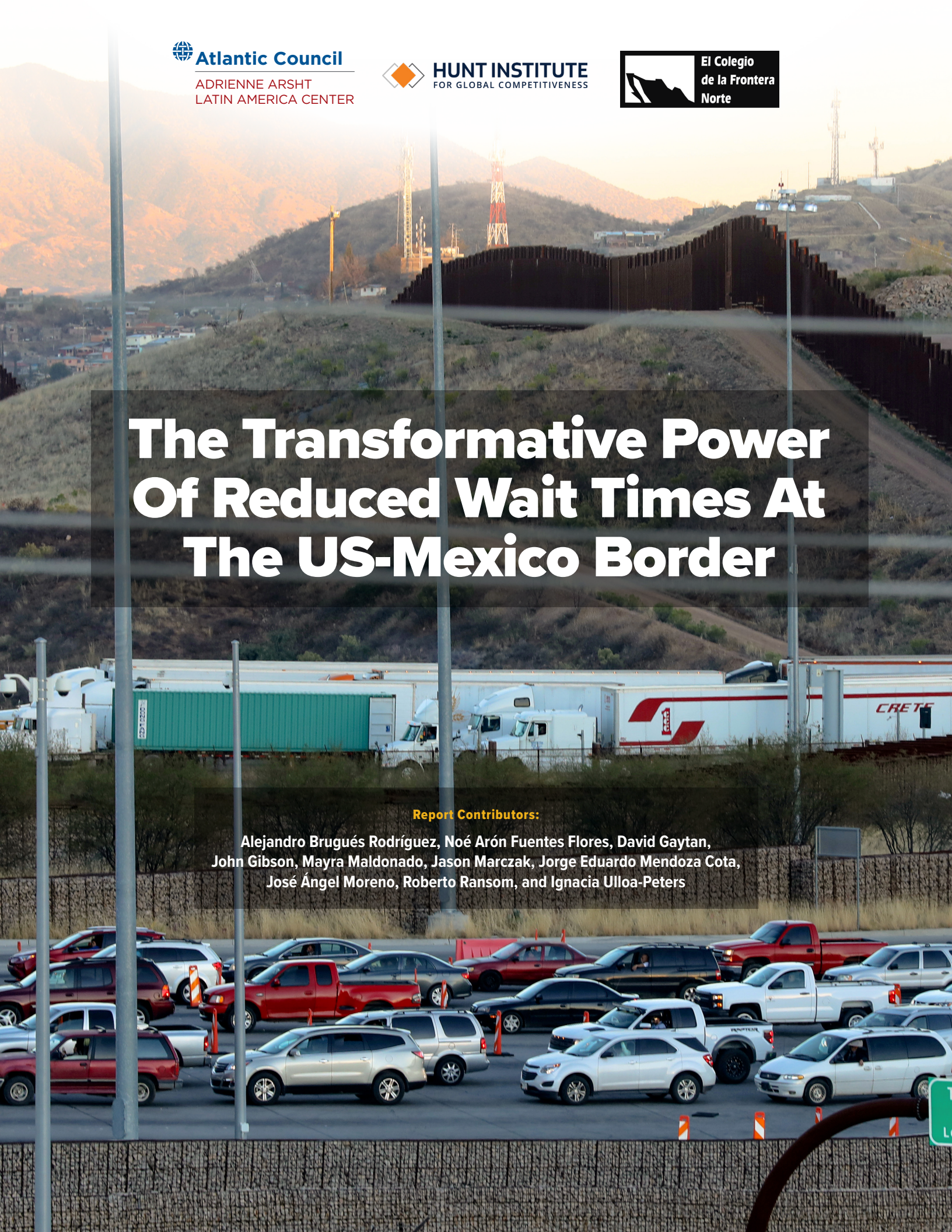
Atlantic Council
ADRIENNE ARSHT
LATIN AMERICA CENTER

HUNT INSTITUTE
FOR GLOBAL COMPETITIVENESS

El Colegio
de la Frontera
Norte



The Transformative Power Of Reduced Wait Times At The US-Mexico Border

Report Contributors:

Alejandro Brugués Rodríguez, Noé Arón Fuentes Flores, David Gaytan, John Gibson, Mayra Maldonado, Jason Marczak, Jorge Eduardo Mendoza Cota, José Ángel Moreno, Roberto Ransom, and Ignacia Ulloa-Peters

Atlantic Council

ADRIENNE ARSHT LATIN AMERICA CENTER

The Atlantic Council's nonpartisan **Adrienne Arsht Latin America Center (AALAC)** broadens understanding of regional transformations while demonstrating why Latin America and the Caribbean matter for the world. The center focuses on pressing political, economic, and social issues that will define the region's trajectory, proposing constructive, results-oriented solutions to inform public sector, business, and multilateral action based on a shared vision for a more prosperous, inclusive, and sustainable future.

AALAC – home to the premier Caribbean Initiative – builds consensus for action in advancing innovative policy perspectives within select lines of programing: US policy in the Western Hemisphere; Colombia's future; Venezuela's multidimensional crisis; Central American prosperity; US-Mexico ties; China in the Americas; Brazil's trajectory; Caribbean development; regional economic development and commerce; and energy transitions. Jason Marczak serves as the center's senior director.

Atlantic Council
1030 15th Street NW, 12th Floor
Washington, DC 20005

For more information, please visit
www.AtlanticCouncil.org.

ISBN-13: 978-1-61977-264-9

February 2023

Design: Donald Partyka and Anais Gonzalez

Cover photo: Trucks and cars cross the border from Mexico into the US in Nogales, Arizona, US, January 30, 2017. Picture taken January 30, 2017. REUTERS/Lucy Nicholson

A joint report by the Atlantic Council's Adrienne Arsht Latin America Center, the University of Texas at El Paso's Hunt Institute for Global Competitiveness, and El Colegio de la Frontera Norte.

Atlantic Council
ADRIENNE ARSHT
LATIN AMERICA CENTER

HUNT INSTITUTE
FOR GLOBAL COMPETITIVENESS

El Colegio
de la Frontera
Norte

The Transformative Power Of Reduced Wait Times At The US-Mexico Border

(The second of a two-part series on the US-Mexico border)

Report Contributors:

Alejandro Brugués Rodríguez, Noé Arón Fuentes Flores, David Gaytán, John Gibson, Mayra Maldonado, Jason Marczak, Jorge Eduardo Mendoza Cota, José Ángel Moreno, Roberto Ransom, and Ignacia Ulloa-Peters.

Table of Contents

Executive Summary

The announcements and commitments made at the North American Leaders Summit in January 2023 reiterated the importance of North American competitiveness, inclusive growth and prosperity, and the fight against drugs and arms trafficking.[1] To achieve the goals and deliverables established during the summit, it is critical that the US-Mexico border be managed and perceived as an essential contributor to national, binational, and regional security and economic development.

A more efficient US-Mexico border has the potential to reduce border crossing times for commercial and noncommercial vehicles, generating positive externalities for the United States and Mexico including enhanced security and economic growth.[2] This report – the second in a two-part series – outlines the economic impact of reduced wait times at the border, focusing on the costs and benefits for border states in both countries.[3]

This report shows that a mere 10-minute reduction in wait times – without any additional action – can create thousands of Mexican jobs, grow the gross domestic product (GDP) of several Mexican states, and generate hundreds of thousands of dollars in new spending in the United States. Ten minutes is then hopefully the starting point for even shorter wait times and even greater economic gains and job creation.

More precisely, increasing border efficiency by 10 minutes can result in more than 3,000 additional jobs across Mexico's six border states while increasing their combined GDP by 1.34 percent.[4] Additionally, this reduction would allow for an additional $25.9 million worth of goods to enter the United States every month and lead to $547,000 in extra spending across the United States' four border states.[5] A forthcoming standalone short report will evaluate the final destination of traded goods and the economic benefits for states beyond the border.

In terms of Mexico's border states, Tamaulipas would see the greatest growth in GDP (1.9 percent), followed by Baja California (1.6 percent) and Chihuahua (1.5 percent). Overall, this would generate a $2.2 billion increase in GDP and a $167 million increase in intermediate demand and a $3.2 million increase in labor income across Mexico's six border states.

A 10-minute reduction in wait times would also lead to an average of 388 new loaded containers entering the United States from Mexico monthly. This translates to $25.9 million worth of cargo crossing through the United States' four border states (Arizona, California, New Mexico, and Texas), a figure identified in the part-one of this study.[6] New research shows that approximately 222 (57.2 percent) of these containers would enter via Texas ports of entry, carrying $17 million in cargo every month.

Separately, the 10-minute reduction in wait times would lead to 5,020 additional noncommercial monthly crossings, resulting in $547,000 in extra monthly spending by families and individuals traveling from Mexico to the four US-border states every month. The model estimates that these individuals would spend an additional $256,000 in California alone, representing nearly 50 percent of the total increase in spending. The clothing retail industry would experience the greatest gains across the board, with $132,000 in additional annual revenue from streamlined noncommercial crossings.

Results were informed by engaging local and regional stakeholders in roundtables, focus groups, and one-on-one interviews to identify areas for practical improvement in border management. These include investing in technologies, infrastructure, management, staffing, and supply chains. For instance, deploying high-tech screening technologies further away from ports of entry would facilitate a greater and faster flow of cargo and passenger information. Similarly, a collaboration between the United States and Mexico to develop joint, decentralized tools for border management and processing could ensure a more efficient flow of legitimate cross-border traffic while detecting illegal activity. Improvements in infrastructure and an increase in personnel staffing ports of entry would prevent bottlenecks and decongest queues that regularly spill over onto interstate highways and local roads.

While this report outlines the potential economic impact of a more efficient US-Mexico border for the border region, it also identifies new spaces for growth and new questions to be asked, studied, and addressed. For example, a lack of data in non-border Mexican states makes it difficult to estimate what the impact of enhanced efficiency in non-border inspection points would be for overall binational commerce and within each individual state. Similarly, limited US data exists to determine the final beneficiaries of new economic activity. New, reliable data is essential to understand the greater implications of streamlined border processes and tools in the United States and Mexico.

Introduction

Joe Alvarado, a US Customs and Border Protection (CBP) Agriculture Specialist, inspects imported broccoli from Mexico at the Pharr Port of Entry in Pharr, Texas, US, October 4, 2018. REUTERS/Adrees Latif

The US-Mexico border is among the busiest in the world. However, traffic congestions and other delays create obstacles for nearshoring and North American competitiveness. A more efficient border would generate significant benefits for the United States and Mexico, including additional commerce, higher employment, greater labor income, increased output, and better overall conditions for commercial and noncommercial border users.

Security rightfully remains a priority for US and Mexican customs authorities, but future legislation on border issues should recognize the symbiotic relationship between improving shared security and advancing economic outcomes. This balance between security and economic gains could be accomplished through enhanced border management practices and the adoption of new technologies.

A safer, smarter, and more efficient border is critical for North American economic integration. As demonstrated at the 2023 North American Leaders Summit in Mexico City, nearshoring and efficient, reliable supply chains are essential for economic growth and prosperity. In an increasingly complicated global context replete with trade disputes, irregular migration, and global supply chain shocks, understanding the economic impact of collaboration and investment in commerce and security-enhancing mechanisms at the US-Mexico border is more important than ever.

This report disaggregates the data and findings from a first report, "The Economic Impact of a More Efficient US-Mexico Border: How reducing wait times at land ports of entry would promote commerce, resilience, and job creation," (September 2022) estimating the economic impact of reduced wait times at the state and county

level in the US and Mexican border regions. It finds that a 10-minute reduction in wait times positively affects local employment, consumption, and output on both sides of the border. It also lays the path for future discussion on what a greater reduction, ranging from thirty minutes to several hours, can have on each economy locally and in outlying regions and states.

Using data from the US Department of Transportation's Bureau of Transportation Statistics and the US Census Bureau, this second report finds that a 10-minute reduction in wait times could result in 388 additional loaded containers crossing into the United States monthly. These 388 additional container crossings would result in approximately $26 million additional cargo value entering the United States monthly. Texas would be the state to experience the largest dollar increase in cargo value following a 10-minute reduction in commercial wait times, with an additional 222 loaded container crossings each month, representing $17 million in additional total monthly cargo value.

The United States would also benefit from more authorized noncommercial crossings with shorter border wait times. A 10-minute reduction in noncommercial wait times is associated with an additional 5,020 authorized noncommercial crossings per month. As shown in the first report, this would lead to a $5.4 million positive annual impact on the US economy due to purchases by additional families and individuals entering the United States from Mexico. This report evaluates the economic impact of increased noncommercial crossings for the United States' four border states by using survey data on the spending patterns of noncommercial border crossers at the county and state levels.

Data from the Mexican National Institute of Statistics and Geography (INEGI) reveals that reducing wait times for commercial vehicles by 10 minutes would create 18,700 direct and indirect Mexican jobs. It would positively impact GDP in Mexican border states by 1.34 percent and create approximately 3,050 direct jobs (an average of 508 new jobs per state).[7]

The study utilizes a 10-minute reduction as its baseline for two reasons. First, it is a time reduction that could be easily achieved with small improvements to border policy, management practices, and screening mechanisms. Second, ten minutes is the largest time reduction that can be used to estimate economic impact while maintaining reliable results with a minimal error term. However, given that report results are mostly linear, they could be scaled to estimate the economic impact of any given reduction in border wait times, considering that the larger the reduction, the larger the error term.

Decision makers in the United States and Mexico should consider the findings in this report as they collaborate to find a mutually beneficial framework for binational security and economic outcomes in line with the framework of a 21st Century Border.

SUMMARY OF FIRST STUDY

The Economic Impact of a More Efficient US-Mexico Border: How reducing wait times at land ports of entry would promote commerce, resilience, and job creation, Atlantic Council's Adrienne Arsht Latin America Center, the University of Texas at El Paso's Hunt Institute for Global Competitiveness, and El Colegio de la Frontera Norte, September 27, 2022.

The first report in this two-part series reveals new data on the national-level benefits of improved border management practices and tools at the US-Mexico border, quantifying the dollar-impact of additional commerce and cross-border spending following a 10-minute reduction in border wait times. Results suggest that such a reduction would lead to an additional $26 million in monthly cargo entering the United States from Mexico via commercial vehicles, translating to $312 million annually. The 10-minute reduction in wait times would also result in $5.4 million in additional spending by families and individuals crossing into the United States from Mexico. This would create nearly 18,700 jobs in Mexico and increase labor income by an average of $17,474 per sector.

Additionally, a one-minute reduction in wait times would increase the average output of Mexico's top-10 producing industries by 2 percent, boosting intermediate sales and aggregate demand by 2.4 percent and 1.7 percent, respectively.

What does increased efficiency at the border look like in practice?

Greater efficiency at the border leads to better economic and security outcomes. However, it is essential to identify how enhanced border management practices and tools could affect commercial and noncommercial users in practice. This section provides an overview of concrete areas in which improvements in technology, infrastructure, and processes could further benefit the US and Mexican economies. The ideas outlined below result from numerous round tables, focus groups, and one-on-one consultations with key stakeholders in the United States and Mexico, including leading representatives from the private sector.

ADOPT ADDITIONAL SCREENING AND SELF-REPORTING TECHNOLOGIES.

Redundancy and inefficiency in personal and cargo processing often lead to delays at the border. In part, this occurs because processing takes place once commercial and noncommercial vehicles arrive at inspection booths rather than along the journey. To reduce wait times, enhanced screening technologies could be deployed to register border users and their cargo further away from ports of entry, thereby accelerating the flow of information into processing systems.

The United States and Mexico could also work together to develop decentralized tools for border management and processing, such as self-reporting mobile apps that enable GPS technology for tracking, requesting cargo information, and using facial recognition features for a quick driver inspection. This, along with license plate readers and other technology mechanisms, could improve border efficiency and security.

INVEST IN SMART INFRASTRUCTURE.

Outdated infrastructure leads to a series of operational issues at the US-Mexico border. For instance, bottlenecks and sub-prime roads create long queues close to inspection points that back traffic onto interstate highways, limit mobility, and generate security and environmental challenges for surrounding communities. These characteristics also provide optimal conditions for road accidents that have the potential to further increase wait times due to emergency operations.

To promote safer and faster border crossings, the United States and Mexico could designate lanes or entire ports of entry for noncommercial vehicles exclusively, thus avoiding potential collisions with large cargo trucks. Similarly, specialized lanes for commercial trucks with empty containers that require minimal inspection could further decongest ports of entry, particularly in ports of entry with high crossing volumes such as Laredo/Nuevo Laredo and El Paso/Ciudad Juárez.

At present, physical barriers such as permanent concrete or plastic barriers (Jersey barriers or K-Rail) are used to slow down traffic and combat threats from transnational criminal organizations. However, these barriers often become major operational obstacles when traffic flows increase, leading to further congestion. To avoid this, retractable barriers that can be raised or lowered to smooth traffic or block access should be prioritized.

CONSIDER THE BORDER AS A SYSTEM.

Production in the United States and Mexico relies on global inputs and the logistical network of supply chain providers, such as freight forwarders, customs brokers, and transportation gateways. This means that border closures and excessive wait times at ports of entry negatively affect the US and Mexican economies at the national and local levels. When consulted on ideal border crossing times, private sector representatives agreed that a wait of 120 minutes or more is detrimental to their supply chain operations. They said optimal conditions for supply chain operations would be a predictable wait of 60 minutes or less.[8] Nevertheless, according to US Customs and Border Protection (CBP), wait times at the border for commercial crossings regularly surpass 125 minutes at regular-to-peak crossing hours.

Border users interviewed as part of this study provided the following suggestions to improve border efficiency:

- **Private funding for staffing and infrastructure:** Establishing quasi-governmental organizations to receive private-sector funding to standardize or consolidate unfinished infrastructure projects and fund CBP operations to staff inspection personnel at ports of entry could reduce delays.

- **Regional border crossings as a system:** Maximizing traffic flows through a system of designated-use ports of entry from binational regions such as Paso del Norte, composed of El Paso, Texas; Santa Teresa, New Mexico; and Ciudad Juárez, Chihuahua. Rather than overusing each port of entry to process all commercial and noncommercial vehicles, ports of entry could specialize in a set of functions and capabilities based on their competitive advantage (e.g., location, staffing, and infrastructure). The Santa Teresa port of entry in the Paso del Norte region is a prime example of a designated port of entry for large and bulky products from the aerospace, automotive, and renewable energy industries. Although this port of entry would benefit from infrastructure improvements, especially on the Mexican side of the border, it alleviates congestion from passenger and commercial goods from Ciudad Juárez into El Paso. Large traffic gets relocated away from major urban and traffic-congested areas. In this way, incoming migrant caravans could be redirected to avoid interrupting noncommercial traffic operations under a regional border crossing scheme.

IMPROVE MANAGEMENT PRACTICES AND STAFFING.

Despite implementing interventions to enhance the experience of border users, those consulted as part of this two-part study expressed concerns about inconsistent policies that are not well attuned to their needs. Federal policy should include frequent evaluations and surveys of border users to ensure the US-Mexico border continues to serve communities in the United States and Mexico. Similarly, to increase binational cooperation and coordination, commercial users, noncommercial users, manufacturing associations, and local governments should be encouraged to participate in the planning and design process for new infrastructure at ports of entry across the entire border region.

Other sources of delays at the US-Mexico border for commercial and noncommercial crossings are the lack of personnel at ports of entry and action plans for unexpected circumstances such as migrant caravans, violence in border towns, or temporary local- and state-level processing requirements.

Economic Impact of a More Efficient US-Mexico Border

Over the past decades, US-Mexico collaboration at the border has deterred illicit activity and promoted cross-border commerce and travel. Improved border management techniques and the adoption of new technologies can simultaneously enhance security at the border while facilitating commercial exchange.

