

Violence and local business in the city of Tijuana

Final project of the Professional Certificate
IBM Data Science

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1 Introduction

1.1 Background

Tijuana is one of Mexico's largest and fastest-growing cities and it is the home of 3.4 million people in 2014 [1], making the largest Mexican city on the U.S.-Mexico border. The city is home to roughly 49 % of Baja California's population while comprising only around 2 % of the state's territory [10]. Tijuana reportedly grows at an annual rate of 35,000 people per year, or nearly 96 new inhabitants per day, drawing large numbers of immigrants from elsewhere in Mexico to join the city's robust economy [6]. Today, nearly 190,000 people cross the border between Tijuana and neighboring San Diego daily for work and other recreational pursuits[10]. The city's proximity to Southern California and its large, skilled, diverse, and relatively inexpensive workforce make it an attractive city for foreign companies looking to establish extensive industrial parks composed of assembly plants that are called "maquiladoras", even more so than other cities in the US-Mexican border zone, taking advantage of the North American Free Trade Agreement (NAFTA) to export products [20]. In the past decade alone, Tijuana became the medical device manufacture capital of the North American continent, surpassing previous leader Minneapolis - Saint Paul and one study estimates that this region is responsible for roughly 40 % of all audio-visual manufacturing in North America [34]. But the abundance of jobs does not go hand in hand with a better quality of life. According to a recent study in 2018 by the National Council for the Evaluation of Social Development Policy (CONEVAL, for his name in Spanish), almost 70 % of the population lives in conditions of poverty [9], there are lots of jobs but very low wages and poor conditions for Social mobility.

Given the geographic point of the city, a rise of violence related to drug trafficking and organized crime groups has been seen in the past decades [11]. The city also has high levels of drug use that are shaped by its proximity to the United States, but still, there is not an analysis or even data of the real problem [27]. Drug violence continues to dominate in Tijuana, wherein 2017 had more homicides than any other city in Mexico, in a record year for national homicide figures, in 2017 one out of twenty murders in Mexico took place in Tijuana. There is not a concise analysis of the violence in the city from the government. This work is the start of what I hope becomes that concise analysis, starting with a focus on the effect of the violence on the local business.

1.2 Personal motivation

I grew up in Tijuana, and lived there for 18 years of my life. Since I have memory violence has been part of the city, and living in one of the most violent neighborhoods ("Sanchez Taboada") helped me realize that from a young age. From my personal experience, after a while you get used to it, violence becomes normal, expected, the fear of getting mugged, shot or, for women, being raped, is something that is not always in the front seat of your mind but its always there, in the back, on stand by. Being in the street in the night means danger, if you hear a gunshot near your house you don't call the police because they are, sometimes, more dangerous than the criminals [12]. Fear of walking on the streets of other cities in Mexico is a constant in my life, I got used to that, I can go on with my life, but every time I visit my parents in Tijuana, I get scared, the fear grows exponentially every time I come back, the same as the violence and poverty. Just as an example, a year ago taxis and apps services like Uber started to refuse to go to my old neighborhood after 7:00 pm, because of the fear of getting mugged or killed [21].

I don't want to be afraid of the city where I grew up, of Mexico, and a need to understand the problems that affect it has been growing in me. Perhaps, if I understand the intricacies of the city my fear will start to work as a fuel to help in a small way, and in time, give the tools to make real changes.

So, what are the causes of the rise in violence?, why the place I grew up is one of the more violent ones in the city? perhaps living in poverty is the cause of the violence, or is the lack of a good justice system, is

it the Carteles fault? or is it a much deep problem in the foundations of our society?. These questions must be answered by the people in charge of the city, the government, but in the research that I have done in these past months, I have not found a clear investigation of the causes of violence in Tijuana from the government of Mexico, the only clear investigation I found was of Justice for Mexico a U.S.-based initiative with some interesting analysis but with much space to grow. The answers of the Mexican government are always the same, the "bad guys" need to be put in jail and the violence will go away, but this has not worked in decades and it will never work [18, 8].



Figure 1: National guard in the Camino Verde neighborhood in Tijuana [36], a response of the new government the past year to the increase in violence and the crisis of migration. A response that many have taken as the first intent of militarization of the country [35, 38]. Photo from [36].

1.3 Problem

The big picture of this project is to analyze the available data of Tijuana, the crime, education, migration, and economics search for the story behind the violence; where are the correlations?; why there are rises of violence in certain neighborhoods?. This is an ambitious project and I'm aware of that, I'm still learning data science and this type of analysis is new to me but with so much personal motivation behind, I can learn faster and at the same time find interesting results. The project will be divided into the necessary parts, the first one that I will present as a final project in the specialization in Coursera "IBM Data Science" is about the relation between violence and local business in the most violent neighborhoods of Tijuana. The question is, **What are the common business in the more violent neighborhoods in the city of Tijuana?**

1.4 Target Audience

What type of clients or a groups of people would be interested in this project?

- The entrepreneurs that want to invest in violent neighborhoods could identify types of business that are missing in the community.
- The authorities in charge of the neighborhood could see windows of opportunity to help the more common type of business to prosper, offering credits or orientation on management.
- The residents could understand better the data of their community

2 Data acquisition and cleaning

The program used in this section is in my Github following this link

2.1 Crime

The data about Tijuana online is poor but thanks to new policies in the government a couple of years ago, more data is becoming available. In the case of crime, there is only one place I could find available information, the official website of State Security and Investigation Guard of the state ("Guardia Estatal de Seguridad e Investigación") [28], but this information was highly incomplete. Let's start reviewing the dataset, quoting the website, "The databases contained in this section only breaks down a selection of crimes considered to be of the high and medium impact that threaten the life and integrity of people and their heritage", so the data is incomplete and it could not find a more complete dataset. The translation of the data from Spanish to English in the crimes was done the best I could but, in legal terms there may be some difference in the definition of each crime. The classification of the crimes is as follows:

- Vehicle theft with and without violence
- Residential burglary with and without violence
- Business theft with and without violence
- Robbery with violence on public roads
- Simple robbery on public areas
- Other robberies without violence
- Other robberies with violence
- Malicious wounding
- Unlawful wounding
- Homicide (Violent)
- Kidnapping.

