



NO LONGER HOME GROWN

How Labor Shortages are Increasing America's Reliance on
Imported Fresh Produce and Slowing U.S. Economic Growth

A REPORT PREPARED FOR THE PARTNERSHIP FOR A NEW AMERICAN ECONOMY
AND THE AGRICULTURE COALITION FOR IMMIGRATION REFORM

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ABOUT THE PARTNERSHIP FOR A NEW AMERICAN ECONOMY

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.

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ABOUT THE AGRICULTURE COALITION FOR IMMIGRATION REFORM

The Agriculture Coalition for Immigration Reform (ACIR) is the broad national coalition representing over 300 national, regional, and state organizations whose members produce fruit and vegetables, dairy, nursery and greenhouse crops, poultry, livestock, and Christmas trees. In the 113th Congress, ACIR is working hand-in-hand as a coalition partner with the Ag Workforce Coalition to achieve meaningful near-term and lasting workforce solutions for American agriculture.

EXECUTIVE SUMMARY



The produce grown on U.S. soil has always played a powerful role in the American imagination. Florida's oranges inspired many families to add orange juice to their morning routine in the 1950s. Georgia's peaches and Washington State's apples have for decades been practically synonymous with each state and in recent years, the interest in American-cultivated produce has only grown. The buy-local movement, which encourages consumers to support local or regional growers, has pushed many Americans to seek out local and U.S.-grown produce at their farmers markets and grocery stores. Several recent high-profile fresh produce recalls involving imports have also made U.S. consumers more determined to buy food grown in America.

From a business perspective, this presents U.S. growers with a real opportunity to expand their operations and contribute more to the country's economic growth—potentially to a dramatic degree. In an era when the vast majority of Americans say they are concerned about food safety, domestic farms hold a real advantage: Studies have consistently found that U.S. consumers worry that other countries have more relaxed standards and enforcement when it comes to the chemicals and safety practices used in fresh food production.¹ Fruits and vegetables are also playing a greater role in the U.S. diet than they did in the past. From 2003–2005, for instance, the average American household ate 63 more pounds of commercially produced fresh produce annually than they had 20 years before.² Domestic fresh fruit and vegetable growers then have been in a unique position to claim a larger piece of an ever-growing pie.

But as this report shows, domestic produce growers—and the U.S. farm economy in general—have been largely unable to realize the benefits of this increased interest in U.S.-grown fresh fruits and vegetables. From 1998 to 2012, a period when U.S. consumption of the major fresh fruits and vegetables rose significantly, the amount of fresh fruits grown in America increased only slightly and our production of fresh vegetables actually declined—forcing American consumers to rely more on imported fresh foods. Using data primarily from the U.S. Department of Agriculture, the U.S. Department of Commerce, and the University of Georgia, this report shows that the primary reason for this change is a very simple one. America's broken immigration system has made it particularly difficult for U.S. growers to find the labor they need to harvest their crops and expand production—a reality that has come at a major cost to the U.S. economy and American job creation.

¹ Lydia Zepeda and Jinghan Li, "Who Buys Local Food?" *Journal of Food Distribution Research*, February 2006. Available here: <http://ageconsearch.umn.edu/bitstream/7064/2/37030001.pdf>

² Sophia Huang and Kuo Huang, United States Department of Agriculture Economic Research Service, "Increased U.S. Imports of Fresh Fruits and Vegetables," (September 2007). Available here: <http://www.unitedfresh.org/assets/files/Increased%20U.S.%20FFV%20Imports.pdf>

KEY FINDINGS:



In recent years, imports have made up a larger and larger share of the fresh fruits and vegetables consumed by American families.

While just 14.5 percent of the fresh fruit Americans purchased from 1998–2000 was imported, by the 2010–2012 period, 25.8 percent was. For fresh vegetables, imports as a share of total spending climbed from 17.1 to 31.2 percent during the same period. Adjusted to constant dollars, that meant the share of produce that was imported grew by 79.3 percent overall.³

In America, our production of fresh produce and the demands of consumers are increasingly out-of-sync.

Between the 1998–2000 period and the 2010–2012 one, the amount of fresh produce consumed by Americans grew by 10.5 percent. During that same time frame, the amount of fresh produce being produced by U.S. growers rose by only 1.4 percent. For fresh vegetables, the gap was even more significant: While Americans increased their consumption of fresh vegetables by 9.1 percent during that period, farm production of fresh vegetables actually declined—falling 3.5 percent overall for major fresh vegetables.⁴

The inability of U.S. growers to keep pace with rising consumer demand at home has represented a major lost opportunity for many rural, American communities dependent on the agriculture industry.

Had U.S. fresh fruit and vegetable growers been able to maintain the domestic market share they held from 1998–2000, their communities would have enjoyed a substantial economic boost, resulting in an estimated \$4.9 billion in additional farming income and 89,300 more jobs in 2012 alone. The increase in production necessary to stave off a growing reliance on imports would also have raised U.S. Gross Domestic Product by almost \$12.4 billion that year.

Labor challenges faced by U.S. farmers and the inadequacies of the H-2A visa program are a key reason why American farmers have been unable to maintain their share of the domestic market.

Although experts often cite growing international trade and free trade agreements as the key cause for the recent domestic market share decline experienced by U.S. growers, our research found that the challenges farmers had finding sufficient labor to harvest crops and expand production played an almost equivalent role—accounting for a full 27 percent of the recent decline. Labor alone can explain as much as \$3.3 billion in missed GDP growth in 2012. It also accounts for \$1.3 billion in farm income that wasn't realized that year.

³ Our figures on the share of fruits that are imported are an underestimate. To best assess how imports have grown in recent years—and the degree to which growers have lost market share—these figures exclude bananas, which are rarely produced in the United States and almost entirely imported. In 2010–2012, as much as 28 percent of America's fresh fruit imports were made up of bananas—meaning including them would have added considerably to the share of fresh fruit that was imported in both time periods considered here.

⁴ Due to limitations in the available data on consumption and production patterns, this finding is derived from data on 38 major fresh fruits and vegetables, instead of the broader universe of all fresh produce. For more information on datasets used, see the methodology appendix.

For several key crops, the share of fresh fruits and vegetables grown in the United States is dropping particularly rapidly.



While only about one in three tomatoes consumed in America were imported in the 1998–2000 period, by 2010–2012 more than half were. During the same period, the share of avocados consumed by Americans that were imported jumped from 28.6 to 68.7 percent. For California and Florida, the primary locations where those crops are grown, this represented a major loss in potential farm revenues and jobs: Maintaining the market share levels those crops held from 1998–2000 would have resulted in more than \$1.4 billion more in annual farm revenues nationally and 26,300 more jobs by 2012.

This report shows that the inability of domestic growers to maintain their place in the U.S. market should be a real and growing concern for American policymakers. The tens of thousands of domestic jobs that could have been created if the U.S. had not had to increase its reliance on imported produce would have improved America’s job creation numbers during a period when the economy has struggled to create a sufficient number of new positions. Although several key states like Washington, California, and Florida grow the majority of America’s fresh fruits and vegetables, fresh produce production is an issue affecting wide swaths of America: Recent agriculture censuses have shown that at least 42 states are actively producing fresh fruits and vegetables for the commercial market.⁵

Whether American growers are able to reclaim some of the footing they lost in the U.S. market depends very much on what action Congress takes in the coming months on immigration reform. As this report demonstrates, having a reliable and dependable source of labor would go a long way towards helping American fruit and vegetable growers better answer the needs of consumers at home. American families want to consume fresh fruits and vegetables grown safely on U.S. soil. It may be up to policymakers, however, how easily they’ll be able to do so in the future.

⁵ U.S. Department of Agriculture Census for Agriculture, 2007, Tables Available by State. (See Table 30.) Accessed March 3, 2014. Available here: http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_US_State_Level

PART I: INTRODUCTION



Fred Leitz, a fourth generation farmer in Sodus, Michigan, says his plan for this year's harvest isn't what he expected it would be several years ago. As recently as 2013, Leitz had devoted about 650 acres of his 1,400-acre farm to the prize-winning tomatoes, cucumbers, apples, and cantaloupe for which his farm is known. And for many years, that part of his operation was an expanding business. "Americans had begun eating a lot healthier," Leitz says, "and the market for our products was incredibly strong."

But in 2012, Leitz says his farm began experiencing its first challenges finding farm laborers. That year he had only 180 of the 240 farm laborers he would typically need for to pick his fresh fruits and vegetables—a job that, due to the delicate nature of the produce, he still does almost entirely by hand. In 2013, the labor shortage only worsened, and Leitz says his efforts to recruit local unemployed workers didn't produce a worker capable of lasting the season. "We had the most beautiful tomatoes that season," Leitz says, "but we just didn't have the hands to pick them." **In the end, Leitz says 35 percent of what he planted in 2013 was left in the field, the first time he'd lost a substantial amount of crop due to anything but a natural disaster.**

After surviving that season, Leitz says he's adjusting his planting strategy for 2014. Despite the continued high demand for fresh fruits and vegetables, this year Leitz will cut the number of acres he devotes to such crops by 20 percent. He says uncertainty about whether enough farm laborers will be available is the key factor driving his decision. He's also driven by Congress's continued inaction on immigration reform, and the country's lack of a workable agricultural visa program that would allow him to bring in the workers he so desperately needs. "I need a tool in my toolbox so I can actually make decisions about the future," Leitz says, "So far, Congress hasn't been able to provide it to me."

This report shows that all too often, America's fresh produce growers are finding themselves in the same situation as Leitz. In the period between 1998–2000 and 2010–2012, the amount of fresh fruits and vegetables eaten by U.S. consumers has grown strongly, increasing by more than 10 percent. During roughly the same period, however, U.S. growers have faced a painful labor shortage, which we estimate totaled at least 80,000 people nationwide. The result has meant a major squeeze on U.S. fresh produce producers, and one that has prevented many farms being able to expand—or even maintain—their operations.