In the first report of this study, the Adrienne Arsht Latin America Center at the Atlantic Council, the Hunt Institute for Global Competitiveness at the University of Texas at El Paso, and the Colegio de la Frontera Norte determined that a 10-minute reduction in border wait times would lead to 532 additional commercial vehicles and 5,020 additional noncommercial vehicles entering the United States from Mexico monthly. This translates to more than $312 million in additional commerce from Mexico into the United States annually, with an annual impact of $5.4 million on the US economy from purchases by other border crossers.

While the previous analysis focused on the impact of reduced border wait times at the national level, this report considers the economic impact across the border region. State-level results for Arizona, California, New Mexico, and Texas are presented in the main text, while county-level results are available in Appendix C.

USEFUL TERMS

- **Aggregate demand:** The total demand for all finished goods and services produced in an economy. Aggregate demand also serves as a proxy for GDP. The five components of aggregate demand are consumer spending, business spending, government spending, and exports minus imports.
- **Intermediate demand:** The demand for goods as they move through the production chain of the economy.
- **Inspection time:** The time required by customs officials to inspect and authorize commercial vehicles to cross the US-Mexico border.
- **Queuing time:** The average time commercial vehicles take to pass through the entire customs system.
- **Crossing without customs recognition:** The most straightforward way for commercial vehicles to cross the US-Mexico border. It usually entails a basic inspection by customs officials that includes the adjustment of levies and other tax-related charges.
- **Crossing with customs recognition:** The more extensive inspection process at customs checkpoints. This process usually entails separate inspection in specialized lanes that can include manual revisions or other forms of non-intrusive technology, such as K-9s, X-rays, or gamma rays.

United States

KEY TAKEAWAYS:

A 10-minute reduction in wait times at the US-Mexico border would:

- Result in 532 additional containers crossing from Mexico into the United States, generating $26 million worth of cargo value monthly. Texas would experience the largest increase in cargo, estimated at $17.7 million.
- Permit 5,020 additional noncommercial vehicles to enter the United States from Mexico. California is expected to benefit the most from more noncommercial crossings, with additional monthly spending by families estimated at $256,192.

Economic impact of additional commercial crossings for US border states

This section outlines the economic impact of additional commercial crossings into the United States for each US border state and its top five industries. The economic impact for US border counties is in Appendix C.

The first report established that a one-minute reduction in wait times is associated with an average of approximately 53.2 additional commercial crossings per month. These results can be scaled by 10 to show that a 10-minute reduction in wait times is associated with an average of 532 additional container crossings per month (See Appendix A2 for regression results). Of these northbound containers, approximately 73 percent are loaded, carrying an average cargo value of $66,980.[9] This means that 388 of the additional 532 containers entering the United States are expected to have goods. Therefore, the analysis determines that a 10-minute reduction in border wait times results in an additional $26 million worth of cargo entering the United States monthly or $312 million annually.

Table 1 disaggregates data on commercial crossings across Arizona, California, New Mexico, and Texas. It allocates the 388 additional loaded containers that would cross the border following a 10-minute reduction in wait times across the four US border states (column 7) based on each state's share of total loaded container crossings (column 3).[10] It also shows the dollar value of the additional cargo expected to enter each state in millions of US$ (column 8).

Results show that Texas would absorb the largest additional cargo value following the 10-minute reduction in commercial wait times, with $17.7 million per month. California would experience the second greatest benefit, with $3.5 million followed by New Mexico, with $3.3 million. Arizona would benefit the least from the additional crossings, receiving $1.4 million in extra cargo monthly.

Table 1. US Border State Crossings (Measured in Millions)

State	Loaded Containers 2019	% of Total State Crossings	Total Import Value (Million USD) 2019	% of Total Import Value	Average Value per Loaded Container (Import) (Million USD)	Additional Loaded Containers*	Additional Cargo Value** (Million USD)
Arizona	344,191	7.2%	$17,663.2	5.5%	$0.05	28	$1.4
California	1,056,457	22.2%	$43,567.8	13.7%	$0.04	86	$3.5
New Mexico	632,973	13.3%	$39,983.7	12.6%	$0.06	52	$3.3
Texas	2,732,531	57.3%	$217,153.6	68.2%	$0.08	222	$17.7
US Total	**4,766,152**	**100.0%**	**$318,368.3**	**100.0%**	**$0.07**	**388**	**$25.9**

NOTE: *A ten-minute reduction in wait times is associated with approximately 388 additional loaded container crossings per month on average.
**Product of the additional loaded containers per month and the average value per container.

SOURCE: Hunt Institute for Global Competitiveness.

Trucks are seen on a bridge intersection near the World Trade Bridge border, in Laredo, Texas US. June 3, 2019. REUTERS/Carlos Jasso

Economic impact of additional noncommercial crossings for US border states

This study reveals that a 10-minute reduction in wait times is associated with approximately 5,020 additional non-commercial, authorized crossings each month across all land ports of entry. This was determined by using noncommercial crossings data from April 2016 through December 2019 and applying a scalable regression model to determine the proportion of crossings coming through each border state. This is after scaling up by ten the results of another regression model used to understand the relationship between noncommercial crossings and border wait times.[11]

Measuring the economic impact of noncommercial crossings requires data on the spending patterns of individuals crossing the border and a model to determine the economic impact of this spending. A 2019 study by the City of El Paso International Bridges Department quantifies the social and economic cross-border activities from vehicle and pedestrian crossings through the El Paso-Ciudad Juárez port of entry. This report focused on survey responses related to the intended destination (El Paso or other) and expected spending across twenty categories.[12] The survey results indicate that approximately 80 percent of individuals crossing the border (by vehicle and as pedestrians) remained in El Paso, while 20 percent continued to another location. Of the 80 percent who

stayed in El Paso, approximately 64 percent of those who crossed by vehicle and 47 percent who crossed as pedestrians reported positive expected expenditures. For technical details on how the data and model were used to calculate the noncommercial impact, see Appendix E.

Table 2 shows the direct, indirect, induced, and total impact of spending by additional noncommercial crossers for each border state following a 10-minute reduction in wait times. The impact is stated in labor income, value-added, and output. Results suggest that California would benefit the most from the additional noncommercial crossings, with $256,192 in extra monthly output. In Texas, this would increase by $221,918. The increase in monthly production for Arizona and New Mexico would be smaller, at $63,084 and $6,343, respectively.[13]

The top five industries in terms of output gains would be clothing retail, general merchandising, and real estate. As shown in Table 3, output increases the most for clothing and clothing accessories stores.

People walk on the international border bridge Paso del Norte to cross to El Paso from Ciudad Juarez in Ciudad Juarez, Mexico. December 28, 2016. REUTERS/Jose Luis Gonzalez

Table 2. Impact from Additional Noncommercial Crossings in Border States Following a 10-Minute Reduction in Noncommercial Border Wait Times (Total US$)

	Impact	Labor Income	Value Added	Output
Arizona	Direct	$16,047.30	$24,355.45	$42,309.75
	Indirect	$2,989.74	$4,575.19	$12,342.90
	Induced	$2,484.50	$4,786.36	$8,431.92
	Total	**$21,521.54**	**$33,717.00**	**$63,084.57**
California	Direct	$58,028.53	$92,093.21	$153,219.56
	Indirect	$17,820.41	$28,758.14	$54,103.88
	Induced	$15,368.56	$30,383.06	$48,868.90
	Total	**$91,217.49**	**$151,234.42**	**$256,192.34**
New Mexico	Direct	$1,481.54	$2,275.89	$4,384.50
	Indirect	$263.23	$476.55	$1,153.35
	Induced	$239.48	$461.29	$805.41
	Total	**$1,984.25**	**$3,213.73**	**$6,343.26**
Texas	Direct	$49,256.29	$73,114.81	$138,167.23
	Indirect	$11,478.05	$17,564.45	$46,216.89
	Induced	$10,863.77	$19,340.05	$37,534.54
	Total	**$71,598.11**	**$110,019.31**	**$221,918.66**

SOURCE: Hunt Institute for Global Competitiveness.

Table 3. Top Five Industries Impacted (Total Output) in Border States (Total $US)

Industry	Output			
	Arizona	California	New Mexico	Texas
Clothing and clothing accessory stores	$16,505.93	$59,948.68	$1,650.19	$54,066.29
General merchandise stores	$6,720.63	$24,335.78	$670.82	$22,030.43
Real estate	$4,703.12	$17,077.51	$427.73	$11,945.47
Retail - Motor vehicle and parts dealers	$4,310.56	$15,660.35	$430.12	$14,189.36
Retail - Food and beverage stores	$4,010.61	$14,589.77	$394.43	$13,133.58

SOURCE: Hunt Institute for Global Competitiveness.

Mexico

KEY TAKEAWAYS:

A 10-minute reduction in wait times at the US-Mexico border would:

- Generate a $2.2 billion or 1.34 percent increase in GDP for the border states. The states experiencing the largest increase in state-level GDP are Tamaulipas (1.86 percent), Baja California (1.62), and Chihuahua (1.53).
- Overall, the decrease in wait times would lead to greater export dynamics that would create 3,050 new jobs and increase labor income by $3 million across Baja California, Chihuahua, Coahuila, Nuevo León, Sonora, and Tamaulipas.

Congestion and delays along US-Mexico border land ports of entry create obstacles to continued North American economic integration and competitiveness. A more efficient border with shorter wait times for commercial vehicles would positively impact Mexican GDP, employment, and labor income.

According to the first report in this two-part study, a 10-minute reduction in border wait times would create nearly 18,700 direct and indirect jobs in Mexico, increase labor income per sector by an average of $17,474, and boost growth for Mexico's manufacturing, wholesale trade, and mining sectors, among others. Just a one-minute reduction would increase the average production per sector by 2 percent, adding an average of $41.5 million per sector to the Mexican economy. These national-level results could be used to analyze the benefits of reduced border wait times for each of the six Mexican border states, each of which significantly contribute to Mexico's export economy. These national-level results can be used to analyze the benefits of reduced border wait times for each of the six Mexican states along the US-Mexico border.

A more efficient US-Mexico border would increase Mexico border states' GDP by 1.34 percent and generate more than $2.2 billion in aggregate demand and about $167 million in intermediate demand within the border region. The states experiencing the largest increase in state-level GDP are Tamaulipas (1.86 percent), Baja California (1.62), and Chihuahua (1.53). Moreover, more efficient border crossings would create more than 3,050 formal jobs and result in an increase of more than $3 million in labor income across the six Mexican border states.

Trucks wait in a long queue for border customs control to cross into the US, at the World Trade Bridge in Nuevo Laredo, Mexico June 30, 2020. REUTERS/Daniel Becerril

Economic Impact of Commercial Crossings for Mexico's Border States

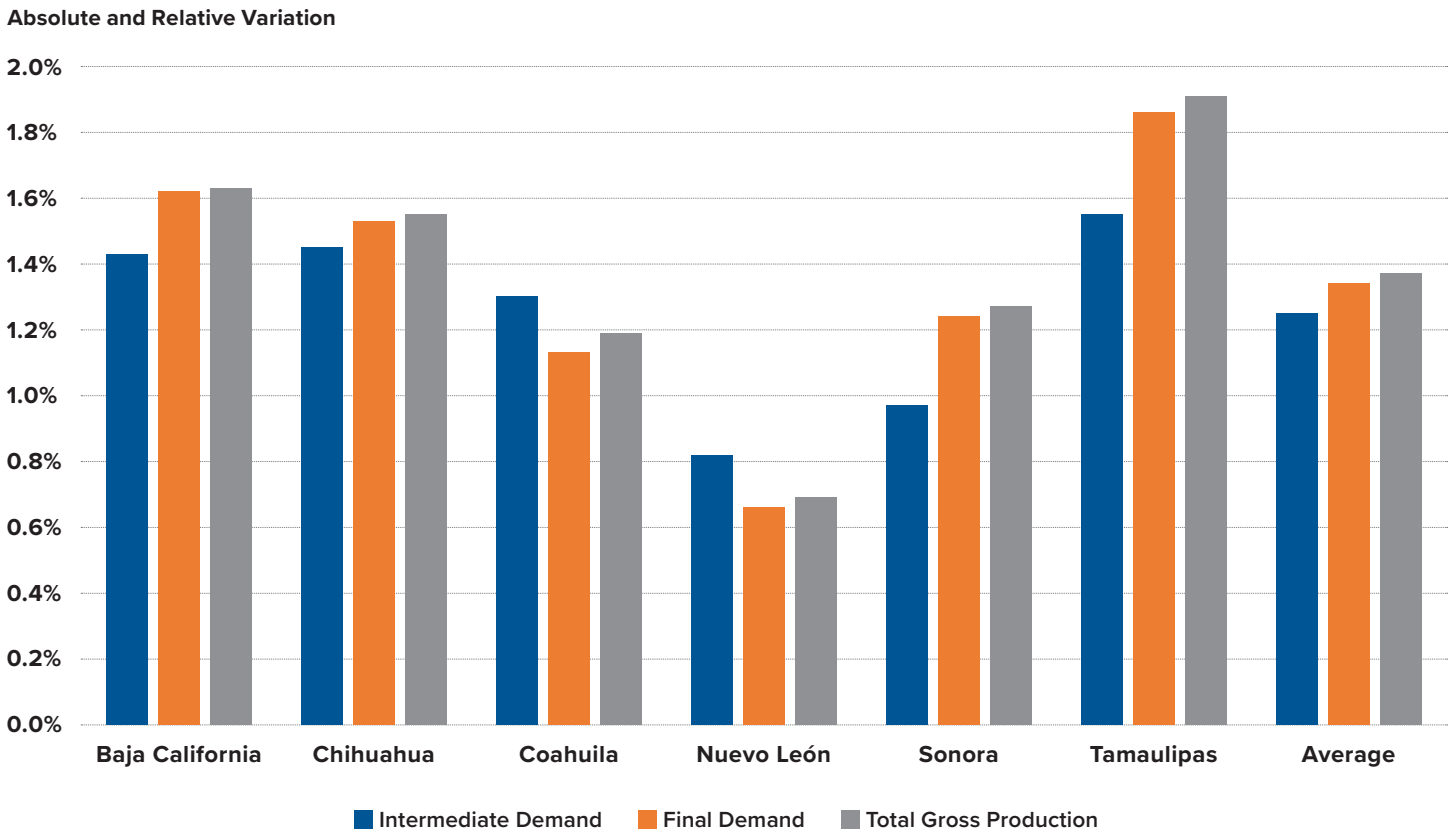
The following section further quantifies the economic impact of a more efficient border for Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas; Mexico's six border states which significantly contribute to Mexico's export economy.

According to INEGI, Mexico's northern border states produced more than 55 percent of all exports from Mexico to the United States in 2018. More specifically, Chihuahua generated 13.2 percent of all exports, Coahuila 10.2 percent, Nuevo León 10.0 percent, Baja California 9.9 percent, Tamaulipas 6.8 percent, and Sonora 5.0 percent.

Figure 1 shows the production structure of the Mexican northern border states by demand components: intermediate demand, final demand, and total production. Results show that across all six states, a 10-minute reduction in wait times generates an average growth of 1.25 percent in intermediate demand, 1.34 percent in final demand, and 1.37 percent in total production.

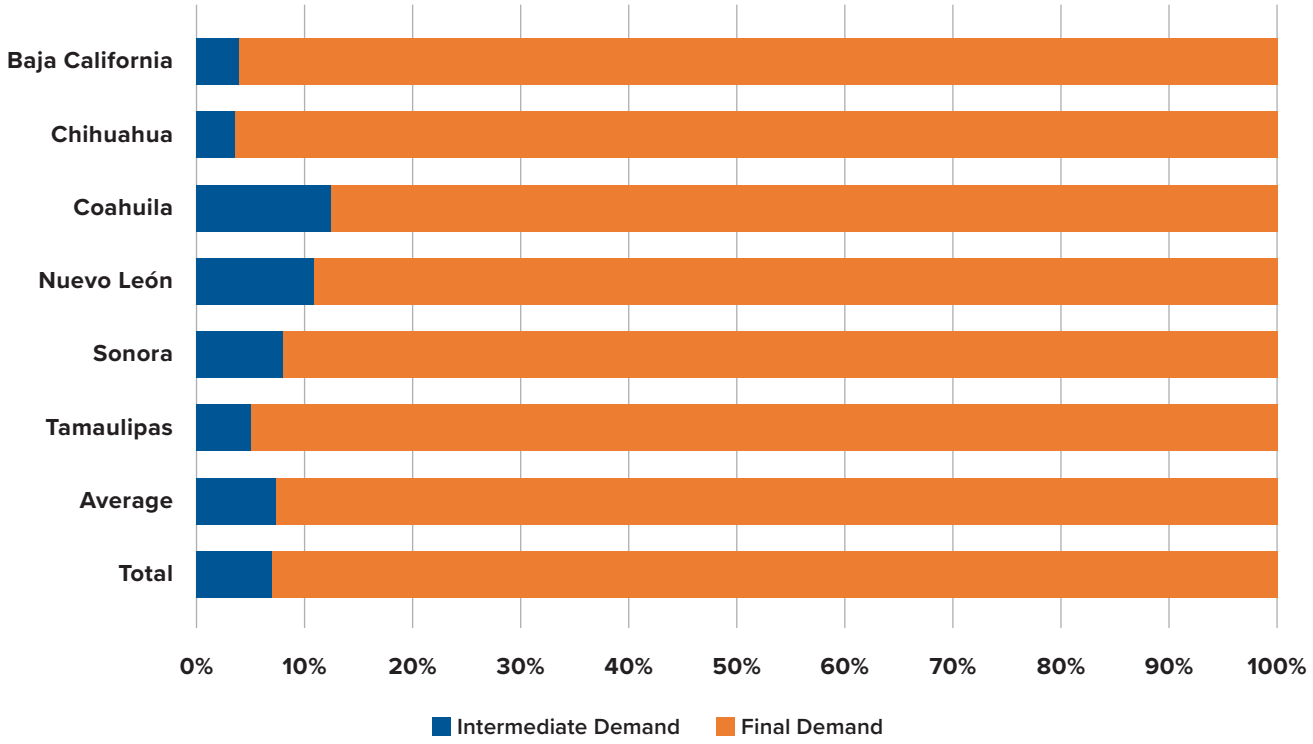
In this scenario, the components of final demand (households, the government, companies, stock variations, and exports) can be understood as aggregate demand, which serves as a proxy for GDP. This means that greater efficiency at the border would generate a 1.34 percent increase in GDP in border states, with Tamaulipas' GDP growing the most in relative terms (1.86 percent), followed by Baja California's (1.62) and Chihuahua's (1.53). Results also show that Nuevo León, the largest contributor to Mexico's GDP, would experience the smallest relative GDP growth at 0.66 percent. As Nuevo León lacks large border crossings, changes in border wait times have little effect on its production.

Figure 1. Variation of Total Gross Production, Intermediate Demand, and Final Demand in Northern Mexican Border States Following a 10-minute Reduction in Wait Times (Relative change; Projection to 2022)



SOURCE: COLEF's calculations on the results of the impact of the input-output tabulators for Mexico's northern border.

