

# The Contributions of New Americans in Pennsylvania



# Partners



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# Demographics

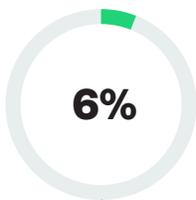
Over the past several decades, Pennsylvania has emerged as an increasingly popular destination for our country's immigrants. In 1990, there were roughly 369,000 foreign-born residents living in Pennsylvania, a group that accounted for 3.1 percent of the state's population overall. By 2010, that share had nearly doubled, reaching 5.7 percent. It climbed to 6.4 percent in 2014.

Without the addition of more immigrants, Pennsylvania's population would have **declined by almost 78,000** people between 2010 and 2014.

Pennsylvania today is home to more than 810,000 immigrants. These new Americans serve as everything from software developers to housepainters, making them a vital part of this state's overall economy. They are also playing a large role helping Pennsylvania avoid the type of population decline that has hurt many other states in recent years, depriving businesses of customers and cities of the taxpayers they need. Between 2010 and 2014, Pennsylvania's foreign-born population grew by 11.9 percent, while the native-born population was shrinking. Without the addition of more immigrants, Pennsylvania's population would have declined by almost 78,000 people during that period.

## 813,198

Pennsylvania residents were born abroad.



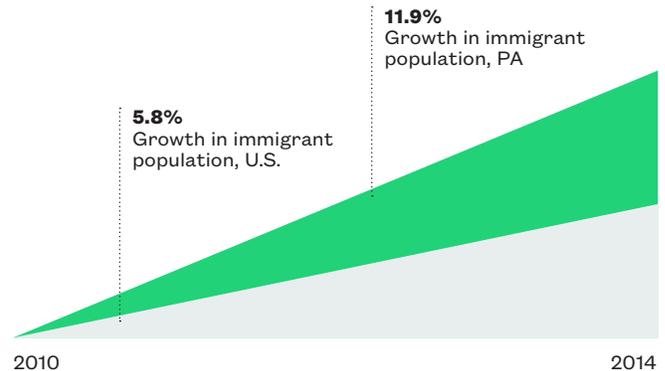
Share of Pennsylvania residents born abroad



Share of U.S. residents born abroad

## 86,185

people immigrated to Pennsylvania between 2010 and 2014.



# The Role of Immigrants as Entrepreneurs

**49,435**

immigrants in Pennsylvania are self-employed

Immigrant-owned businesses generated **\$1.2B** in business income in 2014.



Share of entrepreneurs in Pennsylvania who are immigrants

**143,211** people in Pennsylvania are employed at firms owned by immigrants.

**G**iven that the act of picking up and moving to another country is inherently brave and risky, it should be little surprise that immigrants have repeatedly been found to be more entrepreneurial than the U.S. population as a whole.<sup>1</sup> According to The Kauffman Foundation, a nonprofit group that studies entrepreneurship, immigrants were almost twice as likely to start a new business in 2015 than the native-born population.<sup>2</sup> The companies they founded ranged from small businesses on Main Street to large firms responsible for thousands of American jobs.

In 2010, roughly **1 in 10 American workers** with jobs at private firms were employed at **immigrant-founded companies.**

Recent studies, for instance, have indicated that immigrants own more than half of the grocery stores in America and 48 percent of nail salons.<sup>3</sup> Foreign-born entrepreneurs are also behind 51 percent of our country's billion dollar startups,<sup>4</sup> and substantial share of our Fortune 500 firms.

The super-charged entrepreneurial activity of immigrants provides real and meaningful benefits to everyday Americans. In 2010, roughly one in 10 American workers with jobs at private firms were employed at immigrant-founded companies. Such businesses also generated more than \$775 billion in annual business revenue that year.<sup>5</sup> In Pennsylvania, like the country as a whole, immigrants are currently punching above their weight class as entrepreneurs. Foreign-born workers currently make up 10.1 percent of all entrepreneurs in the state, despite accounting for 6.4 percent of Pennsylvania's population. Their companies

generated \$1.2 billion in business income in 2014. Pennsylvania firms with at least one immigrant owner also provided jobs to roughly 143,000 Americans in 2007.<sup>6</sup>

Immigrant entrepreneurs have long been a critical part of Pennsylvania’s economic success story. Henry Heinz, one of the founders of the company now known as Kraft Heinz, was raised by parents who immigrated to the United States from Southern Germany. As a child, he helped his mother Anna Schmidt Heinz tend to her vegetable garden, sometimes hawking extra produce with her on the street when the family needed money.<sup>7</sup> His first business venture was even inspired by her example: Heinz tried to mass-produce horseradish as good as his mom’s homemade German recipe.<sup>8</sup> Always taught by his parents that every profit should be fairly earned, he said his horseradish wouldn’t have any of the cheap fillers already in many American brands then available. “Henry John Heinz exemplifies the quintessential American success story,” says Michael Mullen, Vice President of Corporate and Government Affairs at Heinz. “He is very much the product of his parents, and the lessons he learned from them resonate in the character of the H.J. Heinz Company today.”<sup>9</sup> Eight other Fortune 500 firms based in the state—including telecom giant Comcast and healthcare provider Aramark—had at least one founder who either immigrated to the United States or was the child of immigrants. Together, those nine companies employ almost 530,000 people globally and bring in almost \$290 billion in revenues each year.

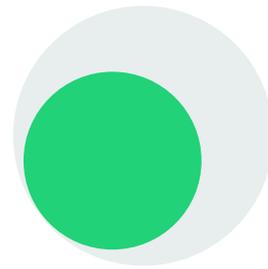
All told, immigrants and their children have played a larger role founding Fortune 500 firms in Pennsylvania than they have nationwide. Of the 19 Fortune 500 firms based in Pennsylvania, 47.4 percent of firms had at least one founder who was an immigrant or the child of an immigrant. For the country as a whole, the equivalent figure is 41.4 percent.

Currently, there is no visa to come to America, start a company, and create jobs for U.S. workers—even if an entrepreneur already has a business plan and has raised hundreds of thousands of dollars to support his or her

idea. Trying to exploit that flaw in our system, countries around the world—from Canada to Singapore, Australia to Chile—have enacted startup visas, often with the explicit purpose of luring away entrepreneurs who want to build a U.S. business but cannot get a visa to do so.<sup>10</sup> Here in the United States, many individuals have gone to great lengths to circumnavigate the visa hurdles. Many entrepreneurs sell a majority stake in their company and then apply for a visa as a high-skilled worker, rather than the owner of their firm. And a few enterprising venture capitalists, led by Jeff Busgang in Boston and Brad Feld in Colorado, have launched programs that bring over foreign-born entrepreneurs to serve as “entrepreneurs in residence” at colleges and universities. Because nonprofit academic institutions are exempt from the H-1B cap, such entrepreneurs can secure their visas by working as mentors at a school, and then build their startups in their free time.

These innovative programs, which are currently available at 13 colleges and universities across the country, are already resulting in meaningful economic contributions. As of mid-2016, 23 entrepreneurs had secured visas through these programs nationally. The companies they founded had created 261 jobs and raised more than \$100 million in funding.<sup>11</sup>

47%



of **Fortune 500** companies based in Pennsylvania were founded by immigrants or their children.

Those firms generate **\$289.1B** in annual revenue, and employ **529,988** people globally.

SPOTLIGHT ON

# Srinath Vaddepally

Founder of RistCall

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**H**ospitalized and experiencing pain, Srinath Vaddepally did what millions of patients do: He reached for the hospital call button to summon a nurse. Then he did something one in seven patients in hospitals do: he fell. The 20 agonizing minutes he spent on the floor were enough to realize there had to be a better way.

“At the time, one of the biggest problems I had was just trying to reach over to this call button,” says Vaddepally, a graduate student at the time. “I just started thinking, if this can happen to me, how about the patients who are older and infirm? And that’s when I started looking into the numbers.”

Seventy percent of falls occur in patients’ rooms, costing healthcare facilities an average of \$20,000 per incident and \$2 billion annually.

Within months of his fall in 2013, Vaddepally had developed RistCall, a wearable device that wirelessly connects patients and nurses. RistCall, which Vaddepally hopes will ultimately replace the hospital call button, lets patients speak to hospital staff immediately. It also collects data on response times and patient satisfaction and has an accelerometer in the wristband that can detect when a patient has fallen or wandered away—a feature that may help hospitals dealing with patients with memory issues or disorientation.

Shortly after he founded the company, numerous large hospital systems in Pennsylvania told Vaddepally they loved the idea. RistCall quickly won funding through pitch-slams and secured early partnerships



with healthcare facilities that agreed to pilot his device—early support that can be difficult to obtain in the healthcare space.

**“At the time, one of the biggest problems I had was just trying to reach over to this call button,” Vaddepally says. “I just started thinking, if this can happen to me, how about the patients who are older and infirm?”**

Yet, even though Vaddepally has achieved such success, he still has to spend considerable time worrying about ability to remain in the country long term.

Vaddepally is from a small town in India, one of three children born to a photographer and homemaker. He won a government scholarship for college and built a promising home-automation application while in school, but America's entrepreneurial promise beckoned. Vaddepally moved to Houston for a job with a Texas Instruments contractor. Declining further job offers, he enrolled at Carnegie Mellon University to earn dual Master's degrees in engineering and technology innovation management and computer engineering.

**“Given the nature of my business,” Vaddepally explains, “America is a much better place for me to work and innovate than back home.”**

There he developed RistCall with help from the university's Project Olympus incubator. But he quickly realized his new startup couldn't initially pay him enough for him to be eligible for an H-1B visa, so he had to try to “find an H-1B at any cost.” As Vaddepally explains it, “Every day since I've graduated, this has been the thing that I think about the most.” He worries what will happen if he isn't fortunate enough to secure one. “Given the nature of my business,” he explains, “America is a much better place for me to work and innovate than back home.”

Luckily, in 2016 he was able to find a way to stay securely in the country—at least for the short term. Vaddepally won a highly competitive spot with the University of Massachusetts Boston's Venture Development Center to serve as a global entrepreneur in residence. Such programs allow entrepreneurs to work as mentors in a university context. And because universities are exempt from the H-1B cap, entrepreneurs are able to secure a visa through the school.