Our research quantifies just how dramatic this labor situation has been for U.S. fresh produce producers—and the impact it has had on U.S. economic growth and the buying habits of American consumers. To do this, the analysis uses a variety of federal data sources. USDA's Farm Labor Survey is used to estimate the size of the labor shortage faced by American growers of fresh fruits

and vegetables. Work done by economists at the University of Georgia—as well as data from the National Council of Agriculture Employers—is used to calculate what this labor shortage has meant in terms of lost or stalled production on American farms. This information is then paired with data from the USDA and the U.S. Department of Commerce to estimate how much labor played into the recent trend of Americans relying more on imported fruits and vegetables. We also use federal data to estimate what the growing reliance on imported fresh fruits and vegetables has cost the United States in terms of missed opportunities for U.S.-job creation and added farm-revenue and GDP growth.

The findings are clear. In recent years, American growers of fresh fruits and vegetables have experienced dramatic erosion in the share of fresh produce they provide to the U.S. market. And although growing international trade is often cited as a key reason for the change, the incredible challenge that U.S. farmers have had finding enough labor to harvest their crops and expand production played an almost equivalent role—explaining 27 percent of the recent market share decline. Had U.S. growers not faced such challenges—and been able to hold onto the share of fresh produce they provided to the domestic market from 1998–2000—America would have boasted more than 89,000 more jobs in 2012 and GDP would have been \$12.4 billion higher that year.

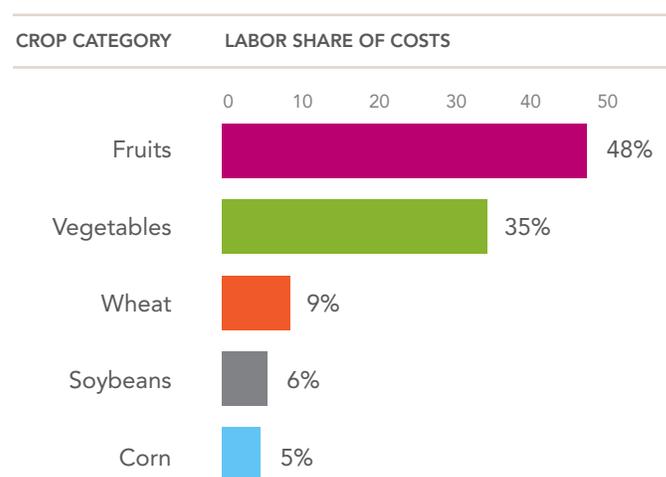
Leitz is well aware of how the labor challenges he's faced have a broader economic impact. The acres that he is planning to remove from fresh fruit and vegetable cultivation this year will likely be left fallow or replanted with commodity crops like wheat or other grains—resulting in far less revenue for his farm overall and far fewer employees. For now, his family is also putting on hold succession plans to ultimately transfer the farm to the next generation. It's the opposite of what he imagined would be happening during a booming market. "It's painful to have to scale back when you really want to be growing," Leitz says of his situation, "But if we're not viable because of the labor situation, there is no use having the next generation inherit the place."

PART II: BACKGROUND

Fresh fruits and vegetables are the ideal crops through which to look at the impact of recent U.S. farm labor shortages. For many fresh fruits and vegetables, mechanized harvesting is not feasible, meaning growers are dependent upon less-skilled and semi-skilled workers to pick the crop by hand.⁶ This is far different from commodity crops like corn, soybeans, and wheat that can often be harvested by as few as one or two employees using machines, and it means that labor availability—or worries about its availability—play a much greater role in decisions fresh produce growers make about how many acres to plant the following year. Many migrants who begin their careers as farm laborers move on to other sectors of the economy or less-demanding positions after several years, meaning farmers growing particularly labor-intensive crops are often the first to feel trends like decreased border crossings or migrant labor shortages.⁷ “Our industry sometimes feels like the canary in the coal mine,” explains Alan Schreiber, executive director of the Washington Asparagus Commission, a group representing a crop that is particularly physically taxing to harvest.⁸

USDA data provide perspective on how particularly important labor issues are for fresh fruit and vegetable growers. According to the USDA’s Agricultural Resource Management Survey, labor costs account for 48 percent of the variable production costs for fresh fruits and 35 percent of the variable costs for fresh vegetables. In contrast, such figures are in the single digits for corn, soybeans, and wheat. The situation is most acute for delicate berries and easily bruised produce, which often are not only harvested by hand, but processed that way as well. For example, the harvesting costs for strawberries, blackberries and cherries account for about 60% to 66% of total production costs—with labor costs being the primary harvest expense.

Table 1:
Share of Variable Costs due to Labor for Selected Crops



Source: 2006-2010 Agricultural Resource Management Survey

⁶ Although some crops such as blueberries, baby leaf lettuce, and pungent onions with lower water content can be picked by machine, this statement still holds true for the majority of fruits and vegetables for the fresh market—and the vast majority of fruits and vegetables examined in this report.

⁷ Patrick O’Brien, John Kruse, and Darlene Kruse, WAEES for the American Farm Bureau, “Gauging the Farm Sector’s Sensitivity to Immigration Reform via Changes in Labor Costs and Availability” (Feb. 2014), Page 8. Available here: <http://www.fb.org/newsroom/nr/nr2014/02-10-14/labor-study14c0207.pdf>; and Tony Pugh, “Fewer Workers Cross Border, Creating U.S. Farm Labor Shortage,” McClatchy Newspapers (July 2, 2012). Available here: <http://www.mcclatchydc.com/2012/07/02/154763/fewer-workers-cross-border-creating.html>

⁸ Telephone interview conducted by Angela Marek Zeitlin with Alan Schreiber (Feb. 25, 2014).

Florida Strawberries

Until the late 1990s, the U.S. dominated the world market for fresh strawberries. Back then, American strawberries were king, and the only strawberries produced in the country in large quantities in the winter originated in Florida—a place that faced little competition in the domestic market during cold-weather months.

In recent years, however, that has begun to change, as more and more imported strawberries have arrived in the U.S. from Mexico. Between the 2003–2005 period and 2010–2012, the amount of fresh strawberries imported from Mexico grew by 317.8 percent. At the same time, Florida strawberry producers increased their output by 84.4 percent. That created a situation where Mexican imports rapidly caught up with the production growers could manage in Florida: In 1998–2000, Florida produced almost \$160 million worth of fresh strawberries, while Mexican imports totaled \$57.4 million. By 2010–2012, the number were virtually equal, both hovering around \$300 million.

The inability of Florida growers to hold onto their domestic market was closely tied to labor challenges. Between 2004–2005 and 2012–2013, farm worker employment during the months when strawberries are picked declined 13.3 percent. Such pressures strained farmers: One 2012 survey found that 30 percent of berry growers in the state were planning to downsize.¹ Had growers not faced labor issues, we estimate strawberry production in the state could have been \$41 million higher, resulting in \$63.6 million in non-farm economic growth in 2012.

1 Yvette C. Hammett, Tampa Bay Online, “Labor Shortage Forces Strawberry Farmers to Leave Fruit on Field,” (Feb. 26, 2013), available here: <http://tbo.com/Labor-shortage-forces-strawberry-farmers-to-leave-fruit-on-field-B82457239Z.1>

Farmers in this space also often have particular difficulty finding U.S.-born or unemployed local workers willing to fill available farm labor jobs. Many of the U.S. workers, otherwise available for employment, may not possess the necessary stamina to perform physically taxing farm work or the specialized skills that develop from years of working in the fields. The seasonal and temporary nature of farm labor positions also makes them unappealing to U.S.-born workers. In 2010, when unemployment remained high, California farmers posted ads for more than 1,160 farm worker positions. Despite that, 233 legal permanent residents or U.S. citizens responded, and few lasted the season.⁹ Such recruitment problems are not inherently a wage issue either: The average wage paid to farm workers was \$11.10 in 2013, well above the federal minimum wage of \$7.25.¹⁰ This report explores how American fresh produce growers have struggled in recent years to hold onto their share of the domestic fresh produce market. It’s important to note that the issue preventing American growers from keeping pace with rising consumer demand is not a lack of natural resources or an inability to expand production on U.S. soil. USDA statistics show that in between the two periods examined in the study, as much as 670,000 acres of land that once supported fresh fruits and vegetables were taken out of production, a 12.8 percent decline in the number of acres used to grow such crops. That land is already known to be able to support fresh fruit and vegetable production, and could, in most cases, be used to grow those products once again.

Given a less difficult labor picture and some changes in current planting restrictions, it would also be possible to transfer at least some of the roughly 240 million acres planted with wheat, corn, cotton or soybeans in 2013 into land bearing fresh fruits and vegetables. One study examining the possibilities for this sort of shift in just six states in the Upper Midwest, for instance, suggested that more than 270,000 acres devoted to bulk crops in those areas could be turned into fruit and vegetable bearing land to meet local produce demand.¹¹ Farmers able to make such a switch would already have a powerful financial incentive as well: Land bearing fresh vegetables or melons brought in an average of more than \$3,100 per acre in revenue in 2004, while the equivalent figure for land bearing food and feed grains, oilseeds, peanuts or cotton crops was \$237.¹²

Farming is also, of course, an industry where the ability of growers to produce crops can be heavily effected by short-term aberrations, like a year of bad weather, insect infestation, or frost. To account for the possibility of such short term fluctuations, our study uses three-year periods to assess recent trends in production, imports, and consumption—comparing the average annual figures for the 1998–2000 period with the average annual numbers for the 2010–2012 one. A more detailed explanation of the analysis and calculations used throughout the report can be found in the Methodology Appendix.

