



MINISTERIO DE JUSTICIA Y  
DEL DERECHO



Instituto Nacional  
de Medicina Legal

# MORTALITY STUDY ASSOCIATED WITH THE CONSUMPTION OF PSYCHOACTIVE SUBSTANCES 2013 - 2020



OBSERVATORIO DE DROGAS  
**DE COLOMBIA**

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## MORTALITY STUDY ASSOCIATED WITH THE CONSUMPTION OF PSYCHOACTIVE SUBSTANCES

The Integral Policy to Address the Drug Problem: “Ruta Futuro”, in the first pillar on reducing the use of psychoactive substances and their impact, contemplates the management of a series of indicators in order to provide information on the situation of drug use and its consequences, among which is the “number of deaths associated with the consumption of psychoactive substances”.

For this reason, the Ministry of Justice and Law, through the Drug Observatory of Colombia and the National Forensics Institute, agreed to prioritize joint work around this indicator, from which arises the present study on mortality associated with the consumption of psychoactive substances, providing relevant information on the impacts generated by this phenomenon and constitutes an input for public policy decision-making in this matter.

According to the World Drug Report<sup>1</sup>, it estimated that about 269 million people between the ages of 15 and 64 years have used illicit drugs in the last year. It is mentioned in this report that half a million deaths were attributed to drug use in 2019. Of these deaths, almost a third are related to disorders caused by drug use. The majority –two-thirds– of these deaths are attributed to the use of opioids. We could refer that 18 million years of healthy life were lost, because of drug use disorders, in particular, due to alterations caused by opioids (70%).

In Colombia during 2019, according to the Global Burden of Disease Study -GBD-<sup>2</sup>, it is estimated that 7.563 deaths were attributable to alcohol consumption, of these, about 50% were related to injuries of external cause, such as: suicide, interpersonal violence, traffic accidents or unintentional injuries. It is also evident that 507 people lost their lives because of drug use. It can then be estimated that due to alcoholism, 453.000 years of healthy life were lost; while due to drug use –associated with addiction disorders<sup>3</sup>– about 75.000 years of healthy life were lost.

<sup>1</sup> Taken from: World Drug Report 2021 (United Nations publication, Sales No. E.21.XI.8). Bogotá, August 2021..

<sup>2</sup> Taken from: Global Burden of Disease Study 2017. Global Burden of Disease Study 2017 (GBD 2017) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018. Bogotá, March 2020.

<sup>3</sup> Ídem

The analysis of mortality associated with the consumption of psychoactive substances reveals an overview of the social and health impact generated using these substances in the country. It should be noted that sometimes the capture of this information is heterogeneous, and the classification of deaths is complex. In other words, in data systems it is difficult to obtain information on deaths related to the use of psychoactive substances, since deaths are often the result of an interaction of several factors –including drug use– which creates a complex panorama when it comes to identifying what is the most relevant causal factor, in addition, in some types of death such as suicide, homicide and accidental deaths, the presence of these substances is not systematically investigated.

Despite the aforementioned limitations, Law 769 of 2002 establishes that in all traffic accidents, involving personal and fatal injuries, drunkenness tests must be carried out. On the other hand, there is no obligation to perform tests that identify other psychoactive substances linked to other types of injuries of external cause, then they are only done at the request of the competent authority, when the context so determines, or when institutional protocols provide for it.

Among the difficulties in obtaining reliable data, as mentioned above, are diagnoses because, there are many factors that could trigger death and this is where obstacles appear when classifying them; additionally, in some cases, the context of the death is not considered to find those associated factors and in others, tests of psychoactive substances are simply not taken that could give the certainty of consumption.

Death statistics, associated with drug use, show differences and evidence underreports. By taking as a source of information the Individual Registries for the Provision of Health Services (RIPS in Spanish) of 2020, 126 deaths related to mental and behavioral disorders associated with the use of psychoactive substances are reported; while in the National Public Health Surveillance System (SIVIGILA in Spanish) in the same year, it recorded 12 deaths. However, the Vital Statistics System of the National Administrative Department of Statistics (DANE in Spanish) in 2019, reported 222 deaths due to drug overdose<sup>4</sup>.

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<sup>4</sup>To generate this information, the following causes of death were taken, into account (in any of the causes): Poisoning by narcotics and psychodysleptics, accidental poisoning due to exposure to antiepileptic drugs, self-inflicted poisoning by drug use and adverse effects of opioids, anesthetic, psychodysleptic (hallucinogenic) and psychostimulants with potential abuse..

As it is, the Ministry of Justice and the National Forensics Institute – INMLCF in Spanish, prepared this study based on the analysis of toxicology information on deaths that enter due to external injuries, with the purpose of having a more precise approximation of deaths.

## Metodología

This study is developed from a cross-sectional analysis using as a source the databases of the National Forensics Institute, The Administrative Information System of Forensic Laboratories (SAILFO<sup>5</sup> in Spanish), the Integrated Information System of Forensic Practice (LIMS 8 in Spanish) and the Information System Network of Missing Persons and Corpses (SIRDEC in Spanish). A review of the following sources was also carried out: Individual and Service Delivery Registries (RIPS), National Public Health Surveillance System (SIVIGILA) and Vital Statistics (EEVV in Spanish).

At first, the SAILFO source of information composed of two databases was processed, namely: toxicology and conclusions, in the first one the records were taken from the analysis results variable, obtaining partial information about the substance. On the other hand, when addressing the database of conclusions, block records were found, so it was necessary to complement the process with text analysis to identify psychoactive substances; later, to complete the substances, information crossings were made between the two bases, based on the key variables, root number and NUNC, with emphasis on deaths. Additional information in the LIMS 8 databases was revised as of 2013.

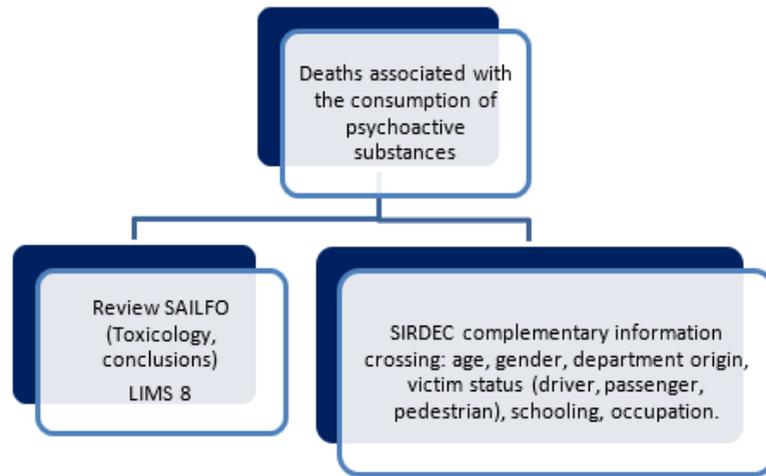
However, for the inclusion in the analysis of psychoactive substances for medical use, which at the same time have been identified as recreational use, a review of medical records was carried out, to rule out their formulation in the patient's emergency situation, such as treatment with morphine, tramadol and fentanyl.

