

COVID-19 and the Movement of People Along the US-Mexico Border
A Case Study of Imperial County, California

by

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TABLE OF CONTENTS

	Page
LIST OF FIGURES	iii
LIST OF TABLES	iv
ABSTRACT.....	v
CHAPTER 1. INTRODUCTION	6
1.1 Purpose of Study	7
1.2 Importance of Study	8
CHAPTER 2. LITERATURE REVIEW	10
2.1 Understanding the History of the Region.....	10
2.2 Regional Dynamics	13
2.3 Previous Case Studies Along the US-Mexico Border.....	20
CHAPTER 3. STUDY AREA	23
3.1 Housing and Poverty	27
3.2. The US-Mexico Border Management and Governance	30
3.3 The Coronavirus Novel	33
3.4 California COVID Policies and Regulations.....	34
3.5 Timeline of Notable Events.....	36
CHAPTER 4. METHODOLOGY	38
4.1 Introduction	38
4.2 Sample Recruitment	38
4.3 Data Collection.....	41
CHAPTER 5. RESULTS AND DISCUSSION.....	44
5.1 Results	44
5.2 Discussion	54
CHAPTER 6. CONCLUSION AND RECOMMENDATIONS	57
6.1 Conclusion.....	57
6.2 Recommendations	59
REFERENCES	62
APPENDIX A. INTERVIEW QUESTIONS	68

LIST OF FIGURES

	Page
Figure 1-1: Community Capital Framework.....	8
Figure 2-1: Satellite Overview of Imperial Overview of Imperial-Mexicali Valleys	11
Figure 3-1: Imperial County Neighboring Communities Map	24
Figure 3-2: Imperial County-Mexicali Aerial Map	24
Figure 3-3: Imperial County Foreign Born Population Breakdown	25
Figure 3-4: Imperial County Unemployment Rate - Nov 2018-Oct 2020.....	26
Figure 3-5: Median Household Income – Imperial County, California, US	29
Figure 3-6: Top 10 California County Persons Per Household Comparison.....	30
Figure 3-7: California Reopening Risk Tiers.....	35
Figure 3-9: Imperial County Cases – Feb 2020-Mar 2021	36
Figure 3-8: Imperial County Positive Cases by Day	36
Figure 4-1: Exploratory Case Study Approach.....	38
Figure 4-2: Frequently Used Terms/Words	42
Figure 5-1: Imperial County – Community Capital Framework	44

LIST OF TABLES

	Page
Table 2-1: Imperial County and Mexicali Population Growth (Decades)	12
Table 2-2: Calexico/Calexico East Border Crossing Annual Data	16
Table 2-3: Imperial County Employment by Industry (2018)	18
Table 3-1: COVID-19 Data – Imperial County, US, Mexico	32
Table 4-1: Participant List	41

ABSTRACT

This qualitative study examines how the movement of people along the US-Mexico border impacts the spread of COVID-19 in a border community, Imperial County, California. The research question proposed in this study investigates the following: what can local government in Imperial County do to effectively address the region's high COVID-19 infection rates, and better protect the health and safety of the community? The methodology used in this research was one-on-one interviews. Through purposeful and snowball sampling, ten individuals representing the public health, agriculture, and local/state government sectors participated in this study. The selection criteria for the participants was based upon their roles, experiences, and knowledge of the community in relation to COVID-19 and the border. Data collected from the interviews was coded and grouped into community-based themes using grounded theory approach. Four major themes that represented the relationship between the border and COVID-19 were identified: the border matters, social osmosis, metropolitan effects on rural population, and misinformation through politics. The study results indicate a strong community capital framework shared between both the Imperial County and Mexicali, Mexico. The shared framework between both communities influences the movement of people, which creates challenges at the local government level in regards to containing the spread of COVID-19. The results indicate a need for better communication strategies about public health and additional resource allocation for border communities at the local government level.

CHAPTER 1. INTRODUCTION

A year after the World Health Organization (WHO) declared coronavirus disease (COVID-19) a global pandemic on March 11, 2020, the US has reported over 30 million people infected with COVID-19, and over 500,000 deaths as of March 2021 (CDC, 2020). COVID-19 has impacted every community in the US differently. While some communities have seen devastating amounts of illness and death due to COVID-19, others have experienced relatively mild outbreaks of the disease (Advisory Board, 2020). COVID-19 has created hardships for communities across the globe such as: loss of jobs, family members, businesses, finances, as well as lifelong mental, and physical health issues.

As of March 28, 2021, the state of California leads the US with approximately 3.6 million documented cases, and over 58,000 deaths (New York Times, 2021). The death toll in California as a result of COVID-19, has eclipsed suicide, hypertension, influenza, and diabetes to become a major leading cause of death since the first identified case (Castañeda, 2020). One of the hardest hit areas in California is located at the southeast corner of the state. This community is known as Imperial County.

Imperial County is a growing community of roughly 180,000 residents (American Census Survey, 2018-2019). Though small in comparison to other California communities, Imperial County's population fluctuates due to the movement of travelers heading north and south of the US-Mexico border. Imperial County shares a border with the Municipality of Mexicali, Mexico, a metropolis of more than 1 million people. In about a year after the community's first reported case on March 2020, the Imperial County has seen 27,000 positive cases, and over 700 deaths (Los Angeles Times, 2021).

The small rural community of Imperial County has received national attention for its COVID-19 numbers. Throughout 2020, Imperial County stood among the highest in the state in regards to COVID per-capita hospitalization rates. In the month of June 2020, the city of El Centro, which is located in Imperial County, was ranked the 2nd worst cases per-capita community in the nation with a 10.69 per-capita average (Solis, 2020).

In this case study, the COVID-19 outbreak in Imperial County will be examined by conducting one-on-one interviews with local community stakeholders. Through this research, the data provided is intended to identify how the border relationship influences community development as well as the spread of COVID-19. Recommendations from this study are intended to provide guidance to the local government as it relates to border community health and disease strategy development.

1.1 Purpose of Study

Imperial County has seen far more coronavirus infections, hospitalizations, and deaths than its size warrants. The striking numbers merely expose the underlying problems of the community at the local level (Lah et al., 2020). The purpose of this study is to investigate why COVID-19 has spread so rapidly in Imperial County. This study explores the following research question: What can local government in Imperial County do to effectively address the region's high COVID-19 infection rates, and better protect the health and safety of the community?

As the US continues to grapple with the social and economic consequences of COVID-19, communities are left wondering how they can blunt the devastation caused by this novel virus (Lockey, 2020). Efforts to slow the growth of new coronavirus cases is critically important. The results from this study indicate a need for better communication strategies about public health and

additional resource allocation for border communities at the local government level. As COVID-19 data continues to develop, this research is intended to help build upon future studies regarding border communities and diseases management for local government.

1.2 Importance of Study

There has been an influx of ongoing research surrounding coronavirus since it emerged as a global pandemic. It is important to explore what specific challenges amplify the spread of COVID-19, and what barriers in the region relate to these challenges. COVID-19 has spread throughout the United States, but it has left a significant imprint on one border community, Imperial County. This community is unique in terms of geographical location and community characteristics. This study specifically targets how the role of the border influences the community capital framework of Imperial County, and how that framework makes the community more vulnerable to high rates of contagion. The seven community capitals are built, natural, political, social, financial, cultural, and human (Figure 1-1).

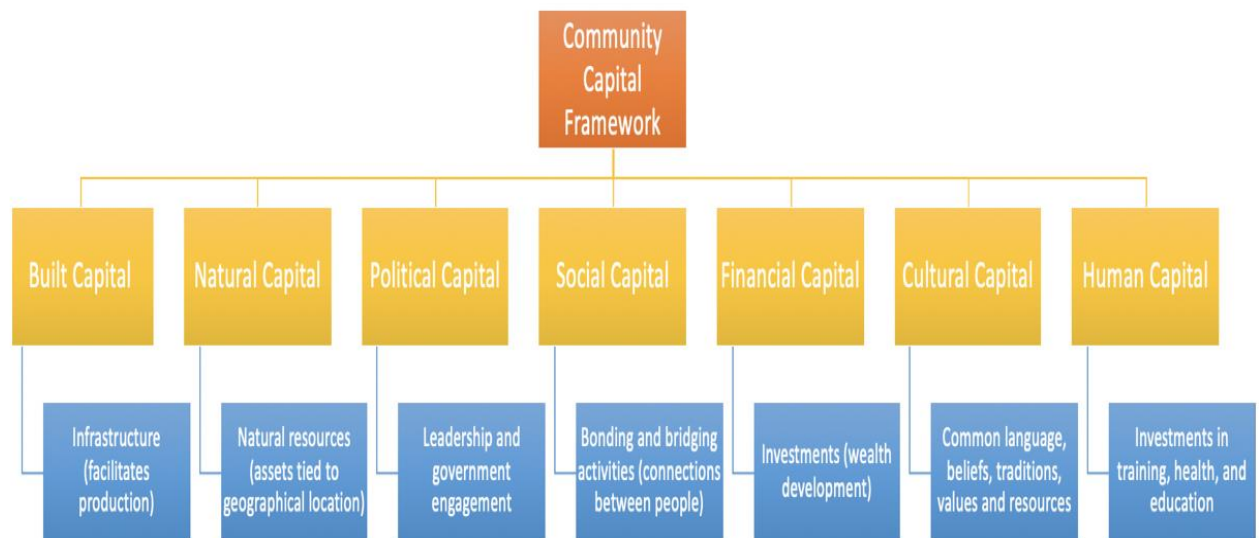


Figure 1-1: Community Capital Framework

Every community possesses a variety of resources and characteristics that interact with each other. These characteristics and resources develop a synergy that allows communities to grow and prosper (Wichtner-Zoia, 2013). Efforts to sustain and build a strong community are dependent upon how much effort is invested in each capital. Imperial County has been able to grow as its framework has become more embedded with Mexicali, Mexico. Although this framework has benefitted both communities, COVID-19 has flourished because of this framework.

In this study, real-life context provided through interviews help develop and describe current events in Imperial County. As COVID-19 is new and developing, it is important to capture and analyze human interpretations and reasoning. This research does not attempt to provide a solution to the community's problems, as it is only intended be used as a roadmap for future research and development for the community.

CHAPTER 2. LITERATURE REVIEW

The literature review examines three themes: history of the region, regional dynamics, and health-related case studies along US-Mexico border. The themes in the literature review are intended to provide a better understanding of the current study area.

2.1 Understanding the History of the Region

The first inhabitants of the Colorado Desert area date back to early Europeans and Americans who encountered indigenous groups that made the area home. The earliest physical record of human presence in the Imperial-Mexicali Valley dates back some twenty thousand years (Herrera, 2004). Due to the harsh environment, settlers often traveled through the Colorado region in order to reach the Pacific. The most significant presence in the Imperial-Mexicali Valley came in the form of agriculture. As Spanish colonists continued to venture into the area, they were not welcomed with treasures, but more so with information regarding how previous settlers adapted to the land (Herrera, 2004).

In 1775, the Spaniards found solace in the thought that this wasteland represented nothing more than a thirsty barrier, and a sandy highway that stood between them and their promised land. Before the waters of the Colorado River transformed the Imperial-Mexicali Valley into an agricultural oasis, this region was predominantly known as a dry desert (Herrera, 2004). As America's manifest destiny continued across the mid 1800's, its relationship with Mexico began to deteriorate. The US-Mexico War began in 1846, which ultimately led to the north-south divide, which today separates the Imperial County and Mexicali.

The US-Mexico border was established in 1848 by the Treaty of Guadalupe Hidalgo. It's establishment resulted in the formation of cities on both sides of the border, which include but are not limited to the Municipality of Mexicali, Mexico and Imperial County, California. The development of these communities has been rooted by the movement of settlers. These movements consisted of Mexican populations from the Southern portion of the country, as well as investors from the north who migrated south and west. Because of these movements, both areas experienced significant growth and development (Durazo, 2004). Dating back to the discovery of the Colorado Desert by Spaniards, Mexicans, and North Americans, the Imperial-Mexicali Valleys have continued to be used as a highway. A major reason for the continuous movement across the region has been attributed to the Colorado River Delta which stretches from the Gulf of California, to Yuma, Arizona, and the Salton Sea (Cohn, 2004) (Figure 2-1).



Figure 2-1: Satellite Overview of Imperial Overview of Imperial-Mexicali Valleys

Source: Source: (J. Cohn, Colorado River Delta, 2004)

According to data developed at the Institute for Social Research at the Universidad Autónoma de Baja California:

The formation of the Imperial-Mexicali Valleys, like that of all border regions, was derived from the creation of the modern-state, in which geographical divisions were instituted to exercise sovereignty and market controls. Within the border framework, one of the most significant social phenomena developed is the migration of people from other regions of Mexico to the Imperial-Mexicali region. The two cities sit next to one another and have transformed the region into a transborder space with the exchange of goods and capital and an international job market that remains viable even today (Durazo, 2004).

Legal migration into both the Imperial County and Mexicali regions have contributed to the community and economic growth of both areas. Population trends in these regions have been marked by rapid growth since World War II, when an increased demand for labor was needed in the United States. As both communities began to form, Imperial County was twice the size of Mexicali in 1930 (Collins, 2004). Since the 1930's there has been a dramatic population change in both regions. Currently, Mexicali has a population of six times the size of the Imperial County (Table 2-1). As of 2020, the average population growth rate of the US is approximately 0.72% in comparison to Mexico's 1.04% (Central Intelligence Agency, 2020).

Table 2-1: Imperial County and Mexicali Population Growth (Decades)

<u>Year</u>	<u>Imperial County, California</u>	<u>Mexicali, Mexico</u>
1950	62,975	66,190
1960	72,105	175,009
1970	74,492	266,300
1980	92,110	343,023
1990	109,303	606,287
2000	142,359	770,314
2010	174,716	938,246
2019	181,215	1,101,000

Source: (American Census Survey/World Urbanization Prospects, 2019)

As affordability in Mexico presented investment opportunities, Mexicali began to develop rapidly through maquiladoras, or export-oriented assembly plants. This resulted in an increased amount of job seekers to the region. On the other side of the border, the Imperial County has remained predominantly an agricultural community, as it owns the right to 2.6 million acre-feet of water annually, in accordance to the 1964 Supreme Court Decree in *California v. Arizona* (IID Water History, 2021).