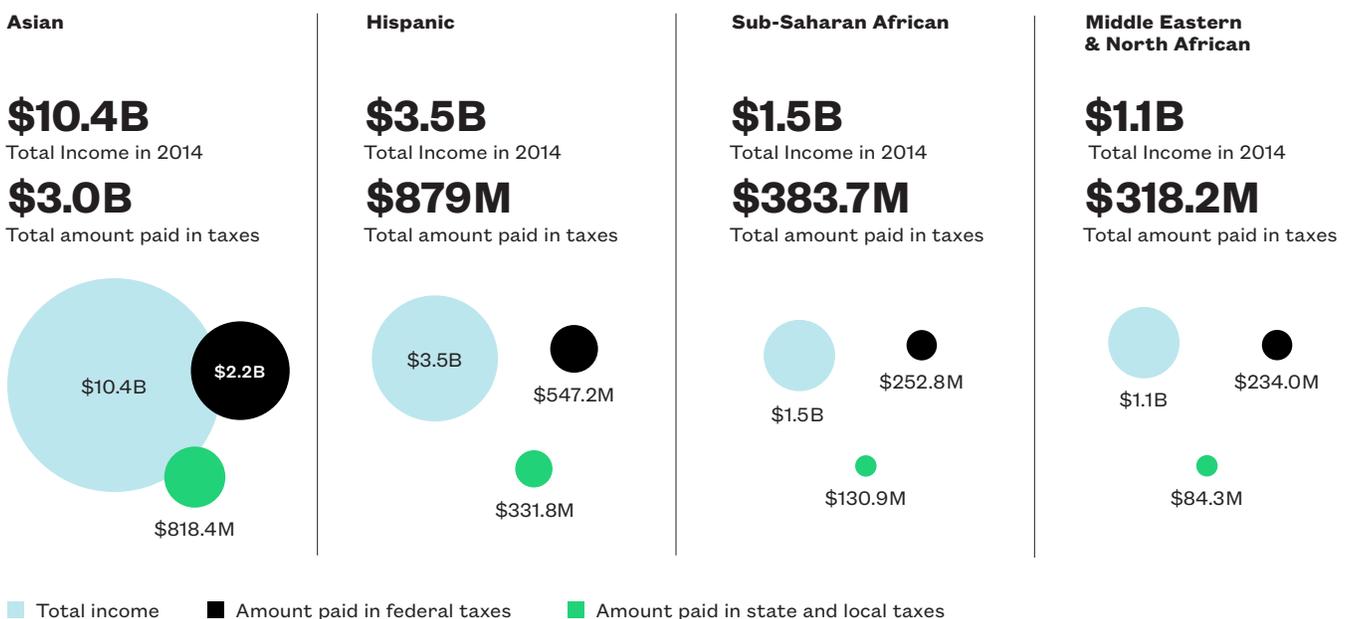
The position, however, has not removed Vaddepally's visa worries. His post could expire in a year, and it prohibits him from working for his company officially. Nevertheless, Vaddepally plans on hiring three full-time workers in Pennsylvania to conduct Ristcall's initial testing. He worries though about how his official absence will look to the investors he so desperately needs.

# Income and Tax Contributions

Immigrants in Pennsylvania play an important role contributing to the state as both taxpayers and consumers. In 2014, immigrant-led households in Pennsylvania earned \$25.8 billion dollars—or 7.2 percent of all income earned by Pennsylvanians that year. With those earnings, the state’s foreign-born households were able to contribute more than one in every 14 dollars paid by Pennsylvania residents in state and local tax revenues, payments that support important public services such as public schools and police. Through their individual wage contributions, immigrants also paid almost \$3.2 billion into the Social Security and Medicare programs that year.

By spending the money they earn at businesses such as hair salons, grocery stores, and coffee shops, immigrants also support small business owners and job creation in the communities where they live. In Pennsylvania immigrants held \$18.6 billion in spending power in 2014, defined in this brief as the net income available to a family after paying federal, state, and local taxes. We highlight the spending power and tax contributions of several subsets of Pennsylvania’s foreign-born population below, including Hispanics and immigrants from Northern Africa or the Middle East.

## INCOME AND TAX CONTRIBUTIONS OF KEY GROUPS WITHIN PENNSYLVANIA'S IMMIGRANT POPULATION, 2014



In 2014, immigrants in Pennsylvania earned **\$25.8B.**



**\$2.1B** — Went to state and local taxes...

**\$5B** — Went to federal taxes...

Leaving them with **\$18.6B** in spending power.

#### ENTITLEMENT CONTRIBUTIONS

Pennsylvania's immigrants also contribute to our country's entitlement programs. In 2014, through taxes on their individual wages, immigrants contributed **\$695.5M** to Medicare and **\$2.5B** to Social Security.



\$695.5M

Medicare



\$2.5B

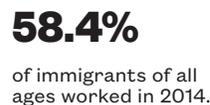
Social Security

# The Role of Immigrants in the Broader Workforce



Because they tended to be working-age,

Immigrants were **25.5%** more likely to work than native-born Pennsylvanians.

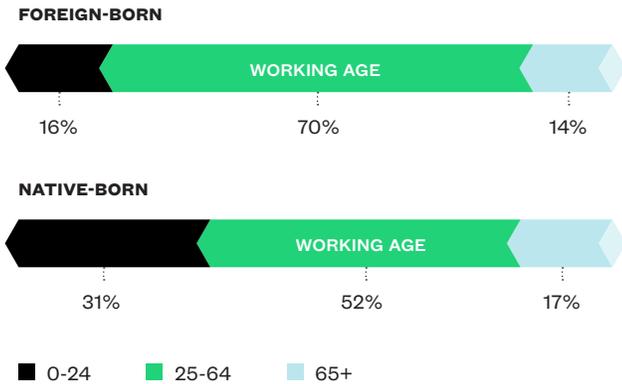


**P**eople who come to the United States often come here to work. Because of that, they often have skills that make them a good fit for our labor force—and a strong complement to American workers already here. In the country as a whole, immigrants are much more likely to be working-age than the U.S.-born. They also have a notably different educational profile.

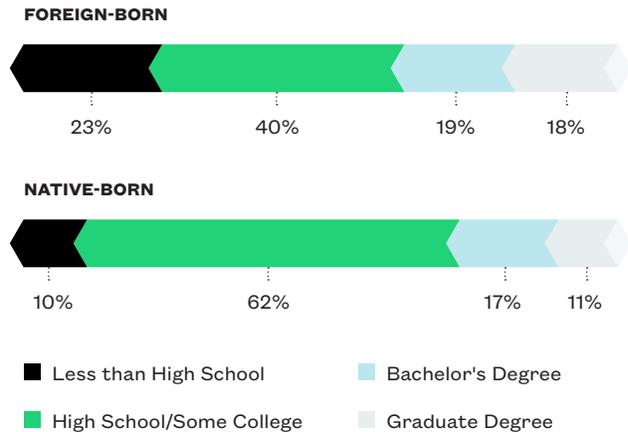
In Pennsylvania, nearly **70%** of the foreign-born population is working aged, compared to less than **52%** of the native-born population.

The vast majority of Americans – more than 79 percent of the U.S.-born population – fall into the middle of the education spectrum by holding a high school or bachelor's degree. Immigrants, by contrast, are more likely to gravitate toward either end of the skill spectrum. They are more likely to lack a high school diploma than the native born, but also more likely to have an advanced degree. This makes them good candidates for labor-intensive positions, such as housekeeping, that many more educated U.S.-born workers are less interested in pursuing, as well as high-level positions that allow innovation-driven firms to expand and add jobs for Americans at all skill levels.

AGE BREAKDOWN OF PENNSYLVANIA'S FOREIGN-BORN AND NATIVE-BORN POPULATIONS, 2014



EDUCATIONAL ATTAINMENT OF PENNSYLVANIA'S FOREIGN-BORN AND NATIVE-BORN POPULATION (AGES 25+), 2014



Both these dynamics are strong in the state of Pennsylvania. When it comes to educational attainment, immigrants in the state are 67.4 percent more likely to hold a graduate degree than natives. They are also more than twice as likely to be educated at less than a high-school level. The foreign-born population is also more likely to be working age, which we define in this brief as ranging in age from 25 to 64. In Pennsylvania, 69.8 percent of the foreign-born population falls into that age band, while only 51.6 percent of the native-born population does. That 18.2-percentage point gap has major implications for the state’s workforce. In 2014, Pennsylvania’s immigrants were 25.5 percent more likely to be actively employed than the state’s native-born residents—a reality driven largely by the fact that a larger than average share of native-born Pennsylvanians had already reached retirement age. Foreign-born individuals punched above their weight class as workers as well: In 2014, they made up 7.9 percent of all employed individuals in the state, despite accounting for 6.4 percent of Pennsylvania’s population overall.

The immigrants who are working in Pennsylvania contribute to a wide range of different industries in the state—many of which are growing and important parts

of the local economy. Foreign-born residents make up more than one in five employees in the state’s computer systems design industry. They also account for 19.6 percent of the state’s workers in pharmaceuticals and medicines, contributing to Pennsylvania’s sizable life sciences sector, which ranks fourth in the country in terms of its research & development expenditures each year.<sup>12</sup> Immigrants also frequently gravitate toward sectors where employers struggle to find enough interested U.S.-born workers. Immigrants in Pennsylvania, for instance, make up 22.4 percent of workers in crop production, an industry that includes workers who hand pick fresh fruits and vegetables in the field.

