



# The Border as a Resource

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YUMA COUNTY'S CROSS-BORDER  
REGIONAL WORKFORCE DYNAMICS

MAY 2022



**Greater Yuma**  
ECONOMIC DEVELOPMENT CORP



**ARIZONA**  
COMMERCE AUTHORITY



CITY OF  
**SAN LUIS**  
ARIZONA



*Yuma* CITY OF

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# EXECUTIVE SUMMARY

Yuma County’s unique location bordering California, Baja California and Sonora presents great promise for the County’s manufacturing sector. The Yuma area is already known for its established and robust agriculture and defense industries. It is also well-connected by U.S. and Mexican interstate highways, major airports in Yuma and Mexicali and has a stable supply of energy and water resources. Arizona has a business-friendly environment with excellent fiscal opportunities, regulatory advantages, and three economic powerhouses as neighboring states.

## Cross-Border Workforce Potential

The region’s human capital is highly resilient and remarkably binational. This was proven by the pandemic: even during the height of the pandemic and border crossing restrictions in April 2020, more than 27,000 essential workers in critical industries and/or U.S. citizens and permanent residents crossed northbound into the United States every day at the region’s four ports of entry. While normally around 15% of crossers cite “work” as their primary reason for crossing (Crossborder Group, 2022), that percentage would have been far higher during the pandemic. This steady and sizeable crossborder flow of talent speaks to the robustness of crossborder ties in the Greater Yuma region and gives a baseline estimate of the total number of people crossing into the U.S. for work-related reasons.

In addition, the region already has a high-skilled workforce specifically trained to work in advanced manufacturing. This report articulates the remarkable size and scope of this workforce by focusing on the technical workforce in Mexicali, Baja California, and San Luis Río Colorado (SLRC), Sonora. These two border cities are within commuting distance from Yuma County and have a combined population of over 1.2 million that includes over 100,000 manufacturing workers. Mexicali and SLRC together have over 16 universities and technological institutes offering 50 degree programs including critical areas for advanced manufacturing such as engineering, robotics, computer science, and elec-



tronics. The annual graduating class for higher and technical educational institutions in both cities combined is 9355, approximately 25% of which possess engineering-related degrees. Educational administrators interviewed for this study estimate that 10-14% of Mexicali’s technical graduates and 3-5% of SLRC’s technical graduates are either U.S. citizens or permanent residents. Based on these statistics, we estimate that approximately 240 U.S. citizens or permanent residents graduate annually from technical or engineering careers at institutions in Mexicali and San Luis Rio Colorado. Manufacturing firms have additional recruiting options for new technical hires at universities in nearby cities such as Tijuana, Ensenada, Hermosillo and Ciudad Obregón.

## A Fluid Border Region

Though much media attention has centered on stopping illegal border crossings, legitimate cross-border work commuting is a common practice in the border region. This is facilitated in the border region by four land ports of entry with more than 30 northbound private vehicle lanes for legal entry into the U.S. Fortuitously, an expansion and remodeling of the San Luis I Port of Entry is planned. One important benefit for the region’s cross-border workforce is the possibility of commuting to work in Yuma County from Mexico with its lower cost of living (i.e., housing and healthcare). Other models for Yuma County-based manufacturing firms include options such as Mexico-based remote work and/or subsidiaries.

# 1. Global and Regional Trends and Realities

For a study of this type, it is important to establish the global and regional context to the diverse economic consequences of the COVID-19 pandemic and the growing uncertainty derived from the armed conflict in Europe. Disruptions in production processes worldwide should be understood as a variable of risk and risk mitigation.

## Global Trends after COVID-19

The pandemic has directly or indirectly impacted production chains, from raw materials to last-mile services for the end consumer. During the pandemic, companies tested the resistance and resilience of their different business models in all areas: production, sales, administration and, above all, logistics. Governments at all levels dealt with this from two sides: guaranteeing enough health, energy, and food supplies and rethinking their intervention in the markets, seeking to facilitate solutions or defuse potential problems. Risk detection and innovation activities took weeks, months and even years. COVID-19 has shaken up processes and forced companies to become faster, more creative, and resilient, specifically regarding trade logistics and the speed of adaptation to decrease uncertainty and risk. Another impact has to do with the environmental sustainability of business models, as consumers (individual and corporate) will have to adapt to a market that demands greater efficiency with less environmental impact. Additionally, recent geopolitical and geoeconomic tensions in Europe will further reinforce the need to reduce risks through increased domestic production. For the Yuma County area, the impact will be seen at the border and in the implementation of new cross-border control protocols and the response of go-

vernments looking to ensure local supply through embargoes or trade restrictions on exports considered sensitive (medical, pharmaceutical or technology supplies).

## Cross-border Regions: A New Reality

Across the many border regions of the world, and especially in the Arizona-California area with Baja California and Sonora, the border is an economic asset. People work and live within the border region. The ties between border communities around Yuma County go beyond business: there are family, partnerships and busi-

ness alliances, and educational ties. Within the region, the border translates into opportunities to grow and generate wealth and profits. COVID-19 was a true challenge for the region. Cross-border zones in the US-Mexico region had to overcome the partial border closure that lasted nineteen months. Now there are numerous signs of revival and recovery. Populations living on both sides of the border are uniquely

prepared to adapt themselves to government-imposed changes in mobility. The key to the future lies in the flexibility of governments to deal with the future crises. The new paradigm will need to focus on protecting existing social and economic ties at the border. The region lives at a crossroads between the “old” normal and the future that has arrived and has integrated the concept of resilience into cross-border development planning, not just in Yuma, but in all communities along the U.S.-Mexico border. Here, the private sector has a role as advocates of an efficient integration in the region. For cross-border efficiency to endure, Federal and state governments will have to keep an inter-municipal approach for the growth of collaboration structures.

*The recent geopolitical and geoeconomic tensions in Europe and Asia will further reinforce the need to reduce risks through increased domestic production.*



## The Border as a Resource

The border between the United States and Mexico represents a special architecture of international order. Territory and nationhood are built around it, as well as opportunities for mutual understanding and development. Yuma's proximity to these international and state boundaries gives its border a potential for growth if it is based on strategic decision-making that mobilizes resources by the region's public and private sectors. Yuma County's location and resources and the global conditions currently prevailing promote the launching of a sustained growth initiative for this Arizona community. The joint initiative to conduct this study is one example. Yuma County seeks to leverage its position as an industrial space using the border as a resource. The neighboring Mexican region of Mexicali and San Luis Río Colorado (S.L.R.C.) presents an important opportunity not only to develop suppliers, but also to recruit human capital with a high level of training and education from an important group of universities and technology centers.

## Parallel Growth: Industry and Skills

Over the last fifty years, the Mexicali and S.L.R.C. metropolitan area has seen its industrial sectors grow

significantly.

The industrial growth on the Mexican side of the border has been accompanied by increases in academic offerings specializing in industrial and manufacturing processes, focusing on high-performance sectors such as electronics and technology. On the Mexican side, both industry and academia complement each other's activities, generating professionals ready to compete in the global labor market. In this specific context, Yuma County has opportunities to strengthen its supply of highly trained professionals, based on the sum of the resources of its neighbors in Mexicali and S.L.R.C. According to Census data 18% of the County's population has a bachelor's degree, often from institutions such as the University of Arizona, Northern Arizona University, Arizona Western College and the University of Phoenix. The opportunities that the Mexicali-S.L.R.C. region offers to the universe of professionals in the region are significant and make up what we call the **binational workforce**. Yuma County and the investments that come to the region could enjoy a significant supply of available and trained human resources available for this cross-border region to increase its participation and benefits generated by the new industrial sectors. The following section will describe in detail the description of these opportunities based on our quantitative and qualitative study of the potential of using the border as a resource.

## 2. Regional Cross-border Assets

Yuma County possesses two enormously valuable assets: geographic location and its binational regional potential. The conditions for its development are still new, so listing them to generate structure and clarity of this inventory is fundamental to understanding the region's potential.