As you can see, the classification left out some very important crimes, such as extortion, Femicide and sexual assault, very common crimes in Tijuana [13, 30, 23]. For some reason, the state attorney doesn't consider rape in the category of "crimes considered to be of the high and medium impact that threatens the life and integrity of people". Now, to understand the fields included in the databases, a little explanation is needed. First, Mexican states are divided into municipalities, rather than counties as in the United States. Tijuana is a municipality of Baja California state. The municipality of Tijuana is divided into administrative boroughs (Districts) or "Delegaciones". The boroughs are in turn divided into "Colonias", the best translation of "Colonias" is Neighborhood. I will focus my analysis on the "Colonias" so I will use that translation. The classification of the crimes is as follows:

- CRIME: Refers to the registered crime
- CRIME CLASSIFICATION: Refers to the crime classification cited above.
- NEIGHBORHOOD OF THE CRIME: Refers to the neighborhood where the crime was committed.
- DATE OF RECORD OF THE CRIME: Date in which the report of the crime began. This date is the one used for the statistical count according to month, day and year.
- DATE OF THE CRIME: Date on which the crime was committed (sometimes it is not the same as the Date of Registration of the Crime), since the crime could be reported on one date and committed on another.
- TIME OF THE CRIME: Hour in which the crime was committed.
- MUNICIPALITY: Municipality where the crime was registered.

The sources of this data are the State Attorney General and were processed by the State Intelligence Center-Statistics Coordination.

2.2 Local businesses

Given the information about crime in certain neighborhoods, I want to explore the local businesses in those neighborhoods. I used **Foursquare API** to get the venues of a given neighborhood, but to do that I needed the coordinates. This was more difficult than expected. My first thought was to use the 12 Districts ("Delegaciones") of the city and base the analysis on crime in each district. The big problem I faced with this idea is that I couldn't find a list of the neighborhoods ("Colonias") that each district has. In the official website of the Metropolitan Planning Institute of Tijuana (IMPLAN) there is an interactive map where you can select the district and the territory appears in the map[17], but in Tijuana there are more than 3000 neighborhoods and looking for each neighborhood that is part of each district this way is too complicated; as surprising that this sounds, on any official website of the government of Tijuana I couldn't find more information about the districts. So, the next best analysis I could do is to focus on the more violent neighborhoods.

Now, understanding what type of local businesses are expected is tricky as well. For example, the wave of so-called "medical tourism" has been so great in recent years that the city received around 1.2 million patients in 2018 who came seeking health treatment from the United States. The low costs of consultations, procedures, drugs, and surgeries - prices between 30 % and 70 % less compared to the US - make the city prosper as a great health center [3].



Figure 2: Multiple pharmacies offer discounts on medications. Their English signs are focused on attracting Americans. Photo from [3].

So, many pharmacies are expected but also there is a lot of informal commerce, its estimated that more than 30 % of businesses in Tijuana are informal, so the information that Foursquare API can provide will not be capable to provide a clear picture of local businesses in the city.



Figure 3: The so called "Sobreruedas" (flea markets), very common all over the city. Photo from [33, 29]

2.3 Coordinates of neighborhoods

To get the coordinates of each neighborhood I used geopy, a Python 2 and 3 client for several popular geocoding web services, geopy makes it easy for Python developers to locate the coordinates of addresses, cities, countries, and landmarks across the globe using third-party geocoders and other data sources [32]. The problem was that many neighborhoods of Tijuana didn't appear to have coordinates in geopy, the results were NaN. The solution for the moment was to put the rest of the coordinates manually, the problem is that there is more than 3000 neighborhoods, so I choose to focus on the 100 more violent. Some considerations were done in this part:

- The Mariano Matamoros Centro neighborhood has not coordinates available in google or other online, so I renamed it as the closest neighborhood, in this case, Mariano Matamoros.
- I couldn't find the coordinates of the Tres de Octubre neighborhood, the problem was the "Tres", so I changed it to the number 3.
- The Obrera Seccion 1 and Fraccionamiento Natura neighborhoods had the same problem as Mariano Matamoros Centro, the same process was done, in this case, the closest neighborhood is Obrera and Fraccionamiento Hacienda las Delicias.

- The division between Sanchez Taboada Produsta and Sanchez Taboada neighborhoods is non-existent these 2 are always taken as one, so I did the same.
- The Foranea and Hacienda Las Fuentes neighborhoods had the same problem as Mariano Matamoros Centro but this time I couldn't find in any map online their locations. I decided to eliminate both of them from the data.

3 Methodology

The program for the histograms used in this section is in my Github following this link and for the maps this one

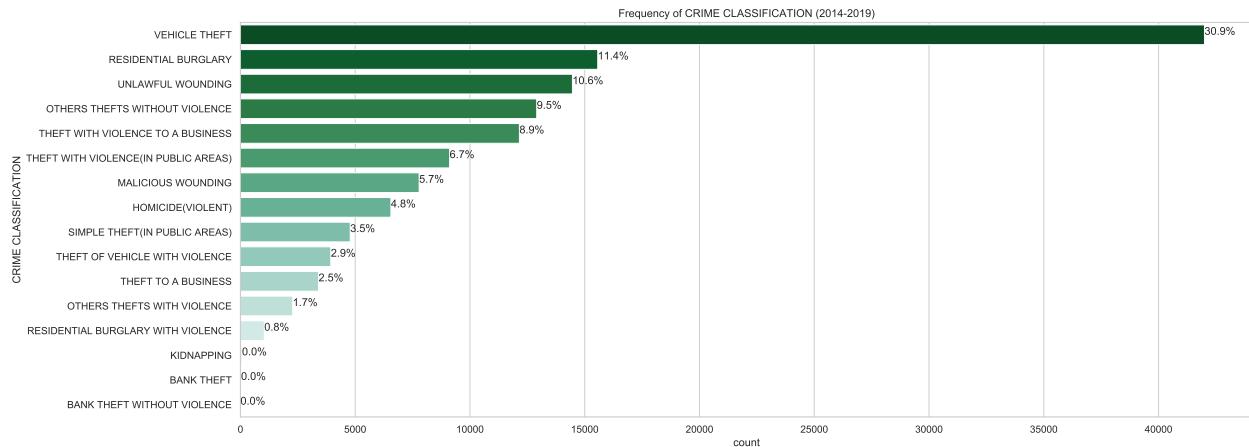


Figure 4: Frequency of the crime classification in the period 2014-2019

The state of Baja California is the first place in vehicle theft in the country [25], and it is not surprising that in Tijuana the numbers of this crime are so big. An analysis of each crime is of importance, but in this work, the focus will be on violent crimes, especially theft to business with violence and homicides. So, we can divide the data just with violent crimes as follows:

- Robbery with violence (public areas)
- Theft with violence to a business
- Theft of vehicle with violence
- Other robberies with violence
- Residential burglary with violence
- Malicious wounding
- Homicide (Violent)

This violent crimes are only the 31.49 % of the total crimes presented in the data, but this type of crimes are the ones that affect more the life in the city.