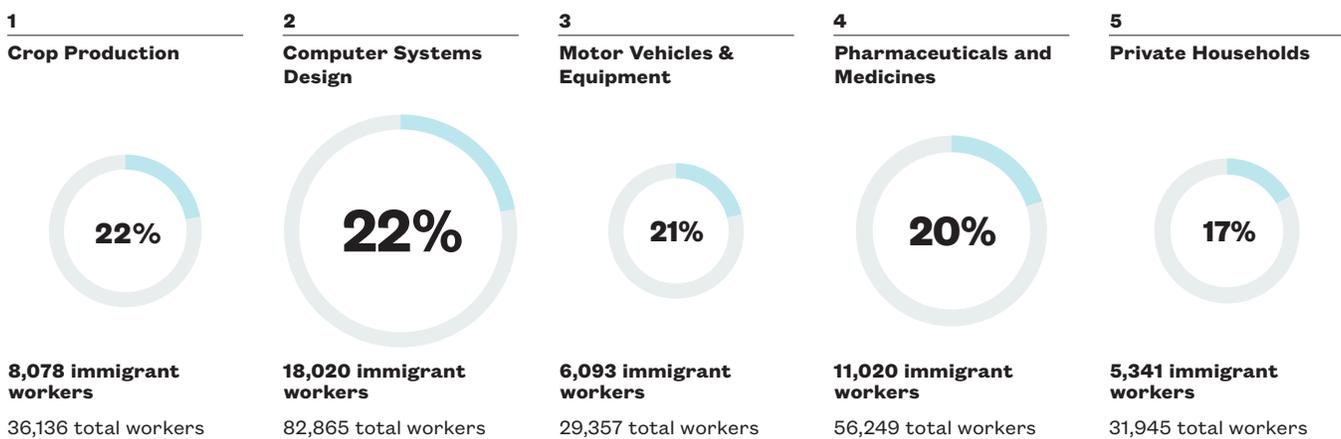
**The almost 730,000 immigrants who were living in Pennsylvania in 2010 were responsible for creating or preserving more than 33,000 manufacturing jobs.**

In recent decades, immigrants have also played an important role in Pennsylvania’s manufacturing industry. Studies have found that the arrival of immigrants to a community can have a powerful impact creating or preserving manufacturing jobs. This is because foreign-born workers give employers access to a large and relatively affordable pool of laborers, making it less attractive for firms to move work to cheaper locations offshore. One study by the Partnership for a New American Economy and the Americas Society/Council of the Americas, for instance, found that every time 1,000 immigrants arrive in a given U.S. county, 46 manufacturing jobs are preserved that would otherwise not exist or have moved elsewhere.<sup>13</sup> The almost 730,000 immigrants who were living in the state in 2010 were responsible for creating or preserving more than 33,000 manufacturing jobs.

Aside from just looking at overarching industry groups, our work also examines the share of workers that are foreign-born in specific occupations and jobs. Immigrants in Pennsylvania, like the country as a whole, are often overrepresented in either high-skilled or particularly labor-intensive positions. While foreign-born workers make up 7.9 percent of the state’s employed population, they account for 33.7 percent of software developers for applications or systems software. They also make up 24.7 percent of individuals with jobs that involve packing goods for shipment by hand, as well as almost one in five of the state’s college and university professors.

INDUSTRIES WITH LARGEST SHARE OF FOREIGN-BORN WORKERS, 2014

■ Share of workers who are immigrants



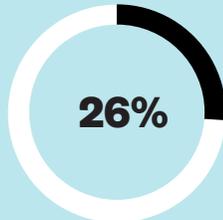
OCCUPATIONS WITH LARGEST SHARE OF FOREIGN-BORN WORKERS, 2014

**1**  
**Software Developers**



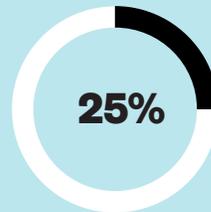
**13,914 immigrant workers**  
41,310 total workers

**2**  
**Physicians and Surgeons**



**12,145 immigrant workers**  
46,059 total workers

**3**  
**Packers and Packagers**



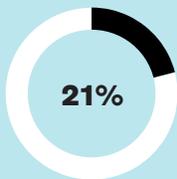
**9,949 immigrant workers**  
40,338 total workers

**4**  
**Maids and Housekeeping Cleaners**



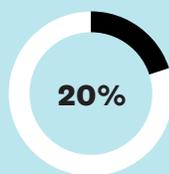
**15,837 immigrant workers**  
72,995 total workers

**5**  
**Misc. Agricultural Workers, Including Animal Breeders**



**6,100 immigrant workers**  
28,910 total workers

**6**  
**Computer Systems Analysts**



**5,168 immigrant workers**  
25,679 total workers

**7**  
**Postsecondary Teachers**



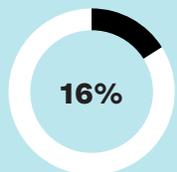
**15,300 immigrant workers**  
78,045 total workers

**8**  
**Misc. Assemblers and Fabricators**



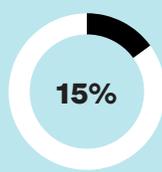
**6,987 immigrant workers**  
44,167 total workers

**9**  
**Painters, Construction and Maintenance**



**4,143 immigrant workers**  
26,495 total workers

**10**  
**Computer Occupations, All Other**



**3,502 immigrant workers**  
23,660 total workers

■ Share of workers who are immigrants

# Science, Technology, Engineering, and Math

**B**etween 2014 and 2024, science, technology, engineering, and math—or “STEM”—fields are projected to play a key role in U.S. economic growth, adding almost 800,000 new jobs and growing 37.0 percent faster than the U.S. economy as a whole.<sup>14</sup> Immigrants are already playing a huge part in ensuring that Pennsylvania remains a leading innovator in STEM fields like telecommunications and finance. Despite making up only 6.4 percent of the state’s population, foreign-born Pennsylvanians made up 15.1 percent of STEM workers in the state in 2014. Our outdated immigration system, however, makes it difficult for STEM employers to sponsor the high-skilled workers they need to fill critical positions. This is problematic because it can slow the ability of firms to expand and add jobs for U.S.-born workers. It also makes little sense, given the country’s ongoing shortage of STEM talent—an issue that heavily impacts employers here. In 2014, 6.8 STEM jobs were advertised online in Pennsylvania for every one unemployed STEM worker in the state.

In 2014 students on temporary visas made up roughly **1 out of every 3** students earning a STEM Master’s degree at Pennsylvania’s universities, and **39.1%** of students earning a PhD-level degree in STEM.

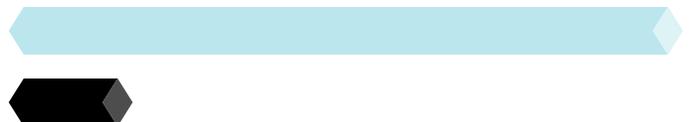
Immigrants, however, are not just a crucial piece of Pennsylvania’s STEM workforce now—they are also likely to power it in the future. In 2014 students on temporary visas made up roughly one out of every three students earning a STEM Master’s degree at Pennsylvania’s universities, and 39.1 percent of students earning a PhD-level degree in STEM. Even after America’s universities invest in their education, however, many of those students struggle to remain in the country after graduation. Creating visa pathways

## 84,075

available STEM jobs were advertised online in 2014, compared to **12,296** unemployed STEM workers.

The resulting ratio of open jobs to available workers was

## 6.8 to 1



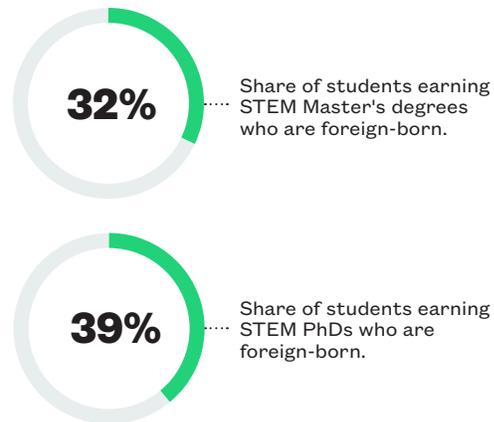
that would make it easier for them to stay would provide a major economic benefit to Pennsylvania. A study by the Partnership for a New American Economy and the American Enterprise Institute found that every time a state gains 100 foreign-born STEM workers with graduate-level STEM training from a U.S. school, 262 more jobs are created for U.S.-born workers there in the seven years that follow.<sup>15</sup> For Pennsylvania, that means that retaining even half of the 4,025 graduates earning advanced-level STEM degrees in 2014 could result in the creation of nearly 5,300 new positions for U.S.-born workers by 2021.

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If half of Pennsylvania's **4,025** advanced level STEM grads on temporary visas stayed in the state after graduation...

**5,273**  
jobs for U.S.-born workers would be created by 2021.

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# Healthcare

In the coming years, the American healthcare industry is projected to see incredibly rapid growth—adding more new positions from 2014 to 2024 than any other industry in our economy.<sup>16</sup> Already, caregivers are facing near unprecedented levels of demand. Between 2013 and 2015, the number of Americans with health insurance rose by almost 17 million,<sup>17</sup> opening the door for many patients to receive more regular care. The country’s 76.4 million baby boomers are also aging rapidly—at a major cost to our healthcare system. Studies have found that elderly

Americans spend three times more on healthcare services than those of working age each year.<sup>18</sup>

In Pennsylvania, a state where more than one out of every six residents is currently elderly, finding enough healthcare workers remains a challenge—and one that will likely worsen in the future. While the state has a healthy supply of practicing physicians, shortages impact a wide range of other healthcare fields. In 2014, 4.2 healthcare jobs were listed online in Pennsylvania for every one unemployed healthcare worker in the state.

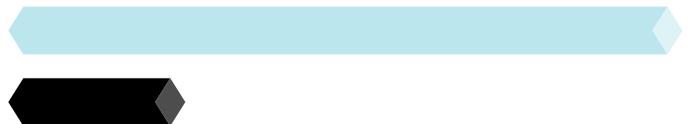
## PENNSYLVANIA HAS A SHORTAGE OF HEALTHCARE WORKERS

# 82,622

available healthcare jobs were advertised online in 2014, compared to **19,715** unemployed healthcare workers.