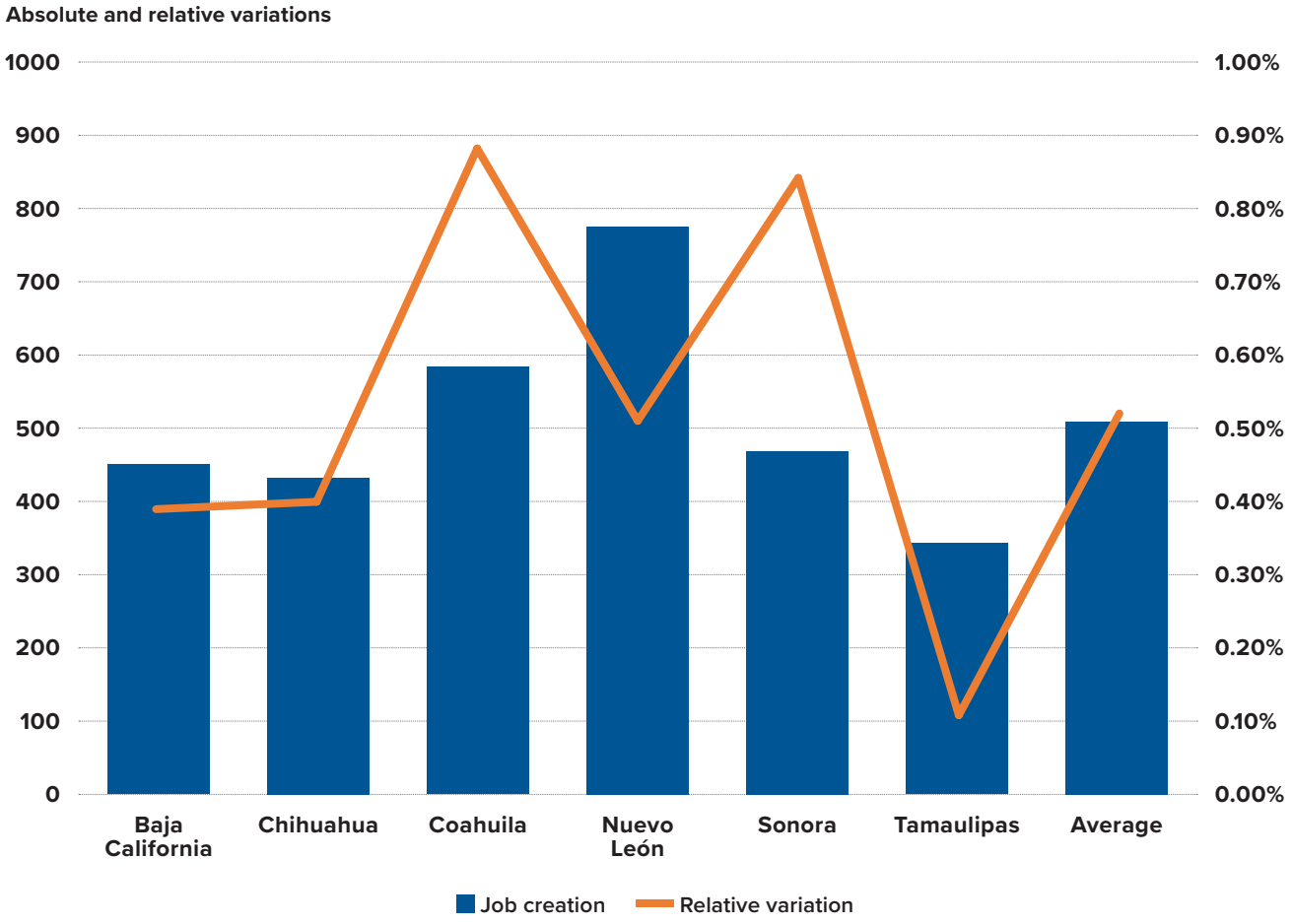
Figure 2. Relative Participation in the Formation of Total Production, Intermediate, and Final Demand in Northern Mexican Border States Following a 10-minute Reduction in Wait Times (Thousand US$; Absolute Variation; Projection to 2022)



SOURCE: COLEF's calculations.

Figure 2 shows the absolute variation in intermediate and final demand per border state in thousands of US dollars following a 10-minute reduction in border wait times. Research shows that a more efficient US-Mexico border would generate an increase of $2.2 billion in GDP or final demand and $167 million in intermediate demand along border strip states.[14] Chihuahua would have the largest absolute variation in GDP, an increase of $535.6 million, and Sonora the smallest, with a $161.3 million increase.

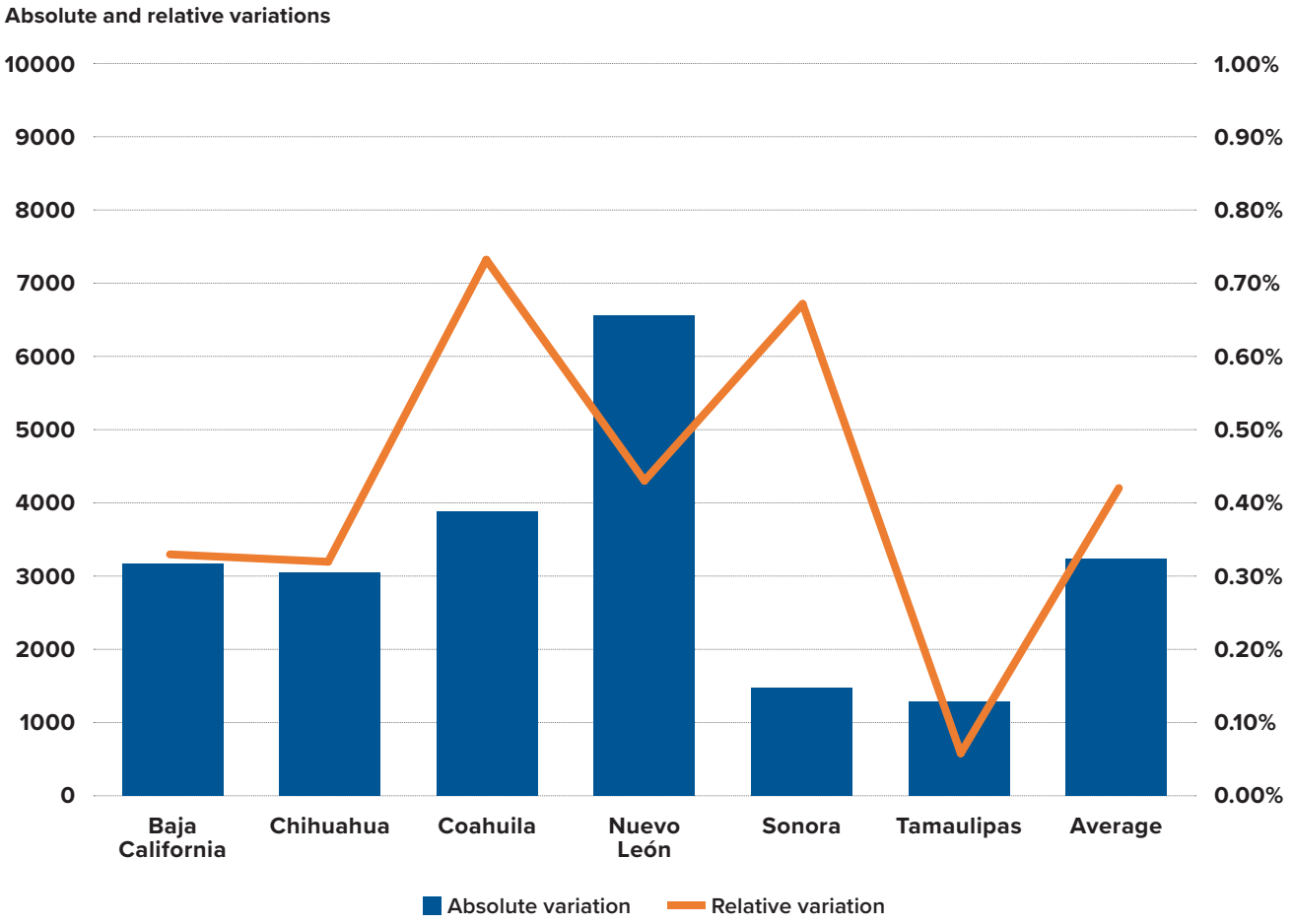
Figure 3. Job Creation in Northern Mexican Border States Following a 10-minute Reduction in Wait Times (Absolute and Relative Variations; Projection to 2022)



SOURCE: COLEF's calculations.

Figure 3 shows absolute and relative job creation by border state. Results suggest that a 10-minute reduction in wait times would create more than 3,050 jobs across the six border states, with an average of 508 new formal jobs per state. States with the highest relative variation in employment creation rates include Coahuila and Sonora, with growth rates of 0.88 percent and 0.84 percent, respectively. In absolute terms, Nuevo León would experience the greatest increase in employment, with approximately 775 new jobs created after the reduction in wait times. Changes in hiring practices can explain these increases. However, economic theory demonstrates that firms that experience an increase in export dynamics, and hence, increased revenue, could invest in capital rather than labor. This substitution effect could lead to a loss of jobs. For more information on substitution effects related to job creation, see Appendix F.[15]

Figure 4. Labor Factor Remuneration in Northern Mexican Border States Following a 10-minute Reduction in Wait Times (Thousand US$; Absolute and Relative Variations; Projection to 2022)



SOURCE: COLEF's calculations.

Research shows that a 10-minute reduction in border wait times would lead to a $3 million increase in labor income across the six Mexican border states. As shown in Figure 4, Nuevo León would have the largest absolute increase in labor income. This is explained, in part, by its labor income structure; Nuevo Leon remunerates labor better than other border states.[16] Therefore, Nuevo León's relative variation in labor income is one-tenth of a percentage point higher than the average of the six border states, at 0.43 percent. Higher compensation for labor translates into a significant absolute increase in labor income but a smaller absolute variation.

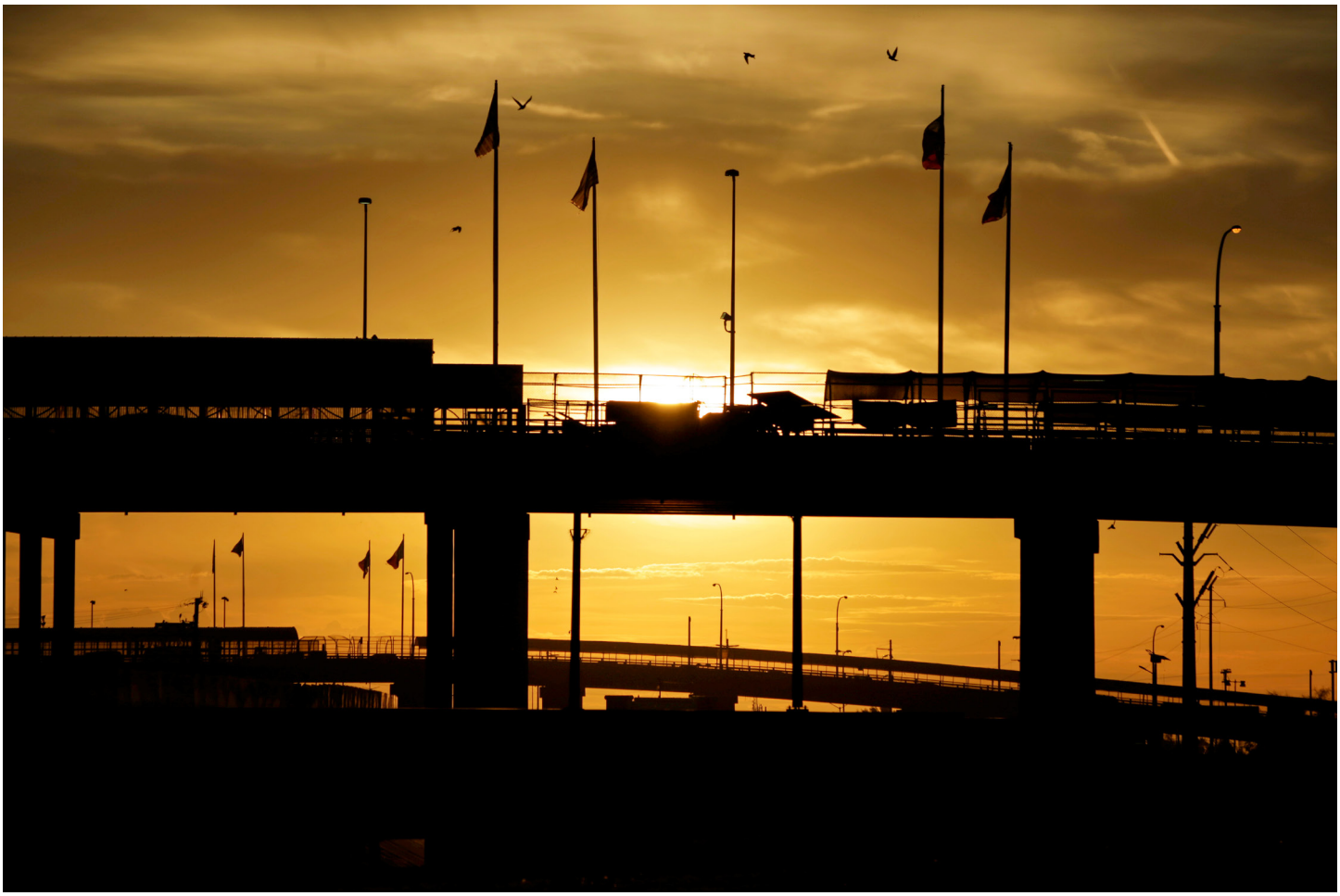
Appendix F includes additional information about the economic impact on economic aggregates, jobs created, and labor income for each border state following reduced wait times.

Conclusion: Looking Ahead

This report demonstrates the economic benefits of a more efficient US-Mexico border, which cannot be overstated. Results show that reducing border wait times positively impacts employment and economic output on both sides of the border. In the United States, a 10-minute reduction in border wait times would lead to 532 additional commercial containers crossing through all ports of entry along the US-Mexico border, of which 388 would be loaded representing approximately $26 million in additional cargo value per month. Texas would experience the largest increase in commercial cargo value per month following a 10-minute reduction in commercial wait times ($17,677,908); California would experience the largest increase in output per month due to additional spending by noncommercial crossers following a 10-minute reduction in noncommercial wait times ($256,192).

In Mexico, a 10-minute reduction in border wait times would increase the GDP of all Mexican border states by 1.37 percent and create approximately 3,000 new jobs, or about 508 new jobs per state. The Mexican states that would benefit most from a more efficient border are Tamaulipas, Baja California, and Chihuahua.

Looking ahead, the United States and Mexico must ensure continued collaboration to create a more efficient and secure border. Using tools such as binational roundtables and working groups, legislators and governments can work with the private sector and civil society to design and implement mechanisms to enhance the border-user experience, which, as this report has shown, carries significant benefits for both countries.



A general view shows the Paso del Norte border crossing bridge as seen from Ciudad Juarez, Mexico September 13, 2019. REUTERS/Jose Luis Gonzalez

Methodology

UNITED STATES

This report follows the same two-step process described in part one of this two-part economic impact study. First, a regression analysis was used to determine the relationship between border wait times and the number of commercial and noncommercial vehicles crossing the border. Then, additional data was employed to determine the economic impact of additional crossings following reduced wait times.[17]

Given the different natures of commercial and noncommercial crossings, this study used additional data and methodologies to estimate the impact of the two types of crossings. The sections below provide descriptions of the methodologies used to analyze commercial and noncommercial crossings separately. Additional details regarding the US-Mexico border and the data used in the analysis are in Appendix A on page 24-26.

A regression analysis was conducted to determine the impact of wait times on commercial crossings. To remove the effect that COVID-19 may have had on commercial crossings, data from April 2016 through December 2019 on the number of northbound container trucks that crossed the US-Mexico border was used. The analysis controlled for additional factors, such as crime, trade, the number of lanes in operation, and total expenditures by the US Department of Homeland Security on both sides of the border.

MEXICO

This study estimates the economic impact of reduced border wait times for border states by analyzing indirect trade's direct and indirect effects on aggregate production, employment, labor income, and tax revenue. The methodology follows the same processes outlined earlier in this report, including the input-output matrix based on a selection of economic activities that report the greatest export dynamics according to INEGI[18]—and the queuing theory used to analyze commercial vehicle wait times at the US-Mexico border.[19]

It uses a three-step process and two economic models to determine the impact of reduced border wait times for commercial vehicles. The analysis used data from the US BTS, CBP, the North American Industry Classification System, Mexico's INEGI, Automated Census Information System, and Servicio de Administración Tributaria (Tax Administration Service).

The first step was to estimate the average inspection rate of commercial vehicles at US-Mexico border land ports of entry (see Appendix H for detailed analysis). Then, a queuing model was used to determine how reduced wait times affect Mexican exports to the United States. Finally, an input-output model was implemented to establish how changes in exports affect production (total gross output), intermediate sales, and aggregate demand for Mexico's top ten sectors in terms of exports to the United States for each Mexican border state (see Appendix F). Appendix I provides a detailed technical description of the queueing and input-output models.

Appendices

The following Appendices provide additional details on the economic analysis summarized in the main report. Given its technical nature, this section can be skipped by more casual readers. Appendices A, B, C, D, and E explain the US-focused analysis by the Hunt Institute for Global Competitiveness at the University of Texas at El Paso, and Appendices F, G, H, and I expand on the Mexico-focused analysis by El Colegio de la Frontera Norte (COLEF).

US-FOCUSED ANALYSIS

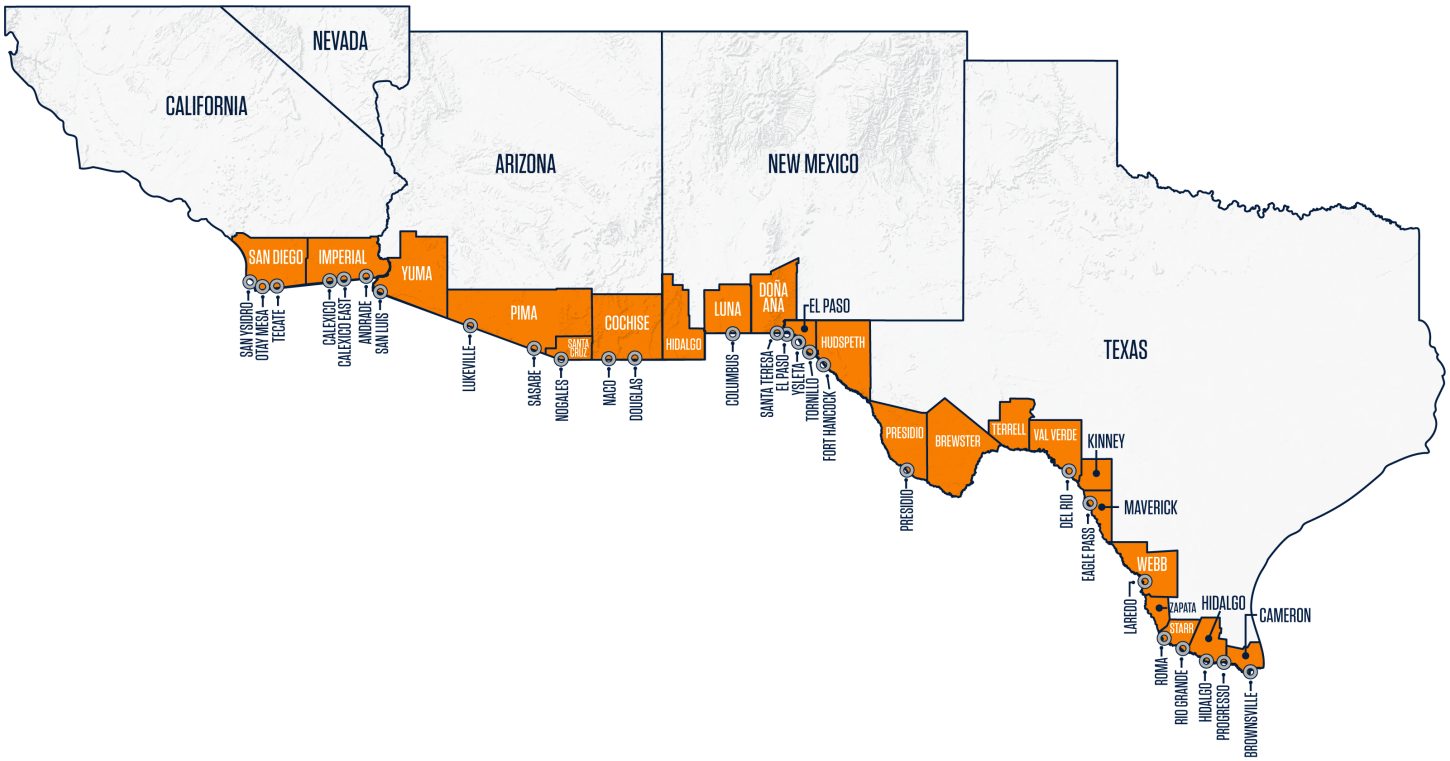
MEXICO-FOCUSED ANALYSIS

APPENDIX A: DATA DESCRIPTION

The analysis contained in this report is built from county-level data that focuses on major US-Mexico border land ports of entry into the United States.

