surgical hospitals, and specialty (except psychiatric and substance abuse) hospitals	622M
Health and personal care, except drug, stores	446Z
Home health care services	6216
Individual and family services	6241
Management, scientific and technical consulting services	5416
Medical equipment and supplies	3391
Nursing care facilities (skilled nursing facilities)	6231
Office of chiropractors	62131
Offices of dentists	6212
Offices of optometrists	62132
Offices of other health practitioners	6213ZM
Offices of physicians	6211
Other health care services	621M
Outpatient care centers	6214
Pharmaceuticals and medicines	3254
Pharmacies and drug stores	44611
Plastics products	3261
Psychiatric and substance abuse hospitals	6222
Residential care facilities, except skilled nursing	623M
Rubber products, except tires	3262M
Scientific research and development services	5417
Soap, cleaning compound, and cosmetics	3256
Veterinary services	54194

NAICS Essential Sectors and Codes—Housing, Construction, Facilities

Agencies, brokerages, and other insurance related activities	5242
Aluminum production and processing	3313
Building material and supplies dealers	4441Z
Cement, concrete, lime, and gypsum products manufacturing	327M
Clay building material and refractories manufacturing	327120
Commercial and service industry machinery manufacturing	3333
Commercial, industrial, and other intangible assets rental and leasing	53M
Construction (the cleaning of buildings and dwellings is incidental during construction and immediately after construction)	23
Construction, and mining and oil and gas field machinery	3331M
Foundries	3315
Glass and glass products manufacturing	3272
Hardware stores	44413
Hardware, and plumbing and heating equipment, and supplies, merchant wholesalers	4237
Household appliance stores	443141
Household appliances and electrical and electronic goods merchant wholesalers	4236
Iron and steel mills and steel products manufacturing	331M
Landscaping services	56173
Lawn and garden equipment and supplies stores	4442
Lessors of real estate, and offices of real estate agents and brokers	531M
Lumber and other construction materials merchant wholesalers	4233
Machinery, equipment, and supplies merchant wholesalers	4238
Metal forgings and stampings	3321
Metals and minerals, except petroleum, merchant wholesalers	4235
Metalworking machinery	3335
Miscellaneous fabricated metal products manufacturing	332MZ
Miscellaneous nonmetallic mineral products manufacturing	3279
Miscellaneous wood products	3219ZM
Nonferrous metal, except aluminum, production and processing	3314
Not specified metal industries	33MS
Paint, coating, and adhesives	3255

Pottery, ceramics, and plumbing fixture manufacturing	32711
Prefabricated wood buildings and mobile homes	32199M
Professional and commercial equipment and supplies merchant wholesalers	4234
Sawmills and wood preservation	3211
Services to buildings and dwellings (except cleaning during construction and immediately after construction)	5617Z
Veneer, plywood, and engineered wood products	3212

NAICS Essential Sectors and Codes—Transportation

Aerospace products and parts manufacturing	33641M2
Air transportation	481
Aircraft and parts manufacturing	33641M1
Automotive equipment rental and leasing	5321
Automotive repair and maintenance	8111Z
Bus service and urban transit	485M
Car washes	811192
Coating, engraving, heat treating, and allied activities	3328
Couriers and messengers	492
Engine, turbine, and power transmission equipment manufacturing	3336
Fuel dealers	454310
Gasoline stations	447
Machine shops; turned product; screw, nut, and bolt manufacturing	3327
Machinery manufacturing, not classified elsewhere or not specified	333MS
Other transportation equipment manufacturing	3369
Paperboard container manufacturing	32221
Pipeline transportation	486
Postal service	491
Rail transportation	482
Railroad rolling stock manufacturing	3365
Services incidental to transportation	488
Ship and boat building	3366
Structural metals, and boiler, tank, and shipping container manufacturing	332M
Taxi and limousine service	4853
Tires	32621
Truck transportation	484
Warehousing and storage	493
Water transportation	483