The resulting ratio of open jobs to available workers was

# 4.2 to 1



Additional number of psychiatrists needed now: **584**



Shortage of dentists projected by 2025: **832**



Projected shortage of licensed practical nurses by 2025: **2,310**

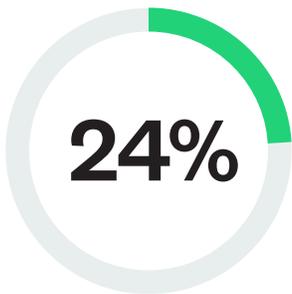


FOREIGN-BORN AND FOREIGN-EDUCATED PROFESSIONALS HELP FILL HEALTHCARE LABOR GAPS

Foreign-Educated

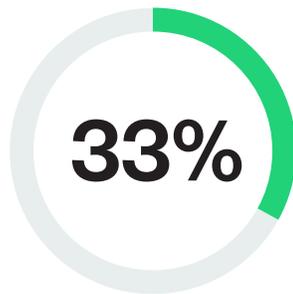
**Doctors**

10,539 graduates of foreign medical schools



**Psychiatrists**

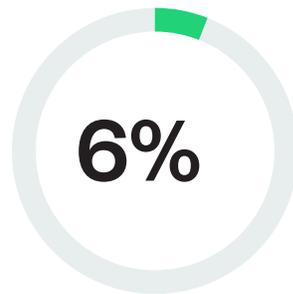
745 graduates of foreign medical schools



Foreign-Born

**Nurses**

9,832 foreign-born workers



**Nursing, Psychiatric, and Home Health Aides**

14,134 foreign-born workers



Other occupations, such as psychiatrists, that are already stretched thin are projected to need hundreds of new workers by 2030, as are several health occupations that cater largely to seniors.<sup>19</sup>

Immigrants are already playing a valuable role helping Pennsylvania meet some of its healthcare workforce gaps. In 2016 nearly one in four physicians in Pennsylvania graduated from a foreign medical school, a likely sign they were born elsewhere. The share of foreign-educated doctors in Pennsylvania, in fact, ranks it among the top 20 among states in the country reliant on foreign-educated doctors nationwide. Immigrant healthcare practitioners also made 6.0 percent of the state's nurses in 2014, as well as almost one in 10 people employed as nursing, psychiatric, or home health aides.

In 2016 nearly **1 in 4** physicians in Pennsylvania graduated from a foreign medical school, a likely sign they were born elsewhere.

# Housing

Immigrant families have long played an important role in helping to build housing wealth in the United States. One study released by the Partnership for a New American Economy and Americas Society/Council of the Americas, for instance, found that in recent decades the country's more than 40 million immigrants collectively raised U.S. housing wealth by \$3.7 trillion. Much of this was possible because immigrants moved into neighborhoods once in decline, helping to revitalize communities and make them more attractive to U.S.-born residents.<sup>20</sup>

In Pennsylvania, immigrants are actively strengthening the state's housing market. The almost 186,000 foreign-

born homeowners in the state held more than \$48 billion in housing wealth in 2014. Immigrant-led households also generated 11.3 percent of the state's rental income, even though they led only 6.8 percent of households in the state. Because Pennsylvania's immigrants are more likely to be working age, they help address another major concern of housing experts as well—that the large wave of baby boomers retiring in the coming years could result in more homes going up for sale than there are buyers to purchase them. In a state where seniors already own 30 percent of homes, immigrant families made up 7.9 percent of new homebuyers from 2010 to 2014—a larger than expected portion given their share of the population.

Immigrants are **bolstering the housing market** by buying the wave of homes coming on the market as the baby boomers retire.



**185,967**

Number of immigrant homeowners in 2014

**\$48.2B**

Amount of housing wealth held by immigrant households



**\$150.4M**

Amount paid by immigrant-led households in rent



# Visa Demand

One key measure of the demand for immigrant workers involves the number of visas requested by employers in a given state. Before an employer can formally apply for many types of visas, however, it must first obtain “certification” from the Department of Labor—essentially a go-ahead from the DOL that the employer can apply for a visa to fill a given job or role. For the H-1B visa, which is used to sponsor high-skilled workers, an employer gains certification by filing what’s known as a Labor Condition

Application, or LCA. In the LCA the employer must detail the position the foreign national would fill, the salary he would be paid, and the geographic location of the job. Firms must also attest that hiring an immigrant will not adversely impact similarly situated American workers. For two other large work visa categories—the H-2A for agricultural laborers and the H-2B for seasonal or temporary needs—employers file what is known as a Labor Certification application, or a “labor cert” for short. To get a labor cert approved, the employer must

## H-1B

Number of positions:

**48,550**

**Top jobs:**

- Computer Systems Analysts
- Computer Programmers
- Software Developers, Applications

## GREEN CARD

Number of positions:

**1,653**

**Top jobs:**

- Software Developers, Applications
- Computer Systems Analysts
- Internists, General

## CERTIFIED POSITIONS BY VISA TYPE, 2014



\* This includes only employment-based green cards

## H-2A

Number of positions:

**675**

**Top crops or jobs:**

- Nursery and Greenhouse Workers
- Poultry
- Fruits and Vegetables

## H-2B

Number of positions:

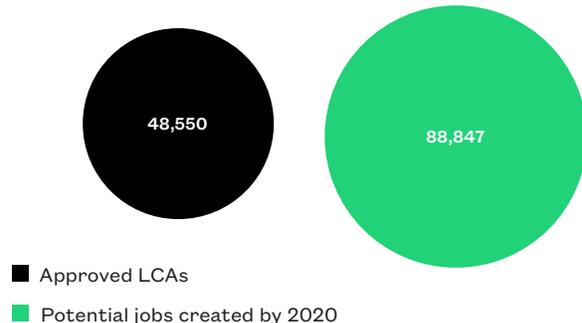
**3,722**

**Top jobs:**

- Landscaping and Groundskeeping Workers
- Amusement and Recreation Attendants
- Coaches and Scouts

## IF ALL APPROVED LCAs HAD TURNED INTO VISAS...

**48,550 LCAs** for H-1B workers could have created **88,847 jobs**.



CITIES ARE DEMANDING VISAS ALL OVER THE STATE

H-1B

Top cities:

- 1 Philadelphia
- 2 Pittsburgh
- 3 Camp Hill

H-2B

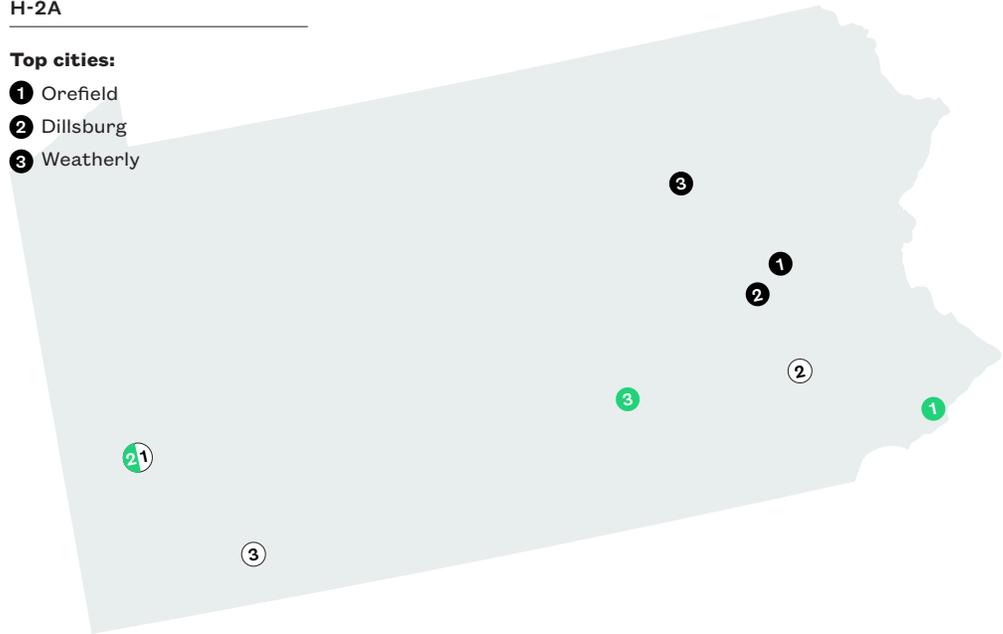
Top cities:

- 1 Pittsburgh
- 2 Exton
- 3 Farmington

H-2A

Top cities:

- 1 Orefield
- 2 Dillsburg
- 3 Weatherly



demonstrate that it is unable to locate an American worker that is available, willing, and able to fill the job.

In fiscal year 2014, Pennsylvania employers received DOL certification for almost 54,600 positions, including jobs across a wide variety of occupations and geographies within the state. They included more than 48,000 positions for potential workers on H-1B visas, as well as roughly 700 for H-2A workers. Federal officials also issued more than 3,700 certifications for H-2B visas, which are frequently used to staff places like hotels, fisheries, and stables during the high season. Given that it is expensive and cumbersome for employers to obtain labor certs—and similarly daunting to formally apply for an H-1B visa—the large interest in all these visa categories indicates Pennsylvania employers likely were having real trouble finding the workers they needed on U.S. soil.

Applying for certification, however, is not the same as receiving a visa. The H-1B program is currently capped at 85,000 visas a year for private sector employers. In the

country as a whole, this resulted in almost half of all such applications being rejected in fiscal year 2014 alone. The H-2B program is similarly limited to just 66,000 visas per year. Even permanent immigrants get ensnared in the limitations of our outdated immigration system. Only seven percent of all green cards can go to nationals of any one country in a given year—resulting in backlogs lasting years for many Indian, Chinese, Mexican, and Filipino workers.<sup>21</sup>

When companies are denied the visas they need, company expansion is commonly slowed—often at a real and meaningful cost to the U.S.-born population. One study by the Partnership for a New American Economy and the American Enterprise Institute estimated that when a state receives 100 H-2B visas, 464 jobs are created for U.S.-born workers in the seven years that follow.<sup>22</sup> The fact that H-1B visa holders actually create—rather than take away—jobs from Americans has also been widely supported in the literature. A 2013 paper written by professors at Harvard University looking at the 1995 to 2008 period found that one

additional young, high-skilled immigrant worker hired by a firm created 3.1 jobs for U.S.-born workers at that same company during the period studied.<sup>23</sup> Other academics have tied each H-1B visa award or labor request with the creation of four<sup>24</sup> or five<sup>25</sup> American jobs in the immediate years that follow.

In this brief, we rely on a more conservative estimate of the impact of the H-1B program on the American workforce. Specifically, we use the estimate that every one additional H-1B visa awarded to a state was associated with the creation of 1.83 more jobs for U.S.-born workers there in the following seven years.<sup>26</sup> On the first page of this section, we show the number of jobs that would have been created for U.S.-born workers in Pennsylvania by 2020 if all the fiscal year 2014 LCAs for H-1Bs had turned into actual visas. We also show how the large number of H-1B visas denied to the Philadelphia and Pittsburgh metropolitan areas in 2007 and 2008 cost U.S.-born tech workers in those cities in the two years that followed.