9 Garance Burke, Associated Press, “Americans Don’t Want Farm Work, Despite Economy” (Sept. 27, 2010). Available here: http://www.huffingtonpost.com/2010/09/27/americans-dont-want-farmwork_n_740178.html

10 U.S. Department of Agriculture, National Agricultural Statistics Service, Farm Labor Survey (2013), Available here: <http://www.usda.gov/nass/PUBS/TODAYRPT/fmla1213.pdf>

11 Dave Swensen, The Leopold Center for Sustainable Agriculture at Iowa State University, “Selected Measures of the Economic Values of Increased Fruit and Vegetable Production and Consumption in the Upper Midwest” (March 2010), available here: <http://www.leopold.iastate.edu/pubs-and-papers/2010-03-selected-measures#sthash.hh4oOgyt.dpuf>

12 Informa Economics, “An Analysis of the Effect of Removing the Planting Restrictions on the Program Crop Base” (February 2007), pg 13.



PART III: THE RISE OF FRESH PRODUCE IMPORTS



In recent years, the safety of imported foods has become an issue of greater concern to U.S. families and consumers. One recent national poll of eligible voters found that almost two out of three adults believed imported foods were often or sometimes unsafe.¹³ Several recent health scares have only added to worries about this issue. Last summer tainted lettuce imported from Mexico caused almost 650 Americans to become sick with a cyclosporiasis, a parasite that causes severe gastrointestinal distress.¹⁴ In part because of such developments, the FDA has proposed new rules that would strengthen its oversight of foreign food producers.¹⁵ Many consumers have also sought to eat more foods produced locally or grown in the United States.

Eating most or predominately fresh produce grown domestically, however, is becoming much harder to do today due to the realities of the U.S. food supply. Our report quantifies how much fresh produce imports have grown in recent years—and how well U.S. growers have responded to increasing demands at home—by assessing two core data sets. Data from the U.S. Department of Commerce shows what portion of U.S. spending on a comprehensive list of fresh fruits and vegetables has gone to importers. U.S. Department of Agriculture Yearbook data uses weight measurements to quantify how imports have grown for a smaller list of 38 major fresh fruits and vegetables, and also shows how production, consumption and export levels have changed for each crop.¹⁶ (See the methodology appendix for information on our datasets and calculations.)

Our work shows clearly that in the 14-year period examined in the study, the amount and share of fresh produce that was imported has risen dramatically. In the 1998–2000 period, 15.7 percent of all fresh produce eaten by American consumers—as measured by spending— was imported from abroad. By the 2010–

2012 period, that figure had risen to 28.2 percent. Adjusted to constant dollars, that meant that in 12 years, the share of produce eaten by U.S. families that was imported grew by more than 79 percent. Viewed in terms of weight, the added imports flooding into places like U.S. grocery stores, homes, and cafeterias was considerable: Americans ate 6.6 billion more pounds of imported fresh fruits and vegetables in 2010–2012 than they ate from 1998–2000. That figure takes into account only the major produce items—leaving aside more niche products like pomegranates, beets, and Brussels sprouts, all of which have become more popular in recent years, likely driving the total weight of imports up further.

TABLE 2:
Growth in the Share of Imported Fresh Fruits and Vegetables as Measured by Spending, 1998-2000 and 2010-2012

	Portion of Domestic Fresh Produce Spending Devoted to Imports, 1998-2000	Portion of Domestic Fresh Produce Spending Devoted to Imports, 2010-2012	Growth in the Share of Fresh Produce that Was Imported
Fresh Fruit	14.5%	25.8%	77.6%
Fresh Vegetables	17.1%	31.2%	82.6%
Fresh Produce Overall	15.7%	28.2%	79.3%

13 The Pew Health Group (2009), Large Majority of Americans Want Stronger Food Safety Rules, [Press Release]. Available here: <http://www.sciencedaily.com/releases/2009/09/090908125122.htm>

14 Dennis Thompson, HealthDay, "FDA Airs Plan to Strengthen Rules for Imported Foods" (Sept. 19, 2013). Accessed March 9, 2014. Available here: <http://consumer.healthday.com/vitamins-and-nutritional-information-27/food-and-nutrition-news-316/fda-air-plant-to-strengthen-imported-food-rules-680300.html>

15 *ibid.*

16 It is worth noting that the 38 fresh fruits and vegetables analyzed here account for a healthy majority of the fresh produce both imported and exported from the United States and are therefore largely representative of overall trends. The 18 fresh vegetables included here in recent years accounted for 85 percent of U.S. fresh vegetable exports and 81 percent of fresh vegetable imports, as measured by consumer spending. The 20 fruits included in the analysis accounted for 89 percent of all the fresh fruit exported from the U.S. and 73 percent of our fresh fruit imports (excluding bananas).

California Garlic

In the last two decades, American garlic producers have faced a new competitor: less-expensive imported garlic, originating in China. Beginning in the early 1990s, China's exports of garlic increased so much that several countries, including America, instituted antidumping duties against Chinese garlic. Even with such import protections, U.S. growers saw their market share shrivel. While only 31 percent of the garlic consumed by Americans was imported in 1998–2000, by the 2010–2012 period, well over half was—or 56.4 percent.

California, the state where the majority of American garlic is produced, felt this shift in the garlic industry particularly acutely. From 1998–2000, California produced enough garlic to supply American consumers with as much as 86.6 percent of the garlic they ate. By 2010–2012, that figure had dropped to 58.9 percent.¹ During a 12-year period when American consumption of garlic fell by 4 percent, growers in the state—facing labor shortages and cheaper competition—cut the number of acres they devoted to garlic almost in half, dropping from 41,000 acres in 1999 to just 25,000 acres by 2012. Meanwhile, the safety food imported by China has become an issue of some public concern: In the last two years, the FDA has stopped some Chinese food products from entering America, including shipments of organic berries and canned mushrooms tainted with high levels of pesticides.²

¹ Because of data limitations, we are not able to capture the share of crop produced in each state that was ultimately exported. These figures divide the production in California the total amount consumed in the U.S. that year.

² Testimony of Patty Lovera before the House Committee on Foreign Affairs Subcommittee on Europe, Eurasia, and Emerging Threats (May 8, 2013), Available here: <http://docs.house.gov/meetings/FA/FA14/20130508/100807/HHRG-113-FA14-Wstate-LoveraP-20130508.pdf>

During the time period examined in the study, U.S. growers also had substantial difficulty keeping pace with rising consumer demand at home for the major fresh produce items. From the 1998–2000 period to the 2010–2012 one, the amount of major fresh fruits and vegetables consumed by Americans grew by 10.5 percent. During that same time frame, however, the amount of those fresh fruits and vegetables produced by American farms grew by just 1.4 percent. To put those figures in context, that meant that while U.S. consumers were eating almost 6.5 billion more pounds of fresh produce in 2010–2012 than they had 12 years earlier, U.S. farms increased the amount they were growing during that period by just 854 million pounds—a shortfall of 5.5 billion pounds in total. For fresh vegetables, growers had even more trouble responding to rising demand: While the amount of fresh vegetables consumed by American families rose during the period examined in our study, the amount produced on U.S. farms actually declined, falling 3.5 percent.



**TABLE 3:
PRODUCTION AND CONSUMPTION TRENDS FOR MAJOR U.S. FRESH FRUITS AND VEGETABLES (BY WEIGHT), 1998-2012**

	Growth in U.S. Consumption (in millions of pounds)	Percent Growth in U.S. Consumption	Growth in U.S. Production (in millions of pounds)	Percent Change in U.S. Production Levels	Growth in U.S. Imports (in millions of pounds)	Percent Increase in Amount Imported (in millions of pounds)	Additional Production Change Needed to Hold Imports Constant*
VEGETABLES							
Artichokes	135	38.8%	1	0.7%	134	52.5%	34.7%
Asparagus	196	81.6%	-75	-53.2%	255	185.6%	217.3%
Broccoli	265	16.7%	17	0.9%	183	188.4%	9.0%
Bulb Onions	897	17.3%	262	4.3%	332	59.9%	-1.9%
Cabbage	-125	-5.4%	-193	-8.2%	47	53.6%	2.4%
Carrots	-204	-7.8%	-414	-15.4%	186	104.7%	8.8%
Cauliflower	-71	-15.4%	21	3.4%	14	62.6%	2.7%
Celery	85	4.8%	79	4.0%	6	7.3%	0.1%
Cucumbers	351	19.3%	-271	-24.0%	606	81.3%	53.9%
Eggplant	73	40.3%	22	17.6%	54	66.6%	14.7%
Garlic	-30	-4.0%	-207	-33.6%	174	74.6%	47.4%
Head Lettuce	-1,805	-27.4%	-2,098	-30.2%	206	737.8%	4.4%
Leaf Lettuce/Romaine	1,564	74.3%	1,621	67.8%	82	264.3%	1.5%
Mushrooms	100	14.3%	51	7.4%	56	185.5%	7.1%
Snap Beans	88	17.0%	-16	-3.0%	78	171.3%	13.3%
Spinach	221	71.4%	233	68.1%	8	152.4%	0.8%
Sweet Corn	351	13.7%	371	14.2%	64	132.6%	1.9%
Tomatoes	1,114	21.2%	-616	-15.8%	1,645	96.6%	39.1%
Vegetables Overall	3,206	9.1%	-1,215	-3.5%	4,129	94.6%	9.7%
FRUITS							
Apples	-263	-5.1%	152	2.4%	20	5.6%	0.6%
Apricots	-1	-1.8%	-3	-6.2%	0	5.4%	0.4%
Avocados	984	184.7%	97	25.1%	911	597.6%	129.6%
Blueberries	307	370.2%	194	250.5%	162	554.5%	19.8%
Cantaloupe	-502	-16.3%	-359	-16.5%	-114	-10.8%	3.2%
Cherries	280	188.5%	325	139.7%	34	619.7%	4.3%
Grapefruit	-662	-45.1%	-1,074	-46.2%	-19	-62.5%	-0.4%
Grapes	350	16.6%	269	15.7%	294	31.2%	6.9%
Honey Dew	-162	-24.7%	-157	-30.7%	-7	-3.5%	11.5%
Kiwi Fruit	-42	-28.3%	11	20.2%	-48	-44.4%	-25.9%
Lemons	345	45.9%	259	26.1%	52	96.7%	2.2%
Oranges	282	9.4%	768	20.0%	102	68.2%	1.9%
Papayas	166	100.2%	-23	-54.6%	185	136.6%	173.0%
Peaches/Nectarines	-55	-3.9%	-53	-3.4%	6	6.8%	0.7%
Pears	-38	-3.9%	41	3.7%	-30	-15.7%	-2.0%
Plums	-109	-23.6%	-111	-39.4%	8	15.3%	8.2%
Raspberries	74	562.7%	69	306.8%	40	830.0%	13.8%
Strawberries	1,092	87.9%	1,068	82.8%	188	246.0%	5.1%
Tangerines	588	79.3%	505	84.5%	137	73.7%	-0.9%
Watermelon	611	15.1%	90	2.3%	572	121.5%	12.7%
Fruits**	3,244	12.4%	2,069	7.6%	2,494	58.1%	6.0%
ALL PRODUCE	6,450	10.5%	854	1.4%	6,623	38.8%	8.0%