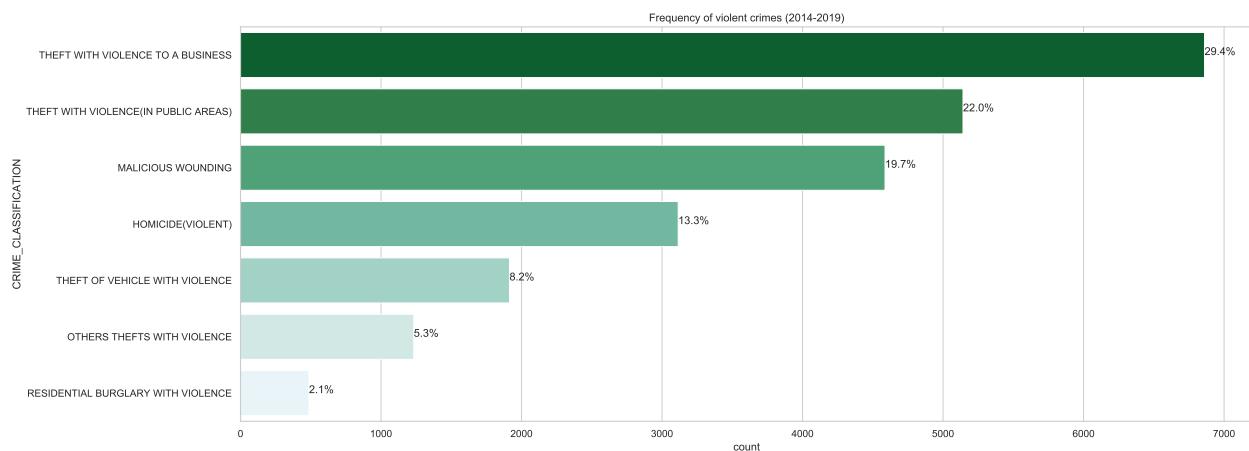


Figure 5: Frequency of violent crimes in the period 2014-2019

From figure 5, theft with violence to a business is the more common crime, a problem that the private sector has been demanding attention to the authorities [2].

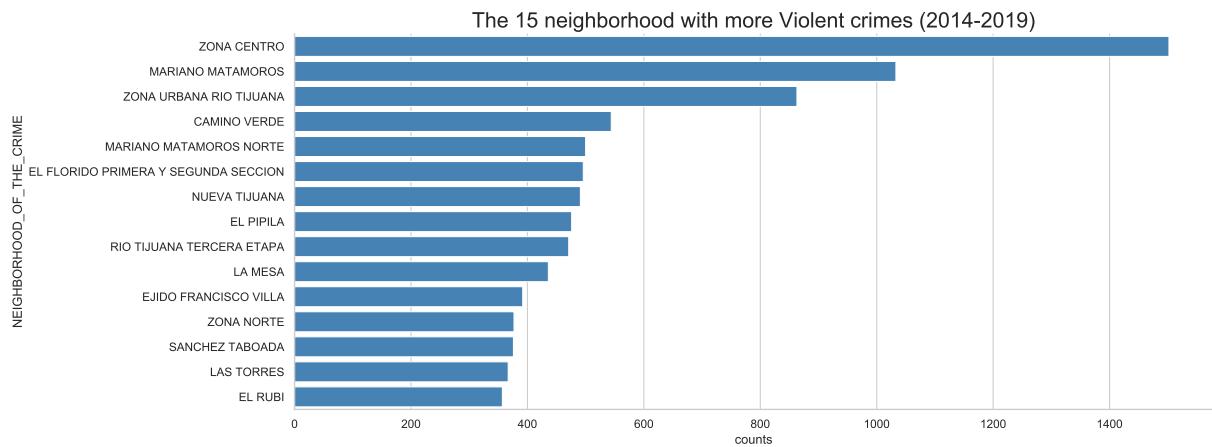


Figure 6: The most violent neighborhoods are as expected, this list has always been the same.

In Figure 6 the 15 most violent neighborhoods are shown. The figure 7 show clusters of the number of crimes in the 100 more violent neighborhood, following the link in the description it can be seen the number per neighborhood.

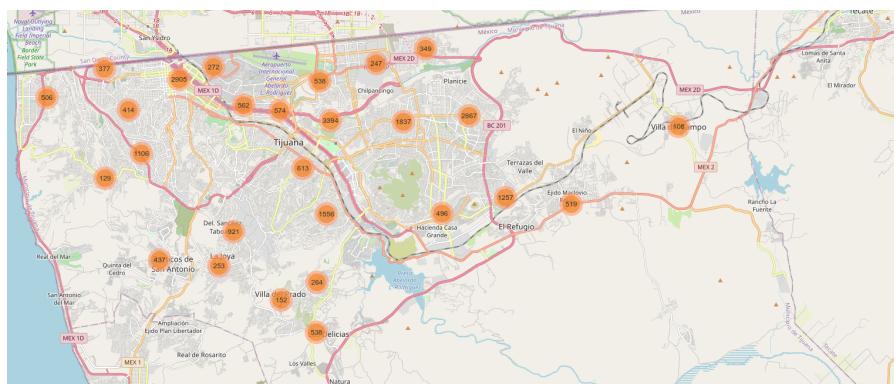


Figure 7: Map that show the 100 most violent neighborhoods and the number of violent crimes in each one. To watch the interactive map follow this link.

Now we will focus on: theft with violence to a business, and homicides; which are strong indicators of the safety of a neighborhood.

3.1 Theft with violence to a business

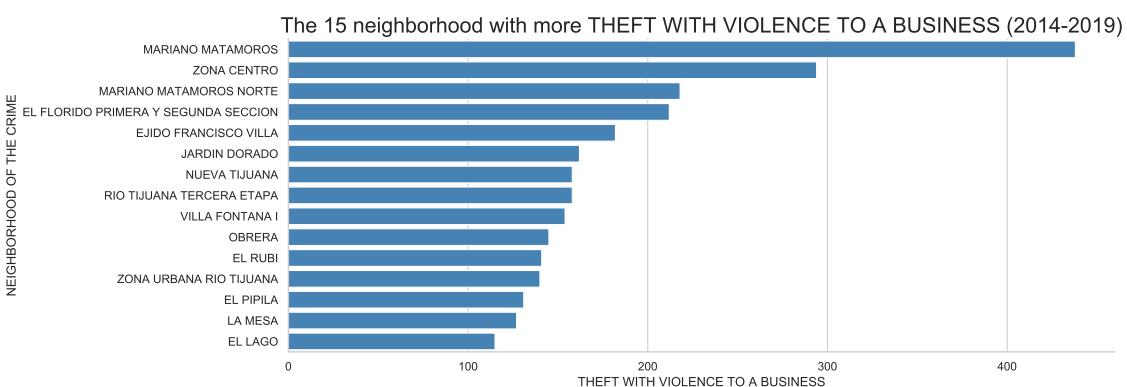


Figure 8: The neighborhoods with the highest number of thefts with violence to a business

In figure 8 the 15 neighborhoods with more thefts with violence to a business are shown. The figure 9 is a map of clusters where the color red indicates a high number of this type of crime.

