COVID-19 in Cuban children and adolescents. First report. Epidemiological weeks 12 to 22. June 2020

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On 11 March 2020, Cuba confirmed the first cases of COVID-19. Three tourists from Italy, who were visiting a heritage city in Central Cuba, tested positive. Ten days later, on 21 March, an 18-month-old child, who was on a family visit with his mother (19) from Spain, became the first child to be diagnosed, along with his mother. The time elapsed between entering the country and showing symptoms shows that they both arrived in the country carrying the SARS-CoV-2 virus. They were both registered according to the place of residence of their relatives, in the urban settlement of Guisa, from the homonymous municipality of over 20 000 residents, one of the Sierra Maestra's mountainous municipalities in the eastern Granma Province, 17 km from the provincial capital Bayamo.

In the following days, other children travelling from the United States, Guyana and France were also diagnosed. Two children from France were considered as imported cases. They were joined by other children who were in contact with confirmed cases from overseas (imported cases) and Cubans (indigenous cases). Seventy days after the beginning of the epidemic in the country, 223 children and adolescents have been diagnosed with COVID-19; four of them were Cubans residing abroad, two foreign tourists and one Cuban resident who returned to the country with her mother.

Description of children and adolescents diagnosed with COVID-19 (according to sex, age and place of residence)

According to the date of confirmation, the amount of cases per day shows a wide variation with figures equal or higher than 10 cases in a few days (6), after the first diagnosis. Figure 1.

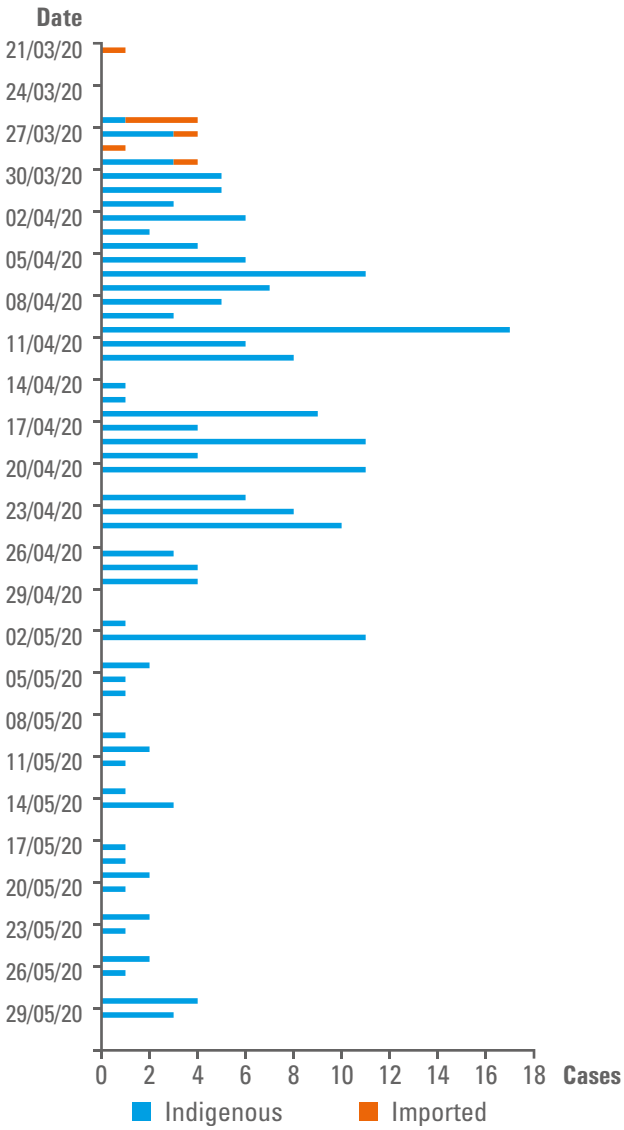


Figure 1. Cuba. COVID-19 cases by date of confirmation (21 March to 30 May)
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database

The evolution of the disease during epidemiological weeks[1] 12 to 22 shows the increase of notifications starting on week 13, which reaches a maximum number of confirmed cases in weeks 15 (55), 16 (36) and 17 (39). In the following weeks, the cases are reduced to 5 in week 20, with a slight increase over the next 2 weeks. This behaviour coincides with the evolution of total cases in the country by epidemiological weeks. Figures 2a and 2b.

In terms of the weekly evolution of the disease in the country, there are no sex-specific differences until week 15. From then on, the highest number of notified cases is reached, the number of infected children increases and this trend continues in most of the subsequent weeks. Figures 3a and 3b.

