



MONITORING THE FACEBOOK
CONNECTIONS VENEZUELAN
REFUGEES, MIGRANTS AND
RETURNEES IN COLOMBIA DURING
THE FIRST HALF OF 2020, WITHIN THE
WIDER CONTEXT OF COVID-19.

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iMMAP locates refugees and migrants from Venezuela in Latin America on a biweekly basis through the use of the Facebook Marketing API, based on the monthly behavior of users. The data is an estimate of the potential reach of a Facebook ad based on the segmentation of the audience on its platform.

The data is not designed to coincide with censuses or other official sources. Facebook does not provide digital census or refugee and/or migrant counts. These estimates should be assumed as a signal to be used in triangulating information.

Facebook only provides the definition of the selected behavior (expatriates from Venezuela) and does not provide historical figures. This behavior is constructed based on the information provided by the user, such as their hometown, city of origin, the structure of their network of friends, among others. The data may contain biases as a result of the variable coverage of Facebook in the territories, the availability of Internet access, divergences in the rate of use by age ranges and the inability to detect users under 13 years. Additionally, the data does not allow for the identification of nationality, for this reason the results presented include Venezuelan refugees and migrants, Colombian returnees and people of other nationalities from Venezuela.

1. INTRODUCTION

a. Context

Since 2015 Colombia has been a receiving country for refugees, migrants and returnees coming from Venezuela. At the date of this report's publication, some 4 million people have emigrated out of the country, of which at least 1.74 million according to official figures can be found in Colombia¹.

It should be noted that this is an ever-changing phenomenon thus leading to constant uncertainty, and complicated further by the Covid-19 pandemic, which is making it difficult to foresee the near future and plan the necessary humanitarian action to alleviate the suffering of vulnerable people from Venezuela. In light of this, it is crucial that governments, organizations from civil society and NGOs ensure that up-to-date information on the mixed migration flows is available.

Consequently, the engagement with non-conventional data sources are well positioned as the only viable alternative to meet the information needs. Due to this, iMMAP has chosen to maintain the constant monitoring of the Facebook connections of this population group, and the Google mobility reports.

It should be highlighted that the information processed by iMMAP is already anonymized by the platforms providing it, ensuring that specific persons or certain profiles cannot be located in groups of less than 1,000. Also, the information obtained can only be used as a demographic proxy at an aggregated level (municipal or locality) and lacks any traceability or precise patterns of the movements of this population

The information obtained has turned out to be in line with the trends observed in official sources of information, such as the reports by Migration Colombia, the 2018 National Population and Household Census (CNPV in Spanish), Registry of Venezuelan Migrants (RAMV in Spanish) and the Integrated Household Survey (GEIH in Spanish), which underpins the usefulness of the data obtained for guidance purposes.

b. Methodology: Facebook and Google data

Since 2018 iMMAP has been monitoring the Facebook connections of Venezuelan refugees, migrants and returnees in Latin America on a fortnightly basis. This has been carried out using a marketing API based on the monthly behaviour of the users, which provides more frequent estimations of this population in the region^{2,3}.

Moreover, in a bid to help the response to the Covid-19 pandemic, Google has published estimations of the movement variation of people in a broad range of places. This is done by using anonymized detection of the presence of Android devices⁴.

With these sources of information, the connections of migrants, refugees and returnees obtained from Facebook were compared, between the first and second quarter of 2020 in order to determine the places where there is sufficient statistical evidence to ascertain the existence of variation. Likewise, the Google data was used to explore whether the Facebook connection variation might be a result of difficulty in gaining internet access owing to confinement or real movements of the population.

It should be noted that the analysis of Facebook connections is only an approximation of reality, and that these data do not constitute a population record nor a census. Also, there are potential biases owing to the availability of internet access of the users, as firstly the information only covers the population over the age of 13 on the social network platform, and secondly, the lower participation of older adults⁵.

Consequently, it is essential to conduct statistical tests to identify the real movements of the population and filter out any insignificant effects.

For this reason, the study took the number of PPV connections on Facebook on a fortnightly basis in every Colombian municipality since January 2020 until June 2020 (1,123 observations over 12 fortnights). Given the size of the data hoard, it can be assumed that these are broadly in line

1. Venezolanos en Colombia corte a 30 de Junio de 2020

2. iMMAP, "Detección de Conexiones de Población Migrante Venezolana," iMMAP Colombia (blog)

3. Emilio Zagheni, Ingmar Weber, and Krishna Gummedi, "Leveraging Facebook's Advertising Platform to Monitor Stocks of Migrants: Leveraging Facebook's Advertising Platform," Population and Development Review 43, no. 4 (December 2017): 721-34

4. Google, "COVID-19 Community Mobility Reports," August 11, 2020, <https://www.google.com/covid19/mobility/>.

5. iMMAP, "iMMAP Report: Tracking Venezuelan Refugee, Migrant, and Returnee Populations in Colombia through Facebook | iMMAP," May 25, 2020.

with a normal distribution, so a parametric method was used to carry out the difference in means tests, known as student T-tests for paired samples or correlations which use the differential between the two periods and the measurements of variability to determine whether these are significant, based on probability distribution. In this vain, variations which are not statistically meaningful

indicate that there is not enough information to ascertain whether there has been a real change or whether the observations may be a result of changes in connectivity rather than the presence of a new refugee, migrant and returnee population.

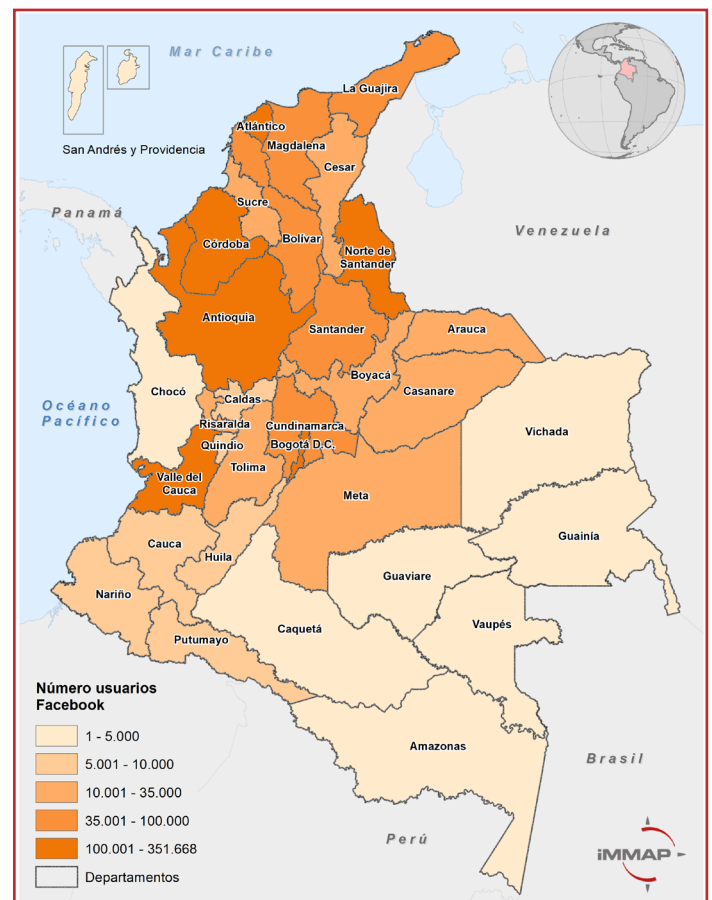
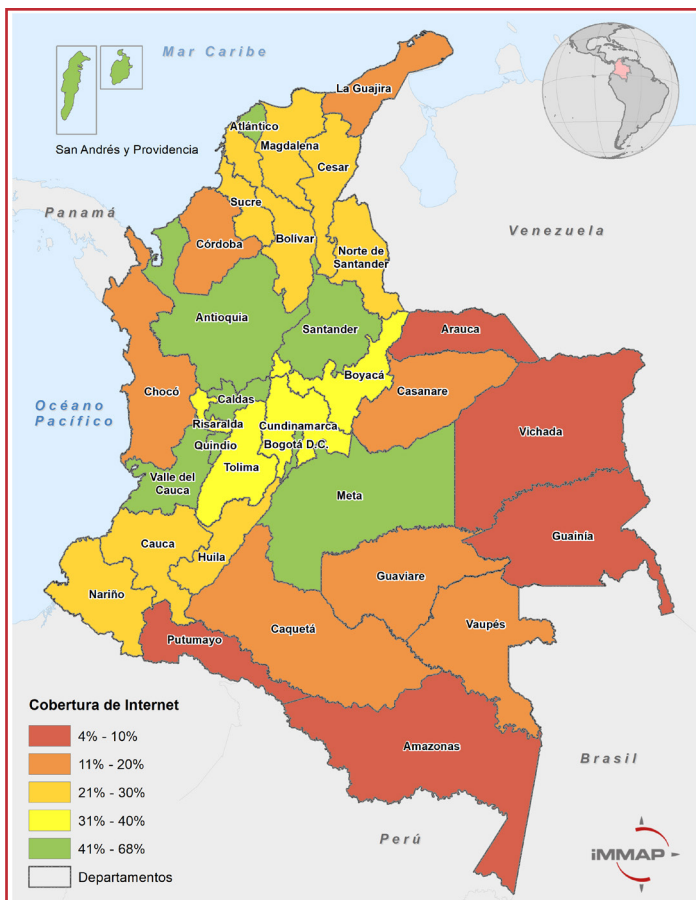
c. Internet connectivity in Colombia

One aspect to highlight in Colombia is the gap in internet access between the departments of the center and the periphery of the country. According to DANE data, between 4% and 30% of the population in border areas have internet at home, with the south of the country being the region with the least access.

This fact means that the information to be analyzed may present a territorial bias in favor of those central departments and cities with better telecommunications infrastructure. However, taking into account that family

separation during the migration process is a high incentive to access Facebook and other communication platforms, it could be assumed that this bias could be less in refugees and migrants than in the local population.

However, a more in-depth study is required in this regard and the usefulness of alternative sources of information such as Facebook must be remembered, given their low cost, temporality and versatility.



Graph 1. Internet coverage map

Map number of users

d. Hypothesis: COVID-19's impact on Venezuelan refugees, migrants and returnees in Colombia

Owing to the spread of SARS-COV-2 and the mandatory isolation measures, it can be assumed that both the mixed migration flows and this population's access to the internet have undergone a change. A key aspect of this was the closing of the Colombian-Venezuelan border in March 6, , which has hindered the two-way migratory flow. Nevertheless, there is a humanitarian channel 7 through which nigh on 100,000 Venezuelans have been returned since April to the present date. Also, there is an irregular flow through informal routes on the border (trails and rivers)8. Consequently, there is uncertainty about actual amount of migration during the border closure, and the possibility of which this is detectable through Facebook connections.

The isolation measures have had a significant impact on the Venezuelan population. According to the figures from January's GEIH 2020, a least 20% of the Venezuelan population works independently, meaning without benefits such as medical insurance 9. Moreover, around 90% of these were employed in the informal sector according to the DANE (Colombia's national statistics office), in businesses such as hairdressers, restaurants, hotels, etc.10 As a result, it can be assumed that the lockdown dramatically reduced the incomes of this population, which has contributed to their voluntary return to Venezuela. .

Likewise, the economic impact may have caused interruptions in the mobile internet service used by vulnerable Venezuelans, something which would also be reflected in a reduction in the number of users connected to Facebook. This may have been exacerbated by the closure of parks and establishments which would have been a source of free internet access.