Subsequently, having the information from the death records with a positive result for psychoactive substances, a crossing was made from the identification code with the information system from the Network of Missing Person and Corpses (SIRDEC), to expand the sociodemographic information, the temporal space and the characteristics of the event.

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<sup>5</sup>Specifically, the data reported by toxicology laboratories in their conclusions.

The data from SAILFO and SIRDEC that could be crossed were those from 2018 to 2020 by unification and standardization of key codes, within National Forensics Institute from 2018.



**Figure 1. Sources of information on variables analyzed from the INMLCF (National Forensics Institute).**

### Criteria of inclusion

Case definition: Any registry with a positive result of consumption of psychoactive substances with toxicology test of victims who present an injury of fatal external cause, located anywhere in the national geography and who have entered the National Forensics Institute.

In addition to complying with the definition of case - according to the process of crossing information as inclusion criteria - it must be taken into account that they were events that should have happened between January 1, 2013, and December 31, 2020, and that in addition, they must have been presented as cases of death, endorsed by the Colombian forensic medical system, by ex officio request or by request from the competent authority.

<sup>2</sup>Específicamente los datos que reportan los laboratorios de toxicología en sus conclusiones

On the other hand, as already explained, it is necessary to clarify to the reader about the possible limitations that the information may present, as is the case of under registration, because not all corpses that enter the National Forensics Institute are analyzed for psychoactive substances other than alcohol.

The National Forensics Institute has protocols for dealing with cases according to the cause of death, as well as incidents by firearm projectile or by knife, only breathalyzer tests are carried out, unless the prosecutor of the case makes the requirement for an analysis of psychoactive substances. In some cases, the result of the psychoactive substance was not identified by the database. Likewise, it should be reported that some variables such as homicide circumstance, educational level, marital status and occupation, the percentage of cases without information may exceed 15%, because the data do not arrive complete in the inspection report of the corpse.

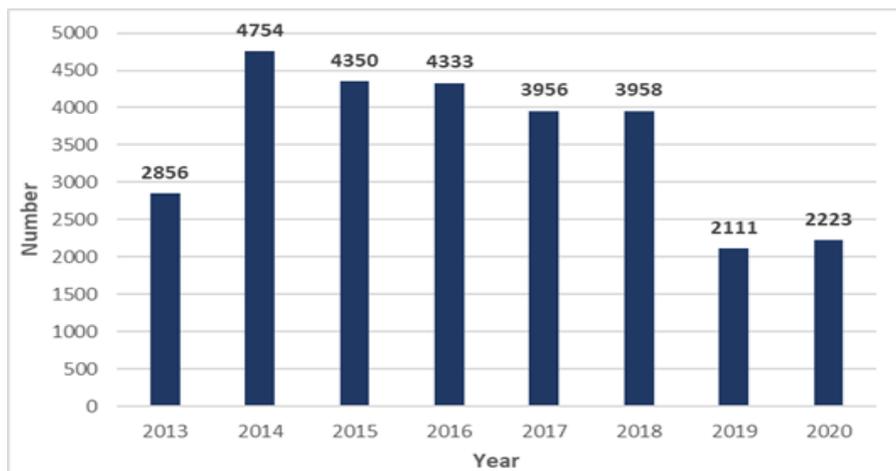
Finally, it is clarified that the results of this analysis do not allow to establish consumption habits, nor the state of addiction.

### Results

#### Analysis of toxicology results external deaths

Analysis of toxicology results external deaths

When analyzing the SAILFO (toxicology, conclusions) databases of Forensic Medicine in the period from 2013 to 2020, 28,541 cases were identified with positive results that –at the time of death– involve psychoactive substances. In addition, it was found that the largest record of the analyzed series appears in 2014, with 4,754 incidents, from that year values close to 4,000 results are recorded until 2018, however, for the years 2019 and 2020 there is a decrease in cases (view Graphic 1).



**Graphic 1. Deaths associated with the consumption of psychoactive substances. Colombia, years 2013-2020.**

Source: National Forensics Institute, SAILFO, LIMS 8..

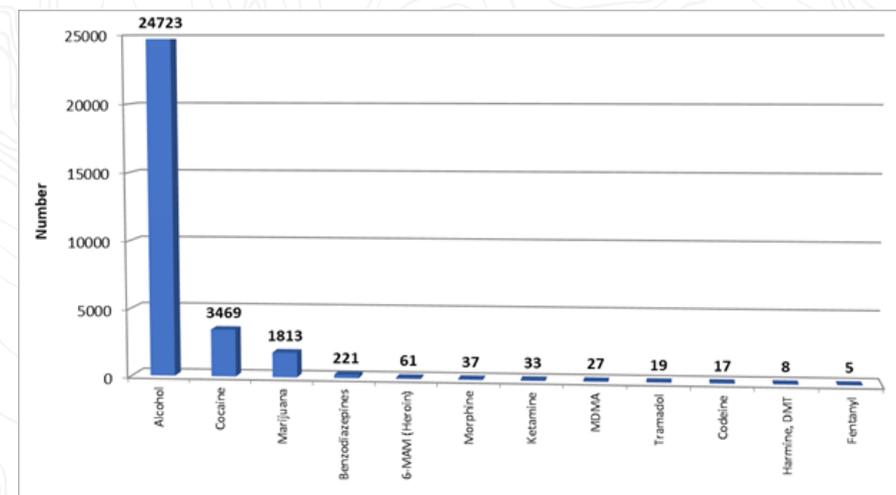
As shown in Graphic 2, of the cases identified with positive results of the toxicological analysis, the substance that stood out in the greatest number was alcohol with 24.723; followed by cocaine, with 3.469; and by marijuana with 1.813 deaths.

With regards to cases from the autopsy rooms, concerts that have a medical use were identified, and at the same time, they are considered of a recreational nature. For example, 37 cases were found related to morphine, and it was evident that 10 of them had consumption of another type of substance, such as cocaine, which is the most frequently mixed element. Tramadol is another of the substances for medical use that were found, with a record of 19 cases associated with its use.

On other hand, in 61 cases, the substance 6-monoacetylmorphine metabolite of heroin could be identified, 51 of which showed a consumption of another substance, mainly cocaine, which was found in 38 of these registries.

Likewise, five cases of fentanyl consumption were confirmed with possible recreational use; it can be said that this drug had already been found on the market for recreational purposes. Although the serious health risks associated with the consumption of this substance were already known, mortality statistics had not been detected in the country.

