

THE UNIVERSITY OF ARIZONA | ELLER COLLEGE OF MANAGEMENT



ARIZONA-MEXICO ECONOMIC INDICATORS
Arizona's Trade and Competitiveness
in the U.S.-Mexico Region



Annual Report
2018

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Arizona-Mexico Economic Indicators Annual Report 2018

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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 fourth 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.



The *Report* is organized into the following sections: Population, Economic Output, Exports to Mexico, Exports to Canada, Border Crossings, Commodity Flows, Export-Based Economy, 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 “Highlights” section which provides readers with a quick scan of important changes as they pertain to Arizona.

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, the latest decade of data is provided wherever possible, the numbers are indexed with the first year in the series serving as a base year, e.g., year 2007=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 absolute 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 2018. 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.

Arizona and Mexico: Economic Relationship, 2007 - 2017



TRADE and CROSS-BORDER COMMODITY FLOWS

Arizona exported to Mexico **\$7.6 billion** worth of goods in 2017. (↑ **44.7%** from 2007; ↓ **8.6%** from year ago); Arizona's manufacturing exports accounted for **\$6.0 billion** (↑ **22.8%** from 2007; ↑ **1.3%** from year ago); US EXPORTS to Mexico via Arizona BPOE reached **\$11.0 billion** in 2017 (↑ **53.9%** from 2007; ↓ **7.7%** from year ago), of which **\$3.2 billion** worth were electric and electronic products (↑ **43.0%** from 2007; ↑ **0.6%** from year ago), and **\$1.5 billion** were transportation products (↑ **27.9%** from 2007; ↓ **14.4%** from year ago). US IMPORTS from Mexico via AZ BPOE were worth **\$16.9 billion** in 2017 (↑ **20.9%** from 2007; ↓ **7.3%** from year ago), of which electric & electronic products accounted for **\$3.4 billion** (↑ **2.8%** from 2007; ↑ **6.3%** from year ago), while transportation products accounted for **\$5.5 billion** (↑ **19.0%** from 2007; ↓ **21.9%** from year ago). In 2017, US imported **\$3.0 billion** worth of fresh produce from Mexico via AZ BPOE (↑ **30.6%** from 2007; ↓ **6.4%** from year ago).

BORDER CROSSINGS

Personal and commercial VEHICLES: In 2017, **9,487,133** personal cars entered from Mexico via Arizona BPOE (↑ **15.6%** from 2007; ↑ **7.3%** from year ago); in the same year, **400,160** trucks from Mexico entered via AZ BPOE (↑ **8.1%** from 2007; ↓ **0.3%** from year ago); **13,443** buses (↓ **20.5%** from 2007; ↓ **0.3%** from year ago), and **649** trains (↑ **10.4%** from 2007; ↓ **12.5%** from year ago). PERSONAL crossings: Passengers in personal vehicles made **18,146,485** crossings northbound in 2017 (↓ **7.4%** from 2007; ↑ **7.6%** from year ago); **7,005,728** crossings were done ON foot (↓ **40.7%** from 2007; ↑ **0.4%** from 2007).

Arizona and Mexico: Economic Relationship, 2007 - 2017



ARIZONA BORDER PORTS of ENTRY (BPOE)

In 2017, Arizona BPOE facilitated **24.2%** of all imported FRESH PRODUCE from Mexico through southern BPOE (▼ from **47.5%** in 2007; ▼ from **27.7%** in 2016); **6.2%** of all US IMPORTS from Mexico through southern BPOE (▼ from **8.6%** in 2007; ▼ from **7.0%** in 2016); **5.8%** of US EXPORTS of electric and electronic products to Mexico through southern BPOE (▼ from **7.5%** in 2007; ▲ from **5.7%** in 2016); **5.5%** of all US EXPORTS to Mexico through southern BPOE (▼ from **6.3%** in 2007; ▼ from **6.1%** in 2016); **5.2%** of US IMPORTS of transportation products from Mexico through southern BPOE (▼ from **9.2%** in 2007; ▼ from **7.1%** in 2016); **4.4%** of US EXPORTS of transportation products to Mexico through southern BPOE (▼ from **6.3%** in 2007; ▼ from **5.1%** in 2016), and **3.8%** of US IMPORTS of electric and electronic products from Mexico through southern BPOE (▼ from **5.2%** in 2007; ▲ from **3.7%** in 2016).

ARIZONA'S SHARE of U.S. BORDER STATES

EXPORTS to MEXICO: **Arizona** accounted for **5.7%** of US border states' exports to Mexico (▼ from **6.5%** in 2007; ▼ from **6.5%** in 2016); and **4.8%** of all manufacturing products exported to Mexico from US border states in 2017 (▼ from **6.4%** in 2007; ▼ from **5.0%** in 2016). EXPORT-BASED ECONOMY: **Arizona's share** of US border states' EMPLOYMENT in aerospace products and parts manufacturing was **18.2%** (↔ as in 2007; ▲ from **17.6%** in 2016); **8.0%** of the total computer and electronic manufacturing employment (▼ from **9.2%** in 2007; ↔ from 2016); In 2016, **7.2%** of US border states' high-tech manufacturing employees (▼ from **8.2%** in 2007; ▼ from **7.3%** in 2015), and **3.5%** in pharmaceutical and medicine product manufacturing (▲ from **2.0%** in 2006; ▲ from **3.4%** in 2015).

Arizona and Mexico: Economic Relationship, 2007 - 2017



IMMEX EMPLOYMENT in MEXICO'S BORDER STATES

In 2017, **Sonora** was home to **129,249** workers employed in **IMMEX** (maquiladora and other export-oriented manufacturing and services sector) (↑ from **35.4%** from **95,438** in 2008; ↑ **8.2%** over **119,450** in 2016). **Sonora's** share of IMMEX employment in **Mexico's border states** was **8.1%** in 2017 (↓ from **8.3%** in 2008*; ↑ from **7.9%** in 2016).

FOREIGN DIRECT INVESTMENT

In 2017, **\$253.3 million** was invested in **Sonora** (↓ from **\$960.3 million** in 2007; ↓ **50.8%** from **\$515.0 million** in 2016). **Sonora's** percent share of **Mexico's border states' total FDI** in 2017 was **2.6%** (↓ from **9.2%** in 2007; ↓ from **5.3%** in 2016).

* 2008 is the earliest full year of data available for this series.

Recent Articles on AZMEX.eller.arizona.edu



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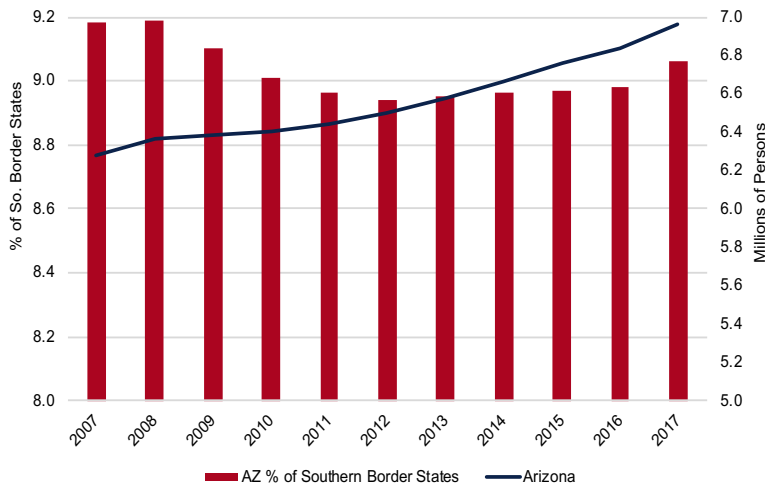
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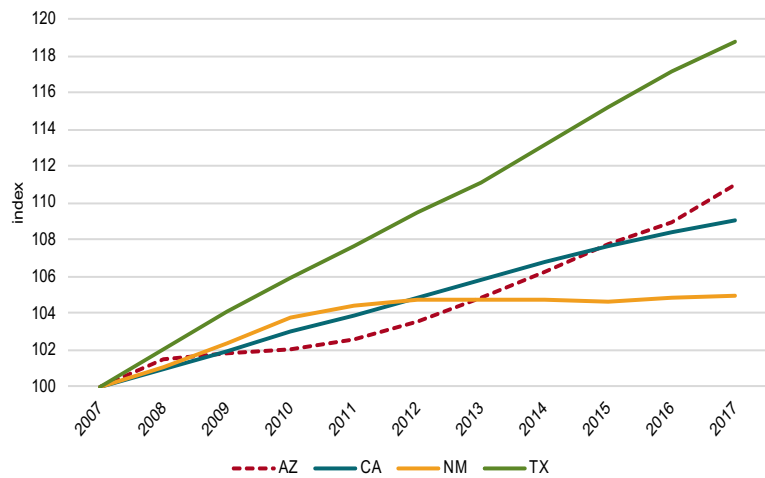
POPULATION

Figure 1: Arizona Population



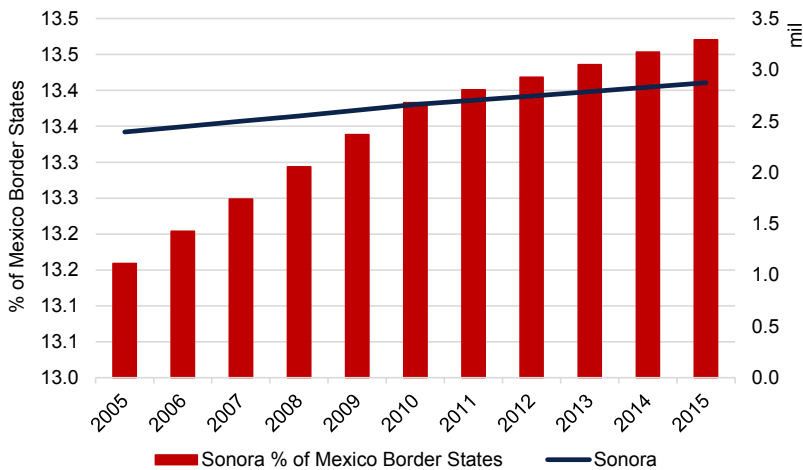
Source: U.S. Census Bureau

Figure 2: U.S. Border States Population (2007=100)



Source: U.S. Census Bureau

Figure 3: Sonora Population



Source: INEGI and EBRC

Population 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's annual population growth rate in 2017 was 1.9%.* This was the fastest growth among the border states, just ahead of Texas at 1.4%, followed by New Mexico at 0.7% and California at 0.6%. The nation's population grew 0.7% in 2017. Arizona's population grew 11.0% over the decade (2007 to 2017) adding 690,916 persons. Texas grew 18.8% over the decade, followed by California (9.1%), and New Mexico (4.9%). Arizona's share of the total population for the border states began the decade at 9.2% and finished at 9.1% (Figures 1 & 2).

*Population figures for Arizona are from the Arizona Office of Employment and Population Statistics; population estimates for the other states are from the Census Bureau.

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).

Population Age Distribution for Sonora and Arizona

In 2015, 16.4% of Arizona's population was 65 years and older, a 3.41 percentage point increase over the decade (2005 to 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).

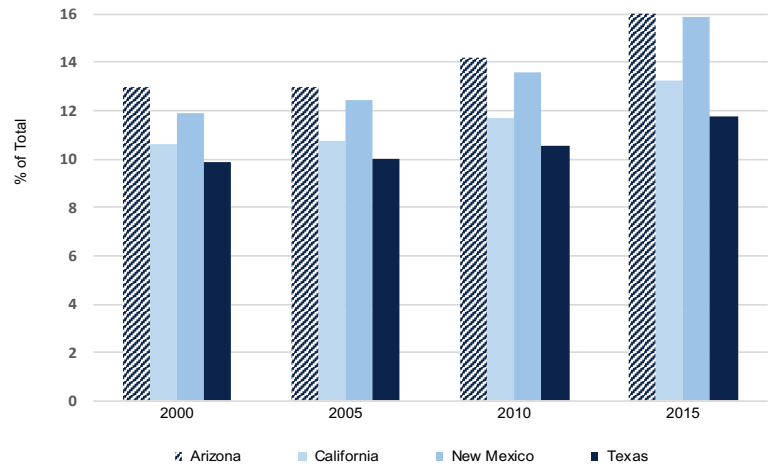
2015 is the most recent year for which we have comparable population estimates for both U.S. and Mexican border states. Arizona's population share under 15 was 19.7% in 2015, higher than the nation (19.0%). Between 2010 and 2015, Arizona's under 15 age cohort fell behind New Mexico's (19.9%). Among border states, Texas had the largest share under 15 (22.0%) and California the smallest (19.4%). (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.

In 2015, 27.5% of Sonora's population was under 15. Although Mexico's border states have higher shares under 15 than the U.S., long term trends show Mexico's population is also aging. Between 2005 and 2015, the share 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?

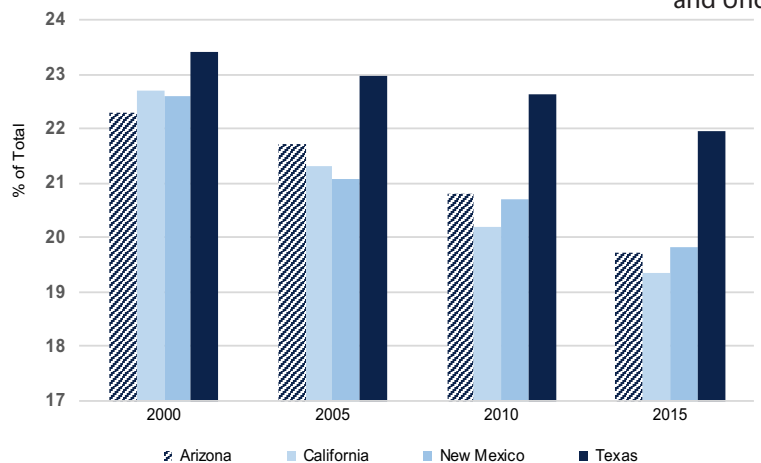
- ▶ In 2017, Arizona had the fastest population growth of U.S. border states (1.9%).
- ▶ 2007-2017: Arizona had the second fastest population growth (11.8%); among U.S. border states, behind only Texas (19.5%), and ahead of California (9.1%).
- ▶ 2005-2015: Both Mexican and U.S. border states exhibit similar aging of their populations long term.

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



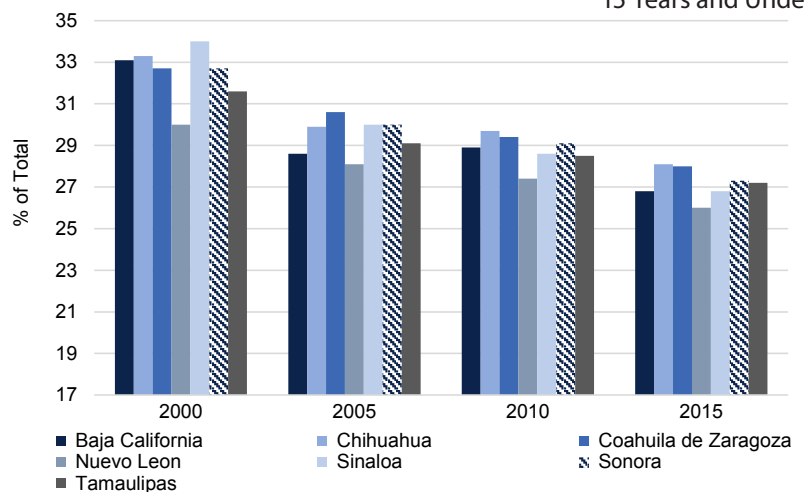
Source: ACS, U.S. Census Bureau

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



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

ECONOMIC OUTPUT

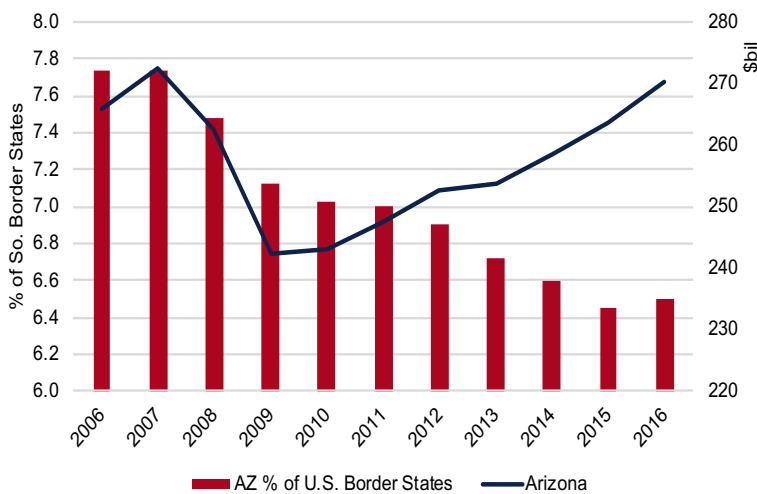
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Table 1: U.S. Border States Real GDP (bil\$2009)

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
2006	265.8	5.8	1975.5	3.4	80.9	1.6	1111.8	6.2
2007	272.4	2.5	1999.3	1.2	81.0	0.2	1166.7	4.9
2008	262.5	-3.6	1993.2	-0.3	82.9	2.3	1173.7	0.6
2009	242.5	-7.6	1912.1	-4.1	82.8	0.0	1166.5	-0.6
2010	243.1	0.2	1936.5	1.3	83.2	0.4	1197.0	2.6
2011	247.4	1.8	1962.9	1.4	83.5	0.3	1240.1	3.6
2012	252.5	2.1	2013.6	2.6	83.5	0.1	1310.5	5.7
2013	253.7	0.5	2064.5	2.5	82.7	-1.0	1377.1	5.1
2014	258.4	1.8	2150.6	4.2	85.0	2.8	1424.7	3.5
2015	263.5	2.0	2245.9	4.4	86.4	1.6	1484.9	4.2
2016	270.2	2.6	2320.3	3.3	86.5	0.2	1480.3	-0.3

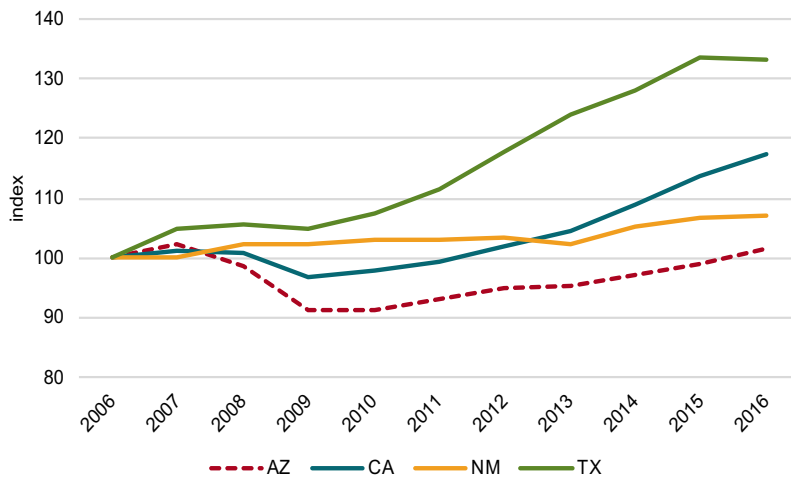
Source: U.S. Bureau of Economic Analysis

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



Source: U.S. Bureau of Economic Analysis

Figure 8: U.S. Border States Real GDP (2006=100)



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

Gross 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.

