ARIZONA-MEXICO ECONOMIC INDICATORS

Arizona's Trade and Competiveness in the U.S. – Mexico Region



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Arizona-Mexico Economic Indicators Annual Report 2017

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Purpose of Arizona-Mexico Economic Indicators

Since December 2014, the Economic and Business Research Center at the University of Arizona's Eller College of Management, in collaboration and with financial support from four of Arizona's leading economic development organizations – Arizona–Mexico Commission, Arizona Commerce Authority, Arizona Department of Transportation, and Arizona Department of Tourism – has maintained the Arizona–Mexico Economic Indicators at https://azmex.eller.arizona.edu. These online indicators monitor Arizona's trade and competitiveness in the U.S.–Mexico region across a range of key economic categories such as Arizona's trade, border crossings, commodity flows through border ports of entry, and economic trends in Mexico.

While designed primarily to meet the needs of organizations engaged with improving Arizona's trade and competitiveness, the AZMEX website has also proved to be a useful tool for citizens, business leaders, and public sector decision makers interested in the unique opportunities the border region has to offer. The project's overarching theme is that presentation of the most up-to-date factual knowledge on the region will enhance understanding and appreciation of the importance of Arizona's economic relationships with Mexico.

Connection with previous reports

The original set of regional economic indicators focusing on the Arizona-Sonora Region was compiled by the University of Arizona in 2000 under the auspices of the Arizona-Mexico Commission and in collaboration with several institutions in Sonora, Mexico. The last report in this series was completed in 2009 and is available in pdf format on our website at http://ebr.eller.arizona.edu/. While some core indicator groups have been retained from these previous studies, the emphasis and scope of the AZMEX website and this report has been broadened in response to the changing economic landscape, as well as, interest on the part of many Arizonans in extending their understanding of economic relationships with Mexico beyond Sonora.

About this Annual Report

This is the third annual report produced by the Arizona-Mexico Economic Indicators project. While the AZMEX website is a dynamic tool providing access to the most recent data at any time, the Annual Report is prepared as a detailed profile of Arizona's trade and competitiveness in the U.S.-Mexico region relative to other border states on an annual basis. By taking a "snapshot" of these indicators at a single point in time, the Annual Report provides a benchmark for year-over-year comparisons, and for evaluating major changes within each indicator group as well as across sections. The focus of the Annual Report is to show where Arizona stands relative to previous period(s), and equally important, how Arizona's progress compares to other border states.



INTRODUCTION

Arizona-Mexico Economic Indicators Annual Report 2017

The Report is organized into the following sections: Population, Economic Output, Exports to Mexico, Exports to Canada, Border Crossings, Commodity Flows, Foundations of Export-Based Economy, Foundations of Knowledge-Based Economy, Educational Attainment, and Foreign Direct Investment. Each section describes the significance of relevant indicators and highlights important changes and trends. In addition, charts illustrating trends and comparisons are presented. Directly following the "Introduction" is a "Summary of Findings" section which provides readers with a quick scan of important changes as they pertain to Arizona. Findings are organized according to positive changes, declines, upward trends (over the decade), downward trends (over the decade), increases in Arizona's share among border states, decreases in Arizona's share among border states, and trends in Mexico, Sonora, and Sinaloa. This summary outlines areas where Arizona is making progress, as well as, areas Arizona is falling behind relative to other U.S. border states.

Methodology

Indicators are presented in respective units of measurement, such as dollar value of exported merchandise, number of vehicles and passengers crossing the border, or as percentages of totals. To facilitate the comparison of trends with other border states (last decade wherever applicable) index numbers are used with the first year in the series serving as a base year, e.g., year 2005=100. This method allows for easy visual comparison of relative changes, especially in situations when units such as states or volume of trade through border ports of entry differ greatly in size. Arizona's competitiveness in the U.S.-Mexico region relative to other border states is represented by a simple proxy measure of percentage share with a focus on changes between two periods

All calculations of change and percent change are performed using the largest number of digits of accuracy available. This means that in a few instances in this report the reader may obtain slightly different numbers for differences and percent changes if they perform the calculations using the figures from some tables which have been rounded. Should the reader have any questions concerning computations, please contact the authors at mln@eller.arizona.edu.

The Data

Most of the datasets used in this report are subject to revision during the year. Some revisions affect three to five years of data or more. This report was compiled and calculations made during May of 2017. Please note, this work was done prior to revisions to the trade data which typically occur sometime in June of each year. The reader can always access the most recent data with revisions on the AZMEX.eller.arizona.edu website. All the data presented in this report are updated on the website as revisions and new data are released.

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At time of publication, data for 2015 is the latest available for several important measures tracked in this report. This summary presents 2015 data first, then changes in measures for which we have 2016 data are reported.

In 2015, in the following increased in Arizona



- Arizona's real GDP increased 1.4% in 2015.
- Arizona's employment in high-tech manufacturing increased 2.1% in 2015 to reach 145,130 people, an increase of 2,959.
- Arizona's employment in pharmaceutical and medicine manufacturing gained 12.2% in 2015.
- The number patents issued in Arizona increased 0.9% in 2015.
- Arizona's share of the of number patents issued among the border states increased from 4.7% in 2014 to 4.8% in 2015.
- The number of households in Arizona where any household member uses the internet at home increased 5.0% from 2013 (data are reported at 2 year intervals).
- The percent of Arizona's population 25 years and older with a bachelor's degree was 27.7% in 2015, a gain of 0.1 percentage points.

In 2015, this measure held constant for Arizona



 Arizona's real per capita GDP remained essentially unchanged in 2015 at \$38,276 (chained \$2009); the lowest real GDP per capita among U.S. southern border states.

In 2015, the following decreased in Arizona



• Arizona's share of high-tech manufacturing employment among the border states declined from 7.4% in 2014 to 7.3% in 2015.

In 2016, Arizona experienced increases in the following



- Arizona's resident population grew 1.1% in 2016 reaching 6,931,071 persons (as July 1, 2016).
- Truck crossings at Arizona BPOE increased 3.3% in 2016 to 401,331.
- Bus crossings at Arizona BPOE increased 3.1% in 2016 to 13,490.
- Pedestrian crossings at Arizona BPOE increased 4.5% in 2016 to 6,980,368.
- Fresh produce imports from Mexico through Arizona BPOE increased 14.6% in 2016 to \$3.3 billion, a \$418.7 million increase.
- Arizona's aerospace manufacturing employment increased 3.6% in 2016 employing 26,000 workers.
- In 2016, there were 30,920 workers in engineering occupations in Arizona, a robust 6.0% over-the-year increase, and by far the best performance among the border states in 2016.

In 2016, these measures held constant in Arizona



- Arizona manufacturing exports to Mexico declined slightly from \$6.0 to \$5.97 billion in 2016.
- Personal vehicle crossings via Arizona BPOE in 2016 gained 0.2% to reach 8.8 million.
- Vehicle passenger crossings declined 0.3% at Arizona BPOE in 2016 to reach 17 million.
- U.S. imports from Mexico via Arizona BPOE held steady at \$18.3 billion in 2016.



In 2016, Arizona experienced decreases in the following



- Arizona exports worldwide declined 2.8% in 2016.
- Arizona exports to Mexico declined 9.2%, falling from \$9.0 to \$8.2 billion in 2016.
- Arizona's share of border states exports to Mexico declined from 7.0% in 2015 to 6.5% in 2016.
- Arizona's exports to Canada declined 7.1% in 2016 falling from \$2.3 to \$2.1 billion.
- Arizona's manufacturing exports to Canada declined 11.6% falling from \$1.9 to \$1.7 billion in 2016.
- Arizona's share of border states exports to Canada fell from 5.2% in 2015 to 5.1% in 2016.
- Train crossings via Arizona BPOE (Nogales) declined 7.4% facilitating 742 crossings in 2016.
- U.S. exports to Mexico through Arizona BPOE declined 11.6% in 2016 to \$11.9 billion.
- U.S. exports of transportation products to Mexico through Arizona BPOE declined 5.0% in 2016 to \$1.7 billion.
- U.S. exports of electric and electronic products to Mexico through Arizona BPOE declined 4.7% in 2016 to \$3.1 billion.
- Electric and electronic manufacturing imports from Mexico via Arizona BPOE declined 3.1% in 2016 from \$3.3 to \$3.2 billion.
- Transportation products imports from Mexico through Arizona BPOE declined 2.2% in 2016 to \$7.0 billion.

Over the decade 2006 to 2016, Arizona experienced increases in the following important measures

• Arizona's population grew 15.0% over the decade 2006–2016, Texas at 19.3%, California 9.0%, and New Mexico's 6.1%.

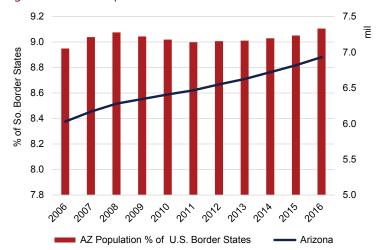
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- Arizona's real GDP grew 4.0% over the decade 2006–2016, while U.S. real GDP grew 13.3%.
- Arizona exports to Mexico grew 55.0% over the decade 2006-2016, while New Mexico exports grew 503.7%, Texas 69.0%, California 28.7%, and U.S. 72.7%.
- Arizona manufacturing exports to Mexico grew 18.1% over the decade 2006–2016, while New Mexico exports grew 630.0%, Texas 67.5%, and California 27.3%.
- Arizona exports to Canada grew 15.8% over the decade 2006-2016, while Texas exports grew 26.4%, California 13.6%, and and New Mexico lost 31.5%.
- Arizona manufacturing exports to Canada grew 6.4% over the decade 2006-2016, while Texas exports grew 19.3%, California 11.8%, and and New Mexico lost 28.3%.
- Truck traffic via Nogales grew 12.3% over the decade 2006-2016.
- Train traffic via Nogales BPOE increased 13.6% over the decade 2006–2016.
- Personal vehicle crossing at Nogales BPOE increased 5.9% over the decade 2006-2016, while traffic at all Arizona BPOE combined grew 1.4%.
- U.S. exports to Mexico via Arizona BPOE increased 61.3% over the decade 2006–2016.
- U.S. exports of electric and electronic products to Mexico via Arizona BPOE increased 82.6% over the decade 2006–2016.
- U.S. exports of transportation products to Mexico via Arizona BPOE increased 33.7% over the decade 2006–2016.



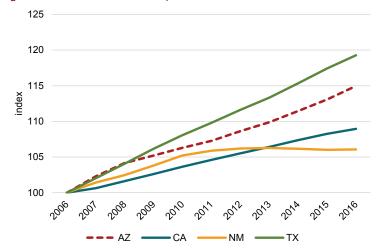
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Figure 1: Arizona Population



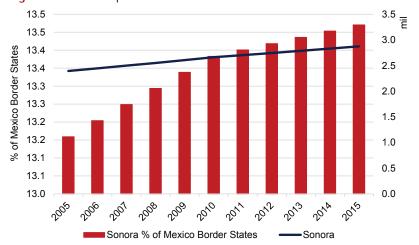
Source: U.S. Census Bureau

Figure 2: U.S. Border States Population (2006=100)



Source: U.S. Census Bureau

Figure 3: Sonora Population



Source: INEGI and EBRC

opulation growth is an indicator of the attractiveness of a region for businesses and people. Age composition provides insight into the relationship between working and dependent populations.

Arizona's Population

Arizona added 77,267 residents in 2016 reaching a population total of 6.9 million, a 1.7% increase over 2015. Arizona's share of the border states total population began the decade at 8.9%, and in 2016 it was 91.% (Figure 1). Arizona had the fastest annual population growth rate among the border states, just ahead of Texas at 1.6%. Tying with the nation as a whole, California came in third with 0.7% growth. New Mexico's population remained essentially unchanged increasing only 0.03% in 2016.

Arizona experienced significantly higher annual population growth rates than other border states prior to the Great Recession reaching a peak of 3.5% in 2005. However, Arizona's growth decelerated more rapidly than other states moving into the recession. Arizona's population grew 15.0% over the decade (2006-2016), second behind Texas at 19.3%, but well ahead of the nation as a whole (8.3%). By contrast, California's population grew only 9.0%, and New Mexico's 6.1% in the same time period (Figure 2).

Sonora's Population

The latest estimates available for Mexico's northern border states are from Mexico's *Encuesta Intercensal 2015*. These show Sonora's population reached 2.9 million persons in 2015, an increase of 1.5% from 2014, and a 17.5% gain over the decade 2005 to 2015 (Figure 3).

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Age Distribution

In 2015, 16.4% of Arizona's population was 65 years and older, a 3.5 percentage point increase over the decade (2005–2015). Over 65 age cohorts for the other border states and the U.S. as a whole also increased. However, Arizona had the highest share. (Figure 4)

Arizona's population share under 15 was 19.7% in 2015, higher than the nation (19.0%), but a decline of 2.1 percentage points over the decade. Between 2010 and 2015, Arizona's under 15 age cohort fell behind New Mexico, now at 19.9%. Among border states, only California had a smaller percent share under 15 with 19.4%. Texas had the largest share (22.0%) (Figure 5). While all four border states have larger shares under 15 than the nation, Figures 4 and 5 illustrate the overall aging of the population.

Sonora's under 15 age cohort represented 29.1% of its population in 2015. While Mexico's border states have higher population shares under 15, long term trends show that, like the U.S., Mexico's population is aging. Over the decade 2005 to 2015, the share of residents under 15 in Mexico's border states declined between 1.8 and 3.2 percentage points; in the U.S. declines ranged between 1.0 and 2.2 points (Figure 6).

How does Arizona compare?

- In 2016, Arizona had fastest population growth of U.S. border states.
- 2006-2016: Arizona had the second fastest population growth (15.0%) among U.S. border states.
- 2005-2015: Mexico and U.S. border states experienced similar declines in youth populations.

Figure 4: U.S. Border States Population 65 Years and Over

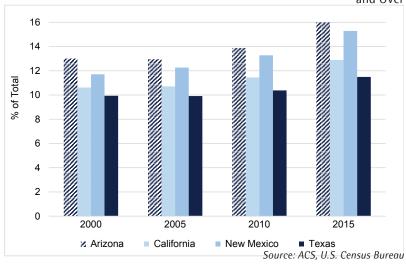
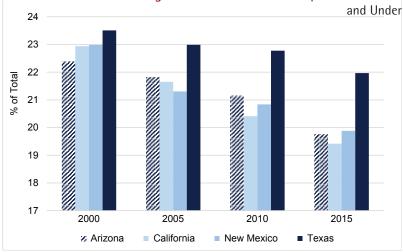
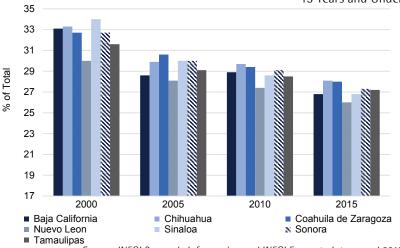


Figure 5: U.S. Border States Population 15 Years



Source: ACS, U.S. Census Bureau

Figure 6: Mexican Border States & Sinaloa Population
15 Years and Under



Source: INEGI Banco de Informacion and INEGI Encuesta Intercensal 2015

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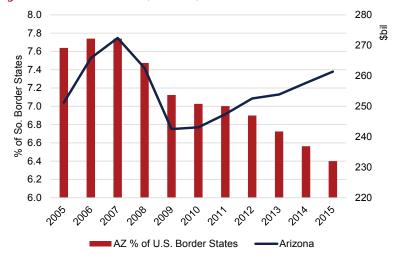
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Table 1: U.S. Border States Real GDP (bil\$2009)

| | AZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|-------|------|---------|------|------|------|---------|------|
| 2005 | 251.2 | 8.2 | 1,910.3 | 4.2 | 79.6 | 0.6 | 1,047.0 | 2.3 |
| 2006 | 265.8 | 5.8 | 1,975.5 | 3.4 | 80.9 | 1.6 | 1,111.8 | 6.2 |
| 2007 | 272.4 | 2.5 | 1,999.3 | 1.2 | 81.0 | 0.2 | 1,166.7 | 4.9 |
| 2008 | 262.5 | -3.6 | 1,993.2 | -0.3 | 82.9 | 2.3 | 1,173.7 | 0.6 |
| 2009 | 242.5 | -7.6 | 1,912.1 | -4.1 | 82.8 | 0.0 | 1,166.5 | -0.6 |
| 2010 | 243.1 | 0.2 | 1,936.5 | 1.3 | 83.2 | 0.4 | 1,197.0 | 2.6 |
| 2011 | 247.4 | 1.8 | 1,962.9 | 1.4 | 83.5 | 0.3 | 1,240.1 | 3.6 |
| 2012 | 252.5 | 2.1 | 2,013.6 | 2.6 | 83.5 | 0.1 | 1,310.5 | 5.7 |
| 2013 | 253.9 | 0.5 | 2,064.6 | 2.5 | 83.1 | -0.6 | 1,373.9 | 4.8 |
| 2014 | 257.7 | 1.5 | 2,143.2 | 3.8 | 85.1 | 2.5 | 1,440.3 | 4.8 |
| 2015 | 261.4 | 1.4 | 2,225.4 | 3.8 | 86.6 | 1.7 | 1,509.8 | 4.8 |

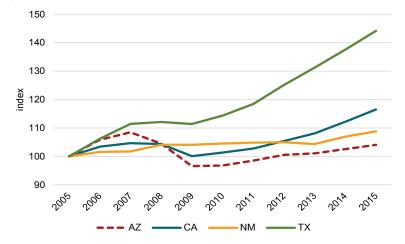
Source: U.S. Bureau of Economic Analysis

Figure 7: Arizona Real GDP (bil\$2009)



Source: U.S. Bureau of Economic Analysis

Figure 8: U.S. Border States Real GDP (2005=100)



Source: U.S. Bureau of Economic Analysis and EBRC

ross domestic product (GDP) is the total output of a country or a state produced in a year. It is a direct measure of the size of an economy. Per capita GDP is useful as a measure of relative performance. A rise in per capita GDP signals growth in the economy.