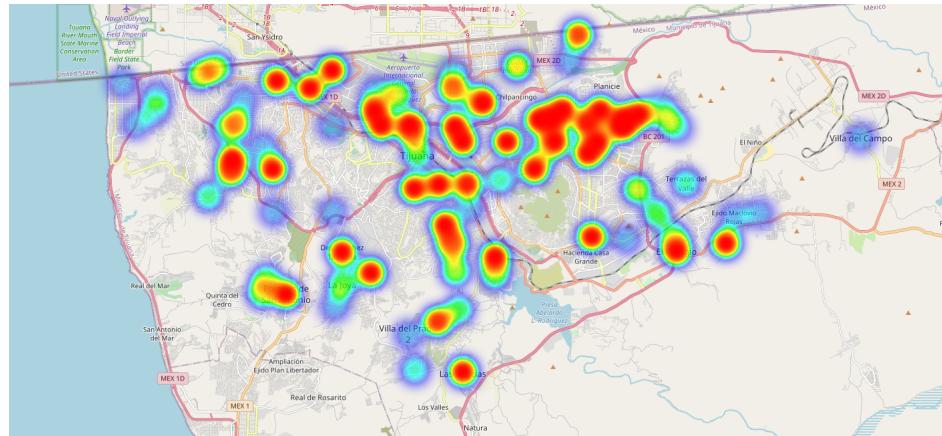


Figure 9: Map that show the number of thefts with violence to a business in the 100 more violent neighborhoods, the intensity of red means higher number of thefts in that area. To watch the interactive map follow this link.

In figure 10 the frequency of theft with violence to a business are shown. We can see that this type of crime is more common in the night having a peak at 0 hours. The 2017 year was the one more dangerous to business and the least one was 2015, the 2018 and 2019 year show not a change.

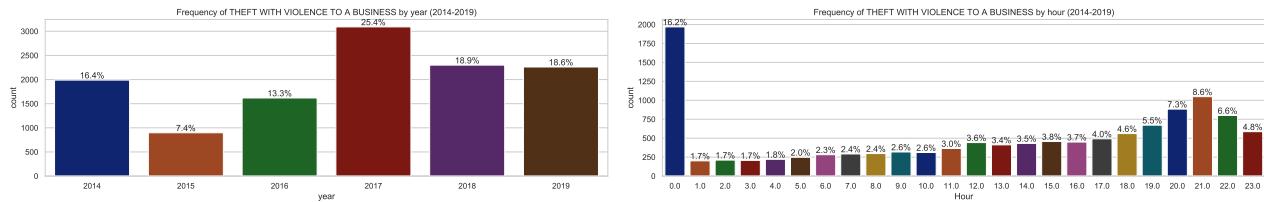


Figure 10: Frequency of theft with violence to a business by year and hour

3.2 Homicides

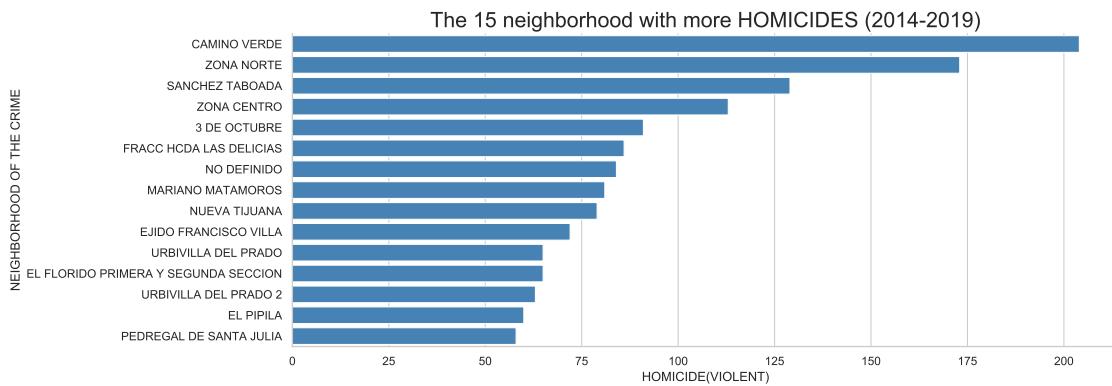


Figure 11: The neighborhoods with the highest number of homicides

In figure 8 the 15 neighborhoods with more homicides are shown. The figure 9 is a map of clusters where the color red show a high number of this type of crime.

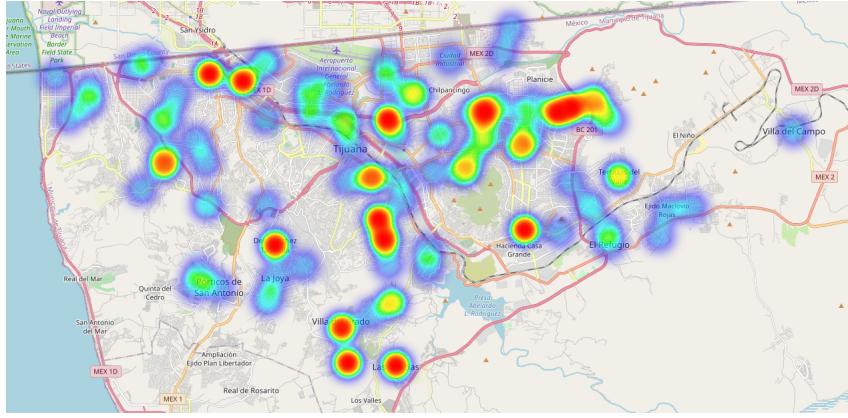


Figure 12: Map that show the number of homicides in the 100 more violent neighborhoods, the intensity of red means more homicides in that area. To watch the interactive map follow this link

In figure 12 the frequency of homicides are shown. We can see that this type of crime, surprisingly, is common during the daylight and afternoon having a peak at the 7, 20, 21 and 22 hours. The 2018 year was the most dangerous and the least one was 2014, the 2019 year shows a small change for the better.