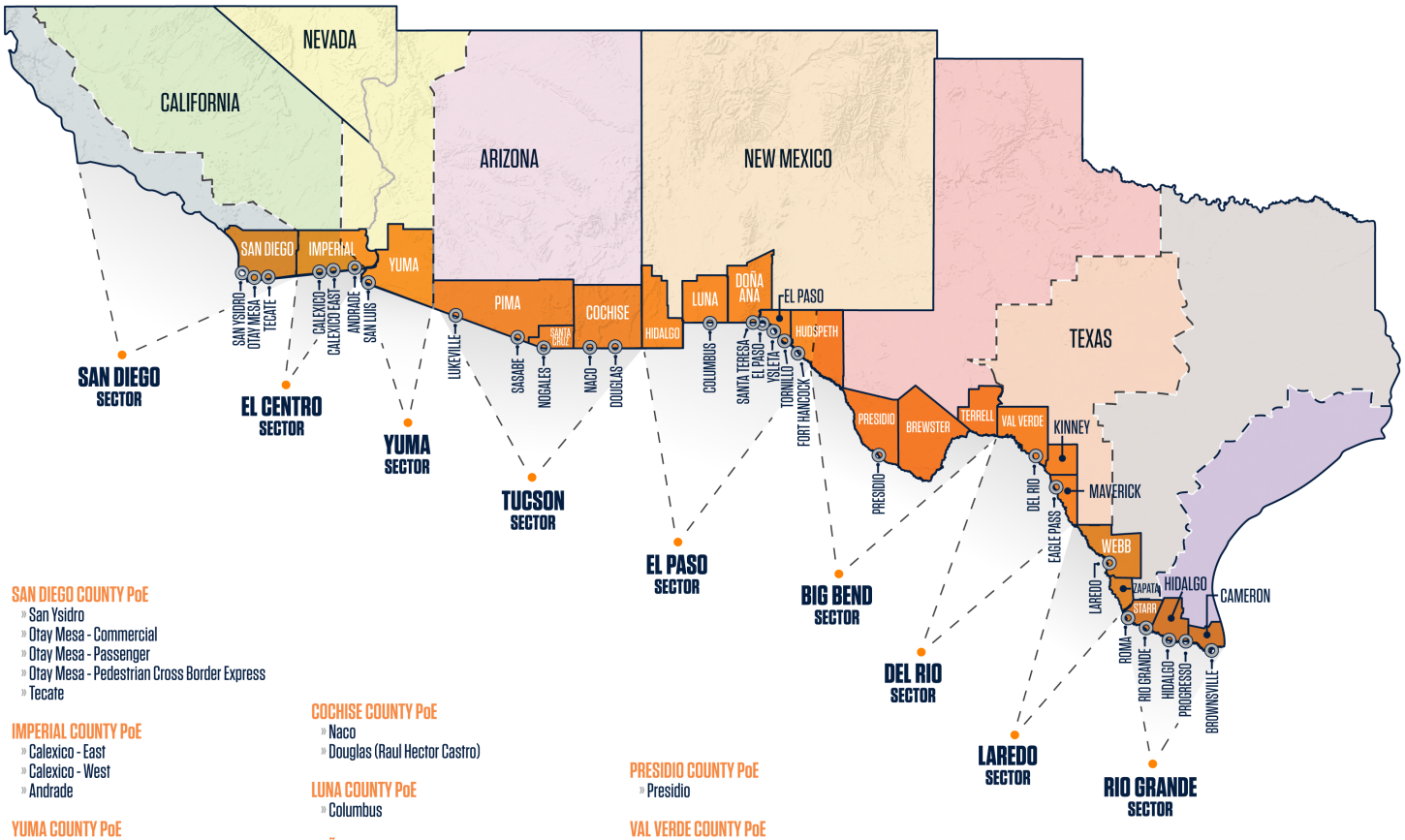
Map A1 presents the US counties on the border with Mexico for which data was collected and analyzed for this report. These counties have one or more land ports of entry.

Map A1. US Border Counties on the US-Mexico Border



SOURCE: Hunt Institute for Global Competitiveness.

Map 2. CBP Sectors Along the US-Mexico Border



SOURCE: The Hunt Institute for Global Competitiveness and COLEF using data from CBP.

Map A2 presents the Customs and Border Patrol (CBP) sectors on the southern border of the United States. Within each sector, the map displays the ports of entry of selected counties. Where available, this analysis collects data for each of these sectors.

Table A1 displays a list of every county in the United States along the US-Mexico border. The list includes the name of every port of entry within that county, the names of the Mexican counties across from the US county, and the name of the CBP sector that encompasses that county.

Table A1. US-Mexico Border States, Counties, Cities, Ports of Entry, Mexican Sister Cities, and CBP Sectors

State	County	City	PoE	Sister City	CBP Sector
California	San Diego	San Ysidro	San Ysidro	Tijuana, Baja California	San Diego Sector California
		Otay Mesa	Otay Mesa - Commercial		
			Otay Mesa - Passenger		
			Otay Mesa - Pedestrian Cross Border Express		
		Tecate	Tecate		
	Imperial	Calexico	Calexico - East	Mexicali, Baja California	El Centro Sector California
			Calexico - West		
		Andrade	Andrade		
Arizona	Yuma	San Luis	San Luis - San Luis I	San Luis Rio Colorado, Sonora	Yuma Sector Arizona
			San Luis - San Luis II		
	Pima	Lukeville	Lukeville	Puerto Peñasco, Sonora	Tucson Sector Arizona
		Sasabe	Sasabe	Sáric, Sonora	
	Santa Cruz	Nogales	Nogales - Deconcini	Nogales, Sonora	
			Nogales - Mariposa		
			Nogales - Morley Gate		
	Cochise	Naco	Naco	Naco, Sonora	
		Douglas	Douglas (Raul Hector Castro)	Agua Prieta, Sonora	
New Mexico	Luna	Columbus	Columbus	Asencion, Chihuahua	El Paso Sector
	Doña Ana	Santa Teresa	Santa Teresa - Santa Teresa Port of Entry	Ciudad Juarez, Chihuahua	
Texas	El Paso	El Paso	El Paso - Bridge of the Americas (BOTA)	Ciudad Juarez, Chihuahua	El Paso Sector
			El Paso - Paso Del Norte (PDN)		
			El Paso - Stanton DCL		
			El Paso - Ysleta		
	Hudspeth	Fort Hancock	Fort Hancock - Fort Hancock		
	El Paso	Fabens	Fabens - Tornillo	Guadalupe, Chihuahua	
	Presidio	Presidio	Presidio	Ojinaga, Chihuahua	Big Bend Sector Texas
	Val Verde	Del Rio	Del Rio	Acuña	Del Rio Sector Texas
	Maverick	Eagle Pass	Eagle Pass - Bridge I	Piedras Negras, Coahuila	
			Eagle Pass - Bridge II		
	Webb	Laredo	Laredo - Bridge I	Nuevo Laredo, Tamaulipas	Laredo Sector Texas
			Laredo - Bridge II		
			Laredo - Colombia Solidarity		
			Laredo - World Trade Bridge		
	Starr	Roma	Roma	Ciudad Miguel Aleman, Tamaulipas	
		Rio Grande	Rio Grande City	Camargo, Tamaulipas	Rio Grande Valley Sector Texas
	Hidalgo County	Hidalgo/ Pharr	Hidalgo/Pharr - Anzalduas International Bridge	Reynosa, Tamaulipas	
			Hidalgo/Pharr - Hidalgo		
			Hidalgo/Pharr - Pharr		
	Hidalgo	Progreso	Progreso - Donna International Bridge	Río Bravo, Tamaulipas	
			Progreso - Progreso International Bridge		
	Cameron	Brownsville	Brownsville - B&M	Matamoros, Coahuila	
			Brownsville - Gateway		
			Brownsville - Los Indios		
			Brownsville - Veterans International		

SOURCE: The Hunt Institute using data from CBP.

APPENDIX B: REGRESSION ANALYSIS

A regression analysis was used to determine the relationship between average wait times (in minutes) and the average number of commercial and non-commercial crossings at major US-Mexico border land ports of entry. To better measure this relationship, factors such as employment and crime on both sides of the border, the number of open lanes, and total expenditures by the Department of Homeland Security (DHS), among others, were taken into consideration. Data from multiple sources—including the CBP, Bureau of Labor Statistics, and Bureau of Transportation from the United States, and the Instituto Nacional de Estadística y Geografía (National Institute of Statistics and Geography or INEGI) and Instituto Mexicano de Seguro Social (Mexican Institute of Social Security) from Mexico—were used. The sample period was April 2016 through December 2019, where the terminal date was chosen to avoid issues due to COVID-19. Table B1 presents the regression results for both the commercial and non-commercial crossing regressions.

Table B1. Regression Results

Regression Results		
	Commercial Crossings	Non-Commercial Crossings
Wait Times	-53.23*	-502.05**
	(30.34)	(227.18)
Employment in US	0.03	0.23
	(0.05)	(0.41)
Employment in Mexico	-0.01	0.05
	(0.02)	(0.17)
Crime in US	-0.03	-1.16***
	(0.04)	(0.43)
Crime in Mexico	-17.60***	-30.00
	(5.56)	(98.12)
Lanes Operational	487.29	314031.50***
	(1998.54)	(68954.24)
DHS Expenditures	-0.002**	0.008
	(0.001)	(0.006)
Trade	8.92e-06***	-
	(5.09e-07)	-
Constant	8307.01	268168.40***
	(6615.80)	(48439.59)
Sample Size	554	585
R^2	0.95	0.76

SOURCE: The Hunt Institute for Global Competitiveness and the COLEF, using data from the US Department of Transportation.

NOTE: The standard error is in parentheses. ***Statistically significant at 1 percent. **Statistically significant at 5 percent. *Statistically significant at 10 percent.

APPENDIX C: ECONOMIC IMPACT OF COMMERCIAL CROSSINGS BY COUNTY

This appendix provides a county-level decomposition of border crossings for the four states of Arizona, California, New Mexico, and Texas. Inspection of the results contained in Tables A3-1 through A3-4 provide additional detail regarding the number of loaded containers entering the border counties of these states and it provides information regarding where the benefits associated with reduced border wait times would likely be the largest.

Table C1. County-Level Commercial Crossings within Arizona

County	Loaded Containers 2019	% of Total Crossings	Total Import Value (Million USD) 2019	% of Total Import Value	Average Value per Loaded Container (Import) (Million USD)	Additional Loaded Containers*	Additional Cargo Value** (Million USD)
Santa Cruz	293,771	85.4%	$15,633.1	88.5%	$0.05	24	$1.3
Cochise	21,775	6.3%	$1,153.3	6.5%	$0.05	2	$0.1
Yuma	28,342	8.2%	$875.1	5.0%	$0.03	2	$0.1
Pima	303	0.1%	$1.8	0.0%	$0.01	0	$0.0
Arizona Total	**344,191**	**100%**	**$17,663.2**	**100%**	**$0.04**	**28**	**$1.4**

NOTE: *A ten-minute reduction in wait times is associated with approximately 28 additional loaded container crossings per month on average. **Product of the additional loaded containers per month and the average value per container. ***Inconsistencies with column addition are due to rounding errors.

SOURCE: Hunt Institute for Global Competitiveness.

Table C2. County-Level Commercial Crossings within California

County	Loaded Containers 2019	% of Total Crossings	Total Import Value (Million USD) 2019	% of Total Import Value	Average Value per Loaded Container (Import) (Million USD)	Additional Loaded Containers*	Additional Cargo Value** (Million USD)
San Diego	798,230	75.6%	$32,480.5	74.6%	$0.04	65	$2.6
Imperial	258,227	24.4%	$11,087.3	25.4%	$0.04	21	$0.9
California Total	**1,056,457**	**100%**	**$43,567.8**	**100%**	**$0.04**	**86**	**$3.5**

NOTE: A ten-minute reduction in wait times is associated with approximately 86 additional loaded container crossings per month on average. **Product of the additional loaded containers per month and the average value per container. ***Inconsistencies with column addition are due to rounding errors.

SOURCE: Hunt Institute for Global Competitiveness.

Table C3. County-Level Commercial Crossings within New Mexico

County	Loaded Containers 2019	% of Total Crossings	Total Import Value (Million USD) 2019	% of Total Import Value	Average Value per Loaded Container (Import) (Million USD)	Additional Loaded Containers*	Additional Cargo Value** (Million USD)
Hidalgo	502,312	79.4%	$23,522.9	58.8%	$0.05	41	$1.9
Doña Ana	114,701	18.1%	$16,344.5	40.9%	$0.14	9	$1.3
Luna	15,960	2.5%	$116.4	0.3%	$0.01	1	$0.0
New Mexico Total	**632,973**	**100%**	**$39,983.7**	**100%**	**$0.06**	**51**	**$3.3**

NOTE: *A ten-minute reduction in wait times is associated with approximately 52 additional loaded container crossings per month on average. **Product of the additional loaded containers per month and the average value per container. ***Inconsistencies with column addition are due to rounding errors.

SOURCE: Hunt Institute for Global Competitiveness.

Table C4. County-Level Commercial Crossings within Texas

County	Loaded Containers 2019	% of Total Crossings	Total Import Value (Million USD) 2019	% of Total Import Value	Average Value per Loaded Container (Import) (Million USD)	Additional Loaded Containers*	Additional Cargo Value** (Million USD)
Webb	1,711,670	62.6%	$135,741.6	62.5%	$0.08	139	$11.1
El Paso	610,869	22.4%	$46,613.7	21.5%	$0.08	50	$3.8
Maverick	149,732	5.5%	$22,197.9	10.2%	$0.15	12	$1.8
Cameron	153,280	5.6%	$8,930.4	4.1%	$0.06	12	$0.7
Val Verde	59,951	2.2%	$3,082.0	1.4%	$0.05	5	$0.3
Starr	38,611	1.4%	$387.7	0.2%	$0.01	3	$0.0
Presidio	8,418	0.3%	$200.3	0.1%	$0.02	1	$0.0
Texas Total	**2,732,531**	**100%**	**$217,153.6**	**100%**	**$0.08**	**222**	**$17.7**

NOTE: *A ten-minute reduction in wait times is associated with approximately 222 additional loaded container crossings per month on average. **Product of the additional loaded containers per month and the average value per container. ***Inconsistencies with column addition are due to rounding errors.

SOURCE: Hunt Institute for Global Competitiveness.

APPENDIX D: ECONOMIC IMPACT OF NON-COMMERCIAL CROSSINGS BY COUNTY

This appendix presents the economic impact of additional non-commercial crossings at the county level for border counties within Arizona, California, New Mexico, and Texas.

Table D1. Impact from Additional Non-Commercial Crossings in Arizona Counties

	Impact	Labor Income	Value Added	Output
Cochise	Direct	$3,289.12	$5,261.50	$9,687.57
	Indirect	$602.07	$950.54	$2,519.34
	Induced	$529.94	$1,042.39	$1,849.44
	Total	**$4,421.13**	**$7,254.43**	**$14,056.34**
Santa Cruz	Direct	$7,247.98	$10,913.60	$17,503.69
	Indirect	$1,946.30	$2,838.10	$5,401.62
	Induced	$1,549.29	$2,926.50	$4,663.19
	Total	**$10,743.58**	**$16,678.19**	**$27,568.50**
Yuma	Direct	$6,146.84	$8,985.33	$15,118.49
	Indirect	$1,003.35	$1,533.44	$3,694.63
	Induced	$1,217.83	$2,215.52	$3,849.59
	Total	**$8,368.02**	**$12,734.28**	**$22,662.71**

SOURCE: Hunt Institute for Global Competitiveness.

Table D2. Top Five Industries Impacted (Total Output) in Arizona Counties

	Impact	Output
Cochise	Clothing and clothing accessory stores	$3,772.94
	General merchandise stores	$1,540.03
	Real Estate	$1,008.16
	Motor vehicle and parts dealers	$985.71
	Food and beverage stores	$915.09
Santa Cruz	Clothing and clothing accessory stores	$6,843.52
	General merchandise stores	$2,735.38
	Real Estate	$2,107.15
	Motor vehicle and parts dealers	$1,770.33
	Food and beverage stores	$1,664.36
Yuma	Clothing and clothing accessory stores	$5,898.67
	General merchandise stores	$2,413.43
	Motor vehicle and parts dealers	$1,554.22
	Food and beverage stores	$1,443.66
	Real Estate	$1,419.27

SOURCE: Hunt Institute for Global Competitiveness.

Table D3. Impact from Additional Non-Commercial Crossings in California Counties

	Impact	Labor Income	Value Added	Output
Imperial	Direct	$15,116.75	$24,669.31	$42,357.49
	Indirect	$2,819.12	$4,319.95	$9,743.08
	Induced	$1,898.37	$4,010.56	$6,776.99
	Total	**$19,834.24**	**$32,999.82**	**$58,877.56**
San Diego	Direct	$42,911.78	$67,423.91	$110,862.07
	Indirect	$14,814.65	$24,116.81	$43,774.23
	Induced	$13,345.21	$26,128.17	$41,701.76
	Total	**$71,071.64**	**$117,668.89**	**$196,338.06**

SOURCE: Hunt Institute for Global Competitiveness.

Table D4. Top Five Industries Impacted (Total Output) in California Counties

	Industry	Output
Imperial	Clothing and clothing accessory stores	$16,535.09
	General merchandise stores	$6,681.76
	Motor vehicle and parts dealers	$4,300.62
	Food and beverage stores	$3,972.17
	Full-service restaurants	$3,210.92
San Diego	Clothing and clothing accessory stores	$43,409.99
	General merchandise stores	$17,648.56
	Other real estate	$14,482.83
	Motor vehicle and parts dealers	$11,356.26
	Food and beverage stores	$10,612.17

SOURCE: Hunt Institute for Global Competitiveness.

Table D5. Impact from Additional Non-Commercial Crossings in New Mexico Counties

	Impact	Labor Income	Value Added	Output
Doña Ana	Direct	$947.93	$1,406.16	$2,615.42
	Indirect	$189.75	$334.35	$774.81
	Induced	$184.95	$339.45	$579.48
	Total	**$1,322.63**	**$2,079.97**	**$3,969.71**
Luna	Direct	$491.17	$797.74	$1,622.23
	Indirect	$66.24	$128.24	$342.00
	Induced	$50.04	$111.80	$207.32
	Total	**$607.45**	**$1,037.78**	**$2,171.55**

SOURCE: Hunt Institute for Global Competitiveness.

Table D6. Top Five Industries Impacted (Total Output) in New Mexico Counties

Industry		Output
Doña Ana	Clothing and clothing accessory stores	$1,019.50
	General merchandise stores	$414.90
	Real Estate	$309.98
	Motor vehicle and parts dealers	$266.38
	Food and beverage stores	$242.49
Luna	Clothing and clothing accessory stores	$630.60
	General merchandise stores	$255.43
	Motor vehicle and parts dealers	$163.48
	Food and beverage stores	$151.31
	Full-service restaurants	$122.23

SOURCE: Hunt Institute for Global Competitiveness.