Therefore, the results are expected to show a drop in the number of Facebook connections by the population coming from Venezuela between the first and second quarter of 2020, as a result of: (1) the return of at least 100,000 Venezuelans to their country of origin owing to the economic issues triggered by COVID-19, and at the same time (2), interrupted internet access. Also, internal movement in Colombia is expected to have occurred, as well as an inflow of Venezuelan refugees and migrants from Ecuador and Peru.



6. Hugo A. Echeverry Cano, "Tensión En La Frontera Entre Colombia y Venezuela Tras Cierre Preventivo Por El COVID-19" *Voz de América*, March 14, 2020,

7 "Lazos Rotos, Fronteras Cerradas: Colombia y Venezuela Se Enfrentan al COVID-19" (Bogotá/Bruselas: International Crisis Group, April 16, 2020),

8 Tamara Taraciuk Broner and Kathleen Page, "Stuck at Venezuela's Border with Covid-19 All Around," *Human Rights Watch*, July 15, 2020.

9 "El programa que apoya a emprendedores migrantes y colombianos retornados," *Proyecto Migración Venezuela*, August 2, 2020.

10 "Trabajos Informales de Los Venezolanos En Colombia," *El Tiempo*, September 17, 2019, <https://www.eltiempo.com/economia/sectores/trabajos-informales-de-los-venezolanos-en-colombia-413472>.

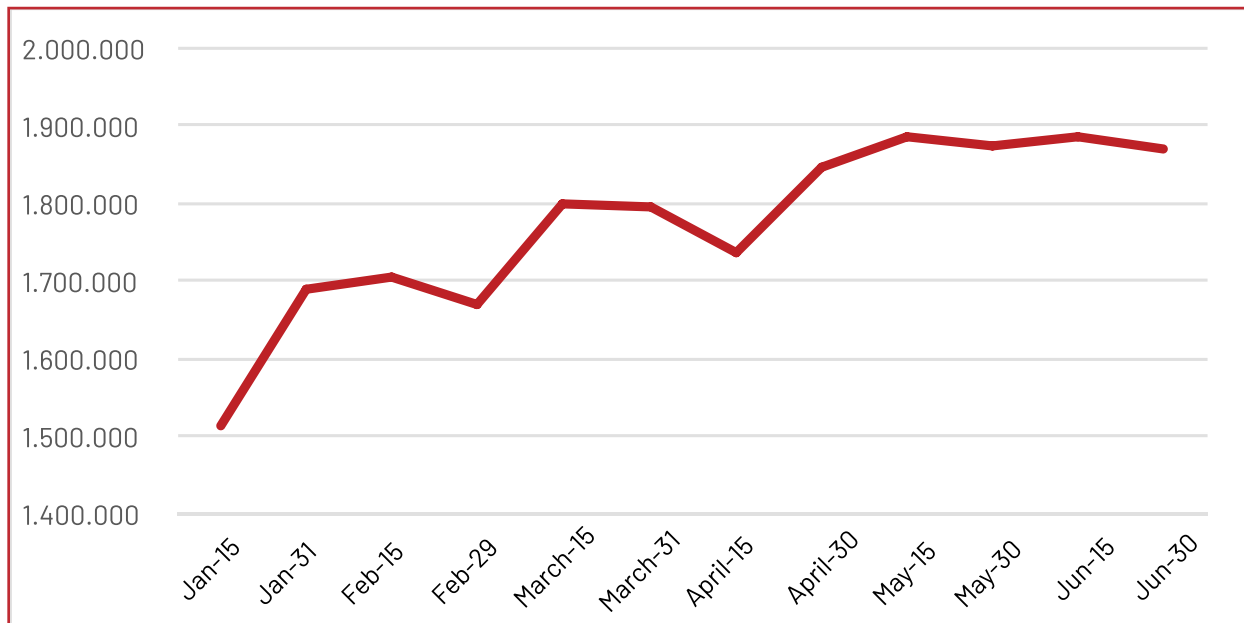
2. MONITORING REFUGEE AND MIGRANT FACEBOOK CONNECTIONS

a. National Level: First and Second Quarter Comparison

Upon observation of the user connections of those from Venezuela on Facebook (graph 2), there is an evident rise of around 9%, however, a student T-test was conducted for paired samples, which proved that

there is insufficient statistical evidence to conclude that there has been a significant change between the first and second quarter of 2020.

Graph 2. Venezuelan users connected to Facebook nationally



March 24: Start of mandatory isolation

April 20: Extension of isolation to May 11

May 28: Extension of isolation until July 1

This dynamic could be explained by greater variability in internet access, instead of significant changes in the presence of the Venezuelan population in the country.

This result also corresponds to the reality in the country, given that throughout the second quarter mandatory isolation was in force as well as the closure of the border, thus no significant variation in the presence of this population is to be expected. Also, the larger amount of time spent indoors could explain the greater number of connections to digital platforms like Facebook.

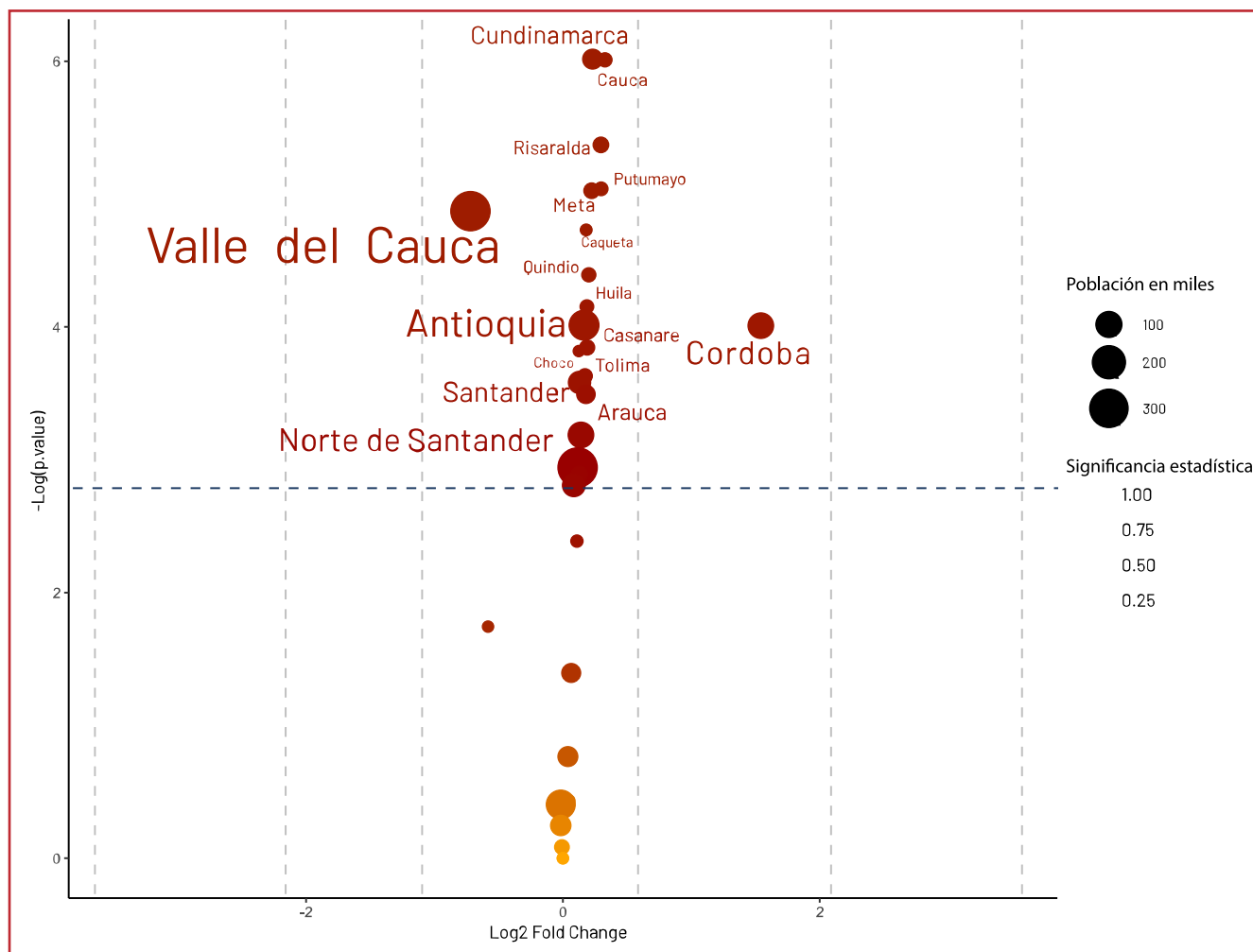
Which seems consistent with the increase in users detected from the extension of the Mandatory Preventive Isolation extensions, particularly as of April 15

Moreover, it may be the case that the return of around 90,000 Venezuelans to their country has not been picked up by Facebook if they are not users of the platform or lack internet access. Also, it is likely that there was an irregular migratory flow which has nullified the figures, however, these hypotheses are impossible to validate with the information set out in this report.

"Lack of internet access is understood as the inability of the population to connect to a public or private wi-fi network or the lack of mobile data plans."

b. Departmental Level: First and Second Quarter Comparison

Graph 3. relationship between the Facebook connection variation at a departmental level and the statistical significance of these between the first and second quarter of 2020



The carrying out of a departmental analysis was considered in order to identify the internal movements in Colombia, in which student t-tests were conducted of the mean differences, the results of which are shown on the volcano plot above. On this graph the variation percentage (horizontal axis in logarithms) and the statistical significance (vertical axis in logarithms) were compared. A point worthy of consideration is that only the departments above the dotted line feature as having statistically significant variations.