On the other hand, as part of the new psychoactive substances identified in the national market, thanks to the Early Warning System of Colombia, the use of the substance PMMA (paramethoxymethamphetamine), was detected, of which no cases of mortality had been detected; although it should be clarified that in this analysis a death associated with this drug is observed. In addition, two deaths associated with 25B-NBOMe were identified.

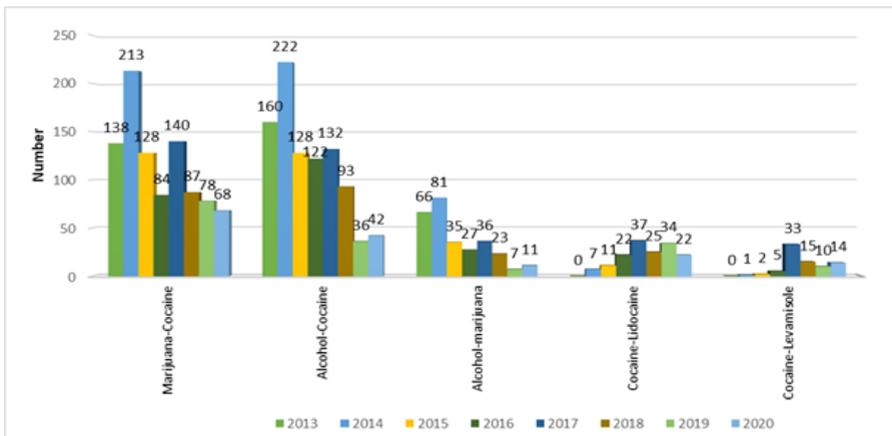


**Graphic 2. Deaths associated with the consumption of psychoactive substances, according to substances. Colombia, years 2013-2020.**

Source: National Forensics Institute, SAILFO, LIMS 8.

In Graphic 3 can be seen that the mixture of psychoactive substances found in the highest number was marijuana and cocaine in 936 deaths, presenting the highest record in 2014. Secondly, the combination of alcohol and cocaine was identified with 935 cases.

Among the main mixtures, cocaine with lidocaine was found, a substance that has been identified as an adulterant for cocaine; mixtures of cocaine were also evident with other adulterants such as: levamisole, phenacetin, levomepromazine and caffeine.

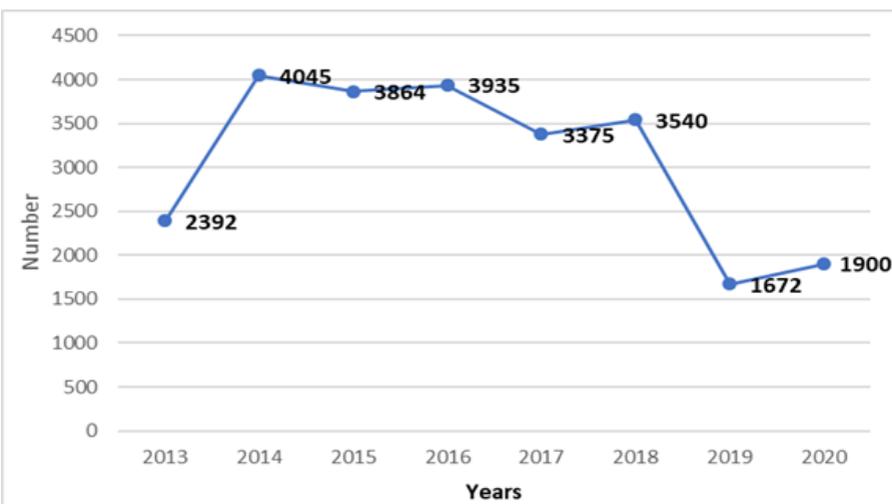


**Graphic 3. Top five mixtures of psychoactive substances identified in deaths associated with drug use. Colombia, years 2013-2020.**

Source: National Forensics Institute, SAILFO, LIMS 8.

### Mortality associated with alcohol consumption

From the information analyzed, 24.723 cases that had presence of alcohol were found; of these, the highest value was recorded in 2014 with 4.045 cases; while during the years 2015 to 2018, the records stabilized and finally in 2019 they decreased to 1.672; however, by 2020 an increase to 1.900 cases was evident.

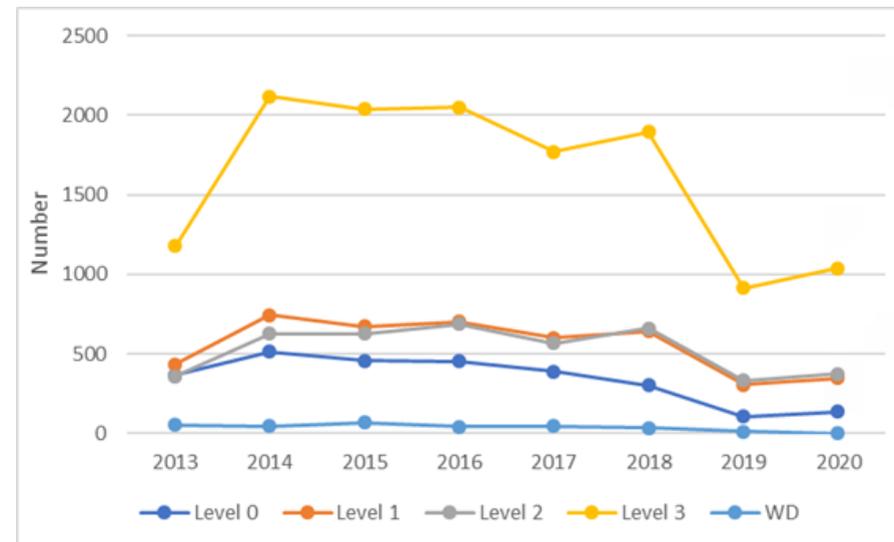


**Graphic 4. Number of deaths associated with alcohol consumption. Colombia, years 2013-2020.**

Source: National Forensics Institute, SAILFO, LIMS 8.

As can be seen in Graphic 5, the cases analyzed presented a high concentration of ethanol, grade 3 drunkenness, showing percentages greater than 50% of the total records for each year, with the same scale of alcohol.

The percentage of cases without information regarding the degree of alcohol was less than 2% for all years, for 2020 this percentage is 0,1%.



**Graphic 5. Cases of deaths associated with alcohol consumption according to alcohol level. Colombia, years 2013-2018.**

Source: National Forensics Institute, SAILFO, LIMS 8.