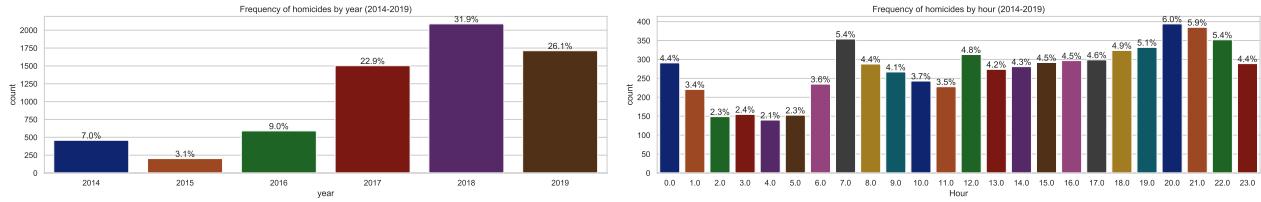


Figure 13: Frequency of homicides by year and hour

3.3 Local businesses

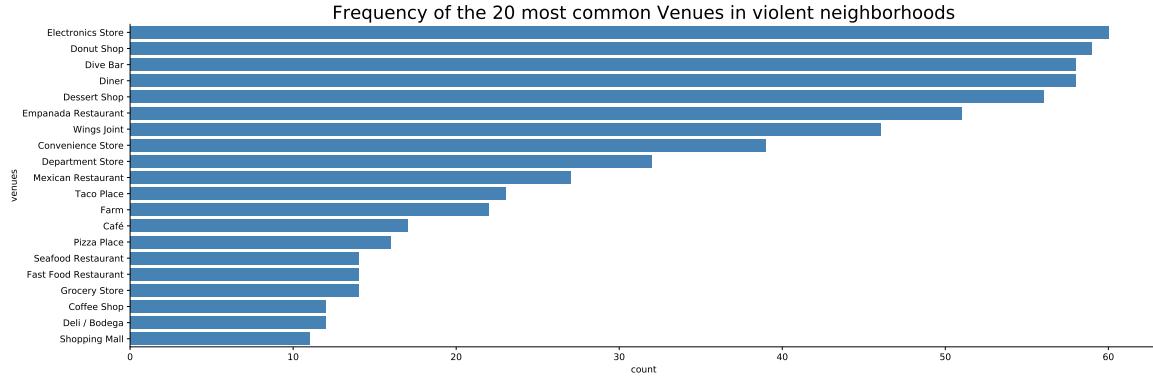


Figure 14: Frequency of the more common venues in violent neighborhoods

In Figure 14 the frequency of the more common venues in violent neighborhoods are shown. This histogram was made using the Foursquare API searching for the more common venues in the 100 more violent neighborhoods of the city. The most common one are electronic stores which, making a quick search in Foursquare City Guide, refers mostly to the sale of smartphones, their accessories and the internet providers offices. The second and third more common are donut shop and dive bar.

| NEIGHBORHOOD_OF_THE_CRIME | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------|----------------------------|-----------------------|
| CAMINO VERDE | Convenience Store | Diner | Wings Joint | Food | Comfort Food Restaurant | Construction & Landscaping | Creperie |
| SANCHEZ TABOADA | Shopping Mall | Breakfast Spot | Bus Stop | Wings Joint | Diner | Empanada Restaurant | Electronics Store |
| ZONA CENTRO | Bar | Mexican Restaurant | Convenience Store | Restaurant | Cocktail Bar | Gay Bar | Shopping Mall |
| ZONA NORTE | Bar | Brewery | Café | Pharmacy | Movie Theater | Museum | Theater |

Figure 15: The 4 neighborhoods with more homicides and there most common venues

| NEIGHBORHOOD_OF_THE_CRIME | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue |
|-------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| EJIDO FRANCISCO VILLA | Taco Place | Department Store | Mexican Restaurant | Supermarket | Electronics Store | Donut Shop | Dive Bar |
| EL FLORIO PRIMERA Y SEGUNDA SECCION | Mexican Restaurant | Pizza Place | Cafe | Wings Joint | Department Store | Electronics Store | Donut Shop |
| MARIANO MATAMOROS | Food & Drink Shop | Garden Center | Wings Joint | Fast Food Restaurant | Empanada Restaurant | Electronics Store | Donut Shop |
| MARIANO MATAMOROS NORTE | Food & Drink Shop | Garden Center | Wings Joint | Fast Food Restaurant | Empanada Restaurant | Electronics Store | Donut Shop |
| MARIANO MATAMOROS SUR | Food & Drink Shop | Garden Center | Wings Joint | Fast Food Restaurant | Empanada Restaurant | Electronics Store | Donut Shop |
| ZONA CENTRO | Bar | Mexican Restaurant | Convenience Store | Cocktail Bar | Beer Bar | Coffee Shop | Restaurant |

Figure 16: The 5 neighborhoods with more theft with violence to a business and their more common venues

In figure 15 the more commons venues in the 4 neighborhoods with more homicides are shown. The more commons venues are bars and food vendors.

| NEIGHBORHOOD_OF_THE_CRIME | counts | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue |
|------------------------------------|--------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| EL RUBI | 357 | NaN |
| 20 DE NOVIEMBRE | 273 | NaN |
| FRACC HCDAS LAS DELICIAS | 268 | NaN |
| TERRAZAS DEL VALLE | 264 | NaN |
| ANEXA LOMA DORADA | 244 | NaN |
| PEDREGAL DE SANTA JULIA | 231 | NaN |
| ALTIPLANO | 226 | NaN |
| 10 DE MAYO | 197 | NaN |
| 3 DE OCTUBRE | 195 | NaN |
| VALLE VERDE | 181 | NaN |
| EL LAUREL | 173 | NaN |
| URBIVILLA DEL PRADO 2 | 152 | NaN |
| SECCION JARDINES PLAYAS DE TIJUANA | 148 | NaN |
| LAZARO CARDENAS | 144 | NaN |
| EMPERADORES | 137 | NaN |
| SANTA FE | 118 | NaN |
| CIUDAD JARDIN | 101 | NaN |
| GUADALUPE VICTORIA | 97 | NaN |

Figure 17: The Foursquare API didn't find venues in 18 neighborhoods

In figure 16 the 18 neighborhoods with not venues in Foursquare are shown.

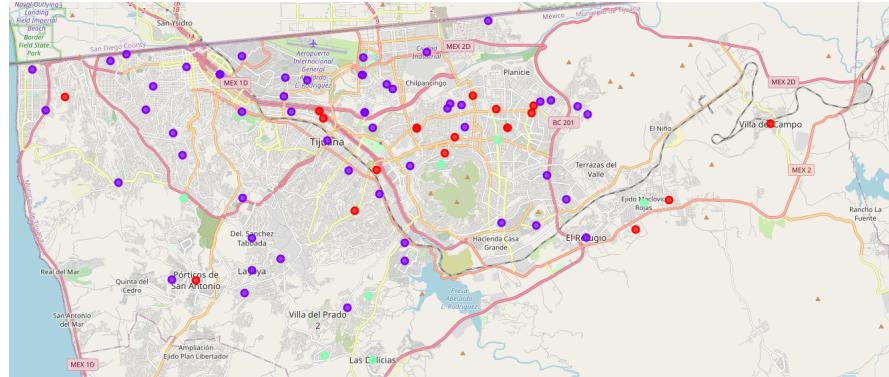


Figure 18: Clusters of the most common venues in the violent neighborhoods of the city. The purple and red dots are mostly restaurants and bars, the green dots are mostly convenience stores. To watch the interactive map follow this link

4 Results and discussion

As you can see from the data, the number of homicides is accompanied by the word violent in parenthesis. For me, this is strange, I couldn't find more information about the definition of this classification. What I can infer is that this data only shows what is considered a violent homicide and the rest are ignored, this is very disturbing. The number of homicides that are not considered violent could be higher.