At 1.4%, Arizona's annual real GDP growth failed to keep pace with 2.5% growth for the nation, or indeed with other border states in 2015. Despite six years of growth, the state's 2015 real GDP was still 4.2% below its 2007 pre-recession peak of \$272.4 bil (chained \$2009). Among the border states, Texas experienced the fastest growth in 2015 at 4.8%. California and New Mexico experienced real GDP growth rates of 3.8% and 1.7%, respectively (Table 1).

Arizona's share of border states real GDP was 6.4% in 2015. This is a decline of 1.2 percentage points from its 7.6% share of a decade ago (Figure 7).

Arizona is the only border state whose real GDP has yet to reach or surpass its pre-recessionary level (Figure 8). In 2015, Texas was 29.4% above its pre-recession peak, California 11.3%, New Mexico 6.9%, and the nation overall had surpassed its 2007 peak by 8.7%.

Arizona's real per capita GDP remained essentially unchanged in

ECONOMIC OUTPUT

2015 declining 0.04% to \$38,276 (chained \$2009). This is is the lowest real GDP per capita among southern border states (Figure 9). Other border states saw growth of between 1.8% for New Mexico and 3.0% in Texas. U.S. real per capita GDP grew 1.7% in 2015 to \$50,054 (chained \$2009), putting Arizona at only 76.5% of the national level.

Sonora Real Gross State Product

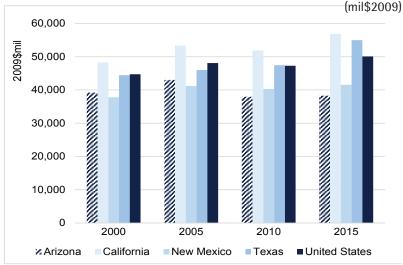
In 2015, Sonora's real GSP was 401,342 million pesos (constant 2008 pesos), an increase of 1.1% from a year ago. Sinaloa's real GSP grew 5.0%, and Mexico's real GDP grew 2.5%. Over the decade (2005-2015), Sonora's real GSP has grown 39.0%, compared to 26.4% for Mexico's real GDP overall (Figure 10).

Sonora's real per capita GSP declined 0.5% in 2015 to 139,614 constant 2008 pesos, but is still 122.0% of Mexico's national per capita real GDP, and third highest per capita real GSP among Mexican border states (Figure 11). Nuevo León had the highest per capita number with 202,986 followed by Coahuila de Zargoza's 156,923.

How does Arizona Compare?

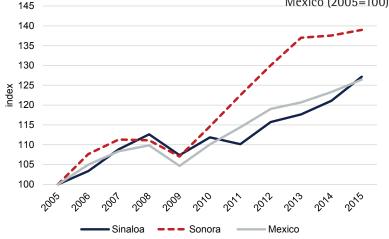
- Arizona's real GDP and real GDP per capita suggest slower postrecession recovery than for other border states
- Sonora's real GSP per capita has followed a similar trend to Mexico, however, is consistently higher than national levels

Figure 9: Arizona and U.S. Border States Real GDP/capita



Source: U.S. Bureau of Economic Analysis

Figure 10: Real GSP Sonora, Sinaloa, and Real GDP Mexico (2005=100)



Source: INEGI and EBRC

Figure 11: Sonora Real GSP/capita and Mexico Real GDP/capita (constant 2008 pesos)



Source: INEGI and EBRC

EXPORTS TO MEXICO



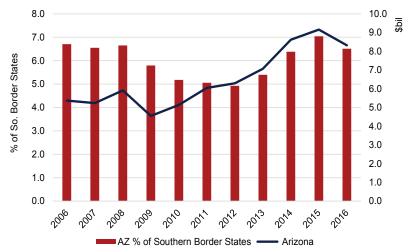
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Table 2: U.S. Border States Exports to Mexico (\$bil)

| | ΑZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|-------|-------|------|------|-------|------|
| 2006 | 5.37 | 13.1 | 19.63 | 10.8 | 0.26 | 39.3 | 54.81 | 9.0 |
| 2007 | 5.24 | -2.5 | 18.35 | -6.5 | 0.38 | 45.7 | 56.01 | 2.2 |
| 2008 | 5.91 | 12.9 | 20.47 | 11.6 | 0.38 | 2.3 | 62.09 | 10.9 |
| 2009 | 4.55 | -23.1 | 17.47 | -14.7 | 0.38 | 0.0 | 56.04 | -9.8 |
| 2010 | 5.14 | 12.9 | 20.95 | 19.9 | 0.43 | 11.7 | 72.69 | 29.7 |
| 2011 | 6.04 | 17.7 | 25.83 | 23.3 | 0.46 | 8.2 | 87.19 | 19.9 |
| 2012 | 6.29 | 4.1 | 26.38 | 2.2 | 0.59 | 27.6 | 94.43 | 8.3 |
| 2013 | 7.07 | 12.4 | 23.91 | -9.4 | 0.8 | 35.1 | 99.26 | 5.1 |
| 2014 | 8.62 | 22.0 | 25.45 | 6.4 | 1.55 | 93.3 | 99.51 | 0.3 |
| 2015 | 9.16 | 6.2 | 26.79 | 5.3 | 1.68 | 8.7 | 92.49 | -7.1 |
| 2016 | 8.32 | -9.2 | 25.26 | -5.7 | 1.56 | -7.5 | 92.67 | 0.2 |

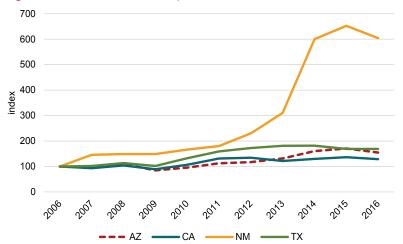
Source: U.S. Census Bureau

Figure 12: Arizona Exports to Mexico (\$bil)



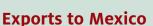
Source: U.S. Census Bureau

Figure 13: U.S. Border States Exports to Mexico (2006=100)



Source: U.S. Census Bureau

exico is Arizona's number one trade partner. The dynamics of Arizona's exports to Mexico provide a composite measure of both Arizona's integration in the U.S. – Mexico production sharing system, as well as competitiveness in Mexico's consumer markets.



Exports to Mexico accounted for 37.8% of the total value of Arizona's exports to the world in 2016. While Arizona exports worldwide declined 2.8%, exports to Mexico declined 9.2%, falling from \$9.2 to \$8.3 billion, the largest percent decline among the border states. Texas exported \$92.7 billion worth of goods to Mexico in 2016, an increase of only 0.2%. The value of California's exports to Mexico declined 5.7% and New Mexico's 7.5% (Table 2).

Arizona's exports to Mexico increased steadily between 2009 and 2015, growing at rates between 4.0% and 22.0% annually. Arizona's percent share of exports to Mexico of southern border states also increased. However, in 2016, its share declined from 7.0% to 6.5% (Figure 12).

Arizona exports to Mexico grew 55.0% between over the decade 2006 to 2016. Among southern border states, Arizona's over the decade growth in exports to Mexico was significantly faster than California's 28.7%, but behind Texas' 69.0%, which tracked national export growth to Mexico (72.7%). New Mexico's growth was by far the most rapid



EXPORTS TO MEXICO

with 2016 export levels 503.7% above what they were in 2006 (Figure 13).

Manufacturing Exports to Mexico

The good news is that the value of Arizona's manufacturing exports to Mexico declined only slightly in 2016 falling from \$6.01 billion in 2015 to \$5.97 billion. While export volumes remained substantial, all border states experienced declines in this important sector in 2016. Arizona was third among southern border states in export value. Texas exported the largest dollar value of manufacturing products at \$88.1 billion (Table 3).

Arizona's manufacturing exports to Mexico accounted for 71.7% of the state's total exports to Mexico in 2016. Arizona experienced double digit growth in this sector in 2014 and 2015, and posted the second smallest decline, 0.7%, in 2016. Only Texas had a smaller decline, 0.2%. Arizona's border state share of manufacturing exports to Mexico remained essentially unchanged at 5.0% in 2016 (Figure 14).

Between 2006 and 2016, Arizona experienced 18.1% growth in this sector, behind California's 27.3%, and Texas' 67.5%. New Mexico, which has by far the smallest dollar volume of trade, experienced 630% growth over the decade (Figure 15).

How does Arizona compare?

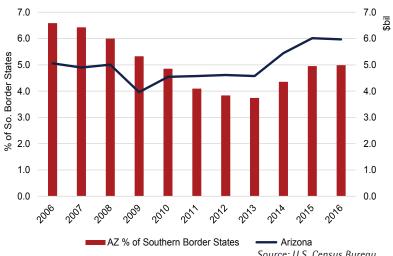
- In 2016, 71.7% of Arizona's exports to Mexico were in manufacturing.
- 2006-2016: Arizona's manufacturing exports to Mexico increased 18.1%.

Table 3: Manufacturing Exports to Mexico (\$bil)

| | AZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|-------|-------|------|-------|-------|------|
| 2006 | 5.06 | 10.4 | 18.86 | 10.4 | 0.21 | 32.2 | 52.61 | 8.9 |
| 2007 | 4.90 | -3.1 | 17.46 | -7.4 | 0.34 | 62.1 | 53.48 | 1.6 |
| 2008 | 5.01 | 2.3 | 19.36 | 10.9 | 0.36 | 5.9 | 58.77 | 9.9 |
| 2009 | 3.96 | -20.9 | 16.57 | -14.4 | 0.36 | -0.3 | 53.53 | -8.9 |
| 2010 | 4.55 | 14.7 | 19.86 | 19.9 | 0.41 | 14.7 | 68.85 | 28.6 |
| 2011 | 4.58 | 0.7 | 24.65 | 24.1 | 0.44 | 8.7 | 82.02 | 19.1 |
| 2012 | 4.62 | 0.9 | 25.07 | 1.7 | 0.54 | 21.4 | 90.16 | 9.9 |
| 2013 | 4.57 | -0.9 | 22.48 | -10.3 | 0.65 | 21.3 | 94.50 | 4.8 |
| 2014 | 5.45 | 19.1 | 23.93 | 6.4 | 1.45 | 122.0 | 94.19 | -0.3 |
| 2015 | 6.01 | 10.4 | 25.53 | 6.7 | 1.64 | 13.3 | 88.27 | -6.3 |
| 2016 | 5.97 | -0.7 | 24.01 | -5.9 | 1.52 | -7.8 | 88.12 | -0.2 |

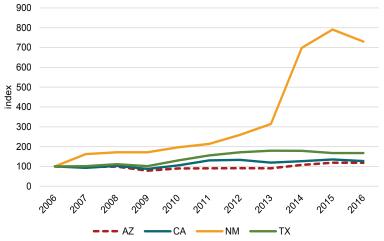
Source: U.S. Census Bureau

Figure 14: Arizona Manufacturing Exports to Mexico



Source: U.S. Census Bureau

Figure 15: U.S. Border States Mfg. Exports to Mexico (2006=100)



Source: U.S. Census Bureau

EXPORTS TO CANADA



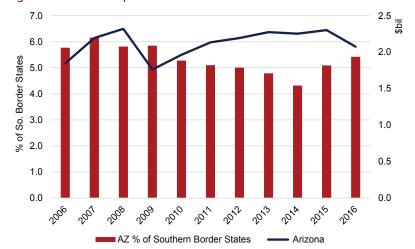
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Table 4: Exports to Canada (\$bil)

| | AZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|-------|-------|------|-------|-------|-------|
| 2006 | 1.85 | 14.4 | 14.25 | 7.4 | 0.20 | 47.6 | 15.72 | 6.4 |
| 2007 | 2.19 | 18.8 | 16.27 | 14.2 | 0.24 | 19.6 | 16.90 | 7.5 |
| 2008 | 2.32 | 5.8 | 17.85 | 9.7 | 0.34 | 44.4 | 19.38 | 14.7 |
| 2009 | 1.76 | -24.0 | 14.31 | -19.8 | 0.25 | -28.0 | 13.80 | -28.8 |
| 2010 | 1.96 | 11.4 | 16.21 | 13.3 | 0.28 | 14.9 | 18.76 | 35.9 |
| 2011 | 2.14 | 8.8 | 17.26 | 6.5 | 0.35 | 24.1 | 22.12 | 17.9 |
| 2012 | 2.19 | 2.8 | 17.42 | 0.9 | 0.33 | -6.8 | 23.86 | 7.8 |
| 2013 | 2.27 | 3.6 | 18.88 | 8.4 | 0.29 | -12.0 | 26.05 | 9.2 |
| 2014 | 2.25 | -0.9 | 18.33 | -2.9 | 0.23 | -19.8 | 31.38 | 20.4 |
| 2015 | 2.30 | 2.2 | 17.26 | -5.8 | 0.19 | -18.7 | 25.50 | -18.7 |
| 2016 | 2.07 | -9.9 | 16.18 | -6.3 | 0.14 | -27.7 | 19.87 | -22.1 |

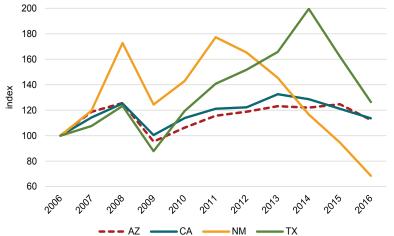
Source: U.S. Census Bureau

Figure 16: Arizona Exports to Canada



Source: U.S. Census Bureau

Figure 17: U.S. Border States Exports to Canada (2006=100)



Source: U.S. Census Bureau

Ithough Arizona's exports to Canada form a smaller share of totals than exports to Mexico, they are significant as an important driver of regional economic activity. The dynamics of Arizona's exports to Canada provide a composite measure of both Arizona's integration into the North American production-sharing system and competitiveness in Canada's consumer markets.

Exports to Canada

Arizona's exports to Canada were valued at \$2.1 billion in 2016, a 9.9% decline from 2015. Exports to Canada accounted for 9.4% of Arizona exports worldwide. Among the southern border states, Texas exported the largest dollar value to Canada at \$19.9 billion, followed by California with \$16.2 billion. New Mexico exported \$0.1 billion. Arizona experienced the second smallest decline in export value after California (6.3%). Texas' exports to Canada declined 22.1% and New Mexico's 27.7% (Table 4).

Despite a tough year for trade, Arizona's percent share of southern border states' exports to Canada increased from 5.1% in 2015 to 5.4% in 2016 as California and Texas experienced large declines (Figure 16).