### General and particular characteristics of deaths associated with the consumption of psychoactive substances for years 2018-2020

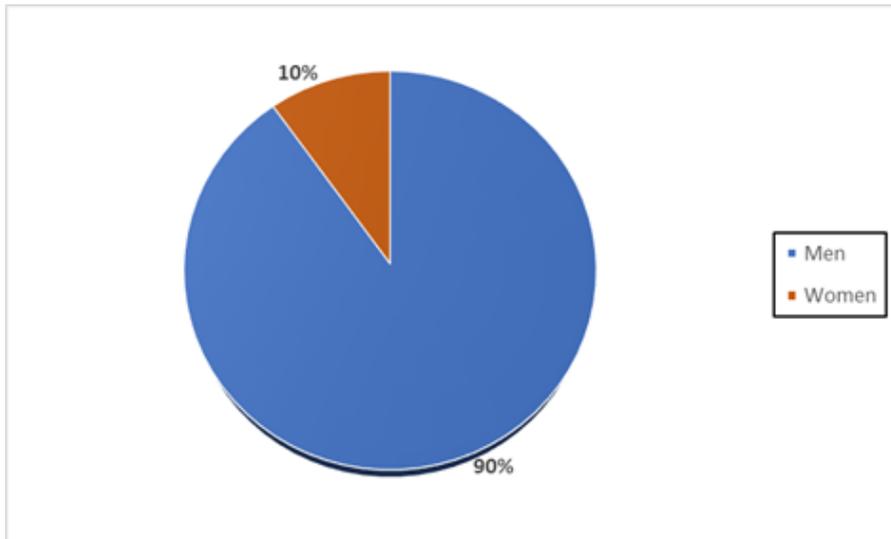
As mentioned above, it was possible to cross with SIRDEC the information corresponding to the years 2018 to 2020, which made it possible to obtain complementary data that allowed a better analysis of the context of deaths associated with the use of psychoactive substances. For the analysis presented below, it was possible to cross information from 7.007 cases in the aforementioned period.

That is why a description of variables is made below, such as: sociodemographic, mode of death, characteristics of the event, spatial-temporal circumstance and geographical location of the cases

## Distribución Sociodemográfica

During the years 2018 to 2020, according to the crossing of information carried out 90% of deaths associated with the consumption of psychoactive substances, involve men, with 6.312 cases; however, 10% correspond to women, with 905 deaths (view Graphic 6).

In men, higher percentage values of alcohol (85,8%) and marijuana (6%) are identified, that in the case of women, where a percentage weight of 80% is evident in alcohol and 2,9% in marijuana. On the other hand, in women (4%), positive results of benzodiazepines are identified higher than the values identified in men (1%).



**Graphic 6. Percentage distribution of deaths associated with the consumption of psychoactive substances by gender. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC

As shown in Table 1, when analyzing by age range, it is observed that –of deaths associated with the use of psychoactive substances– 57,8% of people are between –the ages of 20 and 39. It is striking that in 25 years old, it is women who hold the highest percentages.

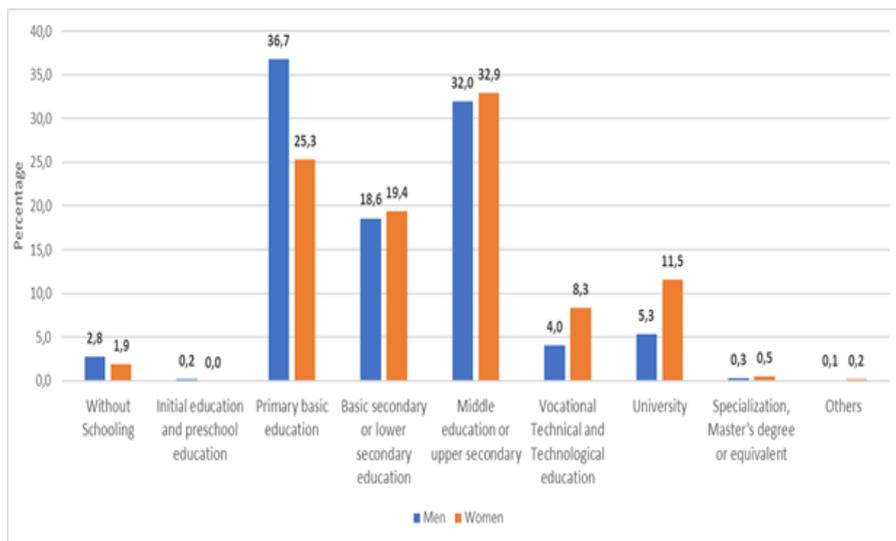
In the group between 20 and 24 years old, the highest percentage of cases is recorded in women and in men the highest value is identified in the group between 25 and 29 with 16,7%. However, from the age of 30, the percentage is higher in men, with the exception of the group between 40 and 44 years old. Finally, in all people over 70 years of age, very close percentage values by gender are evident.

| Age group          | Men          | Women        | Grand Total  |
|--------------------|--------------|--------------|--------------|
| 14 and under       | 0,4          | 1,2          | 0,5          |
| 15 to 19           | 6,2          | 7,8          | 6,3          |
| 20 to 24           | 15,9         | 21,2         | 16,5         |
| 25 to 29           | 16,7         | 15,7         | 16,6         |
| 30 to 34           | 13,3         | 13,0         | 13,3         |
| 35 to 39           | 11,5         | 10,4         | 11,4         |
| 40 to 44           | 8,1          | 8,8          | 8,2          |
| 45 to 49           | 7,0          | 6,3          | 6,9          |
| 50 to 54           | 6,1          | 5,2          | 6,0          |
| 55 to 59           | 5,4          | 3,2          | 5,2          |
| 60 to 64           | 4,4          | 3,0          | 4,2          |
| 65 to 69           | 2,1          | 1,7          | 2,0          |
| 70 to 74           | 1,8          | 1,6          | 1,8          |
| 75 to 79           | 0,7          | 0,7          | 0,7          |
| 80 and more        | 0,4          | 0,2          | 0,4          |
| <b>Grand Total</b> | <b>100,0</b> | <b>100,0</b> | <b>100,0</b> |

**Table 1. Percentage distribution of deaths associated with the consumption of psychoactive substances by age group and gender, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC

When analyzing the educational level of deaths with positive results for psychoactive substances, it is observed that women register, in a higher percentage, a type of upper secondary or secondary education with 32,9%, followed by primary basic education with 25,3%. In men, the highest percentage recorded primary education with 36,7%, followed by middle or upper secondary education with 32%. However, the percentage of deaths at the technical, technological and university levels, in the case of women, is twice higher than the percentages identified in men with these educational levels (view Graphic 7).