In summary, dating back to the early history of the Imperial-Mexicali Valley, the Colorado Desert region has always been connected through the movement of people. Because of this movement, both communities have shared a strong bond that has continued through present day. Though separated by a border, the relationship between the Imperial County and Mexicali is continually linked through crossings related to healthcare, work, family, and more. As COVID-19 has plagued both Mexicali and the Imperial County, it's important to understand how both communities began, and how both communities despite their sizes are interconnected. This can best be explained through the Imperial County's regional dynamics.

2.2 Regional Dynamics

Boundaries that emerge and exist in various social practices such as culture, governance, politics, or economy are instrumental in distinguishing one region from another (Paasi, 2009). The Imperial County has a unique identity, as it shares more characteristics with Mexicali, than any other county in California. A lot of the regional characteristics of the Imperial County are attributed to the shared ideas that come across the border. The movement of people along the border has historically distinguished the Imperial County from others.

US-Mexico Border

The US-Mexico Border is one of the only places in the world where a developed country lies adjacent to a developing country. The Imperial County and Mexicali are very similar despite being divided by a wall. The north-south divide is one of the busiest borders in the world. The residents and businesses that exist in the “in between” territory thrive on cross-border exchange and collaboration. This international relationship has flourished for many centuries. The border line itself covers four US states and six Mexican states with 48 legal border crossing points, and is at the center of much political and public dialogue (Talmage et al, 2019). The border region symbolizes the similarities and differences that exist between these two nations, where economic, social, and political factors and access to health services are the best determinants of health status in both countries (Rangel & González, 2006).

One of the challenges of the US-Mexico border is how to adequately define the region. While guidelines were established for the purposes of conceptualizing the region from a geographical point of view, the economic, demographic, political, and social implications have muddled how to definitively describe the border (US-Mexico Border Health Commission, 2020). For Mexican citizens, the border region generally represents the opportunity to secure quality goods, gain employment, and earn higher incomes, especially if employed in the United States (Coubès, 2000). In the case of U.S. citizens, the border region represents a competitive labor market; for the most part, Mexicans employed in the United States tend to earn less than U.S. citizens doing the same work (US-Mexico Border Health Commission, 2020).

However, it can also represent an opportunity to cross the border to avail themselves of low cost medical and dental services, pharmaceutical supplies, and medications or to enjoy the

many amenities available to foreign visitors. Similarly, for U.S. entrepreneurs and other foreign investors, the proximity of the international border represents commercial and economic advantages in locating manufacturing plants, Mexico side, considering the lower costs for skilled and unskilled labor and lower transportation costs for developed products (US-Mexico Border Health Commission, 2010).

Border regions have witnessed economic and demographic expansion along the line, provoking enormous cultural and political shifts that created a modern, integrated trans-border economy that was instrumental to border communities (Dear, 2013). Residents of the US-Mexico border region may differ from other Hispanic populations in the US, as their cultural and physical proximity to Mexico may impact their health beliefs and behaviors. Border populations may also contend with high levels of poverty, chronic disease, and limited or no access to medical care (Phippard et al, 2013).

As evident in the Imperial County region, the community suffers from some of the worst poverty and health related issues in the state. These issues make the community more vulnerable to infectious disease, and it can affect disease transmission and control, particularly for diseases such as influenza which are easily transmitted from person to person (Phippard et al, 2013). International travel can impact disease transmission, as residents and non-residents travel on a daily basis between communities (Phippard et al, 2013).

As the Imperial County and Mexicali have grown and intertwined their cultures with one another, they have also experienced the hardships brought forth from community assimilation. These hardships travel both north and south of the border. As coronavirus disease has plagued the US, it has also devastated Mexico. Several million cars and trucks cross the 24 official ports of

entry, millions in trade is conducted along the border each day, and several thousand manufacturing plants are located in this region (Table 2-2). The implications for public health are the biggest challenges the Commission faces, particularly with regard to infectious diseases (US-Mexico Border Health Commission, 2010).

The U.S.-Mexico border remains complex because of the multinational global organizations, embedded traditional communities, and commuters passages and visitors found in border areas, which have existed before and after walls and continue to shift due to changes in immigration, asylum, and trade policies. Understanding the border and why residents resort to long travel distances, and transportation choices to improve their economic livability will better explain the linkage between travel and coronavirus (Talmage et al, 2019).

Table 2-2: Calexico/Calexico East Border Crossing Annual Data

<u>Measure</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Bus	3,064	2,906	2,881	2,602	1,953
Pedestrian	4.7 mil	4.5 mil	4.4 mil	4.3 mil	4 mil
Personal Vehicles	7.9 mil	8 mil	8.2 mil	8 mil	8.1 mil
Trucks	337,474	349,727	360,833	376,079	389,046

Source: (United States Department of Transportation, 2021)

When analyzing COVID-19, and the movement surrounding the spread of the virus, the US-Mexico border is a vital component, because of the amount of commuters to the north and south. As it is the busiest border in the world, the amount of traffic each side sees is of paramount importance. As people commute, so does the virus. In order to understand why COVID has become so prevalent along the border, it's essential to understand how border communities are connected.

Community Culture

Communities along the US-Mexico border represent a confluence of cultures, or a place where people of different walks of life all pursue the American Dream (Warren, 2020). Values, attitudes, behaviors, beliefs, and assumptions people share about themselves and others, and about the natural world in which they live, make up a community's culture. It includes the institutions, customs and communication patterns people have created to meet their needs. It can include language behavior, social etiquette, education, and exchange of goods and services. Culture is expressed through a community's social structure (Environmental Protection Agency, 2002).

As previously mentioned, the Imperial and Mexicali Valleys were developed by incoming and outgoing settlers. As a result, many residents of the Imperial County share family ties to Mexico. Though separated by a wall, the traditions, cultures, and beliefs have been passed down from generation to generation. As a large group of individuals who travel to the Imperial County on a daily basis reside in Mexicali, it's impossible to sever cultural ties.

Border residents face the environmental security concerns posed by water scarcity and transboundary air pollution; the planning and infrastructure needs of an exploding population; the debilitating effects of inadequate sanitary and health facilities; and the crippling cycle of widespread poverty. Yet, with its manifold problems, the border area remains an area of great dynamism and hope a multicultural laboratory of experimentation and grass-roots problem-solving. As North America moves towards a more integrated economy, citizen action at the local level is pushing governments to adapt to the driving forces in the border area by creating new institutional arrangements and improving old ones. If there is one defining feature of this ground-up push for more responsive transboundary policies and institutions, it is a departure from the closed, formalistic models of the past to a more open, transparent and participatory model of international interaction (Fernandez & Carson, 2002).

Community culture is a living expression of the culture of everyday life that can be learned and communicated informally from one human being to another (Henry, 2018). The cultural

connection between the Imperial County and Mexicali is recognizable as the Imperial County shares a stronger bond across the border than in its own state. In an effort to maintain its cross border connection, the Imperial County and Mexicali have multiple economic development programs through respective niches to help both communities competitiveness.

Regional Economics

Regional economics best describes why economic activity takes place where it does in the community. In the case of the Imperial County, the community has always been reliant on its surrounding resources, travel, and relationship with Mexicali. Key economic sectors are: agriculture, renewable energy, retail, and tourism (CEDS, 2021). The highest employing industries include: retail/trade, health care and social assistance, accommodation and food services, manufacturing, and wholesale trade (Table 2-3) (American Census Survey, 2018-2019).

Table 2-3: Imperial County Employment by Industry (2018)

<u>Industry</u>	<u>Total Number of Employed</u>	<u>Total Percent of Population</u>
Retail Trade	8,275	25.19%
Healthcare & Social Assistance	5,814	17.70%
Accommodation & Food Services	4,371	13.31%
Manufacturing	2,396	7.29%
Wholesale Trade	1,942	5.91%
Agriculture, Forestry, Fishing & Hunting	775	2.36%

Source: (American Census Survey, 2018-2019)

The Imperial County utilizes its border ties to strengthen its global competitiveness. This is evident through programs such as Cali Baja-Bi-National Mega-Region, Imperial-Mexicali Bi-

National Alliance, and the FourFront initiative. These organizations/programs work to foster the Imperial County and Mexicali's alliance through cross-border trade. Along with trade, with the continuous growing population in the Imperial Valley and Mexicali areas, cross-border consumers have been a major contributor to the economy. With an estimated 14 million crossings occurring yearly between the two countries, this cross-border relationship has drastically shaped the both communities economies (IVEDC, 2021).

The relationship between the Imperial County's economy and Mexico goes hand-and-hand. As resources are provided by Mexico, the Imperial County has utilized its binational relationship to broaden its spatial economy. Whereas, the spatial economics of the County dictates the culture, and influences household placements/size, public and private institutions, internal establishments, and other kinds of businesses.

In short, the Imperial County's economic indicators are heavily reliant on its ability to utilize its location for growth. Regional based activities such as agriculture, tourism, retail, etc. are linked to the coronavirus spread, because of how reliant these activities are on outside travel. Some of the community's most popular industries are seasonal, or may lack benefits. Because of this, employment may be sporadic, which causes residents and non-residents to migrate to new industries, or seek coverage elsewhere. This movement causes people to move from place to place, which increases chances of COVID exposure.

The Imperial County's economy would be stagnant without the border, or any of the previously mentioned activities. With no way to alter the flow of economic opportunities based upon its regional dynamics, the Imperial County has found itself caught between a rock and a hard place. Because of the way the Imperial County is so heavily involved with incoming and

outgoing travelers for economic development, it has made itself more susceptible to a large health-related outbreak, such as COVID-19. Based upon the community's regional dynamics, the movement of people within the community has emerged as a large contributor to the spread.

2.3 Previous Case Studies Along the US-Mexico Border

The US-Mexico border has sparked the interests of researchers for many years. In terms of the border, there have been a variety of avenues targeted in regards to health and wellness. Numerous case studies were reviewed, and analyzed for this research. The first Case Study analyzed is regarding seasonal influenza vaccinations among Mexican migrants. Overall, the rates for vaccinations among Mexican migrants are substantially low, which ultimately indicates there needs to be a higher binational effort to address these health concerns. The second Case Study discusses the management of border health as it relates to politics. This study highlights the growing need for additional resources along the border.

Case Study #1

Seasonal influenza vaccination among Mexican migrants traveling through the Mexico-US border region by Ejebe et al. describes influenza concerns along the border. Due to the circular migration patterns, research shows that migrants may serve as a bridge in transmission of influenza between and within US and Mexico (Ejebe et al., 2014). The authors of the article go on to explain their concerns behind influenza and circular Mexican migrants:

Circular Mexican migrants, Mexican-born individuals that travel back and forth between the United States (US) and Mexico (Passel et al., 2009), are a particularly unique population in the epidemiology of seasonal influenza for several reasons. They may be at increased risk of developing seasonal influenza and associated morbidity due to socioeconomic status, limited access to health care, living and traveling conditions, and legal status (Steege et al., 2009; Truman et al., 2009). Once they contract the disease, low levels of access to health care may result in greater

morbidity (Truman et al., 2009). Employment in the informal sector or in jobs with limited or no sick leave benefits may force migrants to go to work while they are ill, increasing the risk for transmitting the disease to others.

The following study highlights the health related struggles on the southern end of the border, as it relates to socioeconomic status, and other factors. This directly corresponds with the current situation in the Imperial County. Similar to influenza, COVID-19 can be spread across the border the same way. As border health-related conditions in the US and Mexico have not changed substantially over the years, we are seeing similar results in regards to how the disease can spread across the border, and how it impacts communities. Mexico is not the sole source of the blame. The US side of the border moves into Mexico the same way Mexico moves into the US. Low-income border communities are at greater risk for transmitting the disease, as people lack health benefits and resources. As we've seen throughout 2020, and years before that, the Imperial County has been impacted by health-related outbreaks, because there is a governmental failure to address healthcare among US-Mexico border areas.

Case Study #2

Managing US-Mexico “border health”: An organizational field approach by Julie Collins-Dogrul describes the organizational history of the US-Mexico border health field and how macro-politics and inter-organizational stratification shape transnational public health problems (Collins-Dogrul, 2006). The US-Mexico border separates two politically and economically different countries.

Being neighbors to Mexicali presents challenges when addressing border health issues, because there are different health regulations and standards established by both countries. As it

relates to the current COVID situation in the Imperial County, Collins-Dogrul (2006) addresses communicable diseases: Communicable diseases freely travel across frontiers as microscopic infectious organisms easily outmaneuver even the most sophisticated border control technology, by settling undetected, in a variety of hosts (Collins-Dogul, 2006).

As seen by present day COVID research, there is no clear indicators of how to detect the disease, other than conducting specialized testing. Addressing problems along the border has already been deemed difficult due to a variety of factors. For one, the US and Mexico are two completely different nations that are being separated by a wall. Each nation has different funding, resources, policies, etc. In order to find a successful solution to the issues at the border, a happy-medium has to be found, which is impossible. Border health organizations have continued to work towards a safer, and more prominent solution to border problems. As resources for both sides are becoming more accessible, the US and Mexico have benefitted. Despite this, there will always be a gap between both sides due to both counties being different in the way they handle health issues.

As it relates to the Imperial County, border communities receive the brunt end of health problems. As continued efforts are made to address border health concerns, there is still no solution to the amount of back and forth travel seen from both sides of the border. Diseases can be passed along from one community to the next. As the Imperial County shares a strong relationship with its surrounding areas, its exceptionally hard to put an end to dictate where and how people travel from place to place.