The information about the most common venues in the neighborhoods is poor, 18 didn't show any venues. The rest one is to be considered incomplete considering the informal commerce [33] is very high in the city and that Foursquare is based in user input but 43 % of Mexicans are digital illiterates and only 39 % of households have a web connection [16]. The information available in Foursquare doesn't show the complete picture of the business in the city.

Taking all this problems, we can see that the more important local business are food related, restaurants, desserts shops and street food. The bars are in the neighborhoods closest to the border, at least in the violent ones.

The 5 neighborhoods with more homicides and theft with violence to a business are as follows:

| Homicides (Violent) | Theft with violence to a business |
|----------------------------|--|
| 1.- Camino Verde | Mariano Matamoros |
| 2.- Zona Norte | Zona Centro |
| 3.- Sanchez Taboada | Mariano Matamoros Norte |
| 4.- Zona Centro | El Florido 1era y 2da Seccion |
| 5.- 3 de Octubre | Ejido Francisco Villa |

Only the Zona Centro repeats in the top 5 of both crimes. Given the impact of homicides rates in a community, I will focus in the 5 neighborhoods with more homicides and put in context those numbers.

Camino Verde and Sanchez Taboada

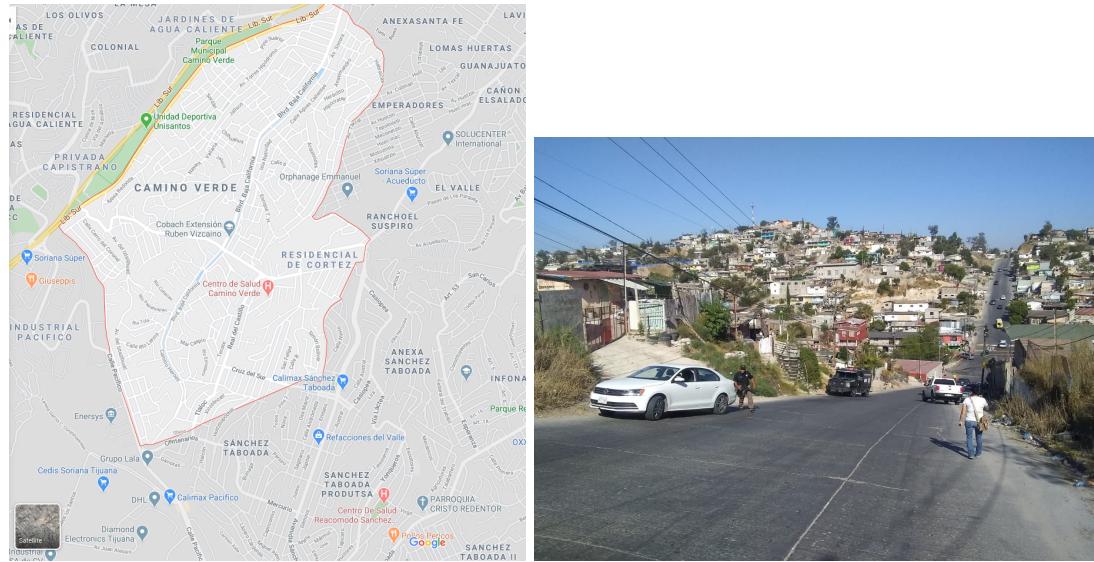


Figure 19: Map showing the Camino Verde neighborhood

In figure 18 a map of the Camino Verde and Sanchez Taboada neighborhoods is shown, as it can be seen they are side by side, there is not a clear division. Both neighborhoods can be considered as one big zone with very high homicides rates.



Figure 20: Geological faults and sinkings that destroys thousands of homes in the Sanchez Taboada neighborhood. Photo from [31, 26].

Since a couple of years ago, there have been geological faults and sinkings that destroys thousands of homes in the Sanchez Taboada neighborhood [31, 26], causing a staggering 2000 approximate number of people whiteout homes. The repercussions in violence and drug addiction in an already poor community have not been investigated.

Zona Norte and Zona Centro

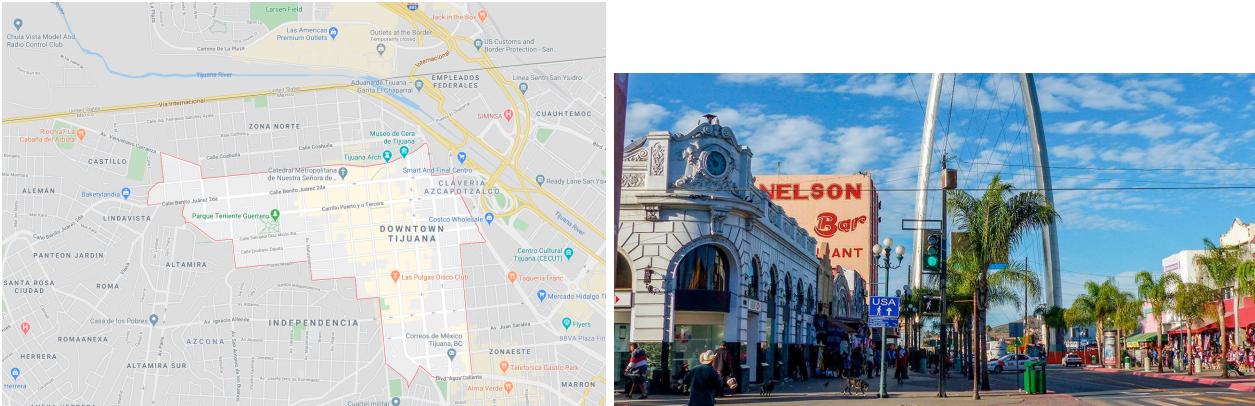


Figure 21: Map showing the Zona centro (Downtown Tijuana) neighborhood

In figure 20 a map of the Zona Norte and Zona Centro neighborhoods are shown, the same as the Camino Verde and Sanchez Taboada, they are side by side. It can be considered another big zone of violence. The Zona Centro is one of the oldest neighborhoods of the city and one of the most visited by tourists given the location close by the frontier.



Figure 22: The Tijuana River is inhabited by many homeless. Between them are a high number of migrants deported from the United States. Photo from [37, 4, 22].