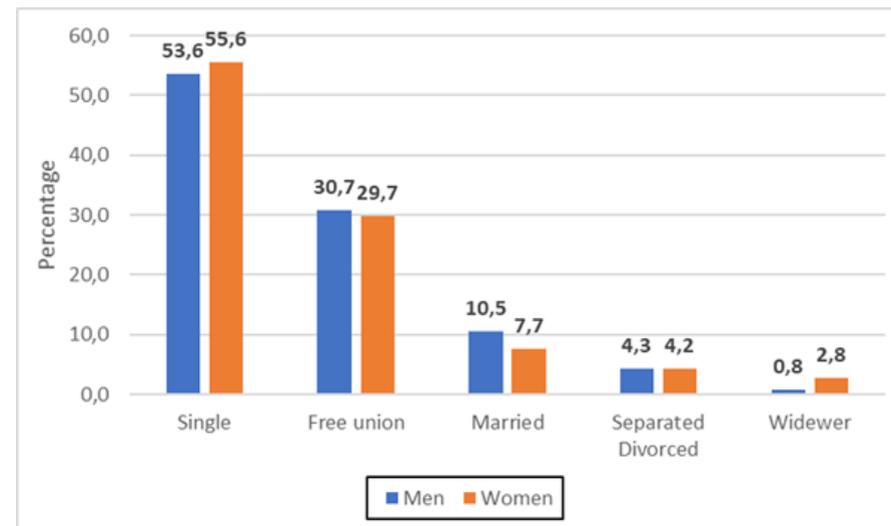


**Graphic 7. Percentage distribution of deaths associated with the use of psychoactive substances by schooling and gender. Colombia, years 2018-2020.**

Note: 1.164 cases without information in schooling are excluded (1.058 men and 106 women)

Source: INMLCF, SAILFO, LIMS 8, SIRDEC.

In Graphic 8 it can be seen that single marital status occupies the first places of the cases –both in men and women– with values greater than 53%; secondly, there is free union marital status with a percentage of 30,7% in men, while for women it is 29,7%.



**Graphic 8. Percentage distribution of deaths associated with the use of psychoactive substances by marital status and gender. Colombia, years 2018-2020.**

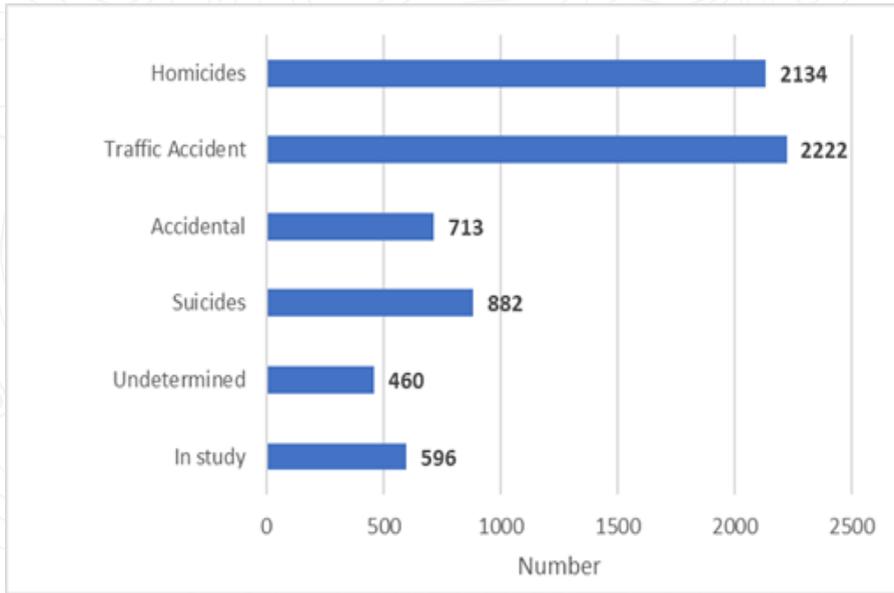
Source: INMLCF, SAILFO, LIMS 8, SIRDEC

Note: 966 cases without marital status information are excluded (883 men and 83 women).

### Way of death

As can be seen in Graphic 9 of the deaths associated with the consumption of psychoactive substances, the highest percentage recorded transport accidents as a way of dying with 31,7% (2.222cases); while homicides<sup>6</sup> ranked second with 30,5% of cases (2.134).

<sup>6</sup> For this analysis, the classification of homicide is made from the guide to procedures for the performance of forensic medical autopsies of the National Forensics Institute and not from a judgment of a judge according to the code of criminal procedure.



**Graphic 9. Distribution of cases of deaths associated with the use of psychoactive substances, by way of death. Colombia, year 2018**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC

Of the deaths related to transport accidents, it was identified that 92,1% (2.047) of the cases recorded alcohol, of which 80% had grades 2 or 3 of alcohol; second, cocaine was evidenced in 5.4% of cases (121); and thirdly, marijuana was found in 4,6% of cases (103). These data can pre-register considering that in positive cases with alcohol they are not processed with other psychoactive substances, according to institutional protocols.

With regard to homicide related deaths, it was identified that 87,4% (1.866) of the cases recorded alcohol, of which 75,8% had grades 2 or 3 of breathalyzer; secondly, cocaine was evidenced in 11,2% of cases (239), and third, marijuana was found in 7,4 of cases (158). It should be clarified that underreporting can also be presented in these data, considering that in homicides by firearm or sharp weapon, only breathalyzer analysis is carried out according to INMLCF protocols. It can be said that, if the authority requires it, other types of laboratory tests can be processed.

In relation to suicide, 82% of cases (723) recorded alcohol; of these, 65,7% had grades 2 or 3 of breathalyzer. Cocaine ranks second with 3,3% (71 cases) and in third place marijuana was identified with 1,7% (36 cases). In these cases, underreporting may also occur, because in suicides with a firearm, only blood alcohol analysis is performed, and analysis of other psychoactive substances is not included.

**Distribution according to characteristics of the event**

After analyzing the deaths associated with the consumption of psychoactive substances and the condition of the victim in transport accidents, we can infer that 83,5% of cases affect vehicle occupants, especially involving drivers with 72,8% (view Graphic 10).



**Graphic 10. Distribution of cases of deaths in traffic accidents associated with the consumption of psychoactive substances, according to the condition of the victim. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC

Note: 14 cases without information are excluded.

As can be seen in Table 2, of the deaths linked to the consumption of psychoactive substances, the most affected road actors, by transport accidents, are motorcycle users, concentrating 67,9% higher by about 18 percentage points, than the national value recorded by the National Forensics Institute in 2018, in the general population, which was 50,2%<sup>7</sup>.

<sup>7</sup> Taken from: National Forensics Institute. "FORENSIS 2018 DATOS PARA LA VIDA". Bogotá, 2019.