Arizona Real Gross Domestic Product

The most recent annual data for real GDP by state is for 2016. At 2.6%, Arizona's annual real GDP growth out paced the nation (1.5%), New Mexico (0.2%), and Texas (-0.3%). California's real GDP grew the fastest among the border states at 3.3%. In 2016, Arizona finally gained back the ground lost during the Great Recession (Table 1).

After eight years of decline, Arizona's share of border states real GDP gained back a bit of ground in 2016 increasing from 6.46% in 2015 to 6.5% in 2016. Its share was 7.7% a in 2006 (Figure 7).

In 2016, Arizona exceeded its pre-recessionary value of a decade ago by 1.7%, while Texas led at 33.1% above its 2006 level, followed by California (17.5%), and New Mexico (7.0%). The nation surpassed its 2006 value by 12.3% (Figure 8).

In 2016, Arizona's real per capita GDP was 11.6% below its 2006 level, and was the lowest real GDP per capita among southern border states, falling behind even New

Mexico (Figure 9). Over the decade, Texas' real per capita GDP grew 11.6%, followed by California (7.8%), and New Mexico (0.9%). For the nation overall it grew 3.7%.

Sonora Real Gross State Product

In 2016, Sonora's real GDP was 570,174 million pesos (constant 2013 pesos), an increase of 5.5% from 2015. Sinaloa's real GDP grew 5.5%, and Mexico's real GDP grew 2.7%. Over the decade (2006-2016), Sonora's real GDP grew 32.7%, followed by 29.2% for Sinaloa. Mexico's real GDP grew 22.2% (Figure 10).

The latest population estimates we have for Mexican states is from 2015, thus per capita GDP numbers are calculated for 2015 (rather than for 2016). In 2015, Sonora's real per capita GDP was 122.0% of Mexico's national per capita real GDP, and the third highest per capita real GDP among Mexican border states (Figure 11). Nuevo León had the highest per capita estimate, followed by Coahuila de Zaragoza.

How does Arizona Compare?

- ▶ Arizona's real GDP and real GDP per capita exhibit slower post-recession recovery than other border states.
- ▶ Sonora's real GDP per capita has followed a similar trend to Mexico, but it is consistently higher than national levels.
- ▶ Sonora's post recession growth in real GDP is much faster than for Mexico as a whole.

Figure 9: Arizona and U.S. Border States Real GDP/capita (mil\$2009)

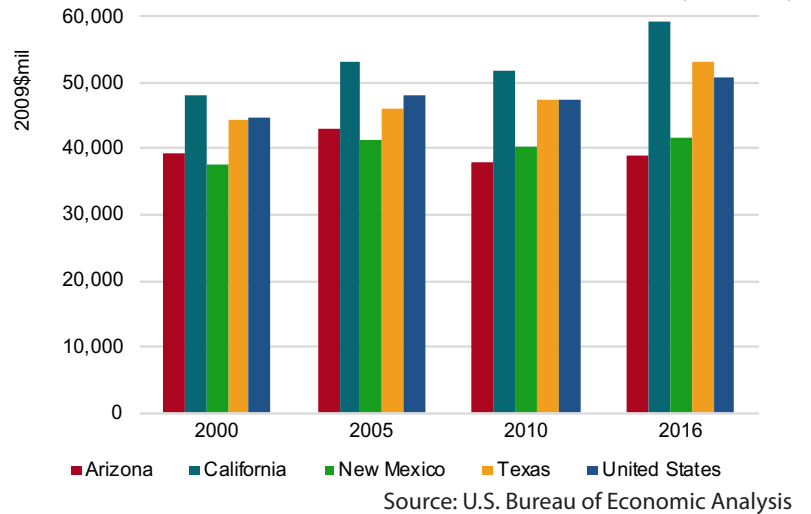


Figure 10: Real GDP Sonora, Sinaloa, and Real GDP Mexico (2013=100)

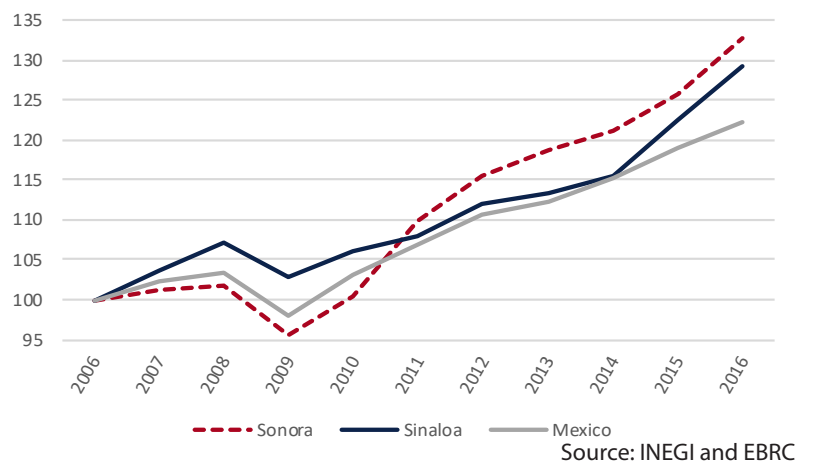
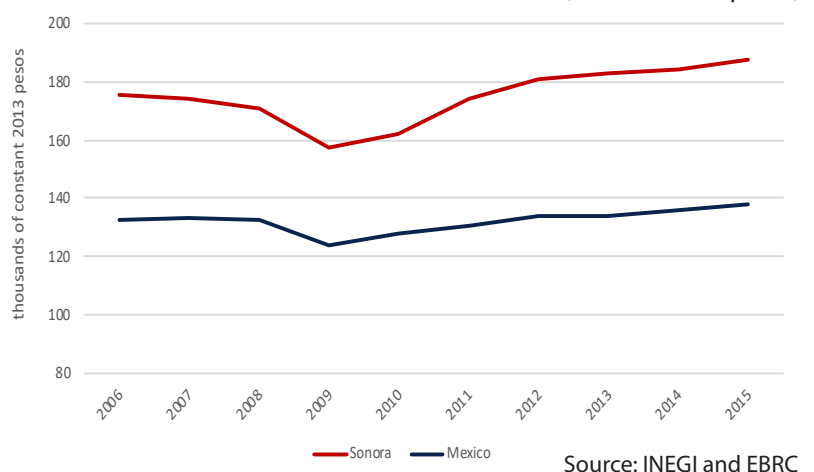


Figure 11: Sonora Real GDP/capita and Mexico Real GDP/capita (constant 2013 pesos)



EXPORTS TO MEXICO

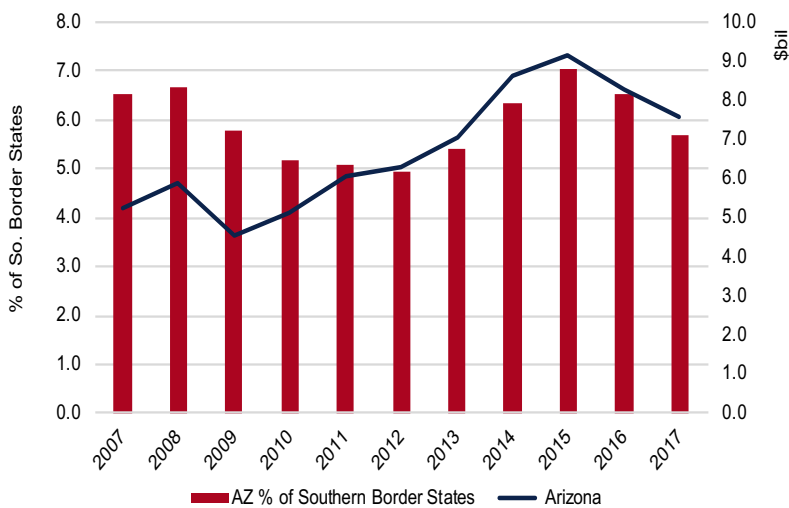
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Table 2: U.S. Border States Exports to Mexico (\$bil)

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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	13.0	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	0.80	35.1	99.26	5.1
2014	8.62	22.0	25.45	6.4	1.55	93.3	100.10	0.9
2015	9.16	6.2	26.79	5.3	1.68	8.7	92.95	-7.1
2016	8.28	-9.6	25.27	-5.7	1.56	-7.5	91.75	-1.3
2017	7.57	-8.6	26.70	5.7	1.59	2.0	97.27	6.0

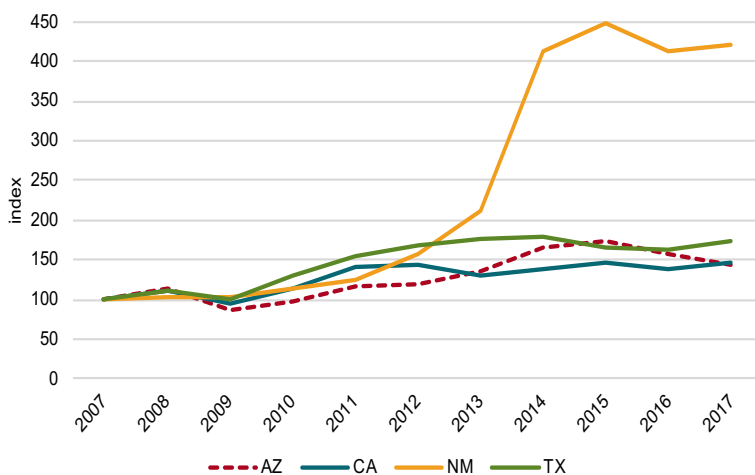
Source: U.S. Census Bureau

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



Source: U.S. Census Bureau

Figure 13: U.S. Border States Exports to Mexico (2007=100)



Source: U.S. Census Bureau

Mexico 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, Arizona's competitive position in Mexico's consumer markets.



Exports to Mexico

In 2017, Arizona's exports to Mexico declined 8.6%, falling from \$8.3 to \$7.6 billion. Further, Arizona was the only border state to experience declining exports to Mexico in 2017. Growth in exports to Mexico was 6.0% for Texas, 5.7% for California, 2.0% for New Mexico, and 5.8% for the U.S. overall (Table 2). Arizona's exports worldwide declined 5.2%, while exports grew 9.6% for southern border states combined, and 6.6% for the U.S. overall in 2017.

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 peaked at 7.0% in 2015, and declined to 5.7% in 2017 (Figure 12).

Arizona exports to Mexico grew 44.7% between 2007 and 2017. Among southern border states, Arizona's export growth was on a par with California (45.5%), but behind Texas (73.7%) and the nation overall (78.8%). New Mexico's exports to Mexico, still small in volume, grew 322.5% over the decade (Figure 13).



EXPORTS TO MEXICO

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Manufacturing Exports to Mexico

The value of Arizona's manufacturing exports to Mexico increased slightly in 2017 from \$5.9 billion in 2016 to \$6.0 billion in 2017, a 1.3% gain. All the border states experienced increases in this important sector in 2017. Texas exported the largest dollar value of manufacturing products to Mexico at \$91.7 billion (up 5.1%), followed by California with \$25.4 billion (up 5.9%), and New Mexico was last with \$1.5 billion (up 1.6%) (Table 3).

Arizona's manufacturing exports to Mexico accounted for 79.4% of the total value of its exports to Mexico in 2017. After double digit growth in 2014 and 2015, Arizona's manufacturing exports then levelled off in 2016 and 2017. Arizona's share of border states manufacturing exports to Mexico declined from 5.0% in 2016 to 4.8% in 2017 (Figure 14).

Between 2007 and 2017, Arizona experienced 22.8% growth in this sector, behind California's 45.6%, and Texas' 71.4%. New Mexico, which has by far the smallest dollar volume of trade, experienced 357.4% growth over the decade (Figure 15).

How does Arizona compare?

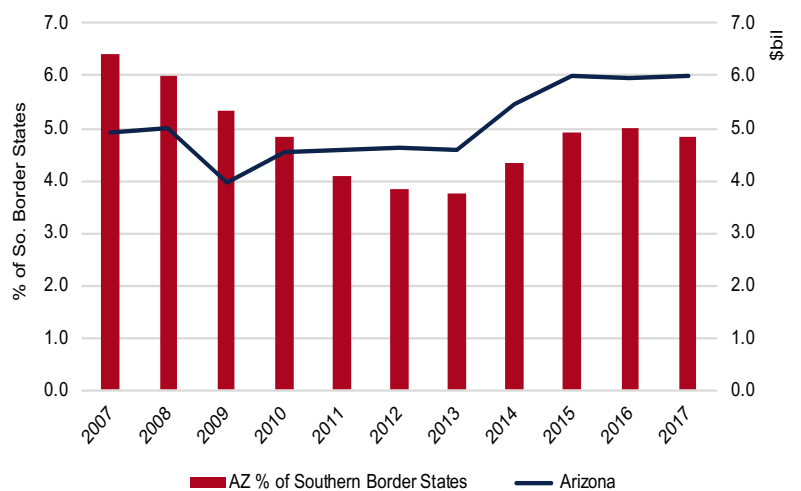
- ▶ In 2017, Arizona was the only border state to see a decline (8.6%) in total exports to Mexico.
- ▶ 2007-2017: Arizona's manufacturing exports to Mexico increased 22.8%, the smallest decade growth among the border states.

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

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
2007	4.90	-3.1	17.46	-7.4	0.34	62.1	53.48	1.7
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	94.78	0.3
2015	6.01	10.5	25.53	6.7	1.64	13.3	88.73	-6.4
2016	5.94	-1.3	24.02	-5.9	1.52	-7.8	87.22	-1.7
2017	6.02	1.3	25.42	5.9	1.54	1.6	91.68	5.1

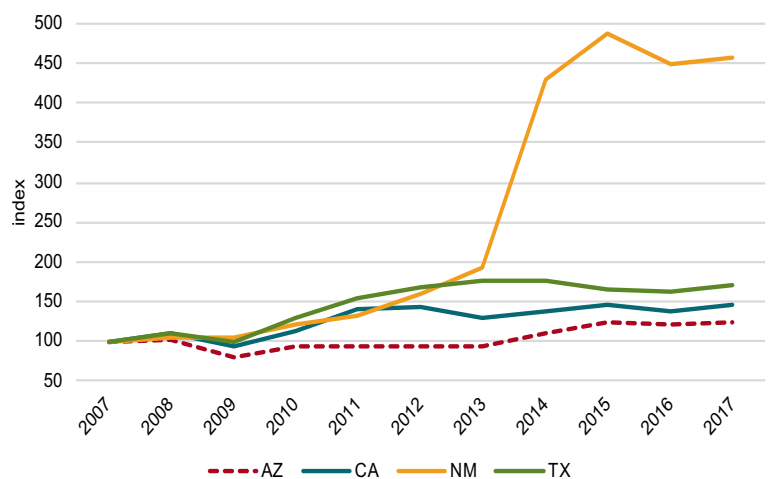
Source: U.S. Census Bureau

Figure 14: Arizona Manufacturing Exports to Mexico



Source: U.S. Census Bureau

Figure 15: U.S. Border States Mfg. Exports to Mexico (2007=100)



Source: U.S. Census Bureau

EXPORTS TO CANADA ◀ ◀ ◀

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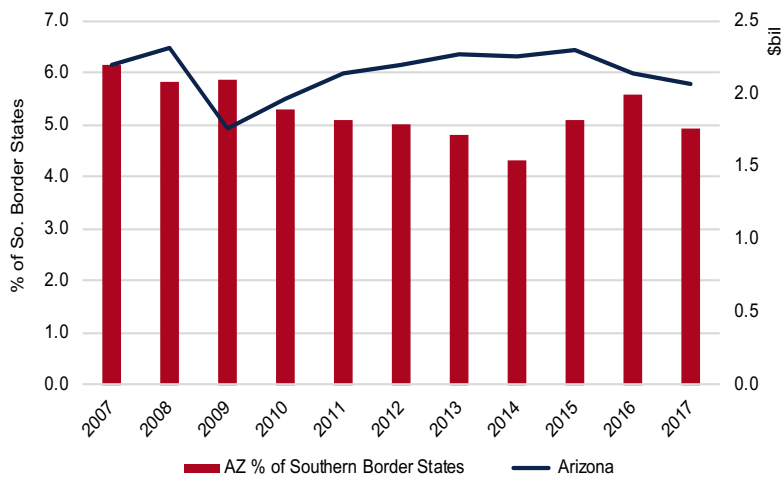
Table 4: Exports to Canada (\$bil)

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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	18.0
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	-5.9	0.19	-18.7	25.51	-18.7
2016	2.14	-7.2	16.24	-5.9	0.14	-26.3	19.96	-21.8
2017	2.06	-3.8	16.77	3.3	0.12	-10.2	22.78	14.1

Source: U.S. Census Bureau

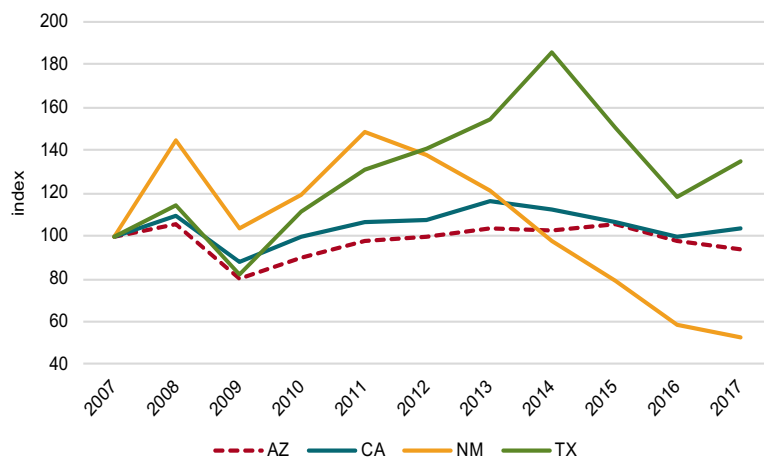
Although Arizona's exports to Canada form a smaller share than exports to Mexico, they are significant as an important driver of regional economic activity. The dynamics of Arizona's exports to Canada provide a composite measure of both Arizona's integration into the North American production-sharing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

Figure 16: Arizona Exports to Canada

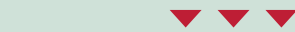


Source: U.S. Census Bureau

Figure 17: U.S. Border States Exports to Canada (2007=100)



Source: U.S. Census Bureau



Exports to Canada

In 2017, Arizona's exports to Canada were valued at \$2.1 billion, a 3.8% decline from 2016, and accounted for 9.9% of the state's exports worldwide. Among the southern border states, Texas exported the largest dollar value to Canada at \$22.8 billion (up 14.1%), followed by California with \$16.8 billion (up 3.3%). New Mexico exported \$0.12 billion (down 10.3%) (Table 4). U.S. exports to Canada grew 5.9%.