Close by the Zona Norte and Zona Centro is the Tijuana River, which has been used as a wastewater conduit since at least the early 20th century. The tunnels of the River are inhabited by a high number of homeless, drug addicts and migrants that are waiting to cross to the United States or that have been deported [37, 4, 22]. This River is a hotspot for violent crimes.



Figure 23: Prostitution in the Zona Norte, a problem that the authorities avoid talking about it. Photo from [5].

The Zona Norte is the Red Light district of the city. Taken from an article of the newspaper "La voz de la frontera" [15]: Professor Víctor Clark Alfaro at San Diego State University estimates that Tijuana is one of the cities in the world, with the greatest boom in everything related to sex tourism. Only in the northern part of the city, the specialist indicates that two thousand sex workers work. This without counting the employees of

hotels, nightclubs and taxi drivers, who live by taking tourists directly from the international line. "There are bars in the area that have a clientele that not only comes from the United States but from Europe, which comes specifically to demand that type of service. People who do sex tourism come with the significant economic capacity to the city of Tijuana," he said. Such is the economic power of many of the tourists who come to Tijuana, motivated by sexual services, that some clubs and bars maintain 24 hours a day, a limousine on the international line, which is in charge of picking up their most distinguished clients and move them directly to the tolerance zone.

There is no official data showing the economic spill that the Zona Norte it leaves for the city. Human trafficking [19] and drugs sell are big problems in this part of the city, another hotspot for violent crimes.

3 de Octubre



Figure 24: Extreme poverty in the 3 de Octubre neighborhood. Photos from [7].

The 3 de Octubre neighborhood is one of the many neighborhoods in Tijuana that formed irregularly [7], just taking a part of the land. This caused a lack of basic services like water, electrical installation, and many others. The extreme poverty is another hotspot for violent crimes.

5 Conclusions

In this work, the most violent neighborhoods in Tijuana were identified and the more common venues were found using Foursquare API, finding the following conclusions:

- The more important local business in violent neighborhoods are bars and food-related for example, restaurants, dessert shops, and street food. The expected high number of pharmacies predicted in the data acquisition section was wrong.
- Given the digital illiterates in Mexico, the information obtained in Foursquare doesn't show the complete picture of the business in the city.
- Complete data of the local business in the city is needed to make a more complete work. This data could be found in the government.
- The more violent neighborhoods are related to poverty, prostitution, drug addiction, and migration.
- The violence in Tijuana is just an example of what is happening in Mexico, a failed system that needs to change. As an example, research by the journalists in "Animal politico" found that: "In Mexico, it is easy to kill and never step in jail. For every 100 murder cases, only in five of them a person is convicted. If we only concentrate on finding those who committed homicides between 2010 and 2016, it would take us 124 years to do so, because at that rate the Mexican justice system works" [24].

"There is no way I'm going back to Mexico. I can't stand to be in a country that is more surreal than my paintings." This quote from the famous painter Salvador Dali couldn't explain better Mexico, a country full of contradictions. Tijuana is just an example of this: the city maintains solid economic growth despite high levels of insecurity and violence [14].

References

- [1] Comite de planeacion para el desarrollo del estado (Copladebc). *Población de Baja California y sus municipios*. Jan. 2014. URL: <http://www.copladebc.gob.mx/seis/pdf/apuntePoblacionBCyMunicipiosEne14.pdf> (visited on 04/13/2020).

- [2] Julieta Aragón. *Preocupa a empresarios robos a comercios, pese a la baja incidencia en el Estado*. Jan. 27, 2020. URL: <https://zetatijuana.com/2020/01/preocupa-a-empresarios-robos-a-comercios-pese-a-la-baja-incidencia-en-el-estado/> (visited on 04/16/2020).
- [3] Darío Brooks. *Turismo médico en México: cómo Tijuana se convirtió en el quirófano de los estadounidenses*. Apr. 9, 2019. URL: <https://www.bbc.com/mundo/noticias-america-latina-47809220> (visited on 04/16/2020).
- [4] Eugenia Jiménez Cáliz. *El Bordo de Tijuana, hogar de migrantes y drogadictos*. July 31, 2014. URL: <https://www.milenio.com/politica/el-bordo-de-tijuana-hogar-de-migrantes-y-drogadictos> (visited on 04/17/2020).
- [5] Graciela Díaz. *machismo-fabrica-putas*. 2017. URL: <https://feminismoinc.org/2018/03/machismo-fabrica-putas.html> (visited on 04/17/2020).
- [6] Sandra Dibble. *What drives Tijuana's next mayor?* July 14, 2013. URL: <https://www.sandiegouniontribune.com/news/border-baja-california/sdut-what-drives-tijuanas-next-mayor-2013jul14-story.html> (visited on 04/13/2020).
- [7] Rafael Colorado y Edgar Carapia. *La 3 de Octubre*. Feb. 19, 2019. URL: <https://www.facebook.com/TijuanaTelevisa/videos/416565892220378/> (visited on 04/17/2020).
- [8] EFE. *Estrategia de seguridad de AMLO no funciona: expertos; México despide 2019 con más violencia*. Dec. 22, 2019. URL: <https://www.sinembargo.mx/22-12-2019/3700383> (visited on 04/13/2020).
- [9] Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL). *Pobreza estatal 2018*. 2018. URL: https://www.coneval.org.mx/coordinacion/entidades/BajaCalifornia/Paginas/Pobreza_2018.aspx (visited on 04/13/2020).
- [10] Octavio Rodríguez Ferreira and David A. Shirk. *El Resurgimiento del Crimen Violento en Tijuana": Análisis de Justice in Mexico*. May 18, 2018. URL: <https://justiceinmexico.org/el-resurgimiento-del-crimen-violento-en-tijuana-new-spanish-translation-of-justice-in-mexico-working-paper/> (visited on 04/13/2020).
- [11] Wendy Fry. *Tijuana still Mexico's bloodiest city despite drop in homicides. Blame drug violence*. Jan. 7, 2020. URL: <https://www.latimes.com/world-nation/story/2020-01-07/tijuana-drug-violence> (visited on 04/13/2020).
- [12] David Gagne. *Corrupción policial en Tijuana es generalizada: Informe*. Feb. 18, 2016. URL: <https://es.insightcrime.org/noticias/noticias-del-dia/corrupcion-policial-tijuana-generalizada-informe/> (visited on 04/17/2020).
- [13] Juan Miguel Hernández. *Asesinatos de mujeres, sin un castigo*. Feb. 15, 2020. URL: <https://www.elsoldetijuana.com.mx/local/asesinatos-de-mujeres-sin-un-castigo-4839276.html> (visited on 04/13/2020).
- [14] Juan Miguel Hernández. *Tijuana se mantiene estable en economía*. Feb. 2, 2019. URL: <https://www.elsoldetijuana.com.mx/local/tijuana-se-mantiene-estable-en-economia-3009856.html> (visited on 04/17/2020).
- [15] JUAN MIGUEL HERNÁNDEZ/. *Zona de tolerancia persiste en Tijuana*. Aug. 20, 2019. URL: <https://www.lavozdelafrontera.com.mx/local/zona-de-tolerancia-persiste-en-tijuana-4064833.html> (visited on 04/17/2020).
- [16] idc. *43 % de los mexicanos son analfabetas digitales*. Apr. 8, 2019. URL: <https://idconline.mx/corporativo/2019/04/08/43-de-los-mexicanos-son-analfabetas-digitales> (visited on 04/17/2020).
- [17] IMPLAN. *Mapa Básico por Delegaciones 2014/Colonias 2014*. 2014. URL: <http://implan.tijuana.gob.mx/servicios/cartografia/mapa.aspx> (visited on 04/17/2020).
- [18] Carlos Jasso. *¿Por qué está fallando la estrategia de seguridad de López Obrador en México?* Sept. 5, 2019. URL: <https://actualidad.rt.com/actualidad/326183-fallos-estrategia-seguridad-lopez-obrador-mexico> (visited on 04/13/2020).
- [19] Laura Sánchez Ley. *Prostitución. El infierno infantil en Tijuana*. Feb. 28, 2016. URL: <https://www.eluniversal.com.mx/articulo/estados/2016/02/28/prostitucion-el-infierno-infantil-en-tijuana#imagen-1> (visited on 04/17/2020).
- [20] Miguel Marshall. *Tijuana and the future of trade*. May 7, 2015. URL: <https://www.weforum.org/agenda/2015/05/tijuana-and-the-future-of-trade/> (visited on 04/13/2020).
- [21] Antonio Maya. *Asaltos y violencia, en Sánchez Taboada*. May 4, 2019. URL: <https://www.elsoldetijuana.com.mx/policia/aspaltos-y-violencia-en-sanchez-taboada-3570659.html> (visited on 04/13/2020).