Frontline SOC Occupations

Facilities managers	113013
Industrial production managers	113051
Farmers, ranchers, and other agricultural managers	119013
Constructions managers	119021
Education and childcare administrators	119030
Food service managers	119051
Entertainment and recreation managers	119070
Lodging managers	119081
Emergency management directors	119161
Meeting, convention, and event planners	131121
Fundraisers	131131
Surveyors, cartographers, and photogrammetrists	171020
Chemical engineers	172041
Industrial engineers, including health and safety	172110
Marine engineers and naval architects	172121
Materials engineers	172131
Petroleum, mining, and geological engineers, including mining safety engineers	1721XX
Surveying and mapping technicians	173031
School psychologists	193034
Urban and regional planners	193051
Agricultural and food science technicians	194010
Biological technicians	194021
Chemical technicians	194031
Environmental science and geoscience technicians, and nuclear technicians	1940XX
Other life, physical, and social science technicians	1940YY
Occupational health and safety specialists and technicians	195010
Mental health counselors	211014
Counselors, all other	211019
Child, family, and school social workers	211021
Healthcare social workers	211022

Mental health and substance abuse social workers	211023
Social workers all other	211029
Social and human service assistants	211093
Other community and social service specialists	21109X
Merchandise displayers and window trimmers	271026
Actors	272011
Producers and directors	272012
Umpires, referees, and other sports officials	272023
Dancers and choreographers	272030
Music directors and composers	272041
Musicians and singers	272042
Disc jockeys, except radio	272091
Entertainers and performers, sports and related workers, all other	272099
Interpreters and translators	273091
Media and communications workers, all other	273099
Television, video, and motion picture camera operators and editors	274030
Chiropractors	291011
Dentists	291020
Dietitians and nutritionists	291031
Optometrists	291041
Pharmacists	291051
Physician assistants	291071
Podiatrists	291081
Occupational therapists	291122
Physical therapists	291123
Radiation therapists	291124
Recreational therapists	291125
Respiratory therapists	291126
Other therapists	29112X
Veterinarians	291131
Registered nurses	291141
Nurse anesthetists	291151

Audiologists	291181
Nurse practitioners and nurse midwives	2911XX
Physicians	291210
Surgeons	291240
Acupuncturists	291291
Dental hygienists	291292
Healthcare diagnosing or treating practitioners, all other	291299
Clinical laboratory technologists and technicians	292010
Cardiovascular technologists and technicians	292031
Diagnostic medical sonographers	292032
Radiologic technologists and technicians	292034
Magnetic resonance imaging technologists	292035
Nuclear medicine technologists and medical dosimetrists	29203X
Emergency medical technicians	292042
Paramedics	292043
Pharmacy technicians	292052
Psychiatric technicians	292053
Surgical technologists	292055
Veterinary technologists and technicians	292056
Dietetic technicians and ophthalmic medical technicians	29205X
Licensed practical and licensed vocational nurses	292061
Opticians, dispensing	292081
Miscellaneous health technologists and technicians	292090
Other healthcare practitioners and technical occupations	299000
Home health aides	311121
Personal care aides	311122
Nursing assistants	311131
Orderlies and psychiatric aides	31113X
Occupational therapy assistants and aides	312010
Physical therapist assistants and aides	312020
Massage therapists	319011
Dental assistants	319091

Medical assistants	319092
Pharmacy aides	319095
Veterinary assistants and laboratory animal caretakers	319096
Phlebotomists	319097
Other healthcare support workers	31909X
First-line supervisors of correctional officers	331011
First-line supervisors of police and detectives	331012
First-line supervisors of firefighting and prevention workers	331021
Miscellaneous first-line supervisors, protective service workers	331090
Firefighters	332011
Fire inspectors	332020
Bailiffs	333011
Correctional officers and jailers	333012
Detectives and criminal investigators	333021
Police officers	333050
Fish and game wardens and parking enforcement officers	3330XX
Animal control workers	339011
Private detectives and investigators	339021
Security guards and gaming surveillance officers	339030
Crossing guards and flaggers	339091
Transportation security screeners	339093
School bus monitors	339094
Other protective service workers	33909X
Chefs and head cooks	351011
First-line supervisors of food preparation and serving workers	351012
Cooks	352010
Food preparation workers	352021
Bartenders	353011
Fast food and counter workers	353023
Waiters and waitresses	353031
Food servers, nonrestaurant	353041
Dining room and cafeteria attendants and bartender helpers	359011