Arizona's percent share of southern border states' exports to Canada decreased from 5.6% in 2016 to 4.9% in 2017. Arizona's share was 6.2% in 2007 (Figure 16).

Arizona's exports to Canada declined 6.2% between 2007 to 2017. Texas exports grew 34.8% over the decade and California's grew 3.1%. New Mexico lost ground in this sector declining 47.6% (Figure 17), while U.S. exports to Canada grew 13.5%.

Manufacturing Exports to Canada

In 2017, Arizona's manufacturing exports were valued at \$1.6 billion, a 5.2% decline from 2016. Texas led the southern border states in this sector with \$18.1 billion (up 2.2%), followed by California with \$14.0 billion (up 3.5%). Arizona experienced steady growth in this high-value sector between 2009 and 2015. However, 2017 marks the second year of contraction since the end of the recession (Table 5).

Arizona's percent share of manufacturing exports to Canada among southern border states decreased from 5.2% in 2016 to 4.8% in 2017. It was 5.8% in 2007 (Figure 18).

Arizona's manufacturing exports to Canada declined 11.3% over the decade (2007-2017). Texas gained 15.8% during this time, California broke even (up 0.7%), and New Mexico also lost ground (down 43.7%) (Figure 19). The U.S. overall grew manufacturing exports to Canada 11.3% between 2007 and 2017.

How does Arizona compare?

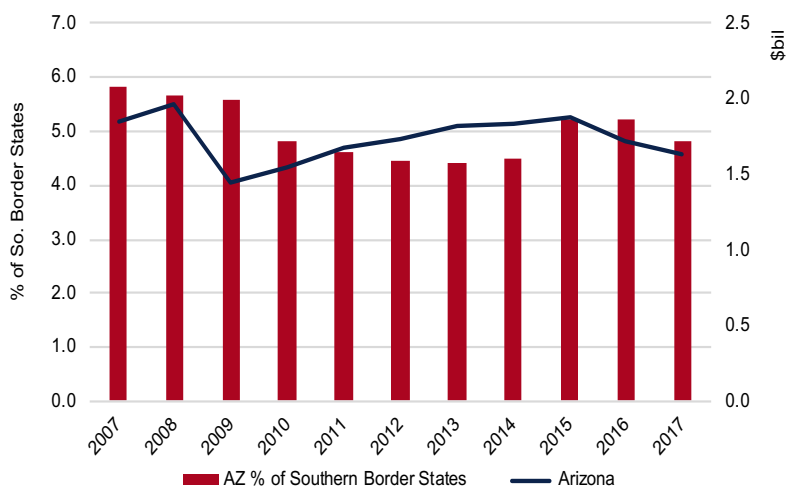
- ▶ 2007-2017: Arizona exports to Canada declined 6.2%. CA and TX gained 3.1% and 34.8%, respectively. U.S. gained 13.5%.
- ▶ In 2017, Arizona exports to Canada declined 3.8% (mfg. exports fell 5.2%). CA and TX gained 3.3% and 14.1%, respectively. The U.S. gained 5.9%.

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

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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	-13.8	23.01	3.7
2014	1.83	0.9	15.45	-3.4	0.22	-20.1	23.09	0.4
2015	1.88	2.7	14.41	-6.8	0.17	-20.0	19.46	-15.7
2016	1.73	-8.2	13.54	-6.0	0.13	-26.8	17.71	-9.0
2017	1.64	-5.2	14.01	3.5	0.11	-15.1	18.11	2.2

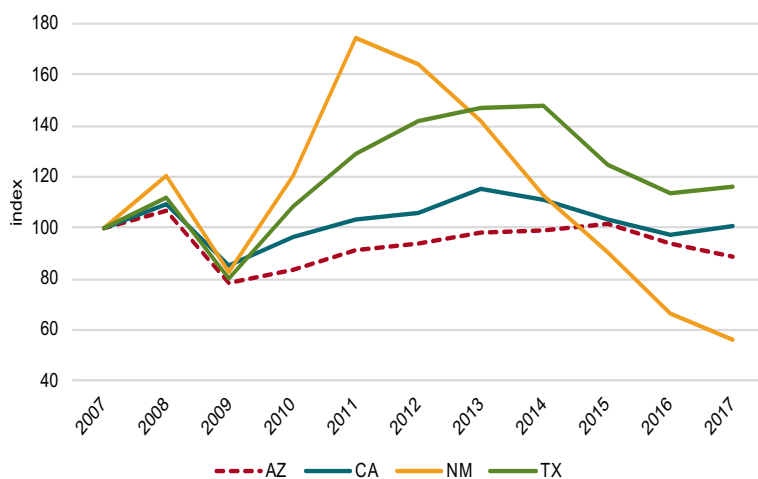
Source: U.S. Census Bureau

Figure 18: Arizona Manufacturing Exports to Canada



Source: U.S. Census Bureau

Figure 19: U.S. Border States Mfg. Exports to Canada (2007=100)



Source: U.S. Census Bureau

BORDER CROSSINGS

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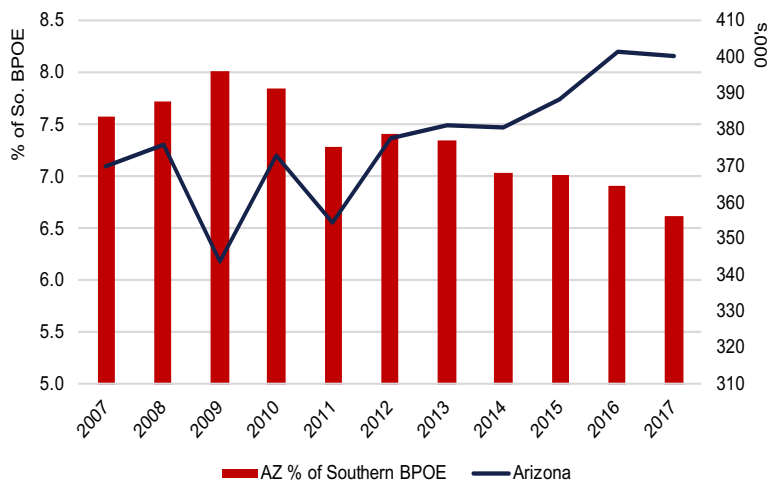


Table 6: Arizona Northbound Truck Crossings

YEAR	Douglas	Lukeville	Naco	Nogales	San Luis	Sasabe
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	38	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	70	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
2017	30,649	206	3,424	333,941	31,940	NA

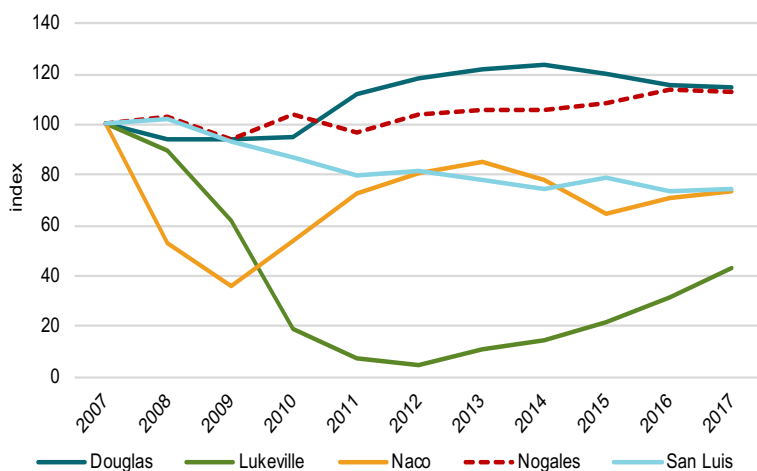
Source: Bureau of Transportation Statistics and EBRC

Figure 20: Arizona Northbound Truck Crossings



Source: Bureau of Transportation Statistics and EBRC

Figure 21: Arizona BPOE Northbound Truck Crossings (2007=100)



Source: Bureau of Transportation Statistics and EBRC

Arizona'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

Truck traffic at Arizona's six BPOE levelled off in 2017, facilitating 400,160 crossings; a negligible 0.3% decline from a year ago. Nogales, Arizona's busiest port, facilitated 333,941 crossings (down 0.5%), San Luis came in second with 31,940 (up 1.9%), and Douglas third with 30,649 (down 0.5%) (Table 6).

Trucks carry the largest value and volume of merchandise across the border, and are the primary means of transportation for Mexican fresh produce. In 2017, Arizona's share of northbound truck crossings declined from 6.9% in 2016 to 6.6% in 2017. The most recent peak was 8.0% in 2009 (Figure 20).

Truck traffic at the Nogales BPOE increased 13.1% between 2007 and 2017, while crossings at all Arizona BPOE combined increased 8.1% over the decade. However, Nogales and Douglas were the only Arizona BPOE to experience sufficient growth in crossings to put them



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above 2007 levels. Truck crossings at Lukeville, Naco, and San Luis BPOE are still well below levels of a decade ago (Figure 21).

All the major southern BPOE except Nogales experienced robust annual growth in 2017. Laredo, facilitated the largest volume of truck crossings, 2,182,984 (up 4.8%), followed by El Paso with 779,410 (up 2.0%), Hidalgo with 620,236 (up 9.2%), and Calexico East with 360,833 (up 3.2%) (Table 7).

Between 2007 and 2017, Laredo gained 39.6%, followed by Hidalgo at 27.4%, Nogales at 13.1% and Calexico East at 11.6%. El Paso broke even over the decade (down 0.5%) (Figure 22).

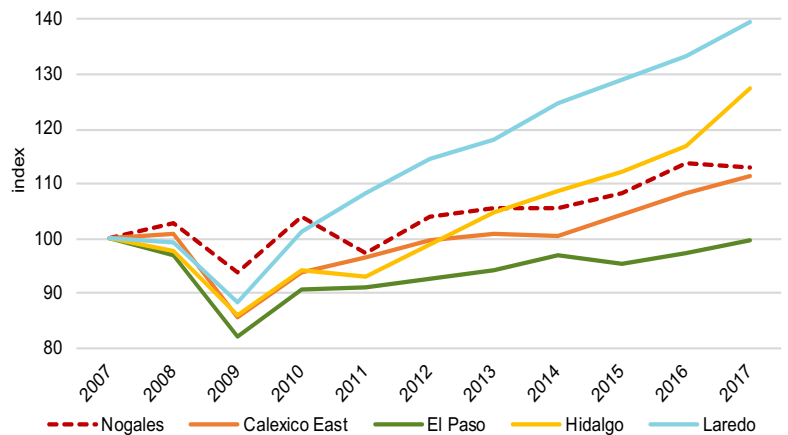
Seasonal variability associated with fresh produce imports via Nogales is reflected in higher truck crossing volumes during winter months (Dec.–May) (Figure 23).

Table 7: Major BPOE Northbound Truck Crossings

YEAR	Nogales	Calexico East	El Paso	Hidalgo	Laredo
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
2017	333,941	360,833	779,410	620,236	2,182,984

Source: Bureau of Transportation Statistics and EBRC

Figure 22: Major BPOE Northbound Truck Crossings (2007=100)

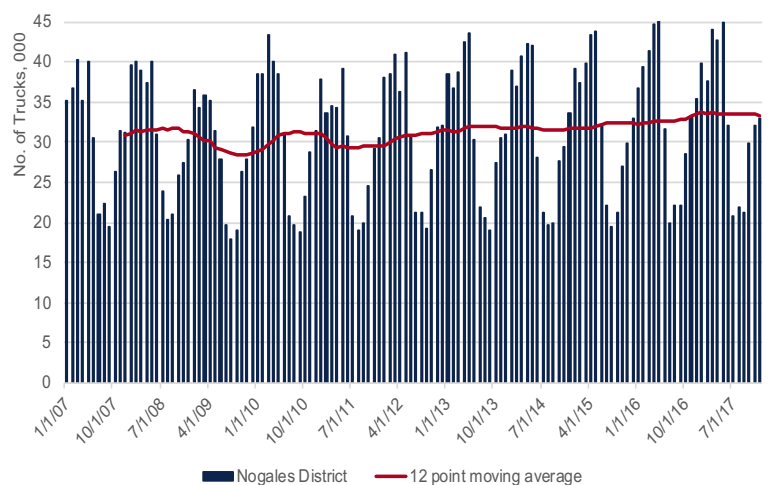


Source: Bureau of Transportation Statistics and EBRC

How does Arizona compare?

- ▶ 2007-2017: Truck crossings at Nogales grew 13.1%, and at Arizona BPOE combined 8.1%. Arizona's share declined from 7.6% to 6.6% over the decade.
- ▶ In 2017, truck traffic at Arizona BPOE levelled off declining 0.3%, while other major so. BPOE experienced growth.

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



Source: Bureau of Transportation Statistics and EBRC

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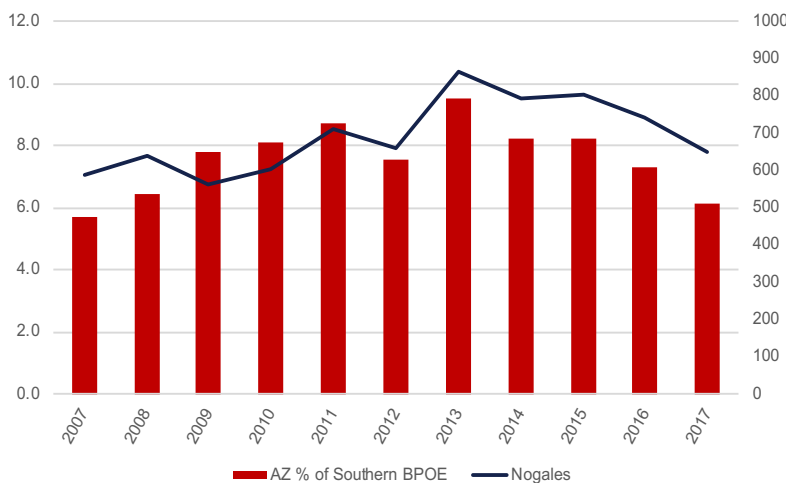
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Table 8: Train Crossings Major BPOE Northbound

YEAR	Nogales	Calexico East	Eagle Pass	El Paso	Laredo
2007	588	591	1,485	2,691	3,994
2008	640	417	1,654	2,473	3,921
2009	563	253	1,704	1,502	2,716
2010	602	243	2,012	1,046	3,036
2011	709	252	2,151	1,152	3,413
2012	657	252	2,349	1,392	3,492
2013	866	250	2,459	1,357	3,629
2014	795	252	2,728	1,434	3,758
2015	801	245	2,814	1,528	3,634
2016	742	250	3,062	1,652	3,739
2017	649	245	3,333	1,498	4,252

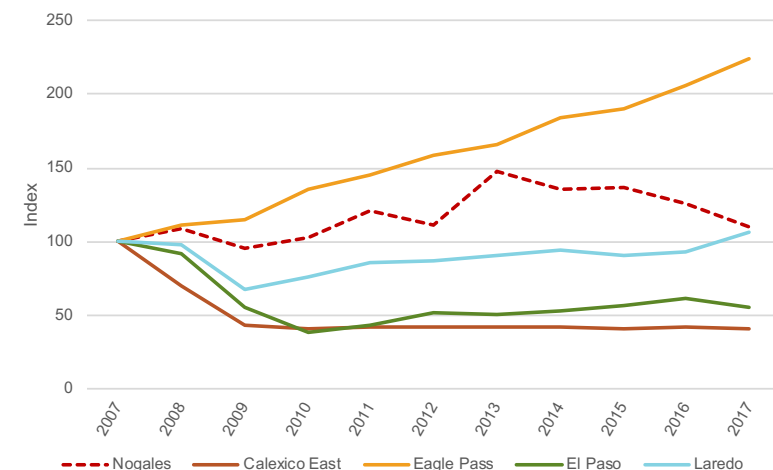
Source: Bureau of Transportation Statistics and EBRC

Figure 24: Train Crossings Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 25: Train Crossings Major BPOE Northbound (2007=100)



Source: Bureau of Transportation Statistics and EBRC

Nogales 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 vital to the auto industry in Sonora, as well as to the transport of commodities such as cement and garbanzo beans. Nogales (the only train crossing in Arizona) facilitated 649 train crossings in 2017, a 12.5% decline from 2016. Of the southern BPOE, Laredo, TX, facilitated the largest number of train crossings, 4,252 (up 13.7%), followed by Eagle Pass with 3,333 (up 8.9%), and El Paso with 1,498 (down 9.3%) (Table 8).