*Because of US consumer demand for some fresh fruits and vegetables out of season, it is not possible for U.S. producers to meet the entire increase in demand domestically. During ideal trade conditions, growers are also exporting goods during their high seasons. To account for these factors, this figure assumes that as production increases to meet domestic demand, exports will also increase proportionately.

**Our analysis does not include bananas, mangoes, and limes, fruits where domestic production has historically been below .5 percent of domestic consumption.



It is important to note that because of international trade dynamics, we would not expect the amount of fresh produce eaten by U.S. consumers and the amount produced on U.S. soil to move in lockstep. In the years examined, about 18 percent of the major fresh fruits and about 6 percent of the major fresh vegetables grown in the United States were ultimately exported. American families have also upped their consumption of some products included in our analysis that are fairly difficult to grow on U.S. soil. Between 1998–2000 and 2010–2012, for instance, the amount of papayas eaten by Americans doubled. Nevertheless, the gap between what Americans were eating and what America was able to grow is indicative of how far behind American growers are falling in the race to supply U.S. kitchens. Had U.S. growers been able to produce more crops, it's likely that more fresh fruits and vegetables could have been exported as well—lessening a rapidly growing U.S. trade deficit in fresh produce that has long troubled policymakers.¹⁷

For several key crops, the trends described above have been particularly dramatic. While 40.9 percent of the cucumbers consumed by American families were imported in 1998–2000, 62.2 percent were by 2010–2012. Asparagus saw a more dramatic increase, with imports growing from 57.0 percent of all asparagus consumed in America in 1998–2000 to almost 90 percent by 2010–2012. For both crops, U.S. consumption increased during the period examined in the study. Despite that, however, the amount of crop being produced by domestic farms actually shrunk—in asparagus's case, by 53.2 percent.

¹⁷ Renee Johnson, Congressional Research Service, "The U.S. Trade Situation for Fruit and Vegetable Products" (Jan. 15, 2014). Available here: <http://www.fas.org/sgp/crs/misc/RL34468.pdf>

**TABLE 4:
INCREASE IN THE SHARE OF IMPORTS FOR SELECTED FRESH FRUITS AND VEGETABLES, 1998-2012**

	1998-2000		2010-2012		Comparison		
	Share of Crop that was Imported	Amount Imported (in Millions of Pounds)	Share of Crop that was Imported	Amount Imported (in Millions of Pounds)	Growth in the Share of Crop Imported	Weight of Increased Imports (in Millions of Pounds)	Percent Weight of Imports Increased
VEGETABLES							
Artichokes	73.0%	254	80.3%	388	9.9%	134	52.5%
Asparagus	57.0%	137	89.7%	392	57.3%	255	185.6%
Broccoli	6.1%	97	15.1%	280	147.2%	183	188.4%
Bulb Onions	10.7%	555	14.6%	887	36.3%	332	59.9%
Cabbage	3.8%	87	6.1%	134	62.4%	47	53.6%
Carrots	6.8%	177	15.1%	363	122.1%	186	104.7%
Cauliflower	4.8%	22	9.3%	36	92.2%	14	62.6%
Celery	4.7%	85	4.9%	91	2.4%	6	7.3%
Cucumbers	40.9%	745	62.2%	1,352	52.0%	606	81.3%
Eggplant	44.4%	80	52.7%	134	18.8%	54	66.6%
Garlic	31.0%	234	56.4%	408	81.9%	174	74.6%
Head Lettuce	0.4%	28	4.9%	234	1054.3%	206	737.8%
Leaf Lettuce/Romaine	1.5%	31	3.1%	113	109.0%	82	264.3%
Mushrooms	4.3%	30	10.8%	87	149.8%	56	185.5%
Snap Beans	8.8%	45	20.3%	123	131.8%	78	171.3%
Spinach	1.8%	5	2.6%	14	47.3%	8	152.4%
Sweet Corn	1.9%	48	3.9%	112	104.5%	64	132.6%
Tomatoes	32.4%	1,703	52.5%	3,348	62.2%	1,645	96.6%
FRUITS							
Apples	7.0%	360	7.8%	380	11.3%	20	5.6%
Apricots	7.7%	3	8.3%	3	7.3%	0	5.4%
Avocados	28.6%	152	68.7%	1,063	140.0%	911	597.6%
Blueberries	35.3%	29	49.1%	192	39.2%	162	554.5%
Cantaloupe	34.2%	1,055	36.4%	941	6.5%	-114	-10.8%
Cherries	3.7%	6	0.1%	40	-97.5%	34	619.7%
Grapefruit	2.0%	30	1.4%	11	-31.7%	-19	-62.5%
Grapes	44.5%	941	50.1%	1,235	12.6%	294	31.2%
Honey Dew	29.1%	191	37.3%	184	28.2%	-7	-3.5%
Kiwi Fruit	71.8%	108	55.6%	60	-22.5%	-48	-44.4%
Lemons	7.2%	54	9.7%	107	34.8%	52	96.7%
Oranges	4.9%	149	7.6%	251	53.8%	102	68.2%
Papayas	82.0%	135	96.9%	320	18.2%	185	136.6%
Peaches/Nectarines	6.6%	94	7.3%	100	11.1%	6	6.8%
Pears	19.8%	192	17.4%	162	-12.3%	-30	-15.7%
Plums	15.5%	52	25.8%	59	67.1%	8	15.3%
Raspberries	36.2%	5	50.7%	44	40.3%	40	830.0%
Strawberries	6.1%	76	11.3%	264	84.2%	188	246.0%
Tangerines	25.1%	186	24.3%	324	-3.1%	137	73.7%
Watermelon	11.7%	471	22.4%	1,042	92.4%	572	121.5%



Jim Middleton, an asparagus farmer in Pasco, Washington, is one producer who had to scale back production in recent years. After the U.S. began importing asparagus tariff-free from Peru in the 1990s, Middleton says he and many farmers cut back the amount of asparagus they were growing for the canned market as cheaper exports flooded the market. In more recent years, labor has been the key factor restricting how much total asparagus he can produce. “There just aren’t as many talented, experienced farm laborers around as there used to be,” Middleton says, “and that’s put a real strain on us.” In 2012, Middleton lacked about 15 to 20 of the 70 asparagus cutters he would typically need to bring in the harvest. Seeking out workers at local staffing agencies and unemployment offices didn’t make much of a dent in his problem. Middleton had to leave roughly 20 acres of asparagus in the ground that year—crop that would have brought in as much as \$2,000 in revenue per acre.

The unique dynamics of the asparagus plant make it particularly difficult to quickly recover from that type of season. The typical asparagus plant has a 14 or 15-year lifespan. For the first two years, it doesn’t grow usable fresh produce; after that, workers must cut it by hand every day during the harvest to ensure it produces the following year. When Middleton lost his 20 acres, many plants that would have produced asparagus for years to come were destroyed. “It’s emotional to lose that crop,” Middleton says, “but it’s also very painful financially because you invested so much to get it established and then don’t see a return on your investment.” After living through 2012, Middleton decided to cut down his risk: Of the 170 acres he typically uses for asparagus, he managed just 115 of them in 2013.¹⁸

¹⁸ Telephone Interview conducted by Angela Marek Zeitlin with Jim Middleton (Feb. 26, 2014).

PART IV: A MISSED OPPORTUNITY FOR THE U.S. ECONOMY



As discussed in the previous section, in the 14-year period examined in our study, the share of fresh produce eaten by American families that was imported increased dramatically. While U.S. growers were able to supply 84.3 percent of America's fresh produce in 1998–2000, by 2010–2012 that figure had fallen to just 71.8 percent. Translated into dollar figures, the impact of increased imports was considerable. When figures are adjusted to constant dollars, Americans were spending \$4.9 billion more on imported fresh produce in 2010–2012 than they were in the 1998–2000 period.