CHAPTER 3. STUDY AREA

The Imperial County is one of 58 counties located in California. It extends over 4,284 square miles, and it is the 9th largest County in California (County of Imperial, 2019). The Imperial County shares borders with Mexico to the south, Riverside County to the north, San Diego County to the west, and the State of Arizona to the east (Figure 3-1). There are seven primary cities located in the Imperial County: Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland. Additionally, the Imperial County has nine unincorporated colonias: Bombay Beach, Heber, Niland, Ocotillo, Palo Verde, Seeley, Winterhaven Salton City, and Poe. Colonias are known as low-income areas, typically without basic necessities like potable water, electricity, and safe housing (Warren, 2020).

The Imperial County is a rural community located next to Mexicali, Mexico, a metropolis of more than one million people (Solis, 2020). Geographically, the difference between the Imperial County and Mexicali is substantial. Aside from their population differences, one community represents vast open land, and the other represents a dense expanding city (Figure 3-2).

The Imperial County shares a strong relationship with Mexicali, Mexico, as it is virtually one of the few places in the world where there is a developed country located next door to a developing country. The county is connected to Mexico through three land Ports of Entry (POEs) at Calexico West/Mexicali I, Calexico East/Mexicali II and Andrade/Los Algodones. Across the Imperial/Mexicali POEs there are approximately 100,000 people that cross the U.S. through these POEs daily for work, school, shopping, entertainment and other socially related trips (Imperial County CEDS, 2017).

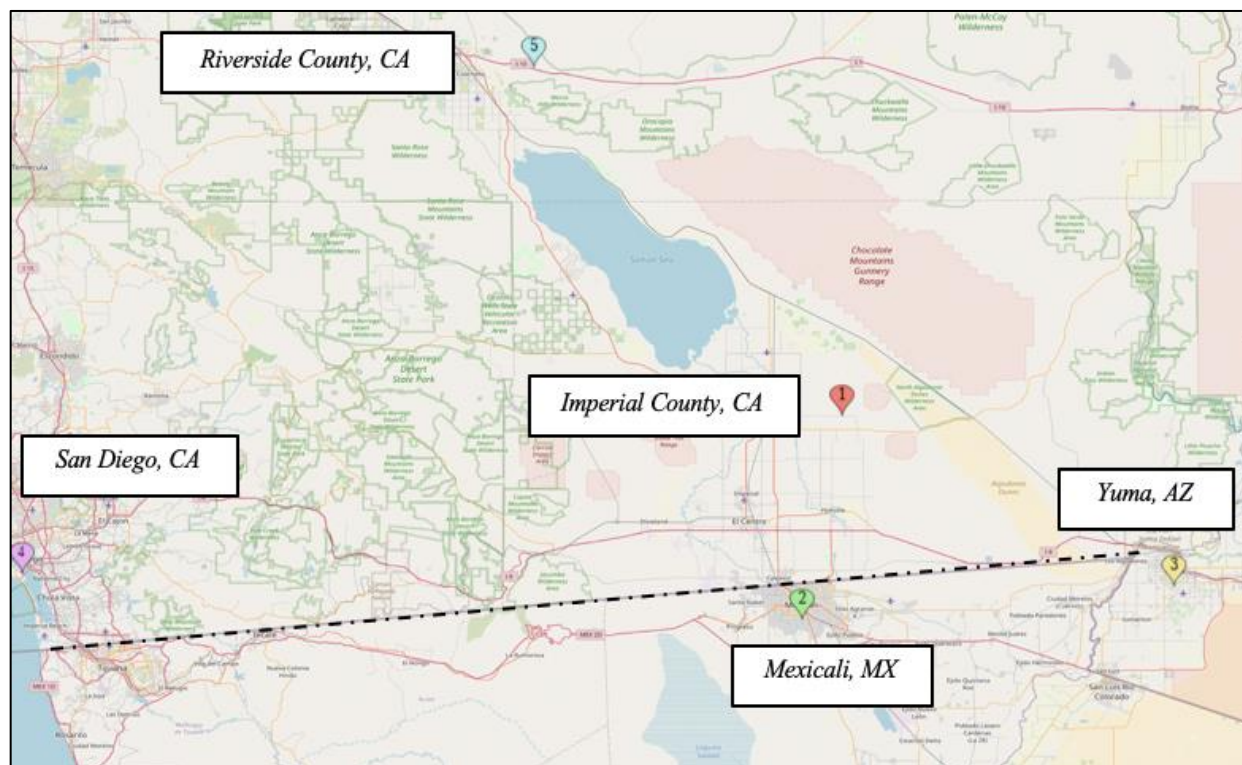


Figure 3-1: Imperial County Neighboring Communities Map

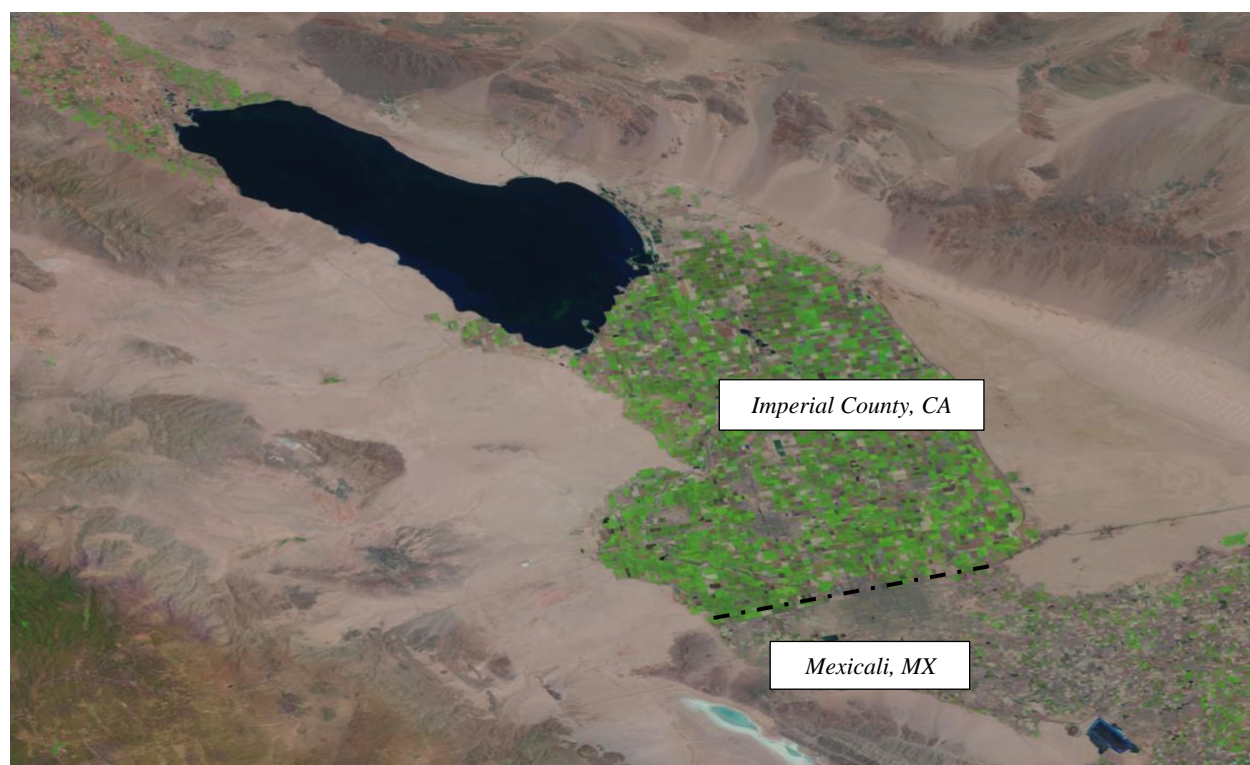


Figure 3-2: Imperial County-Mexicali Aerial Map

Imperial County has a population of approximately 181,215 residents, which consists predominantly of Latino or Hispanic ethnicity 85% (American Census Survey, 2018-2019). Whereas, Imperial County has a foreign born population of 30%, which is more than double the rate in the United States 13.7%. Latin America accounts for the vast majority of the foreign-born population 96% (Figure 3-3) (American Census Survey, 2018-2019). The foreign born population in Imperial County is attributed to its proximity to the border, and its lifelong relationship with Mexico.

The majority of Mexican immigrants that arrived in California between the 1980s and the 1990s were not U.S. citizens even though most have been in California for longer than the five-year period. Most of the foreign-born population is at the pinnacle of their productive adult life (40% of female and 42% of males are between the ages of 20 and 39), while a vast majority of the native-born Hispanic population of Mexican origin, both female and male, is below 10 years of age. Many of these are children of recent immigrants who, within a decade, will be an important component of California's labor force (Thomas Rivera Policy Institute, 2005).

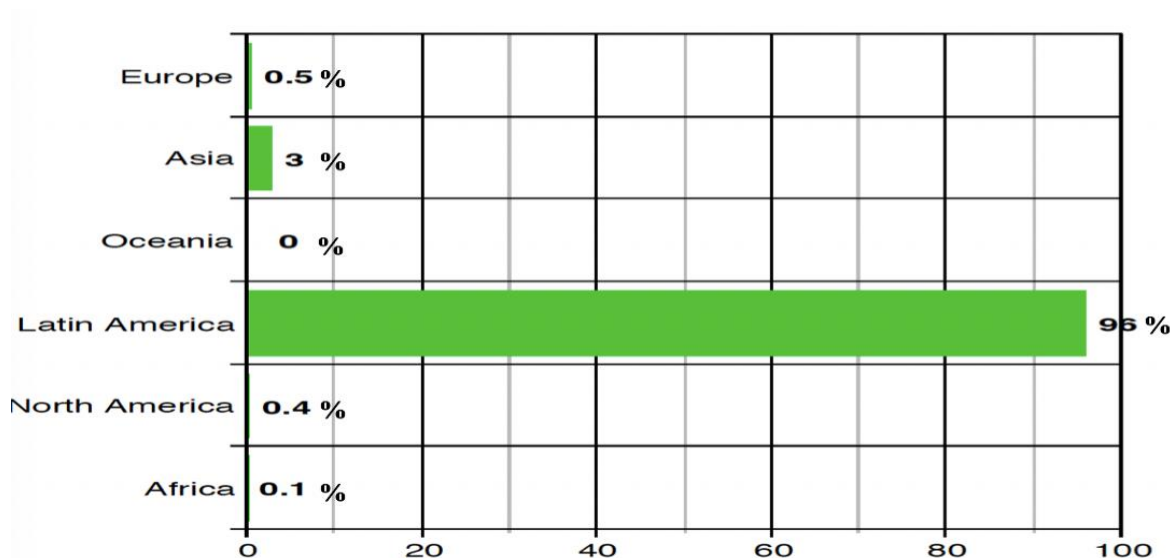


Figure 3-3: Imperial County Foreign Born Population Breakdown

Source: (American Census Survey 2018-2019)

Imperial County historically has competed for the highest unemployment rates in California. Figure 3-4 better depicts the unemployment trends in the community over the last two years. This is a function of three factors. First, the region's largest industry is agriculture, which has seasonal elements impacting labor. Secondly, the region is located along an international border (Mexico). The greater Mexicali Valley (located just south of the international border) has a population of approximately 1,050,000 or about five times that of Imperial County. The sheer size of Mexicali and proximity to Imperial County provides for greater immigration/migration for work, shopping, entertainment, and housing, which influences unemployment rates as people (from both sides of the border) enter and leave the labor force (Bracken, 2018). Thirdly, Imperial County is more rural in nature than most areas in California. Population density in California is approximately 243 persons per square mile while population density in Imperial County is only 42.5 persons per square mile. The region continues to face socioeconomic issues as a result of lack of job opportunities in higher paying industries and work-related transportation constraints (Bracken, 2018).

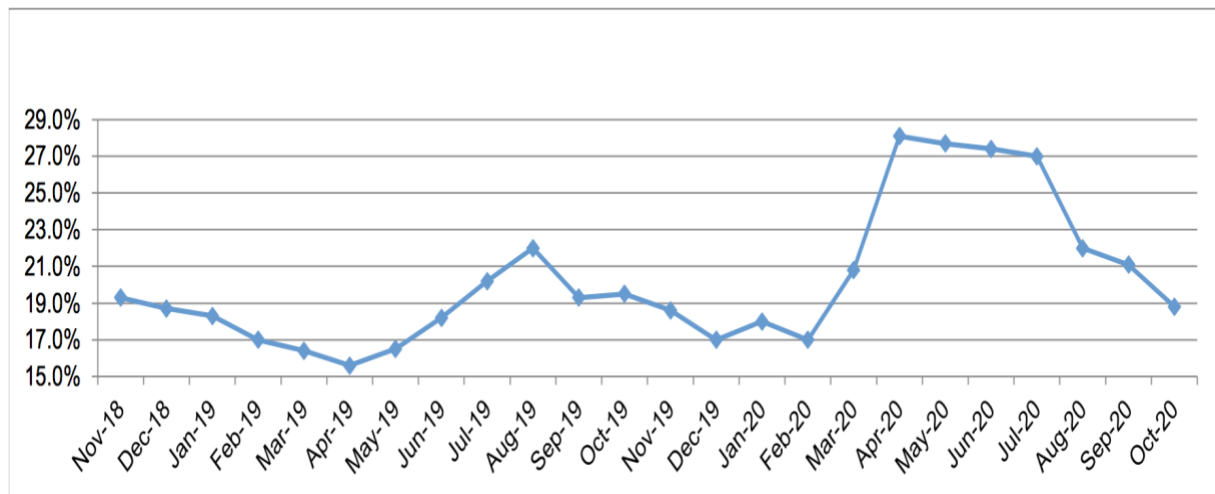


Figure 3-4: Imperial County Unemployment Rate - Nov 2018-Oct 2020

Source: (State of California Employment Development Department, 2020)

Economically, agriculture is the largest private sector industry in Imperial County. While the direct jobs associated with the industry are traditionally low pay, agriculture supports many families in a variety of occupations such as direct farming, professional/business (including accountants), and transportation. Since many of the agriculture-related companies are family owned, the “private” wealth within the region is often rooted in agriculture (Bracken, 2018). Workers living in Imperial County are employed in higher percentages in agriculture retail, education, and public administration. In terms of occupational groups, in addition to farming, higher percentages are employed in community service jobs.

