# INTERNATIONAL HARVEST:

## A Case Study of How Foreign Workers Help American Farms Grow Crops – and the Economy

A report by the Partnership for a New American Economy
and the Center for Global Development
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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 immigration reforms that will help create jobs for Americans today.


**The Center for Global Development** works to reduce global poverty and inequality through rigorous research and active engagement with the policy community to make the world a more prosperous, just, and safe place for us all.

# EXECUTIVE SUMMARY

Do immigrants create jobs or take jobs away? This report answers this question for one important sector of the American economy, agriculture, by looking at the case of North Carolina farms. Analyzing data from North Carolina farms, this report shows that foreign agriculture workers fill jobs that native workers will not, and that by filling these jobs, foreign workers benefit North Carolina's economy and create jobs for Americans.

Many of North Carolina's leading farms band together each year to apply collectively as the North Carolina Growers Association (NCGA) for H-2A visas – temporary visas for foreign seasonal farm workers. Though North Carolina is not the only state to have an organization like the NCGA that manages the H-2A visa compliance process, the NCGA is far and away the biggest such organization and constitutes the largest single user of H-2A visas in the country. By law, before they can secure visas to give to foreign workers, the NCGA must demonstrate that US natives will not fill the NCGA farms' labor needs. In order to do this, the NCGA actively recruits native workers to fill the jobs it offers through advertising in local newspaper classifieds and extensive coordination with North Carolina's unemployment agency to make sure that all eligible unemployed workers can learn about NCGA jobs. The NCGA also tracks its efforts to recruit US natives, allowing us to know, each and every year, how many US workers want farm jobs, how many apply for farm jobs, how many show up on the first day of work, how many last the growing season, and how native workers' interest in farm jobs varies through economic booms and busts. The NCGA data create a clear picture of both the extent to which native workers want farm jobs, and allow us to estimate the economic benefit of filling farm jobs with foreign seasonal farm workers.

Analyzing over a decade's worth of these records, this report finds that:

1. **There is virtually no supply of native manual farm laborers in North Carolina:**

   In 2011, there were on average 489,000 unemployed people in North Carolina and approximately 6,500 available farm jobs offered through the North Carolina Growers Association. Despite the fact that each of these jobs was in or next to a county with over 10 percent unemployment, only 268 of the nearly 500,000 unemployed North Carolinians applied for these jobs. More than 90 percent of those applying (245 people) were hired, but just 163 showed up for the first day of work. A month in, more than half had quit. Only 7 native workers – or 3 percent of US workers hired – completed the entire growing season. By contrast, roughly 90 percent of all Mexican farm workers at the NCGA complete the growing season. In any given week, native farm workers are 30 times more likely to leave the job than Mexican farm workers. With 6,500 job openings, the 7 native workers who completed the season filled only one-tenth of one percent of the jobs offered by the NCGA.

2. **No matter how bad the economy becomes, native workers do not take farm jobs:**

   Increasing unemployment has no impact at all on the number of native workers who complete the growing season with the NCGA, although it does correspond with a slight increase in the number who apply for farm jobs. The study shows that if unemployment rose from 2 percent to 14 percent, which would put hundreds of thousands of new people out of work, only about 100 more US workers would apply for NCGA jobs each year – just a sliver of the roughly 6,500–7,000 placements needed in recent years. Still, this spike in unemployment rate would not make US workers any more likely to finish a growing season at all.

3. **Foreign farm workers create jobs for American workers:**

   In North Carolina, temporary foreign workers play a vital role in commercial agriculture. Because local farms cannot get local labor for many essential manual tasks, foreign workers allow those farms – and their whole contribution to North Carolina's economy – to exist, creating additional jobs for US workers in all sectors. The 7,000 seasonal H-2A workers recruited by the NCGA in 2012 added at least an estimated $248 million to $371 million to the North Carolina economy that year. This economic benefit created one US worker job for each 3.0–4.6 H-2A farm workers who worked in North Carolina. The projected benefit here is actually a conservative estimate for what foreign seasonal laborers add to the North Carolina economy. It underestimates total job creation because it assumes that the H-2A workers could be completely replaced by other methods of harvesting crops, like machines that mechanize harvests, which is not currently possible for many crops. Also, the estimated benefit does not account for the H-2A workers' spending a portion of their wages in the local economy, or for the spending of US workers who work on the same farms. Thus, the actual economic impact of the foreign agricultural laborers is higher.

4. **The North Carolina Growers Association spends more money to comply with the immigration laws designed to protect American workers than it does on salaries for all its American farm workers combined:**

   The North Carolina Growers Association spent more than $100,000 to advertise farm jobs and comply with immigration laws in 2011, while it paid out just $87,000 in wages to the seven native workers who completed the season working on the farm.

The data show this is not a case of farmers preferring foreign labor because they can pay foreign workers less; no matter how bad the economy turned, there were still very few native workers who were willing to take farm jobs. The picture is clear: farms will not get the labor they need from natives alone. Without foreign seasonal workers, whole subsectors of agriculture would not exist in North Carolina today.

The example of the North Carolina Growers Association affirms how deeply American farms depend on foreign labor, and how fundamental foreign labor is to making the agriculture industry run. Immigration policies can and should protect native employment, but should also not ignore economic reality. About two-thirds of hired farm workers in America today are foreigners, and America's farms are depending steadily more on hired help and less on family members: according to the 2007 Census of Agriculture, paid employees made up about 60 percent of all farm workers, a substantial rise from the 40 percent share they made up in the 1990s (correspondingly, unpaid family members constituted 60 percent of farm workers nationally in the 1990s but only 40 percent today). The same survey also showed that Americans are also demanding more fresh produce over time, which relies more heavily on manual labor to harvest, and demand for these labor-intensive crops is only expected to increase. These trends mean that the role of foreign labor on American farms will only grow larger in the coming years, and we need to make sure our immigration policies are equipped to get us the workers we need.

# INTRODUCTION

Foreign labor is fundamental to American agriculture – America's farms could not operate without foreign workers. According to a 2009 survey by the US Department of Labor, 67% of all farm workers were not US citizens. Acknowledging how critical foreign workers are to US farms, Congress created the H-2A visa program as part of the Immigration Reform and Control Act of 1986. The H-2A program updated an existing guest worker program to create a visa specifically for seasonal agricultural workers, or foreigners who come to the US to work just for a growing season and then return to their countries of origin. Under the program, agricultural employers petition US Citizen and Immigration Services (USCIS) for the H-2A visas, but before the employers' applications are approved, they must demonstrate that: "(1) there are not sufficient able, willing, and qualified United States (US) workers available to perform the temporary and seasonal agricultural employment for which an employer desires to import nonimmigrant foreign workers; and (2) employment of H-2A workers will not adversely affect the wages and working conditions of similarly employed US workers." There is no limit to the number of H-2A visas that can be issued in a given year, unlike other temporary US visas.