### Major Assets

To begin with, Yuma County shares a border with Mexico, Arizona's largest trade partner, but also with the state of California, itself a major market. Yuma International Airport services 10 daily incoming and outgoing flights, including 4 round-trip flights to Phoenix, and 1 to Dallas, TX. The county has a road and highways network that allows for a free flow of goods and services to and from Mexico and the state of California. Yuma is three hours away from San Diego, Phoenix, and Tucson and five hours away from the Port of Long Beach. It is also the closest major U.S. city to the Gulf of California, with Puerto Peñasco (or Rocky Point), Sonora just a 3-hour drive away. Two military facilities in Yuma County, the Marine Corps Air Station and the U.S. Army Proving Ground, are major federal assets for the County. Yuma County's main economic activities are food production and distribution, military, and tourism. The County has a small but growing manufacturing industry.

### The 4FrontED Binational Megaregion

One of the main efforts to grow and diversify Yuma County's local economy is the 4FrontED Binational Megaregion organization. 4FrontED was established in 2014 by a group leaders from communities in Arizo-

na, Baja California, California, and Sonora. Its mission translates into greater optimization of regional resources to drive economic development in the region. The initiative seeks reveals the desire to turn the entire region into a true economic development hub, with diversified productive sectors, while promoting regional workforce training to generate jobs. The initiative's: 1) enabling trade relations; 2) promoting the growth of local and regional businesses; 3) generating joint strategies to optimize existing resources; and 4) linking investors to opportunities in the region.

One key asset for investing in the 4FrontED Binational Megaregion is human capital. On the Mexican side, there have been major investments in education and manufacturing processes that already provide world-class "know how." Both Mexicali and San Luis Río Colorado have several industrial parks. In addition, universities on the Mexican side of the border are able and willing to provide trained labor that is knowledgeable on global standards of production.

Investments made in the region could benefit greatly from existing cross border mobility, and with the announcement of upgrades to the existing port of entry infrastructure at San Luis I Port of Entry, Arizona and San Luis Rio Colorado, Sonora, cross border mobility may soon be even less of an issue. Another key asset is that a significant number of potential manufacturing workers already have some sort of immigration status in the U.S.

In 2016, these local authorities signed an intergovernmental agreement which aims to develop the shared potential both in the productive and service areas and the new opportunities brought by the modernization of border ports of entry, as well as the human assets in each place of the partnership.

*On the Mexican side, there have been major investments in education and manufacturing processes that already provide world-class know-how.*

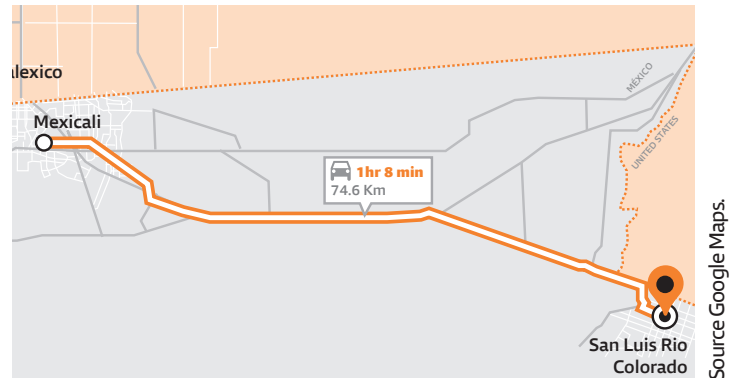
## The Mexicali- SLRC Region

As we have previously established, Baja California and Sonora are Mexican states with a cross border economic focus developed during more than fifty years by building a productive binational region with the United States. Mexicali has distinguished itself primarily for receiving foreign investments in manufacturing, while S.L.R.C. is known for the work of thousands of people in the agricultural fields shared with the United States. The proximity and growth of both entities have turned them into a single Mexican region that exchanges resources daily, creating an annual traffic flow of more than 6 million vehicles, an average of 558k vehicles per month (in 2021) that cross the Rio Colorado Bridge that connects both cities (Fideicomiso Puente Rio Colorado, 2021). Therefore, one of the considerations we establish in this study is to consider Mexicali - S.L.R.C. as a unique region in northern Mexico.

## Demographics and Employment

Mexicali has a population of 1,049,792 according to Mexico's Census (INEGI 2020). It is a young population: the age bracket with the highest concentration of population was 20 to 24 years old (91,917 inhabitants), followed by 15 to 19 years old (87,742 inhabitants) and 25 to 29 years old (86,787 inhabitants). Between them, they accounted for 25.4% of the

FIGURE 1. MEXICALI - SLRC CORRIDOR.



total population. The unemployment rate is 3.2% (INEGI, 2021).

San Luis Rio Colorado has a total population of 199,021 inhabitants (INEGI 2020). The main economic activities are industry, agriculture, livestock, fishing, and commerce. The unemployment rate is 2.94% (INEGI, 2021).

The low level of unemployment in the Mexicali and San Luis Río Colorado region speaks of the border region's progress. As was the case in Tijuana and Southern California, the increase in the level of development of these regions generated population expansion above the national averages of 5% to 6% per year. Expansion of job opportunities in Yuma will likely increase population in Mexicali and SLRC.





## Major Employment Sectors Mexicali - SLRC

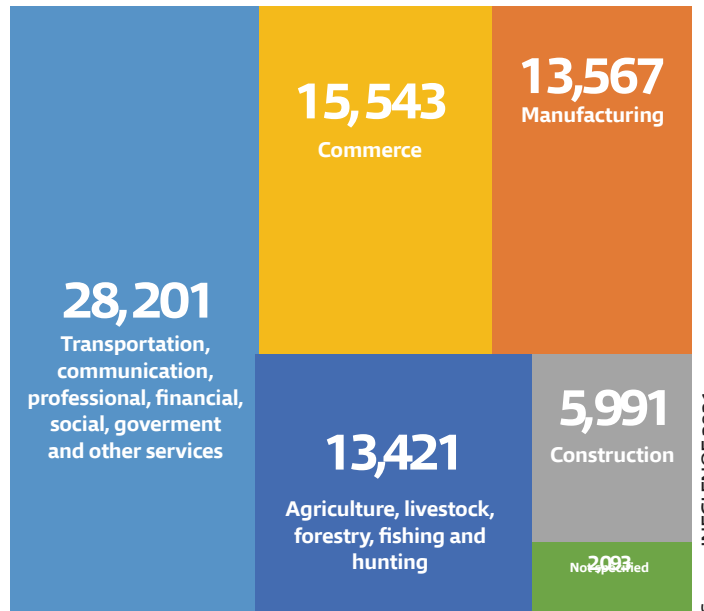
As mentioned above, Mexicali and SLRC each have a long history of manufacturing and in fact have far larger numbers of workers in the manufacturing sector than Yuma County (in the case of Mexicali, the manufacturing sector is larger by several orders of magnitude). This fact provides

additional evidence of a large, strategically located potential workforce for Yuma County’s manufacturing sector. Mexico’s INEGI (Instituto Nacional de Estadística y Geografía, Mexico’s national census) analyzes firms throughout the country and on various levels. The infographics below show both the relative weight and absolute number of jobs by major sector in both communities.

SECTORS OF ECONOMIC ACTIVITY  
MEXICALI



SECTORS OF ECONOMIC ACTIVITY  
SLRC



By analyzing the detail of the 2020 census information, we can detail the number of people employed in manufacturing-related sectors. These numbers provide evidence of technical professionals working in manufacturing in both communities across a broad range of job levels and types.



## Employed population aged 12 and over by sector of economic activity 2020

SECTOR OF ECONOMIC ACTIVITY	MEXICALI		SAN LUIS RIO COLORADO	
	Working population	%	Working population	%
■ Population aged 12 and over	475 210	100.0	78 816	100.0
■ Agriculture, livestock, forestry, fishing and hunting	28 648	6.0	13 421	17.0
■ Mining, manufacturing industries, electricity and water	107 007	22.5	13 567	17.2
■ Construction	31 110	6.5	5 991	7.6
■ Trade	87 540	18.4	15 543	19.7
■ Transport services, communication, professionals, financial, social, government and other	209 678	44.1	28 201	35.8
■ Not specified	11 227	2.4	2 093	2.7

Source: INEGI. Population and Housing Census 2020. Tables of the Expanded Questionnaire.