3.1 Housing and Poverty

The median household income in California is significantly higher than the national average. However, California is a place of contrasts. Approximately, 40% of the state’s households struggle to afford a roof over their heads. Whereas, homeownership, once a staple of the California dream is at its lowest rate since World War II (Levin Christopher, 2017). The majority of Californians see a large chunk of their paychecks go immediately to escalating rents. While it’s always been more expensive to be a homeowner in California, the gap between California and the rest of the country, in terms of housing costs, has grown a great deal. The median California home is now priced 2.5 times higher than the median national home (Levin and Christopher, 2017).

The level of economic hardship is reflected in income, poverty, and unemployment. As residence of Mexico are eager to come to the US for opportunities, US residents are just as eager to retire in Mexico. More recently, an increasing number of Mexican immigrants who have lived during their productive lives in the US are choosing to retire in Mexico, taking advantage of cultural affinity, affordability and better weather (Vargas, 2019). Mexican immigrants who live in

the US and their descendants are the main source of international medical travelers into Mexico. International migration, however, is also a key driver for the use of private healthcare in Mexico through international remittances to dependents living in Mexico, which are often used to pay for healthcare all across Mexico. (Vargas, 2019).

Since Medicare, the healthcare plan for older adults in the US, is currently not available outside of the US and its territories, these Mexican and American retirees oftentimes pay for health-care in Mexico with savings and retirement income. Despite border communities daily struggle, their unrelenting capacity for self-help remains the single most valuable and available resource in colonia community development (Donelson & Esparza, 2010). The home ownership variable captures one of the advantages of residing in Mexico where, due to the significant differences in housing prices between the U.S. and Mexico, cross-border workers are much more likely to be home-owners relative to immigrants despite the formers lower earnings. For cross-border workers, their access to higher earnings relative to non-cross-border workers makes it more feasible for them to purchase a house in Mexico, thus reinforcing their strategy of working in the U.S. but living south of the border (Paulo & Romano, 2013).

Imperial County has a per capita household income of \$18,800 which is about half the median income of California at \$39,393 and the US at \$35,672 (American Census Survey, 2018-2019) (see Figure 3-5). There is no single reason for Imperial County's plight, but inequalities loom large (Spagat, 2020). The poverty rates in Imperial County are a reflection of some of the most affordable housing rates in California.

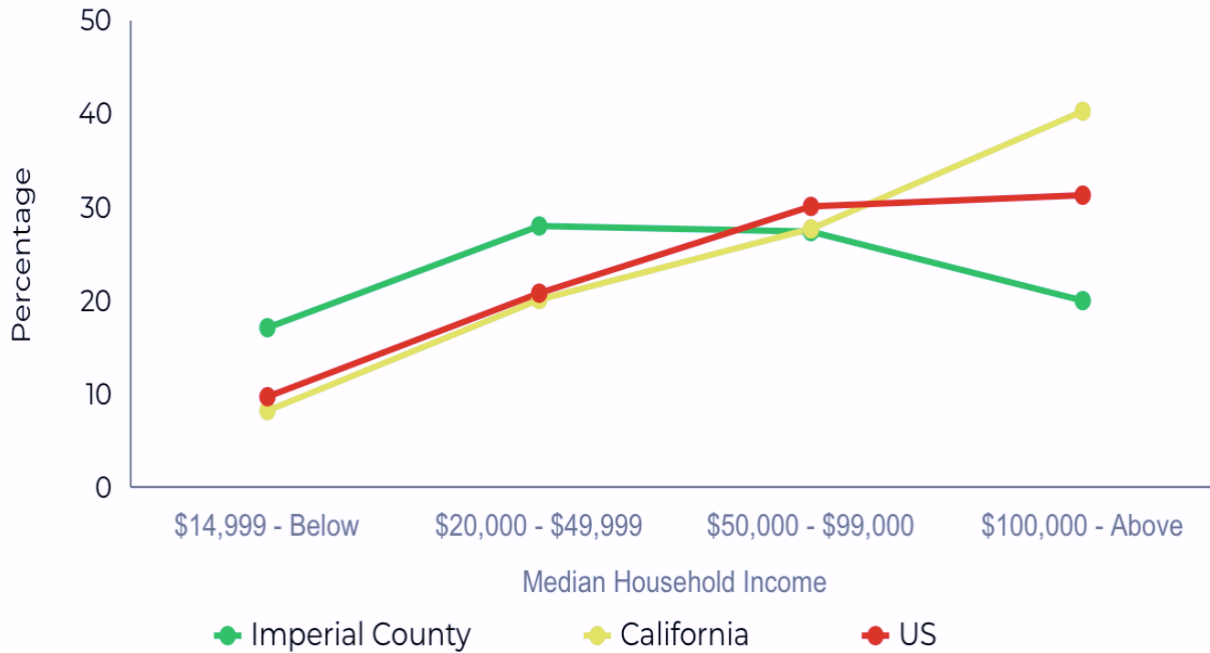


Figure 3-5: Median Household Income – Imperial County, California, US

Source: (American Census Survey, 2019-2019)

Imperial County's social characteristics and community structure are greatly influenced by the international border. The Mexican heritage that resides in Imperial County is evident. The strong Mexican culture in Imperial County has translated into the highest persons per household rate in all of California (Figure 3-6). In comparison to the United States and California, Imperial County has approximately 1-2 more people per household. These multi-generational households represent a long-standing heritage that encompasses border community residents.

The household structure in Imperial County is related to the strong belief in familism. *Familism* is known as a social belief in which family is more important than individual needs. Familism is predominantly found in Latino culture, as these values are passed down from generation to generation. Familistic networks are often times comprised of immigrants who may

be accompanied by their own set of disadvantages. These disadvantages include: language barriers, low-income, educational inequities, and other unique struggles (Desmond and Turley, 2009)

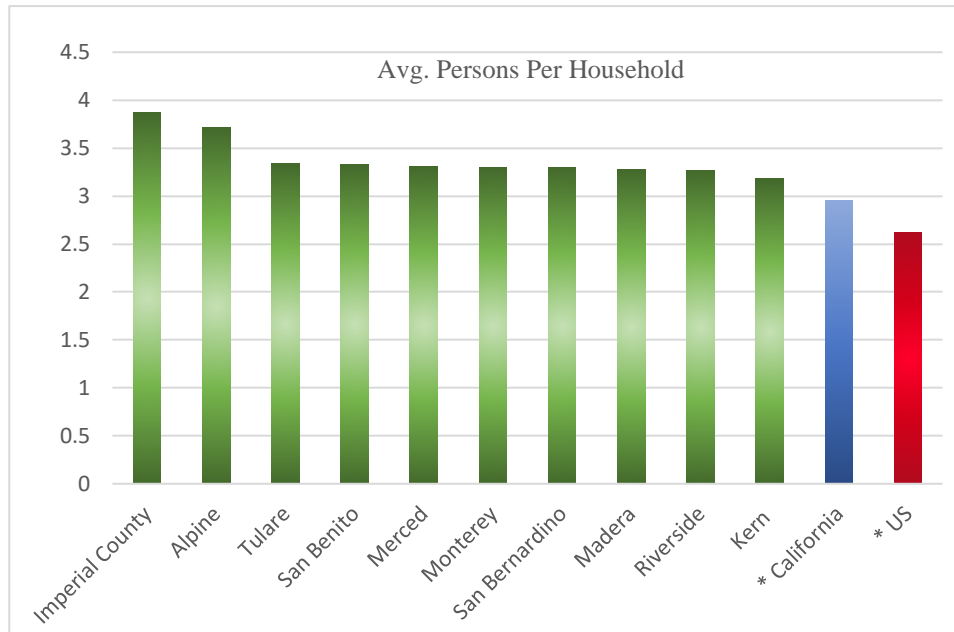


Figure 3-6: Top 10 California County Persons Per Household Comparison

Source: (U.S. Census Bureau, American Community Survey, 5-Year Estimates, 2014-2018)

3.2. The US-Mexico Border Management and Governance

Since 2010, the United States and Mexico have been engaged in a bilateral border management initiative under the 21st Century Border Management. This initiative is a bilateral effort to manage the 2,000-mile U.S.-Mexico border through the following cooperative efforts: expediting legitimate trade and travel; enhancing public safety; managing security risks; engaging border communities; and setting policies to address possible statutory, regulatory, and/or infrastructure changes that would enable the two countries to improve collaboration (Congressional Research Services, 2020).

The COVID-19 pandemic has illuminated and exacerbated social problems within the United States and Mexico, and these have compounded at the border. A lack of federal government policy and guidance to improve the quality of life for people in the border region has been evident (Collins, 2020). Because of this, the local government level has been left to combat diseases with limited resources. The US-Mexico border is a political issue that has received a lot of negative attention for drugs, immigration, violence, and other reasons. The border at the federal level needs to address disease management and border community resources. As the border is a federal zone, the absence of federal leadership adds a level of difficulty for those who live on both sides (Collins, 2020). Because of this uncoordinated response, communities such as Imperial County, are left to manage border issues on their own. Failure to communicate and provide leadership along the border has put more stress on local governments to pick up the pieces.

Even with restrictions on border travel, US. Citizens and permanent residents are still able to cross without restrictions, as long as it is considered essential travel (Collins, 2020). The amount of travel seen at the border should bring insight to policy makers about the connection between border communities. In 2019, the Calexico East Point of Entry saw approximately 532,588 crossers per month (US Department of Transportation, 2021). This includes pedestrian, personal vehicle, bus, and train.

Imperial County has the infrastructure and resources suited for a population of 180,000. As population numbers increase through border movement, those resources begin to dwindle down. The lack of attention to the amount of crossers moving north and south of the border impacts both communities. Mexico and the US are both managing COVID-19 in their communities, yet there has been a lack of attention to the one thing separating both communities, which is the US-Mexico border. Although the border separates both communities, it does not prevent individuals from

crossing back and forth, which has been an issue that has gone unaddressed by the government. The inequality in border management as of April 2021, is evident in the vaccine numbers south of the border in comparison to those north of the border. This failure to address both sides of the border has and will continue to be detrimental to local governments in managing diseases (Table 3-1).

Table 3-1: COVID-19 Data – Imperial County, US, Mexico

	<u>Total Cases</u>	<u>Total Deaths</u>	<u>Vaccine Percentage</u>
Imperial County	27,562	717	19%
US	3.7 mil	566,224	23%
Mexico	2.3 mil	211,693	3%

Source: (John Hopkins University & Los Angeles Times, 2021)

The unique characteristics that are found at the border coincide with some of the problems that have developed in managing COVID-19 in Imperial County. These characteristics are shared through the community's framework. Imperial County shares cultural traditions/beliefs, roads, the border, financial assets, natural resources, and more with Mexicali. Because of how connected Imperial County is to Mexicali, it is impossible for the community to push for a shutdown of the border. Imperial County is a rural community that is directly dependent upon the border, and it does not have the economic resources available to sustain its community without Mexicali. Instead, Imperial County requires assistance in managing COVID-19 in the community. This assistance needs to begin at the federal and state levels of government.

Imperial County local government has taken lead to keep residents safe and provide a response to the pandemic. The problem is, local government has a limit, and it is difficult for governments to work across the border to provide solutions (Collins, 2021). Solutions need to be

solved at the federal and state levels of government. Because there is a disconnect between the different levels of government, border issues will continue to progress and develop. Without communication and solutions to the ongoing problems at the border, both sides will continue to be impacted by diseases as people continue to move along the border.

3.3 The Coronavirus Novel

Coronavirus disease 2019 (COVID-19) is defined as an illness caused by a novel coronavirus now called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV), which was first identified amid an outbreak of respiratory illness cases in Wuhan City, Hubei Province, China (Cennimo, 2020). The virus was initially reported to the World Health Organization (WHO) on December 31, 2019. On January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency. On March 11, 2020, the WHO declared COVID-19 a global pandemic, its first such designation since declaring H1N1 influenza a pandemic in 2009 (Cennimo, 2020).

The virus has brought the world's most powerful country to its knees. Despite warning, the United States was unable to control the global pandemic from devastating its communities. Since coronavirus' arrival in the United States, attention has been paid to how COVID-19 cases and deaths have been distributed across varying socioeconomic and ethnic groups (Finch, 2020). Historically, handling viruses has not always been easy. Curtailing viruses after they spill over requires an ample amount of knowledge, transparency, and decisiveness. Being prepared means being ready to spring into action, so that when something like this happens, you're moving quickly. Unfortunately, the US was not prepared for the damage coronavirus entailed. Ripping unimpeded

through American communities, the coronavirus created thousands of sickly hosts that it then rode into America's hospitals (Yong, 2020).

Since the coronavirus arrived in Imperial County, the community has been monitored closely by the state and federal government. The pandemic has brought an unprecedented level of hardship for residents in a county where the coronavirus hardly feels like an abstraction (Vives, 2020). In attempts to swiftly manage the spread of the virus, the government shut down non-essential businesses and travel. Despite these efforts, the number of coronavirus cases have continued to climb at a rapid rate.

Preexisting medical, environmental, economic, and other issues have played vital roles in writing Imperial County's coronavirus story. Bordered by Arizona to the east, Riverside County to the north, San Diego to the west and Mexico to the south, Imperial County is besieged by agricultural burning, toxic dust from the Salton Sea and fumes from the dozens of factories operating in Mexico. There's also the pollution from thousands of cars and commercial trucks idling at the border (Vives, 2020).. The high infection rates have made it feel like everyone knows or knows of someone who has contracted COVID-19 or died from it (Vives, 2020).