Table D7. Impact from Additional Non-Commercial Crossings in Texas Counties

	Impact	Labor Income	Value Added	Output
Cameron	Direct	$7,258.32	$11,043.48	$21,452.15
	Indirect	$1,803.30	$2,682.98	$6,790.63
	Induced	$1,734.42	$3,029.12	$5,773.37
	Total	**$10,796.04**	**$16,755.59**	**$34,016.15**
El Paso	Direct	$19,670.01	$28,838.38	$53,732.05
	Indirect	$4,822.83	$7,535.02	$18,827.23
	Induced	$4,662.50	$8,378.66	$16,135.87
	Total	**$29,155.34**	**$44,752.06**	**$88,695.15**
Hidalgo	Direct	$8,008.16	$11,806.24	$22,108.37
	Indirect	$1,820.63	$2,767.50	$7,767.15
	Induced	$2,137.23	$3,615.70	$7,142.80
	Total	**$11,966.02**	**$18,189.44**	**$37,018.32**
Maverick	Direct	$4,322.59	$6,542.97	$12,645.13
	Indirect	$672.92	$1,113.16	$3,187.57
	Induced	$512.95	$1,048.86	$2,063.87
	Total	**$5,508.45**	**$8,704.99**	**$17,896.57**
Presidio	Direct	$1,108.77	$1,601.54	$3,078.92
	Indirect	$147.64	$214.64	$606.03
	Induced	$72.78	$149.11	$302.93
	Total	**$1,329.20**	**$1,965.29**	**$3,987.87**
Starr	Direct	$1,714.33	$2,491.04	$4,728.65
	Indirect	$184.21	$280.32	$1,083.03
	Induced	$156.64	$324.67	$666.12
	Total	**$2,055.18**	**$3,096.04**	**$6,477.80**
Webb	Direct	$2,528.83	$3,779.38	$7,274.68
	Indirect	$458.92	$698.56	$1,798.87
	Induced	$383.25	$717.37	$1,392.15
	Total	**$3,371.00**	**$5,195.31**	**$10,465.69**
Val Verde	Direct	$7,155.08	$10,762.82	$20,361.38
	Indirect	$2,023.92	$2,966.77	$7,939.93
	Induced	$1,553.65	$2,736.34	$5,335.52
	Total	**$10,732.65**	**$16,465.93**	**$33,636.83**

SOURCE: Hunt Institute for Global Competitiveness.

Table D8. Top Five Industries Impacted (Total Output) in Texas Counties

	Industry	Output
Cameron	Clothing and clothing accessory stores	$8,395.09
	General merchandise stores	$3,420.26
	Motor vehicle and parts dealers	$2,204.48
	Food and beverage stores	$2,050.86
	Real Estate	$1,782.62
El Paso	Clothing and clothing accessory stores	$21,036.40
	General merchandise stores	$8,577.41
	Motor vehicle and parts dealers	$5,527.13
	Food and beverage stores	$5,076.62
	Real Estate	$4,755.44
Hidalgo	Clothing and clothing accessory stores	$8,662.84
	General merchandise stores	$3,540.62
	Motor vehicle and parts dealers	$2,280.77
	Food and beverage stores	$2,130.00
	Real Estate	$1,997.25
Maverick	Clothing and clothing accessory stores	$4,941.95
	General merchandise stores	$2,005.01
	Motor vehicle and parts dealers	$1,290.83
	Food and beverage stores	$1,189.57
	Full-service restaurants	$936.80
Presidio	Clothing and clothing accessory stores	$1,197.76
	General merchandise stores	$484.38
	Motor vehicle and parts dealers	$307.99
	Food and beverage stores	$288.19
	Full-service restaurants	$235.46
Starr	Clothing and clothing accessory stores	$1,864.56
	General merchandise stores	$757.88
	Motor vehicle and parts dealers	$486.51
	Food and beverage stores	$453.05
	Full-service restaurants	$348.46
Val Verde	Clothing and clothing accessory stores	$2,877.83
	General merchandise stores	$1,169.54
	Motor vehicle and parts dealers	$753.83
	Food and beverage stores	$698.62
	Real Estate	$571.12
Webb	Clothing and clothing accessory stores	$7,966.39
	General merchandise stores	$3,242.73
	Real Estate	$2,381.63
	Motor vehicle and parts dealers	$2,090.40
	Food and beverage stores	$1,943.17

SOURCE: Hunt Institute for Global Competitiveness.

APPENDIX E: TECHNICAL DETAILS OF DATA AND MODEL

The City of El Paso International Bridges Department survey data was used to calculate the average expenditure per crosser, for both vehicle and pedestrian crossings. These expenditures were then scaled by the total number of vehicle and pedestrian crossings in 2019 (after scaling by the proportion of crossers who remained in El Paso and reported spending money) to determine the average expenditure of crossings in 2019 for El Paso County.

Given that similar survey data on expenditures are not available for other ports of entry, this report generalizes average expenditures by scaling them based on the average household income of Mexican states directly to the south of each individual port of entry.[20]

The analysis described above allows to: (1) compute the average expenditure for each spending category, and (2) determine the number of additional non-commercial crossers that would enter each state per month following a ten-minute reduction in non-commercial border wait times. Together, this data determines additional spending in the state as a result of additional non-commercial crossings, and serves as the primary input into IMPLAN, the economic impact model used by this study.

APPENDIX F: MEXICO'S NORTHERN BORDER STATES

BAJA CALIFORNIA

The Major Economic Aggregates

Table F1 highlights the absolute and relative variations of economic aggregates (intermediate demand, final demand, and total gross production) measured in 2022 projections. It shows that in Baja California, an average reduction of 10-minutes in commercial queuing times would increase the demand for intermediate goods by 1.43 percent; final demand by 1.62 percent, and total gross production by 1.63 percent.

By observing Table F1, it becomes evident that the high relative variation in total gross production for activities such as machinery and equipment manufacturing (4.93 percent, labeled subsector 333), and computer and electronic product manufacturing (3.69 percent, labeled subsector 334) ratifies Baja California as an eminent producer and exporter of goods related to mechatronics.

Table F1. Aggregate components impact on national accounts in the state of Baja California (Thousands of USD; Projection to 2022)

Code	Sector	Intermediate Demand		Final Demand		Total Gross Production	
		Absolute Variation	Relative Variation	Absolute Variation	Relative Variation	Absolute Variation	Relative Variation
311	Food Manufacturing	128.90	0.39%	2,791.10	0.36%	2,920.01	0.36%
312	Beverage and Tobacco Product Manufacturing	12.79	0.51%	1,390.06	0.20%	1,402.84	0.20%
314	Textile Product Mills	16.29	1.39%	563.56	1.60%	579.86	1.59%
315	Apparel Manufacturing	92.22	1.61%	3,469.30	1.98%	3,561.52	1.96%
316	Leather and Allied Product Manufacturing	9.42	1.39%	290.52	1.19%	299.93	1.19%
321	Wood Product Manufacturing	791.89	1.57%	772.85	1.49%	1,564.74	1.53%
322	Paper Manufacturing	1,666.25	0.66%	2,453.31	0.27%	4,119.56	0.36%
323	Printing and Related Support Activities	156.17	1.53%	2,702.47	1.47%	2,858.64	1.47%
325	Chemical Manufacturing	577.79	1.02%	3,581.59	0.64%	4,159.38	0.68%
326	Plastics and Rubber Products Manufacturing	1,618.14	1.29%	11,438.04	1.14%	13,056.18	1.15%
327	Nonmetalic Mineral Product Manufacturing	939.28	0.87%	2,891.32	0.59%	3,830.60	0.64%
331	Primary Metal Manufacturing	1,273.03	1.85%	2,335.87	1.23%	3,608.90	1.40%
332	Fabricated Metal Manufacturing	1,973.29	1.56%	24,730.25	2.00%	26,703.53	1.96%
333	Machinery Manufacturing	272.88	1.91%	23,711.38	5.02%	23,984.25	4.93%
334	Computer and Electronic Product Manufacturing	1,646.80	2.70%	147,921.85	3.70%	149,568.66	3.69%
335	Electrical Equipment, Appliance, and Component Manufacturing	384.77	2.10%	25,026.69	2.63%	25,411.45	2.62%
336	Transportation Equipment Manufacturing	2,762.39	1.33%	77,612.58	1.31%	80,374.97	1.31%
337	Furniture and Related Product Manufacturing	62.74	1.76%	9,005.48	2.02%	9,068.22	2.02%
339	Miscellaneous Manufacturing	714.08	1.81%	62,586.82	1.93%	63,300.89	1.93%
Total and Median Variations		**15,099.10**	**1.43%**	**405,275.02**	**1.62%**	**420,374.12**	**1.63%**

SOURCE: COLEF's calculations.

Employment

The effects on employment in Baja California were calculated by considering changes in production coefficients from the simulation described on page XX. For example, the nineteen most active sectors in Baja California employed about 421,000421 thousand people in 2018. Table F2 shows a positive variation of 0.39 percent in the employment rate when wait times are reduced by 10 minutes, which translated to approximately four hundred and fifty450 new jobs. Among the sectors that would see the largest total participation increase in labor are in labor are beverage and tobacco product manufacturing (36.47 percent), wood product manufacturing (28.13 percent), and food manufacturing (17.82 percent).

As shown in Table F2, there are a few sectors that see a contraction in workforce participation following the reduction in wait times at the border. These sectors include jobs that are susceptible to substitution effects in favor of capital, such as paper manufacturing (-1.62 percent) and computer and electronic project manufacturing (1.61 percent). While these sectors decrease overall employment, the jobs created after reducing wait times far outweigh the jobs lost.

Table F2. Direct-indirect job creation impact in the state of Baja California (Projection to 2022)

Sector	Original Total Staff Employed	Absolute Variation	Relative Variation	Total Participation Increase
Food Manufacturing	21,918.00	80.26	▲ 0.37%	17.82%
Beverage and Tobacco Product Manufacturing	9,055.00	164.27	▲ 1.81%	36.47%
Textile Product Mills	1,952.00	6.97	▲ 0.36%	1.55%
Apparel Manufacturing	11,936.00	-2.86	▼ -0.02%	-0.63%
Leather and Allied Product Manufacturing	1,347.00	13.18	▲ 0.98%	2.93%
Wood Product Manufacturing	3,851.00	126.72	▲ 3.29%	28.13%
Paper Manufacturing	10,979.00	-7.32	▼ -0.07%	-1.62%
Printing and Related Support Activities	10,068.00	-4.65	▼ -0.05%	-1.03%
Chemical Manufacturing	6,910.00	15.26	▲ 0.22%	3.39%
Plastics and Rubber Products Manufacturing	27,763.00	-1.17	▼ 0.00%	-0.26%
Nonmetalic Mineral Product Manufacturing	9,206.00	10.13	▲ 0.11%	2.25%
Primary Metal Manufacturing	4,961.00	11.70	▲ 0.24%	2.60%
Fabricated Metal Manufacturing	35,435.00	9.82	▲ 0.03%	2.18%
Machinery Manufacturing	11,347.00	-1.56	▼ -0.01%	-0.35%
Computer and Electronic Product Manufacturing	77,307.00	-7.26	▼ -0.01%	-1.61%
Electrical Equipment, Appliance, and Component Manufacturing	22,619.00	1.26	▲ 0.01%	0.28%
Transportation Equipment Manufacturing	44,266.00	4.75	▲ 0.01%	1.05%
Furniture and Related Product Manufacturing	22,616.00	35.67	▲ 0.16%	7.92%
Miscellaneous Manufacturing	87,745.00	-4.71	▼ -0.01%	-1.04%
Total and Average Increase	**421,281.00**	**450.45**	**0.39%**	**100.00%**

SOURCE: COLEF's calculations.

Labor income

According to data collected by Mexico's 2019 economic census, Baja California compensated the workers across the sectors represented in this analysis approximately $3.2 billion in 2018. The analytical model used in this study projects that a 10-minute reduction in wait times would increase labor income by just over $3 million, or a 0.33 percent relative increase, due to greater dynamics in exports, as can be seen in Table F3.

It is important to note that the sectors with the greatest absolute and relative variation in labor income, mostly coincide with those that experience the greatest increase in employment, such as the wood product manufacturing sector. This result suggests that remuneration can often be explained by the direct and indirect effects of greater dynamics in supply chains. Additionally, the inevitable association of wages with consumption dynamics demonstrates the positive effect that a more efficient border would have on purchasing power in Baja California.

Table F3. Direct-indirect revenue impact in the state of Baja California (Thousands of USD; Projection to 2022)

Sector	Original Total Remunerations	Net Variation of Remuneration	Relative Increase by Sector	Total Participation Increase
Food Manufacturing	95,104.84	1,874.09	▲ 1.97%	59.02%
Beverage and Tobacco Product Manufacturing	76,146.93	416.20	▲ 0.55%	13.11%
Textile Product Mills	10,401.75	31.19	▲ 0.30%	0.98%
Apparel Manufacturing	46,289.42	-26.33	▼ -0.06%	-0.83%
Leather and Allied Product Manufacturing	7,730.05	32.29	▲ 0.42%	1.02%
Wood Product Manufacturing	22,125.71	600.33	▲ 2.71%	18.91%
Paper Manufacturing	100,999.15	-71.63	▼ -0.07%	-2.26%
Printing and Related Support Activities	55,797.50	-50.59	▼ -0.09%	-1.59%
Chemical Manufacturing	65,057.41	45.96	▲ 0.07%	1.45%
Plastics and Rubber Products Manufacturing	209,764.60	-14.02	▼ -0.01%	-0.44%
Nonmetalic Mineral Product Manufacturing	83,957.26	76.50	▲ 0.09%	2.41%
Primary Metal Manufacturing	40,669.95	90.57	▲ 0.22%	2.85%
Fabricated Metal Manufacturing	279,129.91	72.25	▲ 0.03%	2.28%
Machinery Manufacturing	103,094.96	-25.91	▼ -0.03%	-0.82%
Computer and Electronic Product Manufacturing	643,797.50	-61.43	▼ -0.01%	-1.93%
Electrical Equipment, Appliance, and Component Manufacturing	184,623.51	6.07	▲ 0.00%	0.19%
Transportation Equipment Manufacturing	472,454.32	29.51	▲ 0.01%	0.93%
Furniture and Related Product Manufacturing	132,113.13	187.94	▲ 0.14%	5.92%
Miscellaneous Manufacturing	645,444.98	-37.59	▼ -0.01%	-1.18%
Total and Average Increase	**3,274,702.90**	**3,175.42**	**0.33%**	**100.00%**

SOURCE: COLEF's calculations.

CHIHUAHUA

The Major Economic Aggregates

Table F4 shows that an average reduction of 10 minutes in commercial wait times in Chihuahua would increase intermediate demand by $18.7 million, with a relative variation of 1.45 percent; final demand by $535 million, with a relative variation of 1.53 percent; and total gross production by $554.3 million, or 1.55 percent. The most dynamic sectors are the computer and electronic product manufacturing sector, with a 6.62 percent increase in total growth production, as well as the machinery manufacturing sector, which shows a 4.96 percent increase in total gross production.

Table F4. Aggregate components impact on national accounts in the state of Chihuahua (Thousands of USD; Projection to 2022)

Code	Sector	Intermediate Demand		Final Demand		Total Gross Production	
		Absolute Variation	Relative Variation	Absolute Variation	Relative Variation	Absolute Variation	Relative Variation
311	Food Manufacturing	209.82	0.47%	6,305.64	0.68%	6,515.46	0.67%
312	Beverage and Tobacco Product Manufacturing	12.87	1.83%	140.86	0.04%	153.73	0.05%
314	Textile Product Mills	10.11	1.10%	0.00	0.00%	10.11	0.03%
315	Apparel Manufacturing	40.47	1.28%	1,717.33	1.49%	1,757.79	1.49%
316	Leather and Allied Product Manufacturing	82.21	0.67%	659.46	0.46%	741.67	0.47%
321	Wood Product Manufacturing	633.46	1.25%	202.06	0.37%	835.52	0.79%
322	Paper Manufacturing	385.11	0.78%	726.15	0.21%	1,111.25	0.28%
323	Printing and Related Support Activities	25.52	1.27%	406.24	0.71%	431.76	0.73%
325	Chemical Manufacturing	366.64	1.00%	3,164.45	0.82%	3,531.09	0.83%
326	Plastics and Rubber Products Manufacturing	997.39	1.32%	5,278.50	0.90%	6,275.89	0.94%
327	Nonmetalic Mineral Product Manufacturing	826.23	0.68%	1,073.08	0.20%	1,899.31	0.29%
331	Primary Metal Manufacturing	930.33	1.72%	3,524.06	2.33%	4,454.39	2.17%
332	Fabricated Metal Manufacturing	1,114.47	1.43%	9,371.93	1.15%	10,486.40	1.17%
333	Machinery Manufacturing	325.88	2.01%	26,959.89	5.05%	27,285.77	4.96%
334	Computer and Electronic Product Manufacturing	2,729.28	3.70%	256,837.63	6.67%	259,566.92	6.62%
335	Electrical Equipment, Appliance, and Component Manufacturing	673.11	2.39%	38,100.22	2.93%	38,773.33	2.91%
336	Transportation Equipment Manufacturing	8,705.46	1.35%	137,210.40	1.34%	145,915.86	1.34%
337	Furniture and Related Product Manufacturing	17.08	1.33%	1,920.26	1.14%	1,937.34	1.14%
339	Miscellaneous Manufacturing	622.33	1.92%	42,017.10	2.62%	42,639.43	2.61%
Total and Median Variations		**18,707.76**	**1.45%**	**535,615.25**	**1.53%**	**554,323.01**	**1.55%**

SOURCE: COLEF's calculations.

Employment

In Chihuahua, greater export efficiency through a 10-minute reduction in wait times would generate 432432 new jobs, representing a 0.4 percent increase in employment. As shown in Table F5, the beverage and tobacco product manufacturing sector would benefit the most from this dynamic, creating 144 144 new jobs. In line with increasing production dynamics, the computer and electronic product manufacturing sector would lose a small perceptible margin of jobs, most likely derived from a substitution effect.

Table F5. Direct-indirect job creation impact in the state of Chihuahua (Projection to 2022)

Sector	Original Total Staff Employed	Absolute Variation	Relative Variation	Total Participation Increase
Food Manufacturing	28,701.00	47.44	▲ 0.17%	10.97%
Beverage and Tobacco Product Manufacturing	5,036.00	144.76	▲ 2.87%	33.48%
Textile Product Mills	1,453.00	14.09	▲ 0.97%	3.26%
Apparel Manufacturing	6,247.00	0.58	▲ 0.01%	0.13%
Leather and Allied Product Manufacturing	4,052.00	10.98	▲ 0.27%	2.54%
Wood Product Manufacturing	6,388.00	89.12	▲ 1.40%	20.61%
Paper Manufacturing	4,988.00	-0.84	▼ -0.02%	-0.19%
Printing and Related Support Activities	2,774.00	2.18	▲ 0.08%	0.50%
Chemical Manufacturing	4,407.00	12.03	▲ 0.27%	2.78%
Plastics and Rubber Products Manufacturing	20,307.00	-0.03	▼ 0.00%	-0.01%
Nonmetalic Mineral Product Manufacturing	9,878.00	6.67	▲ 0.07%	1.54%
Primary Metal Manufacturing	5,846.00	12.63	▲ 0.22%	2.92%
Fabricated Metal Manufacturing	22,910.00	25.21	▲ 0.11%	5.83%
Machinery Manufacturing	16,184.00	-3.56	▼ -0.02%	-0.82%
Computer and Electronic Product Manufacturing	75,387.00	-12.23	▼ -0.02%	-2.83%
Electrical Equipment, Appliance, and Component Manufacturing	34,127.00	-0.92	▼ 0.00%	-0.21%
Transportation Equipment Manufacturing	200,458.00	-2.26	▼ 0.00%	-0.52%
Furniture and Related Product Manufacturing	7,468.00	92.13	▲ 1.23%	21.31%
Miscellaneous Manufacturing	45,060.00	-5.60	▼ -0.01%	-1.30%
Total and Average Increase	**501,671.00**	**432.41**	**0.40%**	**100.00%**

SOURCE: COLEF's calculations.