## Population aged 12 and over employed by division and main occupation group related to the manufacturing Industry. (2020)

DIVISION AND MAIN OCCUPATION GROUP	MEXICALI		SAN LUIS RIO COLORADO	
	EMPLOYED POPULATION	%	EMPLOYED POPULATION	%
1. Production, technology and transportation directions and managers	2107	0.4	196	0.4
2. Production and technology coordinations and area managers	2838	0.6	308	0.4
3. Researchers and professionals in exact sciences, biological sciences, engineering, information technology and telecommunications	12815	2.7	693	0.9
4. Assistants and technicians in exact, biological, engineering, computer science and telecommunications sciences.	27392	5.8	3948	5.0
5. Industrial plant and machinery operations	35505	7.5	4112	5.2
6. Assemblers and assembles of tools, machinery, metal and electronic products	14932	3.1	1991	2.5
7. Other industrial machinery operations, assemblers and transport drivers, not classified above	4002	0.8	997	1.3

Source: INEGI Censo de población y Vivienda 2020

## Cross-border Workforce Potential: Mexicali and San Luis Rio Colorado

The Mexicali - S.L.R.C. region is an important education hub, with a young growing workforce with highly technical skills.

### Mexicali

Mexicali has more than 47,000 enrolled students distributed in more than two dozen higher education institutions and 9,355 new graduates each year. This translates into a total of 61,256 potential professionals in a 5-year horizon. The institutions with the highest number of students in 2020 were Universidad Autónoma de Baja California (24,200), Instituto Tecnológico De Mexicali (4,170) and Centro De Enseñanza Técnica y Superior (2,420). Engineering, technology, manufacturing, and construction majors account for 27% of the total; business administration and accounting amounts to 20% of the total (ANUIES, 2020-2021).

### Higher Education Student Enrollment by Area in Percentage Mexicali

■ Engineering, technology, manufacturing and construction	27%
■ Business administration and accounting	20%
■ Law and criminology	12%
■ Social sciences and behavioral studies	7%
■ Educational sciences and pedagogy	5%
■ Teacher training	4%
■ Medical sciences	4%
■ Arts	3%
■ Dental sciences	3%
■ Nursing	3%
■ Therapy, rehabilitation and alternative treatments	3%
■ Personal services and sports	2%
■ Auxiliary health disciplines	1%
■ Humanities	1%
■ Information sciences	1%
■ Agronomy, horticulture, forestry and fisheries	1%
■ Veterinary science	1%

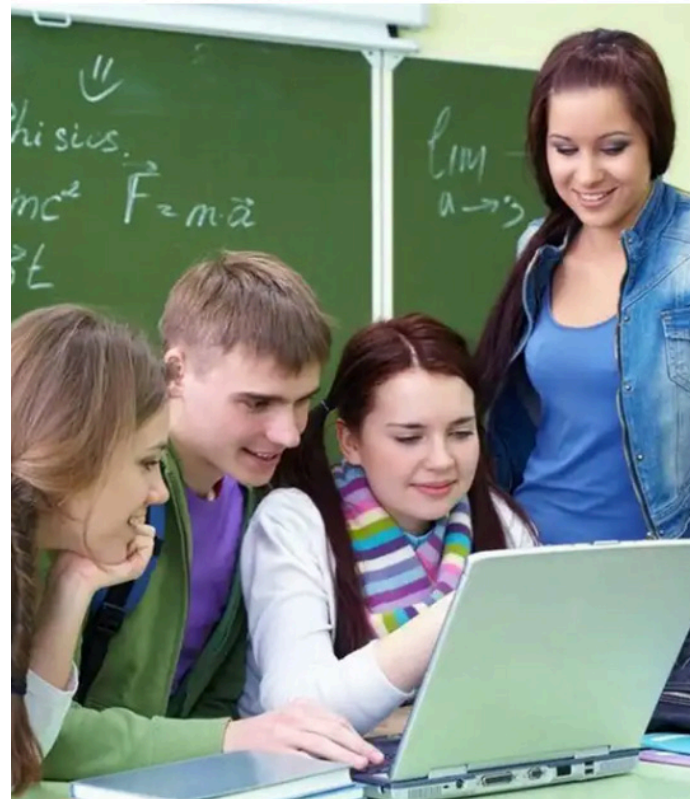
Source: ANUIES



### Public Universities and Technological Institutes in Mexicali, with their technical areas of concentration

INSTITUTION	CONCENTRATIONS
Universidad Autónoma de Baja California (UABC)	<ul style="list-style-type: none"> <li>■ Civil engineering</li> <li>■ Computing</li> <li>■ Electrical engineering</li> <li>■ Electronics engineering</li> <li>■ Mechanical engineering</li> <li>■ Industrial engineering</li> <li>■ Mechatronics engineering</li> <li>■ Topography and geodesist engineering</li> <li>■ Chemical engineering</li> </ul>

INSTITUTION	CONCENTRATIONS
Instituto Tecnológico de Mexicali Mexicali Technological Institute	<ul style="list-style-type: none"> <li>■ Computer systems engineering</li> <li>■ Electric &amp; electronic engineering</li> <li>■ Renewable energies engineering</li> <li>■ Business and Management</li> <li>■ Industrial engineering</li> <li>■ Logistics engineering</li> <li>■ Materials engineering</li> <li>■ Mechatronics engineering</li> <li>■ Mechanical engineering</li> <li>■ Chemical engineering</li> </ul>
Universidad de Educación Abierta y a Distancia Open University	<ul style="list-style-type: none"> <li>■ Industrial management engineering</li> <li>■ Telematics engineering</li> </ul>
Universidad Politécnica de Baja California (UPBC) Baja California Polytechnical University	<ul style="list-style-type: none"> <li>■ Energy engineering</li> <li>■ Mechatronics engineering</li> <li>■ Manufacturing technologies engineering</li> <li>■ IT engineering</li> <li>■ Animation and visual effects</li> </ul>



### Private Universities and Technological Institutes in Mexicali, with their technical areas of concentration

INSTITUTION	CONCENTRATIONS
Centro de Enseñanza Técnica y Superior (CETYS)	<ul style="list-style-type: none"> <li>■ Cybernetics and electronics engineering</li> <li>■ Industrial engineering</li> </ul>
Centro de Estudios Universitarios Vizcaya de las Américas	<ul style="list-style-type: none"> <li>■ Manufacturing processes engineering</li> </ul>

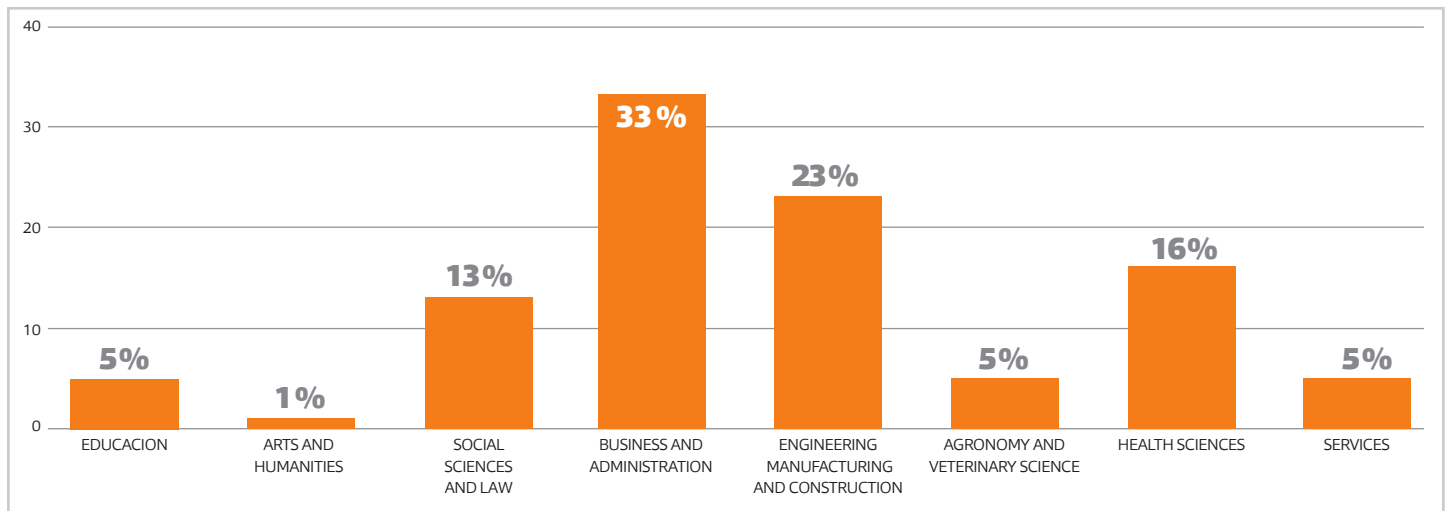
INSTITUTION	CONCENTRATIONS
Universidad de Estudios Avanzados (UNEA)	<ul style="list-style-type: none"> <li>■ Industrial engineering</li> </ul>
Universidad Xochicalco	<ul style="list-style-type: none"> <li>■ Manufacturing processes bioengineering</li> </ul>
Universidad de Tijuana	<ul style="list-style-type: none"> <li>■ Industrial engineering (online)</li> </ul>
Universidad del Desarrollo Profesional (UNIDEP)	<ul style="list-style-type: none"> <li>■ Manufacturing and robotics engineering</li> </ul>
Universidad del Valle de México (UVM)	<ul style="list-style-type: none"> <li>■ Mechatronics engineering</li> <li>■ Industrial and systems engineering (online)</li> </ul>
Tecnológico de Construcción Baja California (TBC)	<ul style="list-style-type: none"> <li>■ Construction engineering (online)</li> </ul>