3.4 California COVID Policies and Regulations

The Governor of California Gavin Newsom, has implemented a reopening plan to regulate how the California economy will restart in the wake of the COVID-19 pandemic. The state plan includes a four-tiered, color-coded system that tracks counties by the number of COVID-19 cases recorded each day and the percentage of positive cases out of the total number of tests administered, both averaged over seven day (Figure 3-7).

The state tier system went into effect Aug. 31, 2020 and replaced the previous “county monitoring list.” On Sept. 30, 2020, the California Department of Public Health released a new health equity metric that went into effect Oct. 6 and impacts a county’s ability to move between tiers. The Purple, or Tier 1, indicates that the virus is widespread in the county — with more than seven cases per 100,000 residents or more than 8% of tests results reported positive over seven days. Red (Tier 2) indicates “substantial” spread of the virus, while orange (Tier 3) indicates “moderate” spread and yellow (Tier 4) indicates “minimal” spread of the virus in the county (Harrington, 2020). After a whole year of being in purple tier, on March 10, 2021, Imperial County moved into the red tier for the first time, which is an indication that the community is finally moving forward.

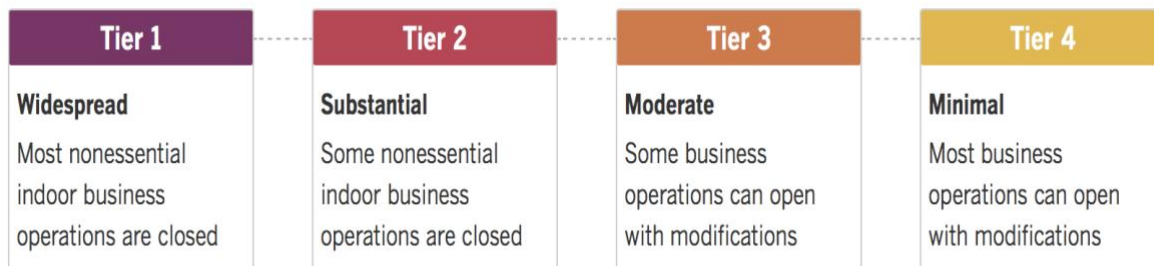


Figure 3-7: California Reopening Risk Tiers

Source: (LA Times, 2020)

In regards to the overall COVID-19 experience in the community, Imperial County has witnessed significant growth in cases throughout 2020 (Figure 3-8). This growth has resulted in businesses and other community operations to be halted. COVID-19 has exposed a lot of the underlying issues in Imperial County. It has been clearly documented that certain communities low-income, Black, Latino, Pacific Islander, and essential workers have been disproportionately impacted by COVID-19. These communities, similar to Imperial County see higher rates of infection, hospitalizations, and deaths.

These disparities create a public health imperative to address exposure in all communities, including especially those disproportionately impacted, as a measure to protect all communities (California Department of Public Health, 2020). Imperial County must address COVID-19 in its community to open further, including making sure the positivity rate in certain neighborhoods (health equity metric) does not significantly lag behind overall county positivity rates. These efforts need cross-sector and broad partnerships to succeed. The health equity metric is only used to decide whether a county can move to a less restrictive tier. Learn more about this focus on equity.

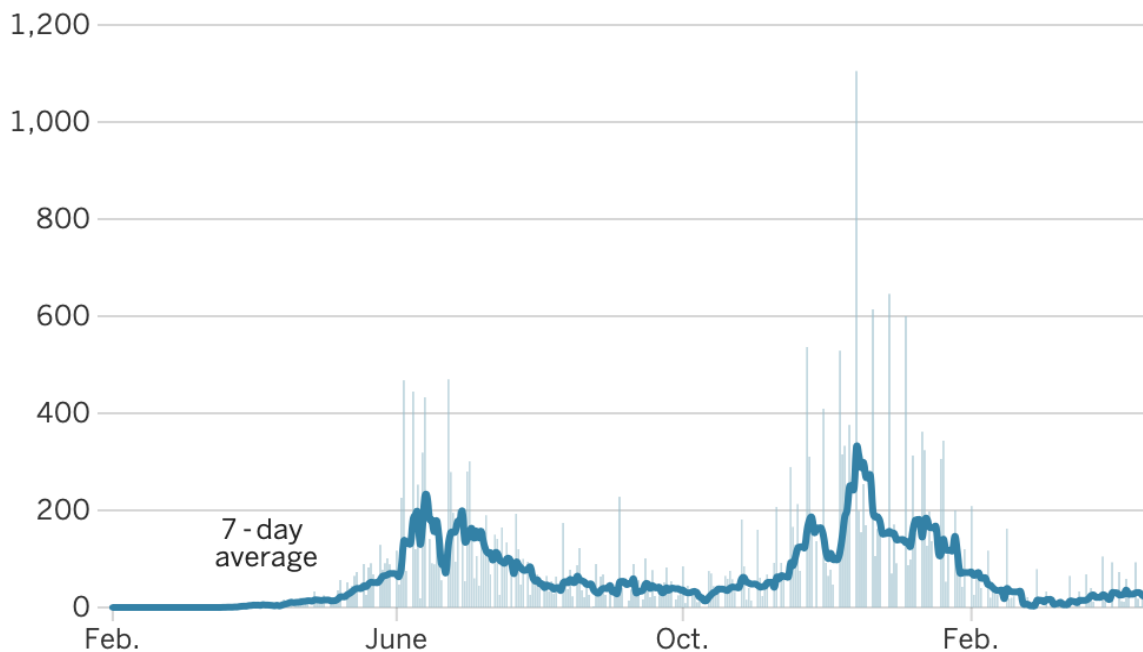


Figure 3-9: Imperial County Positive Cases by Day

Source: (Los Angeles Times, 2021)

3.5 Timeline of Notable Events

Very little is known about the new coronavirus and the disease it causes. This means COVID-19 is something of a wild card in terms of how far it will spread and how many deaths it

will cause. And to date, there is no specific medicine recommended to prevent or treat this type of coronavirus (Baton Rouge General, 2020).

Timeline

() Indicates events that have occurred in Imperial County*

- * March 2020, first documented case of coronavirus in Imperial County
- March 11, 2020, the World Health Organization declares Coronavirus to be a global pandemic
- March 21, 2020, US reaches agreements with Canada and Mexico to limit all non-essential travel across borders (extended until October 21, 2020)
- April 2, 2020, an estimated 6.6 million US workers file for their first week of unemployment benefits as reported by the Department of Labor
- * May 14, 2020, Imperial County surpasses 1,000 COVID-19 positive cases
- May 27, 2020, John Hopkins University reports that Coronavirus has killed more than 100,000 people across the US
- June 11, 2020, the US passes 2 million confirmed cases according to the John Hopkins University
- * June 12, 2020, Imperial County surpasses 5,000 positive cases
- * July 26, 2020, Imperial County reaches over 10,000 positive case
- August 27, 2020, The CDC notifies public health officials around the US to prepare to distribute potential coronavirus vaccine as soon as late October.
- * March 10, 2021, Imperial County enters into red tier

CHAPTER 4. METHODOLOGY

4.1 Introduction

Qualitative interviews were used to examine the real-life experiences of community members within Imperial County as it relates to COVID-19. Because COVID-19 is currently ongoing, this exploratory case study targets “how” and “why” the movement of people along the US-Mexico border, has influenced community development and the spread of COVID-19. The qualitative method of research that was selected better depicts the human insight offered through personal experiences and actions. Since COVID-19 is a diverse event that has impacted community decision-making, a quantitative approach would not be able describe the human thinking and community behavior. The strength of this study lies within its flexibility and openness. The data presented in the results and discussion is intended to aid future studies related to local government management of border communities, and diseases. Figure 4-1 better describes the steps taken in the methodology.



Figure 4-1: Exploratory Case Study Approach

4.2 Sample Recruitment

A combination of 14 people, both male and female comprised of local government, federal government, agricultural, and public health sectors were contacted in the month of January 2021,

to participate in web-based interviews through a videoconferencing software known as “Cisco Webex”. Of those contacted, nine people agreed to participate, one person declined participation, and four people were unresponsive despite multiple attempts to make contact. During the interview process, snowball sampling was used, in which one participant identified and provided the information of a state government official. The state government official was contacted February 2021, in which they agreed to participate in an interview. In total, this study involved 10 participants: one-state government official, three-local government officials, two-agricultural officials, and four-public health officials. Multiple attempts were made to contact a federal government official, but were found unsuccessful.

The selection criteria for the participants in the study was based upon their roles, experiences, and knowledge of the community in relation to COVID-19 and the border. The selected participants represent community decision-making, public health, and business. In order to capture the different perspectives and opinions surrounding COVID-19, all of the participants were necessary for this research. In order to protect the participants’ identity, exact positions were excluded from this research.

The local and state government sectors consisted of upper level government officials. These groups were targeted, because they are knowledgeable and responsible for the different services within Imperial County. These sectors of government have a better understanding of the community demographics and travel behavior of the community. Since COVID-19 arrived in Imperial County, both state and local officials have worked side-by-side to combat the virus. Local and state officials are able to provide insight on community decision-making, and policy implementation. Additionally, these officials have first-hand experience working with the

government of Mexicali, which is important for acquiring information regarding the border and community behavior.

The public health sector was comprised of frontline doctors, nurses, and upper level medical management. Participants from this sector were targeted, because of their medical opinions and experiences handling COVID-19. Since COVID-19 is a medical disease, it is important to understand what problems exist within the community medically, and how they are being handled. The public health sector's roles within the community were amplified as they are not only assisting local community members, but patients from Mexicali as well. Ultimately, public health officials are able to provide insight on preexisting health issues within the community and other miscellaneous health-related problems that have contributed to the COVID-19 spread.

The agriculture sector consisted of experts in crop production as well as experienced individuals in importing and exporting sales. The agricultural sector within Imperial County is one of the largest economic staples in the community. It was important to acquire participants from this sample area, because of their experience working directly with Mexicali. The agricultural sector relies heavily on cross-border labor, as well as overseas international business. Agricultural participants were targeted, because of their insight on cross-border labor and business within the community as it relates to the US-Mexico border.

The federal government works directly with Imperial County and Mexicali, as they oversee operations that take place along the US-Mexico border. Capturing the federal government perspective on community travel as it relates to the international border was targeted throughout this research. Unfortunately, federal government officials did not participate within this study.

4.3 Data Collection

Prior to conducting interviews, all participants were provided an informed consent form, in which they reviewed, and signed. Participants were informed that their information would be kept confidential and the interviews would be recorded and stored in a safe secure location. The research data was collected through structured interviews, and was conducted by the prime investigator (Appendix A). A series of 16 open-ended questions were asked to participants. The interview questions covered a variety of topics: personal introduction, COVID-19 spread, COVID-19 organizational impact, geographical location, travel behavior, community involvement, and recommendations.

Interviews on average lasted a duration of approximately 25 minutes. The data collected from the interviews was inputted into NVIVO, a qualitative data analysis software. All interviewee names were changed to “participant” followed by a numerical value (1-10), and their respective organization/sector. Table 4-1 illustrates how interviewee information was separated in the software.

Table 4-1: Participant List

<u>Interviewee Information</u>	
Name	Sector
Participant 1, 2, 3, 4	Public Health
Participant 5, 10	Agricultural
Participant 6, 8, 9	Local Government
Participant 7	State Government

* All names were omitted from this study in order to ensure the safety of participants' identities

Through the NVIVO software, each interview was individually transcribed and analyzed by the prime investigator. A grounded theory approach was used to better understand and categorize the qualitative data. A series of codes and classifications was created to understand word frequency, and commonly used topics. Word frequency captured commonly used words that appeared on average 50-300 times throughout the ten interviews. These words consisted of terms such as: people, COVID, spread, border and others. The commonly used words were then categorized into themes. These themes were derived from words and statements that directly or indirectly referenced connections between Imperial County and Mexicali. Figure 4-2 shows the most frequently used words categories.

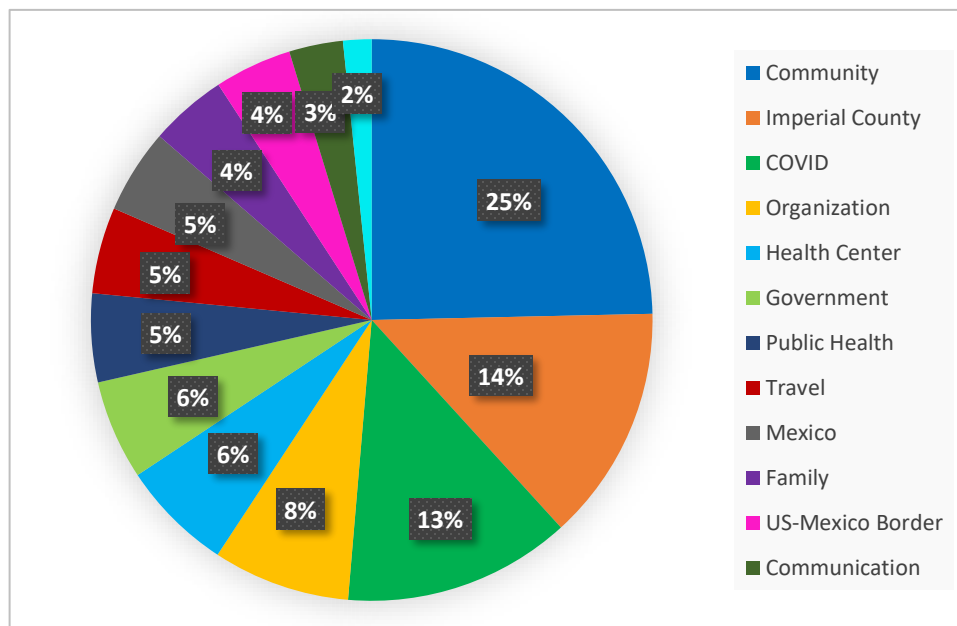


Figure 4-2: Frequently Used Terms/Words

To better understand participant responses, transcribed data was then separated and put into an excel spreadsheet. Each participant response was categorized according to the corresponding interview question. When all of the interview responses were categorized on the spreadsheet, the

data was then analyzed for specific linkages. Duplicate responses and/or answers to the interview questions were documented and given a percentage based upon how many times each respondent stated the same response. Similar responses from the same sectors were also documented, in order to better theorize how each individual sector addressed COVID-19.