Dishwashers	359021
Host and hostesses, restaurant, lounge, and coffee shop	359031
Food preparation and serving related workers, all other	359099
First-line supervisors of housekeeping and janitorial workers	371011
First-line supervisors of landscaping, lawn service, and groundskeeping workers	371012
Maids and housekeeping cleaners	372012
Janitors and building cleaners	37201X
Pest control workers	372021
Landscaping and groundskeeping workers	373011
Tree trimmers and pruners	373013
Other grounds maintenance workers	37301X
Supervisors of personal care and service workers	391000
Animal trainers	392011
Animal caretakers	392021
Gambling services workers	393010
Ushers, lobby attendants, and ticket takers	393031
Other entertainment attendants and related workers	3930XX
Morticians, undertakers, and funeral arrangers	394031
Embalmers, crematory operators, and funeral attendants	3940XX
Barbers	395011
Hairdressers, hairstylists, and cosmetologists	395012
Manicurists and pedicurists	395092
Skincare specialists	395094
Other personal appearance workers	39509X
Baggage porters, bellhops, and concierges	396010
Tour and travel guides	397010
Exercise trainers and group fitness instructors	399031
Personal care and service workers, all other	399099
First-line supervisors of retail sales workers	411011
Cashiers	412010
Counter and rental clerks	412021
Parts salespersons	412022

Retail salespersons	412031
Advertising sales agents	413011
Travel agents	413041
Models, demonstrators, and product promoters	419010
Real estate brokers and sales agents	419020
Door-to-door sales workers, news and street vendors, and related workers	419091
Sales and related workers, all other	419099
Telephone operators	432021
Tellers	433071
Court, municipal, and license clerks	434031
Eligibility interviewers, government programs	434061
Hotel, motel, and resort desk clerks	434081
Library assistants, clerical	434121
Loan interviewers and clerks	434131
New account clerks	434141
Receptionists and information clerks	434171
Reservation and transportation ticket agents and travel clerks	434181
Public safety telecommunicators	435031
Meter readers, utilities	435041
Postal service clerks	435051
Postal service mail carriers	435052
Postal service mail sorters, processors, and processing machine operators	435053
Production, planning, and expediting clerks	435061
Shipping, receiving, and inventory clerks	435071
Weighers, measurers, checkers, and samplers, recordkeeping	435111
First-line supervisors of farming, fishing, and forestry workers	451011
Agricultural inspectors	452011
Graders and sorters, agricultural products	452041
Other agricultural workers	4520XX
Fishing and hunting workers	453031
Forest and conservation workers	454011
Logging workers	454020

First-line supervisors of construction trades and extraction workers	471011
Boilermakers	472011
Carpenters	472031
Carpet, floor, and tile installers and finishers	472040
Cement masons, concrete finishers, and terrazzo workers	472050
Construction laborers	472061
Construction equipment operators	472070
Drywall installers, ceiling tile installers, and tapers	472080
Electricians	472111
Glaziers	472121
Insulation workers	472130
Painters and paperhangers	472140
Pipelayers	472151
Plumbers, pipefitters, and steamfitters	472152
Plasterers and stucco masons	472161
Roofers	472181
Sheet metal workers	472211
Structural iron and steel workers	472221
Solar photovoltaic installers	472231
Brickmasons, blockmasons, stonemasons, and reinforcing iron and rebar workers	472XXX
Helpers, construction trades	473010
Construction and building inspectors	474011
Elevator installers and repairers	474021
Fence erectors	474031
Hazardous materials removal workers	474041
Highway maintenance workers	474051
Rail-track laying and maintenance equipment operators	474061
Other construction and related workers	4740XX
Surface mining machine operators and earth drillers	475020
Explosives workers, ordnance handling experts, and blasters	475032
Underground mining machine operators	475040
Other extraction workers	4750XX