## San Luis Río Colorado

SLRC has more than 4,800 enrolled students distributed in higher education institutions, with 800 new graduates each year. This gives a total 5,600 potential profes-

sionals over a 5-year horizon. In San Luis Río Colorado, the institutions with the highest number of students in 2020 were Universidad Estatal de Sonora, 3,000, Universidad Tecnológica de San Luis Río Colorado, (864), and

FIGURE 2. STUDENT ENROLLMENT BY AREA OF STUDY SLRC



Source : ANUIES 2020-2021

## Public and private universities and technological institutes in S.L.R.C., with their technical areas of concentration

INSTITUTION	CONCENTRATIONS
Universidad Tecnológica de San Luis Río Colorado (UTSLRC) (S.L.R.C. Technological University)	<ul style="list-style-type: none"> <li>■ Software management and development engineering</li> <li>■ Bio food processes engineering</li> <li>■ Mechatronics engineering</li> <li>■ International logistics engineering</li> <li>■ Industrial electronics engineering</li> </ul>
Universidad Estatal de Sonora UES (Sonora State University)	<ul style="list-style-type: none"> <li>■ Environmental engineering</li> <li>■ Biomedical engineering</li> <li>■ Horticultural engineering</li> <li>■ Manufacturing engineering</li> <li>■ Mechatronics engineering</li> <li>■ Software development engineering</li> </ul>

INSTITUTION	CONCENTRATIONS
Universidad de Educación Abierta y a Distancia (Mexican Open University)	<ul style="list-style-type: none"> <li>■ Industrial management engineering</li> <li>■ Telematics engineering</li> </ul>

Centro Universitario de Sonora, (665). Engineering, manufacturing, and construction careers amount to 22% of the total; business administration and accounting take up to 33% of the total (ANUIES, 2020-2021).

In addition to these higher education choices, both Baja California and Sonora have a system of Technical Professional Education Colleges, or CONALEP, which are notable for their educational offerings at the high school level in areas of electronic systems maintenance, alternative energy sources, refrigeration and air conditioning, and computer science. The institutions also feature a wide range of administrative and service careers such as medicine and nursing.

## 3. Binational Workforce

A key feature of this analysis is constructing a robust estimate of the potential number of technical professionals in Mexicali and San Luis Rio Colorado that could complement Yuma County’s workforce. To do this we include the results of our research and cite findings of the Yuma County Local Workforce Development Steering Board (LWDB).

### General Characteristics

The U.S.-Mexico border region has a long history of crossborder mobility. For more than a century, Mexico has been a reliable and constant supplier of labor for the U.S. The now defunct Bracero program was a model that operated successfully for many years, pro-

viding temporary Mexican workers for specific industries. Today, there are versions of temporary immigration but with greater restrictions on participants. The 4FrontED Binational Megaregion has special labor market characteristics. Different labor markets coexist and connect in the area. In Yuma, the labor force is mainly in food production and distribution. On the Mexican side, manufacturing and services complement the strong agricultural sector. In Mexicali and San Luis Rio Colorado, the presence of U.S. labor is minimal, and limited to management or supplier positions. There are economic sectors that benefit directly from cross-border labor such as health care that work with clients and suppliers on both sides of the border.

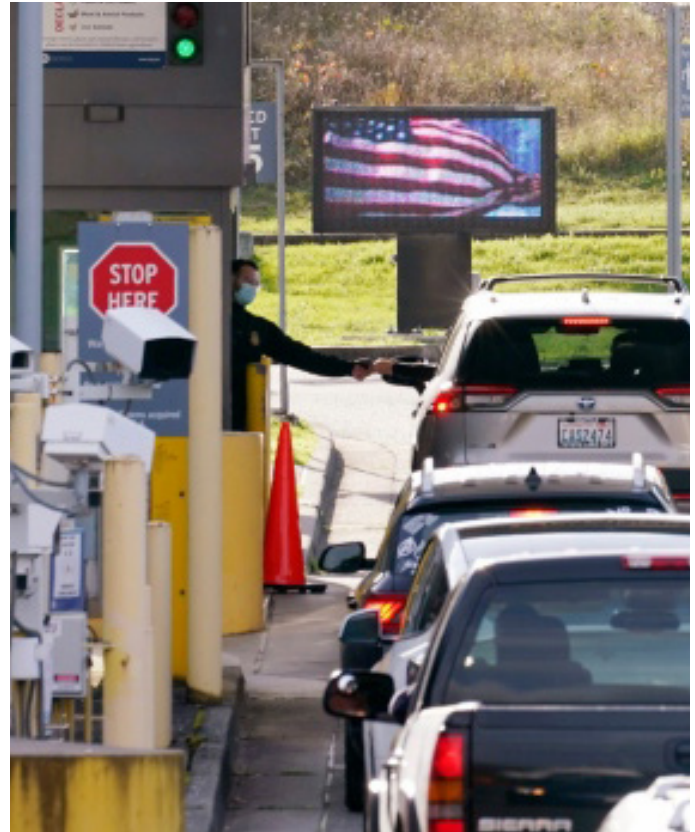


## U.S. Citizens Residing in the Mexicali-SLRC Region

The U.S.-Mexico border region has a number of unique population dynamics. One of them is the considerable number of U.S. citizens residing in Mexico for familiar, professional and/or personal reasons. The Mexicali-SLRC region is no exception. The U.S. State Department does not have official statistics of U.S. citizens residing in Mexico, only general estimates for each Consular District because of the fluidity and particular dynamics of the U.S.-Mexico border.

## The Pandemic and Essential Border Crossing

Some of the most striking evidence of the existence of Greater Yuma's unique cross-border labor force is found in the number of crossings recorded during the partial closure of the U.S.-Mexico border to non-essential traffic. During this period (March 2020 to November 2021), measures established by the U.S. Department of Homeland Security mandated that only U.S. citizens, U.S. permanent residents or non-citizen essential workers (a broad definition encompassing workers in a variety of critical industries) with valid U.S. work permits could cross the border. This meant that the ratio of people crossing into the United States for work, normally around 15% of northbound border crossers (Crossborder Group, 2022), would have been far higher. By reviewing official statistics published by the U.S. Department of Transportation for the San Luis, Calexico, Calexico East, and Andrade ports of entry, we were able to verify the number of passenger vehicles and pedestrians crossing the border during the month of April 2020 (major impact of the COVID-19 contingency restrictions), versus the pre-pandemic average.



The table above also helps us to get closer to the number of U.S. citizens, permanent residents and work permit holders living in the Mexicali - SLRC region.

By dividing the pandemic crossing totals for the four ports of entry by 30 days, we find that even at the most critical peak of border restriction, more than 27,000 people crossed northbound into the United States every day at the region's four ports of entry. This number speaks to the robustness of crossborder ties in the Greater Yuma region, the importance of border crossing infrastructure to the region, and gives a baseline estimate of the total number of people crossing into the United States at those four crossings for work-related reasons.