The themes identified in the interviews and grounded theory approach were cross-examined with the community capital framework of Imperial County. This framework helped identify associations, strengths, and weaknesses of the community as it relates to COVID-19 and community development. Participant statements and other statistical information was compared with other border community, or disease related case studies. This step was taken in order to understand the similarities and differences in various forms of research.

CHAPTER 5. RESULTS AND DISCUSSION

5.1 Results

The interview transcripts acted as the primary data analyzed throughout this study. There were four themes that resulted from the interviews. These themes are: (a) the border matters, (b) social osmosis, (c) metropolitan effects on rural population, and (d) misinformation through politics. All of these themes were tied to a shared community capital framework between Imperial County and the border (Figure 5-1). This shared framework helps identify the challenges at the local government level regarding COVID-19 in Imperial County.

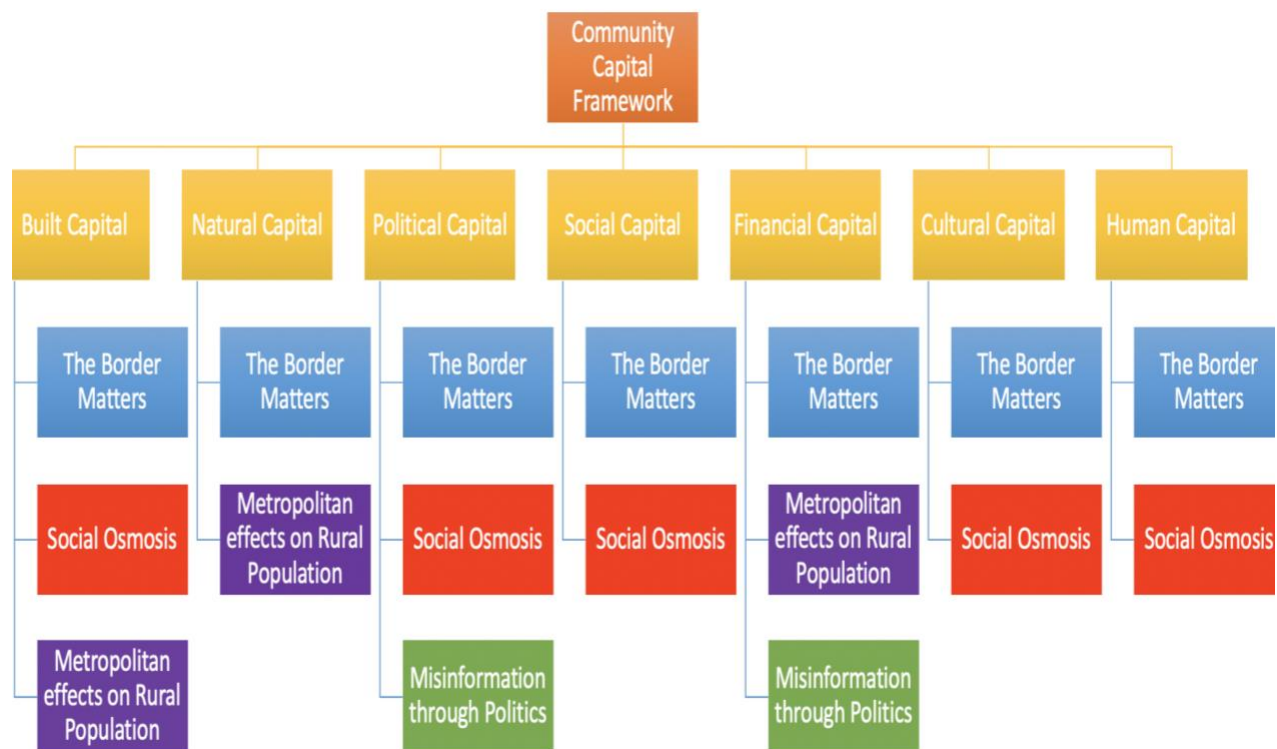


Figure 5-1: Imperial County – Community Capital Framework

The framework in Imperial County is a result of a long standing relationship with Mexicali, Mexico. Participants identified characteristics in Imperial County that fit the seven categories of

the community capital framework. The following framework helped identify the strengths, associations, and weaknesses of the community as it pertains to community development and COVID-19.

The Border Matters

Throughout the data analysis, participants described the international border that divides Imperial County and Mexicali. Specifically, participants highlighted the border as a key component to the everyday life in Imperial County. Interview participants supported this reasoning through the following statements about the border:

We probably live a little bit differently than people do in the rest of California, because the vast majority of our population have ties across the border – *Participant 10 (Agricultural Sector)*

The mentality here is different along the border, we have a cultural thing here that is tied to family. – *Participant 9 (Local Government Sector)*

We are so highly dependent on the people that come across the border. Even with COVID, they're still helping us by their spending. If we didn't have them, we wouldn't even have a mall here. We don't have the population we need, or the spending power we need to keep our economy afloat. We wouldn't be able to survive without Mexicali. I can't even begin to quantify how that impacts us, but it's a huge impact. – *Participant 7 (Local Government Sector)*

You know the border has a huge impact. You have the international border dividing two areas, but it really is a cohesive community here. There's so much cultural similarity between the two – *Participant 1 (Public Health Sector)*

Through grounded analysis, the term border appeared over 80 times throughout the interviews. In regards to COVID-19 and the border, almost all of the participants (70%) stated that cross-border transmission was a major factor for the COVID-19 spread in Imperial County. This cross-border transmission was described as travelers who migrate either north or south of the border actively. This analysis was supported by statements from participants.

The trends that were frequently coming up were multiple families in a single vehicle. They take four households and put them in a car, and then they are in line trying to cross north bound for two hours. From those two hours, they are stopping off and getting whatever done that they need to do, and then go to their work site. From the worksite they separate, and then they do it all again tomorrow. – *Participant 7 (State Government Sector)*

Although the state had different recommendations for different counties, it did not necessarily help us, because every county is unique, and has their own population and geography. Even with our policies, we're next to the border, and they have their own policies, so we still impact each other. – *Participant 8 (Local Government Sector)*

In support of the border, all of the participants in the study also stated that the border is not the sole reason for the spread of the virus. The majority of the participants indicated a strong need for the border to stay open, because of social and economic reasons. The economic relationship between Imperial County and Mexicali is better described through transmigration. Whereas, transmigration is fueled by the structural differences between Mexico and the United States (Alegría, 2002). The border acts as the community development engine for Imperial County. Because of this, the border is directly associated with every community capital.

The border itself, is a mere wall placed between two growing communities. There is little separation between Imperial County and Mexicali. The border matters, because it is responsible for the crossing over of natural resources, cultures, beliefs, community training, educational opportunities, infrastructure, and financial gains. The border itself is interwoven in Imperial County's development.

As the economic relationship has strengthened over the years, the need for business between the two communities has become stronger than ever. Many people wrongly misjudge Mexicans who cross the border, because of the economic comparison between the US and Mexico. This is in fact wrong. Mexicali residents spend a large amount of money in the community, if not

more. Mexicali residents cross regularly to shop and visit relatives across the border. This activity stimulates Imperial County's economy as people stop at local businesses, and spend inside the community. If the border were to close, agricultural work would slow down substantially, and small businesses/retail would suffer.

Participants from the agricultural sector viewed the border as a necessary means of life for business within Imperial County. The relationship between Mexican labor and cross-border trade is built upon the need to move back and forth along the border. The local agricultural industry and economic trade generate roughly \$2 billion per year. Whereas, Calexico's East Port of Entry handles all truck traffic entering and exiting the US, and accounts for about \$17 billion in imports and exports annually (Higgins, 2021). Despite the border partly influencing the spread of COVID-19, participants from this sector felt that with the necessary safety measures in place, the border needs to remain open for all travelers.

Participants from the public health sector identified the movement along the border as a melting pot of social interactions which has played a role in influencing the spread of the virus. These interactions consist of people who may have symptoms of the virus, or may be asymptomatic and travel either north or south from place to place. Because of this travel, they are interacting with different people and potentially passing the virus on from place to place. Again, despite identifying the border as a potential reason for the COVID-19 spread, all of the participants from this sector took notice that it would not be feasible to close the border.

Participants from the local and state government sector identified the border as the backbone of Imperial County. From a community perspective, all of the participants identified the border as the main factor that makes Imperial County unique. The participants within this sector

described the community as being cross-border dependent on tourism, labor, and other economic indicators. More importantly, the border represented the cultural history of the region and the Mexican heritage of families. They identified the border as being a major cause to the spread, because there was a distinct difference in COVID related policies amongst the two countries.

In summary, participants identified the movement along the US-Mexico border as a vital component to community's framework. This framework consists of shared: social, cultural, financial, political, human, built, and natural capitals. Due to these shared capitals, Imperial County is forever embedded into Mexicali. This relationship presents challenges when dealing with a virus that piggybacks from one person to another. Similar to how Mexican culture has assimilated into Imperial County, COVID-19 has been passed back and forth along the border.

Social Osmosis

The second theme materialized, as participants expressed a connection between Imperial County and Mexicali culture. The majority of participants (70%) identified the cultural characteristics of Imperial County as being a factor that contributed to the spread of the disease. This outcome emerged as participants identified the household structure in Imperial County as being directly related to Mexican culture. As identified by an individual in the public health sector, the amount of persons per household has played a role in the COVID-19 case spikes within the community.

The issue that we continually had early on in Imperial County, is you have one person that gets sick with COVID-19. One is not a big deal, but when that person lives in a household with three or four different families and totality to a 12 people. It's very easy to spread from 1 to 12, to more than 12 within a matter of days, which directly amplifies the exposure within the community. - *Participant 3 (Public Health Sector)*

I think the biggest cause of the spread in the County is multiple person households, I think Sweden got away without mask and distancing, because they have a lot of single person households. We have a lot of multi generations, or more than 2 or 3 people living in a house, and all those people share a kitchen and they share a living room. All you need is one trojan horse to get in and everyone gets exposed. But gatherings aren't going to stop, because family is so important down here. I think the social dynamics in the County made the disease spread so rapidly. – *Participant 4 (Public Health Sector)*

As history has shown, Mexican households have been linked to having multiple generations of family members living with each other. The statements provided from participants regarding household size was cross examined with findings from another case study regarding Mexican culture and history.

In a qualitative study that was completed by Bacallo and Smokowski (2007), they referenced familism as being a strong influencer for Mexican household structure. In their research, Mexican parents and adolescents stated that “familism continued to be of the utmost importance and was reinforced after immigration because of the new challenges to family unity. All of the parents and adolescents described familism as a core value in Mexican family life both before and after immigration.” (Bacallao and Smokowski, 2007).

The strong belief in familism within Imperial County is a distinct characteristic of Mexican culture. As documented in Chapter 3 “Study Area”, Imperial County has a foreign born population of over 30%. Whereas, the city of Calexico, which is the city within Imperial County that directly borders Mexicali, has a Hispanic or Latino origin of approximately 97.8%, and a foreign-born population of 44% (American Census Survey, 2018-2019). These numbers are a strong indication of how culture along the border has assimilated into Imperial County.

Additionally, participants in the study identified culture as not only being linked to multiple persons per household, but also being linked to cross-border family ties. Many participants within this study highlighted the importance of cross-border travel as it relates to visiting family members on the other side of the border. Every participant identified Imperial County and Mexicali as two communities that have interwoven within one another. Participants identified commonalities in cultures that relate to: common language, traditions, foods, and more.

The previous data revealed that both communities, despite being divided by a wall and monitored by federal regulations have assimilated into one another. The history of Imperial County is linked to a strong Mexican culture. This culture has influenced the makeup of the community, which has ultimately presented a challenge in regards to how to deal with COVID-19. Family household structure along with cross-border family ties, can impact the spread of COVID-19 as it influences large group gatherings and international travel. Social Osmosis, or the infusion of culture and knowledge was identified as a major influencer to the COVID-19 spread.

Metropolitan Effects on Rural Population

The third theme was evident through the grounded analysis method. As referenced in Figure 4.2, the most frequently used theme was “community”. The theme community encompassed words such as community, people, and population. These words appeared over 421 times throughout the ten interviews. This is important, because the word “population”, was a strong focal point during interviews when describing COVID-19 and travel.

Every participant indicated that the difference in population size between Imperial County and Mexicali was unique. These statements regarding population growth are best represented in

Table 2.1. Throughout the interviews, participants made it known that the population in Imperial County fluctuates throughout the day, as legal travelers move across the border and into the Imperial County.

We have a population 10 times if not 15 times more just south of us that constantly commutes back and forth throughout the day. I think that's not being taken into consideration when it comes to allocated resources and funding for helping us address the pandemic in our community. - *Participant 7 (Local Government Sector)*

We have a big migrant population. Aside from that, we knew were almost seeing 80,000 people a day crossing our borders. Which we have regulation in California, not regulated in Mexico. And their theories of medicine are not what ours are. – *Participant 8 (State Government Sector)*

The population difference in Imperial County and Mexicali is massive. This difference as stated by participants, does not account for the necessary resources to assist the community. The census recorded population of around 180,000 does not account for the amount of people entering the community on a daily basis. From a business perspective, the more people that enter the community, the better off Imperial County is economically. On the contrary, in terms of COVID-19, and funding, Imperial County was not provided with the resources for more than their estimated population.

