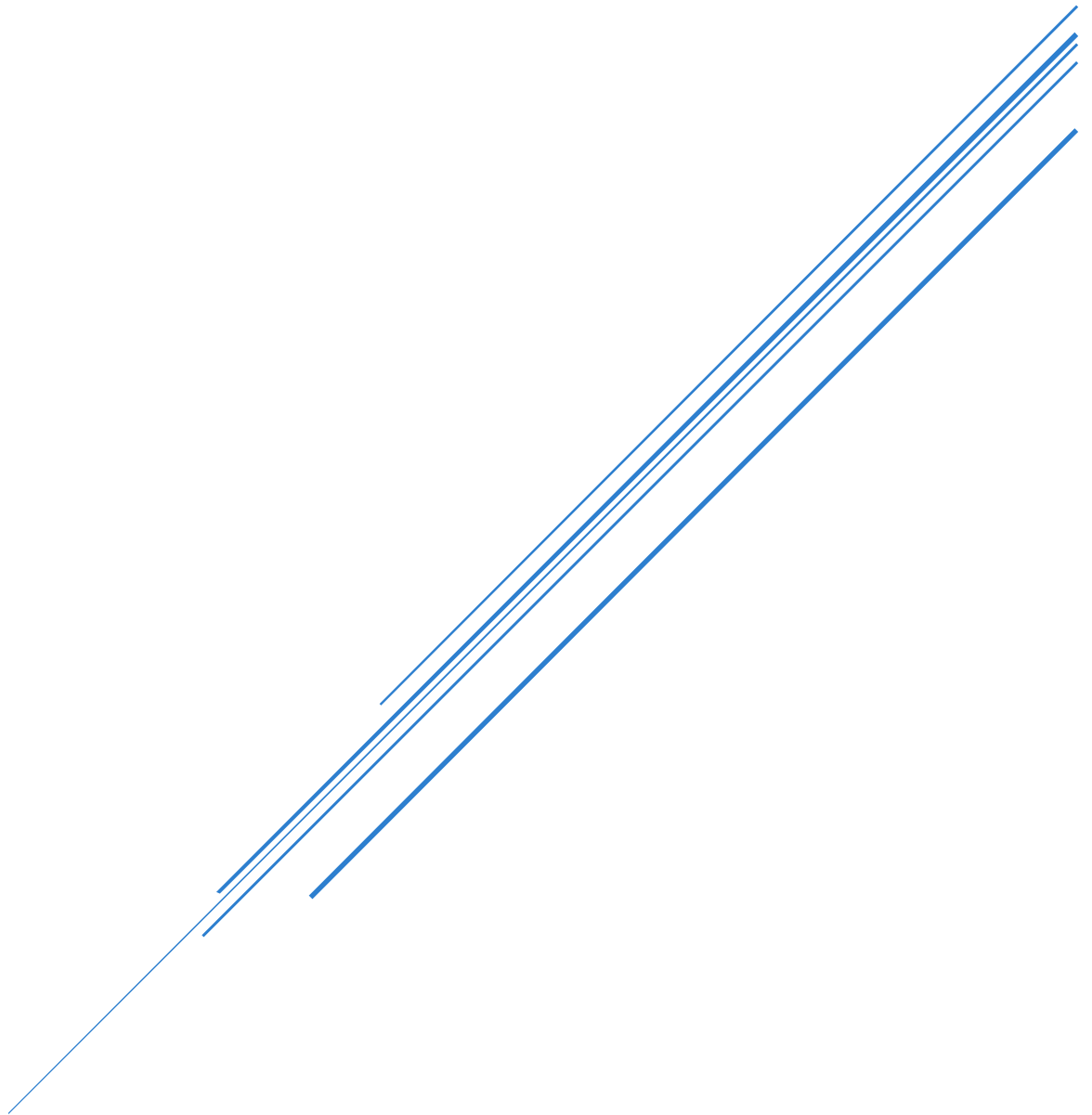


DENGUE MEXICO 2024

Geographic, Demographic and Temporal Distribution



Introduction:

In this report, an analysis of dengue cases in Mexico during the period of the year 2024 is presented, which takes into consideration from the first day of the year until July 1 of the current year indicating the most recent cases.