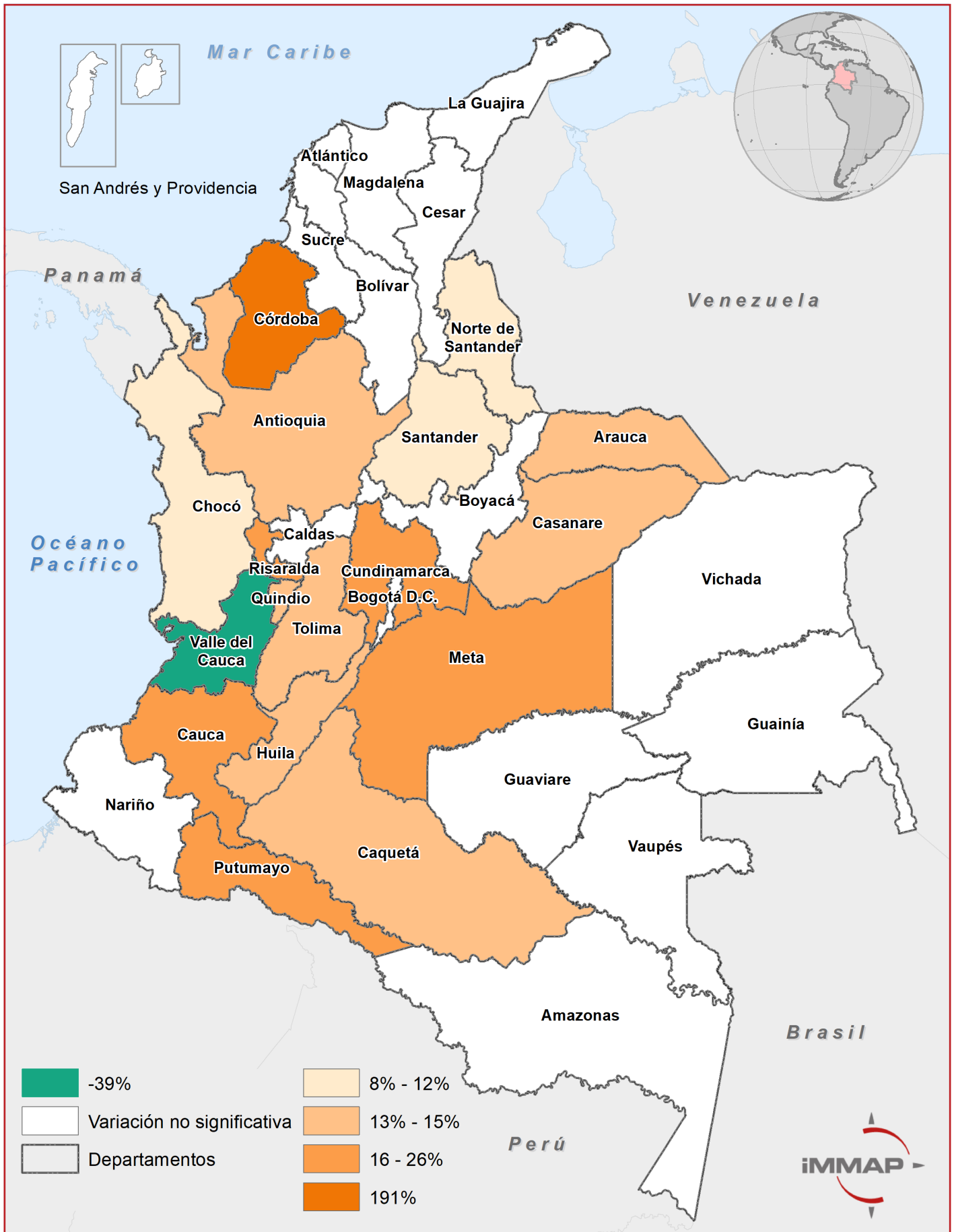
In this respect, there is only evidence to conclude that a real variation exists in 17 Colombian departments (top panel). Amongst these, the only one which experienced a significant drop was Valle de Cauca (-39%), whilst the others show relatively high increases, with Córdoba (191%) leading the way in this behaviour.

It should be noted that in Norte de Santander and Arauca the variation is positive and significant, so it can be assumed that the rise can be attributed to their bordering location with Venezuela, the largest presence of the population with the intention of returning and/or the arrival of undocumented migrants.

On the other hand, the increase in the central departments and the south of the country reflect the decentralization dynamic of the migrant and returnee populations, since in the first migration phases there was a high concentration in the border municipalities, la Costa Caribe, Bogotá and the other large Colombian cities. To validate this, it was decided that a municipal analysis should be carried out to identify whether there are significant increases in the category 2 to 6 municipalities. ¹¹

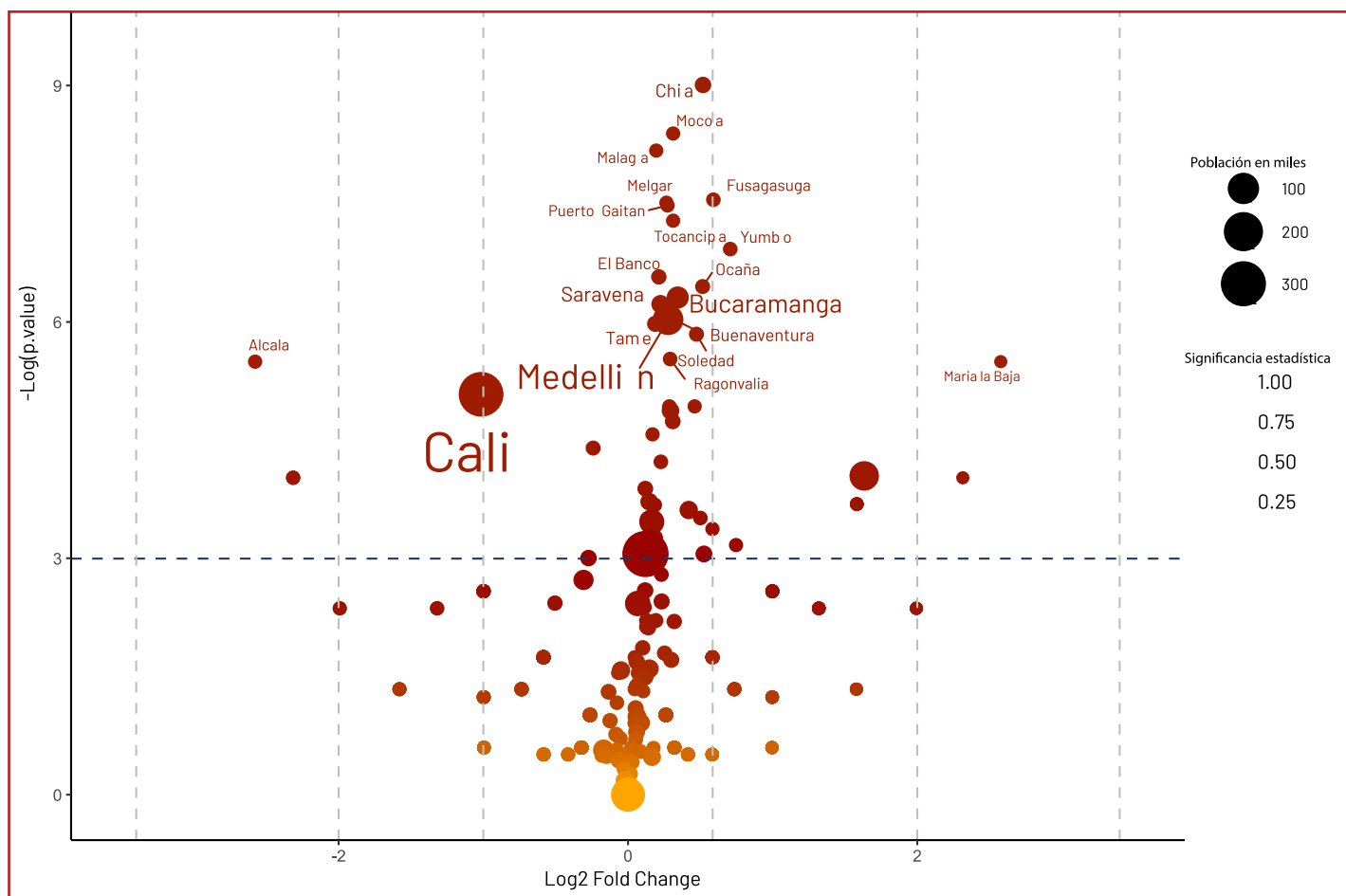
¹¹In Colombia there is a categorization of municipalities and departments according to their population and level of income. The biggest municipalities are found in category 1, whilst the smallest and those with limited resources are classified as level 6. More information can be found at: Resolución 400 de 2019

Graph 4. Departments with significant variations in connections between the first and second quarter of 2020



C. Municipal Level: First and Second Quarter Comparison

Graph 5. relationship between the Facebook connection variation at a departmental level and the statistical significance of these between the first and second quarter



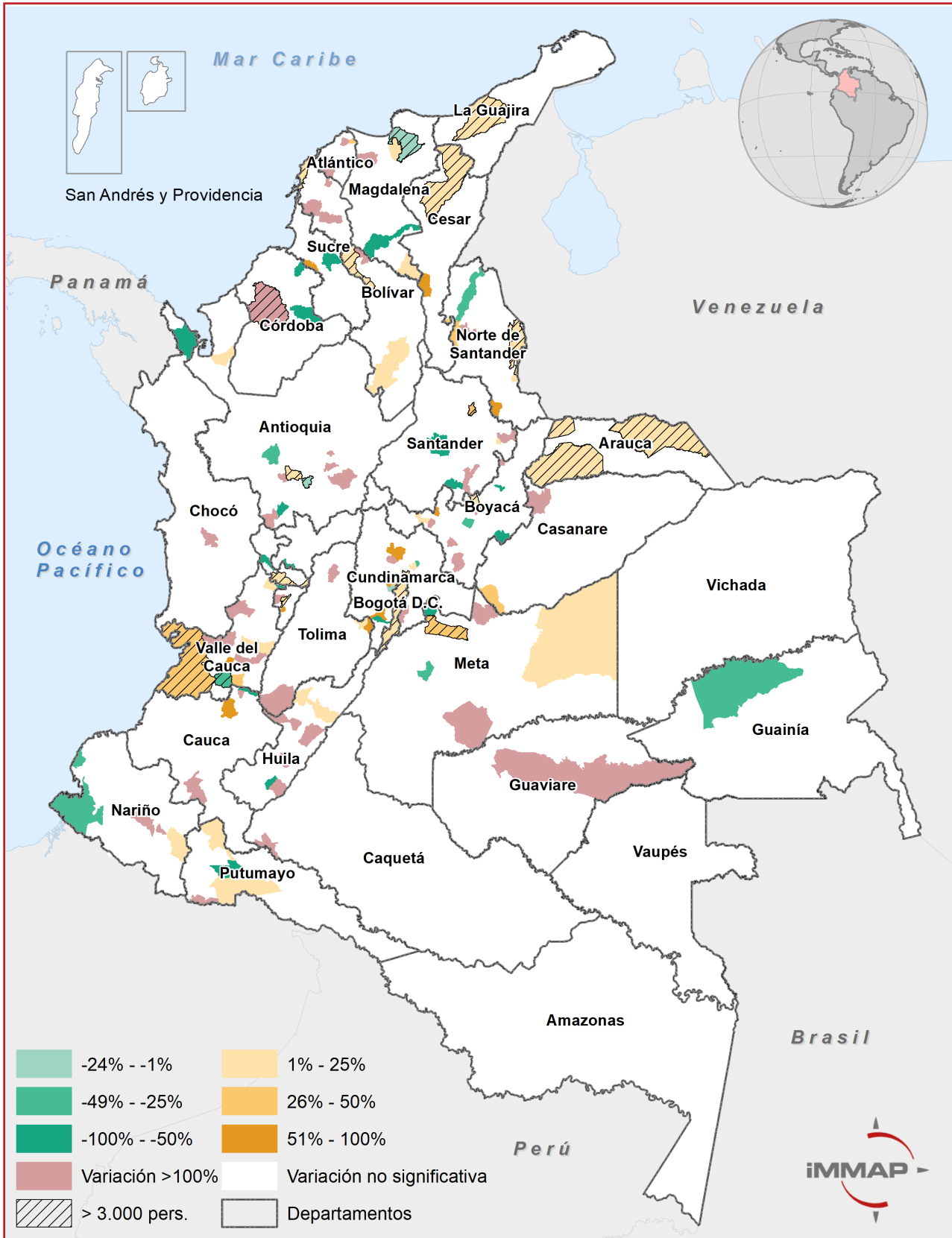
Through a simple glance at graph 5 a large cluster of municipalities stands out on the volcano plot's vertical axis with 0% variation, and beneath the horizontal line, which indicates a non-significant variation (510 municipalities), or there being no population coming from Venezuela (543 municipalities). In this vain, there is only statistical evidence to conclude that real variation exists in 70 Colombian departments.

The municipalities indicating the greatest certainty of such variations include Chía, Mocoa, Málaga and Melgar. The case of Mocoa may be explained by a rise in the number of Venezuelan refugees and migrants arriving from Ecuador and Perú ¹².