Of the total number of drivers, motorcyclists account for 85,2% of deaths associated with the consumption of psychoactive substances, 7,4% higher than what was reported in the general population, for the same year, which was 77,8%. The pedestrian was the second road actor with the greatest impact on transport accidents with 16,4%, it should be noted that the Graphic was 9,3% lower than reported in accidents in the general population.

| Means of transport | Drivers |      | Passenger |      | Pedestrian |     | No information |     | Grand Total |      |
|--------------------|---------|------|-----------|------|------------|-----|----------------|-----|-------------|------|
|                    | Cases   | %    | Cases     | %    | Cases      | %   | Cases          | %   | Cases       | %    |
| Motorcycle         | 1.369   | 85,2 | 140       | 59,1 | -          | 0   | -              | 0   | 1.509       | 67,9 |
| Pedestrian         | -       | 0,0  | -         | 0,0  | 365        | 100 | -              | 0   | 365         | 16,4 |
| Car-Van            | 105     | 6,5  | 68        | 28,7 | -          | 0   | -              | 0   | 173         | 7,8  |
| Bicycle            | 105     | 6,5  | 3         | 1,3  | -          | 0   | -              | 0   | 108         | 4,9  |
| Truck              | 12      | 0,7  | 15        | 6,3  | -          | 0   | -              | 0   | 27          | 1,2  |
| Bus                | 1       | 0,1  | 9         | 3,8  | -          | 0   | -              | 0   | 10          | 0,5  |
| Others*            | 14      | 1,0  | 2         | 0,8  | -          | 0   | -              | 0   | 16          | 0,7  |
| No information     | -       | 0,0  | -         | 0,0  | -          | 0   | 14             | 100 | 14          | 0,6  |
| Grand Total        | 1.606   | 100  | 237       | 100  | 365        | 100 | 14             | 100 | 2.222       | 100  |

**Table 2. Distribution of cases of deaths in traffic accidents associated with the consumption of psychoactive substances, according to the means of displacement and condition of the victim. Colombia, years 2018–2020.**

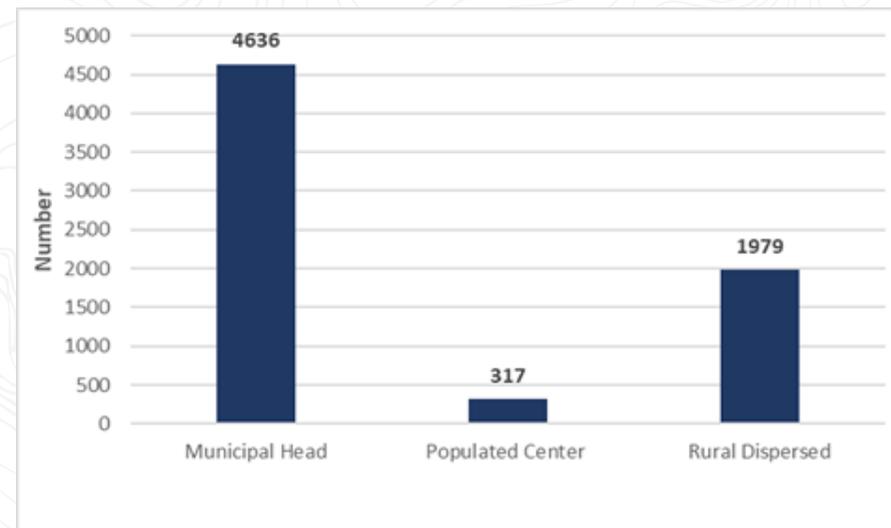
Source: INMLCF, SAILFO, LIMS 8, SIRDEC

\*Others grouped: Airplane, small plane, agricultural machinery, human traction.

### Spatial-temporal distribution of the event

This chapter will describe the characteristics will describe the characteristics of time and place of the event, observing the patterns of deaths by area of occurrence, by months and by days of the week.

During the period analyzed, 66,9% of deaths with a positive result for the use of psychoactive substances occurred in the municipal capital; 28,5% in the rural part, and 4,6% in population centers. In the municipal capital, the highest percentage of cases –34,2%– was associated with homicides, followed by traffic accidents with 23,7%. With regards to rural areas, incidents were more associated with traffic accidents with 49,2%, of which 69,6% used motorcycles as a means of travel (89,5% drivers; 10,5% passengers) and 6,7% cars (69,2% drivers; 30,8% passengers).



**Graphic 11. Distribution of cases of deaths associated with the use of psychoactive substances, area of occurrence of the event. Colombia, year 2018**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC.

Note: 75 cases without information are excluded.

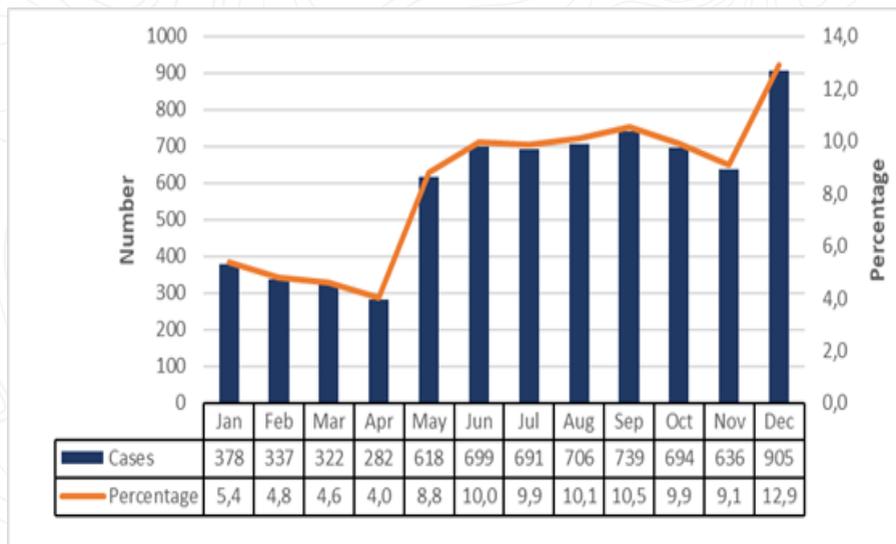
The highest frequency of deaths, which refer to the use of psychoactive substances, was recorded in December with 905 cases (12,9%), according to the 2018 Forensics report<sup>8</sup>, over the years this month it appears to be the most affected by deaths in transport accidents, as well as homicides that, as referred to, are two types of deaths with the highest number of cases related to consumption of psychoactive substances.

From June to October, records close to or greater than 700 cases are evident in each month.

Moreover, in the months of January to April there are fewer cases with lower values than 400; in the month of May, deaths increase to 618, with more than 630 deaths per month hereinafter recorded.