#### HOW THE SMALL SUPPLY OF H-1B VISAS HURTS TECH WORKERS IN PENNSYLVANIA CITIES

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##### PHILADELPHIA

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**4,432 H-1B denials** for tech workers in the metro area cost computer workers there...

**5,859** ↓

Potential new jobs and **\$69.7M** in aggregate wage growth in the two years that followed.

##### PITTSBURGH

---

**1,660 H-1B denials** for tech workers in the metro area cost computer workers there...

**2,211** ↓

Potential new jobs and **\$26.7M** in aggregate wage growth in the two years that followed.

# Naturalization

**P**ennsylvania’s immigrants are not only living in the state, they are laying down roots as well. Our analysis found that immigrants in Pennsylvania are naturalizing, or becoming citizens, at higher rates than they are in the country overall. In 2014, 52.2 percent immigrants in Pennsylvania were already U.S. citizens. Nationally, the equivalent figure was 47.3 percent.

Like almost all parts of the country, however, Pennsylvania is also home to a population of immigrants who are eligible to naturalize but haven’t yet done so. Embracing public policies that would help those individuals navigate the naturalization process could have an important economic impact on the state. Studies have found that immigrants who become citizens seek out higher education at greater rates than non-citizens.<sup>27</sup>

Because citizenship allows immigrants to pursue a greater range of positions, including public and private sector jobs requiring a security clearance, it also has been found to raise a person’s annual wages. One study by researchers at the University of Southern California pegged the size of that wage increase at 8 to 11 percent.<sup>28</sup> If the average non-citizen in Pennsylvania saw a wage boost at the low end of that range, or 8 percent, she would earn almost \$3,000 more per year— money that could be reinvested in the state’s economy through her spending at local businesses. Multiplied by the roughly 171,000 non-citizens in Pennsylvania currently eligible to naturalize, such policy initiatives could collectively boost wages in the state by \$503.8 million.

## 171,055

Number of non-citizens eligible to naturalize in 2014

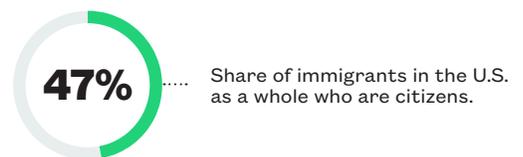
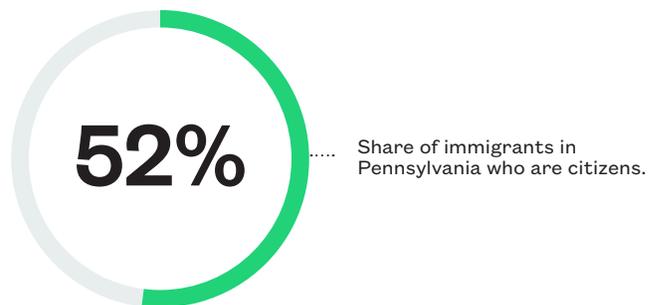


The average non-citizen in Pennsylvania earns **\$36,817** per year. If they naturalized, they each could earn an average of **\$2,945 more** per year.

## \$503.8M

Aggregate additional earnings if eligible non-citizens naturalized.

### NATURALIZATION RATES IN PENNSYLVANIA



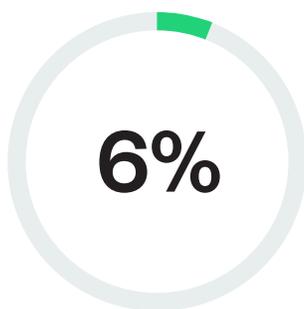
# International Students

**P**olicymakers are increasingly realizing that international students provide huge benefits to the communities where they live and study. The World Bank has found that an increase in the number of international graduate students studying at American schools leads to large boosts in the number of patents awarded to local research universities in the years that follow.<sup>29</sup> Through their tuition payments and day-to-day spending, international students in the broader United States also contributed more than \$30.5 billion to the U.S. economy in the 2014-2015 school year and supported more than 370,000 jobs.<sup>30</sup>

In Pennsylvania, the roughly 41,000 international college students studying on temporary visas make up just 5.7 percent of all college students in the state. Still, their economic contribution is enormous. They support more than 20,000 jobs in the state, including positions in transportation, health insurance, and retail.

Through their tuition payments and day-to-day spending, international students in the broader United States also **contributed more than \$30.5B** to the U.S. economy in the 2014-2015 school year and **supported more than 370,000 jobs**.

International students represent a very small portion of all students in Pennsylvania, but they make a big impact...



International students make up only **6%** of all students in Pennsylvania.

**\$1.4B**

Economic contribution of international students to the state, 2015.

**20,309**

Jobs supported by international students, 2015.

# Voting Power

Immigrants in Pennsylvania do not only have an impact on the state’s economy, they also play a large role at the voting booth. In 2014, Pennsylvania was home to almost 393,000 foreign-born residents who were eligible to vote, including an estimated 213,000 foreign-born residents who had formally registered. Those numbers are particularly meaningful given the narrow margins of victory that have decided elections in this swing state in recent years. In 2012, President Barack Obama won Pennsylvania by less than 310,000 votes.

The power of immigrant voters is likely to continue to be a critical factor in upcoming elections. Based on voting participation patterns in recent years, we would expect more than 155,000 foreign-born voters to cast formal ballots in the presidential election this year. An additional 90,000 more immigrants will either naturalize or turn 18 by 2020, expanding the pool of eligible new American voters in Pennsylvania to almost 452,000 people.

## 392,789

Number of immigrants eligible to vote.



## 213,139

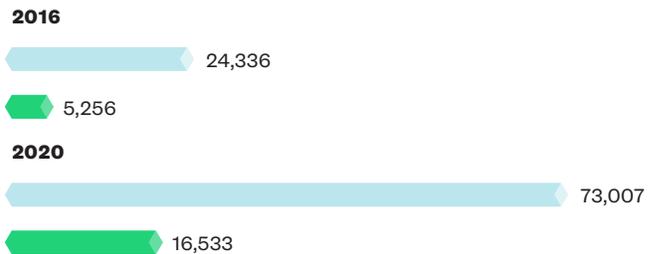
Number of immigrants registered to vote.

## 309,840

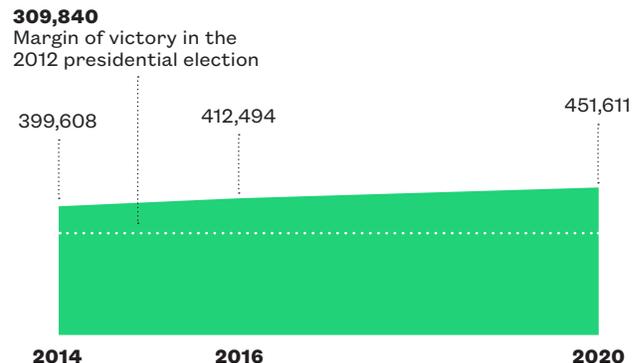
Margin of victory in the 2012 presidential election.

### THE GROWING POWER OF THE IMMIGRANT VOTE

- Immigrants who will become eligible to vote by turning 18
- Immigrants who will become eligible to vote through naturalization



### PROJECTED POOL OF ELIGIBLE IMMIGRANT VOTERS, 2014-2020



# Undocumented Population

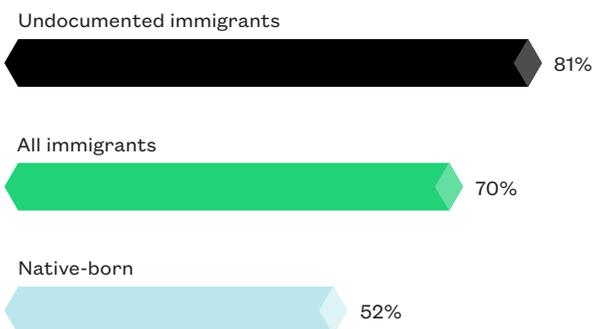
The United States is currently home to an estimated 11.4 million undocumented immigrants, the vast majority of whom have lived in the United States for more than five years. The presence of so many undocumented immigrants in our country for such a long time presents many legal and political challenges that are beyond the scope of this report. But while politicians continue to debate what to do about illegal immigration without any resolution, millions of undocumented immigrants are actively working across the country, and collectively, these immigrants have a large impact on the U.S. economy. One recent study found that 86.6 percent of undocumented males in the country were employed in 2012 and 2013, suggesting that most immigrants who come here illegally do so because of work opportunities.<sup>31</sup> And because employers are required by law to gather Social Security numbers for all their hires,

many undocumented individuals are paying into our tax system as well—often under falsified or incorrect Social Security numbers.<sup>32</sup> These undocumented immigrants generally lack access to federal aid programs such as Medicaid, food stamps, and Temporary Assistance for Needy Families, so they also draw down far less from these programs than their native-born counterparts.<sup>33</sup>

One recent study found that **86.6%** of undocumented males in the country were employed in 2012 and 2013, suggesting that **most immigrants who come here illegally do so because of work opportunities.**

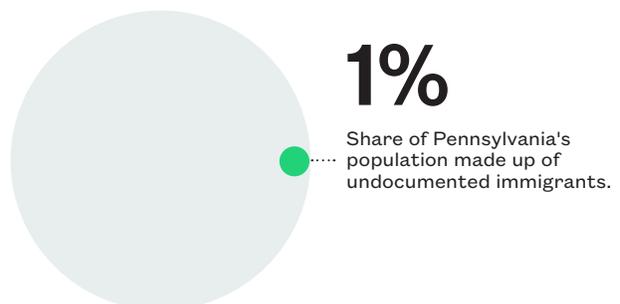
## UNDOCUMENTED IMMIGRANTS ARE MORE LIKELY TO BE WORKING-AGED THAN NATIVES OR OTHER IMMIGRANTS

Share of population ages 25-64, 2014



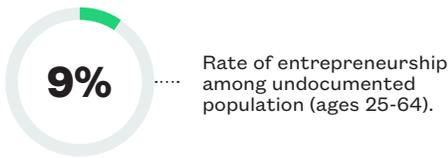
# 171,929

Estimated number of undocumented immigrants in Pennsylvania.