Measure	San Luis			Calexico			Calexico West			Andrade		
	Pre-Pandemic	Border Restrictions	% Reduction	Pre-Pandemic	Border Restrictions	% Reduction	Pre-Pandemic	Border Restrictions	% Reduction	Pre-Pandemic	Border Restrictions	% Reduction
Personal vehicle Passenger	420,000	<b>140,608</b>	<b>67%</b>	725,000	<b>314,832</b>	<b>57%</b>	425,000	<b>124,713</b>	<b>71%</b>	85,000	<b>297</b>	<b>99%</b>
Pedestrians	260,000	<b>97,561</b>	<b>62%</b>	305,000	<b>91,982</b>	<b>70%</b>	40,000	<b>3,391</b>	<b>92%</b>	110,000	<b>11,190</b>	<b>90%</b>

Source: BTS

**BORDER CROSSINGS COMPARISON: PRE-PANDEMIC AVERAGE VS AVERAGE DURING PANDEMIC (APRIL 2020). SOURCE: U.S. DEPARTMENT OF TRANSPORTATION, BORDER TRANSPORTATION STATISTICS**

## Main Findings: Focus Groups

There is an ample supply of higher education in the Mexicali - SLRC region, mainly in the public education system that has evolved as part of the development of these communities. And this is good news, as the growing needs of the manufacturing industry and international business require it.

Engineering careers with fields of concentration in industrial, mechatronics, software, biomedical and alternative energy are the most attractive fields for students in Mexicali, and there is also a good demand in S.L.R.C.

Engineering and technological careers in the region attract approximately 25% (Median) of all students, with the remainder dispersed in administrative, medical, nursing, and legal skills.



The Mexicali- SLRC. region has 61,256 young people enrolled in higher education. Of those, 16,310 are studying in technical and engineering specialties (5-year horizon). Academic personnel at institutions we surveyed estimate 10% to 14% of Mexicali's, and 3% to 5% of SLRC's, of students have U.S. citizenship or residency permits. We therefore estimate approximately 240 graduates per year that have U.S. citizenship or residency.

U.S.-born students must have a Mexican-issue visa or passport to enroll in a Mexican university. Mexican consulates in the U.S. issue passport, consular registration, birth certificates, and other identity documents.

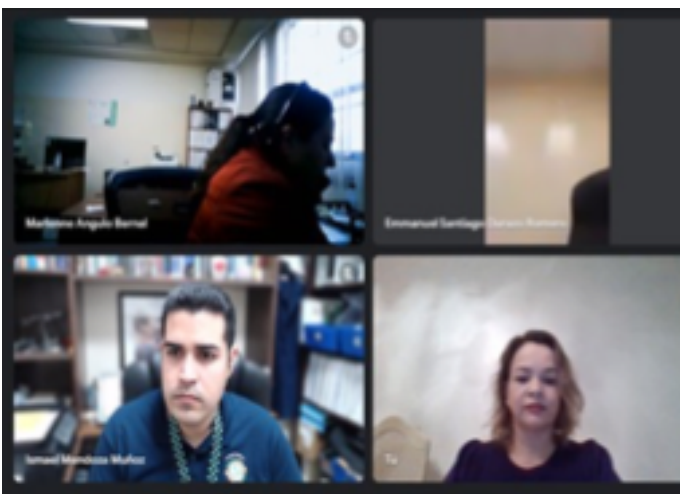
The estimated starting salary upon graduation from engineering careers is in the range of 10,000-25,000 pesos per month when working in Mexico (\$ 500USD-1,250USD).

Of the programs reviewed, all of them have English language instruction programs. Bilingualism is a special characteristic of this region, so all graduates have at least a basic knowledge of the language.

Focus group participants told us young people are familiar with the concept of working in the United States and are aware of the advantages of having dual citizenship or residency permits. Links to jobs in the U.S. are on an individual basis and not through an employment agency or educational institution linkages.

Their salary expectations for working in the United States are positive because of the expectation of a decent wage.

Most interviewees maintain that, if possible, they would prefer to work in the U.S. and live in Mexico, both for the economic advantages and remaining close to family.



UABC INTERVIEW MEETING

# 4. Navigating the Border

One of the most fundamental variables in the development of a cross-border workforce is the physical movement of people and vehicles across the border. Mexico and the United States have 50 border crossings, with 330 lanes. That allows for millions of people, vehicles, trucks, and trains crossings annually. For Yuma County, there are four ports of entry to be considered: San Luis, Andrade, Calexico West, and Calexico East. These four crossings are critical infrastructure for the region’s binational workforce.

## San Luis

The San Luis Port of Entry has its origins in the beginning of the last century and is connected to U.S. Route 95. In 2010, an additional truck crossing location was opened at San Luis II and, in 2012, two more access lanes were added to the main San Luis Port of Entry.

The San Luis port of entry has 7 lanes for pedestrian access and 9 lanes for vehicle crossings. The port has two preferential lanes under the Secure Electronic Network for Travelers Rapid Inspection (SENTRI) program for pre-registered, low-risk travelers. The time it takes to cross from Mexico into the United States varies during the day, increasing after 7:00 a.m. (Figure 5). Border conditions tend to change depending on the dates and circumstances, but there are internet-based information mechanisms constantly updating information (<https://bwt.cbp.gov>), and regular

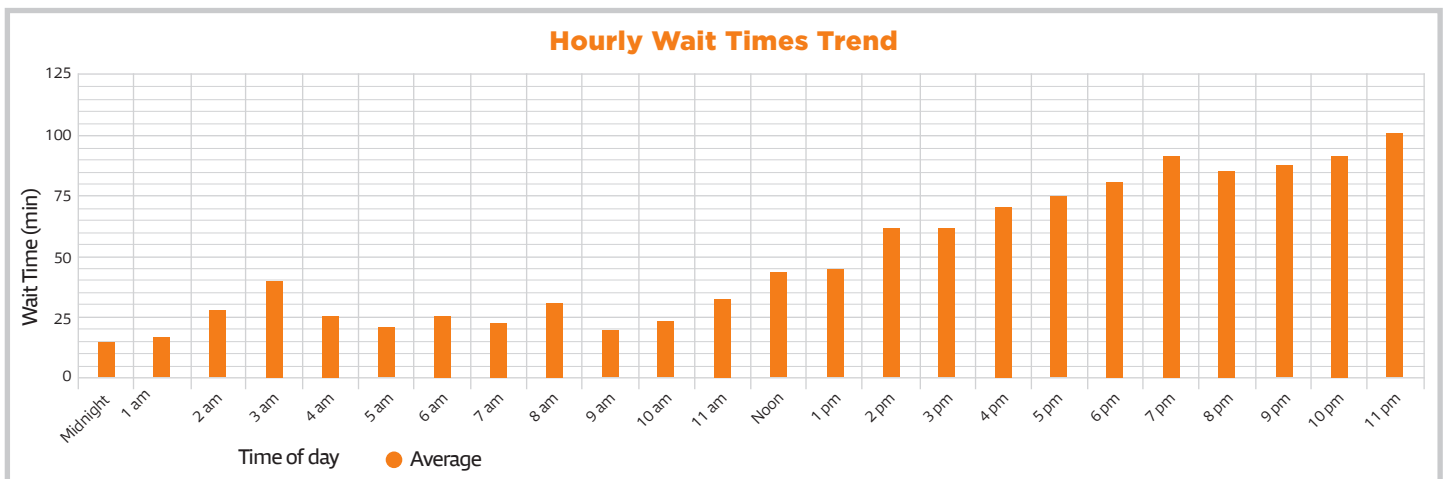
broadcasts on AM radio stations updating the day’s crossing times.

## Andrade

The Andrade Port of Entry, immediately adjacent the town of Algodones in Baja California, Mexico, has the lowest number of crossings of the entire border given its location: 2 miles south of Interstate 8, and about 2000 feet west of the Colorado River, in Imperial County; as well as its reduced number of lanes, three for passenger vehicles and four for pedestrians. It is mainly known as a health tourism crossing point, with dental services and opticians, among others. Crossings are mostly pedestrian.



FIGURE 5. SAN LUIS I. PORT OF ENTRY. PASSENGER VEHICLE CROSSINGS.