In theory, the H-2A program allows farmers access to an unlimited source of agricultural workers, but in reality, the program is notoriously cumbersome to navigate. In a Congressional hearing on the H-2A program in 2011, Lee Wicker, Deputy Director of the North Carolina Growers Association, testified that the program was "broken," and "a bureaucratic morass." The groups who represent farmers' interests in Washington have made improving or replacing the H-2A reform a top legislative priority. While they support the concept of a visa program that gets them access to the labor they need, the burdens of complying with the current program pose significant challenges to individual farmers. The H-2A visa requires that employers work with several government agencies, resulting in a cumbersome mess of paperwork to comply with the program: submitting employee applications to state workforce agencies, and then to the US Department of Labor; filing petitions for workers with the US Department of Homeland Security; and securing visas through the US Department of State. As a result, in most states, few farmers choose to individually enroll in the H-2A program, relying on the large pool of unauthorized workers that dominates America's temporary agricultural workforce. According to the

Government Accountability Office, only about 55,000 H-2As were granted in 2011 – a tiny share of the approximately 1 million hired agricultural workers estimated by the Department of Agriculture to be present in the US.

To overcome the administrative burdens of the H-2A program, in 1989 many of North Carolina's leading farmers, including some of the state's largest farms, banded together as the North Carolina Growers Association (NCGA), a not-for-profit organization responsible for managing applications to and compliance with the H-2A program. Currently, there are around 700 individual farms that participate. As a result, the NCGA is the largest single applicant for H-2A visas in the entire country, receiving about 6,500 of the visas in recent years. North Carolina's program frees individual farmers from the bureaucratic burden of managing the H-2A program and creates a statewide workforce of 6,500 legal temporary workers on-hand when farmers need them.

In order to prove that US workers are uninterested in NCGA jobs, the NCGA is required by law to undertake and document extensive efforts to recruit US workers for each position it offers, notifying all North Carolinians registered as unemployed and interested in farm work of local agricultural jobs. NCGA job placements are shared through local offices of the North Carolina Division of Employment Security (DES) – the state unemployment agency – which in turn advertises NCGA jobs in a mailed notification sent to all unemployed people who express an interest in farm work. In addition, if an unemployed person who states an interest in farm work wants to receive unemployment benefits, that person must sit with a DES employment counselor who will inform him/her about available NCGA jobs. NCGA jobs are also posted at DES offices located near the jobs' worksites, and the NCGA advertises the farm lobs in the classified sections of local newspapers – in at least two daily newspapers or similar publications, and two more in each of two neighboring states.

When an unemployed person asks to be referred to the NCGA, DES shares that person's contact information with the NCGA. The job seeker and the NCGA then set up an in-person interview to determine if the person is physically fit to do farm labor. The referred worker is almost always hired by the NCGA (around 97 percent of workers who asked to be referred to the NCGA from DES were hired between 1998 and 2011). A person is considered to have "started" working if they show for the first day of work, and to have "completed" if the worker lasts the length of time it takes to finish the harvest.

To prove that they have made a vigorous effort to recruit native workers as the law requires, the NCGA keeps records documenting their recruitment efforts and the status of native workers as they are referred to, hired by, begin, and complete work at NCGA worksites. As a result of the extensive record-keeping requirements, the NCGA provides an unusually detailed case study for highlighting the important role of foreign workers in the economics of American agriculture.

# A NEW APPROACH TO STUDYING THE IMPACT OF FOREIGN LABOR

This report uses two points of analysis – the North Carolina Growers Association's (NCGA) status as the largest user of H-2A visas and the rise in national unemployment that accompanied the Great Recession – to produce new insights into how foreign labor affects the job prospects of US natives.

To recruit foreign workers under the H-2A program, the NCGA must submit an application to the US Department of Labor proving that it has actively recruited US natives and native workers will not take NCGA jobs. The data the NCGA collects for this application show who responds when native workers and foreign workers are recruited for the same agricultural jobs. Additionally, the sharp rise in unemployment during the Great Recession allows us to see if native workers are more likely to pursue and keep agricultural jobs when jobs become scarce across the economy. In the late 2000s, North Carolina experienced an economic shock that dramatically increased the state's unemployment rate, from 4.7 percent in 2007 to 10.9 percent in 2010 (a slightly sharper rise than the spike in the unemployment rate nationally, which rose from 4.6 percent to 9.6 percent over the same period). The data collected by the NCGA before and during the Great Recession of the late 2000s enables us to assess how demand for agricultural jobs among native workers changes when unemployment rises in the economy overall.

Because of its importance to the immigration debate, many studies have tried to answer whether an increase in foreign labor has an impact on job prospects for native workers. Most studies show that an increase of foreign labor tends to have a very small effect on overall unemployment among US workers, but the past studies on foreign laborers' effect on native employment are limited in what they can show.

One popular approach measures how an influx of foreign-born workers in a certain geographic area changes employment prospects for native workers' employment in that same area. (Do more immigrants settling in Charlotte make it harder for US citizens in Charlotte to get a job?) Another common approach measures how an increase in foreign labor impacts native worker employment in a group of workers with similar characteristics — like age and education — across a broader labor market. (Do more foreign workers age 25–30 with only a high school degree make it harder for US workers with the same age and education level to find jobs across the entire US?)

Both of these approaches have difficulty accounting for outmigration — in this case, people who choose to leave Charlotte if they face extensive competition from immigrants for jobs, or people who return to school to get more education because competition for jobs among people with high school degrees crowds them out. (For information on prior studies, please refer to Appendix A.) This report has two advantages. First, it allows us to assess the willingness of native workers to take farm jobs before they can even be offered to foreign workers, meaning that this study does not miss any impact caused by people who self-select out of an area or occupation because of competition with foreign workers. Additionally, because the NCGA farms are participating in the H-2A program, they have specifically chosen not to use unauthorized labor – or undocumented workers – preferring authorized workers instead. As part of their participation in the H-2A program, farmers must pay foreign and US workers the same wage, set by the government according to locality and the type of work completed, meaning that the farmers enjoy no benefit by paying the foreign laborers less. If the foreign agricultural workers were undocumented, the farmers may be able to skirt wage and labor rules, but by opting to participate in the H-2A program, NCGA farms have no economic advantage for hiring foreign workers. Unlike other studies arguing that foreign labor is essential to American farms, this one is removed from criticism that the high concentration of foreign workers on these farms is a result of being able to pay foreign workers less than US workers. (For more information on the advantages of the methods used in this study, please refer to Appendix B.)

Taken together, the advantages of this study allow us a more direct view of foreign labor's impact both on American workers' job prospects and on overall economic growth. Though the NCGA is just one example of foreign laborers' economic impact, it is an illuminating one that can inform the immigration debate.

# FINDINGS

**The study of the North Carolina Growers Association (NCGA) shows that:**

The supply of native workers fell far short of meeting NCGA's labor demands despite extensive efforts to recruit native workers in order to comply with the H-2A Guest Worker Program;

High unemployment during the Great Recession effectively had no impact on the supply of native workers for NCGA jobs;

The H-2A workers generated an economic benefit to North Carolina that created jobs for US workers; and

The private-sector and public-sector money spent to comply with the H-2A's current burdensome compliance scheme resulted in a poor return on investment for creating new American jobs.

# 1. US Workers Are Not Taking Seasonal Agricultural Jobs

Native labor supply for seasonal agricultural jobs in North Carolina was essentially zero for the 15 years surveyed, between 1998 and 2012. Even though the North Carolina Division of Employment Security (DES) reported that between 130,000 and 505,000 people were seeking work in the years surveyed, at the most, only 268 unemployed people in a year were referred to the North Carolina Growers Association to apply for seasonal farm jobs. Of those referred to the NCGA, a still much smaller proportion of native workers actually completed the growing season at their NCGA placements. In 2011, NCGA hired 245 native born workers – only 7, or less than 3 percent, lasted the entire term of their contracts. (For more information on the data collected by the NCGA and used in this report, please refer to Appendix C.)