That market share decline—and the huge amount of lost revenue associated with it—had a major impact on the broader U.S. economy. Having healthy revenue and a larger workforce on American farms has a ripple effect on other industries: A recent study from the USDA found that every one dollar in non-commodity crops like fresh fruits and vegetables a farm is able to export results in \$1.55 of additional economic activity in the broader economy.¹⁹ Other experts have testified that every on-farm job also supports three additional positions, often in higher-paying fields like manufacturing, packaging, irrigation, or transportation.²⁰

Our research found that the inability of U.S. growers to maintain their 1998–2000 domestic market share levels represented a major lost opportunity for the American economy. The added production needed to stave off rising imports would have created more than 89,000 additional jobs in the U.S. economy by 2012. It also would have grown American GDP by almost \$12.4 billion that year and produced almost \$4.9 billion more in annual farm revenues.

Several key crops that saw particularly dramatic market share erosion in recent years played a large role in the jobs and economic growth missing from the U.S. economy by 2012. Had U.S. tomato growers been able to hold onto the share of the domestic market they had in 1998–2000, the U.S. economy would have had 15,000 more jobs and almost \$2.1 billion in additional economic growth by 2012. U.S. growers of garlic—a group concentrated in California, Nevada, Washington, Oregon and New York—have lost major ground in recent years to an influx in imported garlic originating in China, a country where as

many as half of packaging and processing firms on the mainland failed safety inspections in 2011.²¹ Had U.S. growers been able to continue to supply the 31.0 percent of garlic they provided in 1998–2000, the U.S. economy would have had 2,850 new jobs and \$395 million in additional GDP growth in 2012 alone.

TABLE 5:
Additional Jobs and Economic Growth that Would Have Been in the U.S. Economy in 2012 had Domestic Growers Maintained their 1998–2000 Market Share of Selected Crops

	Additional Farm Revenues (in millions of dollars)	Additional Growth in U.S. Gross Domestic Product (in millions of dollars)	Additional Jobs
Asparagus	\$199	\$507	3650
Avocados	\$612	\$1562	11300
Blueberries	\$96	\$246	1800
Cucumbers	\$160	\$407	2950
Garlic	\$155	\$395	2850
Grapes	\$126	\$323	2350
Head Lettuce	\$76	\$195	1400
Leaf Lettuce	\$39	\$100	700
Strawberries	\$140	\$358	2600
Tomatoes	\$811	\$2068	15000
Watermelon	\$120	\$305	2200

19 United States Department of Agriculture, Economic Research Service, "Effects of Trade on the U.S. Economy" (Feb. 13, 2014). Accessed March 5, 2014. Available here: <http://www.ers.usda.gov/data-products/agricultural-trade-multipliers/effects-of-trade-on-the-us-economy.aspx#Uxv4zty4mll>

20 Testimony of James Holt, Committee on Agriculture, U.S. House of Representatives (October 4, 2007), page 5.

21 Stanley Lubman, The Wall Street Journal's China Realtime blog, "Why Americans Should Worry About China's Food Safety Problems" (March 21, 2013). Accessed March 7, 2014. Available here: <http://blogs.wsj.com/chinarealtime/2013/05/21/why-americans-should-worry-about-chinas-food-safety-problems/>. See also: Huang and Huang, page 14.

The additional jobs and economic activity associated with U.S. growers maintaining domestic market share would have been evident far beyond the farm sector. Of the 89,300 jobs that would have been in the economy in 2012 if produce growers as a whole had maintained their domestic market share, only 25,800 of them—or fewer than one in three—would have been farm positions. Almost 24,000 more service-industry workers like waitresses, bank tellers, and hotel managers would have had positions in 2012 if demand been met by U.S. production rather than imports. An additional 7,000 people would have been employed in manufacturing as well. In fact, of the almost \$12.4 billion in additional GDP growth the country would have enjoyed in 2012 had import levels remained stable, almost 75 percent of it would have been due to increased economic activity in the non-farm parts of the economy that year.

Such an economic boost would have been particularly meaningful to the rural communities where the bulk of American farms are based. The unemployment rate for America's rural counties was higher than it was for urban areas during the early parts of 2013.²² And in more recent months, the figures have improved only because of a shrinking rural workforce: Population loss has meant fewer and fewer people in rural counties are actually working or actively looking for jobs.²³ Any added employment then is useful in stopping the cycles of population decline that can be so destructive to communities across America. Much of the wages paid to farm laborers are circulated into the local economy, allowing service-oriented businesses like hair salons, car repair shops, and grocery stores to continue employing local workers—and preventing young people from moving elsewhere in search of work.²⁴

Table 6:

Additional Jobs that would have been in the U.S. Economy by 2012 had U.S. Growers Maintained their 1998-2000 Market Share

SECTOR	ADDITIONAL JOBS
Total	89300
Other Services	23700
Trade and Transportation	17500
Other Manufacturing	7000
Food Processing	15300
Farm	25800

22 Bill Bishop, The Daily Yonder, "Rural Unemployment Improves Slightly" (June 7, 2013). Accessed March 5, 2014, available here: <http://www.dailyyonder.com/rural-unemployment-continues-improve/2013/06/07/6134>

23 Bill Bishop, The Daily Yonder, "Unemployment Down, but so is Workforce" (Nov. 7, 2013). Accessed March 6, 2014, available here: <http://www.dailyyonder.com/rural-workforce-joblessness-shrinks/2013/11/06/6899>

24 Jacob Vigdor, The Partnership for a New American Economy and the Americas Society/Council of the Americas, "Immigration and the Revival of American Cities" (September 12, 2013), page 4. Available here: <http://www.renewoureconomy.org/issues/american-cities/>

Maureen Torrey, vice present of Torrey Farms in Elba, New York, says she's found it incredibly painful to scale down her farm's payroll in recent years. Torrey's 11,000-acre farm grows a variety of fresh produce including red and yellow onions, cucumbers, cabbage, and summer squash, and also produces corn and other grains for the bulk market. To plant 1,000 acres of corn—work that is done mostly by machine—Torrey says she employs two temporary workers with a payroll of \$70,000. To plant 1,000 acres of onions, in contrast, Torrey has to employ 50 year-round workers to plant, harvest, and package the crop, a group whose salaries, 401(k)s, and housing totals \$2.5 million.

In the last three years, Torrey has been subject to several federal immigration raids that left her short dozens of farm workers. In response, Torrey's farm shifted about 800 acres completely out of fresh vegetable production into bulk crops—slashing millions of dollars of payroll that could have circulated through the economy in upstate New York. "I'm an 11th generation farmer here, so I care an incredible amount about the success of Elba and the farms in our area," Torrey says, "But we needed immigration reform 16 years ago. With all the challenges our farm has had finding farm laborers, we just can't keep up fresh vegetable production like we once did."²⁵

Although many fresh produce growers like Torrey have dramatically scaled back their operations in recent years, our research found that it would not be unreasonable to assume that farmers could make up the ground they lost in recent years to importers. For U.S. vegetable growers to have kept imports constant from 1998–2000 through 2010–2012, we found they would have needed to up their production in the later period by roughly 10 percent. U.S. fruit growers would have needed to grow their output by an even smaller amount—just 6 percent.²⁶ For some crops, however, the ground that growers need to make up is considerably more dramatic. U.S. asparagus growers, for instance, would need to more than triple their production to reclaim the domestic market share they held from 1998–2000. Avocado growers would need to more than double their output.

Washington Asparagus

Few U.S. farmers know as much about the fight to hold onto domestic market share as America's asparagus growers. In the 1998–2000 period, 57.0 percent of the fresh asparagus consumed in America was imported from abroad. By 2010–2012, that figure had jumped to 89.7 percent, leading many growers to wonder if American-grown asparagus was a soon-to-be-extinct business.

Washington State is one place where growers have that worry. In 1998–2000, Washington growers produced as much as 27.7 percent of all asparagus eaten in the United States. By 2010–2012, that figure had shrunk to just 5.1 percent. Many growers say the decline began much earlier. In 1991 the U.S. began allowing Peru to import asparagus tariff free. Shortly afterwards, Del Monte, Chiquita and Green Giant all closed asparagus processing plants they had in the state, relocating south of the border.⁴ Many farmers who supplied them plowed their fields under.

Asparagus growers left in the state say that such industry dynamics led many experienced asparagus laborers to move elsewhere or return to their home countries. That causes problems for growers because few U.S.-born workers are interested in asparagus farming—work that involves shuffling along, hunched over, for as long as 10 hours a day. In 2012, 10 percent of Washington's asparagus crop was lost because there weren't enough workers to cut it.⁵ That affected industries like transportation dependent upon a robust crop: We estimate the \$43 million Washington has lost in asparagus production since 1998–2000 translates into an additional \$57 million in missed economic activity in non-farm sectors.

⁴ Food & Water Watch, "Crop in Crisis: Asparagus," available here: <http://www.foodandwaterwatch.org/food/farm-bill-2012/agricultural-policy/washington-asparagus/>

⁵ Lynda V. Mapes, The Seattle Times, "Plenty of Asparagus, Few Workers to Pick It" (June 25, 2012), available here: http://seattletimes.com/html/localnews/2018528816_asparagus26m.html

²⁵ Telephone Interview conducted by Angela Marek Zeitlin with Maureen Torrey (March 3, 2014).

²⁶ This figure takes into account the role of exports, assuming that if U.S. growers were to increase the amount of fresh fruits and vegetables they grew domestically, their export levels would increase in turn.

PART V:

THE ROLE OF LABOR ISSUES



Many factors played a role in the domestic market share erosion documented in this report. In the years since 1998, the U.S. government has signed 12 free trade agreements, some of which altered domestic produce markets by bringing in more affordable imported produce from abroad. Experts typically cite that factor—as well as growing international trade more generally—as the core reason why U.S. growers have lost market share in recent years.²⁷ In this report, however, we sought to quantify how much of the growers' market share was lost due to a problem frequently cited by everyday farmers on the ground: The shortage of labor available to keep farms running and give them the flexibility to expand into new fresh produce categories.

