Tracking the Facebook connections of Venezuelan refugee, migrant and returnee populations in Colombia

ANALYSIS OF THE FIRST QUARTERS OF 2019 AND 2020 IN LIGHT OF THE COVID-19 CONTEXT

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iMMAP locates Venezuelan migrants in Latin America through the use of the Facebook advertising data API, which shows the connections of Facebook users who were living in Venezuela before and are now living in a foreign country.

The data from the Facebook API is collected every two weeks. The estimates that are presented in this document are obtained using specific filters and based on the behavior of the Facebook users during the last 30 days.

The presented estimates are not expected to match official statistics. Facebook does not provide online censuses or statistics on migrants and refugees. These estimates should be viewed as a data source that can be used for triangulation. Facebook only provides information on certain population groups (in this case Venezuelan expatriates). It doesn't provide statistical or historical data.

The data is based on the information provided by each Facebook user, his or her current city, city of origin and the characteristics of his or her network of friends (for example, by having at least two Facebook friends in the country of origin and two Facebook friends in the destination country).

FIRST QUARTER 2019 AND 2020

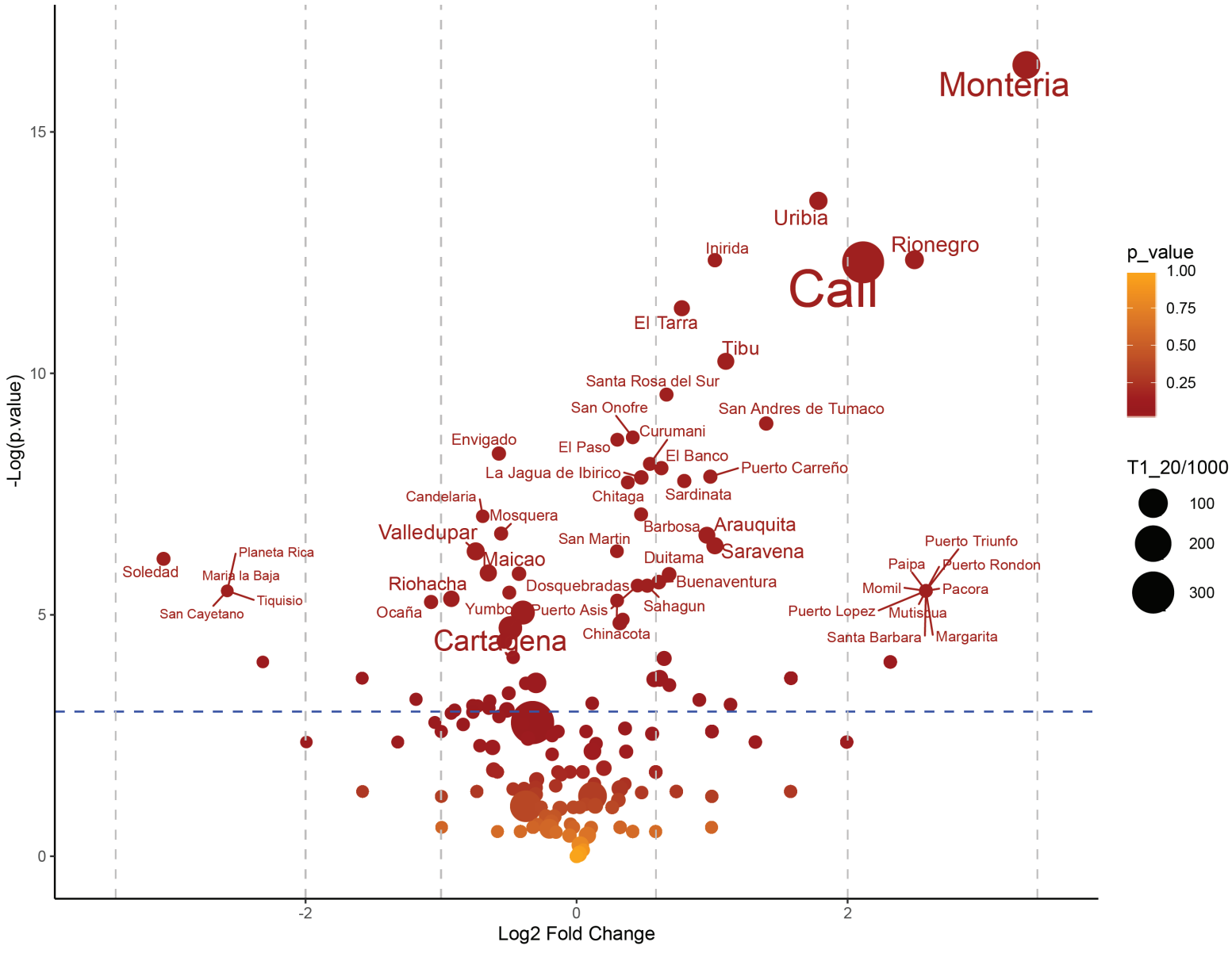
The aim of this report is to compare the situation of the first quarter of 2019 with that of same period in 2020, in order to observe changes in the connections of refugees, migrants and returnees originating from Venezuela in Colombia.

While taking into consideration that throughout the first quarter of 2020 a medical emergency has broken out as a result of COVID 19, this analysis proposes some hypotheses regarding its impact on the behavior and the possible movements of the aforementioned populations.

It should be noted that the analysis of connections on Facebook is only a rough guide to the reality, and that these data in no way constitute a population record or census. This is due to the data only referring to accounts created in Venezuela, and afterwards active on Colombian territory. Nevertheless, varied analysis has demonstrated a significant consistency and similarity in the distribution of the refugees, migrants and returnees compared with other information sources such as reports from Migración Colombia (Colombian Migration Agency), la Gran Encuesta Integrada de Hogares (The Great Integrated Household Survey) and el Censo Nacional de Población y Vivienda de 2018 de Colombia (the 2018 Colombian National Population and Dwelling Census).

1. SIGNIFICANCE OF THE VARIATIONS

GRAPH 1. RELATIONSHIP BETWEEN THE VARIATION OF CONNECTIONS TO FACEBOOK AND THEIR STATISTICAL SIGNIFICANCE BETWEEN THE FIRST QUARTER OF 2019 AND 2020



The data regarding Facebook connections of Venezuelan refugee, migrant and returnee populations in Colombia show a high level of variation in small municipalities with internet restrictions and an evident volatility in the presence of these populations.

Given this situation, it was necessary to carry out a deeper analysis to determine whether the differences shown between the two periods were down to data error and connectivity issues, or if there is enough statistical data to confirm an increase or decrease in the total number of these populations.

Because of this a set of difference of means tests was conducted, known as Student T-tests. These tests use the differential between the average of the two periods and measurement of variability, to ascertain whether these are significant or not, based on probability distribution.[1]

Thus, non-statistically significant variations indicate that there is not enough information to be sure that there is a real change, and that the observations could be down to connectivity changes, and not a new presence of refugee, migrant and returnee populations.

With that in mind, the results were made into graphics using a volcano plot, which compares the variation percentage (horizontal axis) with the statistical significance[2] (vertical axis). This way it is easier to visualize the municipalities with significant changes in the connections by refugees, migrants and returnees. This offers greater certainty about the presence of these populations in the territory.

Graph 1 shows that there are a significant number of municipalities on the volcano plot apex with 0% variation. These are only found beneath the horizontal dotted line which separates the significant changes in connections (top panel), from the ones with non-significant changes (bottom panel). Therefore, there is only statistical evidence to show that there was a real variation in 233 Colombian[3] municipalities, whereas in 381 there was no significant change, and in 509 there are no connections by refugees, migrants and returnees in the first quarter of 2019 or 2020.

It should be noted that data found higher on the volcano plot signifies a greater amount of variation evidence. Thus, Montería, Rionegro, Cali and Uribia represent the municipalities in which there is more certainty of change, and highlighting that in these places the connections increased by more than 300%.

Worryingly, the volcano plot shows that the municipalities with the greatest growth in connections were those hit by the armed conflict, such as: Tibú, Tumaco, Inírida, El Tarra, Santa Rosa del Sur, Puerto Carreño, San Onofre and the department of Arauca. All of which had an increase greater than 100%.

1 For more methodological information, see here: http://www.stat.yale.edu/Courses/1997-98/101/meancomp.htm

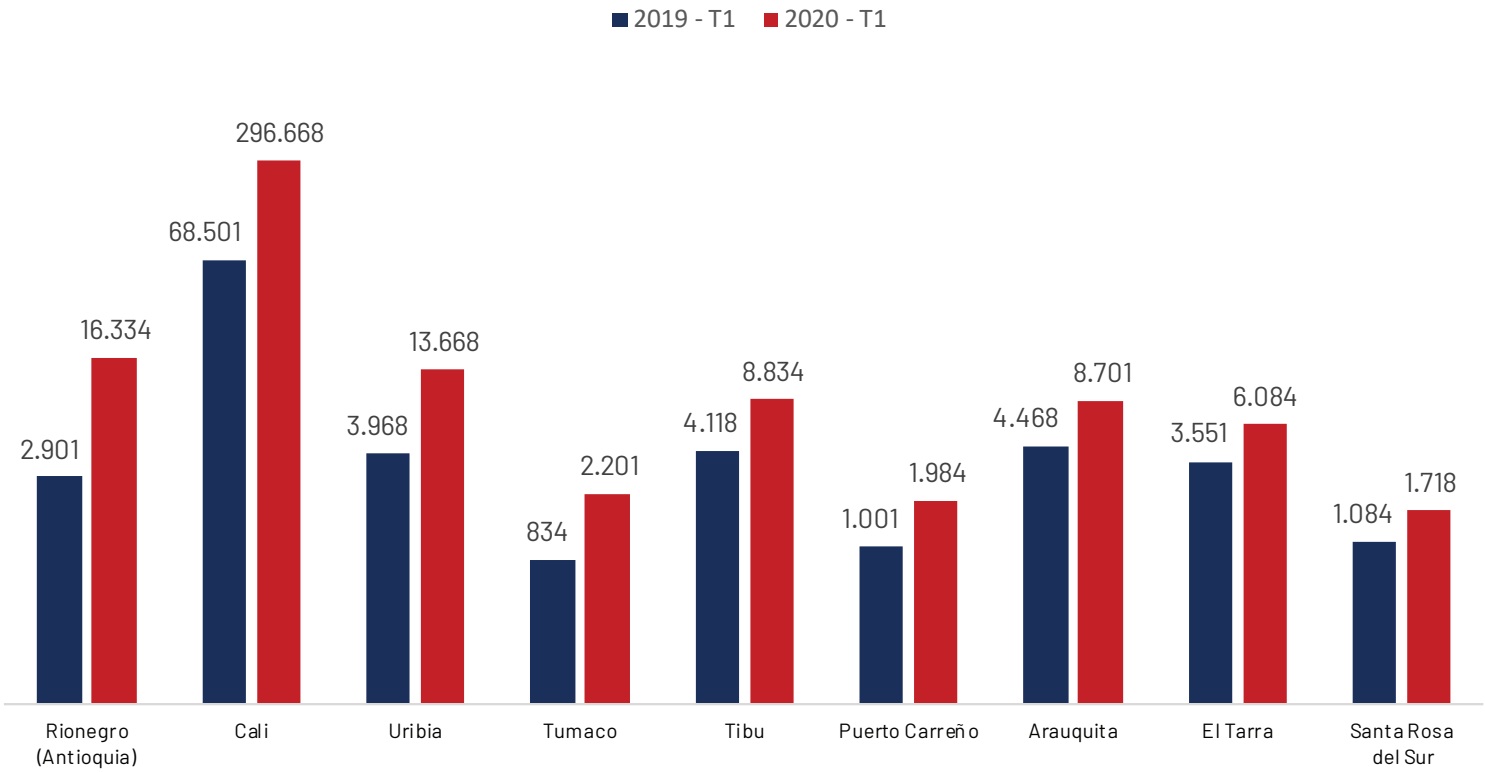
2 Volcano plots are often used in bioinformatics analysis to evaluate differential gene expression. They use the Fold Change logarithm on the horizontal axis. Fold change is defined as the division between the final value and the initial value, therefore, corresponding to the variation between periods and samples. Likewise, the vertical axis plots the negative logarithm of the P value, which is a measurement of the statistical significance. Values higher up on the scatter-plot indicate a greater statistical significance, and more evidence that the change was authentic. For this analysis a P value of 90% level of confidence was used.

3 These are found above the horizontal line

However, to be clear, this variation analysis does not show the population size which predominates in the main cities of the country. Therefore, it is not certain that the refugee and migrant populations as a whole are heading to conflict territories, only that the population in these territories has increased in a significant way.

Specifically, in Tibú where there would be about 8,834 refugees and migrants, compared with 296,668 in Cali, excluding the population below 13 years of age, those who do not have internet access, and the elderly who do not use Facebook.

GRAPH 2. MUNICIPALITIES WITH SIGNIFICANT VARIATIONS IN CONNECTIONS BETWEEN THE FIRST QUARTER OF 2019 AND 2020



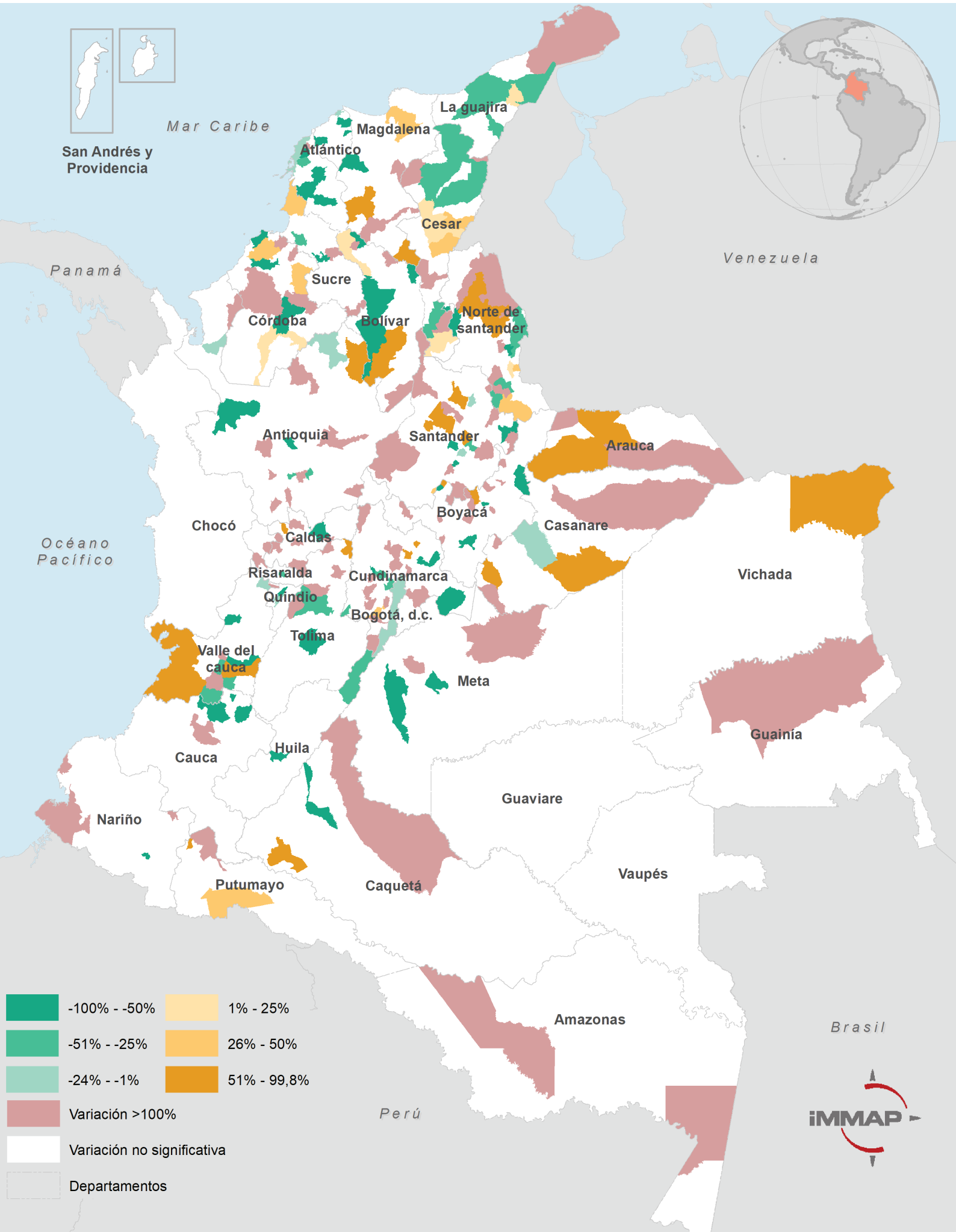
The graph highlights that Bogotá, Cartagena, Maicao, Envigado, Valledupar, Riohacha, Ocaña, among others, experienced significant reductions in the amount of connections. These results will be addressed in greater detail in the following sections.

2. SECOND SESSION MUNICIPAL ANALYSIS

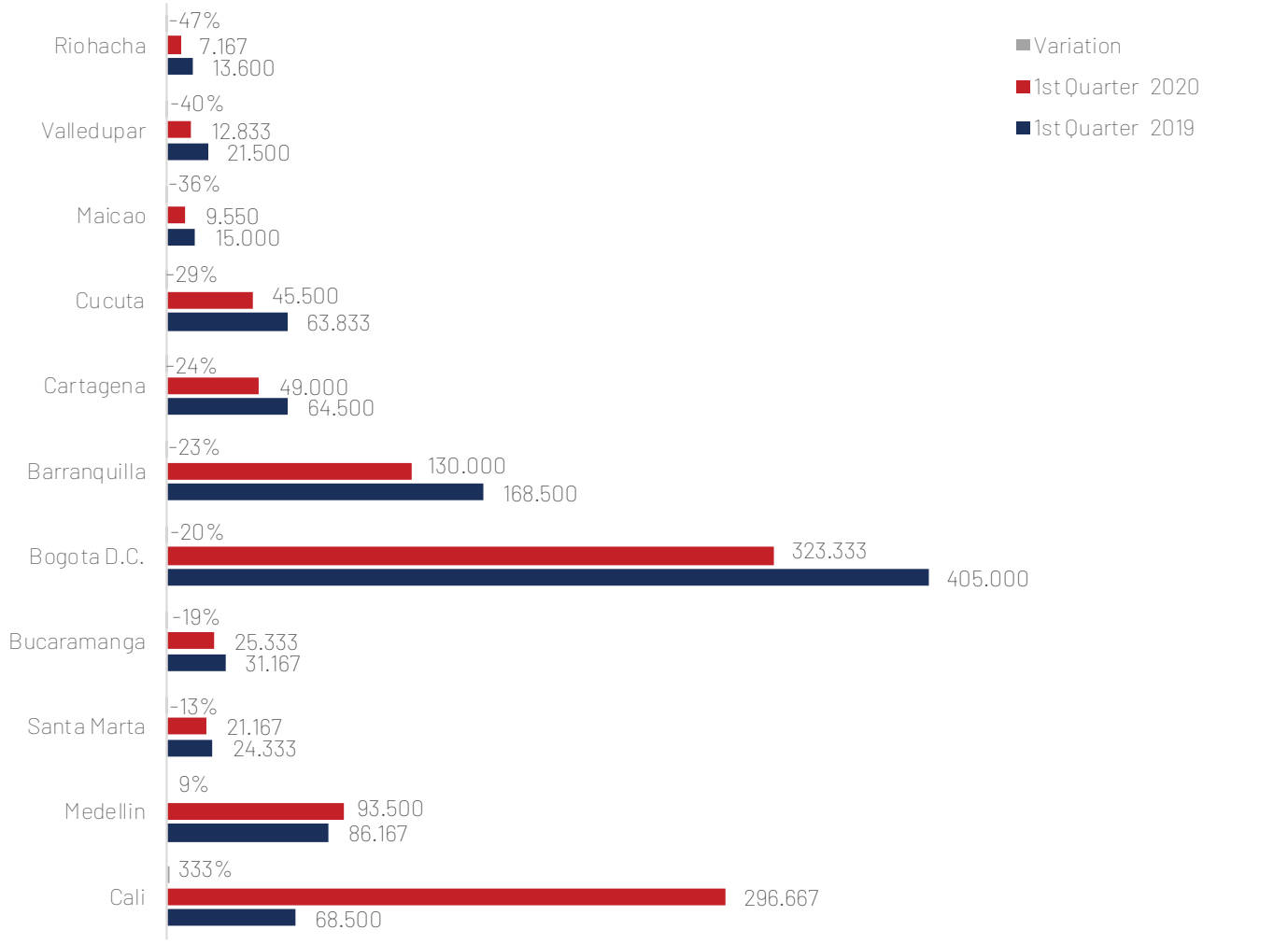
- There is an evident increase in connection variation in regions such as the center-east of the country, el Magdalena Medio, el Eje Cafetero (the coffee axis), Cundinamarca, Boyacá and Valle del Cauca. This could be explained by greater participation in the agricultural sector by refugee and migrant populations, however a greater level of analysis is needed.

- In la Guajira, el norte del Cesar, norte de Bolívar y en el Atlántico there is a notable reduction in the number of connections. This could be down to population movement to other regions or due to a systematic decrease in internet access for refugees, migrants and returnees.

MAP 1: VARIATIONS OF THE FACEBOOK CONNECTIONS BETWEEN THE 2019 AND 2020 FIRST QUARTERS AT A MUNICIPAL LEVEL



GRAPH 3. MUNICIPALITIES WITH THE LARGEST VENEZUELAN POPULATIONS AND CONNECTION VARIATION BETWEEN THE FIRST QUARTER OF 2019 AND 2020



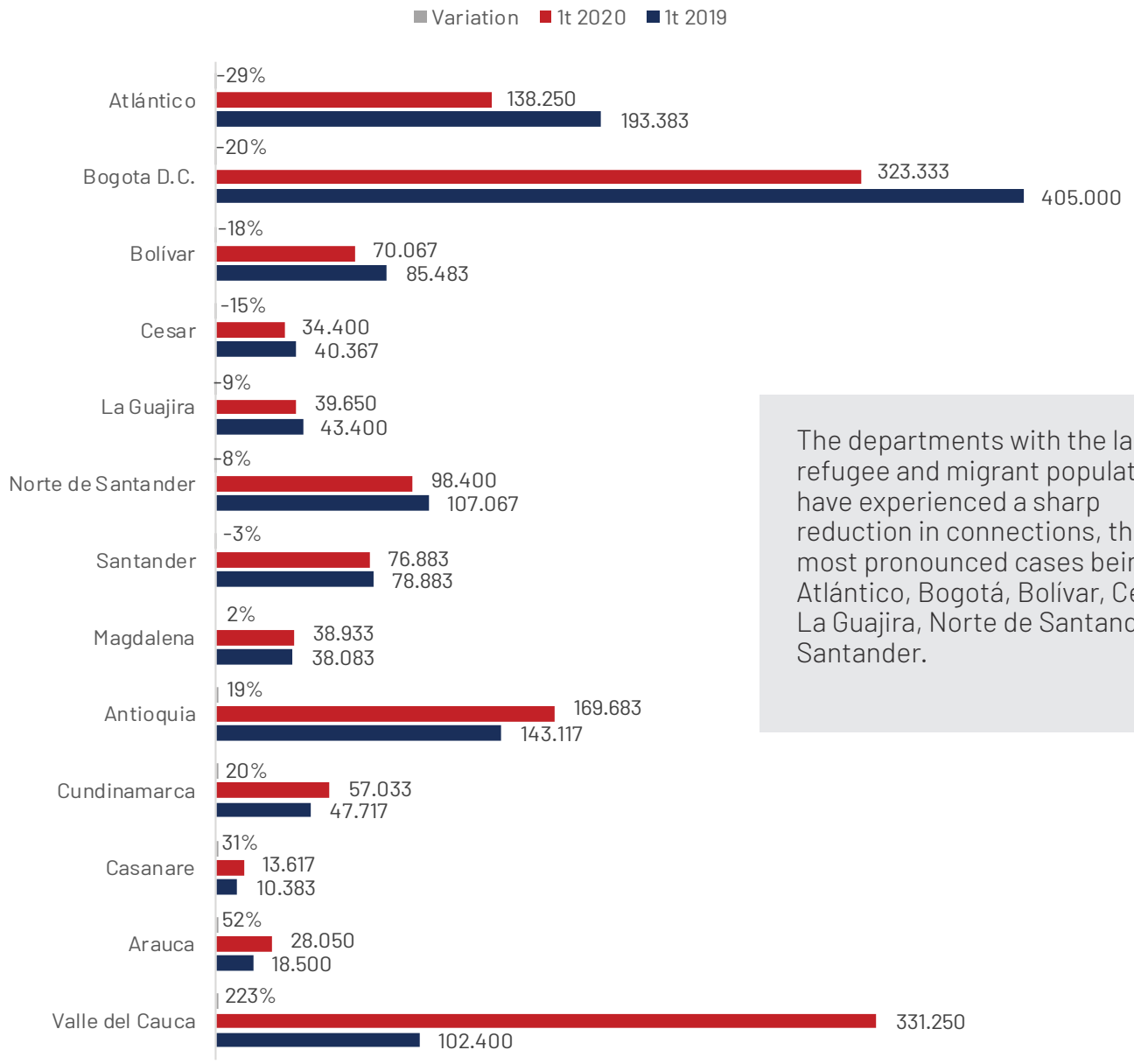
- The largest cities have registered important decreases in Facebook connections, above all, in Bogotá, Cartagena, Cúcuta, Valledupar and Riohacha. This scenario could be a consequence of the COVID-19 pandemic, in which many sectors of the population have had to prioritize their spending, and have been left without internet access. More analysis is needed to verify this hypothesis, and to confirm whether there has actually been a decrease in the population in these places.
- The case of Cali and Medellín has already been set out in previous reports by iMMAP (2020). In those reports it was found that Cali's extensive free internet access points facilitated refugee, migrant and returnee connectivity. Therefore, this greater level of connectivity could explain the increase, while also revealing that Cali has a large floating population in transit to other places.
- Moreover, the situation in Cali can also be explained by changes in a migratory movement happening in the south of Colombia and the border with Ecuador, where there are ongoing voluntary return processes.
- The Bogotá situation could be explained by a greater scattering of the population to neighboring municipalities and to those of Cundinamarca, possibly owing to the rise in the rate of unemployment.
- With the apparent decrease in the refugee, migrant and returnee populations in the main cities of the country and their increase in small municipalities, there is a recognizable scattering dynamic of these populations which confirms the observations in the previous iMMAP report (2020).

3. FIRST SESSION DEPARTMENTAL ANALYSIS

Lastly, in order to observe the variation in the connections as a whole, iMMAP created the following departmental map.

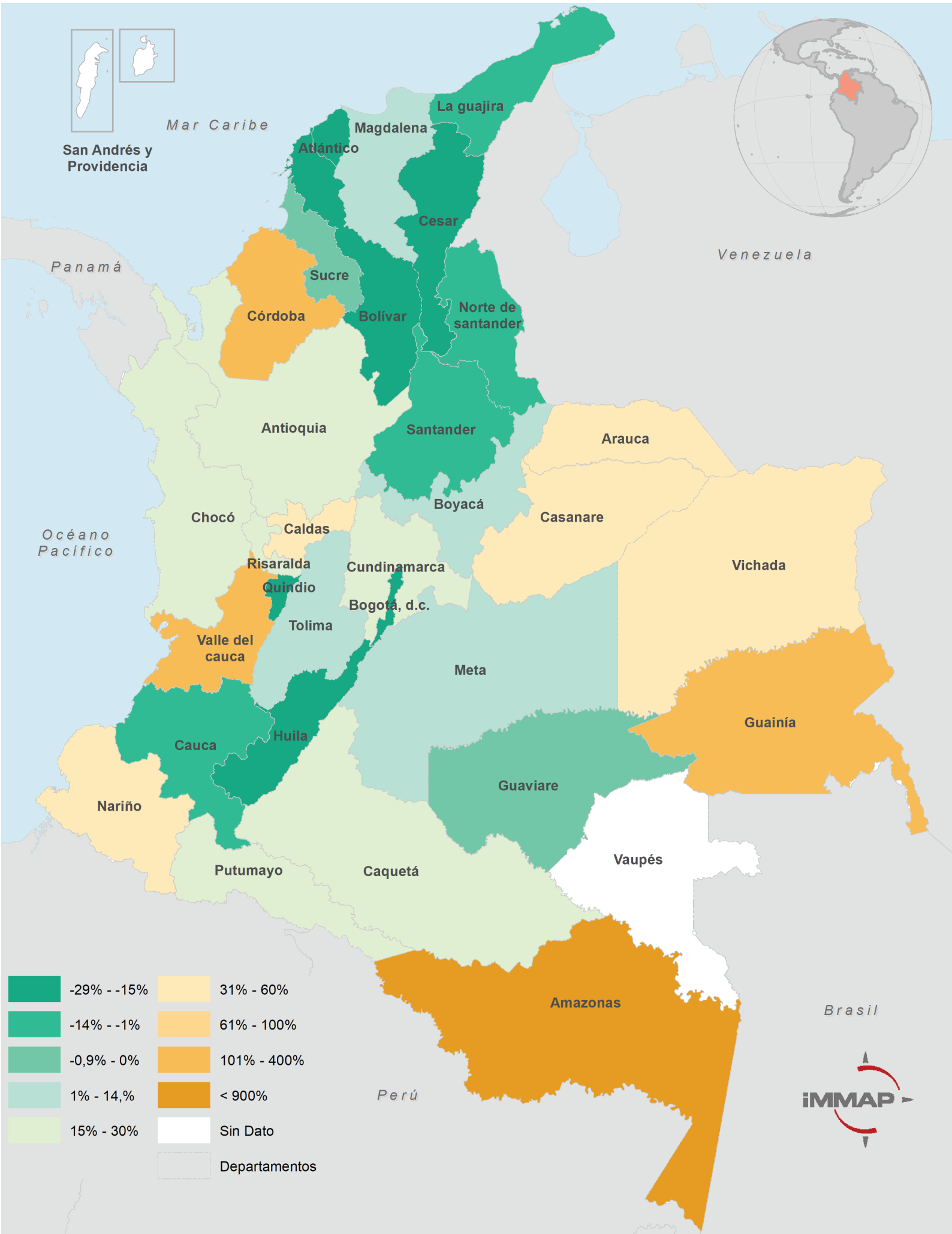
- It shows that the greatest increase occurred in the departments such as, Amazonas, Córdoba, Valle del Cauca, Caldas and Guainía. Although these do not have the highest proportion of the refugee, migrant and returnee populations from Venezuela, according to data from Migración Colombia (Colombian Immigration Agency).
- In the northern region of Colombia, which comprises a large part of Caribbean coast and the Santander departments, Facebook connections have decreased. A similar situation has occurred in the center of the country, including in Bogotá.
- The most representative departments in connection decreases are Cesar, Bolívar, Quindío and Huila.

GRAPH 4. DEPARTMENTS WITH THE LARGEST VENEZUELAN POPULATION AND THEIR CONNECTION VARIATION BETWEEN THE YEARS 2019 AND 2020



The departments with the largest refugee and migrant populations have experienced a sharp reduction in connections, the most pronounced cases being: Atlántico, Bogotá, Bolívar, Cesar, La Guajira, Norte de Santander and Santander.

MAP 2: DEPARTMENTAL VARIATION IN THE CONNECTIONS TO FACEBOOK BETWEEN THE FIRST QUARTER OF 2019 AND 2020



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