Derrick, rotary drill, and service unit operators, and roustabouts, oil, gas, and mining	4750YY
First-line supervisors of mechanics, installers, and repairers	491011
Computer, automated teller, and office machine repairers	492011
Radio and telecommunications equipment installers and repairers	492020
Avionics technicians	492091
Electric motor, power tool, and related repairers	492092
Electronic home entertainment equipment installers and repairers	492097
Security and fire alarm systems installers	492098
Other electrical and electronic equipment mechanics, installers, and repairers	49209X
Aircraft mechanics and service technicians	493011
Automotive body and related repairers	493021
Automotive glass installers and repairers	493022
Automotive service technicians and mechanics	493023
Bus and truck mechanics and diesel engine specialists	493031
Heavy vehicle and mobile equipment service technicians and mechanics	493040
Small engine mechanics	493050
Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers	493090
Control and valve installers and repairers	499010
Heating, air-conditioning, and refrigeration mechanics and installers	499021
Home appliance repairers	499031
Maintenance workers, machinery	499043
Millwrights	499044
Industrial and refractory machinery mechanic	49904X
Electrical power-line installers and repairers	499051
Telecommunications line installers and repairers	499052
Precision instrument and equipment repairers	499060
Maintenance and repair workers, general	499071
Coin, vending, and amusement machine servicers and repairers	499091
Locksmiths and safe repairers	499094
Riggers	499096
Helpers—installation, maintenance, and repair workers	499098
Other installation, maintenance, and repair workers	4990XX

First-line supervisors of production and operating workers	511011
Electrical, electronics, and electromechanical assemblers	512020
Engine and other machine assemblers	512031
Structural metal fabricators and fitters	512041
Other assemblers and fabricators	5120XX
Bakers	513011
Butchers and other meat, poultry, and fish processing workers	513020
Food and tobacco roasting, baking, and drying machine operators and tenders	513091
Food batchmakers	513092
Food cooking machine operators and tenders	513093
Food processing workers, all other	513099
Forming machine setters, operators, and tenders, metal and plastic	514020
Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	514031
Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	514033
Other machine tool setters, operators, and tenders, metal and plastic	51403X
Machinists	514041
Metal furnace operators, tenders, pourers, and casters	514050
Model makers, patternmakers, and molding machine setters, metal and plastic	5140XX
Tool and die makers	514111
Welding, soldering, and brazing workers	514120
Other metal workers and plastic workers	514XXX
Prepress technicians and workers	515111
Printing press operators	515112
Print binding and finishing workers	515113
Laundry and dry-cleaning workers	516011
Pressers, textile, garment, and related materials	516021
Sewing machine operators	516031
Shoe and leather workers	516040
Tailors, dressmakers, and sewers	516050
Textile machine setters, operators, and tenders	516060
Upholsterers	516093
Other textile, apparel, and furnishings workers	51609X
Cabinetmakers and bench carpenters	517011