[1] In general, the term epidemiological week is used in the analysis of the behaviour of diseases, especially communicable ones, in accordance with an international calendar

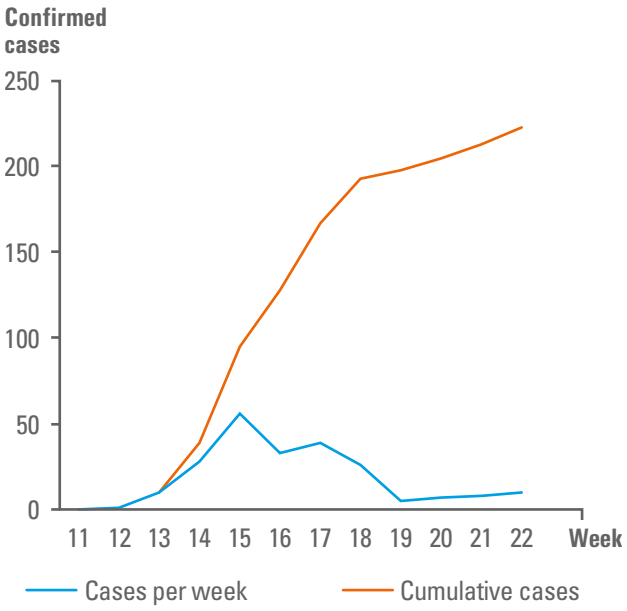


Figure 2a. COVID -19 cases in children and adolescents by confirmation date.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

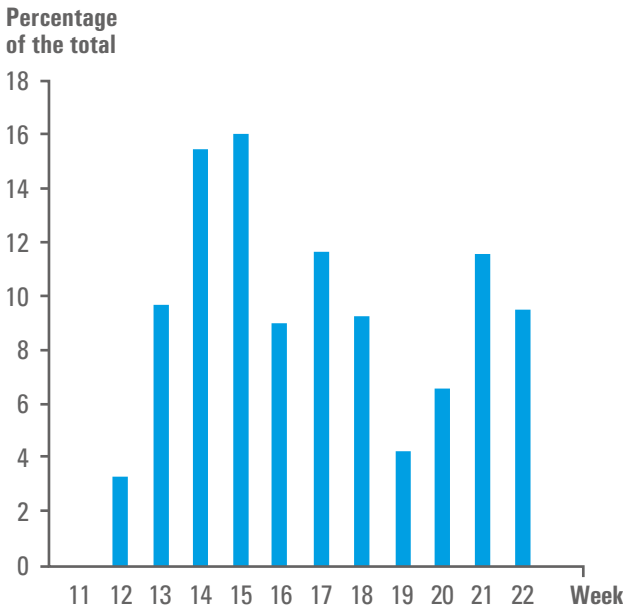


Figure 2b. Percentage of cases in individuals aged 0-18 years.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

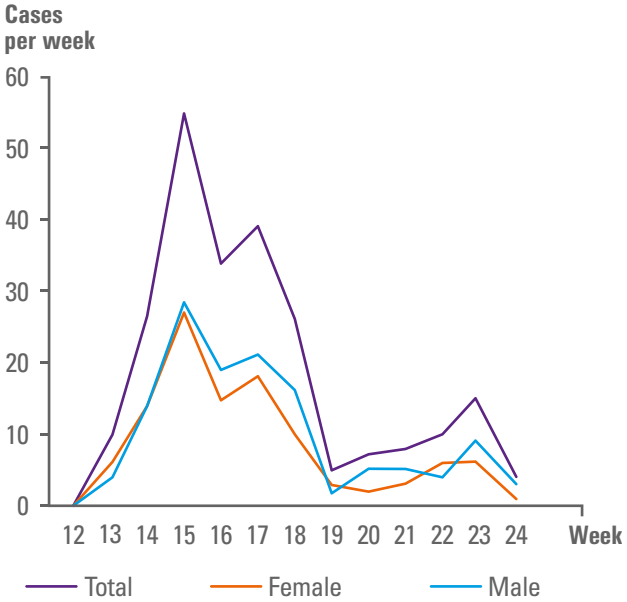


Figure 3a. Cuba. Distribution of COVID-19 confirmed cases by sex and epidemiological weeks.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