Source: CBP



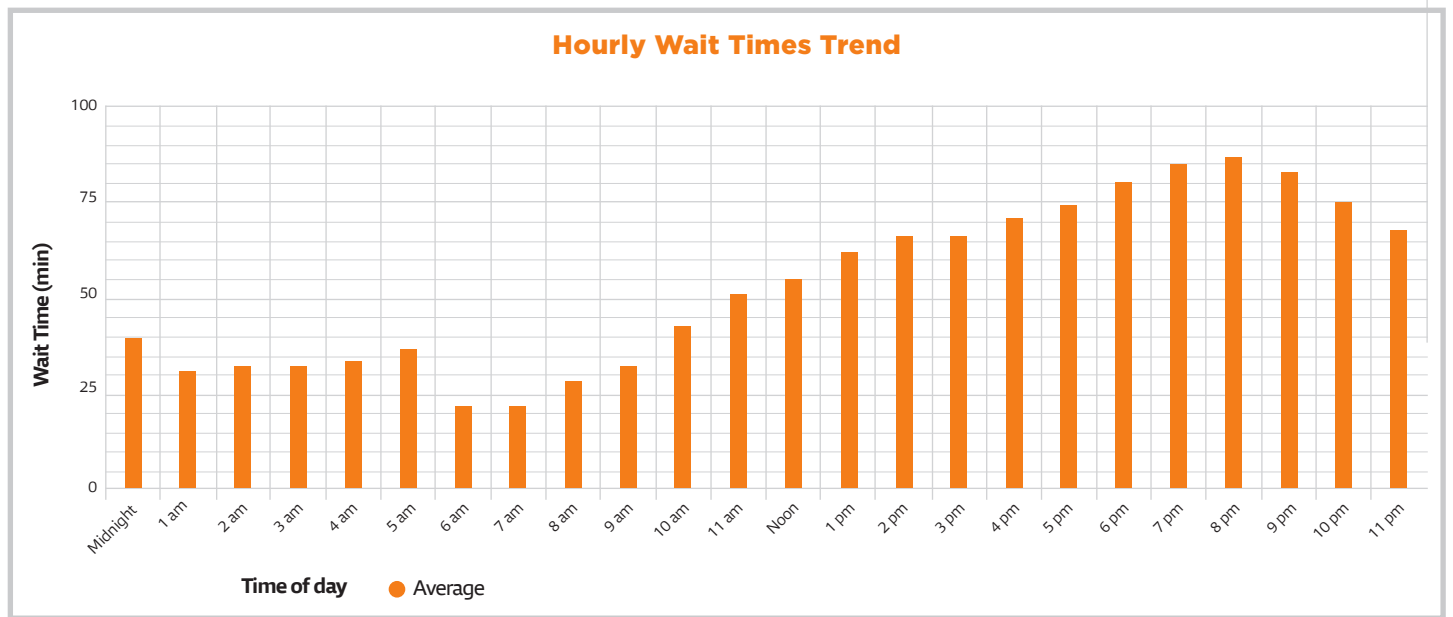
## Calexico West

The preferred ports of entry for people traveling from Mexicali into the United States are Calexico West and Calexico East. Calexico West is called the “downtown” crossing point because it is located midway between the commercial areas of both Mexicali and Calexico. This crossing has easy access to Interstate 8 via California Sta-

te Route 111. It has 10 crossing lanes for passenger vehicles, two of which are part of the SENTRI program, as well as four pedestrian crossing lanes.

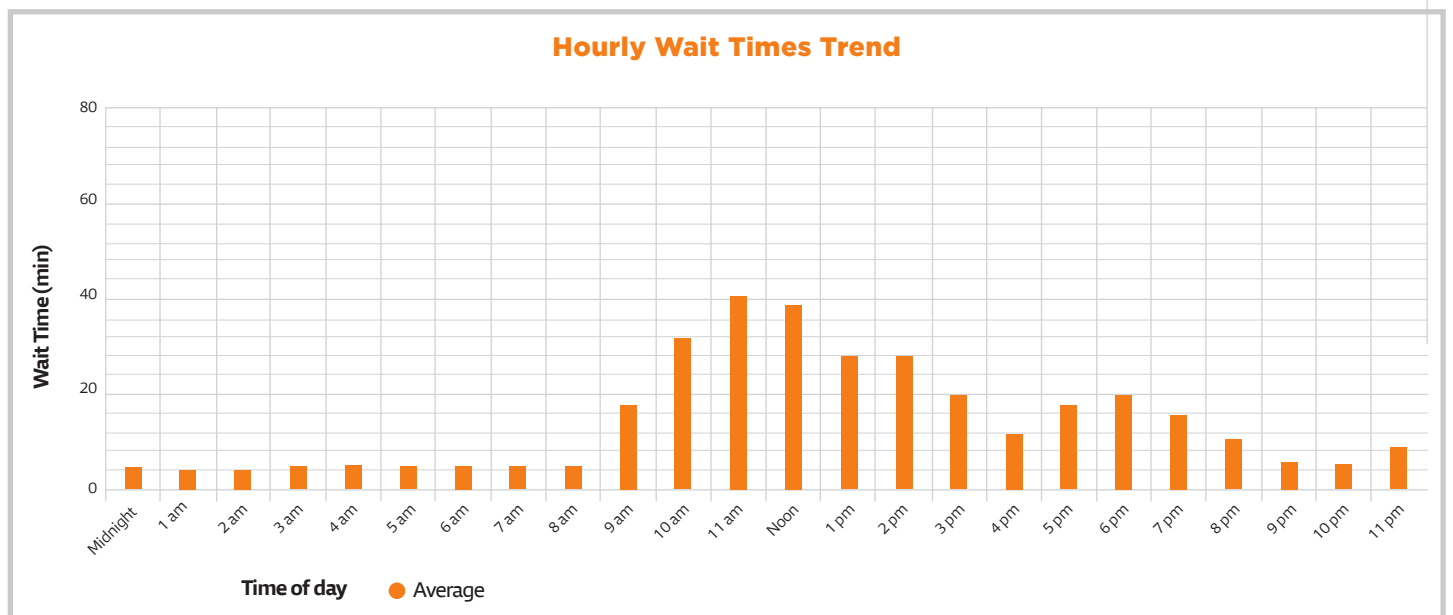
These average wait times figures show that this location has a higher demand for crossing, given its central location between Mexicali and Calexico.

**FIGURE 6. CALEXICO WEST PORT OF ENTRY. PASSENGER VEHICLE CROSSINGS. SOURCE: CBP**



Source: CBP

**FIGURE 7 CALEXICO WEST PORT OF ENTRY. PEDESTRIAN CROSSINGS. SOURCE: CBP**



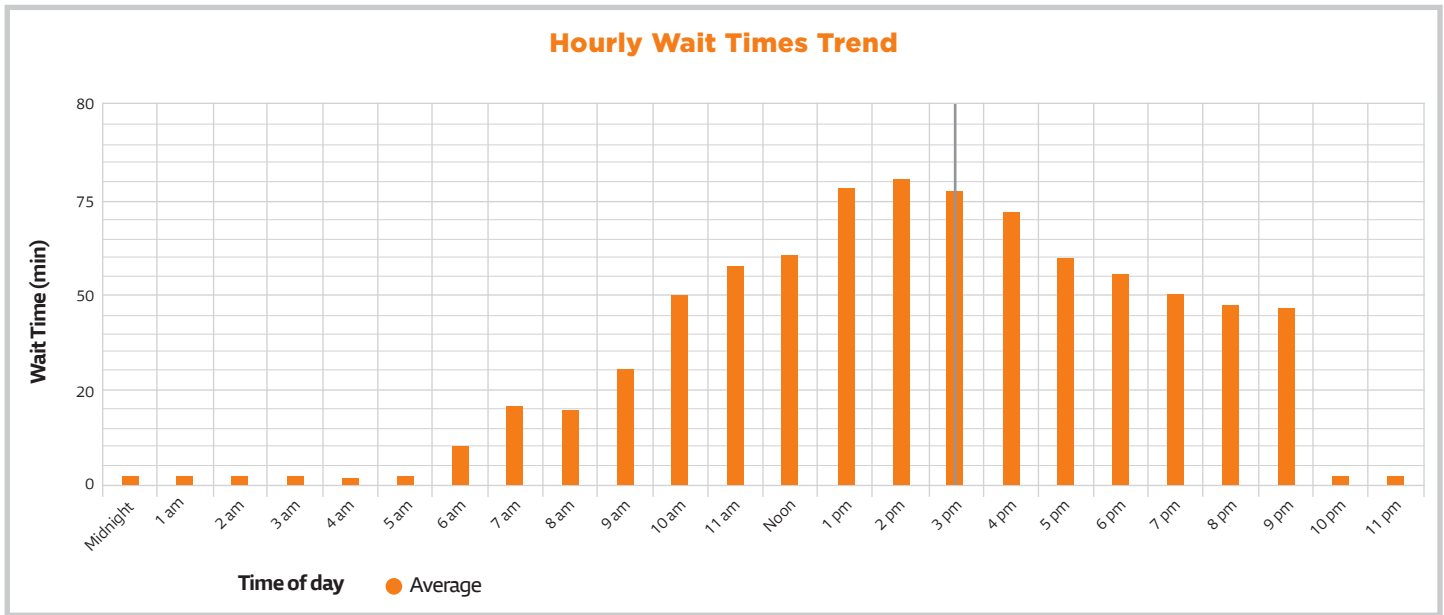
Source: CBP

## Calexico East

The Calexico East Port of Entry opened in 1996. It is directly connected to California State Route 7. This crossing was built to divert traffic from the busy Ca-