*Native labor supply for seasonal agricultural jobs in North Carolina was essentially zero for the 15 years surveyed, between 1998 and 2012.*

As shown in Figure 1.1, the gap between the number of unemployed people registered with a DES office and the number of those people referred to apply for NCGA jobs is substantial. Even with an average of 504,885 people looking for work in any given month of 2010, the year when unemployment was at its highest, only 74 people were referred to the NCGA by a DES office. For all years surveyed, no more than 0.08% of people registered with DES were referred to the NCGA for placement. This held true even though the unemployed people received notification from DES that the jobs were available – through referral from a DES employment counselor or through a notification mailed to the person. If any person interested in farm work were actively looking for a job, it is unlikely the NCGA jobs would have gone unnoticed. Similarly, while the NCGA hired all or almost all of the people referred there by DES each year, native workers who were offered jobs were unlikely to actually show up and work. For

**FIGURE 1.1**

## Only a tiny share of unemployed North Carolinians took jobs at NCGA farms in the 15 years surveyed

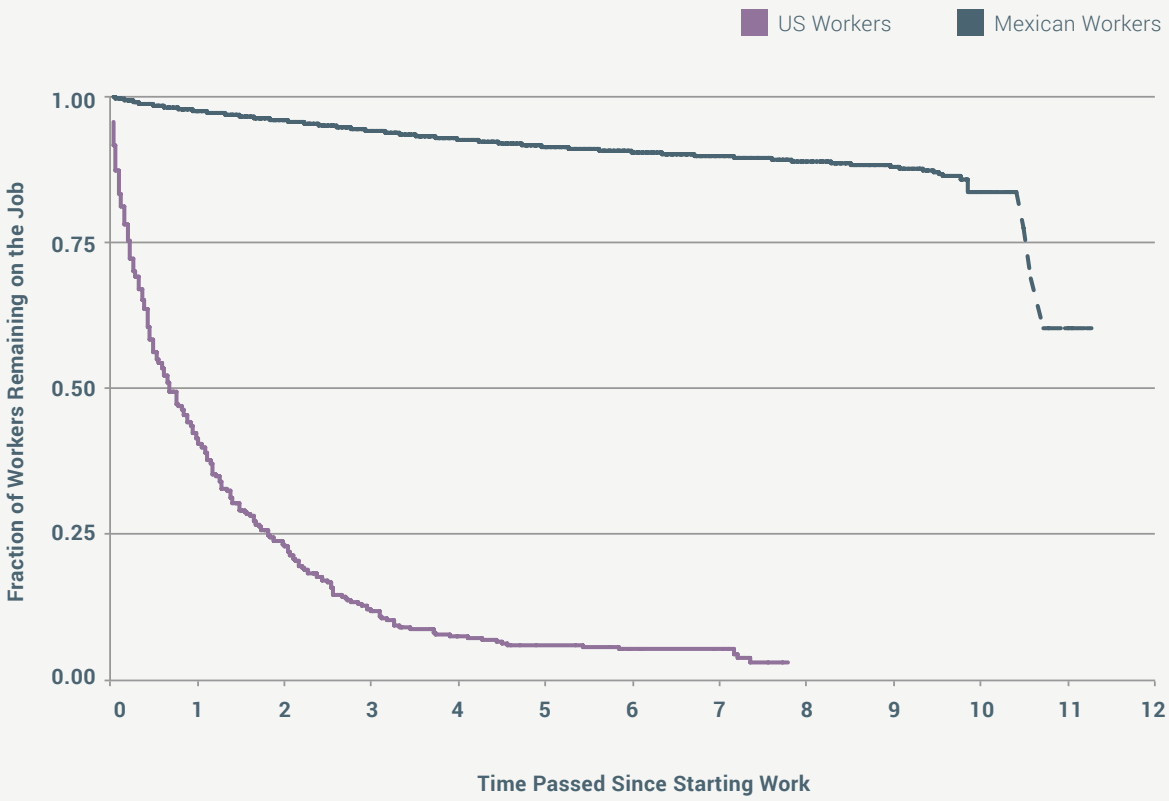
| Year | Unemployment Rate (%) | Total # Unemployed | # Referred to NCGA | # Beginning Work | # Completing Growing Season |
|---|---|---|---|---|---|
| 1998 | 3.53 | 140782 | 112 | 14 | 0 |
| 1999 | 3.27 | 132707 | 41 | 6 | 0 |
| 2000 | 3.75 | 154577 | 35 | 4 | 0 |
| 2001 | 5.64 | 234934 | 46 | 13 | 0 |
| 2002 | 6.63 | 279281 | 99 | 43 | 2 |
| 2003 | 6.45 | 274193 | 244 | 83 | 3 |
| 2004 | 5.54 | 236328 | 134 | 37 | 2 |
| 2005 | 5.26 | 229030 | 57 | 22 | 6 |
| 2006 | 4.74 | 212099 | 88 | 22 | 10 |
| 2007 | 4.71 | 213276 | - | - | - |
| 2008 | 6.19 | 283048 | 170 | 58 | 11 |
| 2009 | 10.76 | 490010 | 108 | 48 | 6 |
| 2010 | 10.94 | 504885 | 74 | 30 | 10 |
| 2011 | 10.51 | 489095 | 268 | 163 | 7 |
| 2012 | 9.52 | 446469 | 253 | 143 | 10 |

instance, of the 34 native workers hired by the NCGA in 2000, only 4 – or 12 percent – showed up for the first day of work even though the NCGA hired 97 percent, or all but one of the 35 people who were referred by DES that year. The rate of native workers hired by the NCGA who showed up for their first day broke 50 percent in only one year – 2011. The tendency of US workers to not show on the first day further shows that their unwillingness to do these jobs does not reflect a lack of information about the jobs.

Native workers were also very unlikely to complete the growing season in NCGA placements. About half the US workers who showed up for work on the first day were no longer on the job after a month. After two months, only around a quarter of US workers who started remained. By the end of the season, the numbers are even lower – in 2008, only 11 of the 170 native workers referred to the NCGA completed the season – the highest in all years surveyed. Between 1998 and 2001, no workers completed the growing season. When comparing the number of native workers who completed a growing season with the number of unemployed people in North Carolina, the gulf is staggering: in 2010, even with unemployment near 11 percent and with over 500,000 North Carolinians looking for jobs, only 10 people completed a growing season in an NCGA placement, or just under two-thousandths of 1 percent.

FIGURE 1.2

## US workers were much less likely than Mexican workers to complete their work contracts on NCGA farms




By contrast, approximately 90 percent of Mexican workers were still fulfilling their work contracts 5 months after they started. (Mexican workers are represented by the gray line in Figure 1.2). In any given week of the season, US workers are over 30 times more likely to leave work than Mexican workers. (For more information on US and Mexican worker start and quit/termination rates, please refer to Appendix D.)