Nogales' share of total crossings at all southern BPOE decreased from 7.3% in 2016 to 6.0% in 2017. It was 5.7% in 2007 (this share is calculated with a denominator including all train crossings at the eight BPOE with rail along the southern border) (Figure 24).

In 2017, train volume via the Nogales port was up 10.4% from a decade ago, while Laredo gained 6.5%. Traffic via Eagle Pass steadily gained ground increasing 124.4% over the decade. Calexico East and El Paso remained well below 2007 levels (Figure 25).



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Bus Crossings

The Nogales BPOE facilitated 10,171 bus crossings in 2017, a 0.9% increase over 2016, and accounted for 75.7% of all bus crossings at Arizona BPOE. Among major southern BPOE, Laredo facilitated the largest volume of bus crossings, 40,220, in 2017 (down 3.9%), followed by Hidalgo with 20,840 crossings (down 16.8%), and El Paso with 15,898 (up 5.6%) (Table 9).

Arizona BPOE facilitated 13,443 bus crossings in 2017, down only 0.3% over the year. Arizona's percent share of all bus crossings at southern border ports has increased steadily since 2012. In 2017, its share was 7.8%, up from 7.4% in 2016, and 6.4% in 2007 (Figure 26).

The only major BPOE to gain ground over the decade was Laredo which increased 8.4% (Figure 27).

How does Arizona compare?

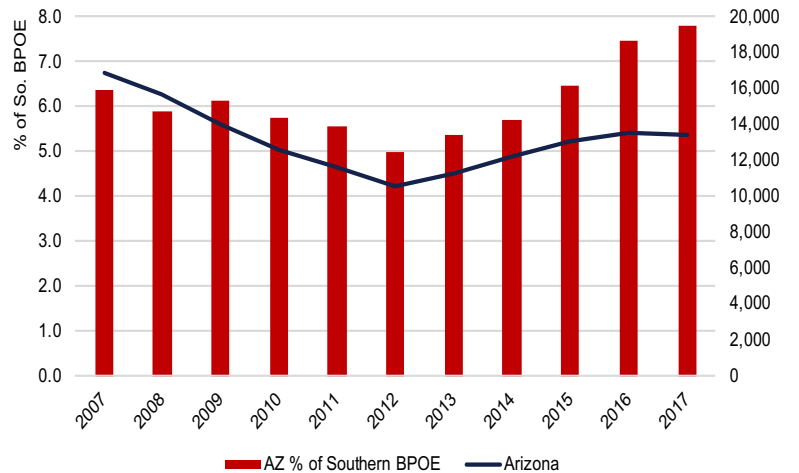
- ▶ 2007-2017: Train traffic via Nogales increased 10.4%, while bus traffic decreased 17.8%.
- ▶ In 2017, 649 trains crossed at Nogales, a 12.5% decline from 2016, while bus crossings (10,171) gained 0.9%.
- ▶ 2007-2017: While train crossing volume at Nogales and Laredo both gained modestly over the decade, traffic at Eagle Pass, TX, took off gaining 124.4%, surpassing El Paso. It is now second only to Laredo.

Table 9: Bus Crossings Major BPOE Northbound

YEAR	Nogales	Calexico East	El Paso	Hidalgo	Laredo
2007	12,375	1,170	18,530	28,942	37,106
2008	11,585	1,669	24,716	33,127	39,122
2009	11,096	2,451	19,474	28,407	43,342
2010	9,872	1,897	22,852	20,031	44,121
2011	9,144	3,193	23,421	20,992	42,980
2012	8,068	2,564	22,798	20,476	38,368
2013	8,699	2,571	21,595	22,521	38,017
2014	9,423	2,785	21,554	26,087	41,230
2015	9,694	3,064	19,739	25,776	40,065
2016	10,077	2,906	15,050	25,045	41,856
2017	10,171	2,881	15,898	20,840	40,220

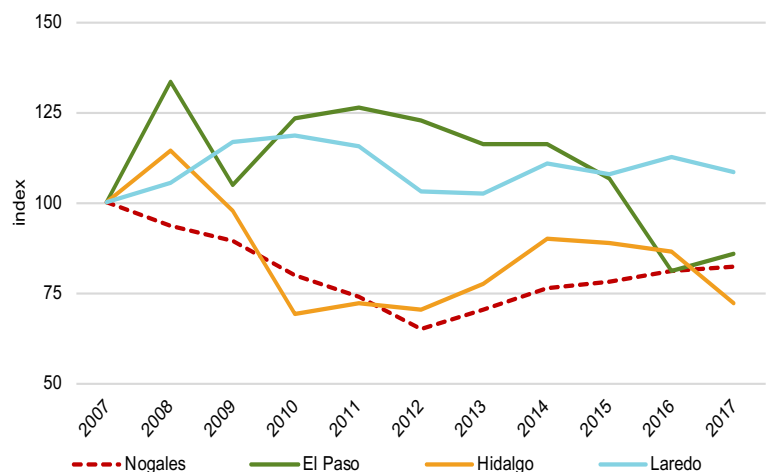
Source: Bureau of Transportation Statistics and EBRC

Figure 26: Bus Crossings Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 27: Bus Crossings Major BPOE Northbound (2007=100)



Source: Bureau of Transportation Statistics and EBRC

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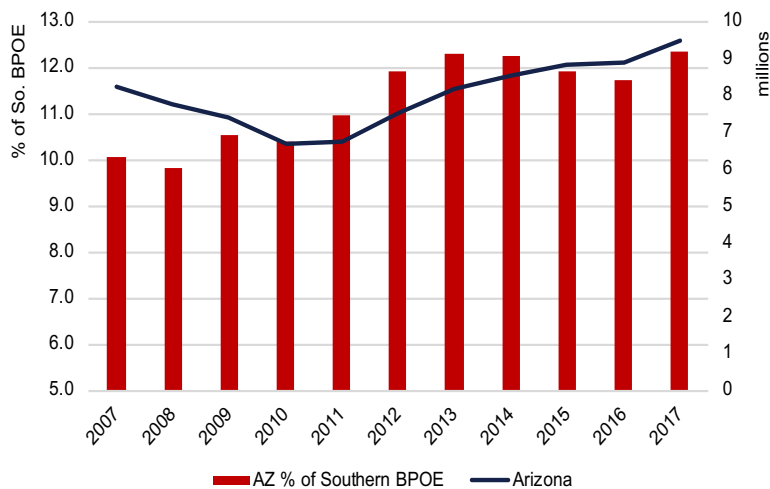
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Table 10: Personal Vehicle Crossings Arizona BPOE Northbound (000s)

YEAR	Douglas	Lukeville	Naco	Nogales	San Luis	Sasabe
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
2017	1,766	383	295	3,806	3,213	24

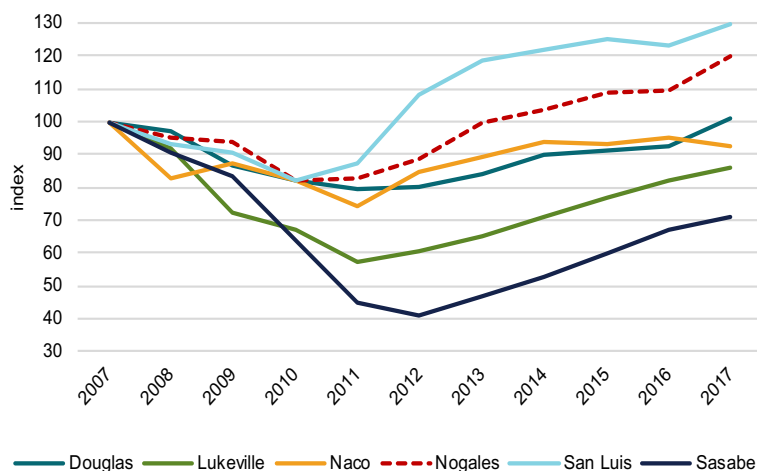
Source: Bureau of Transportation Statistics and EBRC

Figure 28: Personal Vehicle Crossings Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 29: Personal Vehicle Crossings Arizona BPOE Northbound



Source: Bureau of Transportation Statistics and EBRC

Personal 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 vehicle crossings at Nogales were up 9.5% over the year with 3.8 million crossings in 2017. In fact, with the exception of Naco, all Arizona BPOE saw significant traffic increases in 2017. San Luis was up 4.9% with 3.2 million crossings, and Douglas gained 9.3% with 1.8 million (Table 10).

Arizona BPOE combined facilitated 9.5 million personal vehicle crossings in 2017 for 7.3% growth over the year, and 15.6% growth over the decade. Arizona's percent share of vehicle crossings at all southern border ports increased from 11.7% in 2016 to 12.3% in 2017 (Figure 28).

San Luis and Nogales gained 29.5% and 19.7% over the decade, respectively. Douglas caught up to its levels of a decade ago, while the other ports remained well below 2007 levels (Figure 29).

Among the major southern BPOE, El Paso led with 12.6 million crossings, but gained only 0.7% in 2017 and declined 10.3% over the decade.



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Laredo had 5.0 million crossings in 2017, this was down 2.0% over the year and 10.9% over the decade.

Calexico East had 3.8 million crossings in 2017, growing 0.4% over the year, and 12.4% over the decade. With 3.8 million crossings in 2017, Nogales caught up with Calexico East, and grew faster over the decade at 19.7% (Table 11). All other major ports remained well below their 2007 levels (Figure 30).

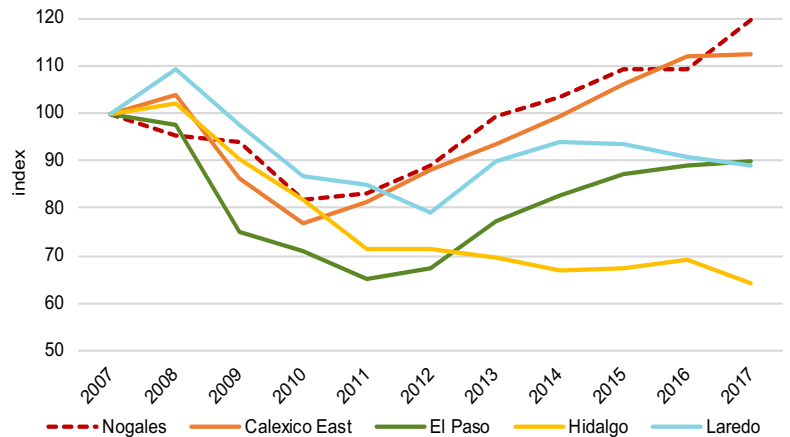
Crossings at Arizona BPOE exhibit marked seasonality, tending to be lower in February and higher in May (Figure 31).

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

YEAR	Nogales	Calexico East	El Paso	Hidalgo	Laredo
2007	3,181	3,418	14,062	6,835	5,600
2008	3,027	3,549	13,716	6,983	6,105
2009	2,991	2,954	10,529	6,178	5,452
2010	2,601	2,627	9,968	5,604	4,864
2011	2,641	2,785	9,148	4,878	4,746
2012	2,823	3,017	9,462	4,894	4,440
2013	3,162	3,199	10,877	4,768	5,023
2014	3,287	3,400	11,595	4,565	5,251
2015	3,470	3,622	12,258	4,594	5,224
2016	3,477	3,829	12,526	4,721	5,092
2017	3,806	3,843	12,615	4,401	4,991

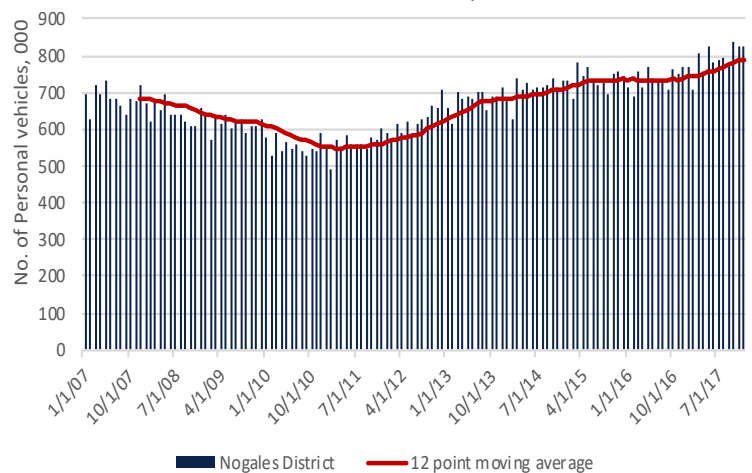
Source: Bureau of Transportation Statistics and EBRC

Figure 30: Major BPOE Northbound Vehicle Crossings (2007=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

How does Arizona compare?

- ▶ 2007-2017: Personal vehicle traffic at Nogales BPOE grew 19.7% followed by Calexico East at 12.4%. Other major BPOE experienced double digit declines.
- ▶ In 2017, traffic volume at Nogales gained 9.5%, El Paso only 0.7% and Calexico East 0.4%. Hidalgo lost 6.8% and Laredo 2.0%.

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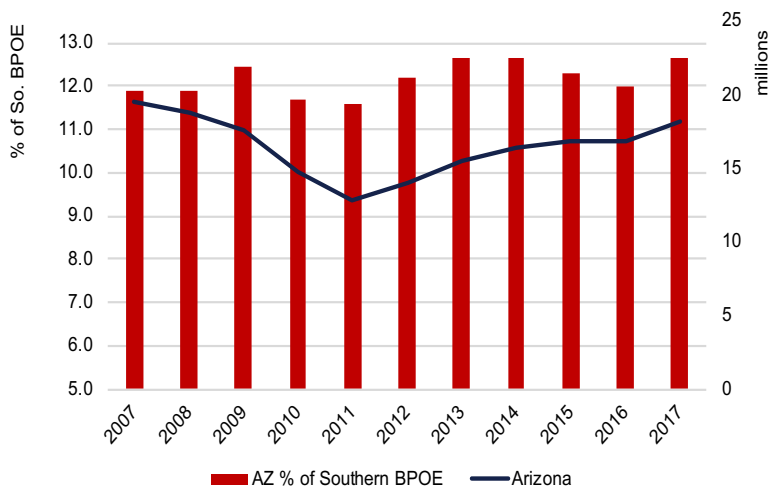
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Table 12: Personal Vehicle Passengers Arizona Northbound (000s)

YEAR	Douglas	Lukeville	Naco	Nogales	San Luis	Sasabe
2007	4,032	1,297	861	8,587	4,713	103
2008	3,907	1,188	705	8,472	4,417	79
2009	3,893	1,088	661	7,636	4,234	67
2010	2,893	695	512	6,729	3,860	37
2011	2,615	539	465	5,289	3,941	30
2012	2,610	581	493	5,730	4,575	26
2013	2,704	625	509	6,510	5,089	26
2014	2,822	653	526	6,798	5,537	31
2015	2,851	751	515	7,190	5,575	36
2016	2,908	887	510	7,061	5,463	41
2017	3,192	1,000	526	7,630	5,753	45

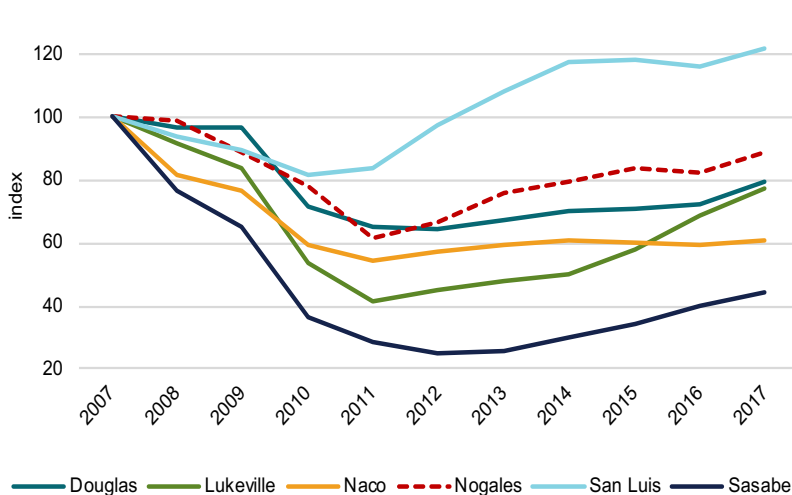
Source: Bureau of Transportation Statistics and EBRC

Figure 32: Personal Vehicle Passengers Arizona Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 33: Arizona BPOE Northbound Vehicle Passengers (2007=100)



Source: Bureau of Transportation Statistics and EBRC

Personal 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.

Personal Vehicle Passengers

Personal vehicle passengers crossing at Arizona's southern BPOE picked up steam in 2017 growing 7.6% with over 18 million persons crossing. Nogales facilitated 7.6 million crossings (up 8.1%), San Luis 5.8 million (up 5.3%), Douglas 3.2 million (up 9.8%) and Lukeville 1.0 million (up 12.7%) (Table 12).

Arizona's share of personal vehicle passenger crossings at all southern BPOE grew from 12.0% in 2016 to 12.6% in 2017 (Figure 32).

San Luis gained 22.1% in passenger crossings over the decade while all other Arizona BPOE lost ground. Nogales declined 11.1% over the decade, Douglas 20.8%, and Lukeville 22.9% (Figure 33).

Among major southern BPOE, El Paso facilitates by far the largest volume of personal vehicle passenger crossings with 22 million in 2017. Laredo followed with 10.5 million, Hidalgo with 9.2 million, Nogales with 7.6 million, and Calexico East with 7.1 million (Table 13).

In 2017, Calexico East was the only major southern BPOE to surpass



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2007 levels growing 2.0% over the decade. All other major southern ports were still significantly below 2007 levels. However, since 2011 all ports have generally been on the upswing or at least not losing ground. In 2017, Nogales was at 88.9% of its 2007 level, El Paso 93.1%, Laredo 78.5%, and Hidalgo 70.0% (Table 15 and Figure 34).

Since the early 2000s, 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?