The labor issues faced by U.S. growers are often a direct result of the limitations of our country's current broken immigration system. Recent estimates from the Department of Labor show that 53 percent of farm laborers in the country today are undocumented.²⁸ Private estimates exceed 70 percent. Farmers commonly hire every qualified applicant with documents that appear genuine, the legal standard, but are able to find few U.S. workers willing and able to do arduous and often temporary farm work. The current visa system designed to allow farmers to bring in temporary agriculture workers legally, the H-2A program, is unworkable for many American farms. The program is expensive and the federal government is often slow to approve visas. Farmers also must pay the laborers for a certain amount of work, regardless of if their harvest is shortened by weather, crop damage, or other factors.

To estimate how much farm labor plays into the recent market decline, we started by first estimating the size of the labor shortage faced by growers of fresh fruits and vegetables in the 14-year period examined in the study. We then used a well-regarded study from economists by the University of Georgia to calculate how much the worker shortage we found decreased the overall dollar value of output of American farms. That figure was then compared to the \$4.9 billion growth in what Americans were spending on imports between 1998-2000 and 2010-2012 to determine what portion of market share decline was due to labor issues. Similar techniques are used to estimate the market share decline due to factors involving international trade. [For a full summary of all sources used and calculation methods, see the Methodology Appendix.]

27 See Huang and Huang; and Tony Corbo, Make Our Food Safe, "The Safety of Imported Foods?" [blog post]. Accessed March 12, 2014. Available here: <http://www.makeourfoodsafesafe.org/news?id=0008>

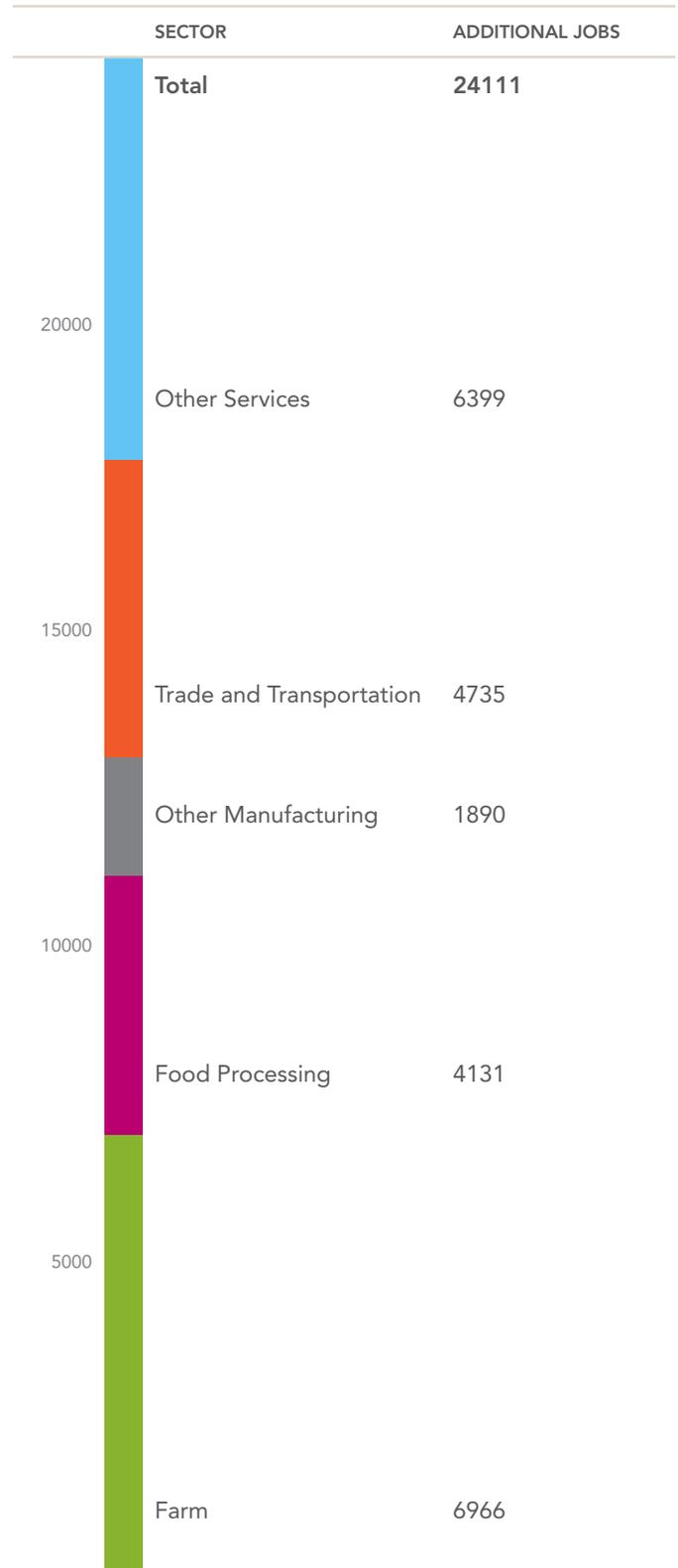
28 U.S. Department of Labor, The National Agricultural Workers Survey (2010). Accessed March 7, 2014. Available here: <http://www.doleta.gov/agworker/report9/chapter1.cfm>

Our work found that in recent years, labor issues played a sizeable role in the phenomenon of U.S. growers from being able to answer the demands of American consumers for more fresh fruit and vegetables grown at home. Between roughly the two periods examined in the study, U.S. growers faced a labor shortage estimated at 80,000 farm laborers. That shortage of workers—and the ripple effect it had preventing growers from harvesting current crops or producing more—explains 27 percent of the recent market share decline. That means that labor issues are one of the top two factors behind the recent growth in prominence of imported fresh foods in the American diet. Our calculations found that the 27 percent share of the market share decline attributable to labor issues was only one percentage point lower than the share explained by growing international trade patterns overall—a factor that accounting for 28 percent of the domestic market share erosion experienced by U.S. growers.

The prominent contribution labor made to the domestic market share decline experienced by U.S. growers between 1998–2000 and 2010–2012 translates directly into missed opportunities for U.S. economic growth and American job creation. The farm labor shortage explains as much as \$3.3 billion in GDP growth the country failed to realize in 2012. Had labor not been an issue for U.S. fresh produce growers during the 1998–2012 period, the economy would have boasted more than 24,000 additional jobs by 2012, including more than 17,000 new jobs outside of farming. Farms would also have enjoyed \$1.3 billion more in revenues in 2012, pumping more money into many rural communities in the American heartland and beyond.

Table 7:

Additional Jobs that would have been in the US economy by 2012 Had US Growers Not Faced Labor Shortages

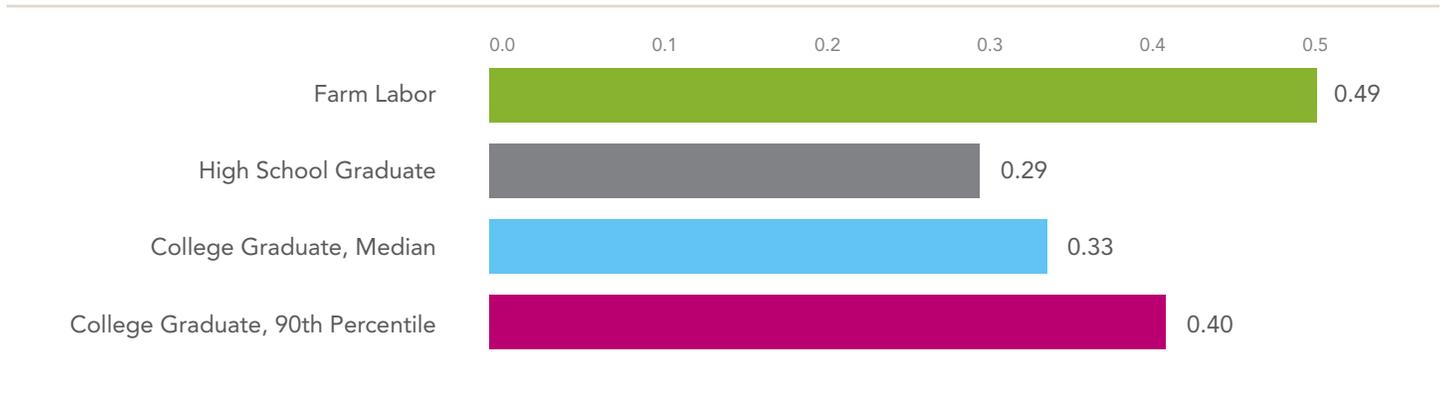


To determine the size of the recent farm labor shortage, our analysis draws on federal data from the USDA Farm Labor Survey that shows that the number of farm workers nationally declined notably in the last few years, falling 14.8 percent from 2000 to 2013 alone. Examining wage data for farm laborers in recent years provides clear and convincing evidence that this drop in employment is indeed due to a major shortage of available labor. From 2000 to 2013, the average wage paid to farm workers in the U.S. has increased substantially faster than the median wage paid to full-time high-school graduates in the country overall. In fact, since 2000 the average wage paid to farm workers has increased at a faster rate than the salaries of college graduates at the top 10 percent of the wage distribution, a group whose skills were in particularly high demand.

If the 80,000-person decrease in employed farm workers was due to factors other than a labor shortage—like increased crop mechanization—we would expect wages to be traveling in the opposite direction. With fewer farm laborers actually needed for the harvest, farm wages would grow slower than the wages for unskilled and semiskilled workers overall.

Table 8:

Wage Growth for Workers of Selected Professions and Educational Levels, 2000-2013



Note: This chart is based on data from the Current Population Survey and the USDA's Farm Labor Survey. Due to data limitations, the farm labor figures are based on growth in the average wage, while the remainder of the figures relate to the median wage paid to each class of workers.