# 12,425

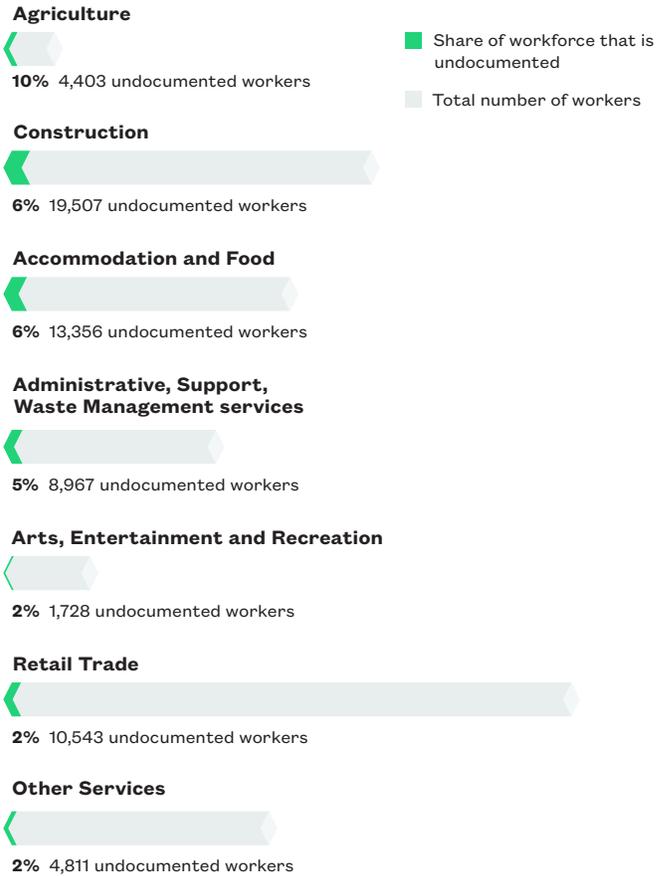
Estimated number of undocumented entrepreneurs in Pennsylvania.



# \$206M

Total business income of self-employed entrepreneurs.

## THE PENNSYLVANIA INDUSTRIES WHERE UNDOCUMENTED IMMIGRANTS MAKE UP THE LARGEST SHARE OF THE WORKFORCE, 2014



Of course, there are many compelling reasons that having a large undocumented population is a problem for a society. It undermines law and order, permits a shadow economy that is far harder to regulate, and is simply unfair to the millions of people who have come here legally. But as the undocumented immigration problem has gone largely unaddressed for the past 30 years, undocumented workers in the country have begun to play an increasingly integral role in many U.S. industries. In some sectors, such as agriculture, undocumented immigrants account for 50 percent of all hired crop workers, making them a critical reason why the industry is able to thrive on U.S. soil.<sup>34</sup> Many

studies have also indicated that these undocumented workers are not displacing the U.S.-born, but rather, taking jobs few Americans are interested in pursuing. Economists have found that low-skilled immigrants, the group that most undocumented immigrants fall into, tend to pursue different jobs than less-skilled natives. While U.S.-born workers without a high school degree are often overrepresented in forward-facing roles like cashiers, receptionists, and coffee shop attendants, many less-skilled immigrants pursue more labor-intensive work requiring less human interaction, filling jobs as meat processors, sewing machine operators, or nail salon workers.<sup>35</sup> This phenomenon exists within

industries as well. In construction, for instance, less-skilled immigrants often work as painters and drywall installers, allowing natives to move into higher paying positions requiring more training, such as electricians, contractors, and plumbers.<sup>36</sup>

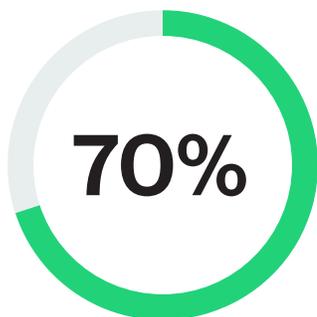
The challenge of undocumented immigration is becoming increasingly apparent in places like Pennsylvania, which have not historically been home to a large number of such immigrants. But just as with the nation as a whole, as these immigrants spend years and decades in America, they get further integrated into our economy. In Pennsylvania, there is evidence that undocumented immigrants are playing a small but critical role in the workforce. In this section, we estimate the size and the characteristics of the undocumented population in Pennsylvania by conducting a close analysis of the American Community Survey from the U.S. Census. This work uses a series of variables to identify immigrants in the survey who are likely to lack legal status—a method that has recently emerged in the academic literature on immigration.<sup>37</sup> (See the Methodology Appendix for more details.)

Using this technique, we estimate that Pennsylvania is home to almost 172,000 undocumented immigrants. These individuals are far more likely than the native-born population—or even the broader foreign-born one—to be in the prime of their working years, or ranging in age from 25-64. They also contribute to a range of industries that could not thrive without a pool of workers willing to take on highly labor-intensive roles. In 2014, for instance, undocumented immigrants made up 5.5 percent of all employees in Pennsylvania’s accommodation and food industry, a sector that includes dishwashers, food preparation workers, and short order cooks. They also made up more than one in 10 workers employed in the agriculture sector, as well as 4.9 percent of workers in the administrative, support, and waste management services sector.

Large numbers of undocumented immigrants in Pennsylvania have also managed to overcome licensing and financing obstacles to start small businesses. In 2014, an estimated 8.9 percent of the state’s working-age undocumented immigrants were self-employed—meaning Pennsylvania is one of about

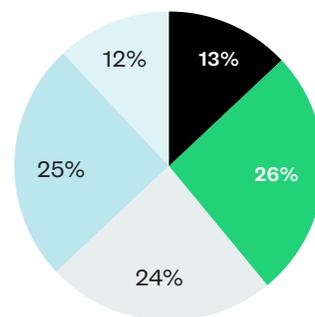
MEASURES OF ASSIMILATION AMONG PENNSYLVANIA'S UNDOCUMENTED POPULATION, 2014

Time in the United States



Share of undocumented immigrants who have been in the U.S. for five years or more.

English Proficiency (population ages 5+)



Speaks only English
  Speaks English well  
 Speaks English very well
  Does not speak English well  
 Does not speak any English

In 2014,  
undocumented  
immigrants in  
Pennsylvania  
earned **\$2.5B.**

**\$118M** — Went to state and local taxes...

**\$186.6M** — Went to federal taxes...

Leaving them with **\$2.2B**  
in spending power.

#### ENTITLEMENT CONTRIBUTIONS

Undocumented immigrants also contribute to our country's entitlement programs. In 2014, through taxes on their individual wages, immigrants contributed **\$50.3M** to Medicare and **\$200.3M** to Social Security.



Medicare



Social Security

two dozen states where unauthorized immigrants boasted higher rates of entrepreneurship than either legal permanent residents or immigrant citizens of the same age group. More than 12,000 undocumented immigrants in Pennsylvania were self-employed in 2014, many providing jobs and economic opportunities to others in their community. Undocumented entrepreneurs in the state also earned an estimated \$206 million in business income that year.

**Social Security’s Chief Actuary, for example, has credited unauthorized immigrants with contributing \$100B more to Social Security than they drew down in benefits during the last decade.**

The larger political debate around the economic cost or benefits of undocumented immigration tends to focus on the expense of educating immigrant children or the healthcare costs associated with increased use of emergency rooms and other services. These costs are real and can be substantial, but taken alone they paint an incomplete picture of the impact of undocumented immigration. This is because the debate infrequently recognizes that since most undocumented immigrants are working, they also make large federal and state tax contributions and frequently are net contributors to many of our most important—and most imperiled—benefits programs. Social Security’s Chief Actuary, for example, has credited unauthorized immigrants with contributing \$100 billion more to Social Security than they drew down in benefits during the last decade.<sup>38</sup> Several in-depth studies at the state level have similarly come to the conclusion that undocumented immigrants represent a net benefit to the states in which they live. One paper, written by researchers at Arizona State University, estimated that undocumented immigrants in that state pay \$2.4

billion in taxes each year—a figure far eclipsing the \$1.4 billion spent on the law enforcement, education, and healthcare resources they use.<sup>39</sup> Another study estimated that, on a per capita basis, Florida’s undocumented immigrants pay \$1,500 more in taxes than they draw down in public benefits each year.<sup>40</sup>

Although we are currently unable to calculate the amount spent on any public benefits or services used by undocumented immigrant families, we can gain a fairly clear sense of the amount they are paying in taxes each year. A variety of studies have estimated that anywhere from 50 to 80 percent of households led by undocumented immigrants file federal income taxes annually.<sup>41</sup> Federal government officials have also estimated that 75 percent of undocumented workers have taxes withheld from their paychecks.<sup>42</sup> In this paper, we make the assumption that 50 percent of the country’s undocumented households paid income taxes in 2014. Although many experts would call this share highly conservative, it has been modeled in several academic papers, and also by think tanks that specialize exclusively in the study of U.S. tax policy.<sup>43</sup>

In 2014, we estimate that Pennsylvania households led by undocumented immigrants earned almost \$2.5 billion in income. Of that, they paid an estimated \$186.6 million in federal taxes. They also contributed almost \$200.3 million directly to the Social Security program through taxes on their individual wages. Pennsylvania’s undocumented immigrants also made an important impact through their state and local tax contributions—money that many localities use to pay for police forces, public education, and city services like garbage collection and recycling. We estimate that Pennsylvania’s undocumented immigrants paid more than \$118 million in state and local taxes in 2014.

Giving legal status to undocumented immigrants would increase their access to a variety of public benefits—resulting in potentially higher costs for federal, state, and local governments. But because legalization is expected to raise the earning power of

undocumented immigrants and give them access to a wider array of jobs and educational opportunities, it would have the opposite effect as well, potentially allowing them to spend more as consumers and pay more in taxes each year.<sup>44</sup> Provisions within immigration reform requiring that undocumented immigrants pay any back taxes before normalizing their status would temporarily boost U.S. tax revenues still further.