Arizona's exports to Canada increased 15.8% between 2006 to 2016. Texas and California exports grew 13.6% and 26.4%, respectively, while New Mexico lost ground in this sector declining 31.5% over the decade (Figure 17). U.S. exports to Canda grew 15.3% over the same time frame.

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Manufacturing Exports to Canada

In 2016, Texas lead the southern border states in this sector with \$17.6 billion in manufacturing exports to Canada. Arizona was third among southern border states with \$1.7 billion, an 11.6% decline from a year ago (Table 5). Arizona had experienced steady growth in this sector since 2009; 2016 marks the first year of contraction since the end of the recession.

Arizona's percent share of manufacturing exports to Canada among southern border states decreased from 5.2% in 2015, to 5.1% in 2016 (Figure 18).

In 2016, Arizona's manufacturing exports to Canada were 6.4% higher than a decade ago in 2006. Arizona experienced slower growth than Texas (19.3%), California (11.8%), and the U.S. (13.1%) over the decade. New Mexico lost ground significantly in this sector beginning in 2012 and declined 28.3% over the decade in this important sector (Figure 19).

How does Arizona compare?

- 2006-2016: Arizona exports to Canada increased 12.3%, and manufacturing exports gained 6.4%, trailing Texas and California.
- In 2016, Arizona exports to Canada declined 9.9%, and manufacurting exports fell 11.6%, a smaller decline than Texas or New Mexico.

Table 5: Manufacturing Exports to Canada (\$bil)

| | ΑZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|-------|-------|------|-------|-------|-------|
| 2006 | 1.56 | 13.6 | 12.06 | 7.1 | 0.17 | 39.5 | 14.77 | 8.3 |
| 2007 | 1.85 | 18.2 | 13.91 | 15.4 | 0.19 | 10.5 | 15.64 | 5.9 |
| 2008 | 1.97 | 6.8 | 15.26 | 9.7 | 0.23 | 20.8 | 17.45 | 11.6 |
| 2009 | 1.45 | -26.3 | 11.84 | -22.4 | 0.16 | -31.4 | 12.53 | -28.2 |
| 2010 | 1.55 | 6.4 | 13.37 | 12.9 | 0.23 | 45.1 | 16.91 | 34.9 |
| 2011 | 1.68 | 8.7 | 14.38 | 7.5 | 0.34 | 45.2 | 20.12 | 19.0 |
| 2012 | 1.74 | 3.2 | 14.70 | 2.2 | 0.32 | -6.0 | 22.19 | 10.3 |
| 2013 | 1.81 | 4.6 | 15.99 | 8.8 | 0.27 | -13.7 | 23.01 | 3.7 |
| 2014 | 1.83 | 0.9 | 15.45 | -3.4 | 0.22 | -20.1 | 23.09 | 0.3 |
| 2015 | 1.88 | 2.7 | 14.41 | -6.8 | 0.17 | -20.0 | 19.48 | -15.6 |
| 2016 | 1.66 | -11.6 | 13.48 | -6.4 | 0.13 | -28.3 | 17.63 | -9.5 |

Source: U.S. Census Bureau

Figure 18: Arizona Manufacturing Exports to Canada

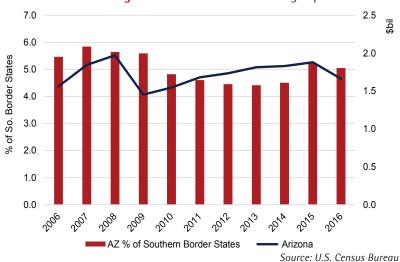
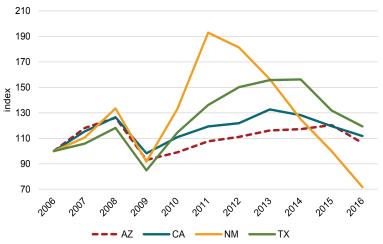


Figure 19: U.S. Border States Mfg. Exports to Canada (2006=100)



Source: U.S. Census Bureau



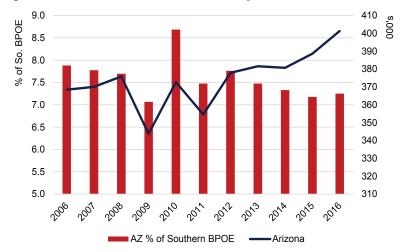
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Table 6: Arizona Northbound Truck Crossings

| YEAR | Douglas | Lukeville | Naco | Nogales | San Luis | Sasabe |
|------|---------|-----------|-------|---------|----------|--------|
| 2006 | 27,951 | 654 | 4,052 | 289,590 | 45,851 | 392 |
| 2007 | 26,718 | 481 | 4,628 | 295,267 | 42,716 | 296 |
| 2008 | 25,062 | 432 | 2,446 | 303,757 | 43,791 | 362 |
| 2009 | 25,162 | 297 | 1,661 | 276,877 | 39,644 | 120 |
| 2010 | 25,504 | 90 | 2,512 | 307,510 | 37,103 | NA |
| 2011 | 29,883 | 33 | 3,376 | 287,091 | 34,190 | NA |
| 2012 | 31,636 | 22 | 3,728 | 307,626 | 34,891 | NA |
| 2013 | 32,497 | 53 | 3,947 | 311,669 | 33,402 | NA |
| 2014 | 33,104 | 68 | 3,601 | 312,010 | 31,968 | NA |
| 2015 | 32,104 | 106 | 2,988 | 319,747 | 33,712 | NA |
| 2016 | 30,815 | 154 | 3,287 | 335,737 | 31,338 | NA |

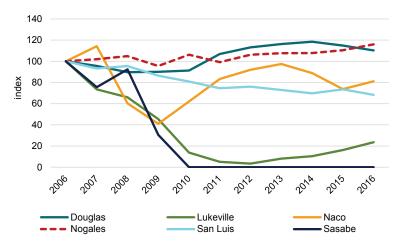
Source: Bureau of Transportation Statistics and EBRC

Figure 20: Arizona Northbound Truck Crossings



Source: Bureau of Transportation Statistics and EBRC

Figure 21: Arizona BPOE Northbound Truck Crossings (2006=100)



Source: Bureau of Transportation Statistics and EBRC

rizona's border ports of entry (BPOE) play a pivotal role in facilitating commercial exchanges between the U.S., Canada, and Mexico. The dynamics of personal vehicle, pedestrian and bus crossings reflect the regional significance of border ports of entry for personal transportation, tourism and trade. Commercial travel and freight in the form of train and truck crossings contextualize border ports of entry as of national and North American significance.

Truck Crossings

Arizona's six border ports of entry facilitated 401,331 truck crossings in 2016, a 3.3% increase from a year ago. The Nogales BPOE had the largest volume of truck crossings, 335,737. San Luis came in second with 31,338, and Douglas was third with 30,815 (Table 6).

Truck crossings represent an important segment of commercial border crossing activity along the U.S. – Mexico border. Trucks carry the largest value and volume of merchandise across the border, and are the primary means of transportation for Mexican fresh produce. In 2016, Arizona's BPOE share of northbound truck crossings across the U.S. southern border increased slightly (0.1 percentage points) to 7.3% (Figure 20).

Truck traffic at the Nogales port increased 5.0% in 2016, and grew 15.9% between 2006 and 2016. Truck crossings at all Arizona BPOE combined increased 8.9% over the decade. However, Nogales and Douglas



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are the only Arizona BPOE to experience enough growth in crossings to put them above 2006 levels. Truck crossings at Lukeville, Naco, and San Luis ports are still well below levels of a decade ago. Data for Sasabe is no longer available in this category (Figure 21).

Nogales ranks among the top southern border ports for volume of truck crossings. In 2016, of the major southern BPOE, Laredo, TX, facilitated the largest volume, 2,083,964. El Paso, TX, came in second with 763,868, while Nogales was fourth (Table 7).

All the major southern ports experienced robust annual growth in 2016. Nogales had the fastest growth rate, 5.0%, and El Paso the slowest, 2.2%. Over the decade, truck traffic through Calexico East and El Paso grew more slowly than Nogales (15.9%), increasing 13.8% and 2.5%, respectively. Traffic increased 37.2% at Laredo and 24.1% at Hidalgo (Figure 22).

Nogales BPOE facilitates the second largest volume of Mexican fresh produce. The seasonal variability associated with the import of fresh produce through Nogales is reflected in higher truck crossing volumes during winter months (Dec.–May) (Figure 23).

How does Arizona compare?

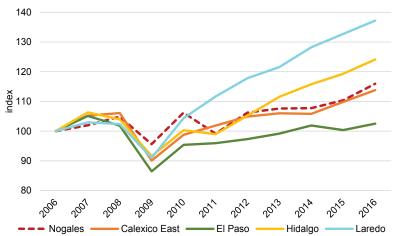
- 2006-2016: Truck crossings at Nogales grew 15.9%; El Paso grew the least (2.5%) and Laredo the most (37.2%) over the decade
- In 2016, Nogales' 5.0% annual growth rate was the fastest among the major southern BPOE

Table 7: Major BPOE Northbound Truck Crossings

| YEAR | Nogales | Calexico East | El Paso | Hidalgo | Laredo |
|------|---------|---------------|---------|---------|-----------|
| 2006 | 289,590 | 307,291 | 744,951 | 457,825 | 1,518,989 |
| 2007 | 295,267 | 323,348 | 782,936 | 486,756 | 1,563,836 |
| 2008 | 303,757 | 325,975 | 758,856 | 476,000 | 1,555,197 |
| 2009 | 276,877 | 276,894 | 644,272 | 419,426 | 1,382,319 |
| 2010 | 307,510 | 303,552 | 710,363 | 459,331 | 1,585,682 |
| 2011 | 287,091 | 312,973 | 714,699 | 453,235 | 1,695,916 |
| 2012 | 307,626 | 322,424 | 724,964 | 481,620 | 1,789,546 |
| 2013 | 311,669 | 325,690 | 738,914 | 510,706 | 1,846,282 |
| 2014 | 312,010 | 325,243 | 759,125 | 530,093 | 1,947,846 |
| 2015 | 319,747 | 337,474 | 747,702 | 546,259 | 2,015,773 |
| 2016 | 335,737 | 349,727 | 763,868 | 568,235 | 2,083,964 |

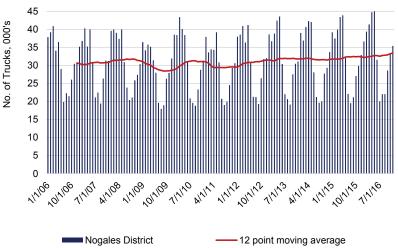
Source: Bureau of Transportation Statistics and EBRC

Figure 22: Major BPOE Northbound Truck Crossings (2006=100)



Source: Bureau of Transportation Statistics and EBRC

Figure 23: Nogales District (All AZ BPOE) Monthly Truck Crossings



Source: Bureau of Transportation Statistics and EBRC



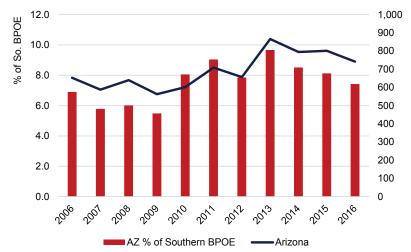
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Table 8: Train Crossings Major BPOE Northbound

| YEAR | Nogale | es | Calexico | East | El Pa | aso | Lared | lo |
|------|--------|-------|----------|-------|-------|-------|-------|-------|
| | | %ch | | %ch | | %ch | | %ch |
| 2006 | 653 | -16.8 | 485 | 16.9 | 2,449 | 51.4 | 3,850 | 11.3 |
| 2007 | 588 | -10.0 | 591 | 21.9 | 2,691 | 9.9 | 3,994 | 3.7 |
| 2008 | 640 | 8.8 | 417 | -29.4 | 2,473 | -8.1 | 3,921 | -1.8 |
| 2009 | 563 | -12.0 | 253 | -39.3 | 1,502 | -39.3 | 2,716 | -30.7 |
| 2010 | 602 | 6.9 | 243 | -4.0 | 1,046 | -30.4 | 3,036 | 11.8 |
| 2011 | 709 | 17.8 | 252 | 3.7 | 1,152 | 10.1 | 3,413 | 12.4 |
| 2012 | 657 | -7.3 | 252 | 0.0 | 1,392 | 20.8 | 3,492 | 2.3 |
| 2013 | 866 | 31.8 | 250 | -0.8 | 1,357 | -2.5 | 3,629 | 3.9 |
| 2014 | 795 | -8.2 | 252 | 0.8 | 1,434 | 5.7 | 3,758 | 3.6 |
| 2015 | 801 | 8.0 | 245 | -2.8 | 1,528 | 6.6 | 3,634 | -3.3 |
| 2016 | 742 | -7.4 | 250 | 2.0 | 1,652 | 8.1 | 3,739 | 2.9 |

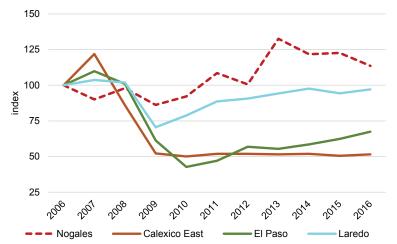
Source: Bureau of Transportation Statistics and EBRC

Figure 24: Train Crossings Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 25: Train Crossings Major BPOE Northbound (2006=100)



Source: Bureau of Transportation Statistics and EBRC

ogales is the oldest rail crossing along the U.S.–
Mexico border. Historically, the railroad has primarily served mining and agriculture. At present, the most important commodities are associated with auto manufacturing at the Ford Company in Hermosillo, Sonora.



Train Crossings

Train crossings are particularly vital to the auto industry in Sonora, as well as to the transport of commodities such as cement and garbanzo beans. Nogales ranked third among major ports in 2016, with 742 train crossings. Laredo facilitated the largest volume of train crossings, with 3,739 crossings, followed by El Paso with 1,652 (Table 8).

Train crossings declined 7.4% at the Nogales port in 2016, and its share of crossings at southern border ports decreased from 8.1% in 2015 to 7.4% in 2016 (Figure 24).

In 2016, train volume via the Nogales port was up 13.6% from a decade ago. In fact Nogales was the only major port to gain ground. While Laredo decreased only 2.9% over the decade, Calexico East and El Paso saw significant declines in train traffic, 48.4% and 32.5%, respectively (Figure 25).

Bus Crossings

The Nogales port of entry facilitated 10,077 bus crossings in 2016, a 4.0% increase over 2015, and accounted for 74.7% of all bus crossings at Arizona



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BPOE. Among major southern BPOE, Laredo facilitated the largest volume of bus crossings, 41,856, in 2016, 4.5% growth. Nogales and Laredo were the only major ports to post gains in 2016 (Table 9).

Arizona BPOE facilitated 13,490 bus crossings in 2016, an increase of 3.1% over the year. Arizona's percent share of bus crossings among all southern border ports has increased steadily since 2012. In 2015, the state's share was 6.7%, up from 6.1% in 2015 (Figure 26).

Between 2006 and 2016, bus crossing volume at the Nogales BPOE declined 12.5%. Although still a rather small port, Calexico East grew dramatically over the decade, with 2016 levels 91.4% higher than in 2006 reflecting the recent expansions at that port (not shown on chart due to scale). Overall, the volume of crossings at major southern BPOE decreased 1.0% over the decade (Figure 27).

How does Arizona compare?

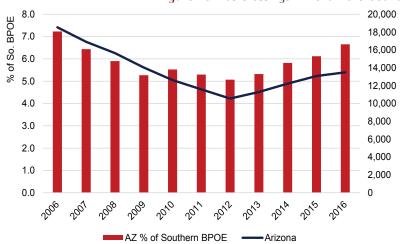
- 2006-2016: Train traffic via Nogales grew 13.6%. It was the only major port to gain ground over the decade.
- In 2016, 742 trains crossed at Nogales a 7.4% decline from 2015.
- 2006-2016: Bus crossings at Nogales decreased 12.5%. However, traffic has been gaining steadily since 2012. El Paso gained 1.4% and Laredo 12.8%; Hidalgo lost 8.4%. Due to recent port improvements, traffic at Calexico East grew 91.4%.