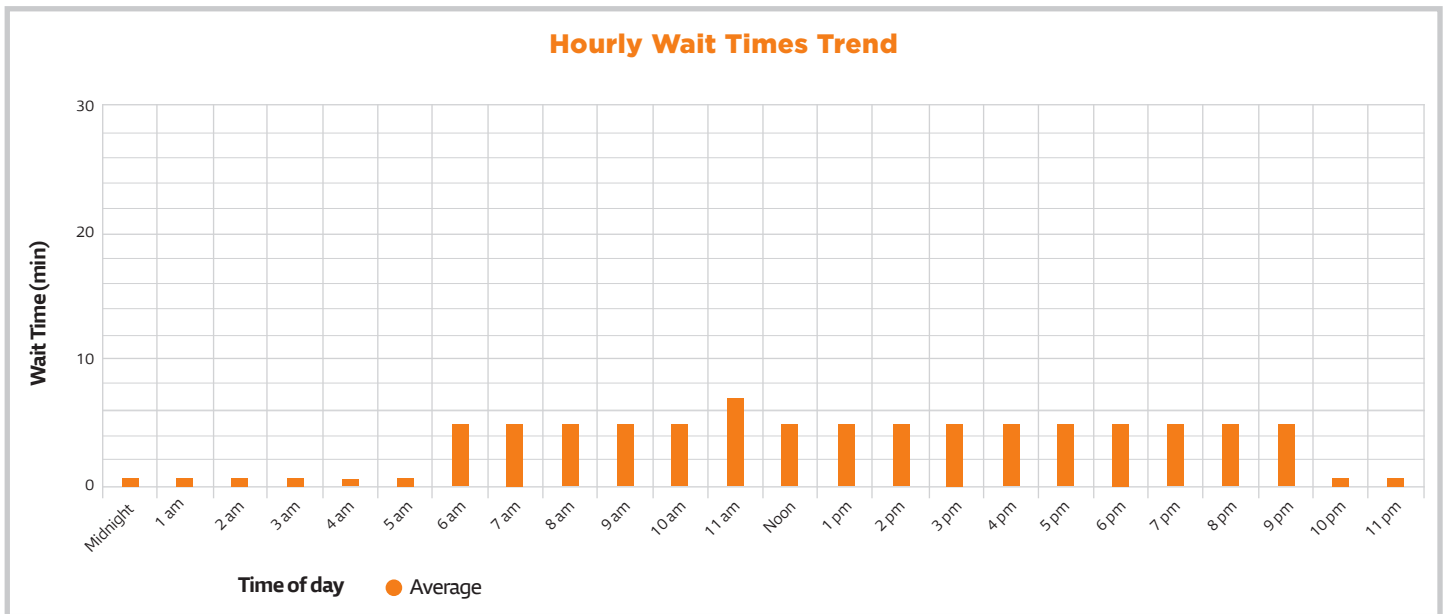
lexico West port of entry into downtown Calexico. It has eight crossing lanes for passenger vehicles and four for pedestrians. The Calexico East gateway operates from 6:00 AM to 10:00 PM.

**FIGURE 8 CALEXICO EAST PORT OF ENTRY. PASSENGER VEHICLE CROSSINGS.**



Source: CBP

**FIGURE 9 CALEXICO EAST PORT OF ENTRY. PEDESTRIAN CROSSINGS.**



Source: CBP

The infrastructure listed above and the data included demonstrate that the Yuma County cross-border area has substantial border infrastructure for people crossing from Mexico into the United States. This allows ample possibili-

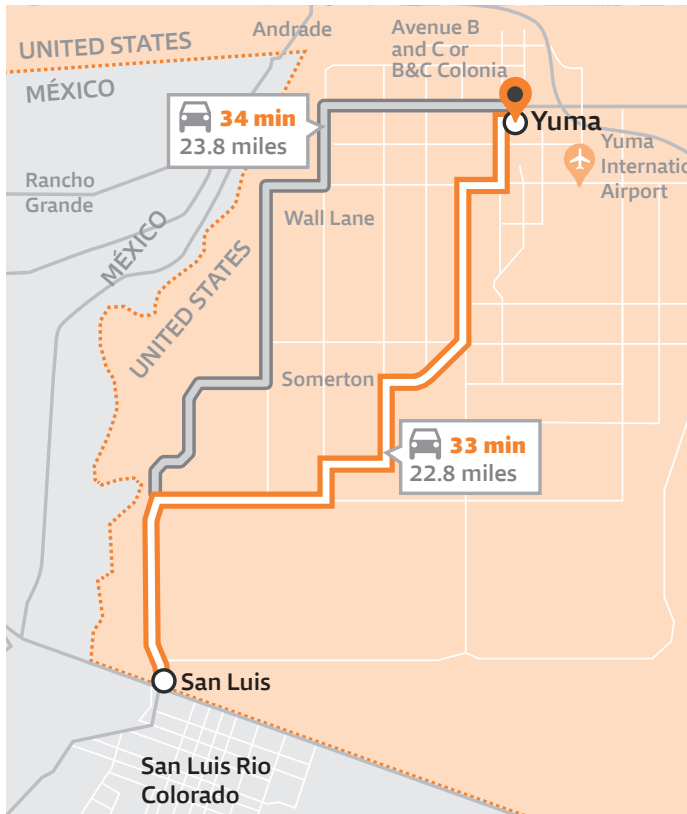
ty for those potential employees who may prefer to work in the United States and live in Mexicali or San Luis Rio Colorado. However, it is important to consider some for crossing times, which may be significant during some periods.

## Commuting Times

Commuting times to Yuma are approximately 50 minutes from Calexico, and 34 minutes from San Luis, and 15 minutes from Andrade. Also worth noting is that Arizona and

Sonora share the same time zone. During Daylight Saving, which begins in March, the four states of Arizona, California, Sonora, and Baja California share the same time zone. There is a possibility that Daylight Saving will disappear in 2023 due to the Senate’s approval of the Sunshine Protection Act.

FIGURE 10 SAN LUIS TO YUMA.



Source: Google Maps.