<sup>7</sup>National Forensics Institute. Forensics 2018. Available in:

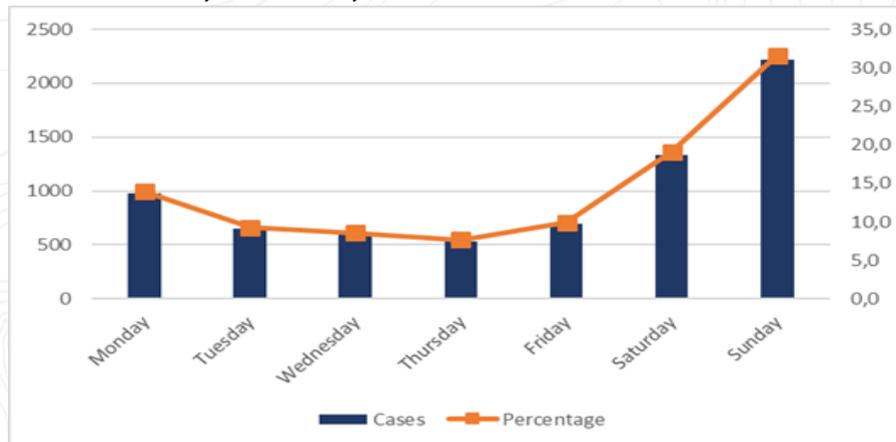
<https://www.medicinalegal.gov.co/documents/20143/386932/Forensics+2018.pdf/be4816a4-3da3-1ff0-2779-e7b5e3962d60>



**Graphic 12. Distribution of cases of deaths associated with the consumption of psychoactive substances, according to the month of the event. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC

In Graphic 13 it can be seen that weekends are the days that recorded the most deaths associated with drug use; Saturday and Sunday account for 50,7% of cases, while Thursday was the day of the week with the lowest number of deaths.



**Graphic 13. Distribution of cases of deaths associated with the use of psychoactive substances, according to the day of the week of the event. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC

## Cases by department of the event

Regarding the geographical distribution of deaths associated with the use of psychoactive substances, in the period analyzed the department that recorded the highest frequency of cases was Bogotá with 1.294, representing 18,5%; followed by Antioquia with 1.195 cases representing 17,1%; in third place is Cundinamarca with 666 deaths, representing 9,5%. When looking at the distribution by gender, in these departments, cases in men are more than 85%. The highest percentage of women is evident in Bogotá and Valle del Cauca with 12,7% and 12,6% respectively. These ten departments concentrate 5.201 cases that correspond to 74,2% of deaths associated with the use of psychoactive substances.

| Department of the event   | Men    |      | Women  |      | Grand Total |
|---------------------------|--------|------|--------|------|-------------|
|                           | Number | %    | Number | %    |             |
| <b>Bogotá, D.C.</b>       | 1.130  | 87,3 | 164    | 12,7 | 1.294       |
| <b>Antioquia</b>          | 1.067  | 89,3 | 128    | 10,7 | 1.195       |
| <b>Cundinamarca</b>       | 617    | 92,6 | 49     | 7,4  | 666         |
| <b>Valle del Cauca</b>    | 381    | 87,4 | 55     | 12,6 | 436         |
| <b>Santander</b>          | 282    | 92,2 | 24     | 7,8  | 306         |
| <b>Tolima</b>             | 263    | 88,0 | 36     | 12,0 | 299         |
| <b>Boyacá</b>             | 256    | 93,8 | 17     | 6,2  | 273         |
| <b>Nariño</b>             | 227    | 91,2 | 22     | 8,8  | 249         |
| <b>Norte de Santander</b> | 220    | 89,8 | 25     | 10,2 | 245         |
| <b>Meta</b>               | 218    | 91,6 | 20     | 8,4  | 238         |

**Table 3. Ten departments with the highest number and percentage of deaths associated with the use of psychoactive substances, according to gender. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC.

As shown in Table 4, the city that recorded the highest number of deaths, in relation to the consumption of psychoactive substances, was Bogotá with 1.294 cases representing 18,5%; followed by Medellín with 464 equivalents to 6,6%. In these ten cities, 2.662 were recorded, representing 38% of the deaths analyzed.

| City of the event    | Men    |      | Women  |      | Grand Total |
|----------------------|--------|------|--------|------|-------------|
|                      | Number | %    | Number | %    |             |
| <b>Bogotá, D.C.</b>  | 1.130  | 87,3 | 164    | 12,7 | 1.294       |
| <b>Medellín</b>      | 407    | 87,7 | 57     | 12,3 | 464         |
| <b>Soacha</b>        | 111    | 91,0 | 11     | 9,0  | 122         |
| <b>Pasto</b>         | 101    | 93,5 | 7      | 6,5  | 108         |
| <b>Villavicencio</b> | 92     | 89,3 | 11     | 10,7 | 103         |
| <b>Cali</b>          | 83     | 81,4 | 19     | 18,6 | 102         |
| <b>Cúcuta</b>        | 78     | 87,6 | 11     | 12,4 | 89          |
| <b>Bucaramanga</b>   | 77     | 87,5 | 11     | 12,5 | 88          |
| <b>Bello</b>         | 75     | 91,5 | 7      | 8,5  | 82          |
| <b>Ibagué</b>        | 61     | 85,9 | 10     | 14,1 | 71          |
| <b>Neiva</b>         | 67     | 94,4 | 4      | 5,6  | 71          |

**Table 4. Municipalities with the highest number and percentage of deaths associated with the consumption of psychoactive substances according to gender. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC.

The following map analyzes the geographical distribution by department and by gender of deaths related to the use of psychoactive substances. In all departments there is a higher concentration of cases in men. Arauca and Sucre are the departments where the highest deaths in women were recorded with 20% and 16,7% respectively.



**Map 1. Deaths associated with the consumption of psychoactive substances, according to department and gender. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC.