Table 9: Bus Crossings Major BPOE Northbound

| YEAR | Nogales | Calexico East | El Paso | Hidalgo | Laredo | Santa Teresa |
|------|---------|------------------|---------|---------|--------|-----------------|
| 2006 | 11,521 | 1,518 | 14,843 | 27,344 | 37,105 | 122 |
| 2007 | 12,375 | 1,170 | 18,530 | 28,942 | 37,106 | 164 |
| 2008 | 11,585 | 1,669 | 24,716 | 33,127 | 39,122 | 341 |
| 2009 | 11,096 | 2,451 | 19,474 | 28,407 | 43,342 | 329 |
| 2010 | 9,872 | 1,897 | 22,852 | 20,031 | 44,121 | 440 |
| 2011 | 9,144 | 3,193 | 23,421 | 20,992 | 42,980 | 315 |
| 2012 | 8,068 | 2,564 | 22,798 | 20,476 | 38,368 | 258 |
| 2013 | 8,699 | 2,571 | 21,595 | 22,521 | 38,017 | 215 |
| 2014 | 9,423 | 2,785 | 21,554 | 26,087 | 41,230 | 129 |
| 2015 | 9,694 | 3,064 | 19,739 | 25,776 | 40,065 | 118 |
| 2016 | 10,077 | 2,906 | 15,050 | 25,045 | 41,856 | 99 |

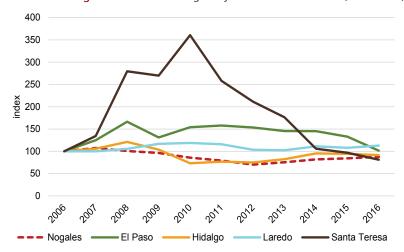
Source: Bureau of Transportation Statistics and EBRC

Figure 26: Bus Crossings Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 27: Bus Crossings Major BPOE Northbound (2006=100)



Source: Bureau of Transportation Statistics and EBRC



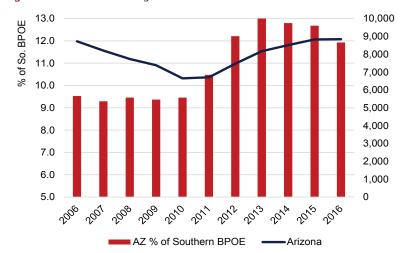
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Table 10: Vehicle Crossings Arizona BPOE Northbound (000s)

| YEAR | Douglas | Lukeville | Naco | Nogales | San Luis | Sasabe |
|------|---------|-----------|------|---------|----------|--------|
| 2006 | 1,953 | 438 | 316 | 3,283 | 2,703 | 35 |
| 2007 | 1,747 | 447 | 319 | 3,181 | 2,481 | 33 |
| 2008 | 1,691 | 410 | 264 | 3,027 | 2,314 | 30 |
| 2009 | 1,514 | 323 | 279 | 2,991 | 2,253 | 28 |
| 2010 | 1,432 | 300 | 263 | 2,601 | 2,033 | 21 |
| 2011 | 1,393 | 256 | 236 | 2,641 | 2,171 | 15 |
| 2012 | 1,405 | 270 | 270 | 2,823 | 2,690 | 14 |
| 2013 | 1,471 | 290 | 285 | 3,162 | 2,949 | 16 |
| 2014 | 1,572 | 316 | 298 | 3,287 | 3,028 | 18 |
| 2015 | 1,591 | 344 | 297 | 3,470 | 3,107 | 20 |
| 2016 | 1,615 | 366 | 302 | 3,477 | 3,062 | 22 |

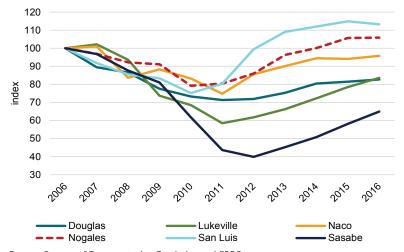
Source: Bureau of Transportation Statistics and EBRC

Figure 28: Vehicle Crossings Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 29: Vehicle Crossings Arizona BPOE Northbound (2006=100)



Source: Bureau of Transportation Statistics and EBRC

ersonal vehicles are the primary mode of transportation for people crossing the border. These data measure crossings by local residents for business, shopping, tourism, and visiting family and friends. Data are available only for northbound crossings, and include all personal vehicles regardless of nationality, including U.S. and Canadian visitors.

Personal Vehicle Crossings

Personal vehicles facilitate the largest travel volume of any mode along the U.S.–Mexico border. Nogales is the busiest port in Arizona, with 3.5 million personal vehicle crossings in 2016. This volume remained essentially unchanged in 2016 increasing just 0.2% over the year. Other major Arizona ports for vehicle crossings are San Luis (3.1 million) and Douglas (1.6 million) (Table 10).

All Arizona border ports of entry combined facilitated 8.8 million personal vehicle crossings in 2016, 0.2% growth. While the volume of crossings held steady in 2016, Arizona's percent share of vehicle crossings at all southern border ports declined slightly from 12.7% in 2015 to 11.9% in 2016 (Figure 28).

All Arizona BPOE saw gains in 2016 except San Luis which lost 1.4%. Sasabe led with 11.6% (but had very small volume), followed by Lukeville (6.5%), Naco (1.8%), Douglas (1.5%), and San Luis (2.6%) (Figure 29).

Although Nogales is Arizona's busiest port, it has the smallest volume of personal vehicle traffic among the



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major southern BPOE. With 3.5 million crossings in 2016, it came in just behind Calexico East at 3.8 million. El Paso lead with 12.5 million. While traffic volume in Nogales held steady in 2016, Calexico East gained 5.7%, El Paso 2.2%, and Hidalgo 2.8%. Laredo was the only port to lose ground 2016, declining 2.5% (Table 11).

Over the decade (2006-2016) traffic volume at Nogales BPOE grew 5.9% and all Arizona ports combined gained 1.4%. In fact, Nogales was the only major southern BPOE see increased personal vehicle traffic over the decade, except Calexico East which grew 1.2%. Traffic at El Paso declined 19.7%, at Hidalgo 27.1%, and at Laredo 15.7%.

Calexico East and Nogales have regained or exceeded pre-recessionary volumes while the largest southern ports, El Paso, Hidalgo, and Laredo, are still well below pre-recession highs. Indeed, traffic through all southern BPOE combined is down 19.0% from a decade ago (Figure 30).

Crossings at Arizona BPOE show seasonality, tending to be lower in February and higher in May (Figure 31).

How does Arizona compare?

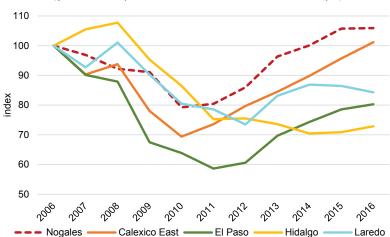
- 2006-2016: Personal vehicle traffic at Nogales BPOE grew 5.9%. Other major BPOE experienced double digit declines except Calexico East which grew 1.2%.
- In 2016, traffic volume at Laredo declined 2.5% while at Nogales it grew only 0.2%. Calexico East gained 5.7%, Hidalgo 2.8%, and El Paso 2.2%.

Table 11: Personal Vehicle Crossings Major BPOE Northbound (000s)

| Nogales | Calexico East | El Paso | Hidalgo | Laredo |
|---------|--|---|--|--|
| 3,283 | 3,785 | 15,603 | 6,480 | 6,042 |
| 3,181 | 3,418 | 14,062 | 6,835 | 5,600 |
| 3,027 | 3,549 | 13,716 | 6,983 | 6,105 |
| 2,991 | 2,954 | 10,529 | 6,178 | 5,452 |
| 2,601 | 2,627 | 9,968 | 5,604 | 4,864 |
| 2,641 | 2,785 | 9,148 | 4,878 | 4,746 |
| 2,823 | 3,017 | 9,462 | 4,894 | 4,440 |
| 3,162 | 3,199 | 10,877 | 4,768 | 5,023 |
| 3,287 | 3,400 | 11,595 | 4,565 | 5,251 |
| 3,470 | 3,622 | 12,258 | 4,594 | 5,224 |
| 3,477 | 3,829 | 12,526 | 4,721 | 5,092 |
| | 3,283 3,181 3,027 2,991 2,601 2,641 2,823 3,162 3,287 3,470 | 3,283 3,785 3,181 3,418 3,027 3,549 2,991 2,954 2,601 2,627 2,641 2,785 2,823 3,017 3,162 3,199 3,287 3,400 3,470 3,622 | 3,283 3,785 15,603 3,181 3,418 14,062 3,027 3,549 13,716 2,991 2,954 10,529 2,601 2,627 9,968 2,641 2,785 9,148 2,823 3,017 9,462 3,162 3,199 10,877 3,287 3,400 11,595 3,470 3,622 12,258 | 3,283 3,785 15,603 6,480 3,181 3,418 14,062 6,835 3,027 3,549 13,716 6,983 2,991 2,954 10,529 6,178 2,601 2,627 9,968 5,604 2,641 2,785 9,148 4,878 2,823 3,017 9,462 4,894 3,162 3,199 10,877 4,768 3,287 3,400 11,595 4,565 3,470 3,622 12,258 4,594 |

Source: Bureau of Transportation Statistics and EBRC

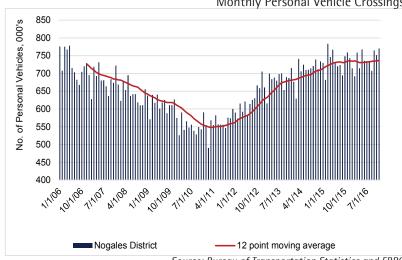
Figure 30: Major BPOE Northbound Vehicle Crossings (2006=100)



Source: Bureau of Transportation Statistics and EBRC

Figure 31: Nogales District (All AZ BPOE)

Monthly Personal Vehicle Crossings



Source: Bureau of Transportation Statistics and EBRC



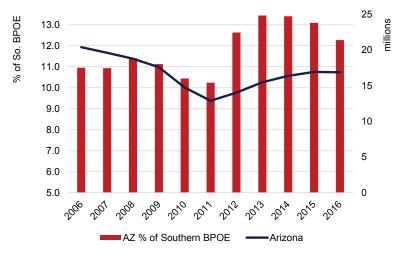
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Table 12: Personal Vehicle Passengers Arizona Northbound

| YEAR | Douglas | Lukeville | Naco | Nogales | San Luis | Sasabe |
|------|-----------|-----------|---------|-----------|-----------|---------|
| 2006 | 4,507,435 | 1,269,459 | 906,971 | 8,401,467 | 5,206,664 | 90,107 |
| 2007 | 4,032,292 | 1,296,599 | 860,990 | 8,587,479 | 4,712,950 | 103,065 |
| 2008 | 3,907,456 | 1,188,331 | 704,678 | 8,472,273 | 4,417,449 | 78,791 |
| 2008 | 3,893,330 | 1,087,799 | 660,822 | 7,636,384 | 4,234,176 | 66,760 |
| 2010 | 2,892,520 | 695,156 | 511,573 | 6,729,330 | 3,860,476 | 37,201 |
| 2011 | 2,615,027 | 538,525 | 465,186 | 5,289,391 | 3,941,304 | 29,610 |
| 2012 | 2,610,492 | 581,467 | 493,205 | 5,729,756 | 4,575,051 | 25,665 |
| 2013 | 2,703,712 | 624,739 | 509,178 | 6,510,096 | 5,088,810 | 26,164 |
| 2014 | 2,821,853 | 653,483 | 525,988 | 6,798,080 | 5,536,747 | 31,157 |
| 2015 | 2,850,942 | 751,471 | 514,875 | 7,190,065 | 5,575,238 | 35,667 |
| 2016 | 2,908,282 | 887,287 | 510,291 | 7,060,684 | 5,462,649 | 41,108 |

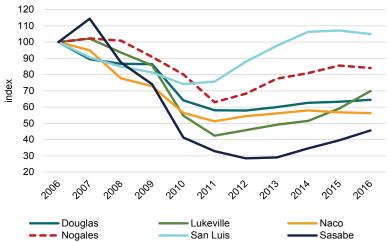
Source: Bureau of Transportation Statistics and EBRC

Figure 32: Personal Vehicle Passengers Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 33: Arizona BPOE Northbound Vehicle Passengers (2006=100)



Source: Bureau of Transportation Statistics and EBRC

ersonal vehicle passenger crossings through Arizona–Sonora border ports of entry (BPOE) reflect the composite effects of both the economic ties between Arizona and Sonora, as well as border crossing procedures that affect wait times.



After steady growth since 2011, personal vehicle passengers crossing at Arizona's southern BPOE levelled off in 2016. Still, almost 17 million people travelling in personal vehicles crossed via Arizona's border ports in 2016, a 0.3% decline from 2015. Nogales facilitated 7.1 million passenger crossings (1.8% decline), San Luis 5.5 million (2.0% decline). Douglas and Lukeville were the only Arizona BPOE to improve this measure in 2016, growing 18.1% and 2.0%, respectively (Table 12).

Arizona BPOE's share of personal vehicle passenger crossings of total southern BPOE passenger crossings also shrank in 2016, declining from 13.1% in 2015 to 12.3% (Figure 32).

In 2016, San Luis recovered to 104.5% of its 2006 pre-recession level. Next was Nogales at 84.0% of its level from decade ago, followed by Luke-ville at 69.9%, Douglas at 64.5%, Naco at 56.3%, and Sasabe at 45.6% (Figure 33).

Among major southern BPOE, El Paso facilitates the largest volume of vehicle passenger crossings, 20.7 million in 2016. This is followed by



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Laredo with 10.7 million. Nogales and Calexico East were comparable in volume both at a little over 7 million passenger crossings in 2016 (Table 13).

In 2016, personal vehicle passenger traffic at all the major southern BPOE was significantly below 2006 levels, although all ports have generally been on the upswing since 2011. Calexico East achieved 90.6% of its 2006 level, Nogales 84.0%, Hidalgo 76.3%, and Laredo 75.4% (Figure 34).

Since the early 2000's, periods of economic slowdown, together with increased wait times at border crossings have reduced the number of personal vehicle crossings and the number of passengers, although not at the same rate. It is interesting to note that personal vehicle crossings have recovered more quickly than total personal vehicle passengers (Figure 35).

How does Arizona compare?