12. Stefania Gozzer, "Coronavirus: El Trágico Viaje de Un Grupo de Venezolanos Que Intentó Regresar a Pie a Su País Desde Perú En Medio de La Pandemia - BBC News Mundo," BBC News, May 18, 2020,

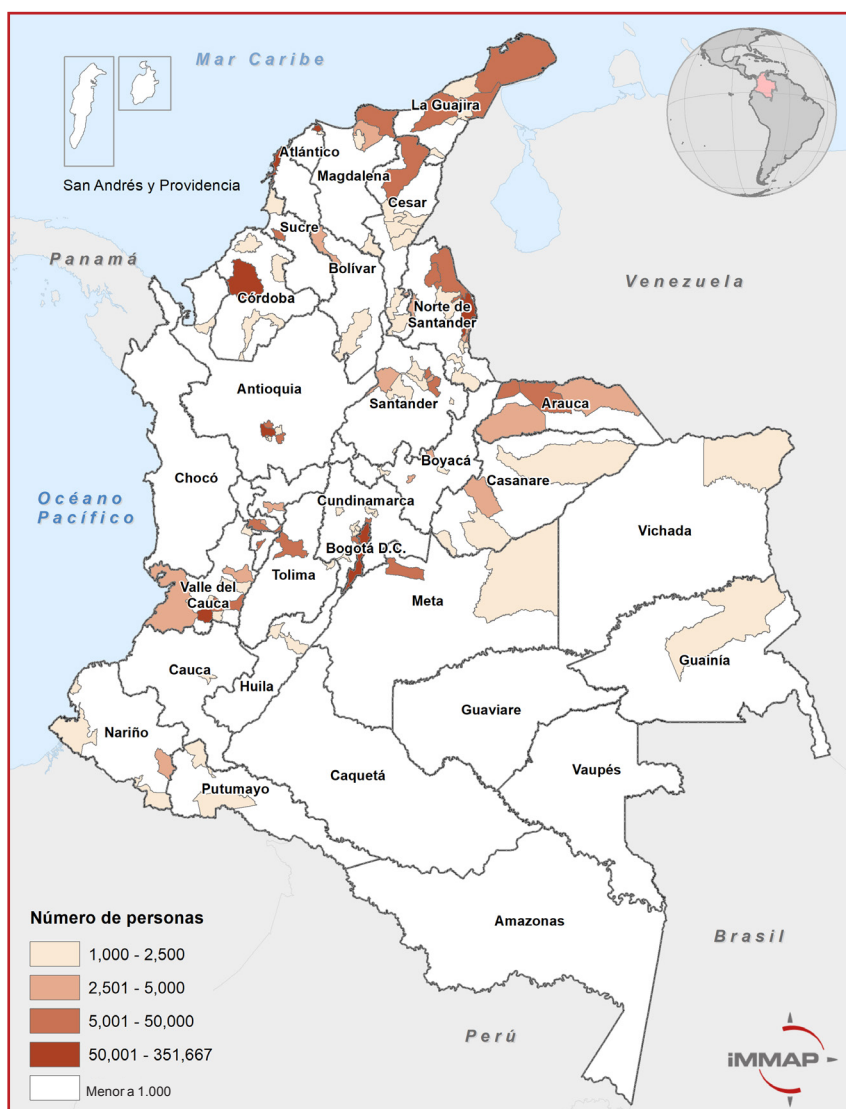
Graph 6. municipalities with significant variations in connections between the first and second quarter of 2020



One aspect which stands out is that the majority of the municipalities with significant increases are not departmental capitals and are found in categories greater than 1, thus confirming the existence of a decentralization dynamic of the migrant population, through the major growth seen in these less conventional territories.

Cali and Alcalá experienced significant reductions in the number of connections. In light of this it must be kept in mind that Cali is a city which has a significant number of free internet access points (Vive Digital) in public spaces, which was helping refugees, migrants and returnees get connected. In this regard, the reduction in connectivity may be explained due to isolation and restricted access to public spaces (parks, sport facilities, amongst others), although the effects of a possible lower proportion of the floating population bound for the southern border cannot be ruled out. ¹³

Another dynamic identified is that of the growth of the refugee and migrant populations in municipalities dominated by agriculture or which are highly rural. The municipality María la Baja shows an increase variation of 500%, which could be explained by the call effect which generates the possibility of employment in the cultivation of African palm trees ¹⁴. Moreover, it is possible that a key group of the refugees and migrants are moving towards municipalities near to the larger cities in search of better rental prices, housing and public services.



In absolute terms, it continues to be observed that the Venezuelan population is concentrated in the main cities of the country and the border areas, while 52 municipalities that had shown significant variations, have a refugee and migrant population of less than 1,000 people, which places these places as destinations in consolidation or possibly temporary due to the cycle of agricultural crops and / or employment opportunities in informal and illicit economies.

13. María Mónica González Escandón, "Viaje humanitario lleva de regreso a venezolanos desde Cali," LA FM, April 17, 2020

14. "La Economía En María La Baja Bolívar," calameo.com, accessed August 11, 2020.

3. MOVEMENT ANALYSIS WITH GOOGLE DATA

a. Changes in Movement: National Level

To contribute to the global response to the COVID-19 pandemic, Google has published global data on their estimations of movement, which is obtained through the anonymous monitoring of the presence of people with Android devices in a range of places, such as Workplaces, Parks, Retail & recreation, Transit stations, Residences, Grocery & pharmacy, with which the development of social distancing at a national and departmental level in different countries can be assessed.

For each category, Google estimates a weekly variation percentage with respect to the average presence of people from January 3 to February 6, which constitutes the baseline of the analysis ¹⁵.

In this study, a national analysis was carried out using a temporary visualisation of the changes in the patterns of movement during the COVID-19 pandemic. This was done in order to carry out a post-comparison of the behaviour in the 17 departments which reported significant statistic changes, with 90% reliability, in the PPV connections on Facebook between the first and second quarter of 2020, along with the changes in the 6 categories of movement according to Google.



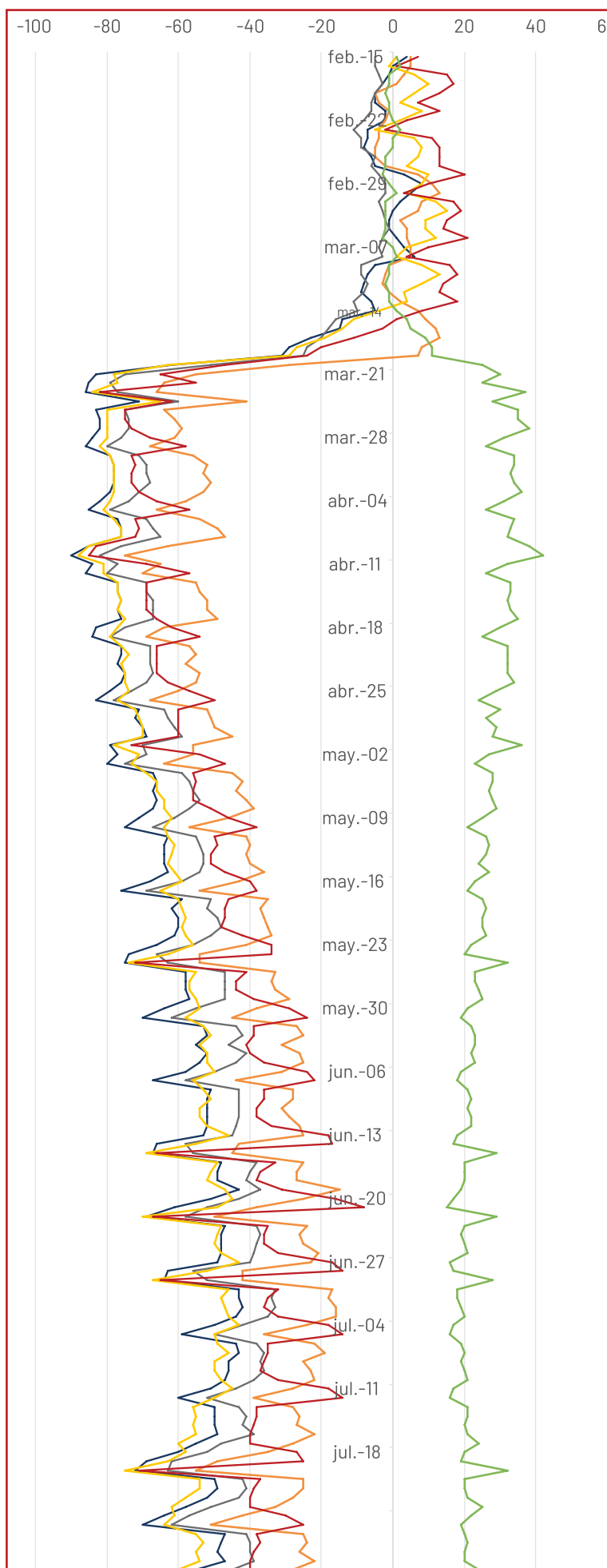
15. Leer más sobre la metodología de Google y las limitaciones del 'Baseline': [Community Mobility Reports Help](#)

Graph 7. Timeline of COVID-19 at a national level

- Shopping & recreation
- Market & Pharmacy
- Parks
- Transit stations
- Work spaces
- Residences

The national level analysis highlights drastic changes in the movement and behaviour of the population in Colombia.

In the attached timeline, one can observe that the majority of the categories (Workplaces, Parks, Retail & recreation, Transit stations, Residences, Grocery & pharmacy) showing a stark drop, reaching up to -80%, after the measures in March when the national lockdown was announced in Colombia. In contrast, Residential activity rose +40%.

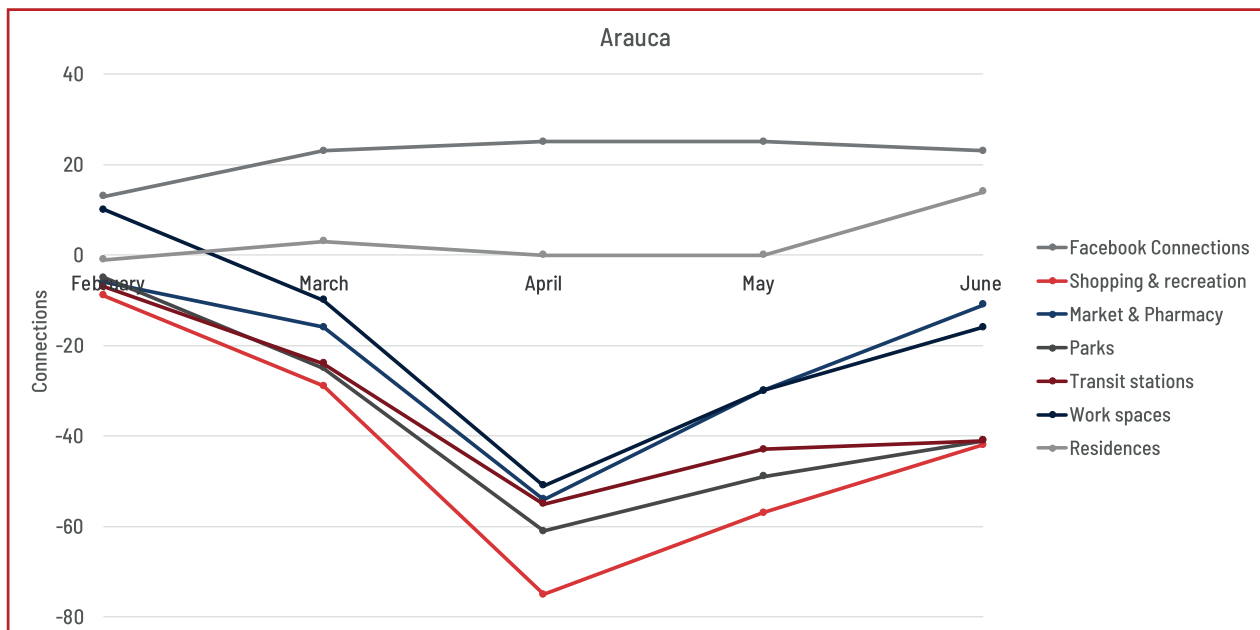
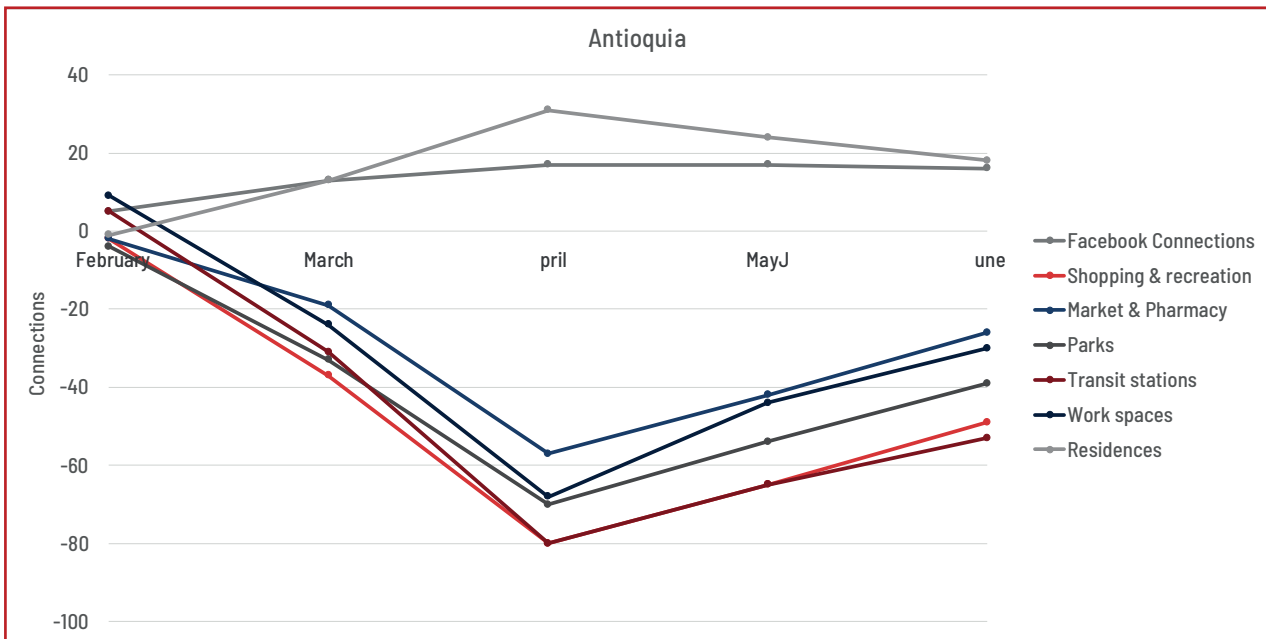


That said, despite the Colombian government announcing various extensions to the national lockdown, the social behaviour has been slowly returning to normal. This trend is an effect of the easing of the mandatory isolation and of the population’s growing discontent with the measures. At the end of the second quarter, Residential activity was sat at +20%, whilst the other sectors returned to values between -60% and -20%.

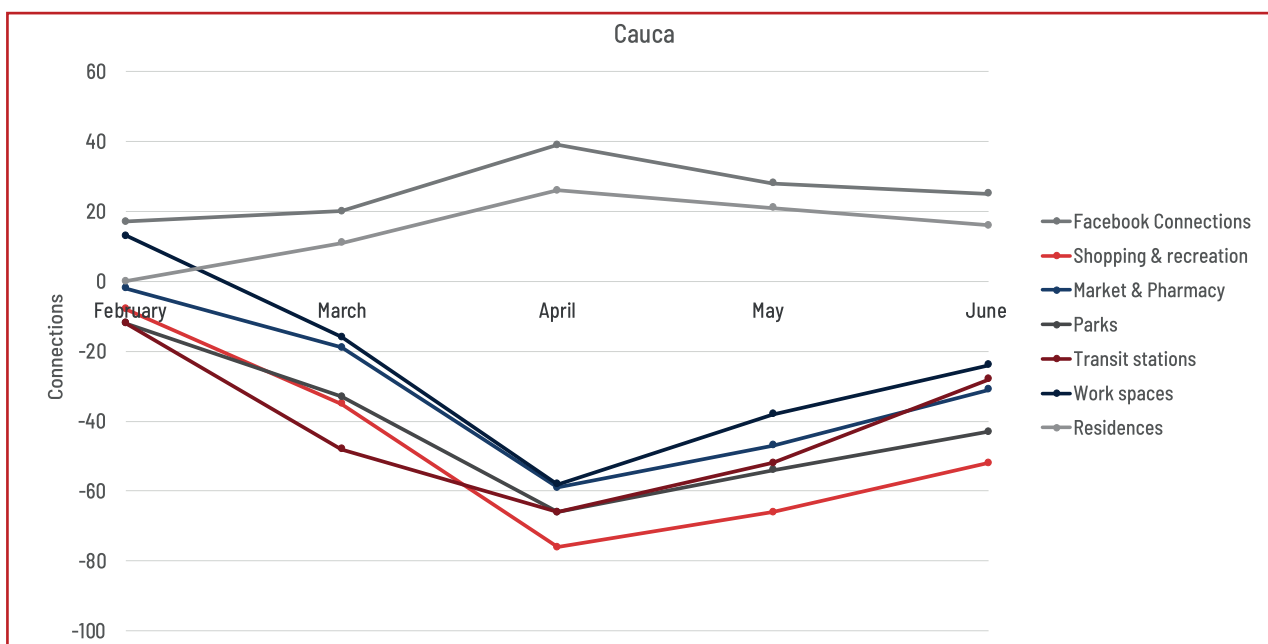
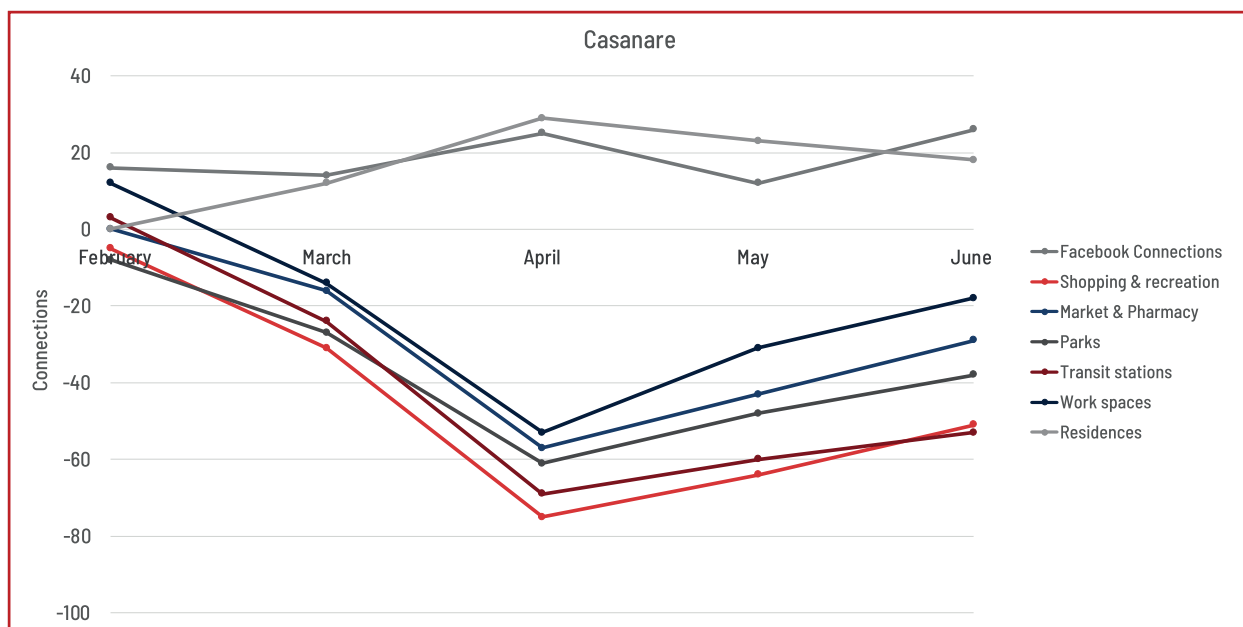
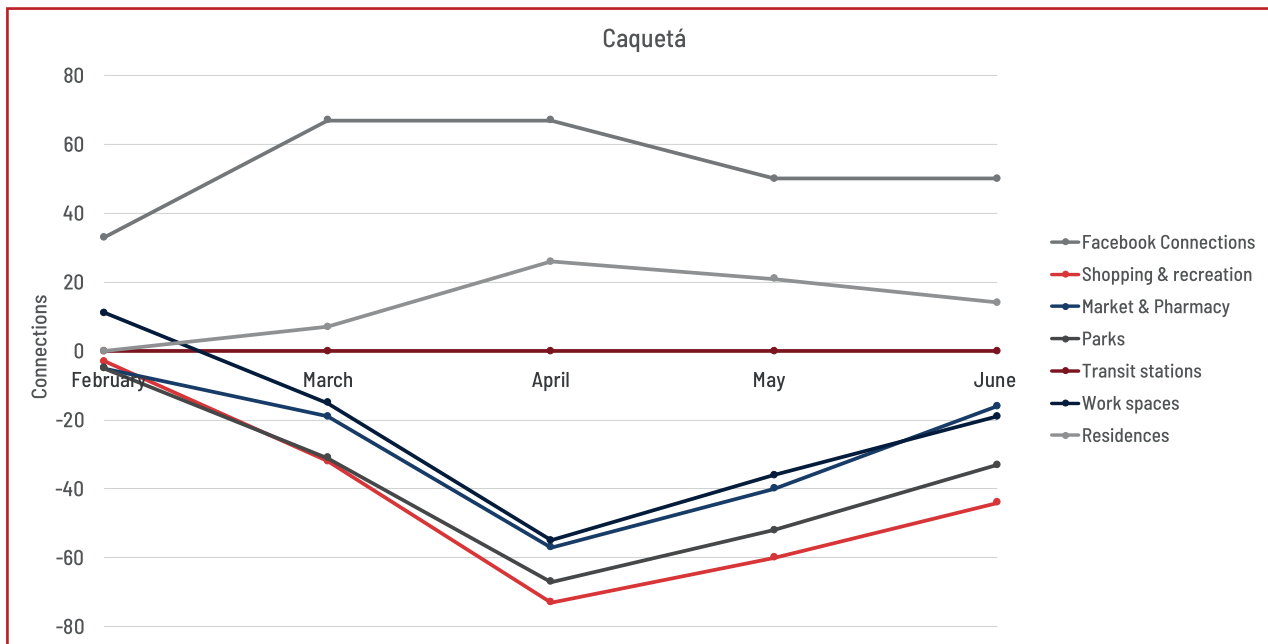
b. Changes in Movement: Departmental Level

In the 17 departments which underwent observation, the activity variation of refugees, migrants and returnees on Facebook follows the trend of the presence in residency environments. In contrast, the connectivity of this population on Facebook seems to be inversely proportional to the other categories, which contradicts the hypothesis according to which the connections are vulnerable to changes in access to public places offering free internet. Accordingly, the Facebook data would be biased towards the population with access to residential and mobile internet.

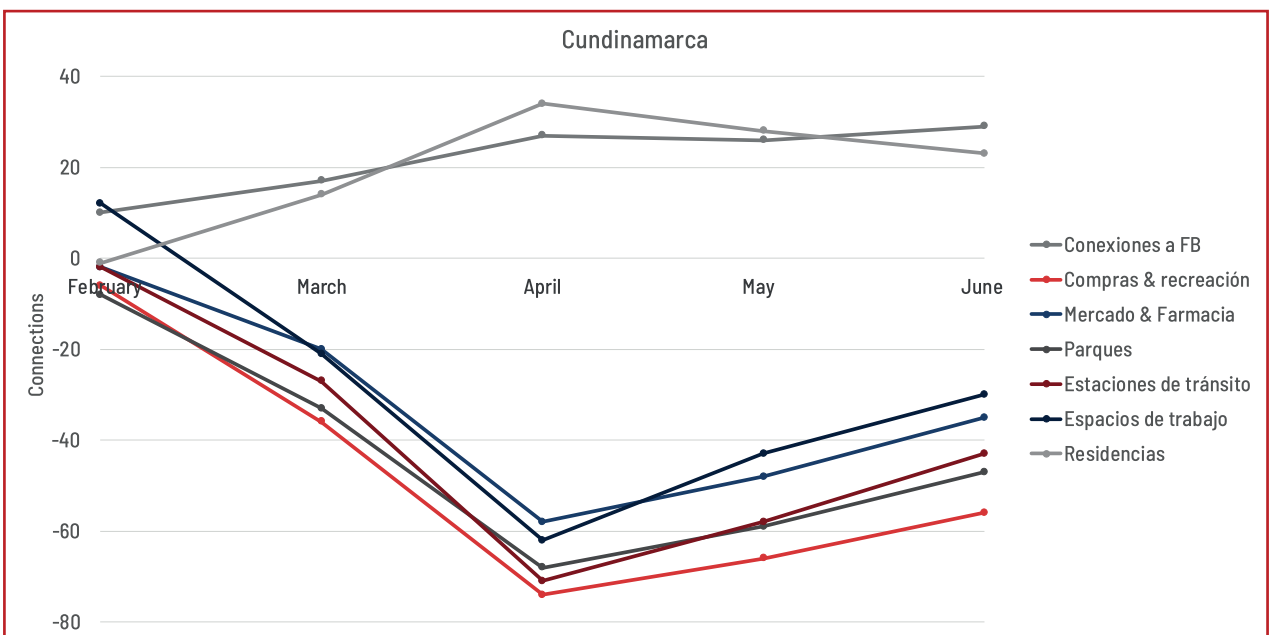
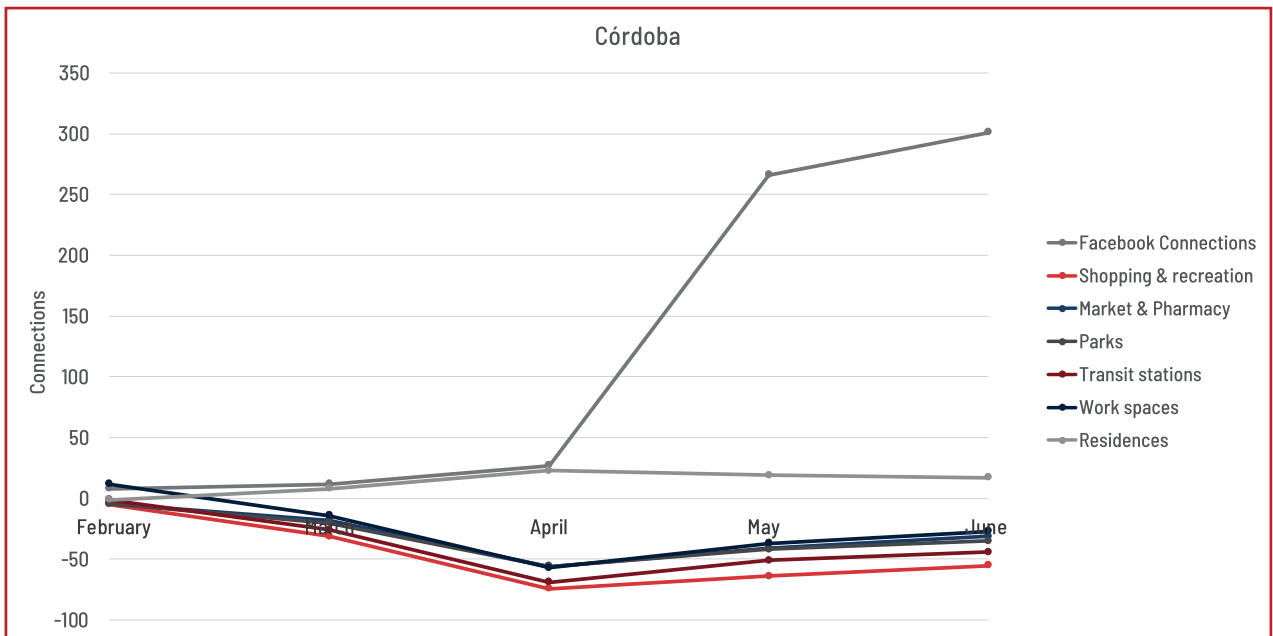
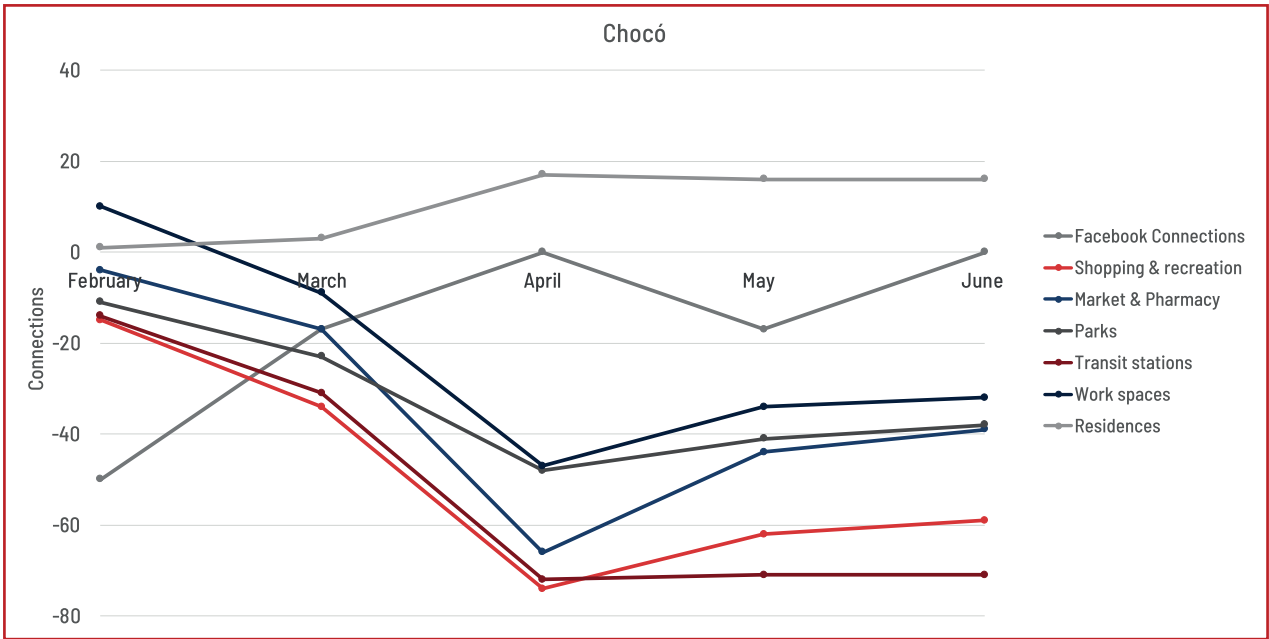
This highlights a possible source of bias, since the population without internet access in the home would not be captured, but who also may be the most vulnerable in relative terms.



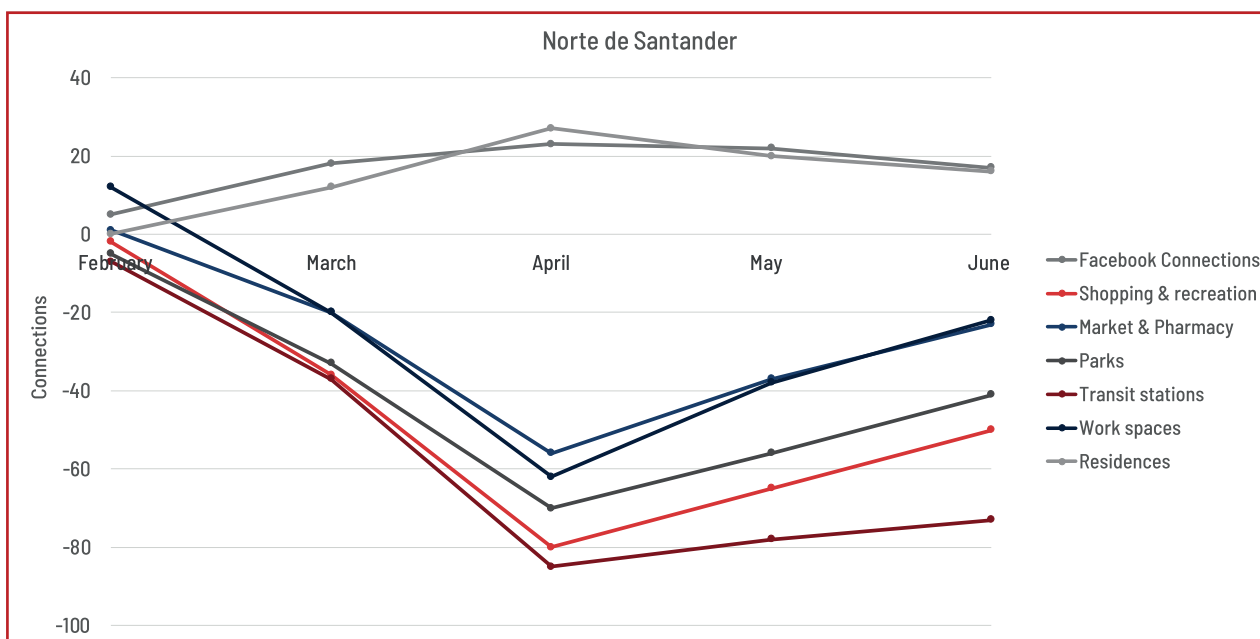
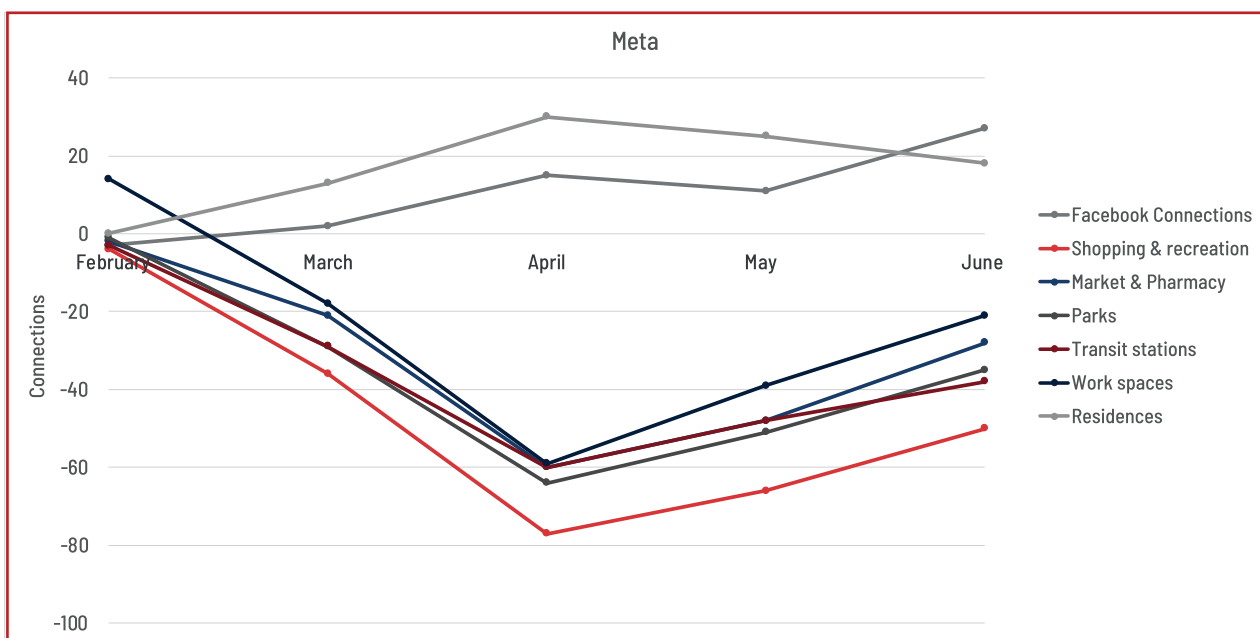
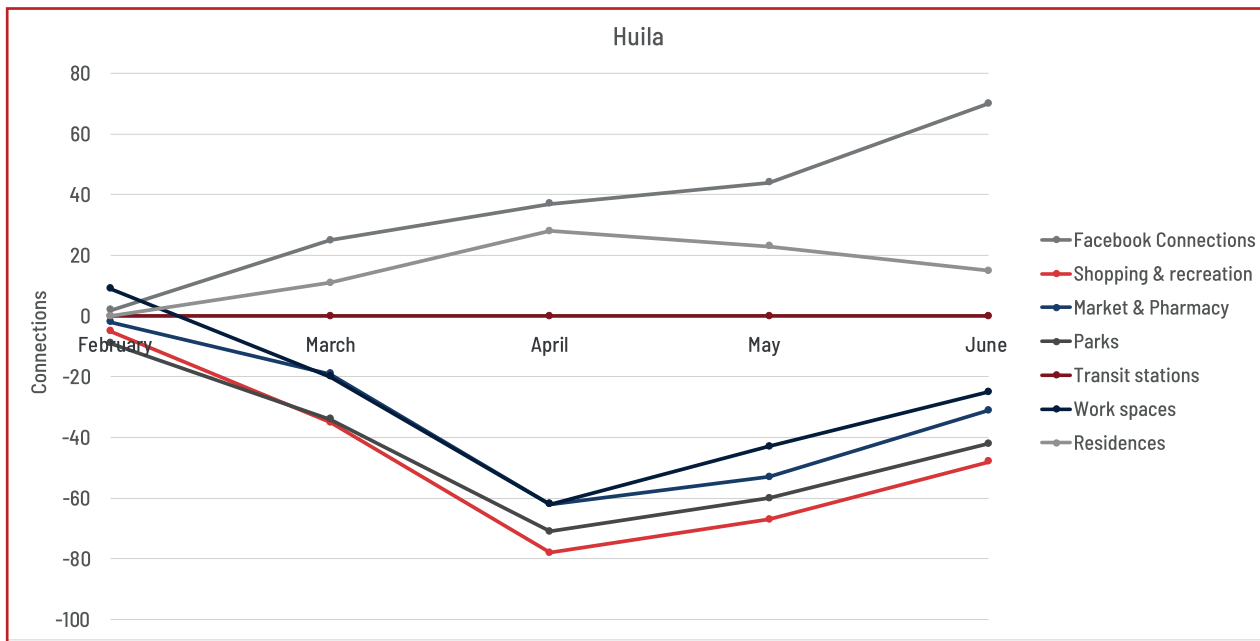
Own elaboration with data from Facebook and Google (2020)