Notably, while reasons why native workers will not take jobs are difficult to determine, native workers' distance from worksites could not have been a significant factor in explaining why unemployed natives are not taking NCGA jobs. Native workers might have been expected to ignore NCGA job openings if the worksites were located far away from unemployed workers' homes. However, an analysis of NCGA job site locations in 2011 showed that each NCGA job site was either in a county or next to a county with over 10 percent unemployment, suggesting that NCGA farm jobs were located close to people seeking work.

# 2. Even at the Height of the Recession, US Workers Did Not Take NCGA Jobs

Even though the Great Recession forced a 6.2 percentage-point spike in unemployment in North Carolina between 2007 and 2010 and put hundreds of thousands of North Carolinians out of work, local supply of farm laborers in North Carolina was still essentially zero. (For more information on the collection of unemployment data used in this report, please refer to Appendix C.) A regression analysis showed an extremely small positive association between local unemployment and referrals to the North Carolina Growers Association (NCGA). (Figure 2.1) In addition, there was a statistically significant, though even smaller, positive association between unemployment and the number of people who show up for their first day of work at NCGA job sites. (Figure 2.2) However, when it came to completing an NCGA job, there was no detectable relationship between increased unemployment and the number of US workers who actually finished a growing season. (Figure 2.3) (For more information on the regression analysis, please refer to Appendix E.)

FIGURE 2.1

## Even with high unemployment rates, the number of US workers referred to the NCGA remains very small

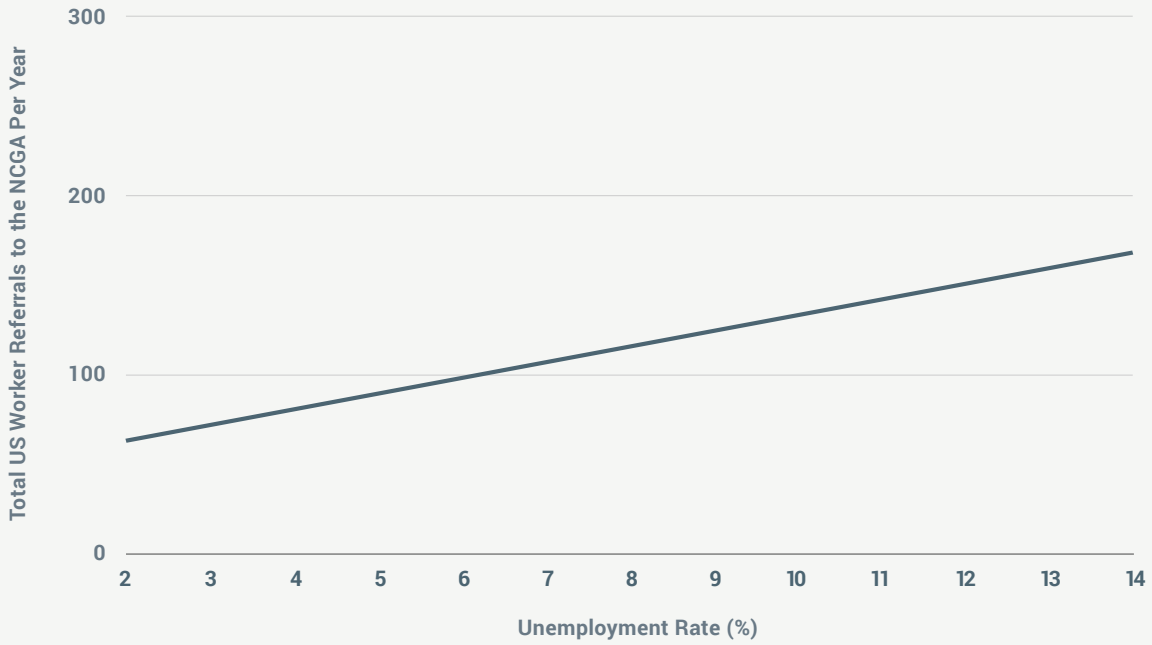


FIGURE 2.2

## The same 12% rise in the unemployment rate would result in fewer than 100 new workers starting NCGA jobs

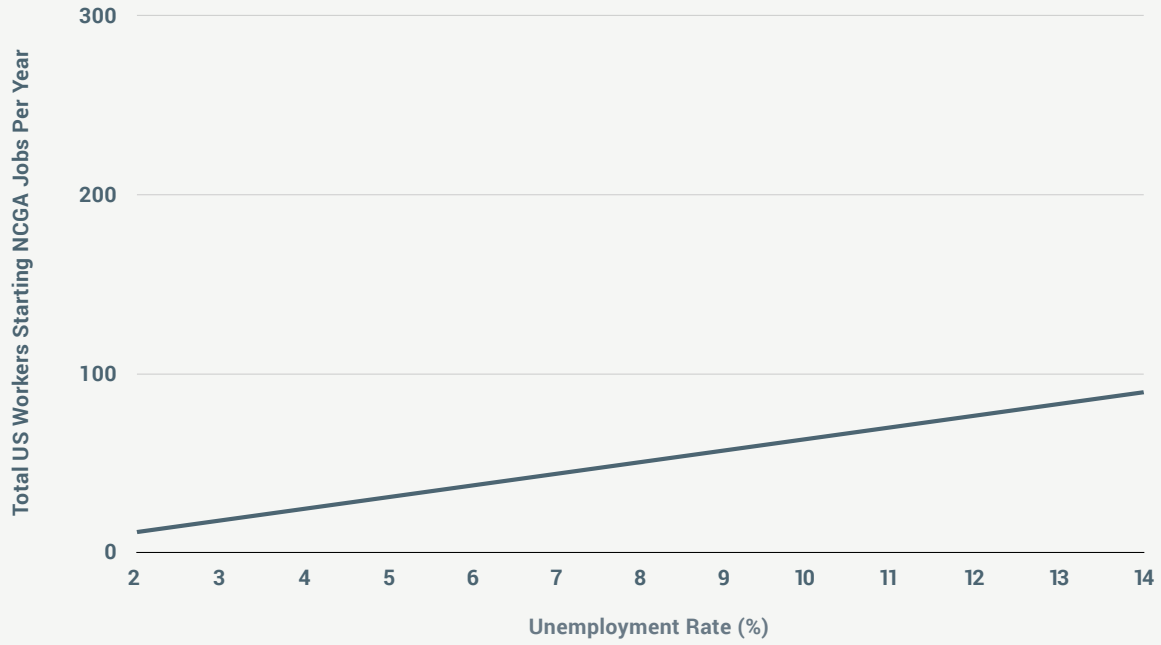



FIGURE 2.3

## A 12% rise in the unemployment rate would have no impact on the number of US workers who stay to complete a growing season