But while the debate over legalization continues without resolution, the data suggests that the undocumented immigrants in Pennsylvania have largely assimilated into the United States, making it less likely that mass deportation will ever be a realistic option. We estimate that 70.4 percent of the state's undocumented population has been in the United States for five or more years. More than 62.4 percent speak English well, very well, or fluently. Studies show that when immigrants with limited English proficiency learn the language, they see a substantial wage benefit and become less isolated in their communities.<sup>45</sup> The labor market outcomes and educational levels of their children increase with time as well.<sup>46</sup>

But while the debate over legalization continues without resolution, the data suggests that the undocumented **immigrants in Pennsylvania have largely assimilated** into the United States, making it less likely that mass deportation will ever be a realistic option.

# Methodology

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The vast majority of data that appears in this brief was calculated by the Partnership for a New American Economy research team, using a variety of publicly available data sources. Our work relied most heavily on the 2014 American Community Survey (ACS) 1-year sample using the Integrated Public Use Microdata Series (IPUMS) database.<sup>1</sup> Unless otherwise noted this data is weighted using the person weight for analysis at the individual level, and is weighted using the household weight for analysis at the household level.

## Demographics

The data points on the foreign-born population in the demographics section are calculated using both the 2010 and 2014 ACS 1-year sample.

## Entrepreneurship

The data on self-employed immigrants and the business income generated by immigrant entrepreneurs come from the 2014 ACS 1-year sample. We define immigrants as foreign-born individuals (excluding those that are children of U.S. citizens or born on U.S. territories).

The number of employees at immigrant-owned firms is estimated by using the 2007 Survey of Business Owners (SBO) Public Use Microdata Sample (PUMS),<sup>2</sup> which is the most recent microdata on business owners currently available. The estimates are weighted using the tabulation weights provided in the dataset. We define immigrant-owned businesses as firms with at least one foreign-born owner. For confidentiality, the data exclude businesses classified as publicly owned firms because they can be easily identified in many states. Based on our own analysis, we believe that many of the publicly owned firms excluded from this data are companies with

500 employees or more. As a result, the final number of employees at immigrant-owned companies in this report is a conservative estimate, and is likely lower than the true value.

Fortune magazine ranks U.S. companies by revenue and publishes a list of top 500 companies and their annual revenue as well as their employment level each year. To produce our estimates, we use the 2015 Fortune 500 list.<sup>3</sup> Our estimates in this section build on past work done by PNAE examining each of the Fortune 500 firms in the country in 2011, and determining who founded them.<sup>4</sup> We then use publicly available data, including historical U.S. Census records and information obtained directly by the firms, to determine the background of each founder. In the rare cases where we could not determine a founder's background, we assumed that the individual was U.S.-born to be conservative in our estimates. Some firms created through the merger of a large number of smaller companies or public entities were also excluded from our analysis. These included all companies in the utilities sector and several in insurance.

To produce the Fortune 500 estimates for each state, we allocate firms to the states where their current headquarters are located. We then aggregate and report the annual revenue and employment of the firms in each state that we identify as "New American" Fortune 500 companies. These are firms with at least one founder who was an immigrant or the child of immigrants.

## Income and Tax Contributions

Using the 2014 ACS 1-year data, we estimate the aggregate household income, tax contributions, and spending power of foreign-born households.

To produce these estimates, a foreign-born household is defined as a household with a foreign-born household head. Immigrant sub-groups are defined as follows: 1) Asian immigrants refer to the foreign-born persons who self identify as Chinese, Taiwanese, Japanese, Filipino, Asian Indian, Korean, Native Hawaiian, Vietnamese, Bhutanese, Mongolian, Nepalese, Cambodian, Hmong, Laotian, Thai, Bangladeshi, Burmese, Indonesian, Malaysian, Pakistani, Sri Lankan, Samoan, Tongan, Guamanian/Chamorro, Fijian, or other Pacific Islanders; 2) Hispanic immigrants include those foreign-born persons who report their ethnicity as Hispanic; 3) Immigrants grouped under Sub-Saharan Africa originate from African countries, excluding the North African countries of Egypt, Libya, Tunisia, Algeria, and Morocco; 4) Middle Eastern and North African immigrants are foreign-born persons from North Africa as well as the following Middle Eastern countries: Iran, Iraq, Bahrain, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arab, Syria, United Arab Emirates, and Yemen.

In this brief, mirroring past PNAE reports on this topic, we use the term “spending power.”<sup>5</sup> Here and elsewhere we define spending power as the disposable income leftover after subtracting federal, state, and local taxes from household income. We estimate state and local taxes using the tax rates estimates produced by Institute on Taxation and Economic Policy by state income quintiles.<sup>6</sup> For federal tax rate estimates, we use data released by the Congressional Budget Office in 2014 and calculate the federal tax based on the household income federal tax bracket.<sup>7</sup>

Social Security and Medicare contributions are drawn from taxes on an individual’s wage earnings.<sup>8</sup> This is far different from a household’s overall income, which may include other revenue streams such as rental income and returns on investments. To account for this difference between overall federal taxes and Social Security and Medicare contributions, we estimate Medicare and Social Security contributions based on wage and salary data provided at the individual level in the ACS. For self-employed individuals, we use the self-employment income as the income base. The amount of earnings that can be taxed by the Social Security

program is capped at \$117,000, while there no such limit for the Medicare program.<sup>9</sup> We use a flat tax rate of 12.4 percent to estimate Social Security contributions and 2.9 percent for to capture Medicare contributions. This estimates the total amount that immigrants and their employers contributed in 2014.<sup>10</sup>

It is also worth noting that half of the amount contributed to Social Security and Medicare (6.4 percent of Social Security tax rate and 1.45 percent of Medicare tax rate) comes from individual workers, while the other half comes directly from their employers. Self-employed workers have to pay the full tax themselves. When estimating Social Security and Medicare contributions, we include all individual wage earners in the households and aggregate the amount paid by state.

## Workforce

We use the 2014 ACS 1-year sample to estimate all data points in the workforce segment of the report. We define the working age population as those 25 to 64 years old. When estimating how much more foreign-born persons are likely to be employed than native-born persons, however, we calculate the percentage of native-born and foreign-born residents of all ages who were employed in 2014. The reason why we choose a more inclusive population for that estimate is because we want to make the point that the increased likelihood of being working aged that we see among immigrants leads to higher employment in the vast majority of states.

Because the employment status of people who are 16 years old or younger is not available in the ACS, we assume that these young people are not employed. The employed population also does not include those in the Armed Forces.

To estimate how much more likely immigrants are to be employed than natives, we calculate the percent difference between the immigrant and native-born employment rates. Our estimates on the share of immigrants and natives of different education levels only take into consideration individuals aged 25 or older.

The North American Industry Classification System, or NAICS Industry code, is used to estimate the industries with the largest share of foreign-born workers. All individuals 16 years old and above are included in these calculations. The total number of workers for certain industries in some states is extremely small, thus skewing results. In order to avoid this, we calculate the percentile distribution of the total number of workers per industry per state and drop the industries in each state that fall below the lowest 25th percentile. Estimated occupations with the largest share of foreign-born workers per state also follow the same restrictions—the universe is restricted to workers age 16 and above, and the occupations per state that fall under the 25th percentile benchmark are not included.

Our estimates on the number of manufacturing jobs created or preserved by immigrants rely on a 2013 report by the Partnership for a New American Economy and the Americas Society/Council of the Americas. That report used instrumental variable (IV) strategy in regression analysis and found that every 1,000 immigrants living in a county in 2010 created or preserved 46 manufacturing jobs there.<sup>11</sup> We use that multiplier and apply it to the 2010 population data from the ACS to produce our estimates.

## Agriculture

We access the agriculture GDP by state from Bureau of Economic Analysis, which includes GDP contributions from the agriculture, forestry, fishing, and hunting industry.<sup>12</sup> The share of foreign-born agricultural workers is estimated using 2014 ACS 1-year sample. Additional data on agriculture output, top three crops per state, and leading agricultural exports come from United State Department of Agriculture (USDA)'s state fact sheets.<sup>13</sup> When displayed, data on sales receipts generated by the top fresh produce items in each state come the Farm and Wealth Statistics cash receipts by commodity tables available from the USDA's Economic Research Service.<sup>14</sup>

The agriculture section uses the Quarterly Census of Employment and Wage (QCEW) to estimate the

percentage of crop farms producing fresh fruits and vegetables, and change in real wage of agricultural workers between 2002 and 2014. The QCEW data uses the North American Industry Classification System (NAICS) to assign establishments to different industries. We identify the following farms as fresh fruits and vegetable farms: other vegetable and melon farming, orange groves, citrus, apple orchards, grape vineyards, strawberry farming, berry farming, fruit and tree nut combination farming, other non-citrus fruit farming, mushroom production, other food crops grown under cover, and sugar beet farming.

The decline in the number of field and crop workers comes from the quarterly Farm Labor Survey (FLS) administered by USDA.<sup>15</sup> Stephen Bronars, an economist with Edgeworth Economics, previously analyzed and produced these estimates for the PNAE report, “A Vanishing Breed: How the Decline in U.S. Farm Laborers Over the Last Decade has Hurt the U.S. Economy and Slowed Production on American Farms” published in 2015. Additional information on those calculations can be found in the methodology section of that paper.<sup>16</sup>

Finally, for a small number of states, we also produce estimates showing how growers in the state are losing market share for specific produce items consumed each year by Americans, such as avocados or strawberries. Those estimates originate in a 2014 report produced by PNAE and the Agriculture Coalition for Immigration Reform.<sup>17</sup> The author used data from the USDA's annual “yearbook” for fresh fruits and vegetables, among other sources, to produce those estimates. More detail can be found in the methodology of that report.

## Science, Technology, Engineering, and Math

We use the STEM occupation list released by U.S. Census Bureau to determine the number and share of foreign-born STEM workers as well as the number of unemployed STEM workers from 2014 ACS 1-year data.<sup>18</sup> Per U.S. Census classification, healthcare workers such as physicians and dentists are not counted as working in

the STEM occupations. All unemployed workers who list their previous job as a STEM occupation are counted as unemployed STEM workers.