The main objective of this analysis is to identify patterns and trends in the data that can provide a better understanding of the distribution and impact of dengue in the Mexican population.

To this end, several factors such as gender, age, geographic distribution, notifying institutions, case status, date of symptom onset, and patient status have been considered.

Methodology:

The analysis was carried out using a dataset obtained from official governmental sources in Mexico, which are available to the population to be informed of the main epidemiological diseases that attack our health.

The dataset data (raw data) shows the records of the inhabitants who showed and presented signs of dengue fever, in which different columns are assigned to form a single record.

- ID
- Gender
- Age
- Indigenous
- State
- Notifying Institution
- Date symptoms
- Patient type
- Hemorrhagic dengue
- Defution
- Sample taking
- Status

Data were cleaned and processed using Excel, as well as analysis and visualizations were performed through Tableau. Several variables were analyzed such as:

- Gender and Age: Analyzes the distribution of cases by gender and age groups.
- States: Shows the distribution of cases by state to identify areas with higher incidence.
- Notifying Institutions: Analyzes if there are differences in the notification of cases according to the type of institution (e.g., State, Imss, Other).
- Symptom Onset Date: Perform a temporal analysis to observe trends over time (e.g., increase in certain months).
- Case Status: Examines the proportion of confirmed, probable and discarded cases over time.
- Patient Type: Difference between outpatients and inpatients and their relationship to risk factors.

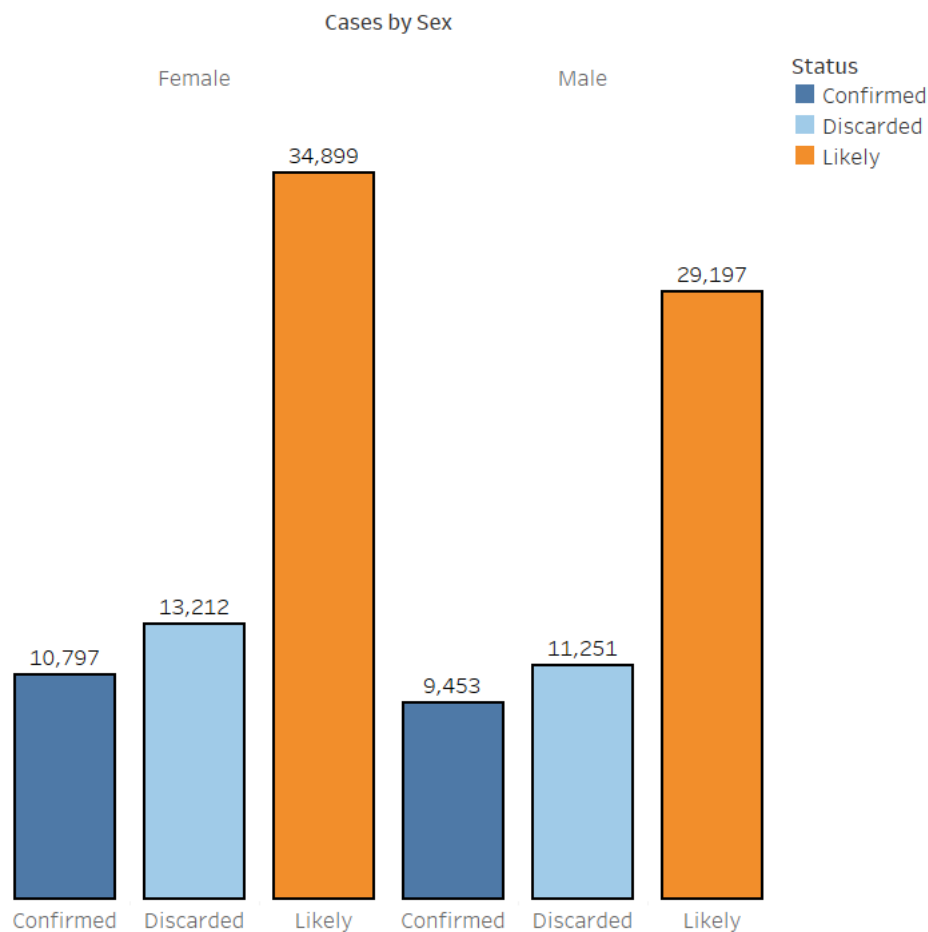
Data Analysis:

- Gender

The distribution of dengue cases by gender and age groups was examined. The results indicate that females represent a higher risk with 10,797 confirmed cases and 34,899 probable cases, as well as representing the group with more persons excluded compared to males.

The difference is minimal in the number of cases, so it is considered that both men and women are at constant risk for dengue.

The following visualization shows the sample of cases:

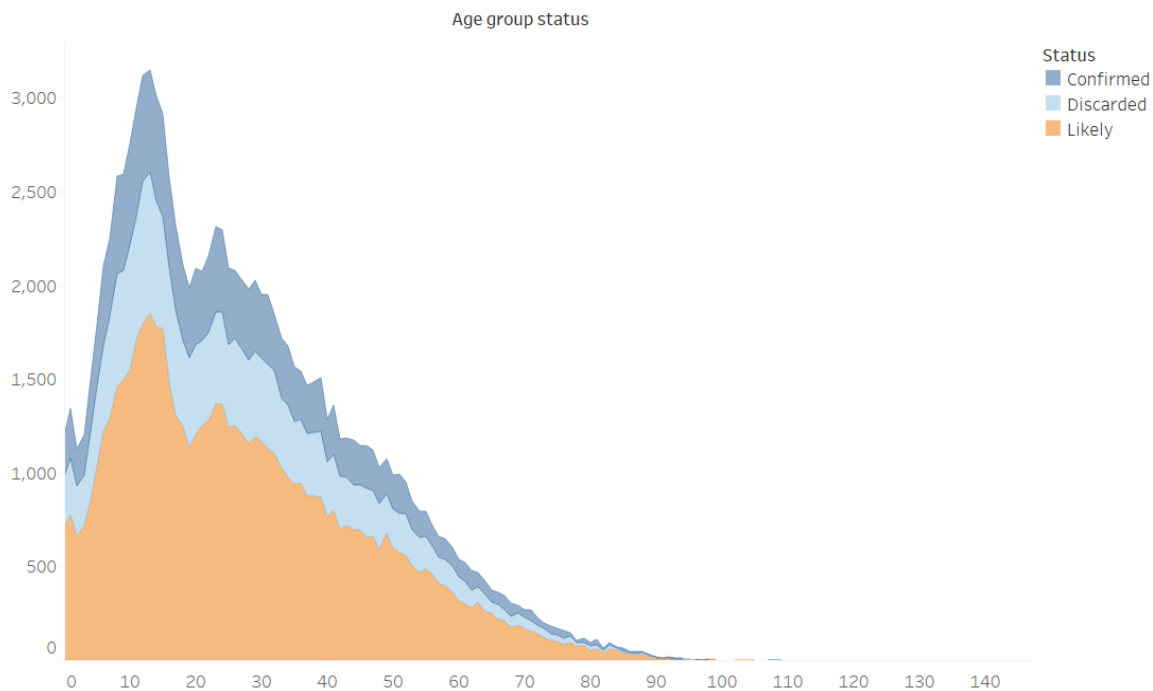


- Age

In addition, it was observed that the age group with the highest number of confirmed cases is young people, with an abundance of cases between 10 and 20 years of age.

As the age range increases, the number of cases decreases, meaning that both confirmed and probable cases are lower in older people.

The age with the highest number of confirmed cases and people suffering from dengue symptoms are children under 13 years of age, while the lowest age of confirmed cases are children under months of age and the highest age are older adults over 100 years old, to be exact, the oldest confirmed case is 112 years old.



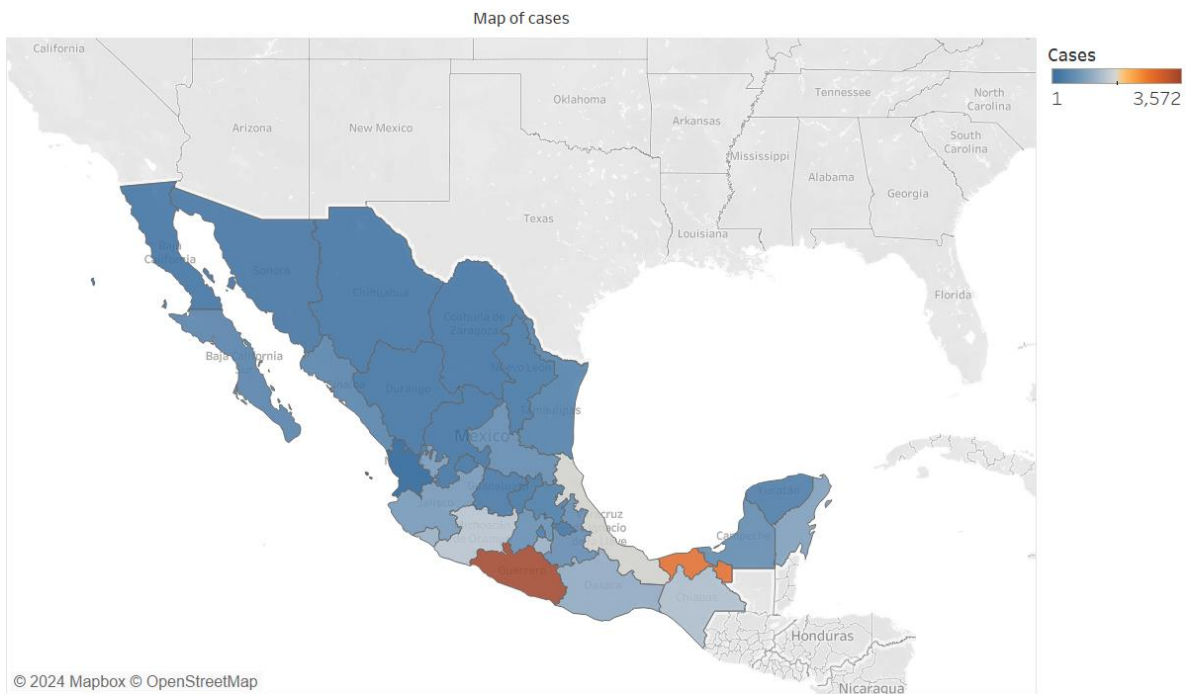
- States

The geographic distribution of the cases shows that in the north of the country there are fewer cases than in the center and south of the country, as can be seen in the following graph:

The blue colored states show amounts with a minimum of cases, while the colors with gray to orange shades show the states with more presence in dengue cases.

The states with the fewest confirmed cases are: Nayarit which has only 1 case and at the same time Chihuahua and Durango have only 2 cases.

The state most affected by dengue is Guerrero with 3,572 confirmed cases, followed by Tabasco with 2,795 cases and Veracruz with 1,711 cases.

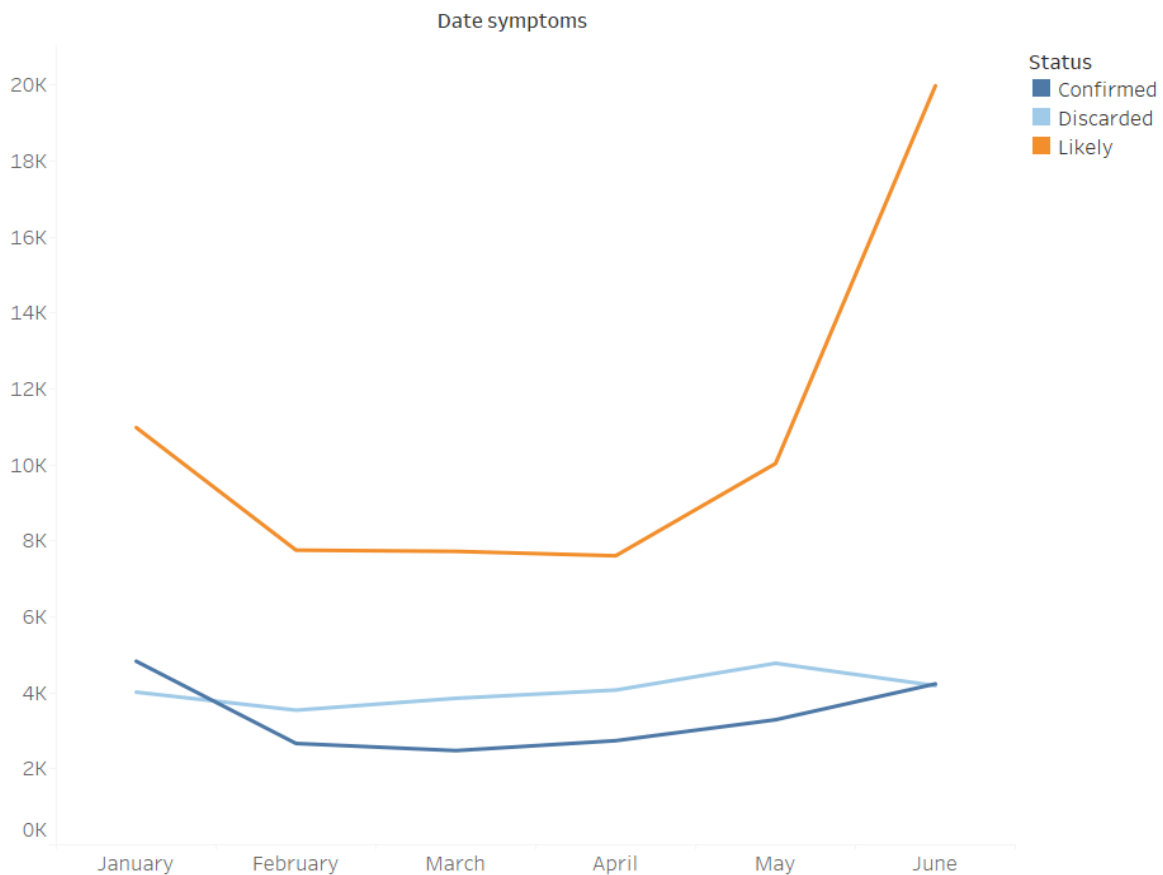


- Date of Symptom Onset

A trend was observed in the date of symptom onset, for example, confirmed and discarded cases show a not very altered behavior, while in probable cases start decreasing in February and until May and June cases increase considerably.

The months with the highest number of confirmed dengue cases are January with 4,833 and June with 4,236.

This may be related to favorable weather conditions for the proliferation of the mosquito vector.



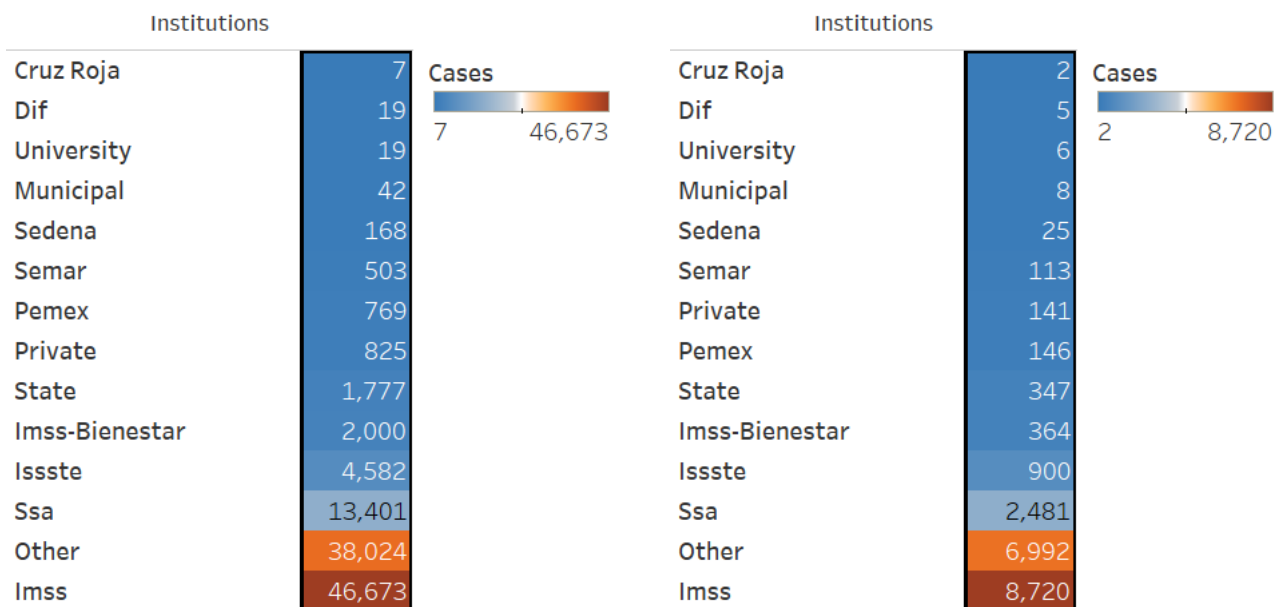
- Reporting Institutions

Data were reported by various institutions, from private institutions such as Red Cross and universities, to public ones such as municipal and belonging to Imss.

The following two visualizations show that the institutions are sorted in ascending order where the minimum number of cases presents blue colors ranging from gray blue to orange and red colors indicating the highest number of cases.

In the left visualization are those total data recorded where each institution gave an alarm to people showing signs of dengue. On the other hand, the right visualization shows the confirmed dengue cases by institution, where the minimum number of cases is counted by the Red Cross with a total of 2, and the maximum number of cases is counted by the IMSS with a total of 8,720.

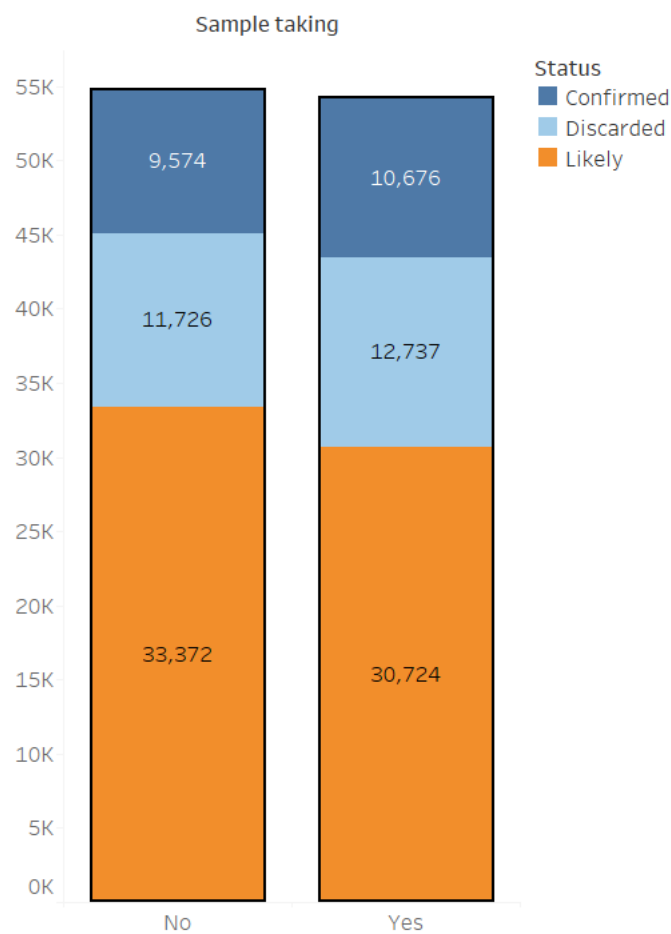
Another point to note is that not all the institutions listed are health institutions, and many the cases affected were through other types of institutions.



- Sample collection

The data set shows the cases that took the sample to diagnose the status, in total the people who did take the sample were 54,137 and on the other hand the people who did not take the sample were 54,672, a little more than 500 samples compared to the cases that chose to take the sample.

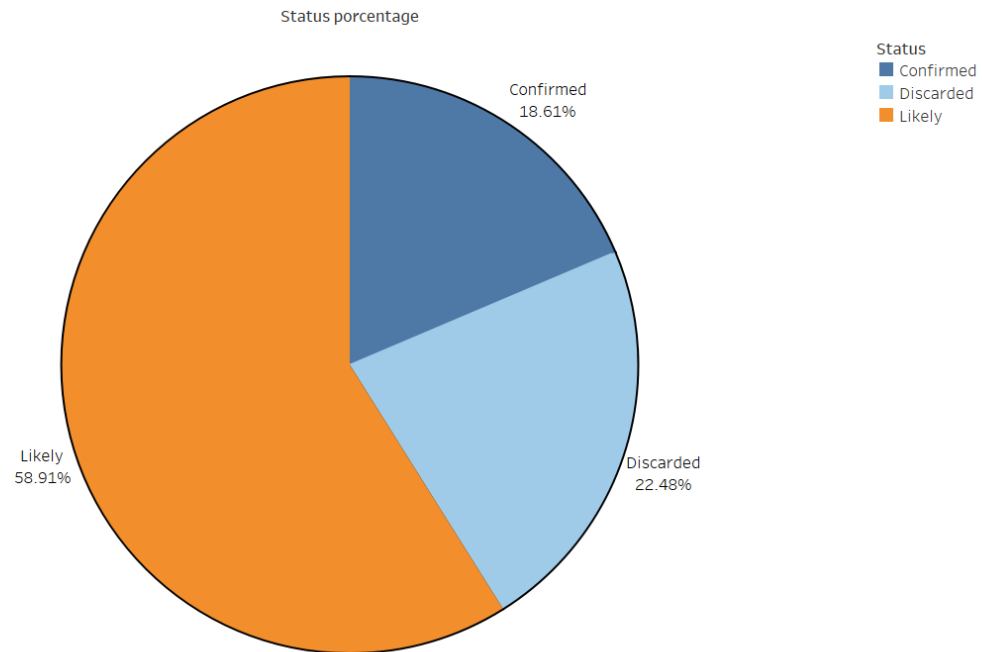
In the case of people with confirmed dengue fever, a total of 20,250 cases were reported, while the probable cases were 64,096 and finally the discarded cases totaled 24,463.



- Percentage of Status of Cases:

The analysis of the status of the cases revealed most of the percentage are probable cases with almost 60% of the set, in the case of people with confirmed dengue they represent 18% of the cases that means it is almost one third of the probable cases. Also, but not less important, the discarded cases represent a little more than 20% of the total number of cases.

This highlights the importance of improving diagnostic accuracy as it is not certain whether probable cases present the same risk as confirmed cases.

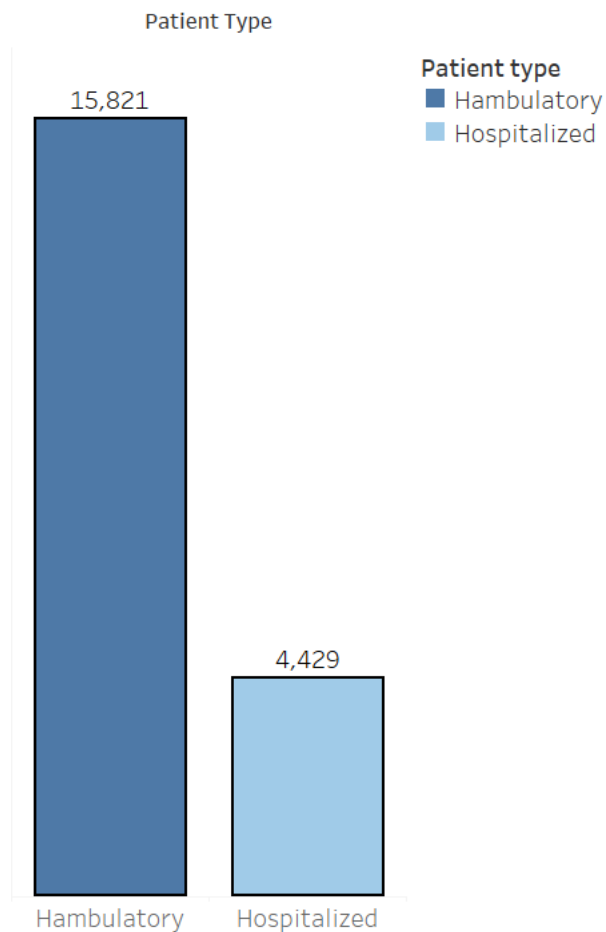


- Patient Status

The status of patients at the time of notification varied, 78% of confirmed cases are ambulatory while hospitalized cases abound at a range of almost 22%.

There were 15,821 ambulatory cases, 94 of which had dengue hemorrhagic fever, which is one of the progressive complications of dengue fever if not treated in time. On the other hand, 4,429 hospitalized cases, 86 have dengue hemorrhagic fever.

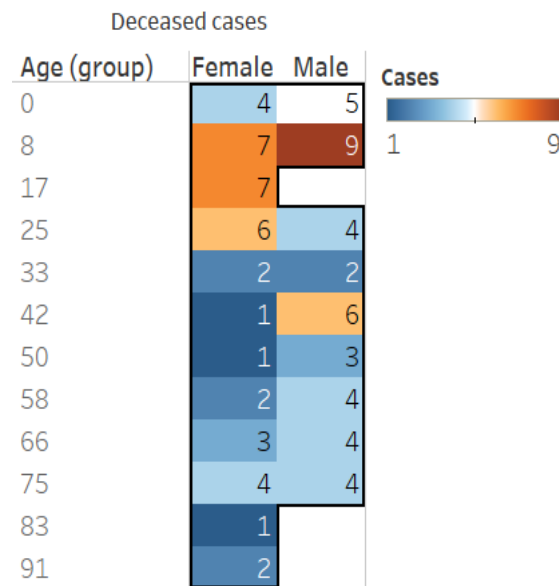
This indicates that a total of 180 cases have dengue hemorrhagic fever.



- Deaths

Finally, the results of deaths were obtained, which in total, both male and female, gave the result of 81 deaths due to dengue.

The following visualization shows that the highest number of deaths is found in children under 10 years of age with a total of 9 deaths, as well as interpreted by age group ranging from 0 to 90 years of age, where the longest deaths from dengue fever are found.



- Conclusions and Recommendations:

In conclusion, the analysis of dengue cases in Mexico during the first half of 2024 reveals several significant patterns. For example, it is noteworthy that most of the cases show probable dengue results, which means that there may be a problem at the time of sampling (studies) to check if they are confirmed cases. As a recommendation, it is important to improve the study plans to accurately detect the presence of the virus.

It was also found that the most vulnerable cases are young people under 20 years of age, where confirmed, discarded and probable cases are more abundant in this age range. It was also reported that women are slightly more exposed to dengue than men due to a minimal number of cases.

However, the greatest presence of dengue is in Guerrero, where there are more confirmed cases and at the same time more deaths registered, so it is recommended to strengthen the capacity to deal with the virus, for example: to implement awareness campaigns in the most affected states.

It is worth noting that the presence of dengue is indeterminate, and a key recommendation is to conduct additional studies to better understand the reasons behind the increase in cases in certain months.

Finally, with this analysis it is important to take care of our lives and the lives of others, we are in constant danger of new viruses and diseases, so it is important to follow the recommendations to avoid risks and problems.