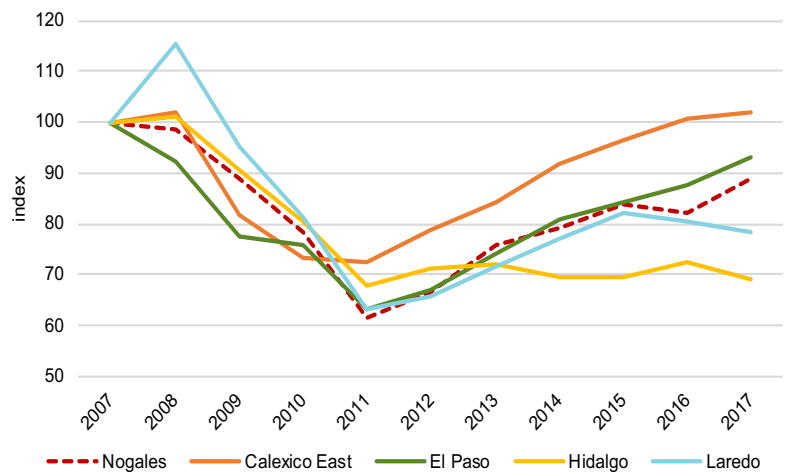
- ▶ 2007-2017: Calexico East was the only major so. BPOE to surpass its level of a decade ago. Nogales was at 88.9%, just behind El Paso at 93.1%. Among Arizona BPOE, San Luis was the stand out growing 22.1% over the decade.
- ▶ In 2017, traffic picked up at Arizona BPOE combined growing 7.6% and facilitating over 18 million crossings. Traffic at Nogales grew 8.1% and at Lukeville 12.7%.

Table 13: Major BPOE Northbound Vehicle Passengers (000s)

YEAR	Nogales	Calexico East	El Paso	Hidalgo	Laredo
2007	8,587	7,004	23,675	13,305	13,368
2008	8,472	7,144	21,806	13,468	15,398
2009	7,636	5,731	18,377	12,074	12,729
2010	6,729	5,152	17,920	10,692	10,858
2011	5,289	5,082	14,941	9,040	8,458
2012	5,730	5,530	15,908	9,484	8,768
2013	6,510	5,916	17,545	9,609	9,588
2014	6,798	6,438	19,135	9,252	10,335
2015	7,190	6,744	19,982	9,272	10,985
2016	7,061	7,042	20,768	9,635	10,746
2017	7,630	7,143	22,047	9,177	10,489

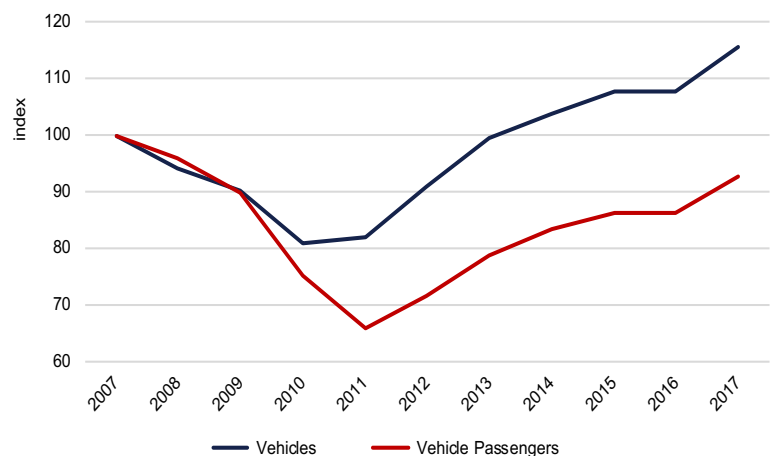
Source: Bureau of Transportation Statistics and EBRC

Figure 34: Major BPOE Northbound Vehicle Passengers (2007=100)



Source: Bureau of Transportation Statistics and EBRC

Figure 35: Number of Vehicles & Vehicle Passengers through Nogales District (2007=100)



Source: Bureau of Transportation Statistics and EBRC

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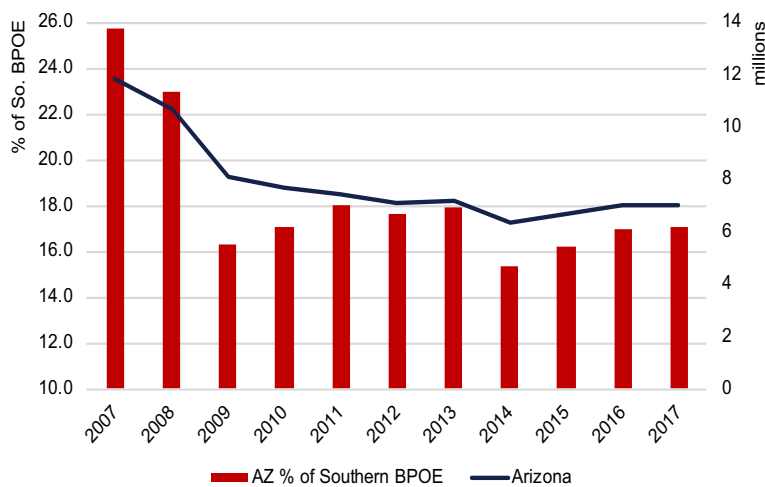


Table 14: Pedestrian Crossings Arizona Northbound

YEAR	Douglas	Lukeville	Naco	Nogales	San Luis	Sasabe
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
2017	854,502	43,051	113,384	3,349,123	2,645,119	549

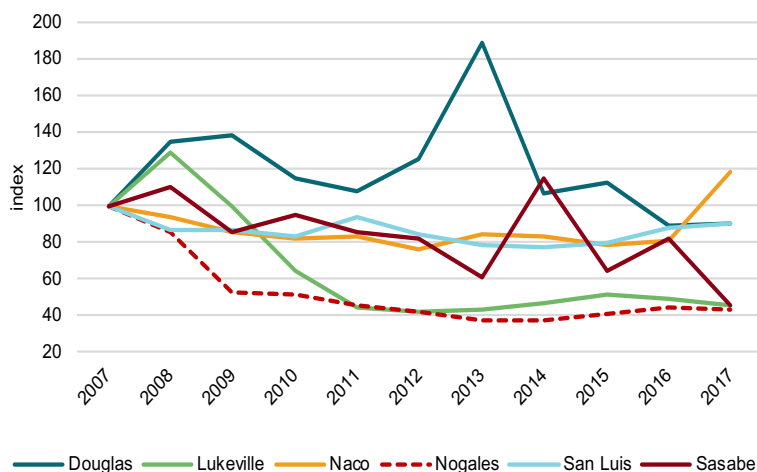
Source: Bureau of Transportation Statistics and EBRC

Figure 36: Pedestrians Crossings Arizona BPOE Northbound



Source: Bureau of Transportation Statistics and EBRC

Figure 37: Pedestrian Crossings Arizona BPOE Northbound (2007=100)



Source: Bureau of Transportation Statistics and EBRC

The 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

In 2017, there were 3.3 million pedestrian crossings at Nogales, Arizona's busiest port, a 2.1% decline from 2016. San Luis came in second at 2.6 million crossings (up 2.4%), and Douglas third with 0.9 million (up 0.3%). Naco gained 47.6%, but traffic fell off at Arizona's other two smaller ports with Lukeville losing 6.4% and Sasabe 44.2% (Table 14).

Arizona's percent share of pedestrian crossings at all southern BPOE held steady at 16.6% (after revisions) (Figure 36).

Pedestrians crossings at Nogales declined 56.6% over the decade from 7.7 million in 2007 to 3.3 million in 2017. Naco was the only Arizona BPOE to gain ground (Figure 37).

Among major southern BPOE, Nogales' 3.3 million pedestrian crossings in 2017 moved it ahead of Laredo (3.0 million). El Paso continued to have the largest number of crossings at 6.9 million (Table 15).



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Hidalgo was the only major BPOE not to lose pedestrian traffic over the decade. Laredo declined 34.8% and El Paso 18.6%. Calexico East, while still a small player by comparison, increased its traffic from 9,429 crossers in 2007 to 260,454 in 2017 (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. (Figure 39).

How does Arizona compare?

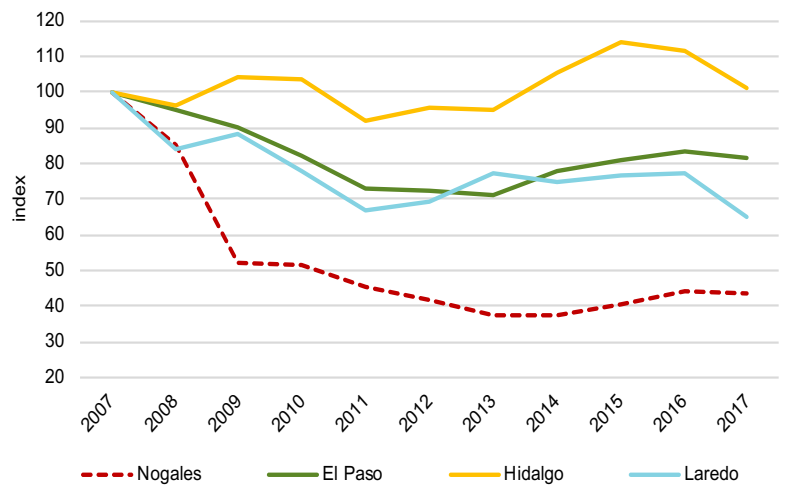
- ▶ 2007-2017: Breaking even, Hidalgo was the only major port not to lose ground over the decade. Pedestrian traffic at Nogales declined 56.6%, Laredo 34.8%, and El Paso 18.6%.
- ▶ 2007-2017: Among Arizona BPOE San Luis lost 10.0%, Douglas 10.3%, and Lukeville 54.4%.
- ▶ In 2017, Nogales BPOE facilitated 3.3 million pedestrians (down 2.1% from 2016), San Luis followed with 2.6 million (up 2.4%), and Douglas with 0.8 million (up 0.3%).

Table 15: Pedestrian Crossings at Major BPOE Northbound

YEAR	Nogales	Calexico East	El Paso	Hidalgo	Laredo
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
2017	3,349,123	260,454	6,883,755	2,185,335	3,016,801

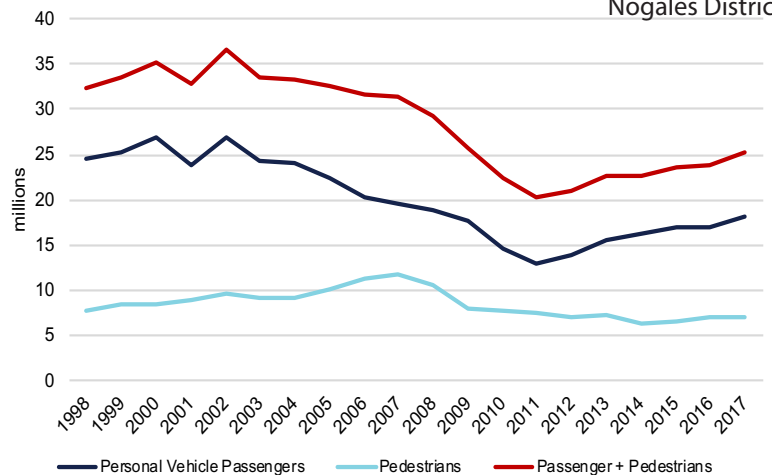
Source: Bureau of Transportation Statistics and EBRC

Figure 38: Major BPOE Northbound Pedestrian Crossings (2007=100)



Source: Bureau of Transportation Statistics and EBRC

Figure 39: No. of Pedestrians + Vehicle Passengers Northbound via Nogales District



Source: Bureau of Transportation Statistics and EBRC

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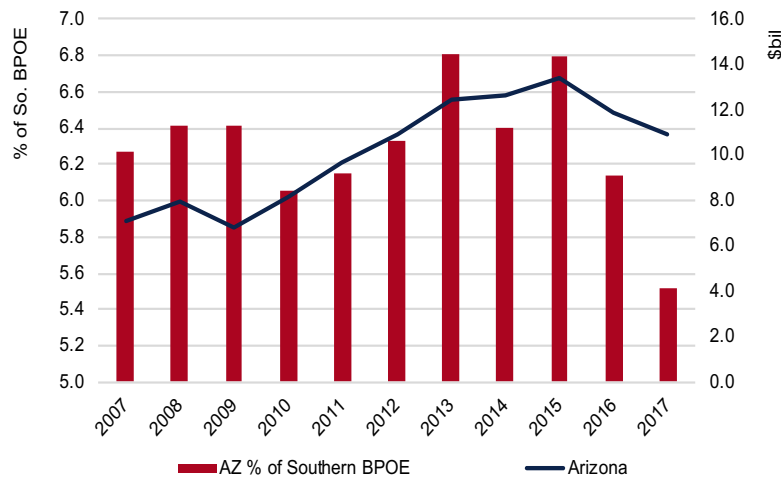
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Table 16: U.S. Exports via So. Border States (\$bil)

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
2007	7.12	-4.5	17.04	-3.1	0.50	12.9	97.77	2.5
2008	7.98	12.1	18.49	8.6	0.42	-15.3	108.71	11.2
2009	6.84	-14.3	15.61	-15.6	1.56	271.8	92.80	-14.6
2010	8.12	18.7	18.48	18.4	4.90	213.4	117.45	26.6
2011	9.68	19.3	20.91	13.2	7.51	53.3	140.37	19.5
2012	10.93	12.9	22.13	5.8	8.15	8.5	152.56	8.7
2013	12.47	14.1	22.57	2.0	8.70	6.7	159.68	4.7
2014	12.68	1.6	23.86	5.7	9.89	13.7	170.83	7.0
2015	13.42	5.9	24.87	4.2	10.32	4.3	164.96	-3.4
2016	11.88	-11.5	24.58	-1.2	10.80	4.7	160.92	-2.5
2017	10.96	-7.7	25.57	4.0	10.44	-3.3	171.35	6.5

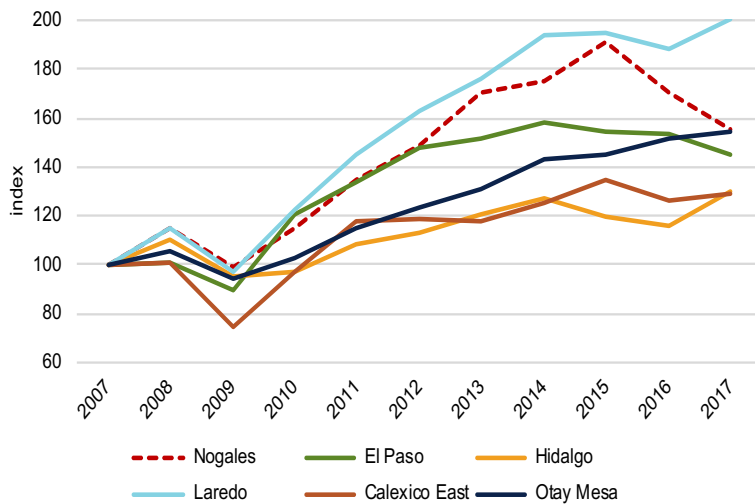
Source: U.S. Census Bureau

Figure 40: U.S. Exports via Arizona BPOE



Source: U.S. Census Bureau

Figure 41: U.S. Exports via So. BPOE (2007=100)



Source: U.S. Census Bureau

Arizona 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 \$11.0 billion in U.S. exports to Mexico in 2017, a 7.7% decline over the year. U.S. exports travelling south via California ports increased 4.0% and in Texas 6.5%. New Mexico saw a 3.3% decline (Table 16). Overall, the value of U.S. exports travelling south via all southern BPOE increased 5.8% in 2017.

In 2017, 5.5% of all U.S. exports to Mexico through southern BPOE travelled via Arizona, down from 6.1% a year ago (Figure 40).

Despite the slowdown over the past two years, U.S. exports through Nogales BPOE in 2017 were 55.6% above 2007 levels. Laredo gained 100.1% over the decade, Otay Mesa 54.6%, El Paso 45.1%, and Hidalgo 29.8% (Figure 41).

How does Arizona compare?

- ▶ In 2017, Arizona BPOE share of border states commodity flows decreased from 6.1% to 5.5%.
- ▶ 2007-2017: exports via Nogales BPOE increased 55.6%, the only major port which grew faster was Laredo with 100.1% growth.



Electric 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 2017, \$3.2 billion in U.S. electric and electronic manufacturing products to Mexico passed through Arizona BPOE, up 0.6% from 2016. With some bumps along the way, overall the last decade has been a period of growth for this important sector which was up 43.0% from 2007 (Table 17).

Arizona BPOE share of this export category was 5.8% in 2017, up from 5.7% in 2016, but still below its 7.5% share a decade ago (Figure 42).

The value of these exports via Nogales were 45.0% higher in 2017 than in 2007. Among the major ports, Laredo grew 107.3% over the decade, Calexico East 102.5%, El Paso 44.1%, Otay Mesa 37.2%, and Hidalgo 10.4% (Figure 43).

How does Arizona compare?

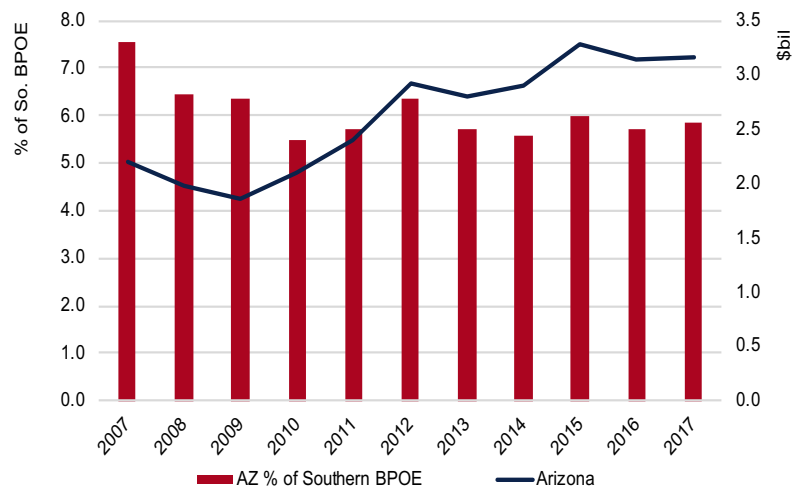
- ▶ In 2017, Arizona's share of border states was 5.8%, up from its 5.7% share in 2016.
- ▶ 2007-2017: Exports through Nogales BPOE increased 45.0%, only Laredo and Calexico East, grew faster.