To capture the demand for STEM workers, we use the Labor Insight tool developed by Burning Glass Technologies, a leading labor market analytics firm. Burning Glass, which is used by policy researchers and academics, scours almost 40,000 online sources daily and compiles results on the number and types of jobs and skills being sought by U.S. employers. This search includes online job boards, individual employer sites, newspapers, and public agencies, among other sources. Burning Glass has an algorithm and artificial intelligence tool that identifies and eliminates duplicate listings—including ones posted to multiple job boards as part of a broad search.<sup>19</sup>

The data on STEM graduates are from the 2014 Integrated Postsecondary Education Data System (IPEDS) completion survey.<sup>20</sup> A study by the Partnership for a New American Economy and the American Enterprise Institute found that every time a state gains 100 foreign-born STEM workers with graduate-level STEM training from a U.S. school, 262 more jobs are created for U.S.-born workers there in the seven years that follow.<sup>21</sup> We use this multiplier and the number of STEM advanced level graduates on temporary visas to estimate the number of jobs created for U.S.-born workers.

The last part of the STEM section presents data on patents with at least one foreign-born inventor. The data is originally from a study by Partnership for a New American Economy in 2012, which relied on data from U.S. Patent and Trademark Office's database as well as LinkedIn, direct correspondence, and online profiles to determine the nativity of individual inventors.<sup>22</sup>

## Healthcare

We estimate the number of unemployed healthcare workers using the 2014 ACS 1-year sample. Healthcare workers are healthcare practitioners and technical occupations, or healthcare support occupations as defined by U.S. Census Bureau.<sup>23</sup>

Unemployed healthcare workers are individuals who report their previous job as a healthcare occupation, and their employment status as currently not working but looking for work. We took the number of job postings for healthcare workers from the Burning Glass Labor Insight tool, a database that scours online sources and identifies the number and types of job postings. We describe this resource in detail in the section on STEM methodology.

We then delve into specific occupations within the broader healthcare industry. To produce the figures on the total number of physicians and psychiatrists and the share born abroad, we use American Medical Association (AMA) Physician Masterfile data. To give a sense of the supply and demand of physicians and psychiatrists, we also calculate the physician and psychiatrist density in each state by dividing the total number of physicians or psychiatrists by the population estimates in 2015 for each state.<sup>24</sup> As for the share of foreign-born nurses and home health aides, we use the 2014 ACS 5-year sample data because data from the 1-year sample is too small to make reliable estimates.

We estimate the shortage of psychiatrists, dentists, and occupational therapists using data from the various U.S. government offices. For example, the shortage of psychiatrists refers to the current lack of psychiatrists per the U.S. government's official definition of a mental health shortage area (1/30,000 residents) in each county, aggregated within each state.<sup>25</sup> The shortage of dentists is from an analysis by U.S. Department of Health and Human Services,<sup>26</sup> and the shortage of occupational workers is from a journal article published by PM&R, the official scientific journal of the American Academy of Physical Medicine and Rehabilitation.<sup>27</sup> For psychiatrists, we project future shortages by accounting for individuals in these occupations as they reach the retirement age of 65.

## Housing

The data in the housing section comes from the 2014 ACS 1-year sample. Immigrant homeowners are defined as foreign-born householders who reported living in

their own home. We estimate the amount of housing wealth held by immigrant households by aggregating the total housing value of homes owned by immigrant-led households. We also estimate the amount of rent paid by immigrant-led households by aggregating the rent paid by such families. We then calculate the share of housing wealth and rent that immigrant households held or paid compared to the total population. For characteristics of homeowners, a foreign-born new homebuyer is defined as a household with a foreign-born household head who owned and moved to the current residence within the last five years.

## Visa Demand

The data on visa demand are drawn primarily from the 2014 Annual Report produced by the Office of Foreign Labor Certification within the U.S. Department of Labor.<sup>28</sup> Our figures on the number of visa requests authorized for each state—as well as the occupations and cities those visas are tied to—originate directly from that report.

In this section, we also present estimates on the number of jobs that would have been created if all the visas authorized in 2014 had resulted in actual visa awards. The multipliers we use to produce these estimates originate in a 2011 report released by PNAE and the American Enterprise Institute. That report, written by the economist Madeline Zavodny, used a reduced-form model to examine the relationship between the share of each state’s population that was immigrant and the employment rate of U.S. natives. More detail on Zavodny’s calculations and the multipliers produced for each visa type can be found in the methodology appendix of that report.<sup>29</sup>

For purposes of these briefs, we use Zavodny’s finding that the award of 100 additional H-1B visas in a state is tied to 183 additional jobs for natives there in the 7 years that follow. The award of 100 additional H-2B visas creates 464 additional jobs for natives in the state during that same time period. We apply these multipliers to the number of visas in those categories authorized for each state in 2014.

In many of the state reports, we also present figures showing how visa denials resulting from the 2007 and 2008 H-1B lotteries cost the tech sectors of metropolitan areas both employment and wage growth in the two years that followed. The economists Giovanni Peri, Kevin Shih, and Chad Sparber produced these estimates for a PNAE report on the H-1B visa system that was released in 2014. That report relied on Labor Condition Application and I-129 data that the authors obtained through a Freedom of Information Act request, as well as American Community Survey data from 2006 and 2011. The authors did regressions that examined the causal relationship between a “shock” in the supply of H-1B computer workers and computer employment in subsequent years for more than 200 metropolitan areas. More information on those estimates can be found in the methodology appendix of that report.<sup>30</sup>

## Naturalization

Using the ACS 2014 1-year sample, non-citizens eligible to naturalize are defined as non-citizens who are 18 years or above, can speak English, and have continuous residence in the United States for at least five years.

Researchers at the University of Southern California’s Center for the Study of Immigrant Integration published a report in 2012, “Citizen Gain: The Economic Benefits of Naturalization for Immigrants and the Economy,” which concluded that immigrants experience an 8 to 11 percent gain in their individual wages as a result of becoming naturalized. Because this earnings gain phases in over time—and we want to be conservative in our estimates—we model a wage increase of just 8 percent when discussing the possible gains that could accrue due to naturalization.<sup>31</sup> We use this multiplier and the mean individual wages of non-citizens in each state to estimate the additional earnings that non-citizens would earn if they naturalized. Finally, we calculate the aggregate wage earnings boost by multiplying the total number of non-citizens who are eligible for naturalization by the average increase in wage income per person.

## International Students

We obtain the size and share of postsecondary students who are international in each state from the 2014 Integrated Postsecondary Education Data System (IPEDS) fall enrollment data. Those figures are then applied to preexisting work previously done by NAFSA, an organization representing professionals employed in the international offices of colleges and universities across the United States. NAFSA has developed an economic value tool and methodology that estimates the total economic benefit and jobs created or supported by international students and their dependents in each state.<sup>32</sup> The economic contributions include the costs of higher education along with living expenses minus U.S.-based financial support that international students receive.

Because the enrollment data from IPEDS that we use in this brief is different from the underlying data used by NAFSA, our figures differ slightly from the NAFSA estimates of the economic contributions made by international students in the 2014-2015 school year.

## Voting

The estimates for the number of registered and active voters who are foreign-born are calculated from the Voter Supplement in the Current Population Survey (CPS) for the years 2008, 2010, 2012, and 2014 using the IPUMS database. The sample in CPS includes civilian non-institutional persons only. Foreign-born individuals who stated having voted between 2008 and 2014 are termed active voters.

Using data from the 2014 ACS 1-year sample, we estimate the number and share of foreign-born eligible voters. We define them as naturalized citizens aged 18 or older who live in housing units. Persons living in institutional group quarters such as correctional facilities or non-institutional group quarters such as residential treatment facilities for adults are excluded from the estimation. We also estimate the number of new foreign-born voters who will become eligible to vote in 2016 and 2020, either by turning 18 or through

naturalization, as well as the total number of foreign-born voters in these years. The estimates of newly eligible voters for 2016 include naturalized citizens ages 16 and 17 as of 2014 (thereby becoming of voting age by 2016). Those eligible to vote in 2020 include all naturalized citizens ages 12-17 in 2014. Applicable mortality rates are also applied.<sup>33</sup> In addition, we estimate newly naturalized citizens using data from the Department of Homeland Security, which show the two-year average of new naturalized citizens by state.<sup>34</sup> We discount from these numbers the percentage of children below 18 in households with a naturalized householder by state. Estimates of total foreign-born voters include naturalized citizens aged 18 or older in 2014, discounted by average U.S. mortality rates by age brackets, summed to the pool of newly eligible foreign-born voters.

Margin of victory in 2012 refers to President Barack Obama's margin of victory over Republican candidate Mitt Romney in terms of popular vote. The margins are negative in states that Romney won in 2012.<sup>35</sup>

## Undocumented

Using data from the 2014 ACS, we applied the methodological approach outlined by Harvard University economist George Borjas<sup>36</sup> to arrive at an estimate of the undocumented immigrant population in the overall United States and individual states. The foreign-born population is adjusted for misreporting in two ways. Foreign-born individuals who reported naturalization are reclassified as non-naturalized if the individual had resided in the United States for less than six years (as of 2014) or, if married to a U.S. citizen, for less than three years. We use the following criteria to code foreign-born individuals as legal U.S. residents:

- Arrived in the U.S. before 1980
- Citizens and children less than 18 year old reporting that at least one parent is native-born
- Recipients of Social Security benefits, SSI, Medicaid, Medicare, Military insurance, or public assistance

- Households with at least one citizen that received SNAP
- People in the armed forces and veterans
- People attending college and graduate school
- Refugees
- Working in occupations requiring a license
- Government employees, and people working in the public administration sector
- Any of the above conditions applies to the householder's spouse

The remainder of the foreign-born population that do not meet this criteria is reclassified as undocumented. Estimates regarding the economic contribution of undocumented immigrants and the role they play in various industries, and tax contributions are made using the same methods used to capture this information for the broader immigrant population in the broader brief. When estimating the aggregate household income, spending power, and tax contributions, we are not able to make reliable estimates for undocumented-led households in Alaska, Maine, Montana, North Dakota, South Dakota, Vermont, and West Virginia due to the small sample size of undocumented-led households in ACS. Finally, the variables giving a sense of the undocumented population's level of assimilation—including their English proficiency and time in the United States—are estimated by examining the traits of the undocumented population in the 1-year sample of the ACS.

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ABOUT

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The Partnership for a New American Economy brings together more than 500 Republican, Democratic and Independent mayors and business leaders who support sensible immigration reforms that will help create jobs for Americans today. Visit [www.renewoureconomy.org](http://www.renewoureconomy.org) to learn more.