Every medical participant stated in their interviews that Imperial County lacks the medical resources that larger cities have access to. As COVID-19 took over both Mexicali and Imperial County, Mexicali hospitals began seeking assistance from Imperial County. Unfortunately, Imperial County only has two very limited hospitals.. Despite this, residents from Mexicali legally crossed the US-Mexico border for assistance. This spillover in medical patients and COVID-19 cases was a result of Imperial County not having the medical resources to accommodate more than

its population. This is attributed to the misleading population of Imperial County. Because of this, it took an event like COVID-19 to expose this weakness in the community.

Ultimately, Imperial County's misleading population, as a result of the movement along the border, took part in contributing to the COVID-19 spread within the community. The population that is not accounted for is a combination of people who reside in Mexicali, and cross the border for work in Imperial County, or residents who reside in Mexicali and travel to the community for other miscellaneous reasons (i.e. family, tourism, etc.). Because of this, the community cannot provide the resources necessary to accommodate such population changes.

Misinformation Through Politics

More than half of the participants in the interviews described instances where there has been misinformation about COVID-19. Interviewees described how misinformation has taken place at the national, state, and local levels of government. Participants stated the following regarding misinformation:

We can always tell how people are not following the recommendations that were set forth by the CDC. Unfortunately, a lot of people simply do not want to wear mask. They are uncomfortable, or there's a constitutional reason for that. And so, they are the ones that have brought in a large amount of patients to the hospitals. – *Participant 2 (Public Health Sector)*

There's been a lot of confusion through COVID. Our governor is getting a huge backlash for all of the sudden changes in procedures. Under political pressure we see officials changing direction, which is my opinion. Of course you have the whole situation with our president, is COVID true? Is it not true? That trickles down, and now you have the chaos of having to get your own county to believe it. – *Participant 9 (Local Government Sector)*

Data collected from the interviews show that politics and misinformation have played a vital role in how COVID-19 has been viewed by communities. When participants were asked if

they have seen a change in residents' perceptions of their organizations during COVID-19, each sector was in agreement that misinformation has impacted their organizations in some shape or form. For example, participants from the public health sector stated that there has been a big misconception regarding hospital safety. Participants explained that people have this idea that hospitals are where you come into contact with COVID-19. According to interviews with public health officials, that information is false. They stated that hospitals are one of the safest places when it comes to preventing COVID-19. This is because hospitals are taking multiple safety measures to stop the spread of the virus. When participants were asked how might they address this issue, more than half of the participants in the interviews were in agreement that the community needs to allocate more funding to public health education in schools.

We first saw COVID-19 being misconstrued at the national level during the presidential election. We saw opposing opinions regarding COVID-19 from President Trump and President Biden. For example, one campaign would host large gatherings, and the other would support small gatherings. One campaign strongly followed CDC guidelines, and the other was relaxed in enforcement. This national disconnect sent community members across the US mixed messages regarding COVID-19.

At the state level, every region in the United States has addressed COVID-19 differently. From day one of the pandemic, until now, we're still seeing division in state COVID policies. While the state of California, New York, and others are closed, the states of Florida, Texas, Arizona, and others are open. This lack of policy cohesion across the board, has driven people to reconsider whether COVID-19 is really as bad as it seems. This has been a direct result of message fatigue, which is the prolonged exposure to the same message. In this particular case, people have

seen the same messages regarding COVID-19 for a whole year. As some states have opened and others have remained closed, people are beginning to grow restless, and become more comfortable taking more risks. One participant went described a scenario that they have observed in the community:

If you've been sitting in your house for over six months, you're going to want to ask yourself: Okay, what's the risk? Is it 20/80? 50/50? 90/10? Maybe I will go out. Maybe I will do what I want. That's been evident with the travel we've seen to open areas. - *Participant 9 (Local Government)*

As politics has played a role in how COVID-19 has been managed by communities, Imperial County has been directly impacted by this. Every participant was in agreement that the conflicting policies in Mexico and Arizona have in some ways influenced COVID-19 in Imperial County. As Imperial County has been closed throughout the pandemic, Arizona and Mexicali have been open. Because where Imperial County sits geographically, residents experiencing message fatigue are more likely to travel 10-30 minutes south to Mexicali, or 45-60 min east to Arizona where businesses are open.

The lack of uniformity in policies relating to COVID-19 will continue to impact areas like Imperial County. Because Imperial County cannot dictate where people choose to travel, residents will continue to move from one open area to another, and back to the community. As supported by the data in this study, the movement from place to place will increase the spread of COVID-19.

5.2 Discussion

This qualitative study focuses on the events and experiences of those impacted by COVID-19 in Imperial County. The results drawn from the data suggests that the movement along the US-Mexico border influences COVID-19 and presents multiple challenges to the community at the

local government level. Additionally, due to the relationship between both Imperial County and Mexicali, this data indicates that the virus was transmitted to both communities from the movement of people crossing both north and south daily. In regards to why the movement along the border has influenced the spread of the virus, most, if not all, participants suggested that it is directly related to a border influenced community capital framework.

Community Framework

Imperial County relies heavily on the border in order to stimulate its economy and maintain its community development. The seven community capitals of Imperial County reveal a direct connection to the border. Because Imperial County's structure, it is unable to break away from being dependent upon the border. As a small rural community that relies on agriculture, retail, trade, and other border related activities, the community does not have the spending power or the ability to use large industries to generate economic support. Imperial County has created a framework that connects to Mexicali. This framework creates opportunities and identifies community strengths. In regards to COVID-19, this framework also presents challenges as it pertains to managing diseases at the border.

As the border ties two communities together, it requires additional attention and regulation. Regulation at the border presents challenges to Imperial County, as the community needs the movement of people along the border to survive. This movement also influences the spread of COVID-19. One of the main themes behind preventing COVID-19 is to limit the amount of exposure and contact with other people and places. This was evident by the federal government putting in place travel restrictions on the border. Due to how Imperial County operates, these restrictions did not impact border travel activity.

In the case of Imperial County, a large chunk of residents have to cross the US-Mexico border daily, which suggest that Imperial County is directly dependent on border travel. As previous studies have shown, COVID-19 is not the first airborne pathogen that has traveled back and forth along the US-Mexico border. As supported in similar research developed in the case study: *Influenza-like illness surveillance on the California-Mexico border, 2004-2009*, findings concluded that the US-Mexico border is one of the busiest crossings in the world. Due to the amount of traffic in the area, a number of viral or other bacteria respiratory pathogens were identified in the research (Kammerer et al., 2012).

Imperial County has built its economy on its cross-border relationship with Mexicali. The border can best be defined as Imperial County's development engine. Imperial County is dependent on Mexicali residents for agricultural activities, retail, trade, etc. For example, both communities play a major role in the economic activity between the US and Mexico. The local agricultural industry and economic trade generate about \$2 billion per year (Higgins, 2021). Whereas, Calexico's East Port of Entry handles all truck traffic entering and exiting the US, and accounts for about \$17 billion in imports and exports annually (Higgins, 2021).

This research supports the idea that the community's framework directly impacts the COVID-19 spread. As Imperial County relies and operates through the movement of people in the community, it increases its chances of spreading the virus. Therefore, it is strongly suggested that the community capital framework in Imperial County has influenced the COVID-19 spread on both sides of the border.

CHAPTER 6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The qualitative findings provided through the interviews allowed for a better understanding of how and why COVID-19 has impacted Imperial County through the movement of people along the international border. The results in this study conclude that the spread of COVID-19 is linked to Imperial County's community capital framework. This framework influences community development, as well the spread of diseases along the border.

Findings suggest that the challenges presented in this case study were tied to the community capital framework shared by both Imperial County and Mexicali. This framework has formed through the assimilation of cross-border movement. The need for travel in the community is essential. Because of this need, addressing COVID-19 in Imperial County has been substantially difficult. As diseases and other airborne pathogens are known to flourish along the border, further findings suggest that Imperial County despite being one of the worst COVID impacted areas in California, has done a great job handling the COVID-19 outbreak. As there has been a political disconnect at the state and federal levels of government, the local level of government has utilized its available resources necessary to manage the COVID-19 spread at the border.

As supported by each individual that participated in the interviews, Imperial County took the necessary steps to provide health equipment, information, and other necessities to people in the community. Despite being critically impacted by COVID-19, Imperial County reached out to Mexicali and assisted their community by taking patients and providing medical resources across the border. When Imperial County reached maximum capacity at the hospitals, they adapted and set up medical tents to assist more people. They also used the gymnasium at the local community

college to assist more people. Imperial County has had to adapt to the onslaught of challenges presented by COVID-19. The community has shown that it takes resiliency to combat COVID-19 along the border. This is evident as Imperial County has seen a recent decline in COVID-19 cases since the start of 2021.

Overall, Imperial County does not have the resources or the policy authority to slow down the spread of COVID-19. Given the community's relationship at the north-south divide, it will continue to be an uphill battle to stop any disease at the border. Imperial County is a community built upon its relationship with Mexicali, Mexico. As found in most border communities, both regions are codependent on each other. Because of this, additional resources and public health assistance needs to be brought to the forefront of policymakers at all levels of government.

Imperial County does not have the ability to close down the border, nor would its community framework ever allow it to. COVID-19 has created challenges for Imperial County, but border communities are resilient. With the border being such a politicized issue, the local government level will have to continue to promote border awareness to the state and federal levels. As Imperial County remains dependent upon the incoming and outgoing movement of people along the border, diseases like COVID-19 will continue to spread in the community. The best way for Imperial County to address the high COVID-19 rates, is to continue to establish a stronger relationship with Mexicali. Imperial County will have to continue to coordinate across international lines to promote better health and safety programs for both US and Mexico.

There were limitations to this study. Comments or statements from a Federal official was pursued, but was ultimately found unsuccessful. Interviews with Federal officials would have provided direct perspectives of what's being done at the border during the COVID-19 outbreak.

Additionally, participants were interviewed one-on-one. Group interviews would have assisted some participants with their feedback on certain interview questions. Lastly, this case study examines only the US side of the border, as it does not capture the experiences and perspectives of those who live in Mexicali. More research is needed to measure the impact of COVID-19 in Mexico, and how the US has impacted its communities.

6.2 Recommendations

Across the board, COVID-19 has and will continue to be a learning experience for everyone. Through recommendations and continued research, communities can be better prepared for the next health-related pandemic. Diseases will not stop at borders, but they can be better prepared for, and managed by communities. This research provides three recommendations:

Recommendation 1: Adherence to CDC Guidelines

Since day one, the Centers for Disease Control and Prevention (CDC) has provided guidance and preventative measures to communities regarding COVID-19. These guidelines include recommendations such as, wearing face coverings, maintaining social distance, avoiding large crowds, etc. Unfortunately, not all people are willing to follow the recommended preventative measures. This is a result of individualist versus collectivist perspective. For those who do not follow guidelines, they not only put themselves at risk, but they put others at risk as well.

Although it may be challenging for everyone to adhere to the regulations provided by the CDC, it is strongly recommended to continue to listen. All in all, the rules and regulations are

intended to make every individual safer. By following the guidelines, you're able to protect yourself and others from the disease.

Recommendation 2: Active Communication Among Federal, State, & Local Levels

The US showed disorganization at the national, state, and local levels of government from the very beginning of the pandemic. The COVID-19 outbreak started as the US was transitioning into the presidential election. Nationally, the US showed divide as both candidates had varying opinions about COVID-19. Because of this, people received mixed messages about COVID-19. At the state level, some communities were opened completely, others were partially opened, and others were completely closed. Each state had different rules and regulations regarding COVID-19 preventative measures. At the local level, communities were developing their own ordinances and guidelines for residents. The disconnect at all levels of government has led to mixed messages and misinformation for every community. The border is political issue that both the federal and state levels of government avoid. Because of this, border communities are left to rethink governance. Local government is directly impacted, and COVID-19 has brought that to the forefront.

In order to better prepare for the future, it is imperative that all levels of government coordinate cohesively as one. This all begins at the federal level, then state, and local government levels. The best way to prevent another devastating pandemic is to have everyone on the same page. With strong communication comes more trust from the community. As trust builds, communities will develop a better relationship with government, which will ultimately lead to a more cohesive response from the people.

Recommendation 3: Proactive Support for Community Vaccines

Towards the end of 2020, the COVID-19 vaccines began to roll out to communities. The current COVID vaccines are intended to lower a person's chances of getting COVID-19 if the person encounters the virus. In order to be declared safe and effective, a COVID-19 vaccine must pass certain tests and standards. Organizations such as the National Academy of Sciences, the National Institutes for Health, and the Food and Drug Administration (FDA) use scientific data from research to help decide if and when new drugs and vaccines can become available to the public. It is important to note that you cannot get COVID-19 from a vaccine. The vaccines contain proteins or other biological substances to stimulate the immune response, but not the coronavirus itself (Kelen and Maragakis, 2021). Border health needs to be recognized equally on both sides. Intergovernmental border health coordination needs to be conducted in both the US and Mexico.