Furniture finishers	517021
Sawing machine setters, operators, and tenders, wood	517041
Woodworking machine setters, operators, and tenders, except sawing	517042
Other woodworkers	5170XX
Power plant operators, distributors, and dispatchers	518010
Stationary engineers and boiler operators	518021
Water and wastewater treatment plant and system operators	518031
Miscellaneous plant and system operators	518090
Chemical processing machine setters, operators, and tenders	519010
Crushing, grinding, polishing, mixing, and blending workers	519020
Cutting workers	519030
Extruding, forming, pressing, and compacting machine setters, operators, and tenders	519041
Furnace, kiln, oven, drier, and kettle operators and tenders	519051
Inspectors, testers, sorters, samplers, and weighers	519061
Jewelers and precious stone and metal workers	519071
Medical, dental, and ophthalmic laboratory technicians	519080
Packaging and filling machine operators and tenders	519111
Painting workers	519120
Photographic process workers and processing machine operators	519151
Computer numerically controlled tool operators and programmers	519160
Adhesive bonding machine operators and tenders	519191
Etchers and engravers	519194
Molders, shapers, and casters, except metal and plastic	519195
Paper goods machine setters, operators, and tenders	519196
Tire builders	519197
Helpers—production workers	519198
Miscellaneous production workers, including equipment operators and tenders	5191XX
Supervisors of transportation and material moving workers	531000
Aircraft pilots and flight engineers	532010
Air traffic controllers and airfield operations specialists	532020
Flight attendants	532031
Ambulance drivers and attendants, except emergency medical technicians	533011
Driver/sales workers and truck drivers	533030
Bus drivers, school	533051

Bus drivers, transit and intercity	533052
Shuttle drivers and chauffeurs	533053
Taxi drivers	533054
Motor vehicle operators, all other	533099
Locomotive engineers and operators	534010
Railroad conductors and yardmasters	534031
Other rail transportation workers	5340XX
Ship and boat captains and operators	535020
Sailors and marine oilers, and ship engineers	5350XX
Parking lot attendants	536021
Transportation service attendants	536030
Transportation inspectors	536051
Passenger attendants	536061
Other transportation workers	5360XX
Crane and tower operators	537021
Industrial truck and tractor operators	537051
Cleaners of vehicles and equipment	537061
Laborers and freight, stock, and material movers, hand	537062
Machine feeders and offbearers	537063
Packers and packagers, hand	537064
Stockers and order fillers	537065
Pumping station operators	537070
Refuse and recyclable material collectors	537081
Conveyor, dredge, and hoist and winch operators	5370XX
Other material moving workers	5371XX
Military officer special and tactical operations leaders	551010
First-line enlisted military supervisors	552010
Military enlisted tactical operations and air/weapons specialists and crew members	553010
Military, rank not specified	559830

Endnotes

1. Estimates presented in this report are based on data from the 2019 [American Community Survey](#) (ACS), an annual, nationally representative survey of 3 million people conducted by the U.S. Census Bureau. ACS respondents are not asked about their immigration status; consequently, immigrants in the survey are assigned different statuses based on other information they provide, including their occupation, their family relationships, government services they use, their country of origin, time in the U.S., and other characteristics. The assignment method is similar to that used by other immigration [research](#) and [policy](#) organizations, and includes population adjustments for potential undercounting in the survey, particularly among undocumented immigrants. A full methodology is available [here](#).
2. The number of undocumented immigrant agricultural workers is likely higher, perhaps more than a million. The million figure is based on [an estimated half](#) of the more than two million estimated agricultural workers nationwide. The American Community Survey (ACS) data used in this report likely undercounts the number of agricultural workers as they are mostly seasonal and transient workers, sometimes out of ACS' reach.
3. FWD.us analysis of Current Population Survey (CPS) data in essential industries, as made available from Sarah Flood, Miriam King, Renae Rodgers, Steven Ruggles and J. Robert Warren. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0 (dataset). Minneapolis: IPUMS, 2020. <https://doi.org/10.18128/D030V8.0>.
4. Midwest states include Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.
5. COVID-19 infection estimates by immigration status are based on [state race and ethnicity data](#) from March through October 2020, adjusted for age and sex, from [national case data](#) from the CDC. These incidence rates were applied randomly to respondents within the 2018 ACS to ascertain estimates of COVID-19 cases by immigration status.
6. Disposable income, or spending power, is total personal income based on ACS data, after estimated federal, state and local tax payments. Total federal tax and payroll estimates are based on tax rates of market income by household type and household size from the Congressional Budget Office's 2017 "[Distribution of Household Income](#)" report. Total state and local taxes are based on share estimates of income from the Institute of Taxation and Economic Policy's 2018 report "[Who Pays? A Distribution Analysis of the Tax Systems in All 50 States](#),".
7. Essential industry sectors presented in this report reflect categories presented in that memo. A full description of the industries considered essential can be found [here](#). More than three-quarters (79%) of the total U.S. workforce, regardless of immigration status, is employed in essential industries.
8. By this definition, about half (49%) of the total U.S. workforce includes essential workers on the front lines.
9. Foreign-born does not include those born in U.S. territories or born to U.S. citizen parents abroad.
10. The total undocumented immigrant population was estimated to be some 10 million people in 2019.
11. Many more H-2A and H-2B visas in essential industries are granted annually than those shown in this report. The estimates in this report are for an "average" day in 2019. Since not all seasonal workers stay in the U.S. the entire year, the report's estimates for this population are lower compared with the higher number of visas granted annually