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

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
2007	2.21	28.5	4.90	18.8	0.08	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	231.6	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	3.8
2015	3.29	13.2	7.91	11.3	8.11	11.9	37.37	2.9
2016	3.14	-4.7	7.62	-3.8	8.51	5.0	36.79	-1.6
2017	3.15	0.6	7.75	1.7	8.30	-2.4	36.53	-0.7

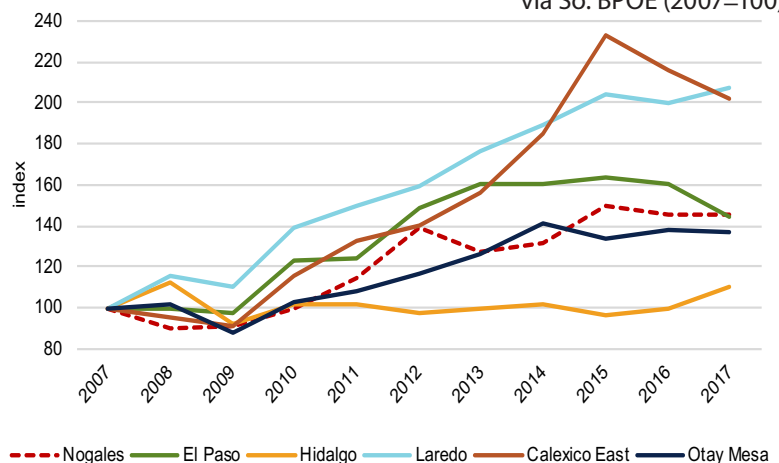
Source: U.S. Census Bureau

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 via So. BPOE (2007=100)



Source: U.S. Census Bureau

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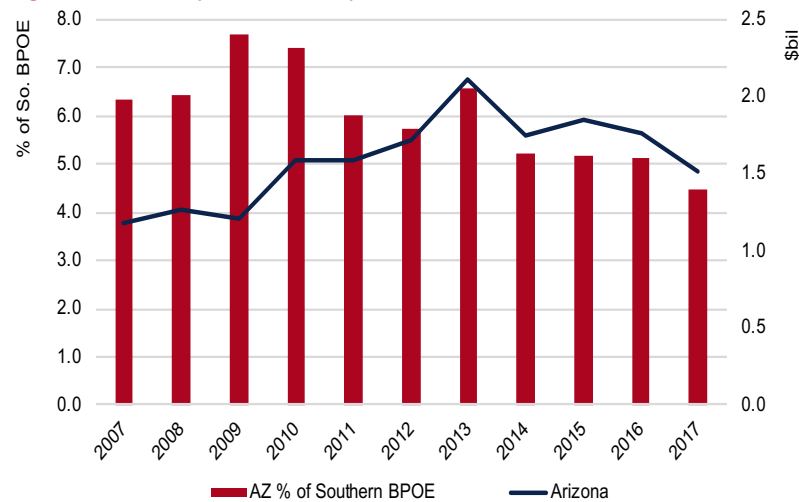
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Table 18: U.S. Exports of Transportation Prod. via So. Border States (\$bil)

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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	6.7
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	-34.3	29.36	-4.8
2017	1.51	-14.4	3.60	6.5	0.07	-56.3	28.89	-1.6

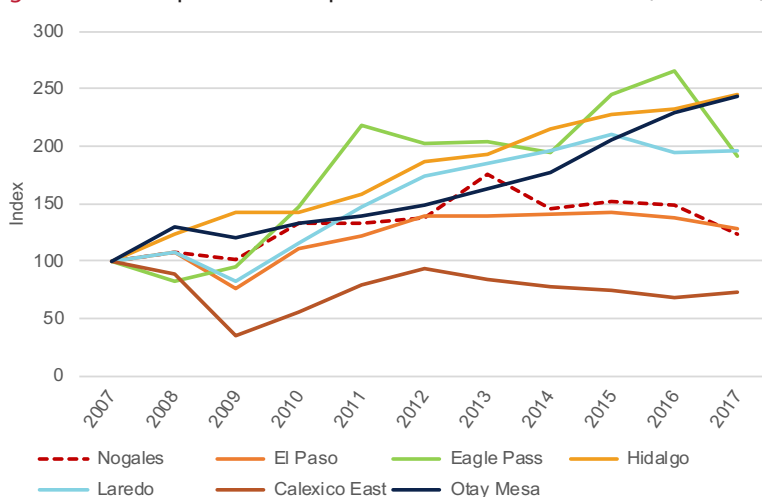
Source: U.S. Census Bureau

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 (2007=100)



Source: U.S. Census Bureau

Mexico'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.

U.S. Exports of Transportation Products

In 2017, \$1.5 billion worth of U.S. transportation equipment was exported to Mexico via Arizona BPOE. This was a 14.4% decrease over the year (Table 18).

Over the decade, the value of transportation exports travelling via Arizona BPOE grew 27.9%. However, Arizona's share declined from 6.3% in 2007 to 4.4% in 2017 (Figure 44).

Nogales BPOE gained 23.9% over the decade keeping pace with El Paso's 28.2%, but failing to keep up with growth at Hidalgo (145.4%), Otay Mesa (143.5%), or Laredo (95.4%). Laredo facilitates the largest volume at \$21.0 billion.

In 2017, Calexico East grew fastest year-over-year at 7.2%, followed by Otay Mesa (6.1%), Hidalgo (5.8%), and Laredo (0.4%). Volume declined at El Paso (7.0%), Nogales (16.2%), and Eagle Pass (28.0%) (Figure 45).

How does Arizona compare?

- ▶ 2007-2017: Exports via Nogales grew 23.9%. At 145.4%, Hidalgo had the largest percent gain.
- ▶ In 2017, sector exports moving via Arizona BPOE declined 14.4%, in Texas 1.6%, and 56.3% in New Mexico. California gained 6.5%.



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Imports 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 travelling via Arizona BPOE declined 7.3% in 2017 to \$16.9 billion. By contrast, imports via Texas BPOE increased 7.8% reaching \$218.9 billion. California BPOE saw a 4.6% increase to reach \$40.6 billion. New Mexico lost 1.7% with imports at \$11.8 billion in 2017 (Table 19).

In 2017, Arizona BPOE share of U.S. imports via southern BPOE was 6.2%, down from 7.0% in 2016 and 8.6% in 2007 (Figure 46).

Imports via the Nogales BPOE gained 19.9% between 2007 and 2017, the smallest decade gain among the major southern BPOE. Over the decade, Laredo gained 81.6%, followed by Hidalgo (61.1%), El Paso (42.3%), Calexico East (34.5%), and Otay Mesa (32.4%) (Figure 47).

How does Arizona compare?

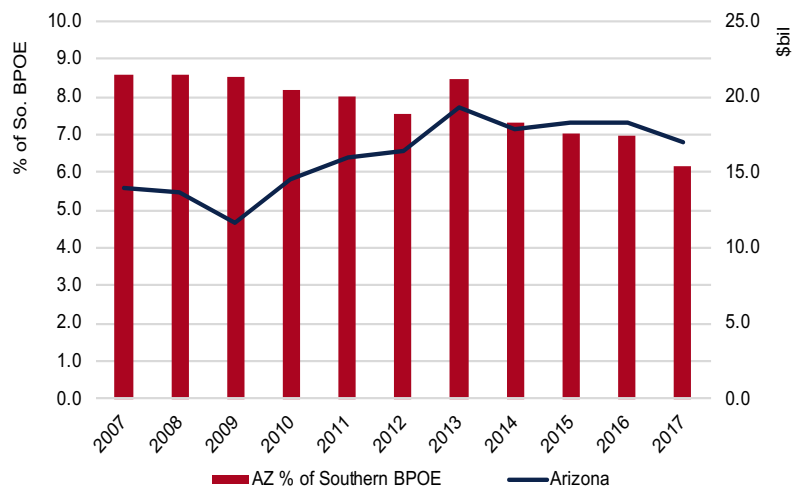
- ▶ 2007-2017: Imports via Nogales BPOE increased 19.9%, the smallest decade gain of any major southern port.
- ▶ In 2017, U.S. imports from Mexico through Arizona BPOE declined 7.3% to \$16.9 billion.

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

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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	184.3	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	-6.5	204.99	6.3
2015	18.26	2.0	39.89	11.7	11.82	22.7	203.19	-0.9
2016	18.26	0.0	38.84	-2.6	12.05	1.9	202.98	-0.1
2017	16.93	-7.3	40.64	4.6	11.84	-1.7	218.87	7.8

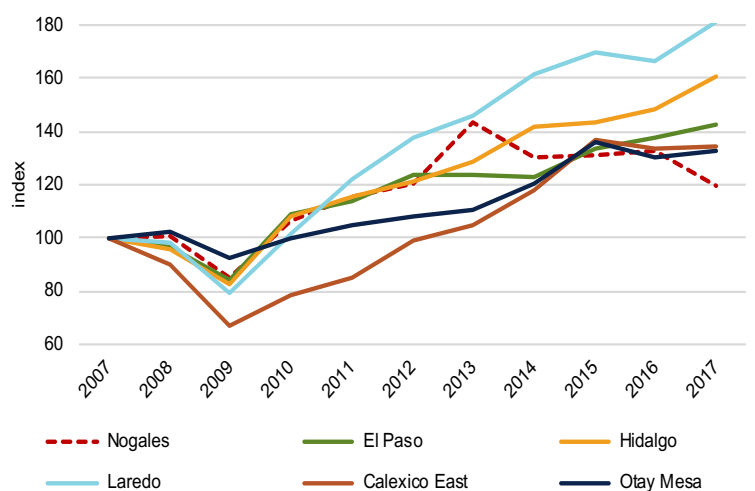
Source: U.S. Census Bureau

Figure 46: U.S. Imports via Arizona BPOE



Source: U.S. Census Bureau

Figure 47: U.S. Imports via So. BPOE (2007=100)



Source: U.S. Census Bureau

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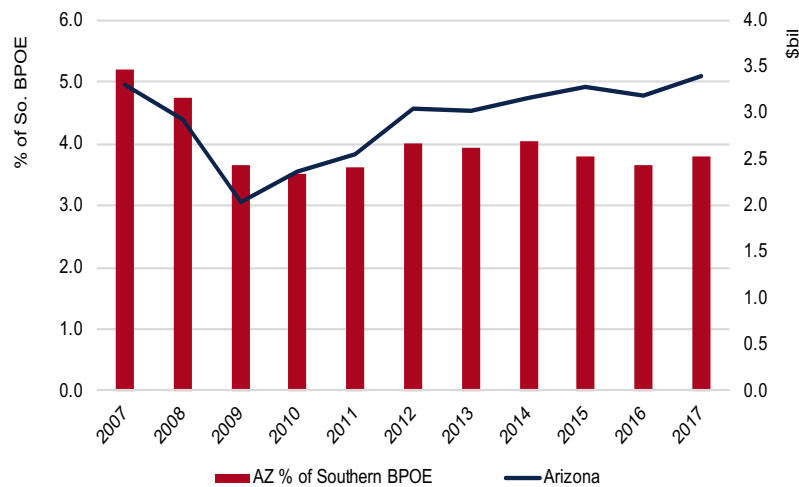
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Table 20: U.S. Imports Electric & Electronic Prod. via So. Border States (\$bil)

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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	16.6
2011	2.56	7.9	15.87	0.2	8.49	20.4	44.72	3.8
2012	3.05	19.0	16.64	4.9	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	6.0
2016	3.19	-3.0	18.72	-8.5	10.11	0.0	55.48	4.3
2017	3.39	6.3	18.10	-3.3	9.80	-3.1	58.74	5.9

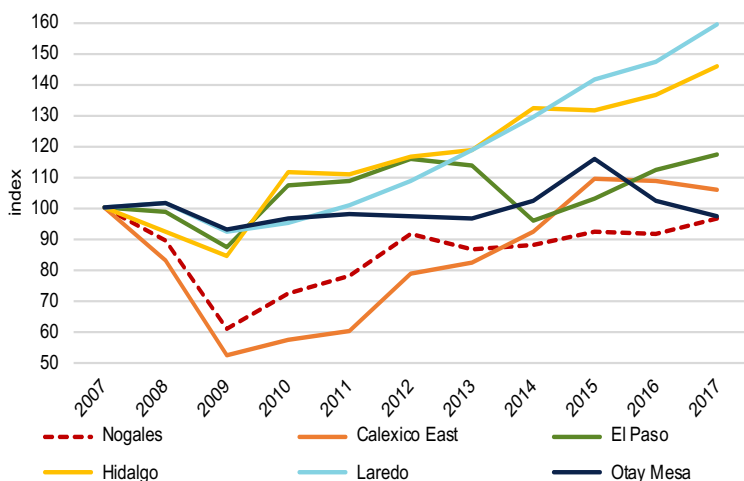
Source: U.S. Census Bureau

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 (2007=100)



Source: U.S. Census Bureau

Electric 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.

U.S. Imports of Electric and Electronic Products

Electric and electronic manufacturing imports from Mexico travelling via Arizona BPOE increased from \$3.2 to \$3.4 billion (6.3%) in 2017. Overall, the value of imports in this sector facilitated by Arizona BPOE are up only 2.8% from a decade ago (Table 20).

In 2017, the Arizona BPOE share of product imports in this sector was 3.8%, down from 5.2% in 2007 (Figure 48).

Electric and electronic product imports from Mexico via the Nogales declined 3.1% between 2007 and 2017, and Otay Mesa lost 2.4%. All other major BPOE saw increases over the decade. Laredo led with 59.2% growth, followed by Hidalgo (45.8%), El Paso (17.5%), and Calexico East (6.1%) (Figure 49).

How does Arizona compare?

- ▶ In 2017, \$3.4 billion in electric and electronic manufacturing products imported via Arizona BPOE, up 6.3% over the year.
- ▶ 2007-2017: Imports via Nogales BPOE declined 3.1%. The only major BPOE to see a decrease.



Arizona 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 2017, \$5.5 billion worth of transportation products were imported from Mexico via Arizona BPOE, a 21.9% decline from 2016. Arizona was the only southern border state see a contraction. Imports via New Mexico grew 14.3%, followed by California (11.3%), and Texas (7.2%) (Table 21).

Arizona's of southern border states total value in this sector was 5.2% in 2017, a decline from its 7.1% share in 2016, and from 9.2% in 2007 (Figure 50).

In 2017, Nogales BPOE facilitated sector imports valued at \$5.0 billion, for 12.9% growth over the decade. Laredo had the largest volume, \$51.9 billion, for 111.2% growth since 2007, followed by Eagle Pass with \$16.4 billion (217.9% growth), and El Paso with \$15.7 billion (73.0% growth) (Figure 51).

How does Arizona compare?

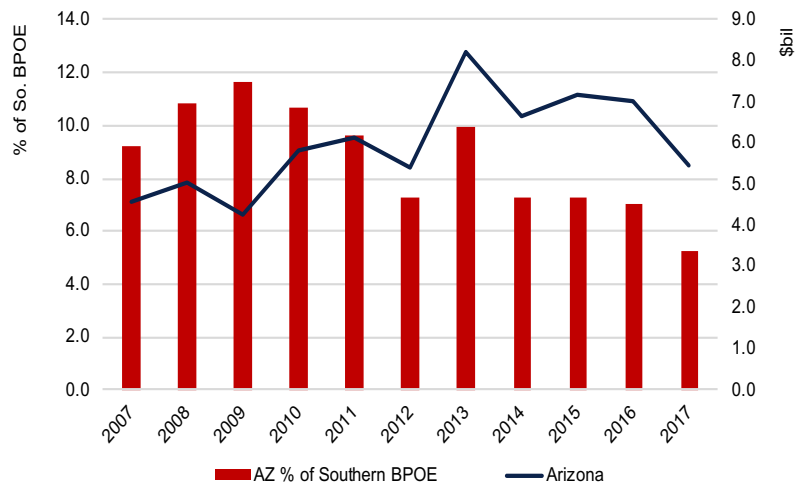
- ▶ In 2017, Arizona's share of border states declined from 7.1% to 5.2%.
- ▶ 2007-2017: Imports via Nogales grew 12.9%, import value via all other major BPOE grew faster.