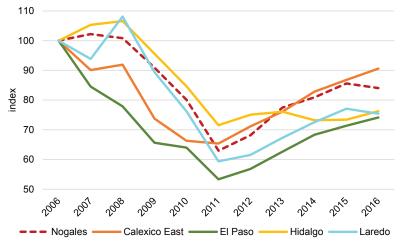
- 2006-2016: All the major so. border ports have yet to regain pre-recessionary levels. Calexico East and Nogales are ahead of the pack having recovered 90.6% and 84.0%, respectively.
- In 2016, traffic declined 1.8% at Nogales and 2.2% at Laredo; it increased 4.4% at Calexico East, 3.9% at El Paso and Hidalgo.
- Personal vehicle crossings have recovered faster than personal vehicle passengers

Table 13: Major BPOE Northbound Vehicle Passengers

| YEAR | Nogales | Calexico East | El Paso | Hidalgo | Laredo |
|------|-----------|---------------|------------|------------|------------|
| 2006 | 8,401,467 | 7,771,283 | 27,999,510 | 12,632,201 | 14,244,080 |
| 2007 | 8,587,479 | 7,003,669 | 23,674,992 | 13,304,851 | 13,367,960 |
| 2008 | 8,472,273 | 7,144,168 | 21,806,353 | 13,467,615 | 15,397,879 |
| 2009 | 7,636,384 | 5,731,129 | 18,377,270 | 12,073,543 | 12,729,210 |
| 2010 | 6,729,330 | 5,152,282 | 17,919,814 | 10,691,969 | 10,857,512 |
| 2011 | 5,289,391 | 5,082,318 | 14,940,566 | 9,040,470 | 8,458,293 |
| 2012 | 5,729,756 | 5,530,414 | 15,908,404 | 9,484,335 | 8,767,939 |
| 2013 | 6,510,096 | 5,915,717 | 17,545,433 | 9,608,966 | 9,588,200 |
| 2014 | 6,798,080 | 6,437,937 | 19,134,740 | 9,252,030 | 10,335,481 |
| 2015 | 7,190,065 | 6,744,400 | 19,982,407 | 9,271,544 | 10,985,281 |
| 2016 | 7,060,684 | 7,041,582 | 20,767,737 | 9,635,092 | 10,745,977 |

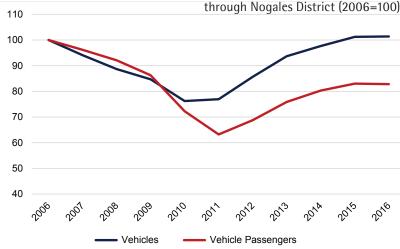
Source: Bureau of Transportation Statistics and EBRC

Figure 34: Major BPOE Northbound Vehicle Passengers (2006=100)



Source: Bureau of Transportation Statistics and EBRC

Figure 35: Number of Vehicles & Vehicle Passengers



Source: Bureau of Transportation Statistics and EBRC



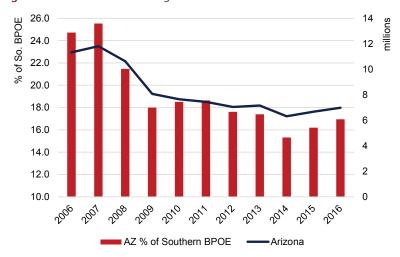
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Table 14: Pedestrian Crossings Arizona Northbound

| YEAR | Douglas | Lukeville | Naco | Nogales | San Luis | Sasabe |
|------|-----------|-----------|--------|-----------|-----------|--------|
| 2006 | 760,211 | 81,873 | 90,020 | 7,726,045 | 2,669,311 | 1,339 |
| 2007 | 952,491 | 94,455 | 95,508 | 7,722,877 | 2,939,684 | 1,191 |
| 2008 | 1,287,836 | 122,264 | 89,175 | 6,568,207 | 2,564,499 | 1,314 |
| 2009 | 1,314,745 | 93,815 | 81,815 | 4,038,356 | 2,537,177 | 1,013 |
| 2010 | 1,096,084 | 60,950 | 78,748 | 3,971,040 | 2,440,158 | 1,127 |
| 2011 | 1,030,357 | 41,608 | 79,115 | 3,525,540 | 2,762,696 | 1,016 |
| 2012 | 1,198,838 | 39,513 | 72,896 | 3,238,929 | 2,497,321 | 977 |
| 2013 | 1,804,110 | 40,699 | 81,146 | 2,912,077 | 2,315,369 | 730 |
| 2014 | 1,011,564 | 44,716 | 79,325 | 2,886,022 | 2,287,955 | 1,369 |
| 2015 | 1,069,031 | 48,627 | 75,267 | 3,131,978 | 2,351,506 | 767 |
| 2016 | 851,997 | 45,995 | 76,834 | 3,420,708 | 2,583,851 | 983 |

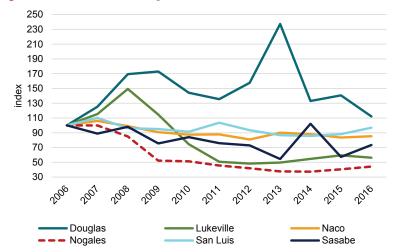
Source: Bureau of Transportation Statistics and EBRC

Figure 36: Pedestrians Crossings Arizona BPOE Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 37: Pedestrian Crossings Arizona BPOE Northbound (2006=100)



Source: Bureau of Transportation Statistics and EBRC

he dynamics of pedestrian crossings through the Arizona-Sonora border ports of entry (BPOE) reflect the composite effects of both the economic and familial ties between Arizona and Sonora, as well as border crossing procedures that affect wait times.



Pedestrian Crossings

There were 3.4 million pedestrian crossings at Nogales, Arizona's busiest port, in 2016, a 9.2% year-over-year gain. San Luis came in second with 2.6 million (up 9.9%), and Douglas third with 0.8 million (down 20.3%). Traffic picked up at two of Arizona's smaller ports, Naco gained 2.1% and Sasabe 28.2%. Crossings declined 5.4% at Lukeville (Table 14).

Arizona's percent share of pedestrian crossings at all southern BPOE increased 0.8 percentage points to reach 17.0% in 2016 (Figure 36).

The only Arizona BPOE to attain or surpass 2006 pre-recession pedestrian crossing levels in 2016 was Douglas which was 12.1% higher than a decade ago. San Luis was 3.2% below its 2006 crossing volume, and Nogales was down 55.2% from a decade ago (Figure 37).

Among major southern BPOE, Nogales' 3.4 million pedestrian crossings in 2016 ran a close third just behind Laredo's 3.5 million. El Paso led with 7.0 million pedestrian crossings (Table 15).



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Hidalgo, the only major southern port to improve pedestrian traffic over the decade, was up 21.4% from 2006. Nogales was down 55.7%, Laredo 15.8%, and El Paso 6.2% (Figure 38).

The number of vehicle passenger crossings has grown faster at Arizona BPOE than the number of pedestrian crossings. This may reflect increased border crossing wait times for pedestrians, as well as, reduced job opportunities in U.S. border communities post recession. Pedestrian crossers typically cross more for work related purposes than persons crossing in vehicles. The latter travelling more for business and leisure (Figure 39).

How does Arizona compare?

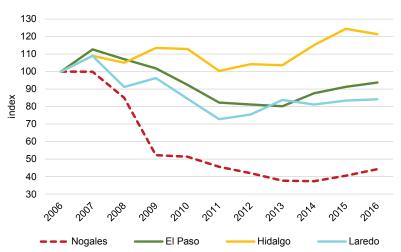
- 2006-2016: The only major southern BPOE to increase pedestrian traffic over the decade was Hidalgo which increased 21.4%; Nogales declined 55.2%, Lareodo 15.8%, and El Paso 6.2%.
- 2006-2016: Among Arizona BPOE Douglas grew 12.3%, San Luis decreased 3.2%.
- In 2016, Nogales BPOE facilitated 3.4 million pedestrain crossings, 9.9% growthg over the year. the only major BPOE to grow faster in 2016 was Calexico East at 13.7%. El Paso grew 2.7%, Laredo was essentially unchanged over the year with 0.9% growth, and Hidalgo decreased 2.4%.

Table 15: Pedestrian Crossings at Major BPOE Northbound

| YEAR | Nogales | Calexico East | El Paso | Hidalgo | Laredo |
|------|-----------|---------------|-----------|-----------|-----------|
| 2006 | 7,726,045 | 12,893 | 7,500,141 | 1,989,201 | 4,245,842 |
| 2007 | 7,722,877 | 9,429 | 8,454,434 | 2,168,660 | 4,625,416 |
| 2008 | 6,568,207 | 18,030 | 8,029,106 | 2,089,603 | 3,873,872 |
| 2009 | 4,038,356 | 33,930 | 7,637,649 | 2,257,385 | 4,090,191 |
| 2010 | 3,971,040 | 58,771 | 6,930,357 | 2,245,341 | 3,587,763 |
| 2011 | 3,525,540 | 117,624 | 6,172,346 | 1,998,203 | 3,089,561 |
| 2012 | 3,238,929 | 318,599 | 6,090,841 | 2,073,485 | 3,206,372 |
| 2013 | 2,912,077 | 321,586 | 6,015,421 | 2,061,995 | 3,558,660 |
| 2014 | 2,886,022 | 310,344 | 6,572,313 | 2,290,469 | 3,447,437 |
| 2015 | 3,131,978 | 223,374 | 6,847,689 | 2,474,962 | 3,542,190 |
| 2016 | 3,420,708 | 253,992 | 7,032,715 | 2,414,852 | 3,573,992 |

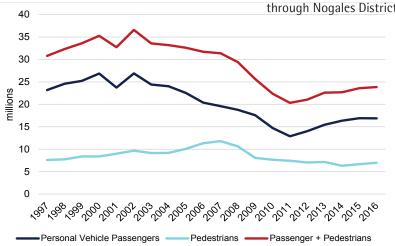
Source: Bureau of Transportation Statistics and EBRC

Figure 38: Major BPOE Northbound Pedestrian Crossings (2006=100)



Source: Bureau of Transportation Statistics and EBRC

Figure 39: No. of Pedestrians plus Vehicle Passengers Northbound through Nogales District



Source: Bureau of Transportation Statistics and EBRC



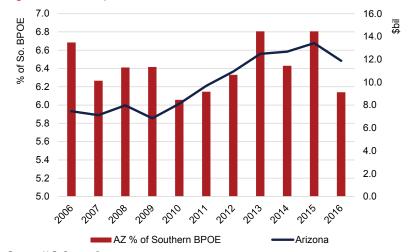
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Table 16: U.S.Exports via So. Border States (\$bil)

| | AZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|------|-------|------|-------|-------|-------|
| 2006 | 7.5 | 25.7 | 17.6 | 10.2 | 0.4 | -0.3 | 95.4 | 11.0 |
| 2007 | 7.1 | -4.5 | 17.0 | -3.1 | 0.5 | 12.9 | 97.8 | 2.5 |
| 2008 | 8.0 | 12.1 | 18.5 | 8.5 | 0.4 | -15.3 | 108.7 | 11.2 |
| 2009 | 6.8 | -14.3 | 15.6 | -15.6 | 1.6 | 271.8 | 92.8 | -14.6 |
| 2010 | 8.1 | 18.7 | 18.5 | 18.4 | 4.9 | 213.4 | 117.4 | 26.6 |
| 2011 | 9.7 | 19.3 | 20.9 | 13.2 | 7.5 | 53.2 | 140.4 | 19.5 |
| 2012 | 10.9 | 12.9 | 22.1 | 5.8 | 8.1 | 8.5 | 152.6 | 8.7 |
| 2013 | 12.5 | 14.1 | 22.6 | 2.0 | 8.7 | 6.7 | 159.7 | 4.7 |
| 2014 | 12.7 | 1.6 | 23.9 | 5.7 | 9.9 | 13.7 | 170.2 | 6.6 |
| 2015 | 13.4 | 5.9 | 24.9 | 4.2 | 10.3 | 4.3 | 164.5 | -3.3 |
| 2016 | 11.9 | -11.5 | 24.6 | -1.2 | 10.8 | 4.8 | 161.9 | -1.6 |

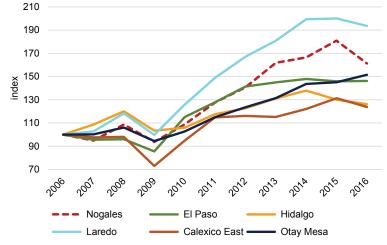
Source: U.S. Census Bureau

Figure 40: U.S. Exports via Arizona BPOE



Source: U.S. Census Bureau

Figure 41: U.S. Exports via So. BPOE (2006=100)



Source: U.S. Census Bureau

rizona border ports of entry play a pivotal role in facilitating trade exchanges between the U.S. and Mexico. The dynamics of commodity flows reflect the composite effects of national and local border-specific economies, as well as the physical and human infrastructure capacities of BPOE.



U.S. Exports to Mexico

Arizona BPOE facilitated \$11.9 billion in U.S. exports to Mexico in 2016, this was a decline of \$1.5 billion (11.5%) over the year. U.S. exports travelling south via California ports declined 1.2% and in Texas 1.6%. New Mexico, which has been catching up with Arizona in volume, reached \$10.8 billion in 2016, a 4.8% gain. With the exception of 2007 and 2009, the value of U.S. exports moving through Arizona BPOE experienced robust growth throughout the last decade until this year (Table 16).

In 2016, 6.1% of U.S. exports to Mexico through southern BPOE travelled via Arizona BPOE, down from 6.8% in 2015 (Figure 40).

Despite this year's slowdown, U.S. exports through Nogales were 61.3% above 2006 levels. Of the major southern BPOE, only Laredo displayed a larger percent gain (93.6%) over the decade (Figure 41).

How does Arizona compare?

- ▶ In 2016, Arizona BPOE share of border states commodity flows decreased from 6.8% to 6.1%
- 2006-2016: exports via Nogales BPOE increased 61.3%, the only major port which grew faster was Laredo with 93.6%

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lectric and electronic manufacturing product exports travelling via Arizona's BPOE reflect the effects of manufacturing integration between Arizona and Mexico, as well as Canada, and other U.S. states that use Arizona's border ports for their exports to Mexico.

U.S. Exports of Electric and Electronic Products

In 2016, \$3.1 billion in U.S. electric and electronic manufacturing products to Mexico passed through Arizona BPOE, down 4.7% from 2015. With some bumps along the way, overall the last decade has been a period of growth for this important sector which was up 89.1% from 2006 (Table 17).

Arizona BPOE share of this export category was 5.7% in 2016, down from 6.0% in 2015 and its 6.4% share of a decade ago (Figure 42).

The dollar value of U.S. exports of electric and electronic products through Nogales were 89.1% higher in 2016 than a decade ago. Among the major ports, Laredo grew 178.4%, Calexico East 95.1%, Otay Mesa 91.9%, El Paso 72.3%, and Hidalgo 32.3% (Figure 43).

How does Arizona compare?

- In 2016, Arizona's share of border states was 5.7%, down from its 6.0% share in 2015
- 2006-2016: Exports through Nogales BPOE increased 89.1%, only Laredo, Calexico East, and Otay Mesa grew faster

Table 17: U.S. Exports Electric & Electronic Prod. via So. Border States (\$bil)

| | ΑZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|------|-------|------|--------|-------|------|
| 2006 | 1.72 | 19.7 | 4.13 | 1.2 | 0.03 | -8.7 | 18.88 | 7.4 |
| 2007 | 2.21 | 28.5 | 4.90 | 18.8 | 80.0 | 140.6 | 23.56 | 24.8 |
| 2008 | 1.97 | -10.7 | 4.84 | -1.3 | 0.08 | 7.3 | 25.02 | 6.2 |
| 2009 | 1.85 | -6.0 | 4.32 | -10.8 | 1.17 | 1340.1 | 22.99 | -8.1 |
| 2010 | 2.09 | 12.9 | 5.24 | 21.3 | 3.88 | 231.5 | 28.38 | 23.4 |
| 2011 | 2.40 | 14.7 | 5.53 | 5.6 | 5.86 | 51.1 | 29.69 | 4.6 |
| 2012 | 2.91 | 21.4 | 5.90 | 6.7 | 5.94 | 1.4 | 32.19 | 8.4 |
| 2013 | 2.80 | -3.7 | 6.32 | 7.2 | 6.26 | 5.4 | 35.01 | 8.7 |
| 2014 | 2.91 | 3.7 | 7.11 | 12.5 | 7.25 | 15.7 | 36.32 | 3.7 |
| 2015 | 3.29 | 13.2 | 7.92 | 11.3 | 8.11 | 11.9 | 37.35 | 2.8 |
| 2016 | 3.14 | -4.7 | 7.62 | -3.8 | 8.52 | 5.1 | 36.84 | -1.3 |

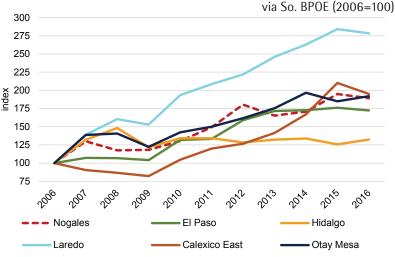
Source: U.S. Census Bureau

Figure 42: U.S. Exports of Electric & Electronic Products via Arizona BPOE



Source: U.S. Census Bureau

Figure 43: U.S. Exports of Electric & Electronic Products



Source: U.S. Census Bureau



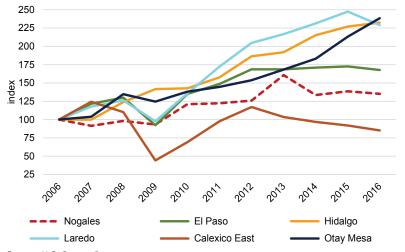
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Table 18: U.S. Exports of Transportation Prod. via So. Border States (\$bil)

| | AZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|------|-------|------|-------|-------|-------|
| 2006 | 1.32 | 90.1 | 2.25 | 54.2 | 0.21 | 14.8 | 13.31 | 2.2 |
| 2007 | 1.18 | -10.5 | 2.26 | 0.3 | 0.14 | -35.2 | 15.15 | 13.8 |
| 2008 | 1.27 | 7.6 | 2.45 | 8.4 | 0.08 | -40.9 | 16.15 | 6.6 |
| 2009 | 1.21 | -4.6 | 1.98 | -19.2 | 0.06 | -27.1 | 12.88 | -20.3 |
| 2010 | 1.59 | 31.5 | 2.33 | 17.6 | 0.09 | 44.9 | 17.85 | 38.6 |
| 2011 | 1.59 | 0.1 | 2.45 | 5.2 | 0.14 | 57.5 | 22.46 | 25.8 |
| 2012 | 1.72 | 8.2 | 2.73 | 11.3 | 0.20 | 49.7 | 25.74 | 14.6 |
| 2013 | 2.11 | 22.3 | 2.78 | 2.1 | 0.45 | 120.3 | 27.14 | 5.4 |
| 2014 | 1.75 | -16.8 | 2.90 | 4.2 | 0.59 | 31.3 | 28.77 | 6.0 |
| 2015 | 1.85 | 5.8 | 3.44 | 18.8 | 0.24 | -59.4 | 30.85 | 7.2 |
| 2016 | 1.76 | -5.0 | 3.38 | -1.8 | 0.16 | -34.4 | 29.38 | -4.7 |

Source: U.S. Census Bureau

Figure 44: U.S. Exports of Transportation Products via Arizona BPOE



Source: U.S. Census Bureau

Figure 45: U.S. Exports of Transportation Prod. via So. BPOE (2006=100)



Source: U.S. Census Bureau

exico's transportation equipment manufacturing sector has become one of the keystones of North American industrial integration. A recent expansion of the Ford Motor Company in Sonora has enhanced the role of Arizona's BPOE.