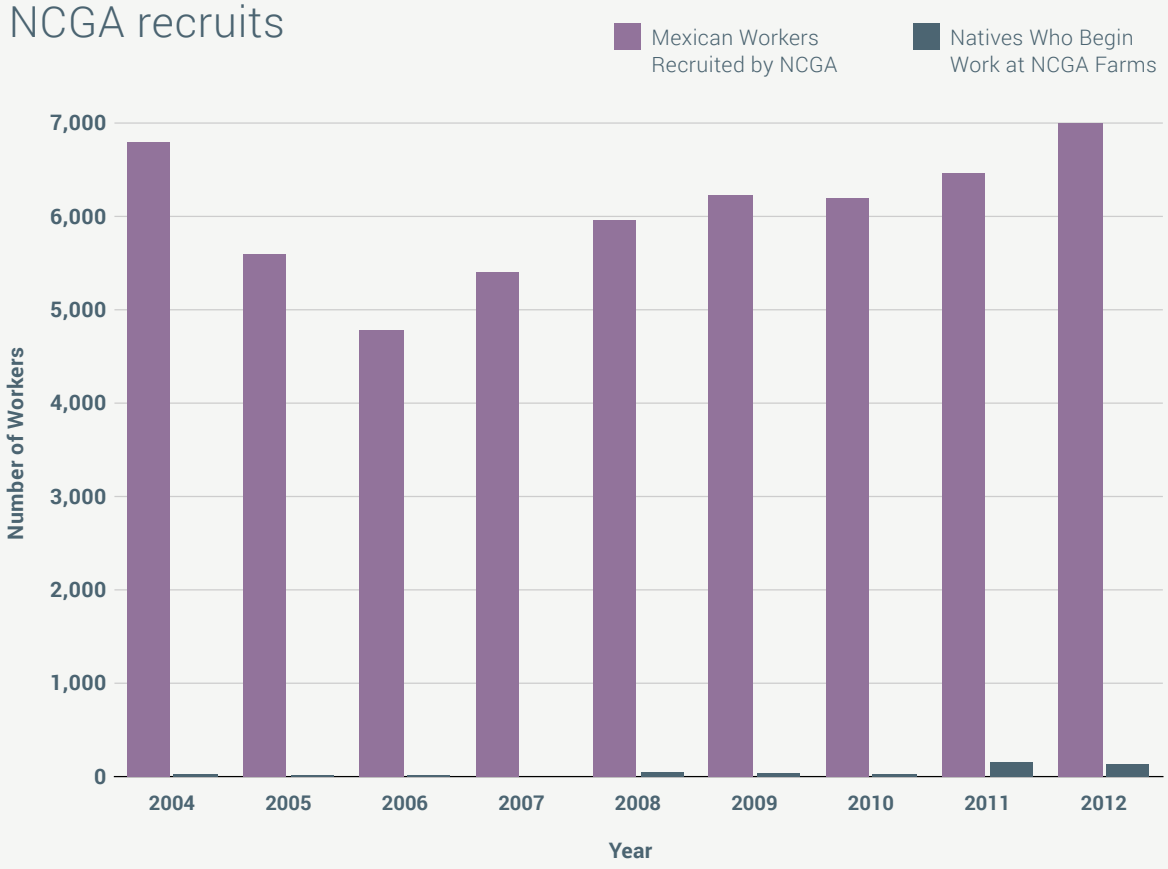
It is important to keep even these associations in perspective: the small numbers of US workers who were referred to and started work at NCGA sites underscore just how modest the association between increased unemployment of US workers and participation in NCGA jobs was. In year-to-year comparisons, increases in unemployment do not have an enormous impact in driving people to take seasonal farm jobs. In 1999, when the employment rate in North Carolina was 3.27 percent and 132,707 people were unemployed, DES was able to refer just 41 people to the NCGA. Of those 41 people (39 of whom were hired by the NCGA), only 6 actually showed up for the first day of work – and none actually completed the season. In 2010, with unemployment at 10.94 percent and over 500,000 North Carolinians looking for work, only 74 could be referred to the NCGA for farm job placements. Of the 73 who were hired, only 30 started, and just 10 native workers stayed through the season. Though the 74 referred to the NCGA in 2010 nearly doubled the 41 referred in 1999, the rise in unemployment during the Great Recession did not result in a groundswell of sudden native labor interest in seasonal farm jobs that would alter even slightly the prevailing need for foreign labor. Even when unemployment rates tripled, the native labor supply available for NCGA jobs could only ever meet a tiny fraction of NCGA's labor needs – which averaged about 6,000 workers from 1998 to 2012, and reached 7,008 in 2012. (Refer to Figure 2.4)

*Even when unemployment rates tripled, the native labor supply available for NCGA jobs could only ever meet a tiny fraction of NCGA's labor needs.*

The analysis here also helps explain that even a large increase in wages for farmers would not make natives any more likely to take seasonal farm jobs. The increase in unemployment mirrors a loss of wages generally in the economy — decreased availability of jobs everywhere else in the economy should be reflected in an increased interest in the NCGA farm jobs because people's ability to earn income across the broader economy is more limited, making these jobs more valuable in comparison. Though this may be reflected in the very modest increase in the number of people who asked for referrals to the NCGA when unemployment rose during the Great Recession in the late 2000s, because the recession had no impact at all on natives' likelihood of finishing of a growing season, it can be inferred that even substantially increasing the value of the job – including paying native workers more – would also not make natives any more likely to finish the growing season.

FIGURE 2.4

The number of US workers who start work at NCGA farms is very small compared to the number of Mexican workers NCGA recruits




## 3. Foreign Workers on North Carolina Farms Create Jobs for US Workers

Taken together, the example of the NCGA shows that foreign agricultural laborers with H-2A visas in North Carolina are not taking jobs away from US workers. Instead, foreign workers recruited through the H-2A program are providing the labor for an industry that has no local labor supply source – and are, in fact, creating jobs for US workers. The agriculture sector is central to North Carolina's economy, accounting for $77 billion, or 18 percent, of the state's income in 2011 according to North Carolina State University's College of Agriculture and Life Sciences. In North Carolina, as nationwide (according to the US Department of Labor's National Agricultural Survey), foreign workers – overwhelmingly of Mexican nationality – constitute the majority of workers on America's farms. Without the labor H-2A workers provide, a portion of North Carolina's economy would be jeopardized. This would-be loss to North Carolina's economy is estimated here.

The foreign farm laborers' economic impact is even larger than just providing the labor that makes it possible for some North Carolina farms to run: their labor results in an overall economic benefit to the state that creates jobs for native workers. Without foreign labor, portions of the agricultural economy would cease to exist, along with the effects they have on the rest of the economy. This study uses an economic multiplier estimated by the US Department of Commerce to approximate the short-run and long-run job creation benefits of the foreign laborers by focusing on the value added by the H-2A workers' labor harvesting three of the principal crops produced by NCGA farms: cucumber, sweet potato, and tobacco. (For more information on the economic impact of the three principal crops and the jobs multiplier, please refer to Appendix F.)

Using estimates of the additional revenue caused by employing a farm worker less the costs of these three crops and wages paid to laborers, we can measure the economic value added by the manual labor of the roughly 7,000 H-2A workers that worked on NCGA farms in 2012. There are two ways to measure the impact of the H-2A workers: a short-term analysis that looks at what foreign workers contribute to the North Carolina economy right now, and a long-term analysis that takes into account the things farmers could eventually do to replace foreign workers if they had to. The short-term analysis estimates what would happen if farmers continue to rely on foreign workers the way they do now without any changes to the way they harvest crops, like introducing machines to mechanize harvests, which would require fewer laborers on the farm. Using this model, 7,000 H-2A workers generate $495-$743 million in added economic value to North Carolina across all sectors of the economy – far beyond agriculture.