Wages and Income

Greater efficiency in commercial border crossing dynamics translates into an additional $3 million in labor income for Chihuahua's economy, which represents a 0.32 percent inter-sectoral increase on average. The highest increase is exhibited in the food manufacturing sector, with a 1.1 percent relative increase in labor income. Like what was observed in Chihuahua's employment analysis, there are sectors that lose remunerative capacity with a reduction in wait times, such as the printing sector.

Table F6. Direct-indirect revenue impact in the state of Chihuahua (Thousands of USD; Projection to 2022)

Sector	Original Total Remunerations	Net Variation of Remuneration	Relative Increase by Sector	Total Participation Increase
Food Manufacturing	135,703.59	1,474.27	▲ 1.09%	48.35%
Beverage and Tobacco Product Manufacturing	52,646.18	540.20	▲ 1.03%	17.72%
Textile Product Mills	9,694.36	78.32	▲ 0.81%	2.57%
Apparel Manufacturing	34,649.98	-6.78	▼ -0.02%	-0.22%
Leather and Allied Product Manufacturing	25,678.93	43.68	▲ 0.17%	1.43%
Wood Product Manufacturing	26,831.75	367.81	▲ 1.37%	12.06%
Paper Manufacturing	37,553.92	-15.10	▼ -0.04%	-0.50%
Printing and Related Support Activities	12,203.25	-12.96	▼ -0.11%	-0.43%
Chemical Manufacturing	41,126.21	45.00	▲ 0.11%	1.48%
Plastics and Rubber Products Manufacturing	138,675.09	-5.73	▼ 0.00%	-0.19%
Nonmetalic Mineral Product Manufacturing	65,115.93	37.44	▲ 0.06%	1.23%
Primary Metal Manufacturing	46,622.87	93.49	▲ 0.20%	3.07%
Fabricated Metal Manufacturing	140,255.32	188.57	▲ 0.13%	6.18%
Machinery Manufacturing	130,538.09	-33.97	▼ -0.03%	-1.11%
Computer and Electronic Product Manufacturing	602,548.98	-98.83	▼ -0.02%	-3.24%
Electrical Equipment, Appliance, and Component Manufacturing	248,136.89	-5.99	▼ 0.00%	-0.20%
Transportation Equipment Manufacturing	1,257,562.51	-9.71	▼ 0.00%	-0.32%
Furniture and Related Product Manufacturing	32,638.89	412.09	▲ 1.26%	13.52%
Miscellaneous Manufacturing	311,235.25	-42.89	▼ -0.01%	-1.41%
Total and Average Increase	**3,349,417.97**	**3,048.93**	**0.32%**	**100.00%**

SOURCE: COLEF's calculations.

COAHUILA

The Major Economic Aggregates

A reduction of 10 minutes in queuing time, would result in an increase in intermediate demand of 1.30 percent, a 1.13 percent increase in final demand, and a 1.19 percent increase in total gross production. A particularly dynamic sector is the electrical equipment, appliance, and component manufacturing sector, which experiences a 4.02 percent increase in final (aggregate) demand. Among the states analyzed in this study, Coahuila shows the greatest uniformity in relative changes to its intermediate demand, which suggests better synchrony in its value chains needed to generate inputs for production.

Table F7. Aggregate components impact on national accounts in the state of Coahuila (Thousands of USD; Projection to 2022)

Code	Sector	Intermediate Demand		Final Demand		Total Gross Production	
		Absolute Variation	Relative Variation	Absolute Variation	Relative Variation	Absolute Variation	Relative Variation
311	Food Manufacturing	244.03	1.80%	2,214.13	0.53%	2,458.16	0.57%
312	Beverage and Tobacco Product Manufacturing	35.41	1.82%	18,853.57	2.42%	18,888.99	2.42%
314	Textile Product Mills	17.98	1.04%	0.00	0.00%	17.98	0.03%
315	Apparel Manufacturing	143.16	1.53%	6,046.32	2.19%	6,189.47	2.17%
316	Leather and Allied Product Manufacturing	30.62	1.61%	1,120.06	2.09%	1,150.68	2.07%
321	Wood Product Manufacturing	160.74	1.13%	0.00	0.00%	160.74	0.66%
322	Paper Manufacturing	391.80	0.73%	462.02	0.11%	853.82	0.18%
323	Printing and Related Support Activities	15.87	0.98%	172.30	0.39%	188.17	0.41%
325	Chemical Manufacturing	598.67	1.06%	908.70	0.18%	1,507.37	0.27%
326	Plastics and Rubber Products Manufacturing	1,325.85	1.27%	8,244.60	1.15%	9,570.45	1.16%
327	Nonmetalic Mineral Product Manufacturing	1,058.95	1.12%	1,237.61	0.26%	2,296.56	0.40%
331	Primary Metal Manufacturing	26,905.27	1.01%	35,435.33	0.56%	62,340.60	0.70%
332	Fabricated Metal Manufacturing	1,660.70	1.35%	4,315.40	0.41%	5,976.10	0.51%
333	Machinery Manufacturing	697.60	1.47%	31,134.80	2.45%	31,832.40	2.41%
334	Computer and Electronic Product Manufacturing	102.94	1.35%	3,255.30	0.85%	3,358.24	0.86%
335	Electrical Equipment, Appliance, and Component Manufacturing	269.28	1.83%	31,839.49	4.02%	32,108.77	3.98%
336	Transportation Equipment Manufacturing	25,280.34	1.20%	275,465.25	1.20%	300,745.59	1.20%
337	Furniture and Related Product Manufacturing	8.14	1.10%	1,049.56	1.17%	1,057.71	1.17%
339	Miscellaneous Manufacturing	42.82	1.29%	1,745.55	1.46%	1,788.38	1.46%
Total and Median Variations		**58,990.19**	**1.30%**	**423,499.98**	**1.13%**	**482,490.17**	**1.19%**

SOURCE: COLEF's calculations.

Employment

In Coahuila, a 10-minute reduction in wait times for commercial vehicles would result in the direct and indirect creation of approximately 583,583 new jobs. The furniture and related product manufacturing sector would see the greatest benefit, directly raising 0.88 percent. Similar to other states, reductions in absolute variation of employment could be explained by substitution effects, where firms with greater productivity opt to invest in capital rather than labor.

Table F8. Direct-indirect job creation impact in the state of Coahuila (Projection to 2022)

Sector	Original Total Staff Employed	Absolute Variation	Relative Variation	Total Participation Increase
Food Manufacturing	21,469.00	18.29	▲ 0.09%	3.14%
Beverage and Tobacco Product Manufacturing	7,622.00	80.91	▲ 1.06%	13.87%
Textile Product Mills	2,370.00	10.33	▲ 0.44%	1.77%
Apparel Manufacturing	20,514.00	-10.04	▼ -0.05%	-1.72%
Leather and Allied Product Manufacturing	2,404.00	57.18	▲ 2.38	9.80%
Wood Product Manufacturing	1,839.00	116.50	▲ 6.33%	19.97%
Paper Manufacturing	3,998.00	1.70	▲ 0.04%	0.29%
Printing and Related Support Activities	2,408.00	12.89	▲ 0.54%	2.21%
Chemical Manufacturing	3,874.00	22.99	▲ 0.59%	3.94%
Plastics and Rubber Products Manufacturing	18,007.00	0.13	▲ 0.00%	0.02%
Nonmetalic Mineral Product Manufacturing	12,570.00	14.14	▲ 0.11%	2.42%
Primary Metal Manufacturing	19,716.00	-1.90	▼ -0.01%	-0.33%
Fabricated Metal Manufacturing	23,614.00	2.19	▲ 0.01%	0.37%
Machinery Manufacturing	24,631.00	-3.45	▼ -0.01%	-0.59%
Computer and Electronic Product Manufacturing	9,136.00	2.58	▲ 0.03%	0.44%
Electrical Equipment, Appliance, and Component Manufacturing	15,602.00	-4.50	▼ -0.03%	-0.77%
Transportation Equipment Manufacturing	204,315.00	-3.57	▼ 0.00%	-0.61%
Furniture and Related Product Manufacturing	5,145.00	240.15	▲ 4.67%	41.17%
Miscellaneous Manufacturing	4,446.00	26.85	▲ 0.60%	4.60%
Total and Average Increase	**403,680.00**	**583.36**	**0.88%**	**100.00%**

SOURCE: COLEF's calculations.

Wages and Income

A 10-minute reduction in wait times in Coahuila would result in the distribution of approximately $4 million in additional wages, meaning a 0.73 percent increase in the wage bill. A particularly favored wage sector is food manufacturing, which would jointly favor its employees with an increase of $2.8 million, resulting in a 4.5 percent increase in wages.

Table F9. Direct-indirect revenue impact in the state of Coahuila (Thousands of USD; Projection to 2022)

Sector	Original Total Remunerations	Net Variation of Remuneration	Relative Increase by Sector	Total Participation Increase
Food Manufacturing	62,704.09	2,819.90	▲ 4.50%	72.58%
Beverage and Tobacco Product Manufacturing	50,881.28	164.83	▲ 0.32%	4.24%
Textile Product Mills	20,442.79	52.09	▲ 0.25%	1.34%
Apparel Manufacturing	76,594.81	-40.39	▼ -0.05%	-1.04%
Leather and Allied Product Manufacturing	17,133.10	90.79	▲ 0.53%	2.34%
Wood Product Manufacturing	4,493.96	269.29	▲ 5.99%	6.93%
Paper Manufacturing	31,582.33	-9.83	▼ -0.03%	-0.25%
Printing and Related Support Activities	6,412.33	-18.75	▼ -0.29%	-0.48%
Chemical Manufacturing	50,286.37	49.38	▲ 0.10%	1.27%
Plastics and Rubber Products Manufacturing	100,988.67	-14.43	▼ -0.01%	-0.37%
Nonmetalic Mineral Product Manufacturing	61,567.40	53.68	▲ 0.09%	1.38%
Primary Metal Manufacturing	294,834.25	-32.46	▼ -0.01%	-0.84%
Fabricated Metal Manufacturing	123,176.78	-30.16	▼ -0.02%	-0.78%
Machinery Manufacturing	157,789.22	-35.46	▼ -0.02%	-0.91%
Computer and Electronic Product Manufacturing	49,683.23	0.76	▲ 0.00	0.02%
Electrical Equipment, Appliance, and Component Manufacturing	61,583.97	-33.41	▼ -0.05%	-0.86%
Transportation Equipment Manufacturing	1,120,924.51	-27.44	▼ 0.00%	-0.71%
Furniture and Related Product Manufacturing	23,867.80	578.08	▲ 2.42%	14.88%
Miscellaneous Manufacturing	20,498.15	48.65	▲ 0.24%	1.25%
Total and Average Increase	**2,335,445.03**	**3,885.12**	**0.73%**	**100.00%**

SOURCE: COLEF's calculations.

NUEVO LEÓN

Principal Economic Aggregates

When analyzing the impact of a 10-minute reduction in commercial queuing times, the relative variation for the main macroeconomic variables in Nuevo León is the smallest when compared to the other six states. This can be attributed it being the most mature economy in Mexico terms of manufacturing infrastructure. Overall, this could be good news for the border region, since the greater export dynamics would provide an incentive for convergence in the growth rate of the six states that conform the region. Further, the growth rate homogeneity of the sectors associated with heavy industry such as metal-mechanics and mechatronics, confirming the vocation of the most industrialized state and the presence of Mexican corporations. What would contribute to growth in Nuevo León, the greatest export dynamics is only 0.66 percent. This corresponds to the hypothesis of it being the state with the largest autonomy in terms of its growth sources, which go through a solid connectivity to the domestic economy's value chains.

Table F10. Aggregate components impact on national accounts in the state of Nuevo León (Thousands of USD; Projection to 2022)

Code	Sector	Intermediate Demand		Final Demand		Total Gross Production	
		Absolute Variation	Relative Variation	Absolute Variation	Relative Variation	Absolute Variation	Relative Variation
311	Food Manufacturing	620.22	0.34%	10,667.47	0.41%	11,287.69	0.41%
312	Beverage and Tobacco Product Manufacturing	30.14	0.39%	3,971.84	0.22%	4,001.99	0.23%
314	Textile Product Mills	6.72	0.77%	250.10	1.05%	256.81	1.04%
315	Apparel Manufacturing	17.16	0.78%	121.41	0.15%	138.56	0.16%
316	Leather and Allied Product Manufacturing	27.25	0.55%	31.80	0.03%	59.04	0.05%
321	Wood Product Manufacturing	581.82	0.70%	263.18	0.58%	845.01	0.66%
322	Paper Manufacturing	1,137.58	0.36%	2,243.56	0.18%	3,381.14	0.22%
323	Printing and Related Support Activities	54.53	0.46%	5.26	0.00%	59.79	0.03%
325	Chemical Manufacturing	2,364.78	0.57%	6,399.01	0.25%	8,763.78	0.30%
326	Plastics and Rubber Products Manufacturing	2,803.54	1.06%	9,002.26	0.58%	11,805.80	0.65%
327	Nonmetalic Mineral Product Manufacturing	3,256.06	0.92%	9,570.92	0.86%	12,826.98	0.87%
331	Primary Metal Manufacturing	20,287.44	0.98%	18,468.73	0.66%	38,756.17	0.79%
332	Fabricated Metal Manufacturing	4,033.05	0.99%	15,929.44	0.56%	19,962.49	0.61%
333	Machinery Manufacturing	1,118.07	1.13%	35,255.33	1.13%	36,373.40	1.13%
334	Computer and Electronic Product Manufacturing	391.55	1.16%	15,537.23	1.05%	15,928.77	1.05%
335	Electrical Equipment, Appliance, and Component Manufacturing	1,475.37	1.28%	66,778.95	1.42%	68,254.33	1.41%
336	Transportation Equipment Manufacturing	10,080.00	1.31%	202,773.87	1.34%	212,853.86	1.34%
337	Furniture and Related Product Manufacturing	17.07	0.81%	1,195.51	0.53%	1,212.58	0.54%
339	Miscellaneous Manufacturing	220.46	0.96%	12,156.33	1.58%	12,376.79	1.56%
Total and Median Variations		**48,522.80**	**0.82%**	**410,622.19**	**0.66%**	**459,145.00**	**0.69%**

SOURCE: COLEF's calculations.

Employment

In Nuevo León, employment presents a relative variation of 0.51 percent, which is practically the average of this indicator among the six states of the northern border. However, in absolute terms, Nuevo León would have a particularly significant addition with 775775 new positions, the highest in the border region. This figure would be explained by the labor mass of a highly industrialized state, as well as by the presence of important corporations in the region. By sector, the value chain linked to the beverage industry would be particularly benefited with 204204 new labor factor demands.

Table F11. Direct-indirect job creation impact in the state of Nuevo León (Projection to 2022)

Sector	Original Total Staff Employed	Absolute Variation	Relative Variation	Total Participation Increase
Food Manufacturing	63,870.00	92.36	▲ 0.14%	11.92%
Beverage and Tobacco Product Manufacturing	8,516.00	204.04	▲ 2.40%	26.32%
Textile Product Mills	2,290.00	16.34	▲ 0.71%	2.11%
Apparel Manufacturing	6,672.00	53.19	▲ 0.80%	6.86%
Leather and Allied Product Manufacturing	2,980.00	40.27	▲ 1.35	5.19%
Wood Product Manufacturing	6,280.00	158.75	▲ 2.53%	20.48%
Paper Manufacturing	21,034.00	-7.32	▼ -0.03%	-0.94%
Printing and Related Support Activities	8,227.00	-0.88	▼ -0.01%	-0.11%
Chemical Manufacturing	19,453.00	13.65	▲ 0.07%	1.76%
Plastics and Rubber Products Manufacturing	40,845.00	-1.10	▼ 0.00%	-0.14%
Nonmetalic Mineral Product Manufacturing	36,127.00	17.23	▲ 0.05%	2.22%
Primary Metal Manufacturing	35,474.00	-1.25	▼ 0.00%	-0.16%
Fabricated Metal Manufacturing	59,331.00	1.06	▲ 0.00%	0.14%
Machinery Manufacturing	42,117.00	-0.93	▼ 0.00%	-0.12%
Computer and Electronic Product Manufacturing	22,732.00	0.63	▲ 0.00%	0.08%
Electrical Equipment, Appliance, and Component Manufacturing	44,533.00	-0.88	▼ 0.00	-0.11%
Transportation Equipment Manufacturing	95,432.00	0.38	▲ 0.00%	0.05%
Furniture and Related Product Manufacturing	10,962.00	182.61	▲ 1.67%	23.56%
Miscellaneous Manufacturing	16,939.00	7.01	▲ 0.04%	0.90%
Total and Average Increase	**543,814.00**	**775.17**	**0.51%**	**100.00%**

SOURCE: COLEF's calculations.

Labor Income

Table F12 below shows the impact on direct-indirect income. In this indicator, Nuevo León would benefit from an increase of some $6.5 million as compensation to workers, which, for its payment structure, means a 0.43 percent variation. The food industry, in its respective value chain, would account for more than half (66 percent) of the increased wage bill with some $4.3 million.

Table F12. Direct-indirect revenue impact in the state of Nuevo León (Thousands of USD; Projection to 2022)

Sector	Original Total Remunerations	Net Variation of Remuneration	Relative Increase by Sector	Total Participation Increase
Food Manufacturing	329,777.13	4,346.29	▲ 1.32%	66.31%
Beverage and Tobacco Product Manufacturing	62,166.15	480.57	▲ 0.77%	7.33%
Textile Product Mills	13,250.92	61.22	▲ 0.46%	0.93%
Apparel Manufacturing	23,672.64	142.20	▲ 0.60%	2.17%
Leather and Allied Product Manufacturing	11,522.22	171.10	▲ 1.48%	2.61%
Wood Product Manufacturing	30,557.61	550.02	▲ 1.80%	8.39%
Paper Manufacturing	132,500.00	-52.11	▼ -0.04%	-0.79%
Printing and Related Support Activities	32,508.89	-33.70	▼ -0.10%	-0.51%
Chemical Manufacturing	179,895.86	26.78	▲ 0.01%	0.41%
Plastics and Rubber Products Manufacturing	231,680.48	-18.13	▼ -0.01%	-0.28%
Nonmetalic Mineral Product Manufacturing	219,303.54	96.57	▲ 0.04%	1.47%
Primary Metal Manufacturing	189,804.19	-7.68	▼ 0.00%	-0.12%
Fabricated Metal Manufacturing	343,992.06	2.15	▲ 0.00%	0.03%
Machinery Manufacturing	297,300.65	-7.70	▼ 0.00%	-0.12%
Computer and Electronic Product Manufacturing	128,940.64	1.18	▲ 0.00%	0.02%
Electrical Equipment, Appliance, and Component Manufacturing	276,961.81	-6.72	▼ 0.00%	-0.10%
Transportation Equipment Manufacturing	700,090.86	-3.27	▼ 0.00%	-0.05%
Furniture and Related Product Manufacturing	43,222.42	789.97	▲ 1.83%	12.05%
Miscellaneous Manufacturing	105,867.05	16.15	▲ 0.02%	0.25%
Total and Average Increase	**3,353,015.13**	**6,554.87**	**0.43%**	**100.00%**

SOURCE: COLEF's calculations.

SONORA

The Major Economic Aggregates

Table F13 below shows the results of the impacts simulation on the main macroeconomic indicators utilized in this study for the state of Sonora. Increased border crossing efficiency implies a positive impact in intermediate demand of 0.97 percent, of 1.24 percent growth in final demand, and 1.27 percent increase in total gross production. While Sonora's final (aggregate) growth is lower than the average of the six border states (visible in Figure 1), the data suggests that Sonora is diversifying compared to other border states through industries such as the textile industry (3.9 percent increase in aggregate demand) and the other manufacturing industries (3.2 percent increase in aggregate demand).