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

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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	43.8	45.61	53.8
2011	6.13	5.0	3.52	12.2	0.10	-32.6	54.26	19.0
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	18.8	79.82	14.9
2015	7.16	7.3	7.29	24.3	0.16	-20.1	85.02	6.5
2016	7.00	-2.3	7.91	8.5	0.17	3.3	85.23	0.3
2017	5.47	-21.9	8.80	11.3	0.19	14.3	91.37	7.2

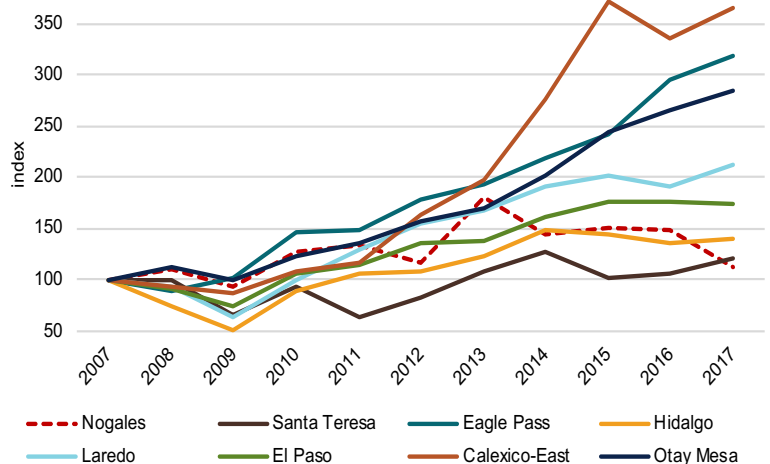
Source: U.S. Census Bureau

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 (2007=100)



Source: U.S. Census Bureau

COMMODITY FLOWS



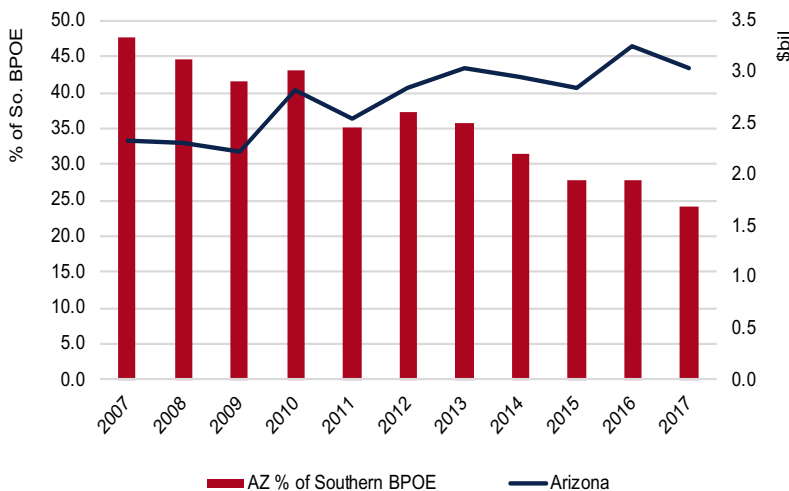
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Table 22: U.S. Imports of Fresh Produce by State (\$bil)

	AZ	%ch	CA	%ch	NM	%ch	TX	%ch
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
2017	3.04	-6.4	2.13	11.8	0.06	-25.8	7.43	14.2

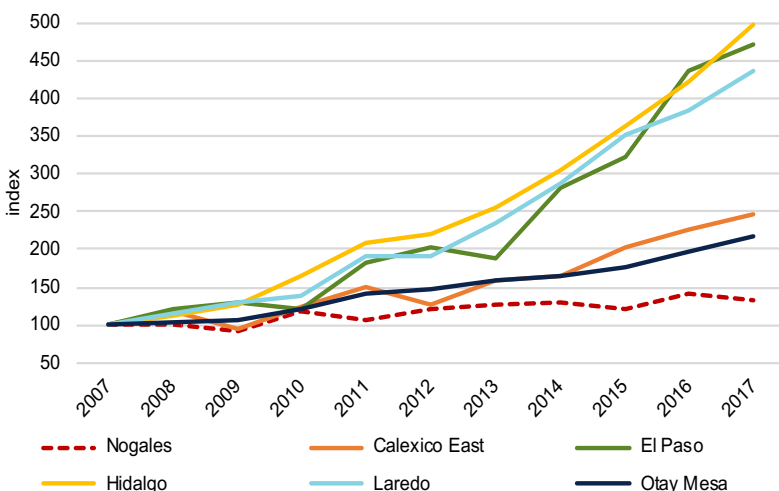
Source: U.S. Census Bureau

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

Arizona 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 2017, Arizona BPOE facilitated \$3.0 billion in fresh produce imports from Mexico, a 6.4% decline from a year ago. Nogales port alone imported \$2.8 billion (Table 22).

Historically, the majority of fresh produce entering the U.S. from Mexico entered via Arizona BPOE. In 2011, Texas surpassed Arizona. In 2017, Arizona BPOE value share of Mexican fresh produce imported via southern BPOE was 24.2%, a decrease from its 47.5% share a decade ago (Figure 52).

Between 2007 and 2017, produce traffic via Nogales port grew 32.5%. However, this important sector grew far faster at all other major southern BPOE: Hidalgo grew 397.4%, Laredo 337.0%, El Paso 372.3%, Calexico East 145.9%, and Otay Mesa 116.1% (Figure 53).

Imports of fresh produce from Mexico have a distinctive seasonal



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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 68.9% of produce imported from December through May compared to 57.4% at Hidalgo, and 55.1% via Laredo, in 2017 (Table 23 and Figure 55).

Laredo surpassed Nogales BPOE for imports of winter produce for the first time in 2017 (Figure 55). At the beginning of the decade (2007), Nogales produce imports were valued at \$2.1 billion. Hidalgo placed a distant second at \$0.8 billion. Despite this disparity, by 2015 Hidalgo had surpassed Nogales importing \$3.0 billion in fresh produce compared to \$2.8 billion at Nogales. This shift is largely due to the rise in avocado imports which currently favor Texas BPOE. In 2017, Hidalgo port facilitated \$4.1 billion, Nogales \$2.8 billion, Laredo \$2.5 billion, and Otay Mesa \$1.4 billion worth of fresh produce.

How does Arizona compare?

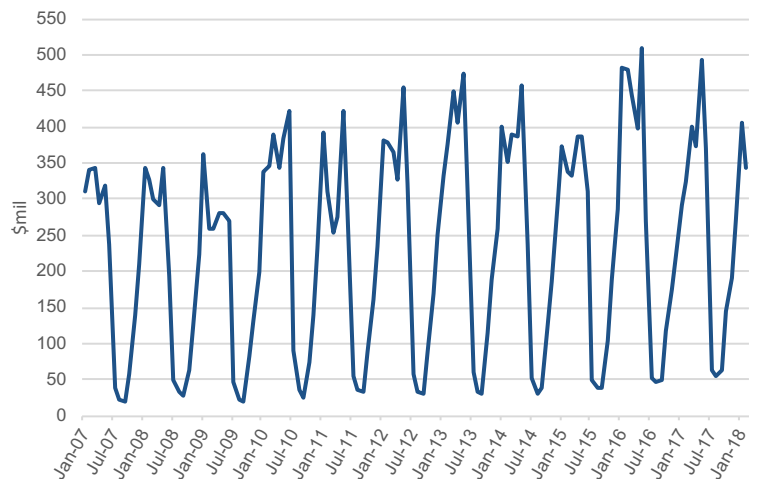
- ▶ 2007-2017: Arizona's share of fresh produce imports declined from 47.5% to 24.2%.
- ▶ In 2017, Hidalgo BPOE facilitated \$4.1 billion in fresh produce imports from Mexico, Nogales \$2.8 billion, and Laredo \$2.5 billion.
- ▶ Hidalgo surpassed Nogales in winter fresh produce imports for the first time in 2017.

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

	Nogales	Hidalgo	Laredo
Mar-17	342.2	423.0	265.1
Apr-17	353.8	406.9	230.9
May-17	485.6	336.7	201.4
Jun-17	367.4	257.3	163.1
Jul-17	62.3	232.2	145.3
Aug-17	53.4	277.5	182.0
Sep-17	60.2	310.5	211.4
Oct-17	141.0	290.9	211.8
Nov-17	183.5	342.2	206.4
Dec-17	261.6	432.2	237.1
Jan-18	370.6	469.0	280.6
Feb-18	292.2	429.9	251.9

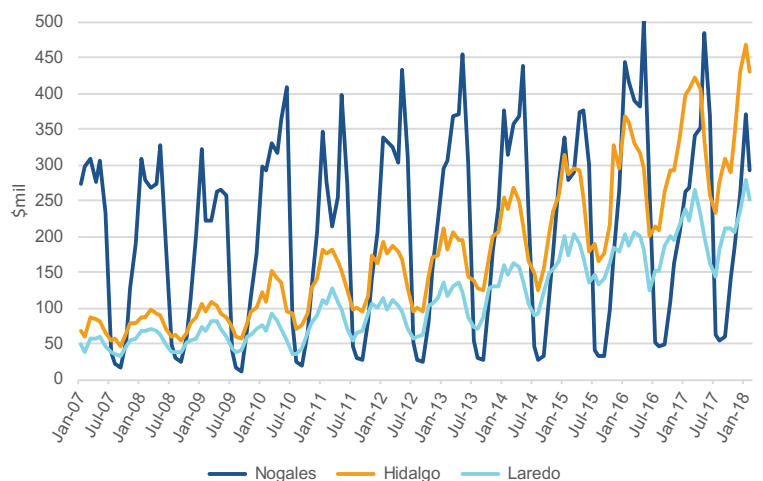
Source: U.S. Census Bureau

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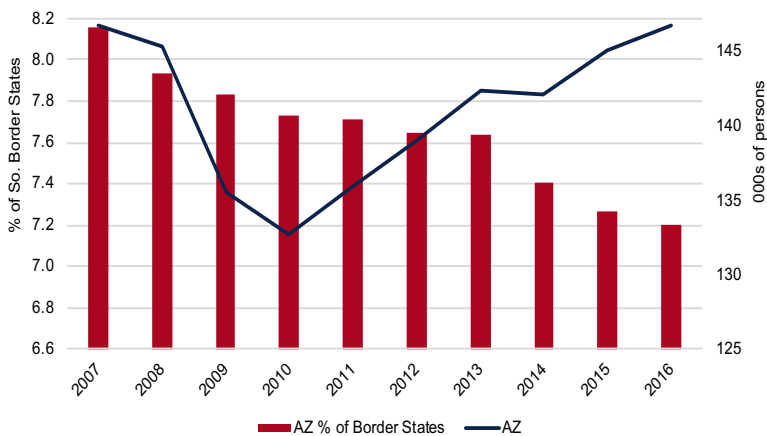
Table 24: Employment in High-Tech Manufacturing Industries (000s)

	AZ	%ch	CA	%ch	NM*	%ch	TX	%ch
2007	146.8		1,060.6		52.0		540.7	
2008	145.3	-1.0	1,077.6	1.6	50.8	-2.5	557.8	3.2
2009	135.5	-6.8	1,021.0	-5.3	48.4	-4.5	525.3	-5.8
2010	132.7	-2.1	1,016.8	-0.4	48.2	-0.6	519.1	-1.2
2011	135.9	2.4	1,040.6	2.3	47.7	-1.0	538.2	3.7
2012	139.0	2.3	1,073.4	3.2	46.2	-3.0	558.5	3.8
2013	142.3	2.4	1,101.2	2.6	45.6	-1.3	575.6	3.1
2014	142.2	-0.1	1,141.4	3.7	44.8	-1.7	590.7	2.6
2015	145.1	2.1	1,199.7	5.1	45.7	2.0	605.8	2.6
2016	146.7	1.1	1,238.9	3.3	45.9	0.4	606.6	0.1

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

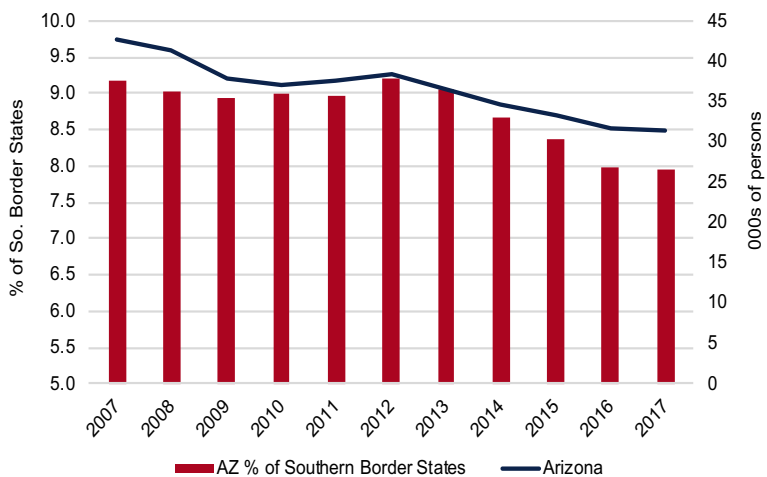
High-tech manufacturing is a pivotal driver of Arizona's export-based economy. In addition to its increasingly important role in international trade, high-tech industries are characterized by higher productivity, highly skilled workers, and higher wages. The dynamics of Arizona's employment in high-tech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

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

Arizona's Employment

Arizona's high-tech manufacturing industries employed 146,749 people* in 2016 (the latest full year of data). This was an increase of 1,619 workers or 1.1% from 2015. 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 2016, high-tech manufacturing employment finally caught up to its pre-recession (2007) level of 146,759 employees (Table 24).

Despite this recovery, Arizona's share of high-tech manufacturing employment in U.S. border states declined from 8.2% in 2007 to 7.2% in 2016 (Figure 56).

Arizona's computer and electronic manufacturing sector* employed 31,500 persons in 2017, and remained virtually unchanged from 2016 (Figure 57).

In 2017, Arizona's aerospace manufacturing industries employed

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26,600 persons, a 2.6% gain over the year. Despite gains over the last two years, this sector is still 2.6% below its level of a decade ago (Table 25).

Arizona's share of U.S. border states' aerospace products and parts manufacturing employment was 18.2% in 2017, still below its peak of 19.3% in 2009, but on a par with its share a decade ago (Figure 58).

Although small in absolute numbers, employment in the pharmaceutical and medicine products manufacturing sector has experienced rapid growth, 105.2%, over the decade. This high value sector gained 8.7% in 2016, the latest full year for which we have data.* Arizona's share of U.S. border states increased from 2.0% in 2006 to 3.5% by 2016 (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 2016; the series for NM is an underestimate due to the exclusion some smaller categories which are not disclosed for privacy. Employment in the Aerospace and the Computer and Electronic Products Manufacturing sectors is from the Current Employment Statistics (CES) program, BLS, and is complete through 2017.

How does Arizona compare?

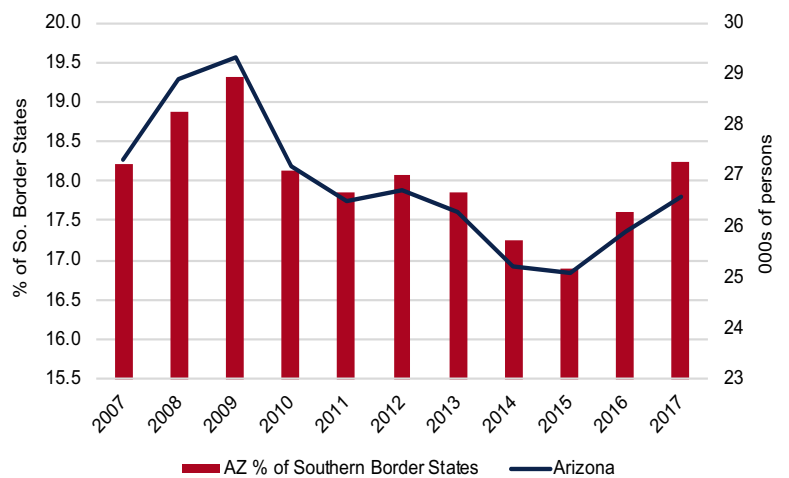
- ▶ In 2016, high tech manufacturing employment in Arizona finally surpassed pre-recession levels.
- ▶ 2007-2016: Arizona's share of high-tech employment eroded.

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

	AZ	%ch	CA	%ch	TX	%ch
2007	27.3	2.3	74.6	2.2	48.0	-2.0
2008	28.9	5.9	75.6	1.3	48.7	1.5
2009	29.3	1.4	74.3	-1.7	48.0	-1.4
2010	27.2	-7.2	74.8	0.7	48.1	0.2
2011	26.5	-2.6	73.4	-1.9	48.5	0.8
2012	26.7	0.8	73.0	-0.5	48.0	-1.0
2013	26.3	-1.5	73.7	1.0	47.3	-1.5
2014	25.2	-4.2	75.9	3.0	45.0	-4.9
2015	25.1	-0.4	78.5	3.4	45.0	0.0
2016	25.9	3.2	76.6	-2.4	44.6	-0.9
2017	26.6	2.7	75.1	-2.0	44.2	-0.9

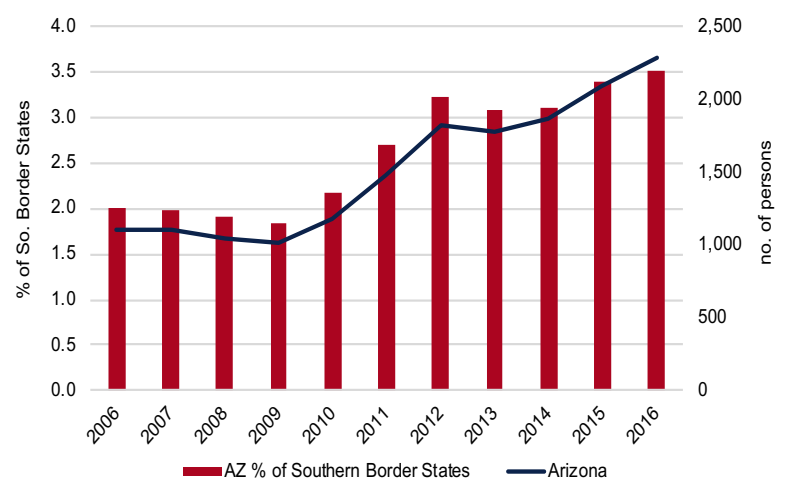
*BLS does not report employment in this category for New Mexico because it is negligible.
Source: Bureau of Labor Statistics, CES

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

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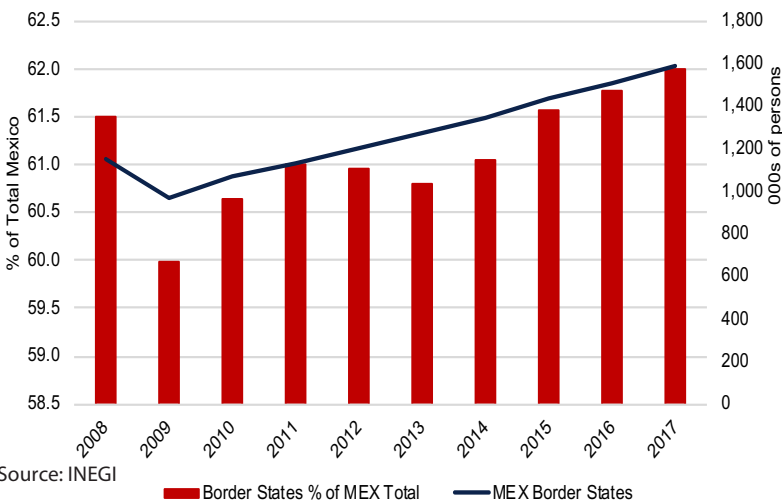
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Table 26: Mexico Border States IMMEX (Maquiladora) Employment (000s)

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	265.1	223.2	308.2	246.7	112.1	190.8
2015	284.8	237.6	339.1	258.8	112.0	201.3
2016	300.8	246.8	357.3	265.3	119.5	213.6
2017	319.8	258.8	376.8	276.9	129.2	228.7

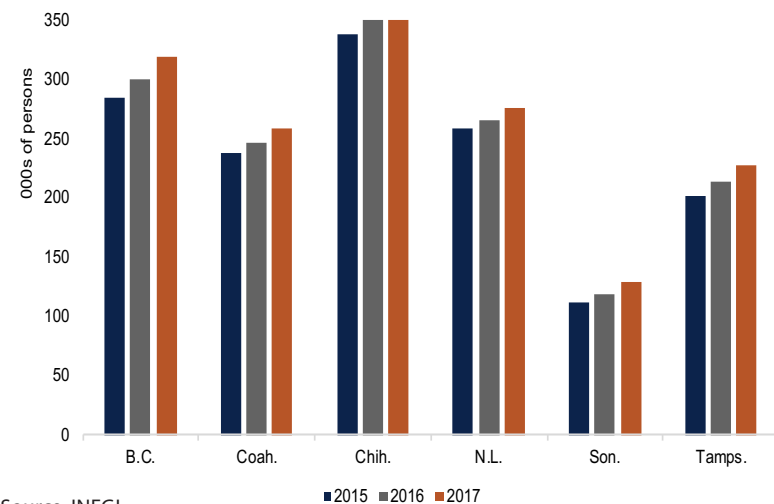
Source: INEGI

Figure 60: Mexico Border States IMMEX (Maquiladora) Employment



Source: INEGI

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



Source: INEGI

Maquiladora 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 was initiated in the mid-1960s, and continued to grow under NAFTA. By 2006, maquiladoras 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 merged in 2006 creating the IMMEX program.