*7,000 H-2A workers add roughly $248-$371 million to the North Carolina economy in a given year.*

However, over a longer period of time, farmers could possibly make adjustments to the way they harvest crops – like using machines – that could effectively replace the need for foreign workers, meaning that, in comparison, the loss of 7,000 H-2A workers have a reduced impact on the North Carolina economy because whatever farmers use to replace the foreign workers could recoup some of the economic value that foreign workers provide. But still, farmers earn more by using foreign workers than by using mechanized harvesters, meaning that even if the farms could make do without it, they would make less money and add less to the North Carolina economy if they did not use foreign labor. With this model, the H-2A workers still add $248-$371 million to the North Carolina economy – less than estimated if the foreign workers are irreplaceable, but still a large benefit to the state.

The projections of the H-2A workers' economic impact allow for estimating how many jobs 7,000 H-2A workers create for North Carolinians in a given year using a jobs multiplier. The jobs multiplier in this report uses data specific to a region and industry (in this case, agriculture in the state of North Carolina) to determine the "total change in number of jobs that occurs in all industries within the state" with each additional million dollars added by that industry to the state's economy. (For more information on the jobs multiplier used in this report, please refer to Appendix G.) Using this multiplier, $495-$743 million in short-term economic output results in one North Carolina-worker job for each 1.5-2.3 H-2A workers, while $248-$371 million in long-term economic output of foreign workers results in one North Carolina-worker job for each 3.0-4.6 H-2A workers.

The actual job creation benefit of the H-2A workers is somewhere between these two estimates: farmers would probably change their harvesting methods without H-2A workers but could not do so overnight. Notably, because there would be no native workers to take manual farm jobs if access to foreign labor were cut off, the job creation estimates here don't just mean that thousands of North Carolinians would not have their current job if not for these Mexican workers; it means that thousands of North Carolinians would not have any job.

*Each 3.0-4.6 H-2A workers created one job for a North Carolinian – a conservative estimate.*

These jobs for US workers could come in many forms, including jobs that relate directly to the harvested crops, such as packaging, shipping, and selling, as well as jobs in sectors with a less direct relationship to the crops across the broader North Carolina economy. If a farmer gets more revenue from a harvest, he may be able to buy a car or make improvements to his home, further spreading the economic benefit of the H-2A workers. Also, the multiplier underestimates the overall total economic impact the H-2A workers have on the economy. Among other things, the multiplier does not account for H-2A laborers' local spending in North Carolina, helping support local restaurants and stores, and the impact that the lift in the North Carolina economy has on other states.

The analysis of the revenue generated for these three principal crops also explains why farmers simply cannot pay higher wages in order to find more native workers. Calculating the economic benefit of the H-2As also shows that the North Carolina farmers do not make enough revenue from the sale of their crops to pay wages high enough for attracting a significant number of native workers. Using cucumbers as an example, if wages were doubled, raising the hourly wage for collecting cucumbers from $9.70 to $19.40, it would be impossible for farmers to grow cucumbers profitably – the farmers' labor cost per acre per year would be too high. The cucumber subsector of North Carolina agriculture, and its contribution to the broader state economy, would cease to exist.

# 4. The H-2A Program's Requirements are Burdensome and Inefficient

The North Carolina Growers Association's (NCGA) use of H-2A visas also provides clear evidence that some of the H-2A program requirements actually cost farmers time and money that could otherwise be used to create jobs. In 2011, the NCGA spent $54,440 on advertising its jobs in local newspapers, as compliance with the H-2A program requires, as well as $46,000 in staff time exclusively devoted to cooperating with the North Carolina Division of Employment Security (DES) recruiting, hiring, and tracking referrals of US workers to NCGA farms. This $100,440 spent by NCGA does not include the time and costs shouldered by DES, the US Department of Labor, or the North Carolina Department of Labor that was spent enforcing H-2A program requirements – each of which devote staff to either ensuring that unemployed workers are referred to the NCGA or that the NCGA is fulfilling its obligation to extensively recruit native workers.

But in that same year, 2011, only seven unemployed US workers were willing to take seasonal farm jobs offered through the NCGA and complete the season. Those seven workers collectively earned approximately $87,300 in wages, meaning the $100,440 spent to comply with the H-2A program exceeded the total value of the jobs it provided to native workers.

# RECOMMENDATIONS

**The number of agricultural guest worker visas should remain uncapped or be flexible enough to meet farmers' labor needs.** Although the current H-2A visa is uncapped, some proposed legislation would set an annual cap on agricultural guest workers. If instated, any limit on the visas must reflect labor market realities – in North Carolina, native workers filled just one-tenth of one percent of farms' labor needs. Any temporary visa program should provide sufficient workers to meet the remaining 99.9 percent of job openings.

**The number of agricultural worker visas should not depend on local or national unemployment rates.** Some proposed legislation would make visas for guest workers available only below a certain unemployment rate. Yet even when unemployment more than doubled in North Carolina, there was just a slight increase in applications, and no change in the number of workers who completed the season.

**Requirements to protect American workers should be modernized and streamlined.** The recruiting requirements for US workers should be preserved, but should be streamlined so that the cost of recruiting – and accompanying documentation – does not exceed the values of the jobs. Eliminating the expense of newspaper advertisements and relying on the more targeted electronic and mail outreach efforts by state labor agencies would cut recruiters' costs.

**The guest worker program should have the flexibility needed by agriculture's employers and employees.** The H-2A program requires employers to apply months in advance for a set number of workers to come for set dates. Yet the needs of planting and harvest depend on climate and weather. Farmers should be certified and allowed to hire the guest workers as needed, and guest workers should be free to work for any certified farmer who has job openings.

# CONCLUSION

In the coming debate about reforming the immigration system, policy makers must remember that the immigration system is fundamentally interconnected with America's agriculture sector, as it is with all other sectors of the economy. The NCGA's example offers important lessons about the critical role immigration plays in our economy and how our economy would be better served if immigration regulations met our economic needs. Quite simply, North Carolina's experience shows that few Americans look for these jobs, fewer show up for day one, and even fewer stay through to the end. Record prolonged high unemployment did little to make Americans more interested in these jobs. Immigration policies should protect native US workers' employment, but in the case of agriculture, federal regulations do not appear to be protecting jobs sought by American workers. At a basic level, the farms of North Carolina depend on foreign labor to even exist. But foreign laborers are not just helping an industry to run – the H-2A workers add economic value, as each 3.0 to 4.6 NCGA foreign laborers creates a new job for a North Carolinian. In addition, foreign workers mean a working local economy – local wages to the workers are spent, at least in part, in local stores and restaurants; local profits to the farmer may also be spent locally or invested in new equipment for the farm.

Simply put: Many of America's farms cannot survive without foreign labor, and foreign labor adds value to the American economy. In the agricultural sector and more broadly, our policy makers need to rethink our approach to immigration and build immigration policies that acknowledge and prioritize economic growth. Smart policies that get America the labor it needs will create jobs for Americans – not take them away.

# APPENDIX

APPENDIX A:

# Previous Research

The recent empirical literature that surveys the effects of foreign labor on job creation for US workers takes two general approaches – the "area" approach and the "factor proportions" approach (Borjas et al. 1996). The area approach, the first approach outlined in the text, tests whether locals' unemployment rises after inflows of immigrants to limited geographic areas. Studies taking this approach include: Grossman (1982); Card (1990); Altonji and Card (1991); Hunt (1992); Carrington and de Lima (1996); Pischke and Velling (1997); Angrist and Kugler (2003); Dustmann et al. (2005); Cohen-Goldner and Paserman (2011); Jean and Jimenez (2011); Glitz (2012). The factor proportions approach tests whether locals' unemployment rises after increases in immigrant share within age, experience, and/or occupation cells across a broader labor market. Studies taking this approach include Borjas et al. (1997); Winter-Ebmer and Zweimüller (1999); Friedberg (2001); Borjas (2003); Carrasco et al. (2008). Studies that test the effects on wages only and not employment, using either approach, are omitted.