12. 1980 is an appropriate starting point for immigration data since the 1986 Immigration Reform and Control Act (IRCA) permitted the legalization of U.S. undocumented immigrants that had entered the U.S. before 1982.
13. Steven Ruggles, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas and Matthew Sobek. IPUMS USA: Version 10.0 (dataset). Minneapolis: IPUMS, 2020. <https://doi.org/10.18128/D010.V10.0>.
14. Adjustments also include undercoverage by age and sex.
15. This could be for many reasons, including concerns of apprehension.
16. This adjustment, although it may not be true for all immigrants from these countries, allows the total estimate to be more aligned to expectations. The year 2000 is used for 2017 data and changes accordingly for other data years. For example, the year 2002 is used for 2019 data.
17. All population estimates based on ACS data are weighted according to survey undercoverage and U.S. citizenship parameters described earlier. Spouses sponsored by a U.S. citizen are eligible for U.S. citizenship three years after receiving LPR. Consequently, this group can be identified only prior to eligibility for U.S. citizenship. The estimate includes only new arrivals, not those already living in the U.S. and adjusting their status.
18. Comparisons with DHS records, after adjustments for mortality (U.S. crude mortality rate from the [Centers for Disease Control](#)) and emigration (based on similar rates used by [DHS](#) in its immigration reports).
19. Comparisons with DHS records, after adjustments for mortality (U.S. crude mortality rate from the [Centers for Disease Control](#)) and emigration (based on similar rates used by [DHS](#) in its immigration reports).
20. Resettled refugees and asylum grantees can apply for LPR within their first year in the U.S.
21. Since many international students do not live in the U.S. for the entire year, the DHS report converts total international student enrollment into the number of students living in the U.S. on an “average” day, and is lower than total international student enrollment.
22. The number of OPT participants estimated in this study are an “average” daily estimate for the entire year, and is lower than the total number of people enrolled in the program annually.
23. The undercounting of lawful and undocumented immigrants in surveys has been established by a number of studies, including [Van Hook et al., 2014](#); [Bean et al., 1998](#); [Capps et al., 2002](#); [Marcelli and Ong, 2002](#).
24. These undercount adjustments lead to a slightly higher number of total immigrants in the U.S. than those indicated by the ACS.
25. Data obtained from IPUMS, Sarah Flood, Miriam King, Renae Rodgers, Steven Ruggles and J. Robert Warren. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0 (dataset). Minneapolis, IPUMS, 2020. <https://doi.org/10.18128/D030.V8.0>.
26. The assignments are not subjective. A cross-reference of an earlier version of CISA's memorandum with [business to business classification of industries](#) was used as a point of comparison to essential industry sectors assigned in this study. [Crosswalks](#) between NAICS codes to other industry (IND) codes were used for CPS analysis.
27. Broad essential industry sector categories are grouped to reflect primary areas of essential worker employment for the U.S. population and reflect the categories listed in CISA's memorandum.
28. Analysis from Dingel and Neiman (2020)'s Becker Friedman Institute's white paper, “[How Many Jobs Can Be Done at Home?](#)”.
29. [Crosswalks](#) between SOC occupation codes to other occupation (OCC) codes were used for CPS analysis.

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