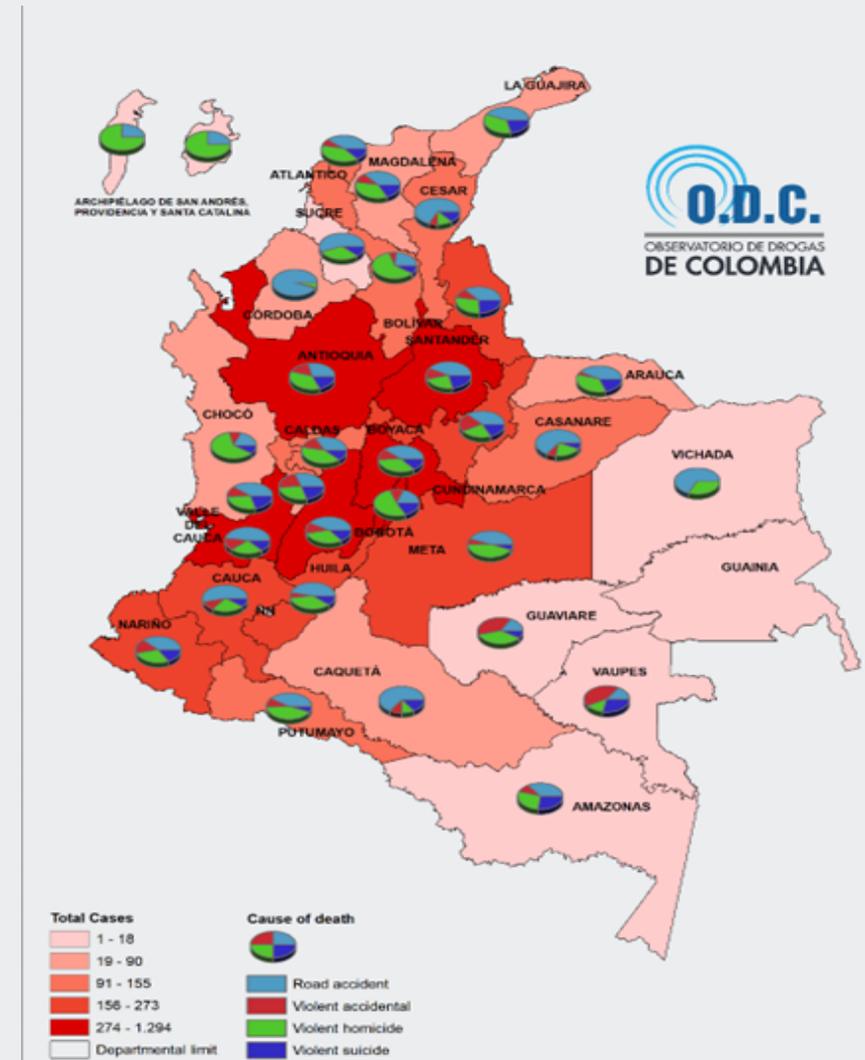
As mentioned before, the highest percentage of cases is concentrated in the municipal capitals. When carrying out a departmental analysis, Arauca, Boyacá, Casanare and Putumayo stand out, where the percentage of deaths in rural areas is more than 55%.



**Map 2. Deaths associated with the consumption of psychoactive substances, according to department and area of occurrence of the event. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC.

As can be seen on Map 3, in the departments of Amazonas, Arauca, Boyacá, Caquetá, Casanare, Cauca, César, Córdoba, Cundinamarca, Huila, La Guajira, Magdalena, Meta, Nariño, Santander, Sucre, Norte de Santander, Tolima, Valle del Cauca and Vichada, traffic accidents are the most frequent way of death. While in Antioquia, Bogotá, Bolívar, Caldas, Chocó, Guaviare, Putumayo and San Andrés, there was a higher concentration of homicides with a positive result for psychoactive substances.



**Map 3. Deaths associated with the consumption of psychoactive substances, according to department and way of death. Colombia, years 2018-2020.**

Source: INMLCF, SAILFO, LIMS 8, SIRDEC.

The development of the study: Mortality Associated with the Consumption of Psychoactive Substances, provides information on the social and health impact of drug use at the national level, generating evidence to guide policies, programs and strategies to reduce the consumption of psychoactive substances and their impact.

The following are the main conclusions that arise from this analytical process:

Various studies, local and international, refer to the relationship between traffic accidents, as well as the commission of crimes and the consumption of psychoactive substances, which raises toxicological tests to identify psychoactive substances in each of the victims who enter the INMLCF for external causes.

The consumption of alcohol, a socially accepted psychoactive substance, causes different alterations in the behavior of the individual, such as: psychological changes, organic changes and short-term neurological changes. The problematic consumption of this psychotropic represents a risk not only to individual safety, but also to other people who carry out activities such as driving cars and laboratories that involve great responsibility or that involve the carrying of firearms.

The present analysis shows that in the period from 2013 to 2020, 28,541 people were identified with a positive result, of at least one psychoactive substance at the time of death. The largest record was presented in 2014 with 4,754 cases, while in 2020 2,223 were registered with a positive result for any psychoactive substance. Alcohol was identified in greater numbers with 24,723 cases, followed by cocaine with 3,469 and, thirdly, marijuana with 1,813 deaths.

Substances that have medical use but have also been identified for recreational use were found; for example, 37 cases of morphine and 19 cases with tramadol consumption appear. Five deaths associated with the use of fentanyl, a substance that had no known mortality reference in the country, were also identified.

As part of the new psychoactive substances identified on the national market, were detected a mortality associated with the use of PMMA (paramethoxymethamphetamine), which does not known history in cases of mortality. In addition, they were found in this analysis to be two deaths associated with the consumption of 25B-NBOMe.

As mentioned above, 24,723 people were identified who had positive results for alcohol, where the highest value was recorded in 2014 with 4,045 deaths, while 1,900 deaths were evident in 2020. It should be noted that the cases analyzed presented, more frequently, grade 3 of drunkenness with percentages greater than 50% of the records for each year.

According to the exchange of information that was carried out during the years 2018 to 2020, 90% of the deaths associated with the use of psychoactive substances correspond to men and 10% to women. In relation to ages, 57,8% of deaths are between the ages of 20 and 39.

Of the deaths related to transport accidents, 2,047 (92,1%) showed alcohol, of this figure 80% had degrees of drunkenness 2 or 3. However, 1,866 deaths (87,4%) are related to homicides, which were positive for alcohol, where 75,8% showed the two highest degrees of drunkenness.

In relation to the condition of the victim in transport accidents, it was found that 82,9% of cases affect the occupants of vehicles, mostly drivers, with 72,3%. Of the total number of drivers, motorcyclists represent 85,2% higher by 7,4% than reported in the general population, for the same year, which was 77,8%.

The highest frequency of deaths associated with the use of psychoactive substances was recorded in December, with 905 cases (12,9%); however, the largest days where these events were recorded were on Saturday and Sunday.

During the years 2018 to 2020, the department that recorded the highest figure with positive results for psychoactive substances was Bogotá, with 18,5%, followed by Antioquia, with 17,1% and third place, it was occupied by Cundinamarca, with 9,5%.

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Toxicology tests are recommended for all deaths entering Forensic Medicine, to identify psychoactive substances in all deaths that enter due to an external cause. In addition, it is recommended to extend laboratory tests to substances other than alcohol, to have a better picture of the association of the use of psychoactive substances with these mortality rates.

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It is recommended that the Colombian Drug Observatory continue, for the following years, and the official implementation of this study based on data and statistics, capable of providing very useful information when making decisions in public policy.

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The flow or articulation of this information should be on a quarterly basis, to monitor patterns of psychoactive substances, which could be very useful when identifying new substances in the national market, generating important information for the Early Warning System of Colombia as an information exchange mechanism to respond to the problems of emerging drugs.