Table F13. Aggregate components impact on national accounts in the state of Sonora (Thousands of USD; Projection to 2022)

Code	Sector	Intermediate Demand		Final Demand		Total Gross Production	
		Absolute Variation	Relative Variation	Absolute Variation	Relative Variation	Absolute Variation	Relative Variation
311	Food Manufacturing	337.01	0.26%	3,463.97	0.20%	3,800.98	0.21%
312	Beverage and Tobacco Product Manufacturing	21.19	0.47%	4,033.79	0.40%	4,054.98	0.40%
314	Textile Product Mills	2.82	1.31%	305.25	3.98%	308.07	3.91%
315	Apparel Manufacturing	15.36	1.37%	1,221.07	2.36%	1,236.43	2.34%
316	Leather and Allied Product Manufacturing	2.65	0.98%	0.00	0.00%	2.65	0.02%
321	Wood Product Manufacturing	174.93	1.25%	6.59	0.04%	181.51	0.62%
322	Paper Manufacturing	232.00	0.82%	1,295.97	0.56%	1,527.97	0.59%
323	Printing and Related Support Activities	15.87	0.89%	215.90	0.41%	231.77	0.43%
325	Chemical Manufacturing	301.32	0.87%	5,051.24	1.35%	5,352.56	1.31%
326	Plastics and Rubber Products Manufacturing	307.69	0.90%	1,820.37	0.66%	2,128.06	0.68%
327	Nonmetalic Mineral Product Manufacturing	211.81	0.61%	159.33	0.07%	371.13	0.14%
331	Primary Metal Manufacturing	5,737.63	1.08%	8,222.90	0.71%	13,960.53	0.83%
332	Fabricated Metal Manufacturing	328.88	0.97%	4,887.07	1.31%	5,215.95	1.28%
333	Machinery Manufacturing	46.56	0.98%	3,104.16	1.79%	3,150.72	1.76%
334	Computer and Electronic Product Manufacturing	366.79	1.12%	23,817.68	1.46%	24,184.47	1.45%
335	Electrical Equipment, Appliance, and Component Manufacturing	113.77	1.34%	12,595.12	2.44%	12,708.90	2.42%
336	Transportation Equipment Manufacturing	3,889.68	0.84%	70,645.49	0.84%	74,535.17	0.84%
337	Furniture and Related Product Manufacturing	8.98	1.15%	1,888.81	1.76%	1,897.79	1.75%
339	Miscellaneous Manufacturing	163.09	1.30%	18,516.22	3.24%	18,679.31	3.20%
Total and Median Variations		**12,278.00**	**0.97%**	**161,250.94**	**1.24%**	**173,528.94**	**1.27%**

SOURCE: COLEF's calculations.

Employment

Table F14 below shows the impact that a 10-minute reduction in wait times would have on employment in Sonora. Data shows that approximately 468468 new jobs would be generated, particularly in the value chains linked to the furniture and related product manufacturing sector, wood product manufacturing, and leather and allied product manufacturing. The increase in the furniture and wood production sectors could be explained an increase in activity within the construction industry. Sonora would benefit from a 0.84 percent increase in relative variation for employment, compared to the average 0.52 percent increase in other border states.

Table F14. Direct-indirect job creation impact in the state of Sonora (Projection to 2022)

Sector	Original Total Staff Employed	Absolute Variation	Relative Variation	Total Participation Increase
Food Manufacturing	38,866.00	28.86	▲ 0.07%	6.16%
Beverage and Tobacco Product Manufacturing	6,667.00	93.54	▲ 1.40%	19.97%
Textile Product Mills	962.00	-4.60	▼ -0.48%	-0.98%
Apparel Manufacturing	8,051.00	-18.56	▼ -0.23%	-3.96%
Leather and Allied Product Manufacturing	749.00	43.61	▲ 5.82%	9.31%
Wood Product Manufacturing	2,289.00	132.22	▲ 5.78%	28.23%
Paper Manufacturing	4,497.00	0.60	▲ 0.01%	0.13%
Printing and Related Support Activities	3,072.00	7.04	▲ 0.23%	1.50%
Chemical Manufacturing	3,322.00	18.01	▲ 0.54%	3.85%
Plastics and Rubber Products Manufacturing	6,421.00	4.01	▲ 0.06%	0.86%
Nonmetalic Mineral Product Manufacturing	3,139.00	14.74	▲ 0.47%	3.15%
Primary Metal Manufacturing	3,226.00	0.42	▲ 0.01%	0.09%
Fabricated Metal Manufacturing	12,937.00	6.78	▲ 0.05%	1.45%
Machinery Manufacturing	5,316.00	1.40	▲ 0.03%	0.30%
Computer and Electronic Product Manufacturing	32,100.00	-2.32	▼ -0.01%	-0.50%
Electrical Equipment, Appliance, and Component Manufacturing	15,185.00	-3.30	▼ -0.02%	-0.70%
Transportation Equipment Manufacturing	52,354.00	0.24	▲ 0.00%	0.05%
Furniture and Related Product Manufacturing	6,882.00	148.96	▲ 2.16%	31.80%
Miscellaneous Manufacturing	16,057.00	-3.22	▼ -0.02%	-0.69%
Total and Average Increase	**222,092.00**	**468.42**	**0.84%**	**100.00%**

SOURCE: COLEF's calculations.

Wages and Income

The decrease in wait times would add an additional $1.4 million in wages to Sonora, which becomes one of the most modest absolute increases in the region. However, given Sonora's wage structure, the impact would mean a positive variation of 0.67 percent, which is the second largest in the region. The indicator is one more evidence suggesting an interregional wealth dispersion effect within the framework of as a slight convergence.

Table F15. Direct-indirect revenue impact in the state of Sonora (Thousands of USD; Projection to 2022)

Sector	Original Total Remunerations	Net Variation of Remuneration	Relative Increase by Sector	Total Participation Increase
Food Manufacturing	80,593.36	555.48	▲ 0.69%	37.74%
Beverage and Tobacco Product Manufacturing	42,369.40	187.51	▲ 0.44%	12.74%
Textile Product Mills	2,985.07	-27.74	▼ -0.93%	-1.88%
Apparel Manufacturing	14,754.92	-31.13	▼ -0.21%	-2.12%
Leather and Allied Product Manufacturing	2,686.52	157.89	▲ 5.88%	10.73%
Wood Product Manufacturing	6,645.93	349.07	▲ 5.25%	23.72%
Paper Manufacturing	47,584.02	-26.36	▼ -0.06%	-1.79%
Printing and Related Support Activities	12,685.07	-29.52	▼ -0.23%	-2.01%
Chemical Manufacturing	11,608.24	50.42	▲ 0.43%	3.43%
Plastics and Rubber Products Manufacturing	62,296.80	1.23	▲ 0.00%	0.08%
Nonmetalic Mineral Product Manufacturing	14,778.48	52.66	▲ 0.36%	3.58%
Primary Metal Manufacturing	63,075.19	-16.65	▼ -0.03%	-1.13%
Fabricated Metal Manufacturing	51,572.39	-11.15	▼ -0.02%	-0.76%
Machinery Manufacturing	47,954.27	-27.48	▼ -0.06%	-1.87%
Computer and Electronic Product Manufacturing	221,681.83	-19.00	▼ -0.01%	-1.29%
Electrical Equipment, Appliance, and Component Manufacturing	126,670.29	-55.03	▼ -0.04%	-3.74%
Transportation Equipment Manufacturing	347,748.63	-6.38	▼ 0.00%	-0.43%
Furniture and Related Product Manufacturing	29,184.82	407.41	▲ 1.40%	27.68%
Miscellaneous Manufacturing	96,491.96	-39.40	▼ -0.04%	-2.68%
Total and Average Increase	**1,283,367.20**	**1,471.83**	**0.67%**	**100.00%**

SOURCE: COLEF's calculations.

TAMAULIPAS

The Major Economic Aggregates

In Tamaulipas, a 10-minute reduction in wait times would generate a positive variation of 1.55 percent for intermediate demand, 1.86 percent for final demand, and 1.91 percent for total gross production. Notably, Tamaulipas' growth in final (aggregate) demand is considerable above the 1.3 percent average of all six border states (see Figure 1). This could be explained by Tamaulipas' current GDP, which is relatively smaller than other states', meaning that a relatively small absolute increase in production translates into a greater increase in relative variation. The sectors that most benefit from the increase in total gross production are the textile product mills at 9.2 percent, and machinery manufacturing sector with 3.6 percent increase.

Table F16. Aggregate components impact on national accounts in the state of Tamaulipas (Thousands of USD; Projection to 2022)

Code	Sector	Intermediate Demand		Final Demand		Total Gross Production	
		Absolute Variation	Relative Variation	Absolute Variation	Relative Variation	Absolute Variation	Relative Variation
311	Food Manufacturing	37.13	0.34%	1,682.75	0.48%	1,719.88	0.48%
312	Beverage and Tobacco Product Manufacturing	9.31	0.63%	945.93	0.19%	955.24	0.19%
314	Textile Product Mills	1.84	1.70%	386.37	9.21%	388.21	9.02%
315	Apparel Manufacturing	37.84	1.10%	499.83	0.41%	537.68	0.42%
316	Leather and Allied Product Manufacturing	4.18	1.36%	0.00	0.00%	4.18	0.03%
321	Wood Product Manufacturing	386.73	1.91%	6.48	0.03%	393.21	0.87%
322	Paper Manufacturing	448.31	1.06%	1,185.12	0.39%	1,633.43	0.48%
323	Printing and Related Support Activities	65.92	1.66%	2,001.83	2.11%	2,067.74	2.09%
325	Chemical Manufacturing	4,808.33	1.05%	21,515.08	0.87%	26,323.40	0.90%
326	Plastics and Rubber Products Manufacturing	819.81	1.58%	6,341.26	1.39%	7,161.07	1.41%
327	Nonmetalic Mineral Product Manufacturing	503.31	1.28%	3,000.72	1.22%	3,504.03	1.23%
331	Primary Metal Manufacturing	349.39	1.72%	419.22	0.64%	768.62	0.89%
332	Fabricated Metal Manufacturing	1,273.69	1.50%	7,717.87	0.83%	8,991.55	0.89%
333	Machinery Manufacturing	539.08	2.31%	29,172.40	3.64%	29,711.48	3.60%
334	Computer and Electronic Product Manufacturing	1,032.23	2.27%	74,741.95	2.66%	75,774.18	2.65%
335	Electrical Equipment, Appliance, and Component Manufacturing	486.83	2.29%	28,491.82	2.76%	28,978.65	2.75%
336	Transportation Equipment Manufacturing	2,471.12	1.71%	76,380.01	1.72%	78,851.13	1.72%
337	Furniture and Related Product Manufacturing	36.54	2.14%	7,146.23	3.34%	7,182.77	3.33%
339	Miscellaneous Manufacturing	231.13	1.85%	19,750.52	3.44%	19,981.65	3.40%
Total and Median Variations		**13,542.73**	**1.55%**	**281,385.37**	**1.86%**	**294,928.10**	**1.91%**

SOURCE: COLEF's calculations.

Employment

In Tamaulipas, approximately 342342 new jobs would result from improved efficiency of border crossings, which in relative terms would lead to 0.11 percent increase in the state's employment rate, the lowest in the region. However, the combination of a high economic growth rate with a relatively low employment rate can, be an encouraging indicator for productivity, meaning that firms are producing with more efficient practices rather than simply expanding operations. Based on this analysis, the machinery manufacturing sector would be the primary wealth formation industry in Tamaulipas. It is worth noting, in this comparison, that a leading sector in wealth formation is the machinery and equipment manufacturing sector.

Table F17. Direct-indirect job creation impact in the state of Tamaulipas (Projection to 2022)

Sector	Original Total Staff Employed	Absolute Variation	Relative Variation	Total Participation Increase
Food Manufacturing	16,452.00	83.27	▲ 0.51%	24.30%
Beverage and Tobacco Product Manufacturing	4,448.00	134.20	▲ 3.02%	39.17%
Textile Product Mills	481.00	-68.71	▼ -14.29%	-20.05%
Apparel Manufacturing	7,892.00	3.75	▲ 0.05%	1.09%
Leather and Allied Product Manufacturing	554.00	11.80	▲ 2.13%	3.44%
Wood Product Manufacturing	1,852.00	119.26	▲ 6.44%	34.81%
Paper Manufacturing	5,031.00	-2.02	▼ -0.04%	-0.59%
Printing and Related Support Activities	4,559.00	-4.70	▼ -0.10%	-1.37%
Chemical Manufacturing	8,407.00	0.57	▲ 0.01%	0.17%
Plastics and Rubber Products Manufacturing	13,647.00	-3.56	▼ -0.03%	-1.04%
Nonmetalic Mineral Product Manufacturing	6,982.00	12.74	▲ 0.18%	3.72%
Primary Metal Manufacturing	1,644.00	13.90	▲ 0.85%	4.06%
Fabricated Metal Manufacturing	16,146.00	13.67	▲ 0.08%	3.99%
Machinery Manufacturing	16,594.00	-3.11	▼ -0.02%	-0.91%
Computer and Electronic Product Manufacturing	56,963.00	-5.53	▼ -0.01%	-1.61%
Electrical Equipment, Appliance, and Component Manufacturing	24,370.00	-1.21	▼ 0.00%	-0.35%
Transportation Equipment Manufacturing	103,868.00	-0.29	▼ 0.00%	-0.08%
Furniture and Related Product Manufacturing	8,920.00	45.83	▲ 0.51%	13.38%
Miscellaneous Manufacturing	20,243.00	-7.26	▼ -0.04%	-2.12%
Total and Average Increase	**319,053.00**	**342.62**	**0.11%**	**100.00%**

SOURCE: COLEF's calculations.

Wages and Income

In Tamaulipas, revenues growth was not significant in an absolute or relative manner. A 10-minute reduction in wait times would only generate $1.3 million in wage increases, which would mean a relative variation of only 0.06 percent. Cross-sectoral, the activity which benefits the most is the food manufacturing sector, which is responsible for 73 percent of all the absolute growth in the remuneration of the labor factor.

Table F18. Direct-indirect revenue impact in the state of Tamaulipas (Thousands of USD; Projection to 2022)

Sector	Original Total Remunerations	Net Variation of Remuneration	Relative Increase by Sector	Total Participation Increase
Food Manufacturing	65,917.32	945.44	▲ 1.43%	73.34%
Beverage and Tobacco Product Manufacturing	34,328.41	137.26	▲ 0.40%	10.65%
Textile Product Mills	1,784.12	-260.08	▼ -14.58%	-20.17%
Apparel Manufacturing	28,663.75	-4.60	▼ -0.02%	-0.36%
Leather and Allied Product Manufacturing	5,247.83	20.09	▲ 0.38%	1.56%
Wood Product Manufacturing	5,715.58	271.54	▲ 4.75%	21.06%
Paper Manufacturing	32,724.41	-23.17	▼ -0.07%	-1.80%
Printing and Related Support Activities	24,566.90	-41.28	▼ -0.17%	-3.20%
Chemical Manufacturing	66,428.71	-16.07	▼ -0.02%	-1.25%
Plastics and Rubber Products Manufacturing	81,173.19	-31.67	▼ -0.04%	-2.46%
Nonmetalic Mineral Product Manufacturing	49,674.44	72.64	▲ 0.15%	5.63%
Primary Metal Manufacturing	16,180.83	119.10	▲ 0.74%	9.24%
Fabricated Metal Manufacturing	126,802.05	117.29	▲ 0.09%	9.10%
Machinery Manufacturing	140,687.72	-24.59	▼ -0.02%	-1.91%
Computer and Electronic Product Manufacturing	434,508.44	-43.36	▼ -0.01	-3.36%
Electrical Equipment, Appliance, and Component Manufacturing	198,039.59	-7.38	▼ 0.00%	-0.57%
Transportation Equipment Manufacturing	693,841.54	7.63	▲ 0.00%	0.59%
Furniture and Related Product Manufacturing	56,406.14	105.31	▲ 0.19%	8.17%
Miscellaneous Manufacturing	121,804.34	-54.89	▼ -0.05%	-4.26%
Total and Average Increase	**2,184,495.31**	**1,289.19**	**0.06%**	**100.00%**

SOURCE: COLEF's calculations.

APPENDIX G: ECONOMIC MODEL

Based on the national 2018 input-output matrix, provided by National Institute of Statistic and Geography (INEGI), the regionalization process, based on the methodological proposal of Flegg & Tohmo (2011), starts from the estimation of localization coefficients, which are indicative of the relative importance of each sector in the productive structure of the region in contrast with that same importance evaluated in the national productive structure. Such an approach gives rise to the key equation of the Flegg-Tohmo model, given by:

$$FLQ_{ij} = (CILQ_{ij})(\lambda_r^{\delta})(a_{ij}) \quad \text{(equation one)}$$

Where:

$FLQ_{ij} =$ the Flegg-Webber coefficient;

$CILQ_{ij} =$ the cross-industry location coefficients

$\lambda_r^{\delta} =$ the weighting factor of the region's relative size;

$a_{ij} =$ the national technical input-output coefficients

From equation one above, the estimation and use of the λ_r^{δ} factor stands out, which represents a weighting of the region's relative size. For Flegg & Tohmo, based on empirical evidence, setting a base two logarithm represents an average weighting of the relative size of the subnational region. Any other base deviates from the average indicating self-sufficiency of the region or else an underrepresentation of subnational territories. Thus, that:

$$\lambda_r^{\delta} = log_2(1+Y_r/Y_n)^{\delta} \quad (2)$$

Where:

$Y_r =$ the gross regional added value;

$Y_r =$ the gross national added value.

APPENDIX H: ECONOMIC IMPACT OF REDUCED BORDER WAIT TIMES FOR MEXICAN BORDER STATES.

Table H1 includes 2019 data—the latest available—on the rate of inspection for commercial vehicles with no customs recognition at land ports of entry across Mexico's northern states in 2018. Nuevo León is not included due to its lack of a significantly active port of entry. It is important to note that crossing rates decrease when more vehicles are required to undergo customs recognition processes and are subject to additional inspection, including K-9s, X-rays, or gamma rays.

Table H1. Cargo Vehicles through Border Crossings and Ports in 2018

State	Port Name and City	Trucks 2018[1]	Weekly Operating Hours[2]	Maximum Lanes in operation[2]	Trucks crossing per Hour per Lane
Baja California	Otay Mesa/Tijuana	962,577	65	10	28
	Calexico East/Mexicali	376,079	78	3	31
	Tecate/Tecate	61,778	40	2	15
Sonora	Douglas/Agua Prieta	27,.804	45	2	6
	Lukeville/Sonoyta	298	40	1	0
	Naco/Naco	2,997	40	1	1
	Nogales/Nogales	337,179	76	8	11
	San Luis/SLRC	28,211	56	3	3
Chihuahua	Columbus/Puerto Palomas	14,502	40	1	7
	Presidio/Ojinaga	8,829	40	2	2
	Santa Teresa	114,988	70	3	11
	El Paso*/Juárez	292,712	63	6	15
	Ysleta*/Juárez	518,223	98	10	10
Coahuila	Del Rio/Acuña	78,328	78	2	10
	Eagle Pass/Piedras Negras	173,105	82	1	41
Tamaulipas	Brownsville/Matamoros	255,169	154	8	4
	Hidalgo/Reynosa	647,157	91	7	20
	Laredo/Nuevo Laredo	2,313,967	92	23	21
	Progreso/Nuevo Progreso	50,795	42	1	23
	Rio Grande City/Camargo	38,094	85	2	4
	Roma/Miguel Alemán	8,111	40	1	4
	Total	**6,310,903**	**1,415**	**97**	
	Total Weighted Average				**15**

SOURCE: [1]Border Crossing/Entry Data from the Bureau of Transportation Statistics.
[2]Annual Data and Wait Times from Data from Custom and Border Protection website (https://bwt.cbp.gov/).