In 2016, \$1.8 billion of U.S. transportation equipment was exported to Mexico via Arizona BPOE, a 5.0% decrease over the year (Table 18). Of the major BPOE, Otay Mesa grew the fastest at 11.8%, followed by Eagle Pass at 8.5%, and Hidalgo at 2.4%. El Paso lost 2.9% in 2016, Laredo 7.4%, and Calexico East 7.2%.

Sector exports travelling via Nogales BPOE grew only 0.1% in 2016, yet were still 33.7% above 2006 levels. Over the decade exports via Otay Mesa grew 138.3%, Laredo, which facilitates by far the largest volume (\$20.9 billion), grew 129.0%, and El Paso 67.7% (Figure 44).

Arizona BPOE share of U.S. transportation equipment manufacturing products shipped through all southern BPOE remained at 5.1%, unchanged from 2015. Arizona's share was 7.6% in 2006 (Figure 45).

How does Arizona compare?

- 2006-2016: Exports via Nogales grew 33.7%, Otay Mesa 138.3%, Laredo 129.0%, El Paso 67.7%, and declined 14.8% at Calexico East.
- In 2016, exports in this sector via Arizona BPOE decreased 5.0%, 1.8% in California, 4.7% in Texas, and 34.4% in New Mexico.



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mports through Arizona border ports of entry reflect the composite effects of both the trade between Arizona and Mexico, and other U.S. states that use Arizona's border ports to import goods from Mexico. Also reflected in commodity flow dynamics are the relative infrastructure capacities of the southern border ports of entry.

U.S. Imports from Mexico

U.S. imports from Mexico through Arizona BPOE held steady in 2016 at \$18.3 billion. Like Arizona, goods travelling north via Texas ports remained essentially unchanged at \$203.0 billion, while they declined 2.6% to \$38.9 billion in California, and increased 1.9% to reach \$12.1 billion in New Mexico (Table 19).

In 2016, Arizona BPOE share of U.S. imports from Mexico via southern BPOE remained constant at 7.0% (Figure 46).

Imports via the Nogales BPOE gained 28.8% between 2006 and 2016, the smallest decade gain among the major southern BPOE. Over the decade, Laredo grew 80.5%, Hidalgo 62.4%, El Paso 55.6%, Otay Mesa 44.6%, and Calexico East 41.7% (Figure 47).

How does Arizona compare?

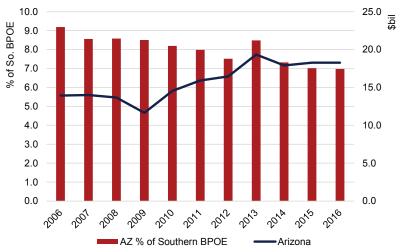
- 2006-2016: Imports via Nogales BPOE increased 28.8%, the smallest decade gain of any major southern port.
- In 2016, U.S. imports from Mexico through Arizona BPOE held steady at \$18.3 billion.

Table 19: U.S. Imports via So. Border States (\$bil)

| | AZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|-------|-------|-------|-------|-------|-------|--------|-------|
| 2006 | 13.92 | 31.8 | 28.60 | 19.1 | 0.78 | -2.0 | 132.14 | 13.6 |
| 2007 | 14.01 | 0.6 | 30.37 | 6.2 | 0.96 | 23.6 | 141.34 | 7.0 |
| 2008 | 13.67 | -2.4 | 30.24 | -0.4 | 0.88 | -8.1 | 143.19 | 1.3 |
| 2009 | 11.65 | -14.8 | 25.90 | -14.4 | 2.97 | 236.8 | 115.05 | -19.7 |
| 2010 | 14.53 | 24.8 | 28.82 | 11.3 | 8.45 | 184.2 | 150.27 | 30.6 |
| 2011 | 15.92 | 9.5 | 29.84 | 3.5 | 10.38 | 22.9 | 175.12 | 16.5 |
| 2012 | 16.45 | 3.3 | 31.19 | 4.5 | 11.83 | 13.9 | 191.04 | 9.1 |
| 2013 | 19.34 | 17.6 | 32.09 | 2.9 | 10.30 | -13.0 | 192.77 | 0.9 |
| 2014 | 17.90 | -7.4 | 35.73 | 11.3 | 9.63 | -6.4 | 205.00 | 6.3 |
| 2015 | 18.27 | 2.0 | 39.90 | 11.7 | 11.82 | 22.7 | 203.19 | -0.9 |
| 2016 | 18.27 | 0.0 | 38.85 | -2.6 | 12.05 | 1.9 | 203.04 | -0.1 |

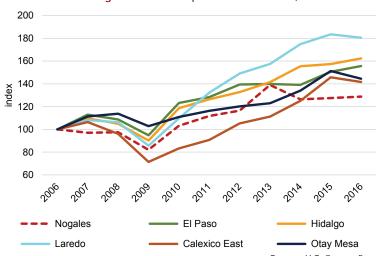
Source: U.S. Census Bureau

Figure 46: U.S. Imports via Arizona BPOE



Source: U.S. Census Bureau

Figure 47: U.S. Imports via So. BPOE (Index 2006=100)



Source: U.S. Census Bureau



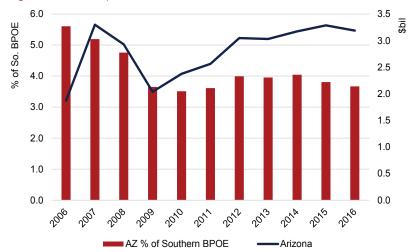
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Table 20: U.S. Imports Electric & Electronic Prod. via So. Border States (\$bil)

| | ΑZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|-------|-------|-------|-------|-------|-------|
| 2006 | 1.87 | 5.5 | 5.47 | -1.9 | 0.16 | 7.0 | 26.20 | 9.5 |
| 2007 | 3.30 | 76.4 | 18.17 | 232.1 | 0.35 | 112.0 | 42.29 | 61.4 |
| 2008 | 2.93 | -11.2 | 17.91 | -1.4 | 0.31 | -10.8 | 41.18 | -2.6 |
| 2009 | 2.04 | -30.4 | 15.24 | -14.9 | 2.15 | 597.1 | 36.99 | -10.2 |
| 2010 | 2.38 | 16.6 | 15.84 | 3.9 | 7.06 | 228.4 | 43.11 | 16.5 |
| 2011 | 2.56 | 7.9 | 15.87 | 0.2 | 8.49 | 20.4 | 44.72 | 3.7 |
| 2012 | 3.05 | 19.0 | 16.64 | 4.8 | 9.94 | 17.0 | 47.42 | 6.0 |
| 2013 | 3.03 | -0.6 | 16.68 | 0.2 | 8.47 | -14.8 | 49.06 | 3.5 |
| 2014 | 3.17 | 4.8 | 17.99 | 7.8 | 7.73 | -8.7 | 50.19 | 2.3 |
| 2015 | 3.29 | 3.5 | 20.46 | 13.8 | 10.11 | 30.7 | 53.17 | 5.9 |
| 2016 | 3.19 | -3.0 | 18.72 | -8.5 | 10.11 | 0.0 | 55.49 | 4.4 |

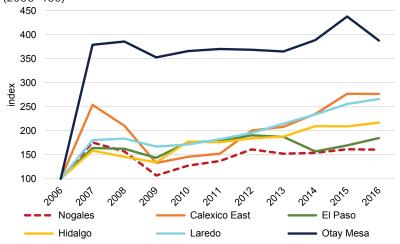
Source: U.S. Census Bureau

Figure 48: U.S. Imports of Electric & Electronic Prod. via Arizona BPOE



Source: U.S. Census Bureau

Figure 49: U.S. Imports of Electric and Electronic Prod. via So. BPOE (2006=100)



Source: U.S. Census Bureau

lectric and electronic manufacturing products are the top commodity imported via Arizona's border ports of entry, and a key component of the North American production sharing system.



Electric and electronic manufacturing imports from Mexico travelling via Arizona BPOE declined from \$3.3 to \$3.2 billion (3.1%) in 2016. Overall, the value of imports in this sector faciliated by Arizona BPOE grew 70.5% from a decade ago (Table 20).

In 2016, the Arizona BPOE share of product imports in this sector was 3.7% in 2016, down from 3.8% in 2015; well below its 5.6% share a decade ago (Figure 48).

Electric and electronic product imports from Mexico via the Nogales BPOE grew 60.7% between 2006 to 2016. However, all other major BPOE experienced much larger increases in this sector over the decade. Otay Mesa led the pack growth with 240.4% growth, followed by Calexico East with 176.7%, Laredo 266.0%, Hidalgo 116.9%, and El Paso 84.8% (Figure 49).

How does Arizona compare?

- In 2016, \$3.2 in electric and electronic manufacturing products imported via Arizona BPOE, down 3.0% over the year.
- ▶ 2006-2016: Imports via Nogales BPOE grew 60.7% significantly slower than other major BPOE.



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rizona BPOE are key in the import of cars and transportation equipment from Mexico. The role of the state's ports has been enhanced by recent expansion of Ford Motor Company in Sonora further integrating Arizona's economy into the North American transportation production system.

U.S. Imports of Transportation Products from Mexico

In 2016, \$7.0 billion worth of transportation products were imported from Mexico through Arizona BPOE, a 2.2% decline from 2015. Arizona was the only southern border state see a contraction in this import sector. Imports via California ports grew 8.5%, in New Mexico 3.3%, and volumes through Texas remained essentially unchanged (Table 21).

Arizona BPOE percent share of import value in this sector was 7.1% in 2016 and has been fairly constant in the 7.0% range the last three years. However, this represents a significant decline from its 11.3% share of a decade ago (Figure 50).

The value of transportation sector imports via Nogales in 2016 were 30.0% above 2006, by far the smallest growth among major southern ports over the decade. Eagle Pass grew 195.7% followed closely by Calexico East and Otay Mesa (Figure 51).

How does Arizona compare?

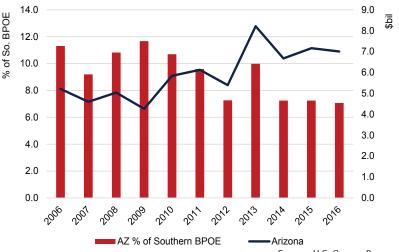
- In 2016, Arizona's share of border states was unchanged at 7.1%.
- 2006-2016: Imports via Nogales grew 30.0%, import value via all other major BPOE grew faster.

Table 21: U.S. Imports of Transportation Prod. via So. Border States (\$bil)

| | AZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|-------|------|-------|------|-------|-------|-------|
| 2006 | 5.22 | 119.6 | 3.15 | 30.1 | 0.11 | 26.7 | 38.14 | 8.6 |
| 2007 | 4.60 | -11.8 | 2.63 | -16.3 | 0.16 | 39.7 | 42.70 | 12.0 |
| 2008 | 5.04 | 9.6 | 2.83 | 7.6 | 0.16 | 1.0 | 38.57 | -9.7 |
| 2009 | 4.26 | -15.5 | 2.54 | -10.3 | 0.10 | -35.4 | 29.66 | -23.1 |
| 2010 | 5.84 | 37.1 | 3.14 | 23.3 | 0.15 | 43.7 | 45.61 | 53.8 |
| 2011 | 6.13 | 5.0 | 3.52 | 12.2 | 0.10 | -32.6 | 54.26 | 18.9 |
| 2012 | 5.39 | -12.0 | 4.15 | 17.8 | 0.13 | 30.5 | 64.95 | 19.7 |
| 2013 | 8.22 | 52.3 | 4.55 | 9.8 | 0.17 | 30.3 | 69.45 | 6.9 |
| 2014 | 6.68 | -18.7 | 5.87 | 28.9 | 0.20 | 18.7 | 79.82 | 14.9 |
| 2015 | 7.16 | 7.3 | 7.29 | 24.3 | 0.16 | -20.1 | 85.02 | 6.5 |
| 2016 | 7.01 | -2.2 | 7.9 | 8.5 | 0.17 | 3.3 | 85.24 | 0.3 |

Source: U.S. Census Bureau

Figure 50: U.S. Imports of Transportation Products via Arizona BPOE



Source: U.S. Census Bureau

Figure 51: U.S. Imports of Transportation Products via So. BPOE (2006=100) 300 250 200 index 150 100 50 Eagle Pass Santa Teresa Nogales Hidalgo Laredo El Paso Calexico-East Otay Mesa Source: U.S. Census Bureau



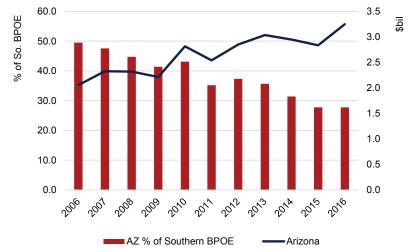
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Table 22: U.S.Imports of Fresh Produce via So. Border States (\$bil)

| | ΑZ | %ch | CA | %ch | NM | %ch | TX | %ch |
|------|------|------|------|------|------|-------|------|------|
| 2006 | 2.05 | 9.6 | 0.87 | -3.3 | 0.02 | 20.0 | 1.21 | 5.3 |
| 2007 | 2.33 | 13.3 | 0.91 | 5.2 | 0.05 | 86.8 | 1.62 | 33.6 |
| 2008 | 2.32 | -0.4 | 0.98 | 6.9 | 0.05 | -0.8 | 1.85 | 14.6 |
| 2009 | 2.21 | -4.5 | 0.94 | -3.3 | 0.07 | 49.7 | 2.13 | 14.9 |
| 2010 | 2.81 | 27.1 | 1.11 | 18.0 | 0.06 | -7.4 | 2.55 | 19.8 |
| 2011 | 2.54 | -9.7 | 1.30 | 16.8 | 0.07 | 15.1 | 3.32 | 30.1 |
| 2012 | 2.85 | 12.3 | 1.30 | 0.0 | 0.07 | -6.2 | 3.44 | 3.6 |
| 2013 | 3.04 | 6.4 | 1.45 | 11.8 | 0.05 | -27.0 | 3.99 | 16.1 |
| 2014 | 2.95 | -2.9 | 1.52 | 4.4 | 0.07 | 37.8 | 4.87 | 22.1 |
| 2015 | 2.84 | -3.8 | 1.70 | 12.0 | 0.07 | 1.8 | 5.64 | 15.8 |
| 2016 | 3.25 | 14.6 | 1.90 | 12.1 | 0.08 | 20.9 | 6.51 | 15.3 |

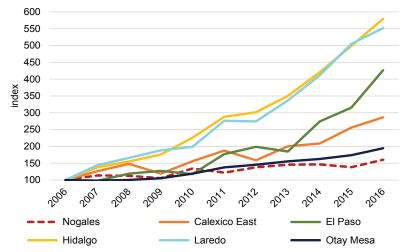
Source: U.S. Census Bureau

Figure 52: U.S. Imports of Fresh Produce via Arizona BPOE



Source: U.S. Census Bureau

Figure 53: U.S. Imports of Fresh Produce via So. BPOE (2006=100)



Source: U.S. Census Bureau

rizona border ports of entry have a long tradition of serving as the primary gateway for fresh produce originating in Sinaloa and Sonora. This is particularly true for the Nogales port of entry. The dynamics of fresh produce movement through Arizona BPOE reflect climate-related seasonality of agricultural production in Sinaloa and Sonora, as well as the physical and human infrastructure capabilities of border ports of entry to facilitate efficient and secure movement of fresh produce across the border.