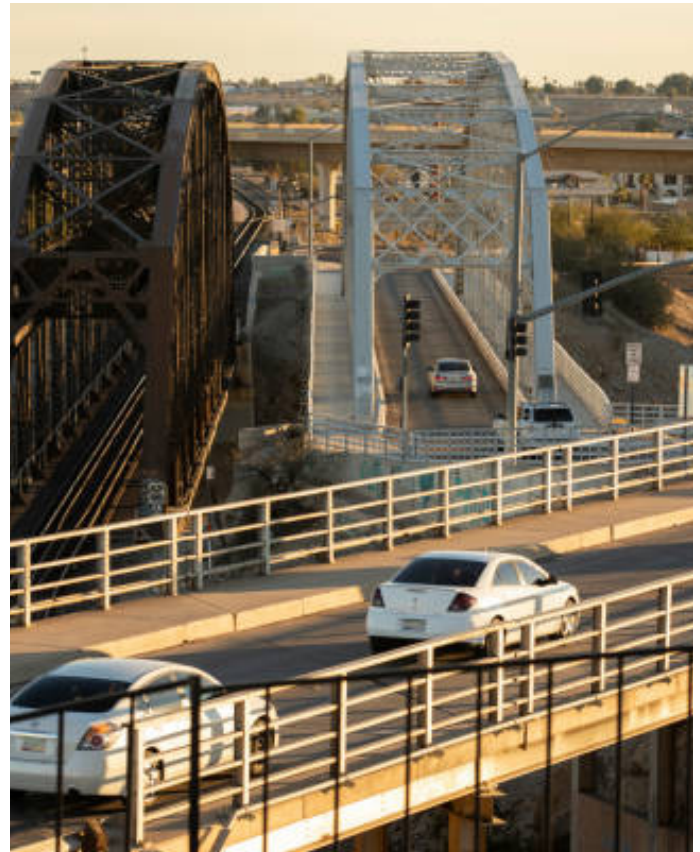
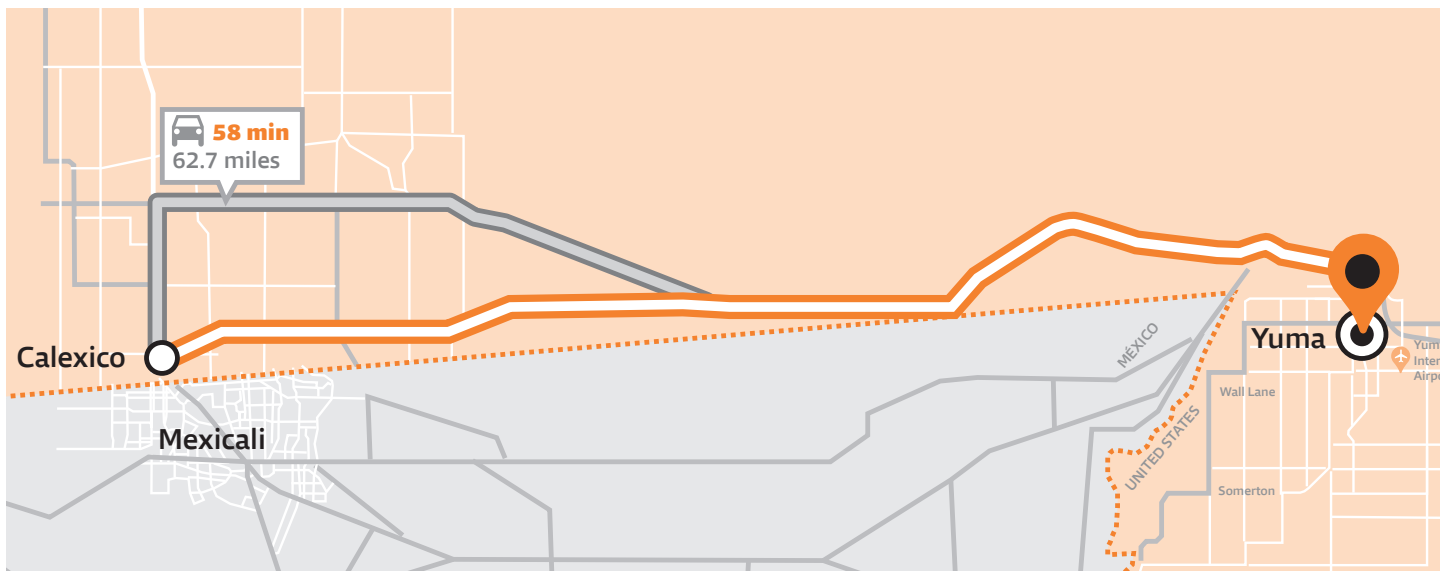


FIGURE 11 CALEXICO TO YUMA.



Source: Google Maps.

## Visa Requirements

Although this analysis has demonstrated the existence of a sizable technical workforce eligible to work in the

United States, firms may need to supplement their hiring by facilitating work visas.

The relevant U.S. visas are listed below.

SELECTED TEMPORARY NON-IMMIGRANT VISAS	
<b>H-1B</b>	<ul style="list-style-type: none"> <li>For people in a specified professional or academic field or with special expertise who have a college degree or higher or the equivalent in work experience. These visas have a residency cap of three years.</li> </ul>
<b>H-2A y H-2B</b>	<ul style="list-style-type: none"> <li>For seasonal, or peak load, temporary workers in an agriculture (H-2A) or non-agricultural (H-2B) setting. Generally, these do not extend beyond a year.</li> </ul>
<b>O</b>	<ul style="list-style-type: none"> <li>For those with extraordinary and exceptional abilities or achievements, across industries.</li> </ul>
<b>TN NAFTA</b>	<ul style="list-style-type: none"> <li>For qualified Canadian and Mexican citizens to seek temporary entry into the United States to engage in business activities at a professional level, under the North American Free Trade Agreement.</li> </ul>

Source: U.S. Department of State-Bureau of Consular Affairs

IMMIGRANT VISAS
<ul style="list-style-type: none"> <li>Those with specific job skills — and their spouses and children — can apply for the roughly 140,000 employment-based green cards available each year. Permanent residence in the U.S. can be obtained through a combination of education, expertise, eligibility, and skill sets. Most of these visas call for an existing offer of employment from an employer who has the proper U.S. Department of Labor certification, verifying that there are both insufficient workers with this skillset within the United States, and the hiring does not take a job away from a U.S. citizen.</li> </ul>



# Key Takeaways

The analysis for this business intelligence report utilized both quantitative and qualitative data to address the question of the size and scope of potential binational technical workforce for Yuma County manufacturers in San Luis Río Colorado, Sonora and Mexicali, Baja California. Major conclusions from the analysis include the following.

- 1.** The Greater Yuma region has highly resilient and remarkably binational human capital; even during the height of the pandemic and border crossing restrictions in April 2020, more than 27,000 essential workers in critical industries and/or U.S. citizens and permanent residents crossed northbound into the United States every day at the region's four ports of entry.
- 2.** The recent geopolitical and geoeconomics tensions in Europe and Asia will further reinforce the need to reduce risk for manufacturers through increased domestic production. Yuma County is well-positioned to take advantage of this reshoring trend with its unique location and human capital.
- 3.** Our analysis indicates that there is already a significant number (approximately 240) of graduates annually in technical fields at various postsecondary institutions in San Luis Río Colorado, Sonora and Mexicali, Baja California with either U.S. citizenship or permanent residency who could potentially work for manufacturing firms in Yuma County. With a current total of 3000 manufacturing jobs in Yuma County, this number is significant, particularly when projected over several years.
- 4.** Higher education institutions in Tijuana and Ensenada, Baja California and Hermosillo and Ciudad Obregon, Sonora would potentially provide additional technical professionals for manufacturing operations in Yuma County.
- 5.** There is currently a lack of formal placement or recruiting mechanisms to connect recent graduates from Mexicali and San Luis Rio Colorado higher education institutions.



## METHODOLOGICAL NOTE

*This research was implemented using a mixed quantitative and qualitative methodology.*

*The data and estimates are the product of database analysis from official sources in Mexico and the United States as well as interviews with business executives, academic personnel, and university students. The investigation was conducted between March and April 2022.*

## REFERENCES

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- | *Population and Housing Census 2020 (extended questionnaire).*
- | *ENOEN as of the fourth quarter of 2021.*
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- | *SIM Baja California, SIM Sonora*
- | *Bureau of Transportation Statistics*
- | *Yuma County Workforce Development 4 Year Plan 2020-2023*
- | *Greater Yuma Economic Resource Portal*
- | *4FrontED Binational Megaregion*
- | *Crossborder Group*

### **Particular recognition to the following institutions:**

- | *Universidad Estatal de Sonora, unidad SLRC.*
- | *Universidad Tecnológica de San Luis Río Colorado.*
- | *Colegio Nacional de Educación Profesional Técnica del Estado de Sonora plantel SLRC*
- | *Universidad Autónoma de Baja California, campus Mexicali, facultad de Ingeniería*
- | *Cetys Universidad campus Mexicali*
- | *Universidad Xochicalco campus Mexicali*
- | *Universidad Valle de México campus Mexicali*
- | *Instituto Tecnológico de Mexicali*

## RESEARCH TEAM

*Erik Lee Bedoya is an analyst with numerous publications on the U.S.-Mexico border region in the areas of cross-border trade, economic development and sustainability.*

*Victor Remigio Martínez Cantú, PhD is a geopolitical analyst and professor of international relations at Tec de Monterrey, Campus Sonora Norte.*

*The research team co-leads wish to express our appreciation for the excellent work of our project team: Luis Jaloma, Alejandra González, Luis Cáñez, Carlos Cruz.*