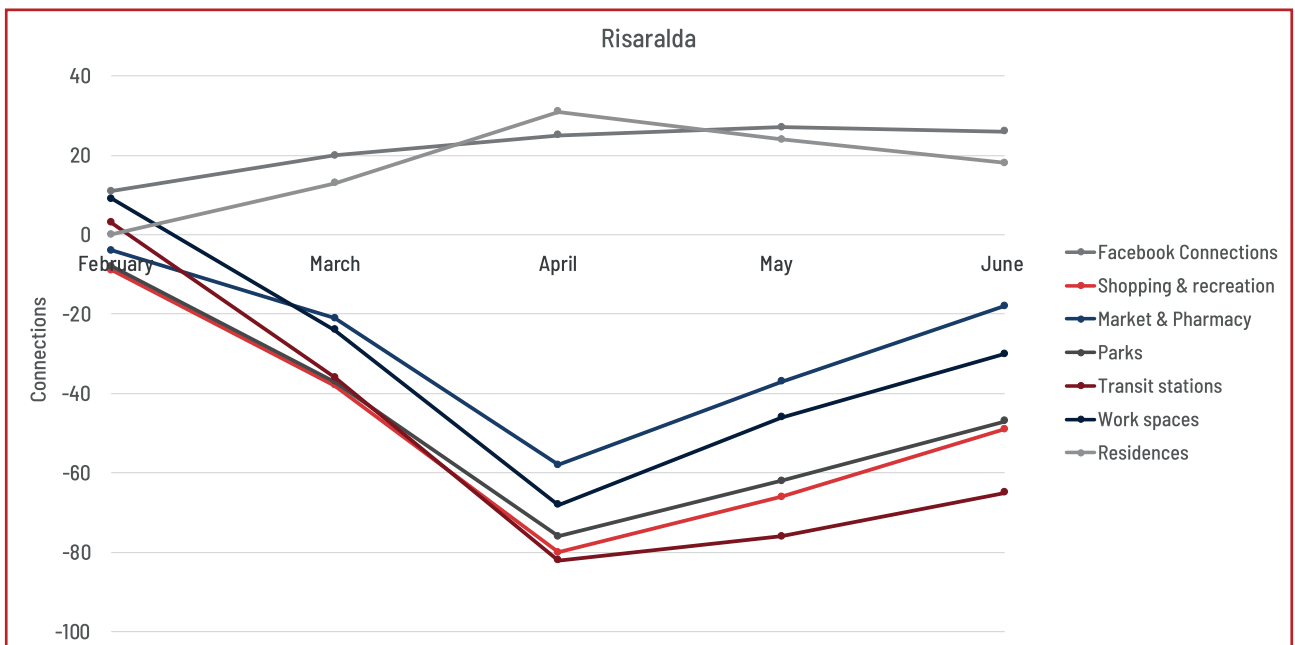
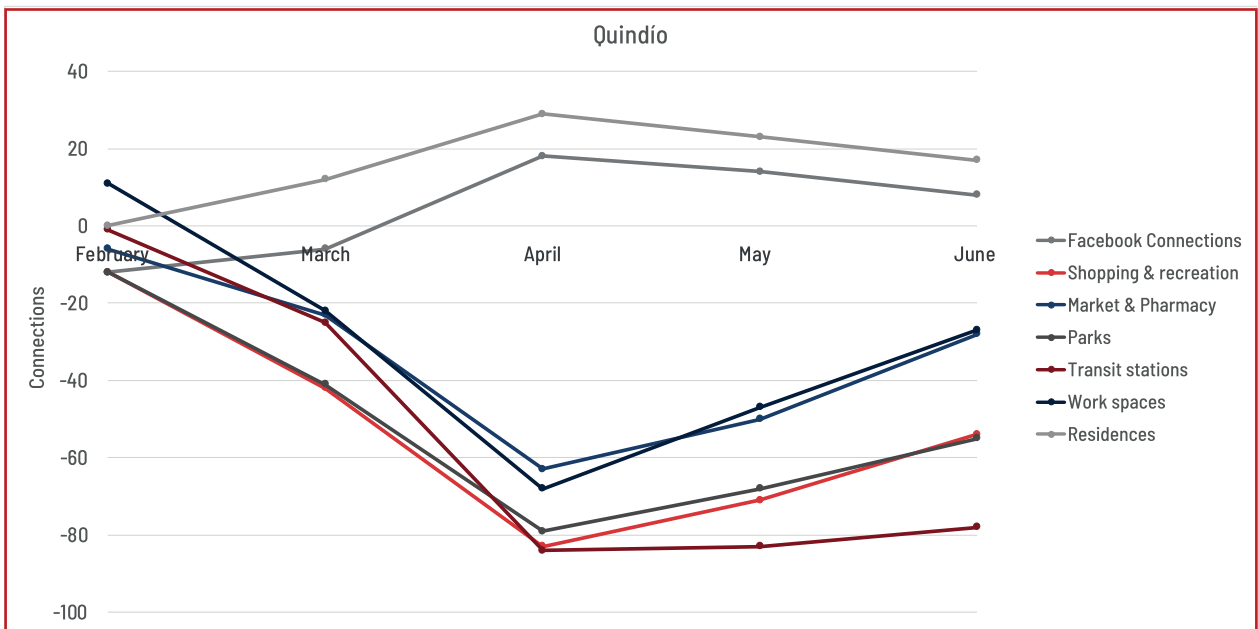
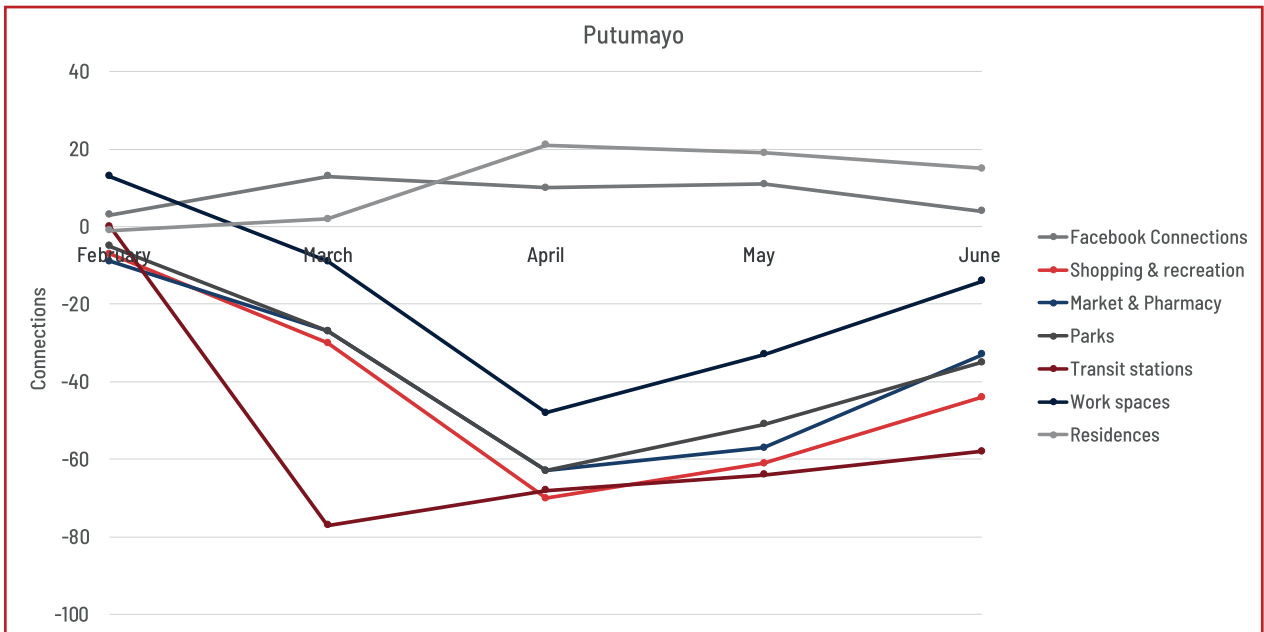
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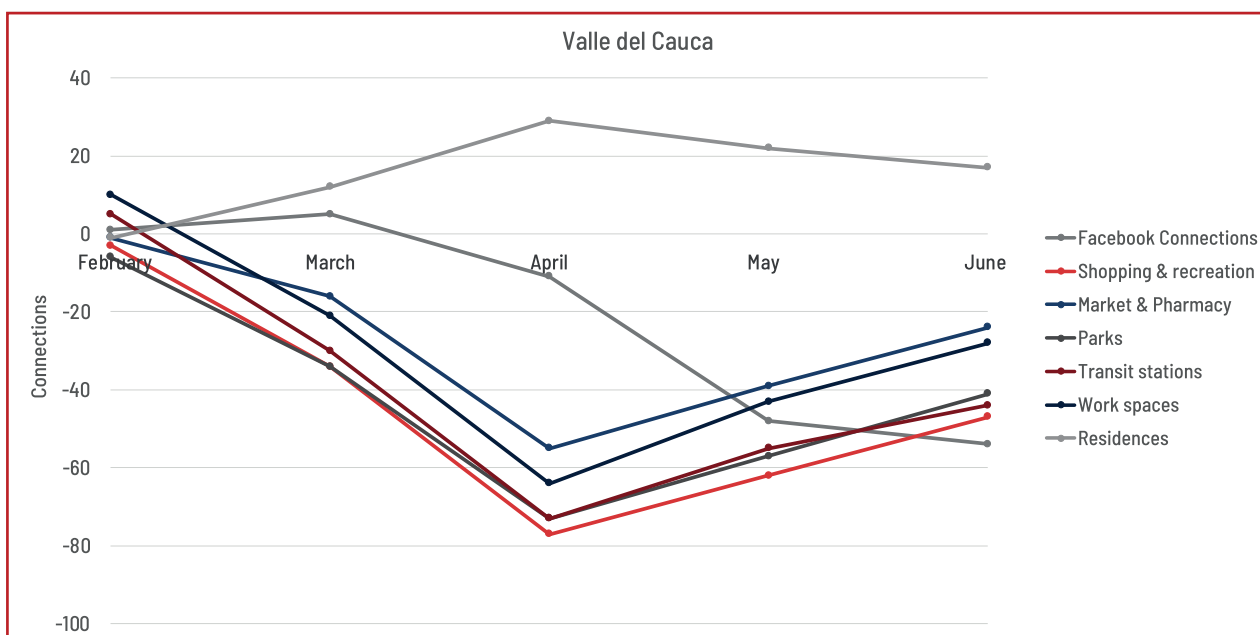
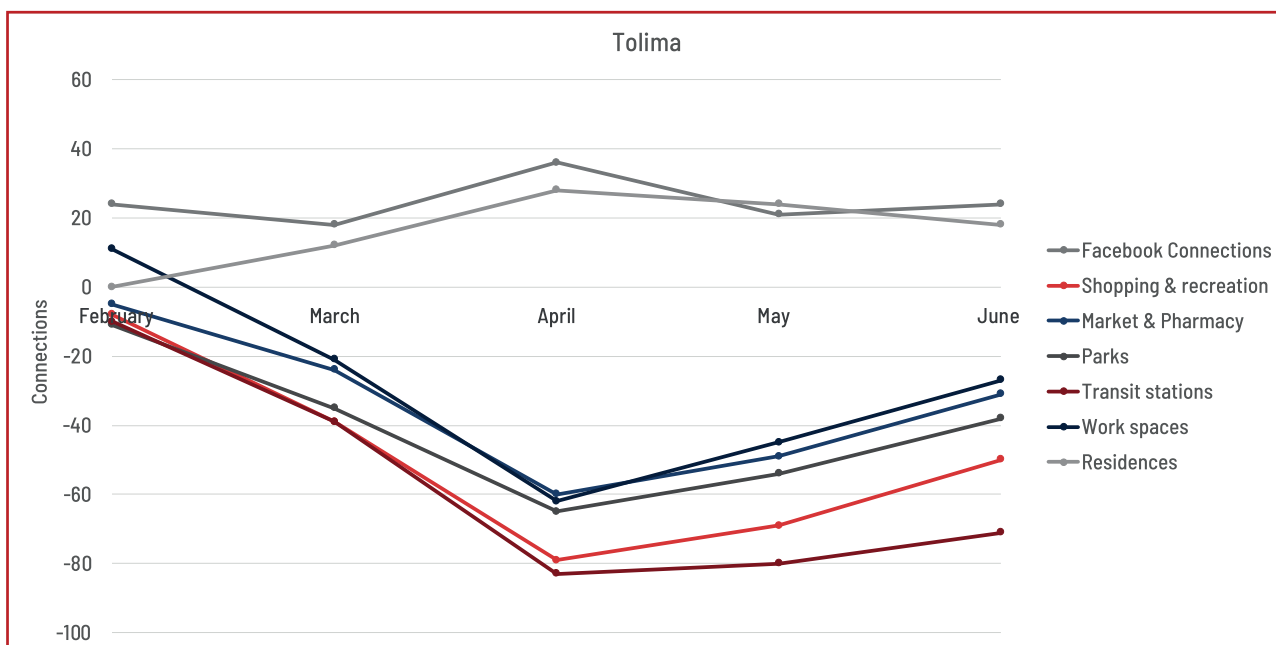
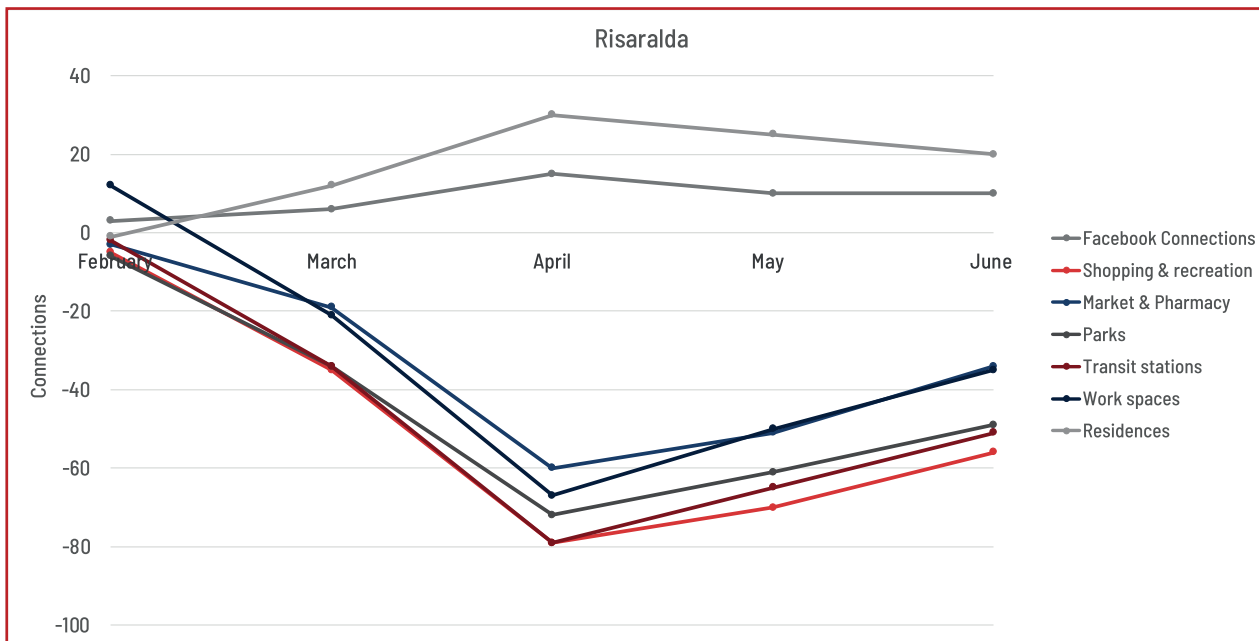
Own elaboration with data from Facebook and Google (2020)



Own elaboration with data from Facebook and Google (2020)



Own elaboration with data from Facebook and Google (2020)



Own elaboration with data from Facebook and Google (2020)

However, some exceptions to the general trend need to be highlighted. In Córdoba there is a clear dramatic increase in the number of refugee, migrant and returnee users on Facebook beginning in April, something which requires deeper research since the mandatory isolation had restricted their mobility. Likewise, in Huila and Meta, the increases stand out, although less so than those of Córdoba.

One possible hypothesis could be that the refugees and migrants were on whole able to access internet services during the pandemic through means not covered in this study.

Finally, in Valle del Cauca a trend contrary to that of the other departments can be seen, since in the second quarter the number of connected users fell significantly, moving away from the residential environment trend. In light of this a preliminary hypothesis may underpin that this reduction is explained by the high figure of floating migrant and refugee population heading for Ecuador, Peru and other destinations in Colombia and Venezuela, as well as an apparent dependence on the Vive Digital free internet access points which

4. CONCLUSION

In accordance with the analysis carried out, it is clear that there is a lack of statistical evidence to underpin the conclusion that there has been a variation between the number of refugees, migrant and returnees coming from Venezuela in Colombia, at least according to the information available. This may be explained by the high variation in the data, by a nullifying effect between the returnee population heading to Venezuela and irregular migration, or by the reduced percentage which this dynamic represents on the total value.

Conversely, there is enough evidence to determine that a decentralization dynamic of the population has been reinforced, since there is a large increase of this in the departments and municipalities of lower economic and demographic density than the border regions, the Costa Caribe, Bogotá/Cundinamarca and Valle del Cauca.

This could be explained by the refugee, migrant, and returnee population tending towards agricultural jobs, as well by their seeking out environments where things such as housing and food are more economical than in large cities.

Furthermore, the hypothesis was contrasted with how the mandatory isolation would have affected the connectivity of this population owing to the lack of access in public places. According to the data, there is a positive relationship between the presence at home and Facebook connectivity, which reflects a possible source of bias in the data, since the main population that would be undergoing monitoring is that which has access to 3G and 4G mobile networks or home Wi-Fi. Meaning, the data may not be capturing the most vulnerable population which lacks these services.



Population from Venezuela estimated by department and variation between the first and second quarter of 2020

Department	Estimated population second quarter 2020	Estimated variation
Antioquía	170.000	12%
Arauca	30.167	13%
Bogotá D.C.	351.667	8%
Bolívar	64.000	6%
Boyacá	17.667	9%
Caldas	6.683	10%
Caquetá	1.833	13%
Casanare	12.833	14%
Cauca	9.117	25%
Chocó	1.217	9%
Córdoba	271.667	191%
Cundinamarca	46.167	17%
Guainía	2.533	8%
Huila	6.217	14%
Meta	14.000	17%
Norte de Santander	101.333	10%
Putumayo	6.533	23%
Quindío	7.683	15%
Risaralda	15.333	23%
Santander	64.333	9%
Tolima	10.833	13%
Valle del Cauca	193.333	-39%

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