Bernie Thiel, the owner of Sunburst Farms just outside Lubbock, Texas views labor as the key issue limiting the success of his farm in recent years. In 2013, Thiel had only 75 to 80 percent of the workers he needed to harvest his farm's 250 acres of fresh vegetables—crops consisting mostly of summer squash and purple-top turnips. Some of the workers he'd depended on for years were lured by higher-paying jobs in the local oil fields, and no matter how hard he tried to recruit locals to come work for him, he found no one who lasted on his farm longer than a week. "It was a pretty stressful and strenuous year," Thiel says, "I sat in bed every night wondering if I'd have enough workers to pick enough to satisfy my produce buyers." In the end, he fell short. Thiel lost an entire field of fresh vegetables—15 to 20 acres of crops that in many cases had to be shredded and destroyed.

Thiel says until he has a more stable source of workers, he knows every harvest will present such challenges. This year, his worries about having sufficient farm laborers led him to plant 30 fewer acres of fresh vegetables than he did in 2013. He also feels pressure seeing more and more summer squash coming into the U.S. market from Mexico. "I am pretty passionate about what I do and I'm not just doing this for the money part of things," Thiel says, "If I knew labor wasn't going to be an issue, I'd be expanding my squash production. There is also definitely a market for cucumbers and bell peppers, but at this point, there is no way that I could even think about doing that." Thiel worries that the longer U.S. growers have to make due without immigration reform, the harder it will get for them to provide American consumers with what they actually want. "I would like to think that the majority of Americans would like to eat domestic fruits and vegetables that are grown by American workers," he says, "but we don't have the tools to provide it."²⁹

California Avocados

Earlier this year, Chipotle, the popular Mexican food chain, surprised many loyal fans when it mentioned in an earnings statement that if the prices of some of its raw ingredients (like avocados) went up, it might have to temporarily suspend several menu items—namely, guacamole.⁶ While that news alarmed Mexican food fans, it wasn't a surprise to followers of the avocado industry. In the last two decades, avocados have become incredibly more popular, with U.S. consumption almost quadrupling between 1998 and 2012. That has caused prices to hit record highs.

One factor driving up prices, of course, is the supply of avocados produced by U.S. farmers. California, the state that grows the bulk of U.S. avocados, has not been able to expand its production of avocados anywhere near fast enough to respond to growing U.S. demand. In recent years, in fact, production in the state has actually declined: Between the 2003–2005 period and the 2010–2012 one, the amount of avocados California produced fell by 5.1 percent.

Drought has played a big role slowing California production some years, but labor has been a part of the story as well. Growers say that many farm laborers legalized in the 1986 Immigration Reform and Control Act are now entering their 50s, reaching the end of their picking careers, and tougher immigration enforcement makes it hard to find new ones.⁷ While California growers stall, however, Mexican farms are catching up: While 4.7 percent of the avocados eaten in America were imported from Mexico in 1998–2000, by 2010–2012, almost half were.

⁶ Chipotle Investor Relations, 10-K SEC Filing (Feb. 5, 2014), available here: <http://ir.chipotle.com/phoenix.zhtml?c=194775&p=irol-SECText&TEXT=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbnmcueG1sP2lwYWdlPTkzNjJzNTImRFNFUT0wJlNFUT0wJlNRREVTQz1TRUNUSU9OX0VOVEISRZzdWJzaWQ9NTc%3d>

⁷ Pat Maio, U-T San Diego, "Avocado Grower Looks to Solve Labor Shortage," (July 30, 2011), available here: <http://www.utsandiego.com/news/2011/Jul/30/region-avocado-grower-looks-to-solve-labor/>

PART VI: CONCLUSION



As this study demonstrates, in recent years a smaller and smaller portion of the fresh fruits and vegetables consumed by American families actually came from growers operating on United States soil. Between the 1998-2000 period and the 2010-2012 one, the share of fresh produce consumed in America that was imported rose by 73.9 percent. This was despite heightened concern among the U.S. public about the safety of the food supply—a concern that is particularly pronounced for imported products. The inability of U.S. growers to hold onto the share of the domestic fresh produce market they had from 1998-2000 also represented a major lost opportunity for the U.S. economy overall. Had growers maintained that market share through 2012, the U.S. would have had more than 89,000 additional jobs and almost \$12.4 billion in additional GDP that year.

Our study shows the inability of U.S. growers to find sufficient labor was one of the most important factors driving the recent rise in prominence of imported produce in the U.S. diet. Labor accounted for 27 percent of the recent domestic market share decline experienced by U.S. growers—meaning it was alone responsible for decreasing the 2012 GDP by \$3.3 billion and lowering total employment that year by more than 24,000 positions. Under the current immigration system, it is little surprise that U.S. farmers would face so many struggles finding sufficient workers to harvest crops and expand production. Few U.S. workers are willing to work on fresh produce farms due the seasonal, temporary, and arduous nature of the work. The H-2A visa program designed to allow farmers to bring in temporary workers is also unworkable and expensive for many American farms.

One positive message from this report is that the labor challenges faced by U.S. growers—and the impact they have on the American food supply—can be easily addressed by the U.S. Congress this year. The immigration reform bill passed in the Senate last year created a future legal agricultural visa program that would allow farms to bring in more than 300,000 additional temporary workers during times of high labor need. The U.S. House has discussed creating a guest-worker program of a roughly similar magnitude. As this report shows, any reform that creates a reliable, viable source of workers for U.S. farms to draw from would go a long way towards helping growers reclaim their share of the domestic market. If U.S. growers have the workers they need to harvest crops—and the freedom sufficient labor would allow them to expand their operations—it is possible that they would not only recapture their 1998-2000 market share, but exceed it, creating even more jobs and GDP growth than outlined here.

Our work also shows, however, that it is urgent that Congress act now to address the labor challenges faced by U.S. produce growers. The 8.0 percent increase in production in 2012 that would have allowed U.S. fresh fruit and vegetable growers to recapture their 1998-2000 market share is still largely achievable. For some crops like asparagus and avocados, however, the dramatic increases in production that would be required to reclaim market share may already be out of reach—and the situation is worsening every year. It's a worry that haunts Maureen Torrey, the fresh vegetable farmer in Upstate New York who has cut down her production so much in recent years. "What bothers me now is that we are quickly approaching the point of no return," she says, "I see my neighbors turning away from fresh produce farming; I'm seeing skills developed over generations lost." She, like many farmers, says the system needs to change—and change fast. "Immigration reform," Torrey says, "couldn't come soon enough."

APPENDIX: EXPLANATION OF METHODOLOGY



This report draws on data from the University of Georgia, the United States Department of Agriculture’s “yearbook:” data sets, and the USDA’s Farm Labor Survey, among other sources, to make determinations about the rising share of America’s fresh fruits and vegetables that have been imported in recent years and the role of labor in the domestic market share decline of U.S. growers. To even out any short-term fluctuations or other factors that could effect U.S. domestic production, I use three-year periods in the analysis—1998–2000 and 2010–2012. The following sections explain the core calculations used in the report.³⁰

Changes in Import Shares for Selected Crops

To calculate the share of each of the major fresh fruits and vegetables consumed by Americans that were imported, I use the same methodology employed by the USDA. I first pulled data from the USDA’s annual “yearbook” tables for both fruits and vegetables. My data set included 38 fresh fruits and vegetables, the entire universe of crops for which data was available that had significant U.S. production. Three fruits—mangoes, limes, and bananas—were excluded from the analysis, due the fact that between 90 to 95 percent of such fruits in the United States are typically imported. Due to the challenges growing such fruits on U.S. soil, it is not likely that U.S. growers could reasonably recapture market share in those areas if labor was not an issue.

Using the USDA data, I collected information on total U.S. consumption, total U.S. production, and the total amount imported and exported for each of the 38 crops. (The USDA measures this data using the weights of each product.)

Then, I do the following calculations: The import share for a crop equals the amount of imports divided by the domestic use, or consumption, of that crop in the United States. The domestic use of each crop equals the domestic production plus imports minus exports. The export share for a crop is the amount of exports divided by the total supply of that crop. The total supply of a crop is production plus imports.

This report also calculates the additional production that would be required to maintain import shares at the same level they were at in 1998–2000 for each crop analyzed. For example, if the import share of a crop increased from 10% to 15% between 1998–2000 and 2010–2012 an additional 5% of the domestic use of the crop came from imports. This increase in imports (which is 5% of domestic use in 2010–2012) is then expressed as a percentage of domestic production in 2010–2012.

Expressing Changes in Import Shares in Dollar Terms for Selected Crops

The import share calculations described above are expressed in terms of pounds for each crop. These values are converted to 2010–2012 dollars using the average of import and export prices for each crop.

Export and import prices are obtained from the USDA’s Foreign Agricultural Services web page, which presents information on U.S. fresh produce expenditures that is re-packaged from the U.S. Commerce Department. For each crop, weights and prices of imports and exports are reported annually by 10-digit product code using the Harmonized Tariff Schedule codes. These weights are used to obtain a weighted average price for each crop imported and exported (e.g. watermelon imports and watermelon exports). The weighted average of annual import and export prices for each crop are then averaged over the three year period 2010–2012 to obtain three year averages of import and export prices for each crop. Finally, an average of import and export prices is obtained by taking the midpoint between the three-year average export price and the three-year average import price of each crop.

³⁰ <http://apps.fas.usda.gov/gats/default.aspx>

Changes in Import Shares Overall

To calculate the increase in import share for the entire group of fresh fruits and vegetables overall, I use the total dollar amount of imports and exports for all fresh fruits and vegetables (other than bananas) available on the USDA's Foreign Agricultural Services web page. This represents a much broader group of fresh produce than the 38 products featured in our calculations on consumption and import share described above. Products like guavas, leeks, and radishes not covered by the USDA yearbook tables are featured here.