APPENDIX B:

# Immigration Regulation by Limits on Labor Demand

There are advantages to a research design that allows separation of the effects of labor demand and labor supply on native-foreign labor substitution, discussed here in a simple model. Following LaLonde and Topel (1991) and Card (2001) as extended by Angrist and Kugler (2003), let the output y of a firm employing native and immigrant workers in some occupation be

$$y = f(\theta g(N,M)),$$
$$\text{where } g = (N^{\rho} + \gamma M^{\rho})^{(1/\rho)}, \qquad \textbf{(1)}$$

$N$ and $M$ are the demands for native and migrant labor in the occupation in question; $\theta$ is an exogenous shifter; $0<\rho\leq 1$ determines the elasticity of substitution between native and migrant labor $(1/(1-\rho))$;$\gamma>0$ sets the relative marginal revenue product of native and migrant labor; and $f$ is the production function such that $f'(.)>0$; and $f''(.)<0$. Normalizing the output price to unity, the employer sets demand to maximize profit $\Pi \equiv f(\theta g) - w^N N - w^M M$, where $w^N$ and $w^M$ are native and migrant wages. Here and throughout, a subscript denotes the partial derivative. Demand for native labor $N^d$ is set by the first-order condition

$$\ln f' + \ln g_N = \ln w^N - \ln\theta \qquad \textbf{(2)}$$

Next, let native workers have a different labor supply for the occupation than migrants, following Peri and Sparber (2009) and D'Amuri and Peri (2011). Possible reasons for explaining this might be that native workers dislike the circumstances of the work or that they incur a social stigma for performing such work. Migrant labor supply $M^s$ is fixed and inelastic, while native labor supply (shifted by a constant $\xi$) is

$$N^s = \xi (w^N)^{\varepsilon}, \qquad \textbf{(3)}$$

where $\varepsilon$ is the wage elasticity. To get the response of native labor to an increase in migrant labor, impose $N = N^d = N^s$ and $M = M^d = M^s$ by substituting (3) into (2), and totally differentiate with respect to M. Then,

$$N_M = \phi(\varepsilon,.)\left((\theta f'')/f'\ g_M + g_{NM}/g_M\right) \qquad \textbf{(4)}$$

The first term in parentheses $(\theta f'')/f' \; g_M<0$ represents the simple reduction in firms' use of native labor as the availability of migrant labor rises, if native and migrant labor are perfect substitutes. (The inequality holds because $g_M=\gamma(M/g)^{\rho-1}>0.$) If native and migrant labor are imperfect substitutes $(\rho<1)$ the term $g_{NM}/g_M > 0$ represents the countervailing increase in demand for native labor as the firm's production rises with greater use of migrant labor. (The inequality holds because $\rho<1 \Leftrightarrow g_{NM}/g_M = \gamma (1-\rho)/M \, (M/g)^{\rho} > 0.$) The overall effect of migrant labor on native labor is scaled by $(\varepsilon,N,M,\rho,\theta) \equiv (1/N\varepsilon - g_{NN}/g_N - (\theta f''/f') \, g_N)^{-1} > 0$, where $\phi_\varepsilon > 0.$ (Assuming imperfect substitution then $\phi>0$, since $g_{NM}/g_M = N^{-1} (1-\rho) ((N/g)^{\rho} \; \rho/N-1) \leq 0.$)

This report highlights two implications of the effect of migrant labor on native labor (4). First, the effect has ambiguous sign, and the magnitude of any effect depends on three key forces. 1) It depends on the shape of $f$ and thus the magnitude of $\theta f''/f'$. In different industries, therefore, the effect could differ. 2) It depends on the elasticity of substitution between native and migrant labor, $1/(1-\rho)$. The more imperfectly migrants substitute for natives in production, the smaller is any displacement effect. 3) The less willing native workers are to supply labor to this occupation (smaller ε), the smaller is any displacement effect.

Note that the effect of migrant labor depends both on the form of labor demand (via $\rho$) and, separately, on the form of labor supply (via ε). The most common approach in the literature is to estimate reduced-form equations capturing the overall effect $N_M$ (Pischke and Velling 1997). These suit some purposes but do not allow separation of effects conditioned by firms' labor demand from effects conditioned by native and migrant labor supply. Such estimates also do not allow prediction of displacement by any given type of worker in a given industry.

Second, suppose a policymaker seeks to protect native employment, minimizing the average effect of migrant labor occasioned by the marginal effect. Equation (4) suggests two ways to accomplish this via migration policy: 1) the policymaker can regulate immigration by quotas, exogenously setting $M^s$ to some low number, without changing the marginal effect $N_M$. 2) The policymaker can regulate a reduction in the marginal effect $N_M$: either the policymaker can regulate a lower bound on wages in immigrant heavy industries (that is, force firms to behave as if $(\theta f'')/f' \; g_M$ were less negative), or can require firms to hire any native willing to do the work (that is, force firms to behave as if natives and migrants were perfect substitutes in production, thus $\rho$=1 and $g_{NM}/g_M =0)$.

Governments do each of these in different combinations: governments sometimes regulate migration by quotas without wage/hiring restrictions (e.g. US family-reunification residency visas); sometimes by wage/hiring restrictions without quotas (e.g. US H-2A visa and Canada Seasonal Agricultural Workers Program); and sometimes have both quotas and wage/hiring restrictions (e.g. US H-2B visa). A partial, explicit goal of all of these policies is to protect native employment. The effect of these interventions will be smaller to the extent that natives and migrants are imperfect substitutes in labor demand, and to the extent that labor supply to different occupations differs between natives and migrants.

APPENDIX C:

# NCGA and Unemployment Data Collection

All data on US workers referred to and hired by the North Carolina Growers Association (NCGA), and on Mexican workers hired by the NCGA, were provided by the NCGA. Data on North Carolina Department of Employment Security offices were disseminated in the monthly editions of Employment Services and Unemployment Insurance Operations published by the Employment Security Commission of North Carolina, Labor Market Information Division, Employment Services and Unemployment Insurance Reporting Unit, from February 2005 to May 2011. Statewide total estimates of the size of the labor force and number of unemployed persons were collected by combining data from each North Carolina county, and are from the Local Area Unemployment Statistics (LAUS) database at DES, which creates its estimates based on two sources of data from the US Dept. of Labor Bureau of Labor Statistics: the Current Employment Statistics (CES) and the Quarterly Census of Employment and Wages (QCEW). Their method for creating county-level unemployment estimates is described in Bureau of Labor Statistics (2009), Local Area Unemployment Statistics: Estimation Methodology, US Dept. of Labor, accessed Jan. 24, 2013. For each month, county-level data were resolved to DES office-level data as follows. First, only one county (Guilford) has more than one DES office (Greensboro and High Point). These two offices were treated as a single office, comprising the total applications, referrals, and placements for the two offices in each month. Second, 14 offices each serve more than one county. In these cases, county-level data on number of people in the labor force and number of people unemployed were totaled across counties served by each DES office, then divided to achieve the office-level unemployment rate. Finally, the Warrenton DES office is ignored because the DES did not publish application, referral, and placement statistics for that office between February 2005 and May 2011.