In 2017, IMMEX employment in Mexico's border states was 1,590,281, up 5.8% from a year ago; nationwide, IMMEX employment increased 5.4%. Employment in this sector has risen steadily post recession (Table 26), as has the percent share of IMMEX employment in the border states which was 62.0% in 2017 (Figure 60).

In 2017, all Mexican border states experienced robust growth in IMMEX employment: Sonora led with 8.2% growth, followed by Tamaulipas (7.1%), Baja California (6.3%), Chihuahua (5.5%), Coahuila (4.9%), and Nuevo León (4.4%). Chihuahua employs the largest number of IM-

MEX workers, 376,754, and Sonora the fewest with 129,249 (Figure 61).

Sonora's IMMEX employment reached 129,249 in 2017, an 8.2% over-the-year gain, and a 35.4% increase from 2008 (first full year of data available for this report) (Table 27).

In 2017, Sonora's share of the border states total was 8.1%, this was below its 8.3% share in 2008, and its peak at 8.7% in 2013 (Figure 62).

Between 2008 and 2017, IMMEX employment in Coahuila grew 64.9%, followed by Nuevo León (39.4%), Chihuahua (39.0%), Baja California (29.7%), and Tamaulipas (27.2%). IMMEX employment in Mexico nationwide grew 37.3% during the same period (Figure 63).

How does Sonora compare?

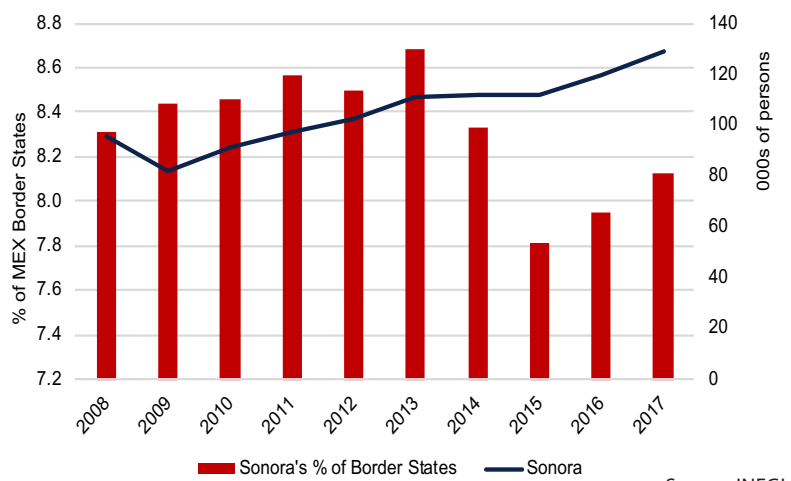
- ▶ In 2017, Sonora's 8.2% annual growth in IMMEX employment was the fastest among border states.
- ▶ Sonora's IMMEX employment grew 35.4% between 2008 and 2017.

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

YEAR	Son.	Son. % share of Mexico Border States	Mexico Border States	Mexico Total
2008	95.4	8.3	1,148.5	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	112.1	8.3	1,346.1	2,205.2
2015	112.0	7.8	1,433.6	2,328.8
2016	119.5	7.9	1,503.2	2,433.6
2017	129.2	8.1	1,590.3	2,565.4

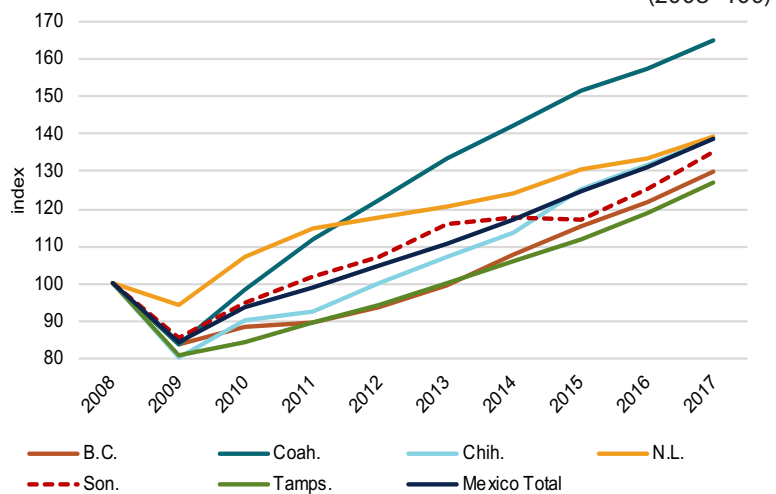
Source: INEGI

Figure 62: Sonora IMMEX (Maquiladora) Employment



Source: INEGI

Figure 63: IMMEX (Maquiladora) Employment Mexico Border States (2008=100)



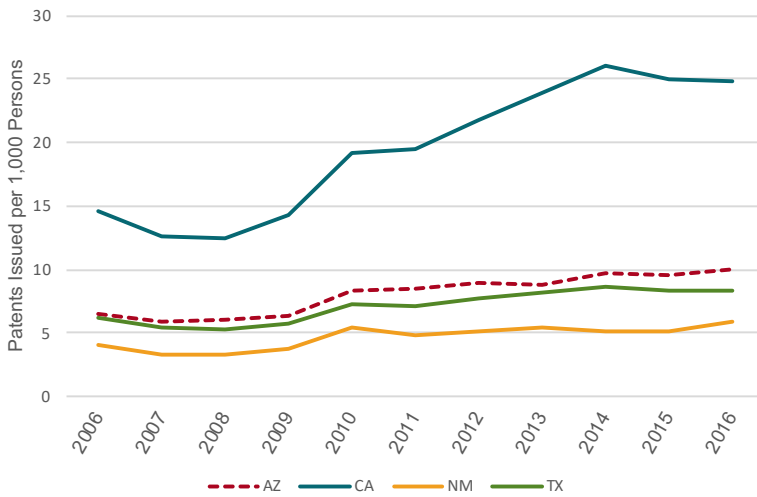
Source: INEGI

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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	-1.9	142.6	6.7
2013	30.8	-1.7	220.4	2.5	4.5	144.1	1.0
2014	30.0	-2.6	224.0	1.6	-1.7	144.9	0.6
2015	29.2	-2.6	223.9	0.0	9.1	144.2	-0.5
2016	30.9	6.0	218.0	-2.6	-10.7	146.4	1.5
2017	31.4	1.6	223.1	2.3	-4.1	148.0	1.1

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

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

	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	-3.4	38.3	0.8
2013	7.5	14.6	98.1	7.9	9.7	37.1	-3.2
2014	7.4	-1.1	95.9	-2.2	0.2	38.9	5.0
2015	6.8	-7.2	91.2	-4.9	4.5	36.4	-6.4
2016	6.5	-5.4	91.5	0.4	15.3	36.3	-0.3
2017	6.5	0.2	89.5	-2.2	20.2	35.0	-3.6

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

Knowledge 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 2016, Arizona posted a patent rate of 10.0 patents per 10,000 workers. This ranked Arizona second among the border states and equal to the national rate. California ranked first at 24.8, followed by Texas at 8.4, and New Mexico ranked last at 5.9 patents. Arizona has seen steady increases in the number of patents issued per worker since 2008 (Figure 64).

Science and Engineering Occupations

In 2017, there were 31,350 workers in engineering occupations in Arizona, a 1.6% increase from 2016. California gained 2.3% in this category, Texas 1.1%, and New Mexico lost 4.1% (Table 28).

There were 6,510 life and physical scientists working in Arizona in 2017, this figure remained essentially unchanged from 2016, after declining for three consecutive years. New Mexico made progress at closing in on Arizona’s number of life and physical scientists with a 20.2% increase in 2017 (Table 29).

Educational Attainment

Regions with better-educated workers show higher GDP per capita and real wages overall. These regions also compete more successfully for high-tech industries.

In 2016, 28.0% of Arizona's population 25 years and older had earned a bachelor's degree or higher, up from 26.4% in 2011, and 23.5% recorded in Census 2000. The figures for 2011 and 2016 are five-year pooled estimates from the American Community Survey. **Figure 65** shows Arizona, New Mexico, and Texas were very similar in 2000, but, over the next 16 years, New Mexico has fallen behind while Texas and Arizona tracked each other closely.

Arizona has made progress since Census 2000, but its gap with the nation has widened. Tech powerhouse California continues to dwarf the other border states and the nation in educational attainment.

Table 30 and Figure 66 show Arizona behind California, the US, and Texas for the rate of bachelor degrees in 2016. The rate of graduate and professional degree holders for Arizona lagged California, New Mexico, and the nation, but was higher than Texas.

How does Arizona compare?

- ▶ 2011-2017: Arizona gained 3.6% in engineering occupations, while California gained 8.5%, and Texas 10.7%; New Mexico lost 5.7%.
- ▶ 2000 -2016: Arizona's percent of population 25 years + with a bachelor degree or higher has increased from 23.5% in 2000 to 28.0% in 2017.

Figure 65: Percent of Population 25+ Years with Bachelor Degree or Higher**

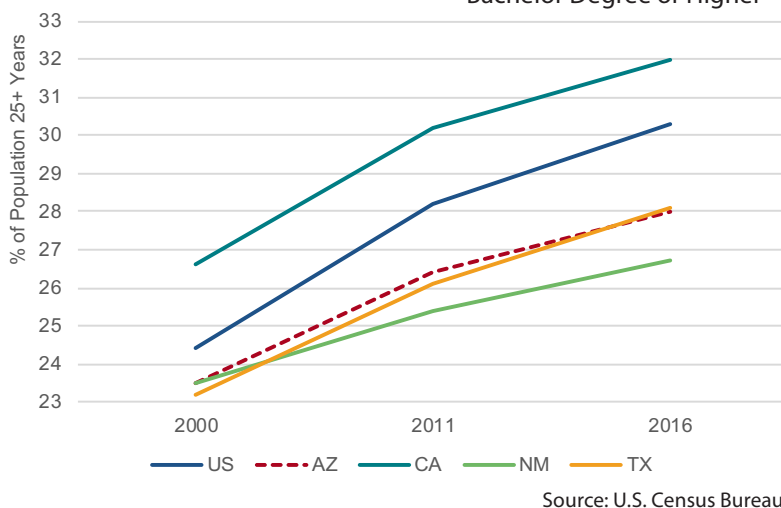
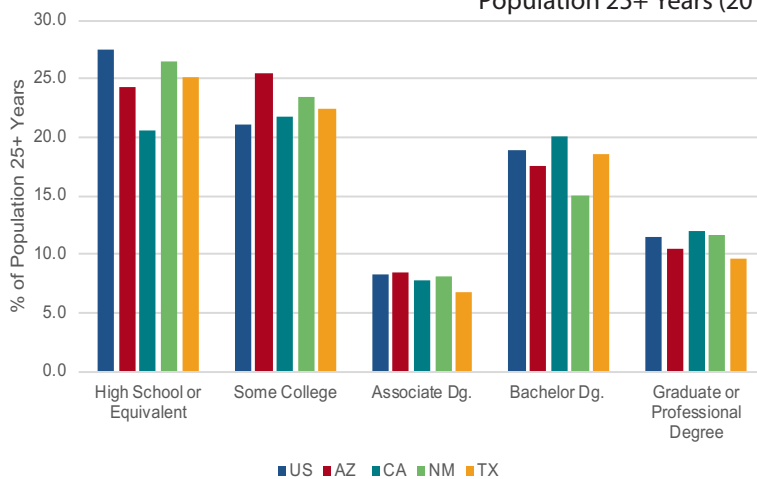


Table 30: Educational Attainment Level as Percent of Population 25+ Years (2016)

	US	AZ	CA	NM	TX
High School or Equivalent	27.5	24.3	20.6	26.4	25.1
Some College	21.0	25.5	21.7	23.5	22.4
Associate Degree	8.2	8.5	7.8	8.1	6.8
Bachelor Degree	18.8	17.5	20.1	15.0	18.5
Graduate or Professional Degree	11.5	10.4	11.9	11.6	9.6

Source: U.S. Census Bureau

Figure 66: Educational Attainment Level as Percent of Population 25+ Years (2016)



FOREIGN DIRECT INVESTMENT



Arizona-Mexico Economic Indicators Annual Report 2018

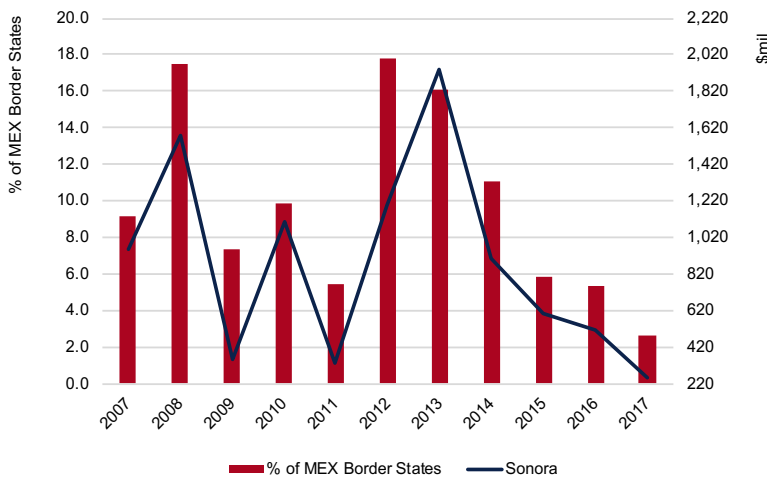
Table 31: FDI Sonora, Sinaloa, and Mexico Total (\$mil)

YEAR	Sinaloa	Sonora	Mexico Total
2007	277.4	960.3	32,468.3
2008	174.4	1,573.1	29,420.0
2009	148.1	354.5	18,165.2
2010	221.8	1,108.4	27,319.0
2011	236.9	328.0	25,221.4
2012	436.7	1,197.9	21,730.3
2013	625.1	1,935.0	48,491.7
2014	400.1	905.9	28,672.0
2015	439.3	605.1	34,857.6
2016	427.8	515.0	29,755.1
2017	747.1	253.3	29,695.0

Source: INEGI

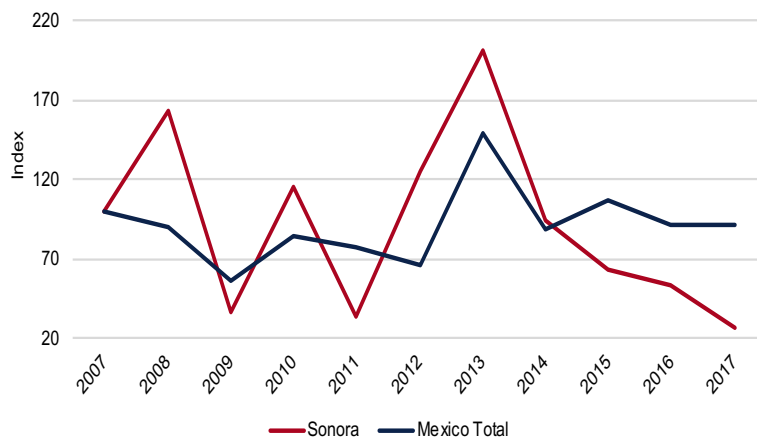
Foreign Direct Investment (FDI) is a key characteristic of international economic integration. Its importance to a host country is that it brings additional capital, creates jobs, and encourages the transfer of technology. Benefits to investor countries include access to an expanded labor force, and 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.

Figure 67: Sonora FDI



Source: INEGI

Figure 68: Sonora and Mexico FDI (Index 2007=100)



Source: INEGI

Foreign Direct Investment

In 2017, Sonora garnered \$253.3 million in foreign direct investment (FDI). This was a decline of 50.8% from \$515.0 million in 2016. FDI in Sonora has declined steadily since hitting a peak of \$1.9 billion in 2013 (Table 31). (Coahuila led the border states in 2017 with \$2.3 billion, followed by Nuevo Leon with \$1.9 billion, Chihuahua with \$1.7 billion, Tamaulipas with \$1.3 billion, and Sinaloa \$0.75 billion.)

Sonora's percent share of Mexico's border states' total peaked in 2012 at 17.8%. In 2017 its share was 2.6% (Figure 67).

Foreign direct investment in Sonora has fluctuated significantly between 2007 and 2017. Sonora tracked Mexico's volatility somewhat until it began to drift downward in 2015 (Figure 68).



DATA SOURCES

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Population

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

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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

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Instituto Nacional de Estadística Y Geografía (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>

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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 Estadística Y Geografía (INEGI), Banco de Información Económica (BIE); website: www3.inegi.org.mx

Find the complete Arizona-Mexico Economic Indicators at:
AZMEX.eller.arizona.edu