REFERENCES

- Advisory Board. (May 2020) Why Covid-19 hits some places so hard-and not others. <https://www.advisory.com/daily-briefing/2020/05/06/covid-theories>
- American Census Survey. (2018-2019). Imperial County Quick Facts. <https://www.census.gov/quickfacts/imperialcountycalifornia>
- Bacallao, M. L., & Smokowski, P. R. (2007). The costs of getting ahead: Mexican family system changes after immigration. *Family Relations*, 56(1), 52-66. doi:10.1111/j.1741-3729.2007.00439.x
- Baton Rouge General. (2020). Mayo Clinic Care Network. What Does “Novel” Coronavirus Mean? <https://www.brgeneral.org/healthy-lifestyle-blog/2020/march/what-does-novel-coronavirus-mean/>
- Bracken, Michael J. (2018). 9th Annual Southern California Economic Summit. County Economic Report. http://economy.scag.ca.gov/Economy%20site%20document%20library/2018_EconomicReportIMP.pdf
- Bustamante, Arturo Vargas. (2019): US-Mexico cross-border health visitors: how Mexican border cities in the state of Baja California address unmet healthcare needs from US residents, *Journal of Ethnic and Migration Studies*, DOI: 10.1080/1369183X.2019.1597473
- California Department of Public Health (2020). Blueprint for a Safer Economy: Equity Focus. <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/CaliforniaHealthEquityMetric.aspx>
- Castañeda, Leonardo. (Aug 07, 2020). California’s worst natural disaster: compares to other killers. The Mercury News. <https://www.mercurynews.com/2020/08/07/californias-worst-natural-disaster-how-coronavirus-compares-to-other-killers/>
- Cennimo, David J. (Sep 04, 2020). How did coronavirus outbreak start? Medscape. <https://www.medscape.com/answers/2500114-197402/how-did-the-coronavirus-outbreak-start>
- Centers for Disease Control & Prevention (CDC). (2020). Disease & Conditions. <https://www.cdc.gov>
- Central Intelligence Agency (CIA). (2020). The World Factbook. Population Growth Rate. <https://www.cia.gov/library/publications/resources/the-world-factbook/fields/344.html>.
- Cohn, Jeffrey P. (2004). Colorado River Delta. *Bioscience*, Volume 54, Issue 5. Pages 386-391. [https://doi.org/10.1641/006-3568\(2004\)054\[0386:CRD\]2.0CO;](https://doi.org/10.1641/006-3568(2004)054[0386:CRD]2.0CO;)

- Collins-Dogrul, Jullie. (2006). Social Science & Medicine. Managing US-Mexico “border health”. An organizational field approach. Volume 63, Issue 12. Pages 3199-3211.
- Collins, Kimberly. (2020). Governance in Imperial County and Mexicali at the US-Mexico Border during the COVID-19 Pandemic. *Borders in Globalization Review*. Volume 2, Issue 1 (38-41).
- Collins, Kimberly Et Al. (2004) Capitalist Development and Population Growth in the County of Imperial, California, and Mexicali, Baja California. San Diego State University Press Institute for Regional Studies of the Californias. ISBN 0-925613-43-6.
- Congressional Research Services. (2020) US-Mexico Economic Relations: Trends, Issues, and Implications. <https://fas.org/sgp/crs/row/RL32934.pdf>
- Dear, Michael. (2013). Why Walls Won’t Work. Repairing the US-Mexico Divide. http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTAwMHhuYV9fNTYzODU3X19BTg2?sid=921e2ad0-3c50-4621-8c3a-73fcca6b1148@pdv-v-sessmgr02&vid=0&format=EB&lpid=lp_170&rid=0
- Desmond and Turley. (2009). The Role of Familism in Explaining the Hispanic-White College Application Gap. University of Wisconsin-Madison. https://scholar.harvard.edu/files/mdesmond/files/sp5602_05.pdf
- Donelson, A. J., & Esparza, A. X. (2010). *The Colonias reader: Economy, housing, and public health in U.S.-Mexico border colonias*. Tucson, AZ: University of Arizona Press.
- Durazo, Norma Fimbres. (2004). Capitalist Development and Population Growth in the County of Imperial, California, and Mexicali, Baja California. San Diego State University Press Institute for Regional Studies of the Californias. ISBN 0-925613-43-6.
- Ejebe, Ifna et al. (2014) Preventative Medicine. Seasonal influenza vaccination among Mexican migrants traveling through the Mexico-US border region. Volume 71, Pgs. 57-60. https://www.sciencedirect.com/science/article/pii/S0091743514004782?casa_token=ayaoi7TweYgAAAAA:PBf4O7dD2zUuBA8ZeVYuGP43nOqbgXEVlzU4RtwKa5R0zOhlwtalk-JNzRaUgUVcnUB3yN1JQ
- Employment Development Department. (2017). State of California. County to County Commuting Estimates. <https://www.labormarketinfo.edd.ca.gov/file/commute-maps/imperial2013.pdf>.
- Environmental Protection Agency. (2002). Community Culture and environment: a guide to understanding a sense of place. United States Office of Policy. <https://permanent.fdlp.gov/lps33347/20004X0G.pdf>

- Ericson, A. (1970). The impact of commuters on the Mexican-American border area. *Monthly Labor Review*, 93(8), 18-27. Retrieved November 7, 2020, from <http://www.jstor.org/stable/41839773>.
- Fernandez, L., & Carson, R.T. (2003). *Both Sides of the Border: Transboundary Environmental Management Issues Facing Mexico and the United States*. New York: Kluwer Academic.
- Finch, Holmes and Finch, Marie E. Hernandez. (2020). Poverty and Covid-19: Rates of Incidence and Deaths in the United States During the First 10 Weeks of the Pandemic. Department of Educational Psychology, Ball State University, Muncie, IN, United States. https://www.frontiersin.org/articles/10.3389/fsoc.2020.00047/full?utm_campaign=ba-cov-sci-fsoc-usa&utm_medium=cvlp&utm_source=fweb
- Guo, Eileen. (Sep 2017). The Border Commuters. The outline. <https://theoutline.com/post/2219/the-border-commuters>
- Harrington, Theresa. (Oct 20, 2020). Ed Source. Quick Guide: What California's color-coded county tracking system means for schools. <https://edsource.org/2020/quick-guide-what-californias-color-coded-county-tracking-system-means-for-schools/639357>
- Henry. (Apr 2018). Importance of a Community Culture. Negotiationisover.net. <https://negotiationisover.net/importance-of-a-community-culture/>
- Higgins, Bill. (Jan 2021) Imperial's Mission Borders on Diplomacy. CALOG. <https://calcog.org/imperials-mission-borders-on-diplomacy/>
- Homeland Security. (Oct 2019). Fact Sheet: DHS Measures on the Border to Limit the Further Spread of Coronavirus. <https://www.dhs.gov/news/2020/10/19/fact-sheet-dhs-measures-border-limit-further-spread-coronavirus>
- Imperial County, (2015). Comprehensive Economic Development Strategy 2016-2017 Annual Update. Report. Pg. 1-62. <https://www.co.imperial.ca.us/announcements/PDFs/Imperial%20County%20CEDS%202015%20to%202016%20Annual%20Update.pdf>
- Imperial County, (2020). Comprehensive Economic Development Strategy 2018-2023 Annual Update. Report. Pg. 46. http://www.imperialcountyced.com/media/managed/Revised_FINAL_CEDS_Document_09_08_20_CEDS_Document.pdf
- Imperial County, (Dec 2015). 2020 Strategic Plan. Report. Pg. 12. <https://www.co.imperial.ca.us/otherpdfs/2020Plan.pdf>
- Imperial County. (2021). Welcome to our County!. <https://imperialcounty.org>

- Imperial Valley Economic Development Corporation (IVEDC). (2021). Retail and Trade. <https://www.statebook.com/site/imperial-valley-economic-development-corporation-ca/industries/#employment>
- John Hopkins University. (2021). Coronavirus Resource Center. <https://coronavirus.jhu.edu/region/united-states>
- Kelen, Gabriel David and Margakis, Lisa Lockerd. (2021). COVID-19 Vaccine: What You Need to Know. John Hopkins Medicine. <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/covid-19-vaccine-what-you-need-to-know>
- Kammerer, Peter E et al. "Influenza-like illness surveillance on the California-Mexico border, 2004-2009." *Influenza and other respiratory viruses* vol. 6,5 (2012): 358-66. doi:10.1111/j.1750-2659.2011.00316.x
- Lah, Kyung et al. (Jul 09, 2020). Medics are down to their last defense with coronavirus swamping their town. CNN. <https://www.cnn.com/2020/07/09/us/california-coronavirus-imperial-county/index.html>
- Levin, Matt and Christopher, Ben. (Aug. 2017). Californians: Here's why your housing costs are so high. Cal Matters. <https://calmatters.org/explainers/housing-costs-high-california/>
- Lockey, Stephen D. (Jun 03, 2020). What's Important: What is our Role in the COVID-19 Pandemic? https://journals.lww.com/jbjsjournal/fulltext/2020/06030/what_s_important_what_is_our_role_in_the_covid_19.2.aspx
- My Life Elsewhere. (2020). Cost of Living Comparison. <https://www.mylifeelsewhere.com/cost-of-living/mexico/california-usa>.
- New York Times. (2021). Coronavirus in the US: Latest Map and Case Count. <https://www.nytimes.com/interactive/2020/us/california-coronavirus-cases.html>
- Orraca-Romano Paulo, Pedro. (Mar 2017). Cross-Border Earnings of Mexican Workers Across the US-Mexico Border. <https://www.tandfonline.com/doi/full/10.1080/08865655.2017.1294025>
- Orraca-Romano Paulo, Pedro. (2013). Immigrants and Cross-Border Workers in the US-Mexico Border Region. <http://www.scielo.org.mx/pdf/fn/v27n53/v27n53a1.pdf>
- Paasi, Anssi. (2009). Regions and regional dynamics. https://www.researchgate.net/publication/316318918_Regions_and_regional_dynamics
- Pérez, David Marical. El Pais. (2017). Mexicans working in the United States earns six times more than at home. https://english.elpais.com/elpais/2017/02/01/inenglish/1485948570_616168.html

- Phippard, Alba et al. (Aug 2013). Understanding Knowledge, Attitudes, and Behaviors Related to Influenza and the Influenza Vaccine in US-Mexico Border Communities. <https://search.proquest.com/docview/1372932624/fulltextPDF/1E7A43612D1495FPQ/1?accountid=10906>
- Plevin, Rebecca. (Jun 08, 2020). You're about to get the surge: How Imperial County is handling a bi-national health crisis. The Desert Sun. <https://www.desertsun.com/story/news/politics/immigration/2020/06/08/how-imperial-county-along-california-mexico-border-handling-bi-national-health-crisis/5281205002/>
- Rangel, G., & González, R. (2006). Situación de la salud en la frontera norte de México. In G. Ordóñez Barba & M. Reyes (Eds.), *Los retos de la política social en la frontera norte de México* (pp. 181-211). Tijuana, México: El Colegio de la Frontera Norte.
- Thomas Rivera Policy Institute. (Sep. 2005). The Economic Impact of the Mexico-California Relationship. https://www.immigrationresearch.org/system/files/Tomas_Rivera_-_The_Economic_Impact_of_the_Mexico-California_Relationship.pdf
- Schaefer, Annette. (Oct 01, 2005). Commuting Takes Its Toll. Scientific American. <https://www.scientificamerican.com/article/commuting-takes-its-toll/>
- Solis, Gustavo. (Jun 14, 2020). Imperial County has highest rate of COVID-19 cases in the state; it wants to reopen anyway. San Diego Tribune.. <https://www.sandiegouniontribune.com/news/story/2020-06-14/imperial-county-has-highest-rate-of-covid-19-cases-in-the-state-it-wants-to-reopen-anyway>
- Spagat, Elliot. (2020). Virus ravages poor California county along Mexican Border. <https://apnews.com/article/e96cf8b8d080b626f50b5c485300b242>
- Talmage, C.A., Pijawka, D. & Hagen, B. Re-Examination of Quality of Life Indicators in US - Mexico Border Cities: a Critical Review. *Int. Journal of Com. WB* 2, 135–154 (2019). <https://doi.org/10.1007/s42413-019-00029-7>
- United States-Mexico Border Health Commission. (2020). Healthy Border 2020: A Prevention & Health Promotion Initiative. <http://docplayer.net/36083754-Healthy-border-2020-a-prevention-health-promotion-initiative.html>
- United States Department of Transportation. (2020). Bureau of Transportation Statistics. Border Crossing/Entry Data. <https://www.bts.gov/content/border-crossingentry-data>
- Vives, Ruben. (Jul. 2020). Underserved and underfunded: Inside California's county hit hardest by COVID-19. Los Angeles Times. <https://www.latimes.com/california/story/2020-07-28/imperial-county-coronavirus-rural-california>
- Warren Democrats. (2020). Justice for Border Communities. <https://elizabethwarren.com/plans/justice-for-border-communities>

Wichtner-Zoia, Yvonne. (2013). What are community capitals? Michigan State University.
https://www.canr.msu.edu/news/what_are_community_capitals

Yong, Ed. (2020). How the Pandemic Defeated America The Atlantic.
<https://www.theatlantic.com/magazine/archive/2020/09/coronavirus-american-failure/614191/>

APPENDIX A. INTERVIEW QUESTIONS**IOWA STATE UNIVERSITY****College of Design**

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<http://www.design.iastate.edu>**Interview Questions****COVID-19 and the Movement of People along the US-Mexico Border****Case Study: Imperial County***Personal Introduction*

- 1) Can you please tell me your:
 - Name
 - Organization that you work for
 - Your Position
 - Please describe your current position?
- 2) How has COVID-19 changed the work you do in this position?
- 3) How has the pandemic changed how your organization functions?

COVID-19 Spread

- 4) What are the major factors that have contributed to the COVID-19 spread in Imperial County?
- 5) How has your organization addressed some of these factors?

COVID-19 Organizational Impact

- 6) How has the pandemic changed how residents view your organization?
- 7) What actions should or could have been taken by other organizations within the County of Imperial that might have slowed the spread? (Ask for an example).

Geographical Location

- 8) What is your perception of the actions taken to slow the spread of COVID-19 in Imperial County compared to neighboring areas?

- 9) How does the location of Imperial County in relation to the US-Mexico border shape the culture, economy, and way of life in the County?

Travel Behavior

- 10) What is your understanding of the regional commuting patterns in Imperial County? Can you explain the patterns of commuting that you have identified?
- 11) What are the main reasons that people who live and work in Imperial County cross the US-Mexico border?

Community Involvement

- 12) What can the community do to minimize and prevent COVID-19 from spreading?
- 13) What policies and/or programs have you found most helpful to deal with COVID-19 in the County? Why?

Recommendations

- 14) What do you think are the most important lessons from dealing with the spread of COVID-19 in Imperial County?
- 15) What are the strategies that the County should implement to avoid the spread of a future pandemic?
- 16) Is there anything else you would like to add regarding COVID19 in Imperial County?