Using the above data, Table H2 identifies the range of crossing times for each border state:

- **Baja California:** Wait times range from forty-one minutes at the Tijuana port of entry to eighty-one minutes in Tecate; average wait times across Baja California's ports of entry are fifty-six minutes.
- **Sonora:** Crossing times range from fifty-six minutes in Douglas/Agua Prieta to sixty-eight minutes in Nogales; average wait times across Sonora's ports of entry are sixty-two minutes.**Chihuahua:** Crossing times range from forty-two minutes at the Palomas Bridge to fifty-two minutes at the Juarez-El Paso Bridge, averaging fifty-two minutes across the state's ports of entry.
- **Chihuahua:** Crossing times range from forty-two minutes at the Palomas Bridge to fifty-two minutes at the Juarez-El Paso Bridge, averaging fifty-two minutes across the state's ports of entry.
- **Coahuila:** Border crossing wait times range from forty-nine minutes through Piedras Negras, to 66 minutes in Acuña, averaging just under fifty-eight minutes across both ports of entry.
- **Tamaulipas:** It has the most ports of entry and the greatest variation in wait times, which can range from forty-four minutes at Miguel Alemán to sixty-seven at the Nuevo Progreso bridge. The average crossing time for commercial vehicles in Tamaulipas is fifty-five minutes.

Table H2. Queuing time simulation for commercial vehicles by Mexican state in 2018

State	Port and City Name	Average arrival rate per hour	Average vehicles inspected per hour	Average waiting Time in Customs (Minutes)	Average Queuing Time (Minutes)
Baja California	Otay Mesa/Tijuana	26	28	4	41
	Calexico East/Mexicali	28	31	5	46
	Tecate/Tecate	13	15	4	81
Chihuahua	Columbus/P. Palomas	6	7	5	45
	Presidio/Ojinaga				45**
	Santa Teresa	10	11	4	50
	El Paso*/Juárez	14	15	4	42
	Ysleta*/Juárez	9	10	4	48
Coahuila	Del Rio/Acuña	8	10	5	66
	Eagle Pass/P. Negras	39	41	4	49
Sonora	Douglas/Agua Prieta	5	6	5	56
	Lukeville/Sonoyta				56*
	Naco/Naco				56*
	Nogales/Nogales	10	11	6	68
	San Luis/SLRC				56*
Tamaulipas	Brownsville/Matamoros	3	4	4	52
	Hidalgo/Reynosa	18	20	4	55
	Laredo/Nuevo Laredo	20	21	4	64
	Progreso/Nuevo Progreso	19	23	4	67
	Rio Grande/Camargo	3	4	5	46
	Roma/Miguel Alemán	3	4	4	44
	Total Weighted Average	**11**	**13**	**4**	**54**

NOTE: *It is close to the value recorded in Agua Prieta. **It is close to the value recorded in Columbus/P. Palomas. *
SOURCE: COLEF calculations.

APPENDIX I: INPUT-OUTPUT MATRIX AND QUEUING THEORY

Input-Output Matrix

The economic impact analysis for Mexican border states is evaluated through the input-output multipliers using a regional input-output model based on the latest 2018 national input-output table for Mexico (INEGI, 2021). This provides disaggregated results by sector and state for key variables such as production, employment, and factorial income.

This report focuses on commercial crossings without customs recognition, meaning commercial vehicles passing through customs with the most basic level of inspection by customs officials (e.g., modulation of levies and other tax-related charges) to standardize crossing times.

Queuing Theory

The queuing theory assumes that cargo entering the United States from Mexico undergoes a standard inspection process in which commercial vehicles wait in their assigned lane until they are inspected by a customs official (a single channel and server). This means that wait times directly depend on the volume of commercial vehicles arriving at border checkpoints.

Therefore, the simulation estimates average inspection and queueing times for commercial vehicles crossing into the United States from Mexico. Inspection times should be understood as the time required by customs officials to determine that the merchandise being inspected corresponds to the merchandise registered and authorized for import to the United States. Without customs recognition, this process takes just a few minutes. Queuing times should be understood by the average time that a commercial vehicle takes to pass through the whole customs system.

The main parameters of the queuing time model for simulations are: λ=*arrival rate,* μ = *service/inspection rate and* $\rho = \lambda/\mu$ = *inspection capacity utilization rate*. Initially the number of simulations corresponds to one working day at customs, or the number of vehicles per hour inspected times the inspection hours. Then, the number of simulations increases to a work week (simulation per day times five week days). After that, the number of simulations is one year, i.e., work week times business weeks per year.

About the Authors

The US Department of State's Bureau of International Law Enforcement funded this report and the research behind it. The Atlantic Council's Adrienne Arsht Latin America Center is the grant's primary recipient. The Atlantic Council contracted the Hunt Institute at The University of Texas at El Paso (UTEP) to create the economic impact analysis of US-Mexico border management on the American economy, and the Colegio de la Frontera Norte (COLEF) to provide a similar economic impact analysis for the Mexican economy in a separate report.

ADRIENNE ARSHT LATIN AMERICA CENTER AT THE ATLANTIC COUNCIL

The Atlantic Council's nonpartisan Adrienne Arsht Latin America Center (AALAC) broadens understanding of regional transformations while demonstrating why Latin America and the Caribbean matter to the world. The center focuses on pressing political, economic, and social issues that will define the region's trajectory, proposing constructive, results-oriented solutions to inform public sector, business, and multilateral action based on a shared vision for a more prosperous, inclusive, and sustainable future.

Jason Marczak

Jason Marczak is senior director of the Atlantic Council's Adrienne Arsht Latin America Center. Marczak has over twenty years of expertise in regional economics, politics, and development, working with policymakers and private-sector executives to shape public policy. Since 2016, Marczak is an adjunct professor at The George Washington University's Elliott School of International A-airs. He previously served as director of policy at the Americas Society/ Council of the Americas, cofounder and senior editor of Americas Quarterly magazine, and has held positions in the US Congress.

Ignacia Ulloa-Peters

Ignacia Ulloa Peters is an assistant director at the Atlantic Council's Adrienne Arsht Latin America Center, where she contributes to the Center's Mexico and Venezuela work. Ulloa Peters plays an instrumental role in the Center's US-Mexico border programming, implementing the US State Department grant that made this report possible. She manages the Venezuela Transatlantic Fellowship, a project that seeks to advance transatlantic EU-US nonpartisan engagement on Venezuelan issues. Prior to joining the Atlantic Council, Ulloa Peters worked in the Latin America Practice at McLarty Associates. Ulloa Peters has a BA in economics and sociology from the University of Notre Dame.

THE HUNT INSTITUTE FOR GLOBAL COMPETITIVENESS AT UTEP

The Hunt Institute for Global Competitiveness at The University of Texas at El Paso, herein the Hunt Institute, provides economic analysis of the Paso del Norte and the US-Mexico border regions. The mission of the Hunt Institute is to foster the economic and social wellbeing of these communities by creating and applying theoretical and pragmatic mechanisms.

John Gibson

John Gibson is the director of research at the Hunt Institute for Global Competitiveness, where he focuses primarily on producing policy relevant technical reports and scholarly research papers using data gathered by the Institute. Previously, Gibson served as an Assistant Professor at Georgia State University and is currently a visiting scholar at the Federal Reserve Bank of Atlanta and a consultant to the GMF Latin American Division of the World Bank. He received an MS and Ph.D. in economics from Florida State University and a BA in economics with mathematics from the University of Southern Mississippi.

Mayra Maldonado

Mayra Maldonado is the director of the Hunt Institute for Global Competitiveness, where she works on binational, comparative commercial and financial analysis. She previously worked as an economist at the Central Bank of Mexico and at Morgan Stanley Capital International. Maldonado received a BA in economics from the *Instituto Tecnológico y de Estudios Superiores de Monterrey and a MA in economics from New York University.*

José Ángel Moreno

José Ángel Moreno is a research economist at the Hunt Institute for Global Competitiveness, where he oversees the Regional Economic Sector Reviews, Regional Banking Sector Review, and Water Sector Review. He has contributed to various projects at the Hunt Institute, where he collects, analyzes, and harmonizes regional economic data. Moreno has a BA in economics and an MS in Economics, both from the University of Texas at El Paso.

Roberto Ransom

Roberto Ransom is the director of operations at the Hunt Institute for Global Competitiveness, where he oversees the institute's projects. Previously, he held roles that focused on developing, directing, and administering businesses outreach efforts. These efforts contributed to the strong economic growth of the Southern New Mexico's Borderplex region. Ransom received a BA in international business and computer information systems from the University of Texas at El Paso.

EL COLEGIO DE LA FRONTERA NORTE

The Colegio de la Frontera Norte (COLEF) is an institution in Mexico dedicated to high-level research and teaching. COLEF seeks to generate scientific knowledge about the regional phenomena of the US-Mexico border while training skilled graduates and linking institutionally to contribute to the development of the region.

Alejandro Brugués Rodríguez

Alejandro Brugués Rodríguez has been a researcher and professor at COLEF since 1995. He serves as COLEF's Norwest Regional Director in Juárez and is member of National Researcher System of Mexican Council for Science, Technology, and Humanities. His fields of interest are Regional Studies and Economic Development. Brugués has a Ph.D. in Economic Sciences from the Baja California Autonomous University.

Noé Arón Fuentes Flores

Dr. Fuentes is a researcher-professor at COLEF's Department of Economic Studies. He is President of the Mexican Association of the Input Output Matrix and has served as coordinator of COLEF's master's program in Regional Development, director of postgraduate studies, and director of the Department of Economic Studies. He holds a Ph.D. in Economics from the University of California, Irvine, a master's degree in Economics from the Instituto Tecnológico Autónomo de Mexico, and a bachelor's degree in Economics from the Universidad Autónoma de Nuevo León.

Dr. Edgar David Gaytan Alfaro

Edgar David Gaytan Alfaro is professor-researcher at COLEF's Department of Economic Studies. He serves as coordinator for COLEF'S master's program in Applied Economics and the Research Network on Cyclical Fluctuations and Economic Growth and is a member of the National System of Researchers. He has a Ph.D. in Economic Sciences from the Autonomous University of Baja California, a master's degree in Regional Economics from the Socioeconomic Research Center of the Autonomous University of Coahuila, a Bachelor's degree in economics from the Autonomous University of Zacatecas, and specialized in Time Series Econometrics at the University of Copenhagen in Denmark.

Jorge Eduardo Mendoza Cota

Jorge Eduardo Mendoza is a full-time researcher in the Economic Studies Department at COLEF. He has taught graduate and undergraduate courses in regional economics, Latin American economic problems, North American economic integration, and labor economics at COLEF and San Diego State University. He served as COLEF's director of Economic Studies and coordinator of the master's program in Applied Economics. Mendoza also served as coordinator of the master's program in regional economics in the Center of Socioeconomic Research at the Universidad Autónoma de Coahuila. Mendoza holds a Ph.D. in Economics from the University of Utah.

Acknowledgements

This report was informed by roundtables, focus groups, and consultations carried out in the United States and Mexico and the analysis of economic data. We thank the many individuals and institutions who participated in project activities and research efforts. It was a true pleasure to work with our partners at the University of Texas at El Paso's (UTEP's) Hunt Institute for Global Competitiveness and Colegio de la Frontera Norte (COLEF) once again.

We are deeply grateful to the Adrienne Arsht Latin America Center (AALAC) team, who worked tirelessly to produce this report. A special thank you to Camila Hernández who provided invaluable writing and editorial support throughout this project, and to the entire Atlantic Council Editorial Team, including Cate Hansberry, Mary Kate Aylward, and Nancy Messieh.

Our gratitude extends to Rhonda Shore for her diligent editorial work and to Donald Partyka and Anais Gonzalez for their exceptional design skills. Most importantly, we thank the US Department of State's Bureau for International Narcotics and Law Enforcement Affairs for their continued support for this project in service of daily border users and strengthening the US and Mexican economies.

Endnotes

1 The North American Leaders Summit (NALS) is a trilateral meeting attended by the heads of state of the United States, Mexico, and Canada. The 2023 NALS took place in Mexico City on January 9 and 10.

2 These externalities were explored in part one of this two-part series: Alejandro Brugués Rodríguez et al., *The economic impact of a more efficient US-Mexico border: How reducing wait times at land ports of entry would promote commerce, resilience, and job creation*, Atlantic Council's Adrienne Arsht Latin America Center, the University of Texas at El Paso's Hunt Institute for Global Competitiveness, and El Colegio de la Frontera Norte, September 27, 2022, https://www.atlanticcouncil.org/in-depth-research-reports/report/the-economic-impact-of-a-more-efficient-us-mexico-border/.

3 A 10-minute reduction in wait times is used as the baseline for analysis in this report because it is an easily achievable reduction that could be accomplished with slight changes to management practices and tools on both sides of the border. Given that the results of this study are mostly linear, the reduction in wait times could be expanded to an hour or more. However, the 10-minute reduction was chosen to keep the results of the study reliable, as it is the greatest time reduction to estimate economic impact with minimal room for error.

4 Mexico's six border states are Baja California, Chihuahua, Coahuila, Nuevo León, Sonora, and Tamaulipas.

5 The United States' four border states are Arizona, California, New Mexico, and Texas.

6 Alejandro Brugués Rodríguez et al., *The economic impact of a more efficient US-Mexico border: How reducing wait times at land ports of entry would promote commerce, resilience, and job creation*, Atlantic Council's Adrienne Arsht Latin America Center, the University of Texas at El Paso's Hunt Institute for Global Competitiveness, and El Colegio de la Frontera Norte, September 27, 2022, https://www.atlanticcouncil.org/in-depth-research-reports/report/the-economic-impact-of-a-more-efficient-us-mexico-border/.

7 This figure was determined in the first report. Brugués Rodríguez et al, *The Economic Impact of a More Efficient US-Mexico Border.*

8 This figure was agreed upon across focus group participants representing various sectors and industries.

9 Brugués Rodríguez et al, *The Economic Impact of a More Efficient US-Mexico Border.*

10 The share of crossing is calculated using US Customs and Border Protection data.

11 This regression was first used in the first report of this two-part series. Brugués Rodríguez et al, *The Economic Impact of a More Efficient US-Mexico Border* (September, 2022). Given migrant caravans disrupting normal pedestrian crossing patterns, this study only analyzes non-commercial vehicle trends. Additional information on the process used to allocate additional noncommercial crossers is available in Appendix D

12 Spending categories include clothing, general merchandise, auto parts, groceries, electronics, restaurants, gas, sports and music, building, furniture, personal care services, fast food, health, business and other professional services, amusement and recreation, accommodation, bar, theater, and transportation and parking.

13 The total impact on output across all four states is $547,538 per month, which exceeds the national-level finding in the previous report ($5.4 million). The difference is due to an adjustment in the economic impact software that accounted for direct effect leakages at the national level but near zero at the state and county level. In particular, the value of those services provided in delivering commodities to consumers, or margins, were the direct leakages taken into consideration for the impact at the national level.

14 The average ratio between intermediate and final demand is 7.54 percent. This illustrates greater dynamism in aggregate demand, explained by changes in export variables due to the reduced border wait times.

15 These specific variations may be observed in the state and sectoral breakdown presented in Appendix F.

16 Nuevo León is the state with the highest export dynamics and highest salaries, making it the greatest contributor to Mexico's GDP.

17 The analysis used data from various sources, including US Customs and Border Protection, the US Department of Transportation's Bureau of Transportation Statistics, the US Department of Labor's Bureau of Labor Statistics, Instituto Nacional de Estadística y Geografía (National Institute of Statistics and Geography), and the Instituto Mexicano de Seguro Social (Mexican Institute of Social Security).

18 See tabulations of annual exports by state and sector for 2007-2021. "Exportaciones por entidad federative," INEGI website, accessed on October 18, 2022, https://www.inegi.org.mx/temas/exportacionesef/#Tabulados.

19 Robert B. Cooper, Introduction to Queuing Theory (Amsterdam: Elsevier Science & Technology Books, 1980).

20 The assumption here is that individuals who reside in more affluent border states within Mexico are likely to spend more when crossing into the United States than those who reside in less affluent border states.

Atlantic Council

Board of Directors

CHAIRMAN
*John F.W. Rogers

EXECUTIVE CHAIRMAN EMERITUS
*James L. Jones

PRESIDENT AND CEO
*Frederick Kempe

EXECUTIVE VICE CHAIRS
*Adrienne Arsht
*Stephen J. Hadley

VICE CHAIRS
*Robert J. Abernethy
*C. Boyden Gray
*Alexander V. Mirtchev

TREASURER
*George Lund

DIRECTORS
Todd Achilles
Timothy D. Adams
*Michael Andersson
David D. Aufhauser
Barbara Barrett
Colleen Bell
Stephen Biegun
Linden P. Blue
Adam Boehler
John Bonsell
Philip M. Breedlove
Myron Brilliant
*Esther Brimmer
Richard R. Burt
*Teresa Carlson
*James E. Cartwright
John E. Chapoton
Ahmed Charai
Melanie Chen
Michael Chertoff
*George Chopivsky
Wesley K. Clark
*Helima Croft
*Ankit N. Desai
Dario Deste
*Paula J. Dobriansky
Joseph F. Dunford, Jr.
Richard Edelman
Thomas J. Egan, Jr.
Stuart E. Eizenstat
Mark T. Esper
*Michael Fisch
Alan H. Fleischmann
Jendayi E. Frazer
Meg Gentle
Thomas H. Glocer
John B. Goodman
*Sherri W. Goodman
Jarosław Grzesiak
Murathan Günal
Frank Haun
Michael V. Hayden
Tim Holt
*Karl V. Hopkins
Kay Bailey Hutchison
Ian Ihnatowycz
Mark Isakowitz
Wolfgang F. Ischinger
Deborah Lee James
*Joia M. Johnson
*Safi Kalo
Andre Kelleners
Brian L. Kelly
Henry A. Kissinger
John E. Klein
*C. Jeffrey Knittel
Joseph Konzelmann
Franklin D. Kramer
Laura Lane
Almar Latour
Yann Le Pallec
Jan M. Lodal
Douglas Lute
Jane Holl Lute
William J. Lynn
Mark Machin
Marco Margheri
Michael Margolis
Chris Marlin
William Marron
Christian Marrone
Gerardo Mato
Erin McGrain
John M. McHugh
*Judith A. Miller
Dariusz Mioduski
Michael J. Morell
*Richard Morningstar
Georgette Mosbacher
Majida Mourad
Virginia A. Mulberger
Mary Claire Murphy
Edward J. Newberry
Franco Nuschese
Joseph S. Nye
Ahmet M. Ören
Sally A. Painter
Ana I. Palacio
*Kostas Pantazopoulos
Alan Pellegrini
David H. Petraeus
*Lisa Pollina
Daniel B. Poneman
*Dina H. Powell McCormick
Michael Punke
Ashraf Qazi
Thomas J. Ridge
Gary Rieschel
Lawrence Di Rita
Michael J. Rogers
Charles O. Rossotti
Harry Sachinis
C. Michael Scaparrotti
Ivan A. Schlager
Rajiv Shah
Gregg Sherrill
Jeff Shockey
Ali Jehangir Siddiqui
Kris Singh
Walter Slocombe
Christopher Smith
Clifford M. Sobel
James G. Stavridis
Michael S. Steele
Richard J.A. Steele
Mary Streett
*Gil Tenzer
*Frances M. Townsend
Clyde C. Tuggle
Melanne Verveer
Charles F. Wald
Michael F. Walsh
Ronald Weiser
*Al Williams
Maciej Witucki
Neal S. Wolin
*Jenny Wood
Guang Yang
Mary C. Yates
Dov S. Zakheim

HONORARY DIRECTORS
James A. Baker, III
Robert M. Gates
James N. Mattis
Michael G. Mullen
Leon E. Panetta
William J. Perry
Condoleezza Rice
Horst Teltschik
William H. Webster

**Executive Committee Members*

List as of November 18, 2022

Atlantic Council

The Atlantic Council is a nonpartisan organization that promotes constructive US leadership and engagement in international affairs based on the central role of the Atlantic community in meeting today's global challenges.

Atlantic Council
1030 15th Street, NW, 12th Floor,
Washington, DC 20005
(202) 463-7226,
www.AtlanticCouncil.org

Made possible by: