

Uruguayan Crimes

July 26, 2025

1 Introduction

This is a report made based on the analysis of the crimes reported raw data that we can find on the [uruguayan government data list](#).

I found and used two datasets, one that contains mostly data about crimes committed between 2013 and 2025, while the other contains only homicides that took place on the same timeline.

I made this to contrast what I thought is happening in the country to what it really is happening. This helped me make some interesting discoveries either about whether a neighborhood in Montevideo is safer than other, some possible causes, check that domestic violence is not only important to take care of but it is increasing over the years.

This is not only interesting information that we can get, but we can use what we retrieved and use it with other reports to get to a deeper point of understanding about what is really happening in the territory.

For this analysis I used Python, with the main libraries for this, as pandas, matplotlib, seaborn and others. Also most of this project uses SQL and a personal DB made using MySQL where I uploaded and extract the clean and raw data to make different queries as to retrieve information for punctual conclusions and verify my thoughts. This paper is made entirely using Jupyter Notebook and LaTeX.

You can find the notebook and other files related to this report, and the different codes for the graphs on my [Github repository](#).

2 Uruguayan reported crimes

2.1 What is this about?

Using the dataset with [other crimes reported](#) from the Ministerio del Interior we will try to get to know some things: - The anual growth of crimes on Uruguay, per department and in general. - The trend on crime types over the years. - What is happening with the most crime reported neighborhoods over the years?

We can find the metadata containing what each column means [here](#).

2.2 Data Insight

There is some columns that we don't need or we won't be using for this analysis, so I decided to clean and extract only what we are going to use.

This ensures more optimal and efficient results, also the data is uploaded to my SQL server as to not need to query it all every time we open this notebook.

Columns:

- crime : Crime type - date : Date of the crime - year : Year of the crime - month : Month of the crime - dept : Department of Uruguay where the crime took place - barrio : Neighborhood on Montevideo where the crime took place.

Total: 2296511 crimes reported.

Starting date: 2013-01-01

Last date: 2025-03-31

I decided to make the 5 dataframes needed to each point of the analysis, and labeled as I needed to:

df_crimes_year_dept : Contains yearly crimes splitted by departments.

df_crimes_year : Contains all the crimes accumulated per year.

df_montevideo : Contains all crimes occurred in Montevideo.

df_crime_type : Contains all crimes accumulated by crime, year and month.

2.3 Yearly growth for each department

I found interesting to know how does the crime rate and evolution changes between the different departments in Uruguay, for this I decided to do the following plot.

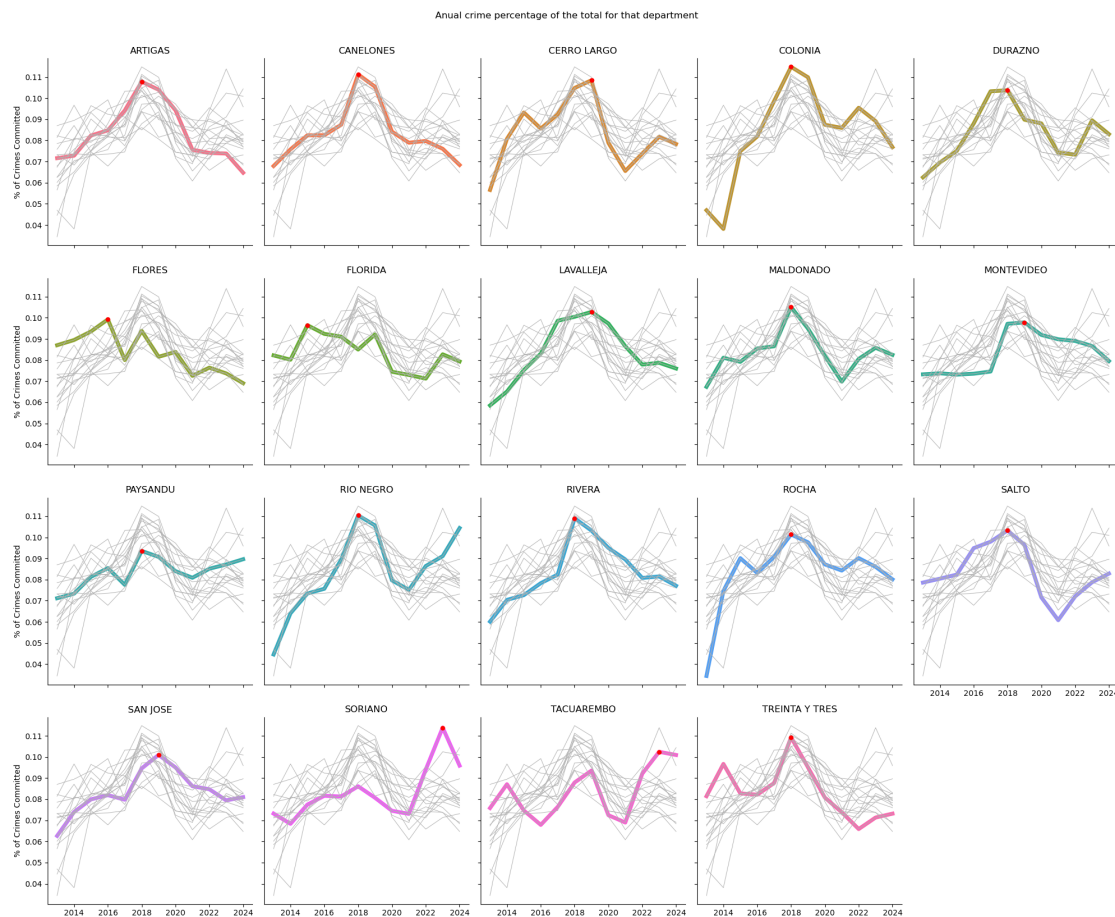


Fig 1. Crime evolution per department of Uruguay.

The figure we can see above has 19 plots, one for each departments where each contains both their own growth over the time colored and the other other departments line plotted in gray. The red dot we see is the maximum point in which year the department reached its peak in reported crimes.

Having a look at this graphs we can see something interesting.

In 17/19 departments there was a big spike on crime reports between 2018-2019.

As it may have been expected, on 2020 due to the global pandemic there was a decrease on all the departments.

On the whole region we can not only see that max and big spike in reports from 2017 to 2018 being almost an increase of: 25% corresponding to previous year. Also after the pandemic the crime rate seems to be normalized and seems to be decreasing since 2022.

After some research on different important news websites like La Diaria or El Observador, there

was indeed an increase, but the percentage of mugging was way higher than the increase of crimes between 2017 and 2018, being around the 50%+, this was something alarming in that year. We are going to talk about this on the following sections.

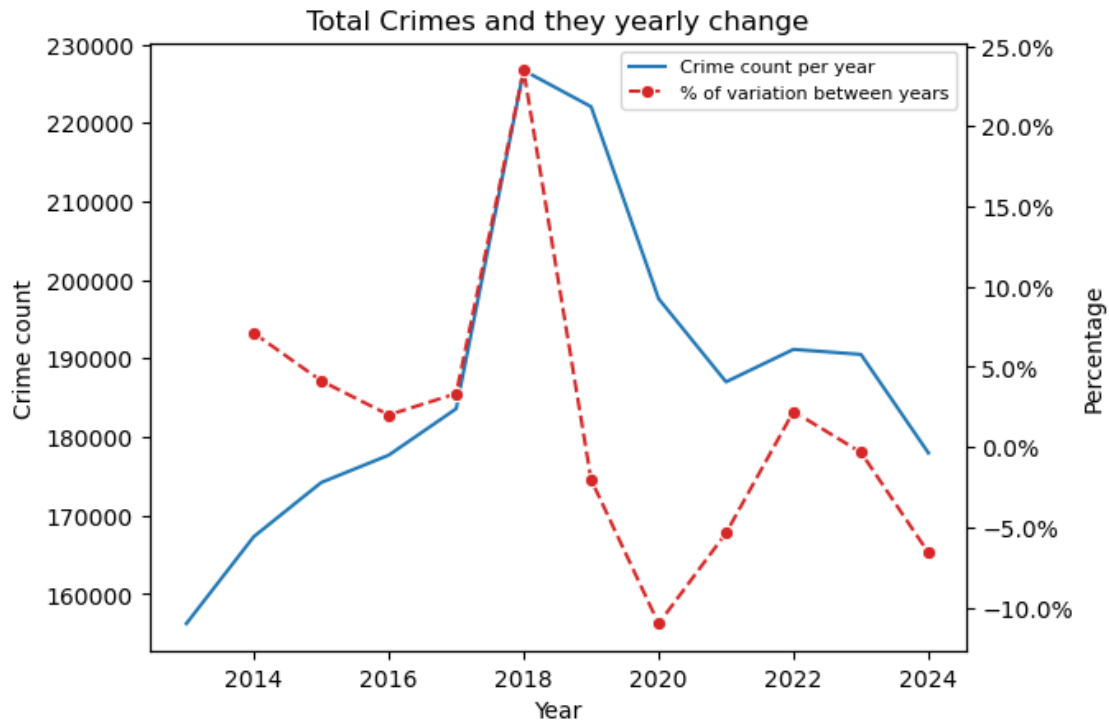


Fig 2. Crime evolution and variation in the country.

Over this graph we can see and confirm what we saw before, there was not only a raw increase in crime but an interesting and fast growth rate for the crime in 2018 specially. In 2018 the crimes got around 23% up from 2017, and got a drastic drop from 2019 to 2020 of a 10% less.

It's clear that after the pandemic effects, the crime was going to increase as we can see it get around a 5%-10% increase between 2021 to 2022, nowadays it seems to be going down.

2.4 Theft got the first place. Concerned about Domestic Violence

In this part we want to know which crimes are more common to happen, and they evolution since 2013 to previos year.

From the metadata we found that there are this type of crimes: - Hurto : Theft - Rapiña : Mugging - Violencia Domestica : Domestic violence - Lesiones : Injuries - Abigeato : Cattle rustling

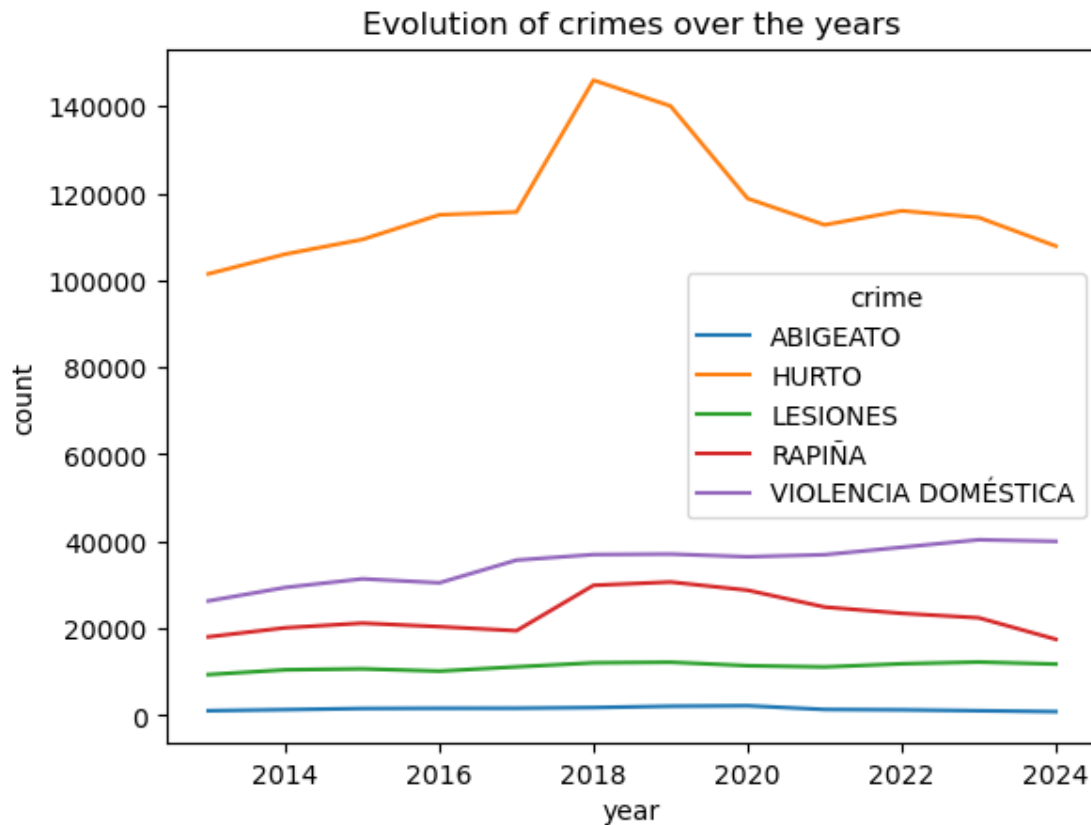


Fig 3. Crime trends over the years.

year	2013	2018	2020	2024
crime				
ABIGEATO	1059	1794	2206	852
HURTO	101453	145973	118783	107845
LESIONES	9370	12069	11408	11780
RAPIÑA	18035	29885	28757	17480
VIOLENCIA DOMÉSTICA	26288	36946	36445	39990

Using the plot and looking on the resumed data where we choose 4 different years we can see some interesting things.

- Abigeato has decreased a lot since 2021, being on the all time low on 2024.
- Hurto has it's peak on 2018 as well as Rapiña did.
- Hurto is the most current type of crime.
- All the crimes are currently decreasing over the time except domestic violence.

- Domestic violence seems to be increasing steady and slowly over the years, on 2023 it reached it's max.

These are really concerning results, we are going to talk more about **domestic violence** in the homicides section, where we are going to see how many women were killed by their couples, specially on 2023.

Also, as we found before, Rapiña (mugging) got the increase that was being talked about, it rised from around 20 thousand to almost 30 in just one year, being this an 50% increase in this type of crime for that particular year, nowadays we can see that it started to lose more and more traction being it less common on frequent years, same is happening with theft.

2.5 Summer, where the most crimes are committed

On the following plot we can see that most of the crimes take place on the summer season of the year.

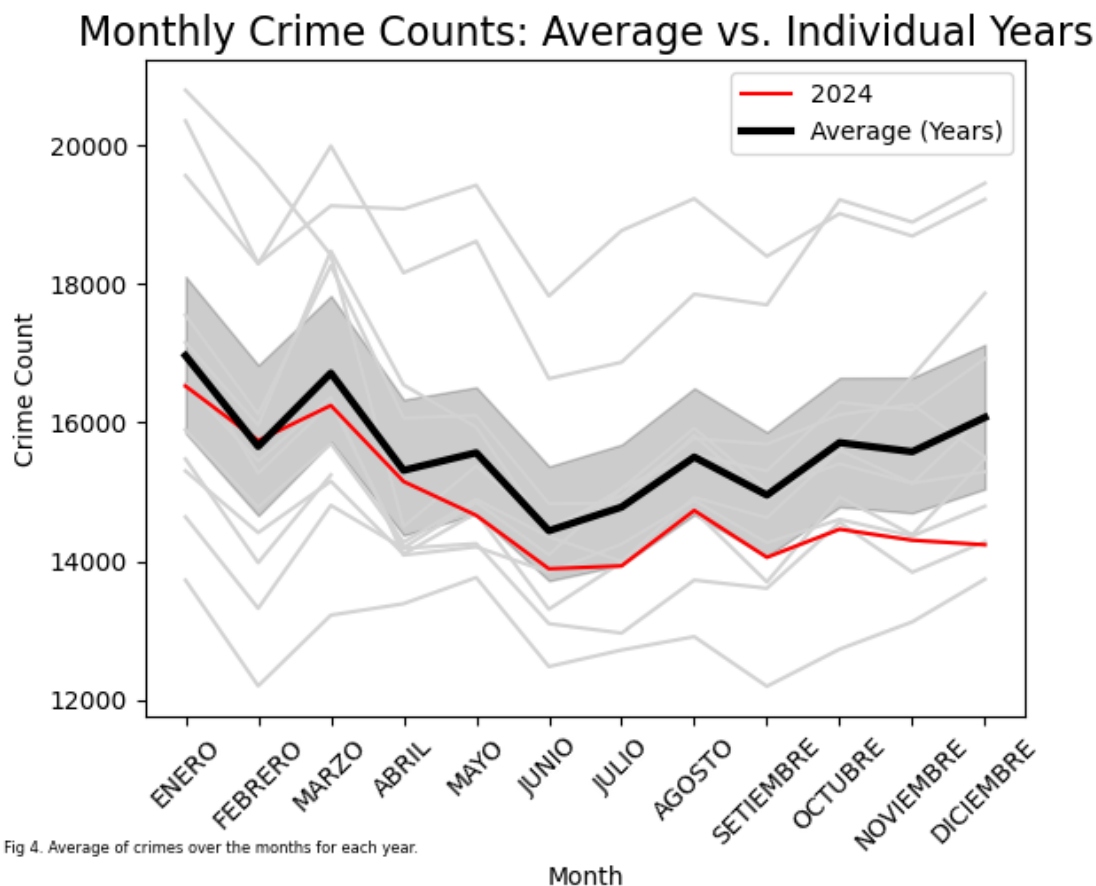
This may be caused due to people going out more in the summer than in the winter.

Some houses got not being taken care of during vacations, people walk more freely since there is no cold.

It is interesting to see that domestic violence does have the same behavior. After some research I found from a [C.A.W.C](#) (Connections for abused women and their children) website that indeed the summer affects the domestic violence rate by the physiological effects of the heat that lead to irritability and heightened stress.

Also states that heat also cause sleep deprivation which is linked to increases irritability and lower impulse control.

It's important to note that most of 2024 is below the average for each part of the year (except february), this is good news.



2.6 Neighborhoods and crime report impact over the years

I want to know what happens in the most crime committed neighborhoods and how do they behave in the next years.

For this we will make a Choropleth map using the neighborhoods of Montevideo where the more red a neighborhood is the more crimes have been reported.

I found the shapefile in this [github repository](#) made by Vierja.

After some standarization in the data we retrieved from M.Interior, we manage to match the shapes for each corresponding neighborhood and now we have this maps.

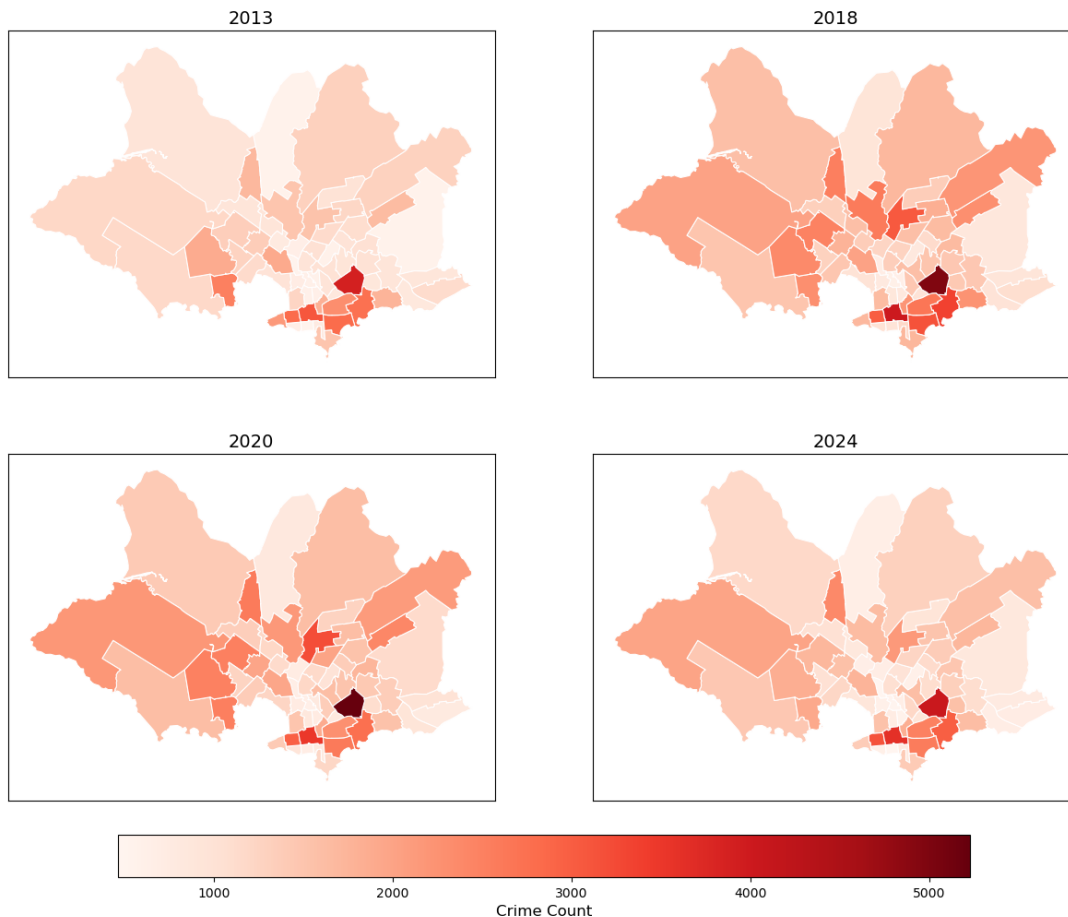


Fig 5. Heatmap of Montevideo's neighborhoods for years 2013, 2018, 2020 and 2024.

In the Montevideo map over the years we can see how the zones that did not have that much crime (reported) on it on the outsides, specially on the northwest, starts to gather more and more reports, and near zones to them like Cerro started to dismiss the crimes.

It is important to note that now zones like Centro and Ciudad Vieja start to have more crimes over the years.

The south part of Montevideo stays almost the same, being between the most crime reported

zone.

It is well noted that Union stayed on the top 1 of most crime reported neighbors, where the crime that was most reported in last year was theft (Hurto) and Mugging (Rapiña).

We don't know the exact nature of some reports, but we can estimate that some zones started to gain more reports as they get out from the center in newer years.

Keep in mind that these does not mean that they are the most insecure neighborhoods, got example, in Pocitos, most of the crimes reported on previous year are theft, but mugging is less common than domestic violence.

This is an important distinction, since in Uruguay "Hurto" is classified as theft without violence, while mugging states that it is indeed with violence.

In that centric or southern zones is normal to have more crimes reported since they are more crowded, also we can state that the violence on this zones is often less than on more periferal zones, for example in Cerro, mugging is almost 4 times more frequent than in Pocitos.

If we calculate a relationship between the amount of crimes with violence that were committed on the southern neighborhood to the periferal, we can estimate that most of them are going to be like 2 or 3 times greater than in the ratio in the southern.

Conclusion: To conclude, we manage to see that the neighborhoods that got the most crimes stayed almost the same on every year. Some of them are starting to decrease, like Pocitos, but most of the southern ones, they are not related to mugging.

Most of this calculations were made by queries on SQL and checking some of the top 5, southern and periferal neighborhoods

2.6.1 Top 5 most crime reported neighborhoods

Year 2013

	barrio	year	crime_count
754	UNION	2013	3899
273	CORDON	2013	3098
182	CENTRO	2013	2825
624	POCITOS	2013	2822
91	BUCEO	2013	2745

Year 2024

	barrio	year	crime_count
765	UNION	2024	4066
284	CORDON	2024	3622
193	CENTRO	2024	3148
102	BUCEO	2024	2989
635	POCITOS	2024	2577

2.6.2 Top 5 least crime reported neighborhoods

Year 2013

	barrio	year	crime_count
26	ATAHUALPA	2013	527
546	PALERMO	2013	527
52	BAÑADOS DE CARRASCO	2013	562
247	COLON SURESTE ABAYUBA	2013	568
169	CASTRO CASTELLANOS	2013	578

Year 2024

	barrio	year	crime_count
37	ATAHUALPA	2024	461
557	PALERMO	2024	464
297	FIGURITA	2024	480
375	LA COMERCIAL	2024	562
180	CASTRO CASTELLANOS	2024	594

2.7 Conclusions of this part:

After the analysis of more than 2.2 million reported incidents along the years 2013-2025, reveals an interesting trend in the territory.

In 2018-2019 there was an increase in almost every crime, this came to drop over the Covid-19 pandemic, this is pretty much visible in almost every department making this not an isolated effect of Montevideo but a more widespread phenomenon.

Since 2018 peak where theft and mugging (Hurto y rapiña) reached its maximum, there is a decrease on this type of crime, but on the contrary, domestic violence shows a persistente and steady increase over the years, this is critical for the population on Uruguay, and should be taken more into perspective.

It's notable to see that most of the crimes occur during summer time of the year and not over the winter, this is something we could study more deeply. Is this caused by people going outside of the country? People not going out that often on winter? The day being shorter?.

This are some questions we can ask and analyze over in another paper.

To finish, Montevideo being the capital shows that most of the violent crimes occur outside the centric/south zone, but this zones keep increasing the crimes that happen, also this shows that zones where there was not common to report crimes are starting to get more and more reports over the years.

3 Homicides

We are going to use the data set found in the government website that we have stated before and we can find it on [this page](#).

From this we can retrieve the next information:

- Year, Month, Time, Department
- Weapon classifications (Fire, Hand, White, etc)
- Minors involved (Did minors participate on the homicide?)
- Relationship (What the relationship between the victim and aggressor was)
- Cause (Why did it happen)
- Sex, Age

Some of this are not known since not every homicide has all the data, but there are some questions we can ask and provide an answer: - Does the minor participants rate increased over the years? - How many people die under Domestic violence, and how much of those are women?

```
jupyter nbconvert -to pdf --TagRemovePreprocessor.remove_input_tags="{ 'hide_input' }"
"Uruguayan Crimes.ipynb"
```

3.1 Minors involucrated are becoming less common

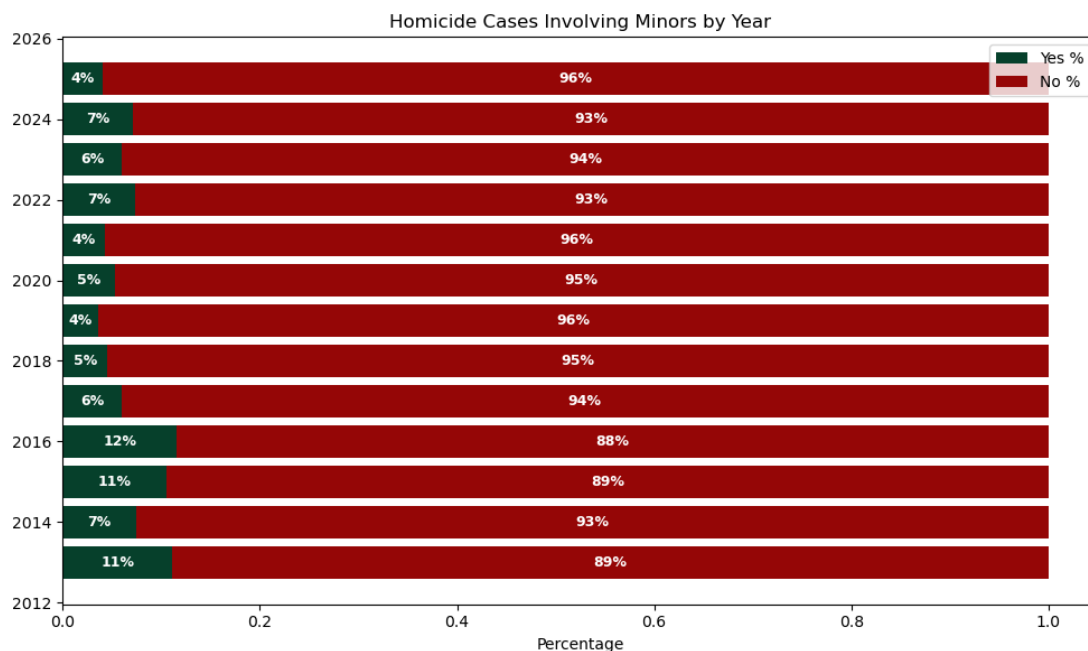


Fig 6. Percentage per year of total homicides committed by minors.

In the graph above we can see that most homicides are caused by not minors. Also since 2016 it seems that even though there occurred more crimes caused by minors as we see in the graph below, seems to be less frequent over the total homicides that take place in Uruguay.

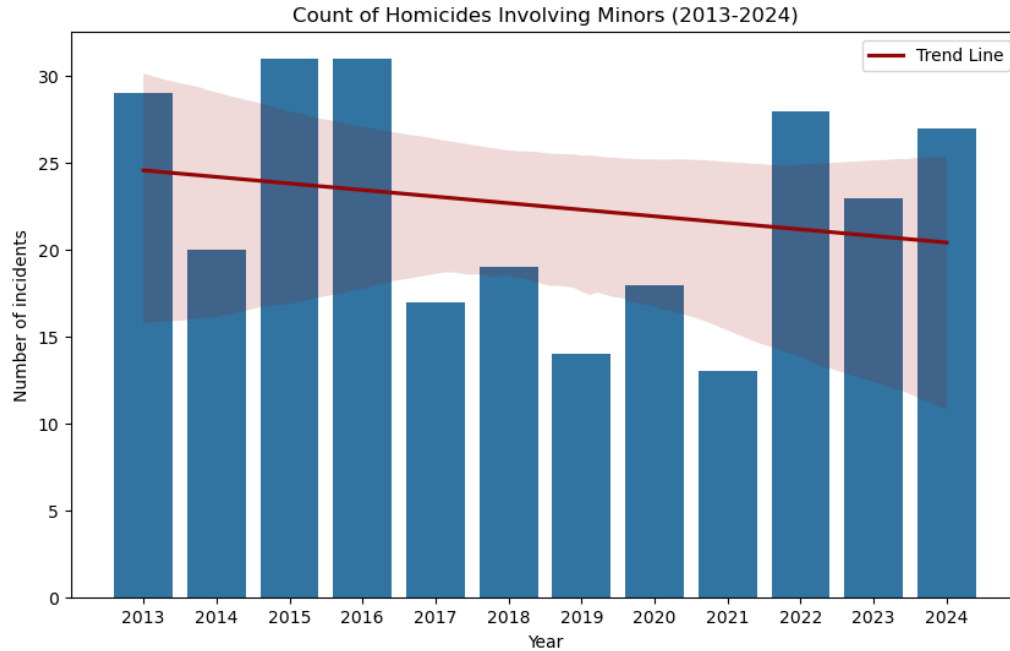


Fig 7. Chart with minors involved crimes and the trend

From the previous chart we can assure that the minors take around 25 lives per year mostly in aggravated crimes. It seems to have a non consistent trend over the years and high volatility, also it is really variable, we can see this over the confidence interval in the red graph showing that they can differ from the prediction.

After some queries I found that from the different homicides occurred by minors, only 20 were related to domestic violence, this means either revenge against an abusive parent or killing their couples or family members.

3.2 Domestic violence homicide is 1.5 times more common in women than in men.

To gather insights about what is happening in Uruguay about the homicides that take place in domestic violence, we can see that there are 5 categories on their relationships: - Couple - Friend - Family member - Don't Know - No relationship

Between all this years there have only taken place 534 homicides related to domestic violence.

Note: There was a particular outlier that I think it was a typo, either could be 24 or 12, it is set as 124 years old which is impossible, so for this reason it was removed from the data we are using.

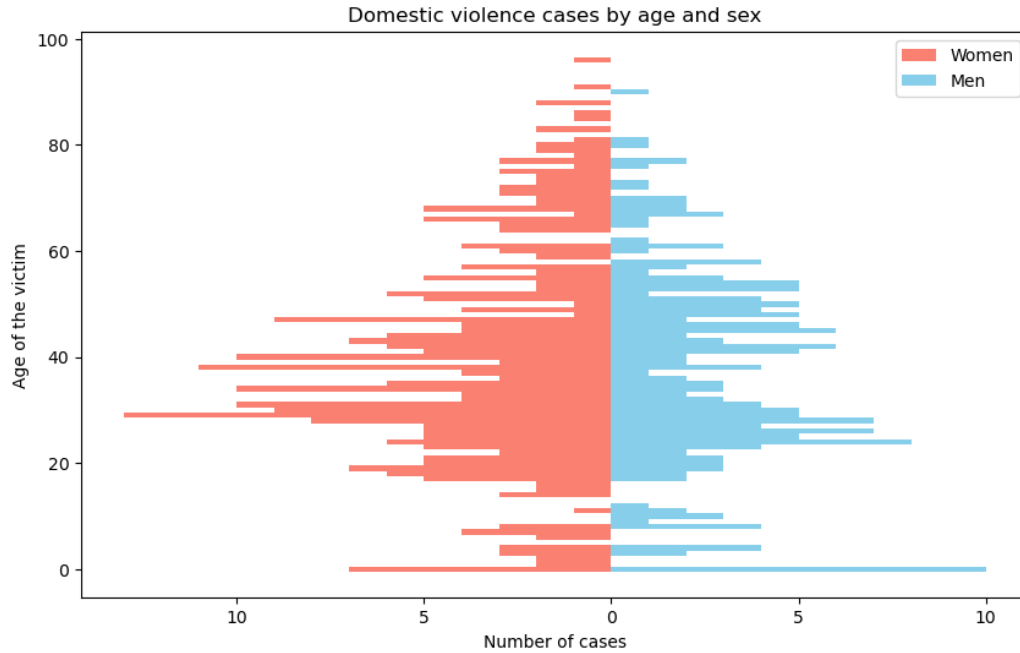


Fig 8. Age/Sex pyramid from victims of domestic violence

We can see on the graph above that there is a wide range of women in her 30s that are killed due to domestic violence.

Most of the victims tend to be women in all ages past the 20s, but if we look down, we can see that there is a wide difference in male kids that get killed due to domestic violence.

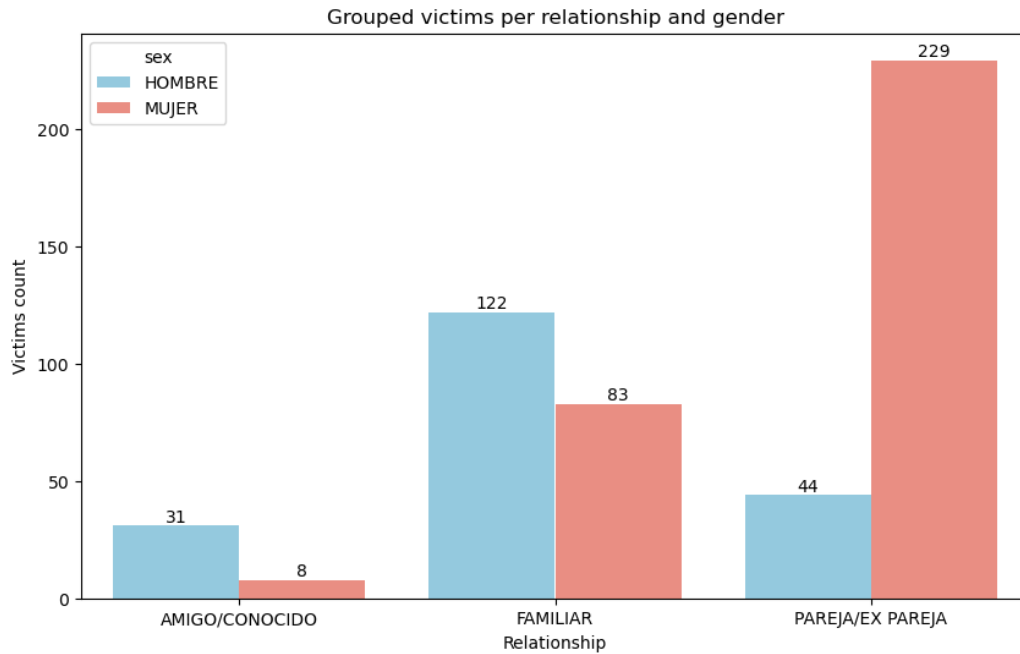


Fig 9. Bar chart for victims grouped by relationship with their killer.

From the data in the graph above, we can assure that not only is more common type of homicide in women, but it takes place way more common for a couple than it happens in a familiar environment. It is great to note that in other cases, like friends, known people or family members its more common to happen to a man than to a woman.

The numbers are still alarming since domestic violence takes the third place in causes for homicides in Uruguay, being just below spontaneous conflicts.

3.3 Conclusions of this part:

The homicides that take place in Uruguay, are not that common to been caused by minors and it seems to be less and less common in frequent years.

Keep in mind that this is something that may blow up from one year to another due to an extremely volatility and variability in what we have seen, anyways they always seem to be around the 25 homicides per year in hands of a minor.

When we approach to domestic violence, we can depict that most deaths happen to woman when the relationship with their perpetrator is their couple.

Also its bold to note that there are 117 homicides more against woman than man, and it is more common to happen in a familiar relationship than to a couple in men's cause.

3.4 Final conclusion

This analysis of crime data between 2013 and 2025 from Uruguay reveals an interesting view. Where an important spike took place on 2018-2019 and the effects the pandemic may have had in the reports.

The most critical find is the trend in crimes and how there is a high volume of theft and mugging and while they are decreasing, a very important and difficult type of crime is rising and keeping an increase at a constant and stable pace, the domestic violence.

This is not only alarming for the uruguayan people but if we then take place and compare to the homicides that take place around where approximately 1 in 700 reports end in a homicide, it seems like a small number but it is bigger when you think about the quantity of reports that happen every day.

I found that the childs are currently being victims of domestic violence to the point they parents or close partners kill them, specially on male infants in the lowest ages.

While general crime metrics suggest that there has been an stabilization and decrease since the 2018 peak, the data sound clear alarm of the crisis of domestic violence in Uruguay and should be taken care of.