*Missing Data:* In some cases, there data containing information on some US workers at NCGA worksites are missing, specifically: either the worker's final outcome (whether the worker failed to show up for work, whether the worker completed the growing season, etc.) is unknown, or the duration of their stay on the contract is unknown. A separate analysis, available on request, was done to determine that the missing data do not materially alter the conclusions presented here.

APPENDIX D:

## Worker Survival from Start Date to Completion

Using NCGA data, this graph features a Kaplan-Meier survival curve for all workers referred to the NCGA between 1998 and 2012, from start date to completion of the growing season, and compares native workers' hazard rate to that of Mexican H-2A NCGA workers. Censoring is defined as completing the work contract. Workers drop out if they quit or are fired. Here, censoring is defined as completing the work contract.

APPENDIX E:

## Regression Analysis

This section uses panel fixed-effects regressions with DES referrals and their outcomes as the dependent variable, local unemployment and office-level job-applications as the regressors, and DES office fixed effects.  The full analysis is available on request.

APPENDIX F:

# Economic Benefit of H-2A Workers

To calculate the economic impact of the H-2A workers' labor, this study measures the Marginal Revenue Product (MRP) of the manual seasonal harvest and planting workers for three of the state's principal crops: cucumbers, sweet potatoes, and tobacco. Put simply, MRP is calculated by determining the revenue/season/acre, non-labor cost/season/acre, and total manual labor wages to determine the dollar value added by manual farm labor. The MRPs calculated for each are based primarily on crop budgets produced by researchers at North Carolina State University and are specific to the state. The short-run estimates of workers' MRP as presented in the text assume a Leontieff production function, so that the MRP/hour/acre is simply equal to the MRP/acre/season divided by the hours of manual harvest and planting labor required per season (this approach assumes that farmers would not adjust other inputs in response to a loss of manual labor). The long-run estimates assume a Cobb-Douglas production function, assuming that the production elasticity of manual labor equals its cost share (this approach assumes farmers of crops whose harvest has not been mechanized would infinitely substitute other inputs for manual labor at a constant elasticity).

- *Marginal Revenue Product of Cucumbers (pickling):* Data on revenue/season/acre and costs/season/acre (without manual harvesting & planting labor) were drawn from two sources, dated ten years apart. In 2002 they were drawn from E. Estes, J. Schultheis, and H. Sampson (2002), "Cucumbers, Pickling: Est. Revenue, Operating Exp., Annual Ownership Exp., and Net Revenue Per Acre", Dept. of Agricultural and Resource Economics, North Carolina State Univ. (ARE/NCSU), and in 2012 from G. Bullen and A. Thornton (2013), "Spring Cucumber for Pickles—Irrigated: Estimated costs per acre, 2013", ARE and Dept. of Horticultural Sciences, NCSU. Approximate worker hours/season/acre for low-skill manual harvest labor was drawn from Prof. David H. Nagel, Extension Professor in the Dept. of Plant and Soil Sciences, Mississippi State University, personal communication January 15, 2013. He is the author of D.H. Nagel (2000), Commercial Production of Cucumbers in Mississippi, Starkville, MS: Mississippi State University Extension Service.

- *Marginal Revenue Product of Sweet Potatoes:* Data on revenue/season/acre and costs/season/acre (without manual harvesting & planting labor) were drawn from two sources, dated ten years apart. In 2002 they were drawn from E. Estes, J. Schultheis, and H. Sampson (2002), "Sweet potatoes: Estimated Rev., Operating Expenses, Annual Ownership Expenses, and Net Return Per Acre", ARE/NCSU; and in 2012 from G. Bullen (2012), Sweet Potato—2012: Estimated Costs per Acre, 2012, ARE/NCSU. Estimated worker hours/season/acre for low-skill manual harvest and planting labor is from W. Ferreira (2011), Sweet Potatoes—for fresh market, irrigated: Estimated Costs and Returns per Acre, Kingstree, SC: Clemson University Cooperative Extension Service; and from D. Parvin, C. Walden, and B. Graves (2000), Estimated Costs and Returns for Sweet potatoes in Mississippi, Starkville, MS: Office of Agricultural Communications, Mississippi State Univ. Division of Agriculture, Forestry, and Veterinary Medicine.

- *Marginal Revenue Product of Tobacco:* To estimate typical revenue/season/acre for tobacco, the average yield/acre in North Carolina for the years 2009 (2,346 lb/acre) and 2010 (2,123 lb/acre), i.e. roughly 2,250 lb/acre (A.B. Brown et al. [2011], Flue-Cured Tobacco Guide 2011, Raleigh, NC: North Carolina State University, p. 7) is multiplied by the average price received for all stalk positions (approximately $1.80/lb in 2009, ibid. p. 8) to get approximate revenue/season/acre of $4,050. Estimated costs/season/acre (without manual harvesting & planting labor) are from G. Bullen and L. Fisher (2012), "Flue-Cured Tobacco—Hand Harvest Piedmont 2012: Estimated Costs per Acre, 2012, ARE/NCSU. (Note that NCSU also publishes tobacco budgets for 2009 but they are for machine-harvested tobacco; the only current, recently published hand-harvest tobacco budget from NCSU is from 2012.)

- *Wages and manual labor costs:* The 2012 and 2013 NCGA wage of $9.70/hr is from the NCGA and public records at the U.S. Dept. of Labor Foreign Labor Certification Center. The 2002 and 2009 wages are the North Carolina-specific "Adverse Effect Wage Rate" fixed for each year by the U.S. Dept. of Labor's Office of Foreign Labor Certification and published in the Federal Register. The employer's full cost of manual H-2A workers' labor is estimated at 1.4 X wage, in accordance with NCGA estimates. The additional costs are primarily for housing, transporting, equipping, and training workers.

APPENDIX G:

# U.S. Jobs Multiplier

The multiplier used in this report is the Regional Input-Output Modeling System (RIMS II). The Bureau of Economic Analysis at the U.S. Dept. of Commerce built RIMS II to create estimates of how local demand shocks affect gross output, value added, earnings, and employment in regions of the United States. RIMS II estimates two types of employment multipliers for economic shocks in the "Crop and Animal Production" subsector of the "Agriculture, forestry, fishing, and hunting" sector. Type I multipliers omit the effects of household spending by all workers; Type II multipliers include these effects. With the relevant region limited to the state of North Carolina, the Type I multiplier for shocks to this subsector is 9.527 and the Type II multiplier is 13.815. This multiplier "represents the total change in number of jobs that occurs in all industries within the state for each additional million dollars of output delivered to final demand by the selected industry." The jobs effect estimated in this way is very different from popular estimates of the number of jobs "supported by" manual laborers, which do not typically take into account the ability of workers to find other jobs if their current jobs were to be eliminated. Instead, the RIMS II jobs multiplier estimates the number of jobs in all sectors of the entire state that are caused to exist by a given change in the economic activity happening within one sector, including the ability of workers who lose their jobs to find other jobs. It estimates the effect of economic change on the total pool of all jobs available to any individuals, not the effect on the current jobs of particular individuals.

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