U.S. Imports of Fresh Produce from Mexico

In 2016, Arizona BPOE facilitated \$3.3 billion worth of fresh produce imports from Mexico, a \$418.7 million increase (14.6%) from a year ago. Nogales port alone imported \$3.0 billion (Table 22).

Arizona BPOE facilitated the second highest value of imported fresh produce in 2016 when compared with the other border states. Until 2011 when Texas surpassed Arizona, the majority of fresh produce entering the U.S. from Mexico entered via Arizona BPOE.

Arizona BPOE share of the value of Mexican fresh produce imported through southern BPOE was 31.8% in 2016, a decrease from its 49.5% share of a decade ago (Figure 52).

Between 2006 and 2016, Nogales port grew 60.2%. However, all other major southern BPOE grew faster: Hidalgo grew 479.3%, Laredo 451.8%, El Paso 326.8%, Calexico East 186.6%, and Otay Mesa 94.5% (Figure 53).



Imports of fresh produce from Mexico have a distinctive seasonal character with peaks during winter months from December through May (Figure 54).

Of the top three BPOE importing fresh produce from Mexico, Nogales has by far the largest seasonal shift with 77.8% of produce imported from December through May compared to 57.2% at Hidalgo, and 53.3% via Laredo, in 2016 (Table 23 and Figure 55).

Historically, Nogales BPOE was the major port for the import of fresh produce from Mexico. In 2006, it imported produce valued at \$1.9 billion and Hidalgo port placed a distant second with \$0.6 billion. Despite this disparity, by 2015 Hidalgo had surpassed Nogales importing \$3.0 billion in fresh produced compared to \$2.6 billion at Nogales. This shift is largely due to the rise in avocado imports which currently favor Texas BPOE. In 2016, Hidalgo port facilitated \$3.5 billion, Nogales \$3.0 billion, Laredo \$2.2 billion, and Otay Mesa \$1.3 billion worth of fresh produce.

How does Arizona compare?

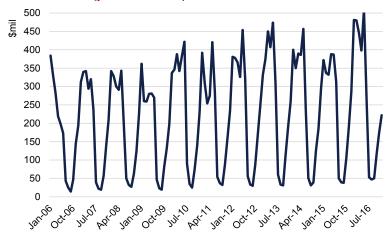
- 2006-2016: Arizona's share of fresh produce imports declined from 49.5% to 31.8%.
- In 2016, Hidalgo BPOE facilitated \$3.5 billion in fresh produce imports from Mexico, Nogales \$3.0 billion, and Laredo \$2.2 billion.
- Of the major southern BPOE, fresh produce imports via Nogales BPOE display by far the largest seasonal variability.

Table 23: Mo. U.S. Imports of Fresh Produce via Major So. BPOE (\$mil)

| 2016 | Nogales | Hidalgo | Laredo |
|-----------|---------|---------|--------|
| January | 445.7 | 368.0 | 203.4 |
| February | 416.8 | 358.9 | 186.7 |
| March | 390.3 | 330.2 | 206.8 |
| April | 382.3 | 317.8 | 201.9 |
| May | 501.2 | 294.3 | 181.8 |
| June | 266.4 | 200.4 | 124.9 |
| July | 51.0 | 213.9 | 152.9 |
| August | 45.4 | 209.2 | 152.8 |
| September | 48.4 | 263.9 | 187.5 |
| October | 109.2 | 293.4 | 201.4 |
| November | 162.9 | 291.8 | 195.3 |
| December | 206.2 | 337.8 | 216.6 |

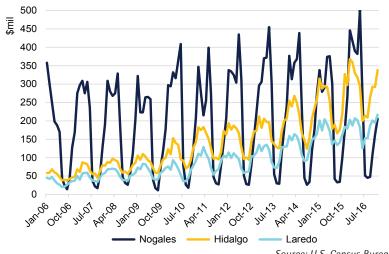
Source: U.S. Census Bureau

Figure 54: U.S. Imports of Fresh Produce via Arizona BPOE



Source: U.S. Census Bureau

Figure 55: U.S. Imports of Fresh Produce via Major So. BPOE



Source: U.S. Census Bureau

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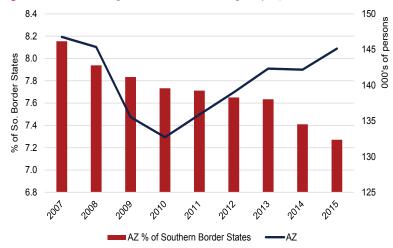
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Table 24: Employment in High-Tech Manufacturing Industries (000s)

| | AZ | %ch | CA | | NM | %ch | TX | %ch |
|------|-------|------|---------|------|------|------|-------|------|
| 2007 | 146.8 | | 1,060.6 | | 51.8 | | 540.7 | |
| 2008 | 145.3 | -1.0 | 1,077.6 | 1.6 | 50.5 | -2.5 | 557.8 | 3.1 |
| 2009 | 135.5 | -6.8 | 1,021.0 | -5.3 | 48.2 | -4.5 | 525.3 | -5.8 |
| 2010 | 132.7 | -2.1 | 1,016.8 | -0.4 | 47.5 | -1.4 | 519.1 | -1.2 |
| 2011 | 135.9 | 2.4 | 1,040.6 | 2.3 | 47.5 | -0.2 | 538.2 | 3.7 |
| 2012 | 139.0 | 2.3 | 1,073.4 | 3.2 | 46.0 | -3.0 | 558.5 | 3.8 |
| 2013 | 142.3 | 2.4 | 1,101.2 | 2.6 | 45.2 | -1.8 | 575.6 | 3.1 |
| 2014 | 142.2 | -0.1 | 1,141.4 | 3.6 | 44.4 | -1.8 | 590.7 | 2.6 |
| 2015 | 145.1 | 2.1 | 1,199.7 | 5.1 | 45.3 | 2.0 | 605.8 | 2.6 |

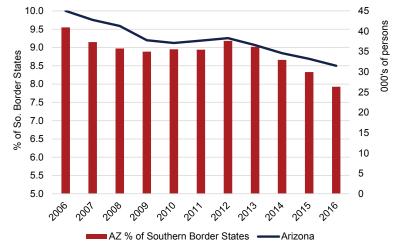
Source: U.S. Bureau of Labor Statistics, QCEW, and EBRC

Figure 56: Arizona High-Tech Manufacturing Employment



Source: U.S. Bureau of Labor Statistics, QCEW, and EBRC

Figure 57: Arizona Employment in Computer and Electronic Prod. Mfg.



Source: U.S. Bureau of Labor Statistics, CES

igh-tech manufacturing is a pivotal driver of Arizona's export-based economy. In addition to its increasingly important role in international trade, high-tech industries are characterized by higher productivity, highly skilled workers, and higher wages. The dynamics of Arizona's employment in high-tech manufacturing industries provide a measure of Arizona's capacity to build and sustain an export-based economy.

Arizona's Employment

In 2015, Arizona's high-tech manufacturing industries employed 145,130 people,* an increase of 2,959 workers or 2.1% from a year ago. High-tech manufacturing includes occupational categories such as pharmaceutical and medicine, computer and peripheral, communications equipment, semiconductor and electronics, electronic instrument, aerospace, and software publishing. In 2015, high-tech manufacturing employment almost regained its pre-recession 2007 level of 146,759 employees (Table 24).

Despite recovery to near its prerecession level, Arizona's share of U.S. border states' high-tech manufacturing employment declined from 8.2% in 2007 to 7.3% in 2015 (Figure 56).

In 2016, 31,500 persons were employed in Arizona's computer and electronic manufacturing sector.* This was a decline of 1,400 workers, a 5.4% decrease from a year ago (Figure 57).

In 2016, Arizona's aerospace manufacturing industries employed 26,000

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workers, an increase of 900 employees for a 3.6% gain over the year. This sector has declined 2.6% over the decade (Table 25).

Arizona's share of U.S. border states' aerospace products and parts manufacturing employment was 17.9% in 2016, up from 17.1% in 2015. This share is down from its peak of 19.6% in 2009, and is now on a par withits share of a decade ago (Figure 58).

Although small in absolute numbers, employment in the pharmaceutical and medicine products manufacturing sector has experienced rapid growth, 107.7%, over the decade. This sector gained 12.2% in 2015, the last year for which we have data.* Arizona's share of U.S. border states increased from 1.9% in 2005 to 3.4% in 2015 (Figure 59).

*EBRC's "High-Tech Manufacturing" total employment and "Pharmaceutical and Medicine Products Manufacturing" employment are custom aggregations constructed using the Quarterly Census of Employment and Wages (QCEW), BLS. The most current full year of data available from the QCEW is 2015. Aerospace and Computer and Electronic Products Manfacturing sector is from the Current Employment Statistics (CES) program, BLS, and is complete through 2016.

How does Arizona compare?

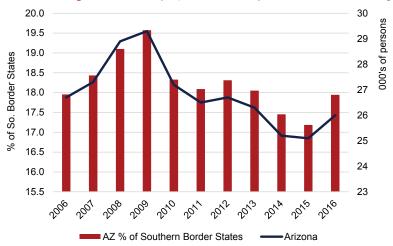
- In 2015, high tech manufacturing employment in Arizona recovered to pre-recession levels.
- 2005-2015: Arizona has retained a significant percentage of border states' aerospace manufacturing employment

Table 25: Employment in Aerospace Products and Parts Mfg. (000's)*

| | AZ | %ch | CA | %ch | TX | %ch |
|------|------|------|------|------|------|------|
| 2006 | 26.7 | 0.4 | 73.0 | -0.5 | 49.0 | 2.5 |
| 2007 | 27.3 | 2.2 | 72.8 | -0.3 | 48.0 | -2.0 |
| 2008 | 28.9 | 5.9 | 73.7 | 1.2 | 48.6 | 1.3 |
| 2009 | 29.3 | 1.4 | 72.4 | -1.8 | 48.0 | -1.2 |
| 2010 | 27.2 | -7.2 | 73.1 | 1.0 | 48.1 | 0.2 |
| 2011 | 26.5 | -2.6 | 71.5 | -2.2 | 48.5 | 0.8 |
| 2012 | 26.7 | 0.8 | 71.1 | -0.6 | 48.0 | -1.0 |
| 2013 | 26.3 | -1.5 | 72.1 | 1.4 | 47.3 | -1.5 |
| 2014 | 25.2 | -4.2 | 74.4 | 3.2 | 45.0 | -4.9 |
| 2015 | 25.1 | -0.4 | 76.6 | 3.0 | 44.9 | -0.2 |
| 2016 | 26.0 | 3.6 | 74.3 | -3.0 | 44.6 | -0.7 |

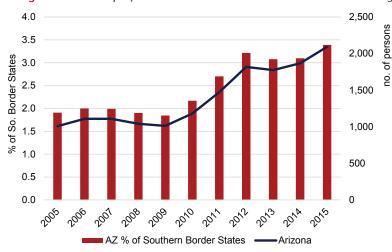
^{*} BLS does not report employment in this category for New Mexico because it is negligible. Source: Bureau of Labor Statistics, CES

Figure 58: AZ Employment in Aerospace Prod. and Parts Mfg.



Source: U.S. Bureau of Labor Statistics, CES

Figure 59: AZ Employment in Pharmaceutical and Medicine Prod. Mfg.



Source: U.S. Bureau of Labor Statistics, QCEW

EXPORT-BASED ECONOMY ◀ ◀

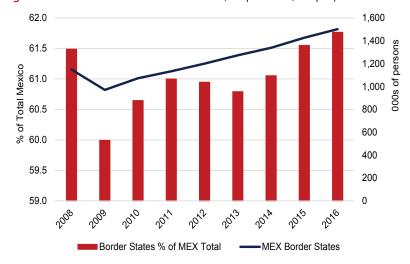
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Table 26: Mexico Border States IMMEX (Maguiladora) Employment (000s)

| YEAR | B.C. | Coah. | Chih. | N.L. | Son. | Tamps. |
|------|-------|-------|-------|-------|-------|--------|
| 2008 | 246.5 | 157.0 | 271.1 | 198.7 | 95.4 | 179.8 |
| 2009 | 206.3 | 131.8 | 218.4 | 186.9 | 81.9 | 145.1 |
| 2010 | 218.8 | 154.7 | 244.8 | 212.5 | 90.8 | 152.0 |
| 2011 | 221.3 | 175.9 | 251.4 | 228.1 | 97.2 | 160.8 |
| 2012 | 231.7 | 192.3 | 271.1 | 234.2 | 102.1 | 169.7 |
| 2013 | 245.6 | 209.1 | 289.9 | 239.1 | 110.6 | 179.9 |
| 2014 | 263.8 | 221.3 | 306.8 | 244.9 | 113.1 | 189.3 |
| 2015 | 283.0 | 237.7 | 335.2 | 254.9 | 115.4 | 201.4 |
| 2016 | 300.8 | 246.8 | 357.3 | 265.3 | 119.5 | 213.6 |

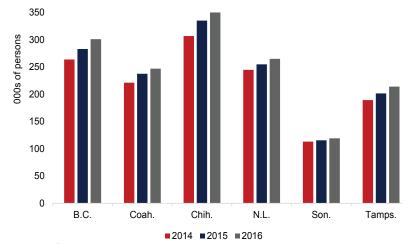
Source: INEGI

Figure 60: Mexico Border States IMMEX (maguiladora) Employment



Source: INEGI

Figure 61: Mexico Border States IMMEX (Maquiladora) Employment (000s)



Source: INEGI

aquiladora plants, together with other companies producing products for export, including automobile manufacturers, form IMMEX program employment. IMMEX accounts for more than 80.0% of all manufacturing exports from Mexico and the largest share of trade between the U.S. and Mexico. The majority of IMMEX employment is concentrated in border states.

IMMEX (Maquiladora) Employment in Mexico

The Maquiladora Program, initiated in the mid-1960s as assembly platforms for U.S. manufacturers, continued to grow under NAFTA, and by 2006 employed 1.2 million people. The PITEX Program was established in 1990 and by 2006 included all motor vehicle assembly plants and most of their parts suppliers in Mexico. The two programs were merged into the IMMEX program in 2006.

In 2016, IMMEX employment in Mexico's border states was 1,503,161, up 5.3% from a year ago; nationwide, IMMEX employment increased 4.9%. Employment in this sector has risen steadily since 2009 (Table 26).

Mexico's border states accounted for 61.8% of all IMMEX employment in Mexico in 2016, a slight uptick from 61.5% a year ago (Figure 60).

All the Mexican border states saw robust growth in IMMEX sector employment in 2016. Chihuahua had the fastest growth at 6.6%, followed by Baja California at 6.3%, Tamaulipas at 6.0%, Nuevo León at 4.1%, and Coahuila at 3.8%. Sonora had the slowest

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growth at 3.5%. Chihuahua had the largest number of IMMEX employees, 357,270, and Sonora the fewest with 119,450 (Figure 61).

Manufacturing establishments account for 89% of total IMMEX employment. The non-manufacturing activities, which include agriculture and mining activities, account for 11%. Transportation equipment manufacturing, which includes Mexico's burgeoning auto industry, is the strongest sector accounting for 32% of IMMEX manufacturing employment.

Sonora's IMMEX employment reached 119,450 in 2016, a 25.2% gain from 2008 (Table 27).

Sonora's share of the border states total decreased slightly from 8.1% in 2015 to 7.9% in 2016. This share reached a high of 8.7% in 2013 (Figure 62).