An aggregate import and export shares are then constructed by combining the dollar values in the USDA trade data with the dollar values of cash receipts from fruit and vegetable crops from the USDA's Agricultural Resource Management Survey.³¹ The value of cash receipts for these crops is used as a dollar value of domestic production. The import share overall equals the dollar amount of imports divided by the dollar amount of domestic use of these crops. The dollar amount of the domestic use is the dollar value of domestic production plus the dollar value of imports minus the dollar value of exports for these crops. The export share is the dollar value of exports divided by the dollar value of the total supply of these crops. The dollar value of total supply is the dollar value of production plus the dollar value of imports.

Impact of Increased Agricultural Production on the U.S. Economy

The USDA study "Agricultural Trade Multipliers: Effects of Trade on the U.S. Economy" conducted by the Economic Research Service of the USDA indicates that each \$1 billion of agricultural output of non-bulk crops has a multiplier effect of 1.55 and therefore generates an additional \$1.55 billion in non-farm income and output.³² The same report explains that each \$1 billion in agricultural production adds about 7,230 jobs to the economy. These multipliers are used to obtain the missing jobs, farm revenue, and GDP figures included in the report due to the U.S. growers not holding onto their 1998-2000 market share. The USDA study also indicates how each additional billion dollar of farm production impacts job creation, income and economic output in various sectors of the economy, such as transportation.

Magnitude of the Farm Worker Shortage in Fruits and Vegetables

The fact that total farm worker employment is falling at a time when farm worker wages have been increasing relative to the wages of other workers indicates that there the supply of available farm works has been dropping. The first goal of this analysis is to obtain an estimate of this supply reduction. The magnitude of the decline in supply of farm workers is at least as large as the decrease in farm worker employment (because the elasticity of labor supply for farm workers is positive). The decline in field worker employment is therefore an underestimate of the supply reduction to the farm worker labor shortage in the U.S.

Not all farm workers are employed in the production of fresh fruit and vegetable crops. I estimate the decline in farm worker employment in fresh fruit and vegetable production first by focusing only on farm workers in the USDA Farm Labor Survey in field worker jobs, (and exclude those in livestock jobs). I obtain this estimate by reverse engineering the counts of field workers in the Farm Labor Survey. The USDA reports total employment for field and livestock workers but not field workers individually. However, the USDA reports a weighted average of field and livestock worker wages as well as the wages of field workers and livestock workers separately. For example, in Florida in October 2013, the USDA reports a field worker wage of \$10.40, a livestock wage of \$11.00, and a combined wage of \$10.45. This can only occur if 1 out of 12 of farm workers in Florida are livestock workers and 11 out of 12 are field workers. The USDA also reports that there were a combined 46,000 field and livestock workers in Florida. It follows that 42,167 farm workers in Florida are field workers. The analysis of the USDA Farm Labor Survey is focused on the states of California, Florida, Washington, Oregon, Arizona and New Mexico. New Mexico is included because the USDA reports farm labor totals for the

31 <http://www.ers.usda.gov/data-products/arms-farm-financial-and-crop-production-practices.aspx>

32 See footnote 15.

states of Arizona and Mexico combined. These states produce about 5/6 of the fresh fruits and vegetables grown in America.

I estimate the decline in field worker employment in these six states from 1999–2000 to 2012–2013 in the peak employment months of July and October. I use two-year rather than three-year averages because the Farm Labor Survey was briefly suspended in 2011 because of budget limitations. I find that farm labor employment in these six fruit and vegetable producing states declined by 99,000 workers between 1999–2000 and 2012–2013. This represents a decline in employment of farm field workers in these states of about 25% since 1999–2000.

Not all field workers in these six states are employed in fruit and vegetable production. To account for field worker employment in other crops, I allow for the possibility that 1/3 of the observed decline in field worker employment was due to declines associated with the production of crops in the mechanized farm sector. Finally, I assume that for every 5,000 farm field workers employed in the six largest fruit and vegetable producing states there are 1,000 workers in fruit and vegetable production in the rest of the U.S. This is consistent with the observation that 5/6 of fresh fruits and vegetables are produced in the six high producing states.

Using these methods I estimate that nationwide there are 80,000 fewer farm field workers employed in the production of fresh fruits and vegetables in 2012–2013 than they were in since 1999–2000.

Estimates of Dollar Loss per Farm Worker due to Labor Shortage

To estimate the dollar value of lost agricultural production due to the farm-labor shortage outlined above, I begin by consulting research produced by agricultural economists at the University of Georgia.³³ These economists estimated the losses that occurred for a variety of individual crops in the U.S. South when a 10% farm labor shortage was present. Their estimates are based on simulations that rely on assumptions for the relevant elasticities of supply and demand. I used the middle range of estimates from their calculations. I divided aggregate losses per crop by the decline in the number of workers associated with a 10% decline in farm labor to obtain a dollar amount of loss per worker for each crop. Their average loss figure is \$16,200 per worker, on average, for the crops they studied.

I then cross checked this figure with national data to ensure that estimates derived from the University of Georgia analysis appear to be applicable to the broader United States. To do this, I first compared the dollar value calculated above to survey results from the National Council of Agricultural Employers (NCAE) who estimated losses of \$317 million in their 2010 survey³⁴ of growers from the denial or delay of H-2A visas. I relied on internal information from the survey to calculate that these losses could be tied to the denial or delay of 19,470 full-time equivalent farm workers. The NCAE reports that 10,935 H-2A positions were requested but denied. Their survey also reports that 72% of the positions that were approved involved a delay of 22 late days. I calculated the full-time equivalent workers by assuming a 22-day delay based on 175 working days, which is about the average length of employment for H-2A contract, or a 12.6% reduction in available work time. Combining both delayed and denied H-2A visas yields a loss of 19,470 full-time equivalent (FTE) farm workers. Dividing the \$317 million in estimated losses from both delayed and denied visas by my estimate of the 19,470 FTE farm workers delayed or denied yields losses per FTE farm worker of about \$16,280.

Economic theory implies that the marginal revenue product of a farm worker should be approximately equal to his/her annual salary if markets are competitive. In other words, a farm worker should produce additional revenue each year that is roughly equal to the cost of employing that worker for a single year. The average wage for farm workers in the U.S. is about \$11 per hour according to the USDA Farm Labor Survey. In the Farm Labor Survey, 70% of workers are full-year employees and 30% are hired for less than 150 days. I calculate hours

33 "Potential Impact of Labor Shift in the Southern Fruits & Vegetable Industry" by Sebastain N. Awondo and Esendugue E. Fonsah, Department of Agricultural & Applied Economics, University of Georgia, Copyright 2013 S.N. Awondo and E.G. Fonsah.

34 "Potential Impact of Labor Shift in the Southern Fruits & Vegetable Industry" by Sebastain N. Awondo and Esendugue E. Fonsah, Department of Agricultural & Applied Economics, University of Georgia, Copyright 2013 S.N. Awondo and E.G. Fonsah.

worked per farm worker as 70% of 2,000 hours (full-year) plus 30% of 600 hours (because 75 is the midpoint between zero and 150 days and a farm worker working eight hour days for 75 days would work 600 hours). In other words, the USDA Farm Labor Survey is consistent with annual hours worked of about 1,580 per farm worker.

Multiplying 1,580 annual hours by \$11 hourly wage yields annual wage costs of \$17,380. In southern states where the University of Georgia study was done farm wages average about \$10 per hour and annual wage costs would be about \$15,800. Annual wage costs in this range are consistent with production losses of \$16,200 per worker due to a farm labor shortage.

Based on these estimates we assume that the dollar loss due to a labor shortage is \$16,200 per farm worker.

Annual Dollar Losses Due to Farm Labor Shortages

After conducting the two estimates outlined above, producing the estimated annual loss in production due to a farm labor shortage involves a simple calculation. I multiply the 80,000-person decline in field workers in the fresh fruit and vegetable space by the loss per worker of \$16,200 estimated above. This yields a total loss of about \$1.3 billion. This figure is then divided by \$4.9 billion, the value of the additional imports brought into the U.S. economy between 1998-2000 and 2010-2012 (in constant dollars), to determine the share of market share decline attributed to labor issues.

Globalization Effect

Some of the growth in import shares overall are due to increased globalization and may not be the direct effect of farm labor shortages. The effects of increased globalization on the growth in import shares are subtracted out by only calculating the growth in import shares that was over and above the growth in export shares. For example, between 1998-2000 and 2010-2012 the export share of fresh fruits in the U.S. increased by 4.1 percentage points. Consequently 4.1 percentage points of the 14.3 percentage point increase in the import share of fresh fruits is due to increased trade and globalization, or 28.7 percent.

Evidence that Farm Worker Wages are Increasing Relative to other Workers

Changes in weekly wage rates between 1999-2000 and 2012-2013 were compared for farm workers as reported in the USDA Farm Labor Survey and other workers as reported by the Bureau of Labor Statistics Current Population Survey (CPS). While the data from the Farm Labor Survey reports mean hourly wages and mean hours worked per week for farm workers, the published annual weekly wage data from the CPS reports wages for the median full-time worker as well as workers at other percentiles of the wage distribution (10th, 25th, 50th, 75th and 90th) by educational attainment categories. There has been considerable economic research comparing wages and wage growth of more and less educated workers as well as between workers in the top 10% compared to workers at the median wage. Consistent with this long line of research, the published CPS data shows higher wage growth between 1999-2000 and 2012-2013 for more educated workers as well as higher wage growth at the 90th percentile than at the median.

The fact that the average weekly wages of unskilled and semi-skilled farm workers has grown relative to the wages of high school and college graduates is clear evidence of a farm labor shortage instead of a shift to mechanization. A shift to mechanization would have reduced the demand for farm workers and reduced the weekly wages of farm workers relative to other workers in the U.S.