- [22] Isabel Mercado. *Ante indiferencia de autoridades, el Bordo vuelve a repoblar*. July 24, 2017. URL: <https://zetatijuana.com/2017/07/ante-indiferencia-de-autoridades-el-bordo-vuelve-a-repoblar/> (visited on 04/17/2020).
- [23] Adán Mondragón. *En Baja California más de 7 mil 800 violaciones y 18 mil delitos sexuales*. Aug. 17, 2019. URL: <https://cadenanoticias.com/regional/2019/08/en-baja-california-mas-de-7-mil-800-violaciones-y-18-mil-delitos-sexuales> (visited on 04/13/2020).
- [24] Animal politico. *Matar en Mexico: impunidad garantizada*. June 19, 2019. URL: <https://www.animalpolitico.com/muertos-mexico-homicidios-impunidad/> (visited on 04/17/2020).
- [25] Lourdes Loza Romero. *BC: primer lugar nacional en robo de vehículo*. Apr. 13, 2020. URL: <https://zetatijuana.com/2020/04/bc-primer-lugar-nacional-en-robo-de-vehiculo/> (visited on 04/16/2020).
- [26] Daniel Ángel Rubio. *Urge reubicar a 2 mil en Sánchez Taboada: Rosas*. Dec. 22, 2019. URL: <https://www.elsoldetijuana.com.mx/local/urge-reubicar-a-2-mil-en-sanchez-taboada-rosas-4619362.html> (visited on 04/17/2020).
- [27] Glenn Sanchez. *Tijuana necesita estudio de adicciones*. Sept. 26, 2019. URL: <https://www.elimparcial.com/tijuana/tijuana/Tijuana-necesita-estudio-de-adicciones-20190926-0005.html> (visited on 04/13/2020).
- [28] Guardia Estatal de Seguridad e Investigación. *BASES DE DATOS DE INCIDENCIA DELICTIVA*. 2019. URL: <https://www.seguridadbc.gob.mx/contenidos/estadisticas3.php> (visited on 04/13/2020).
- [29] Sintesis. *sobreruedas*. 2020. URL: <https://sintesistv.com.mx/vendedores-ambulantes-en-la-irregularidad-por-retrasos-del-ayuntamiento/sobreruedas-5/> (visited on 04/17/2020).
- [30] El sol de tijuana. *Aumentan montos de dinero en extorsiones telefónicas de BC*. May 4, 2019. URL: <https://www.elsoldetijuana.com.mx/local/aumentan-montos-de-dinero-en-extorsiones-telefonicas-de-bc-3573103.html> (visited on 04/13/2020).
- [31] El sol de tijuana. *Demolerán casas en el fraccionamiento Sánchez Taboada*. Dec. 28, 2018. URL: <https://www.elsoldetijuana.com.mx/policia/demoleran-casas-en-fraccionamiento-sanchez-taboada-jaime-bonilla-4632848.html> (visited on 04/17/2020).
- [32] Python Geocoding Toolbox. *geopy 1.21.0*. 2018. URL: <https://pypi.org/project/geopy/> (visited on 04/13/2020).
- [33] Karina Torres. *Comercio informal representa pérdidas millonarias: CANACO*. Aug. 7, 2019. URL: <https://www.elsoldetijuana.com.mx/local/comercio-informal-representa-perdidas-millonarias-canaco-4005433.html> (visited on 04/17/2020).
- [34] Center for U.S.-Mexican Studies. *Jobs Without Borders: Employment, Industry Concentrations, and Comparative Advantage in the CaliBaja Region*. 2014. URL: https://usmex.ucsd.edu/_files/2014_report_jobswithoutborders.pdf (visited on 04/13/2020).
- [35] David Vicenteño y Vannesa Alemán. *Guardia Nacional es la militarización del país: académico de la UNAM*. Jan. 10, 2019. URL: <https://www.excelsior.com.mx/nacional/guardia-nacional-es-la-militarizacion-del-pais-academico-de-la-unam/1289456> (visited on 04/16/2020).
- [36] Carolina Vázquez. *Guardia Nacional comienza a patrullar Camino Verde y Sánchez Taboada*. July 12, 2019. URL: <https://psn.si/guardia-nacional-comienza-patrullar-cv/2019/07/> (visited on 04/16/2020).
- [37] Laura Woldenberg. *El purgatorio de los deportados*. June 9, 2013. URL: <https://www.vice.com/es-latam/article/zn9jmx/el-purgatorio-de-los-deportados-0000410-v6n4> (visited on 04/17/2020).
- [38] Oswaldo Zavala. *La Guardia Nacional y la militarización de las fronteras*. July 12, 2019. URL: <https://www.proceso.com.mx/592118/la-guardia-nacional-y-la-militarizacion-de-las-fronteras> (visited on 04/16/2020).