Over the eight years for which we have data, 2008 to 2016, Sonora's IMMEX employment grew 25.2%. It fell between the faster growth rates of Coahuila, Chihuahua, and Nuevo León (57.2%, 31.8%, and 35.5%), and the slower growth of Baja California (22.0%) and Tamaulipas (18.7%). Mexico's national IMMEX employment growth during the same period was 30.3% (Figure 63).

How does Arizona compare?

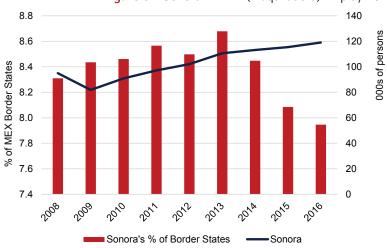
- In 2016, Sonora's 3.5% annual growth was the slowest among the border states.
- Sonora's IMMEX employment has grown 25.2% since 2008, faster growth than Baja California or Tamaulipas, but slower than other border states and Mexico overall.

Table 27: Sonora and Mexico IMMEX (Maquiladora) Employment (000s)

| YEAR | Son. | Son. % share of Mexico Border States | Mexico Border States | Mexico Total |
|------|-------|--|----------------------------|-----------------|
| 2008 | 95.0 | 8.3 | 1,149.0 | 1,867.8 |
| 2009 | 81.9 | 8.4 | 970.5 | 1,617.7 |
| 2010 | 90.8 | 8.5 | 1,073.6 | 1,770.3 |
| 2011 | 97.2 | 8.6 | 1,134.5 | 1,859.9 |
| 2012 | 102.1 | 8.5 | 1,201.1 | 1,970.7 |
| 2013 | 110.6 | 8.7 | 1,274.2 | 2,095.9 |
| 2014 | 113.1 | 8.4 | 1,339.2 | 2,193.4 |
| 2015 | 115.4 | 8.1 | 1,427.6 | 2,319.4 |
| 2016 | 119.0 | 7.9 | 1,503.0 | 2,433.6 |

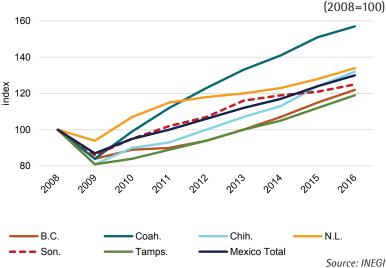
Source: INEGI

Figure 62: Sonora IMMEX (Maquiladora) Employment



Source: INEGI

Figure 63: IMMEX (Maquiladora) Employment Mexico Border States

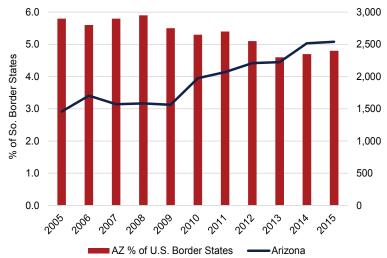


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Figure 64: Patents



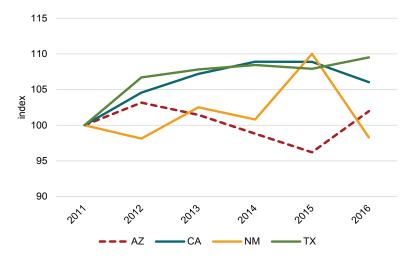
Source: U.S. Patent and Trademark Office

Table 28: Number of Engineers (000s)

| | AZ | %ch | CA | | NM | %ch | TX | %ch |
|------|------|------|-------|------|------|-------|-------|------|
| 2011 | 30.3 | | 205.6 | | 12.3 | | 133.7 | |
| 2012 | 31.3 | 3.2 | 215.0 | 4.6 | 12.1 | -1.9 | 142.6 | 6.7 |
| 2013 | 30.8 | -1.7 | 220.4 | 2.5 | 12.6 | 4.5 | 144.1 | 1.0 |
| 2014 | 30.0 | -2.6 | 224.0 | 1.6 | 12.4 | -1.7 | 144.9 | 0.6 |
| 2015 | 29.2 | -2.6 | 223.9 | 0.0 | 13.5 | 9.1 | 144.2 | -0.5 |
| 2016 | 30.9 | 6.0 | 218.0 | -2.6 | 12.1 | -10.7 | 146.4 | 1.5 |

Source: U.S. Bureau of Labor Statistics, OES

Figure 65: U.S. Border States No. of Engineers (2011=100)



Source: U.S. Bureau of Labor Statistics, OES

nowledge drives productivity and economic growth, generates new or improved products and services, contributes to technological change, and enhances living standards. The knowledge economy can be measured in terms of the number of "knowledge workers" such as engineers and scientists, or also in terms of overall human capital based on educational level.



Patents

In 2015 (the latest year for which we have data), 2,540 patents were issued in Arizona, a 0.9% increase over 2014 and a 74.3% increase over the decade. Arizona has the second highest per capita patents issued among the border states with 3.7 patents issued per 10,000 persons, behind Texas at 10.2, but ahead of California at 3.6 and New Mexico at 2.1. Arizona's share of patents issued in the southern border states combined was 4.8% (Figure 64).

Along with New Mexico, Arizona was one of only two border states to experience an increase (albeit small) in the number of patents issued in 2016. California and Texas exhibited declines of 1.1% and 0.9%, respectively.

Engineering Occupations

In 2016, there were 30,920 workers in engineering occupations in Arizona, a robust 6.0% over-the-year increase, and by far the best performance among the border states in 2016. California lost 10.7% in this category, and New Mexico 2.6%. Texas gained 1.5% (Table 28). After three consecutive years of decline these gains in



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2016 put Arizona above its level five years ago (Figure 65).

The life and physical scientists sector in Arizona lost 370 persons in 2016, a 5.4% decrease from 2015 (Figure 66). Employment in this category declined 0.3% in Texas, gained 0.4% in California, and New Mexico made progress at closing on Arizona in the number of life and physical scientists with a 15.3% increase in 2016 (Table 29).

Internet Access

Internet access is increasingly necessary at individual, company, and societal levels for finding employment, expanding innovation, and remaining globally competitive. At the individual level, access to internet at home is especially important as an educational tool for middle- and high-school students. Access to internet profoundly affects participation in the knowledge economy.

The number of households where any household member uses the internet at home in Arizona was 1,830,911 in 2015, an increase of 87,884 compared to 2013. This was a 5.0% increase, and the second highest growth rate among border states, behind only Texas with 6.0% growth over the same period* (Figure 67).

*National Telecommunications & Information Administration reports these data every other year.

How does Arizona compare?

- 2011-2016: Arizona added 250 persons in engineering occupations, California 4,060, New Mexico 1,290, and Texas lost 1,720.
- In 2015, 69.0% of Arizona's population lived in a household with home internet access, up 5.0% from 2013, the second fastest growth among the border states.

6.0 7.5 5.0 9000 7.0 9000 9.00

AZ % of Southern Border States

2014

Source: U.S. Bureau of Labor Statistics, OES

Arizona

2016

6.0

Figure 66: Life and Physical Scientists

Table 29: Number of Life and Physical Scientists (000s)

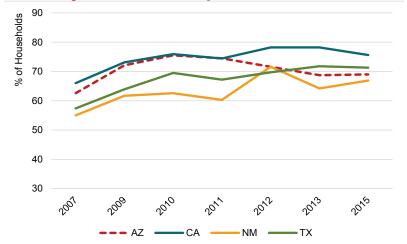
0.0

2011

| | AZ | %ch | CA | | NM | %ch | TX | %ch |
|------|-----|------|------|------|-----|------|------|------|
| 2011 | 6.2 | | 87.5 | | 3.8 | | 38.0 | |
| 2012 | 6.5 | 4.5 | 90.9 | 3.9 | 3.7 | -3.4 | 38.3 | 0.8 |
| 2013 | 7.5 | 14.6 | 98.1 | 7.9 | 4.1 | 9.7 | 37.1 | -3.2 |
| 2014 | 7.4 | -1.1 | 95.9 | -2.2 | 4.1 | 0.2 | 38.9 | 5.0 |
| 2015 | 6.8 | -7.2 | 91.2 | -4.9 | 4.5 | 9.1 | 36.4 | -6.4 |
| 2016 | 6.5 | -5.4 | 91.5 | 0.4 | 5.1 | 15.3 | 36.3 | -0.3 |

Source: U.S. Bureau of Labor Statistics, OES

Figure 67: Individuals Living in Households with Internet Access



Source: National Telecommunications & Information Administration

EDUCATIONAL ATTAINMENT



Figure 68: Percent of AZ Population 25+ Years with Bachelor's

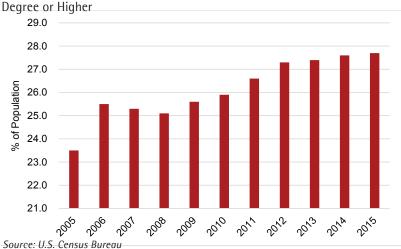
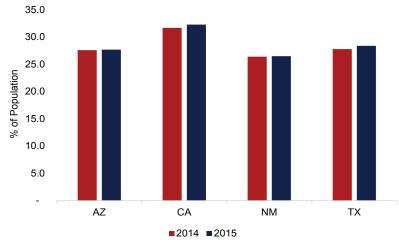


Table 30: Percent of Population 25+ Years with Bachelor's Degree or Higher

| YEAR | AZ | CA | NM | TX |
|------|------|------|------|------|
| 2005 | 23.5 | 29.2 | 20.0 | 24.5 |
| 2006 | 25.5 | 29.0 | 25.3 | 24.7 |
| 2007 | 25.3 | 29.5 | 24.8 | 25.2 |
| 2008 | 25.1 | 29.6 | 24.7 | 25.3 |
| 2009 | 25.6 | 29.9 | 25.3 | 25.5 |
| 2010 | 25.9 | 30.1 | 25.0 | 25.9 |
| 2011 | 26.6 | 30.3 | 25.6 | 26.4 |
| 2012 | 27.3 | 30.9 | 26.1 | 26.7 |
| 2013 | 27.4 | 31.0 | 26.4 | 27.5 |
| 2014 | 27.6 | 31.7 | 26.4 | 27.8 |
| 2015 | 27.7 | 32.3 | 26.5 | 28.4 |

Source: U.S. Census Bureau

Figure 69: U.S. Border States Population 25+ Years with Bachelor's Degree or Higher



Source: U.S. Census Bureau

ducational attainment is key to better paying jobs and improving standards of living. A strong relationship exists between educational attainment and regional economic performance. Regions with better-educated workers show higher GDP per capita and real wages. These regions also compete more successfully in the knowledge economy for high-tech industries.



In 2015, 27.7% of Arizona's population 25 years and older had earned a bachelor's degree or higher. this is up from 27.6% in 2014 and 23.5% in 2005 (Figure 68).

Arizona came in third among the border states with California leading the pack at 32.3%, followed by Texas at 28.4%. New Mexico was in fourth place with 26.5% (Table 30).

California and Texas posted the largest gains in 2015 for share of population over 25 with a bachelor's degree or higher, both gaining 0.6 percentage points (Figure 69).

How does Arizona compare?

- **2005–2015:** the percentage of Arizona's population over 25 with a BA or higher gained 4.2 percentage points to reach 27.7%.
- In 2015, Arizona ranked third among border states in the percentage of population with a BA or higher.



FOREIGN DIRECT INVESTMENT

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oreign Direct Investment (FDI) is a key characteristic of international economic integration. Its importance to a host country is that it brings additional capital, creates jobs, and encourages the transfer of technology. Benefits to investor countries include access to an expanded labor force, and expanded opportunities for promotion of products in international markets. Mexico ranks among the top developing countries in the attraction of foreign investors seeking to expand into the NAFTA area.

• • •

Foreign Direct Investment

In 2016, Sonora garnered \$564.2 million in foreign direct investment. This was a decline of \$31.0 million, or a 5.2% decrease over 2015. Nuevo León led among border states with \$2.6 billion, followed by Chihuahua with \$2.1 billion. Sinaloa was last with \$402.3 million (Table 31).

Sonora's share as a percentage of Mexico's border states in 2016 increased to 6.1% from 6.0% in 2015. In 2012, its share peaked at 18.1%. Sonora's share of the national total increased from 1.8% to 2.1% in 2016. In 2012, this share peaked at 5.7% (Figure 70).

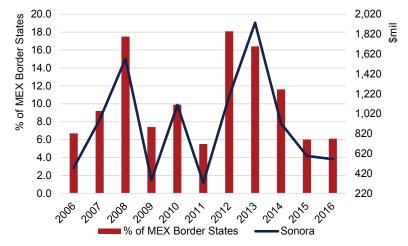
Foreign direct investment in Sonora has fluctuated significantly between 2006 and 2016. It reached a high point in 2013 at \$1.9 billion and a low point in 2011 at \$324.7 million. Depsite this volatility, Sonora's 2016 FDI levels were 18.9% higher than a decade ago in 2006 (Figure 71).

Table 31: FDI Sonora, Sinaloa, and Mexico Total (\$mil)

| YEAR | Sinaloa | Sonora | Mexico Total |
|------|---------|---------|--------------|
| 2006 | 144.4 | 474.5 | 21,147.6 |
| 2007 | 277.4 | 959.0 | 32,457.2 |
| 2008 | 174.4 | 1,571.9 | 29,381.5 |
| 2009 | 148.1 | 353.9 | 18,111.8 |
| 2010 | 221.8 | 1,108.4 | 27,262.8 |
| 2011 | 230.5 | 325.1 | 24,706.2 |
| 2012 | 432.6 | 1,195.6 | 21,060.8 |
| 2013 | 621.9 | 1,933.5 | 47,536.9 |
| 2014 | 386.5 | 922.3 | 27,507.9 |
| 2015 | 424.7 | 595.0 | 33,181.3 |
| 2016 | 330.9 | 564.0 | 26,738.6 |

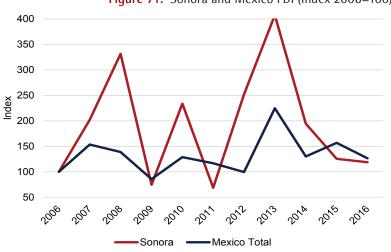
Source: INEGI

Figure 70: Sonora FDI



Source: INEGI

Figure 71: Sonora and Mexico FDI (Index 2006=100)



Source: INEGI

DATA SOURCES



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Population

Arizona Office of Employment and Population Statistics, Arizona Department of Administration; website: laborstats.az.gov

Instituto Nacional de Estadistica Y Geografia (INEGI), Banco de Información; website: www3.inegi.org.mx

U.S. Census Bureau, Population Division; website: www.census.gov

U.S. Census Bureau, American Community Survey; website: www.census.gov

Border Crossings

U.S. Department of Transportation, Office of the Assistant Secretary for Research and Technology (RITA), Bureau of Transportation Statistics (BTS); website: http://www.rita.dot.gov/bts/

Economic Output

U.S. Department of Commerce, Bureau of Economic Analysis: website: www.bea.gov

Instituto Nacional de Estadistica Y Geografia (INEGI), Banco de Información Económica (BIE;)website: www3.inegi.org.mx

Economic Business and Research Center, Eller College of Management, The University of Arizona

Exports to Mexico and Canada

U.S. Census Bureau via USA Trade; website: https://usatrade.census.gov/

Commodity Flows

U.S. Census Bureau via USA Trade; website: https://usatrade.census.gov/

Export-Based Economy

U.S. Department of Labor, Bureau of Labor Statistics (BLS); website: http://www.bls.gov/ Current Employment Statistics (CES); http://www.bls.gov/ces/ Quarterly Census of Employment And Wages (QCEW); http://www.bls.gov/cew/cewover.htm

Instituto Nacional de Estadistica Y Geografia (INEGI), Banco de Información Económica (BIE); website: www3.ineqi.org.mx

Knowledge-Based Economy

U.S. Patent and Trademark Office; website: www.uspto.gov

National Science Foundation; website: www.nsf.gov

U.S. Department of Labor, Bureau of Labor Statistics (BLS); website: www.bls.gov

U.S. Census Bureau, American Fact Finder; website: www.factfinder.census.gov

Foreign Direct Investment

Instituto Nacional de Estadistica Y Geografia (INEGI), Banco de Información Económica (BIE;) website: www3.ineqi.org.mx

Find the complete Arizona-Mexico Economic Indicators at:

AZMEX.eller.arizona.edu