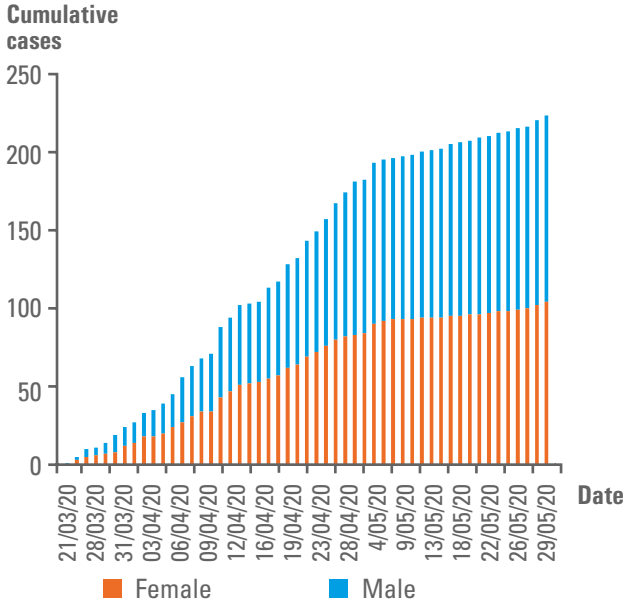


Figure 3b. Cuba. Dynamics of COVID-19 case confirmations by sex.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

The distribution of children and adolescents confirmed with COVID-19 by age group shows the highest number of cases among children aged 12–18 years. A comparison between the proportion of population and the proportion of cases in each group indicates a smaller impact on the 0-5 age group, a similar one in the 5-11 age group and higher in the 12-18 group. Figures 4a and 4b.

The highest numbers of confirmed cases in the age groups 12-18 and 6-11 were reached in epidemiological week 15 (5 – 11 April), and week 16 for the 0-5 age group. Up until week 15, a similar behaviour in terms of age groups is observed, as the distribution by group is varies in the following week.

The distribution by sex and age shows a relatively homogenous behaviour of cases by sex in the age group 12-18. Boys are predominant in week 15 and girls in week 17. The behaviour by sex is irregular in the rest of the groups. Figure 5.

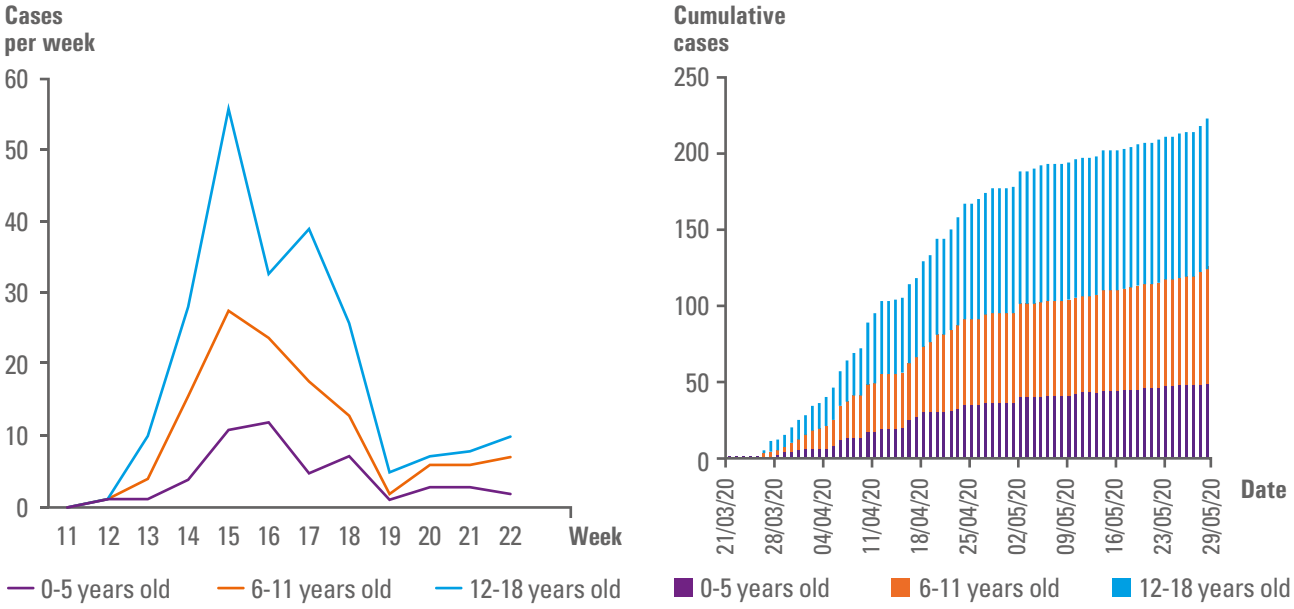


Figure 4. Cuba. Distribution of COVID-19 confirmed cases by age group: a) cumulative number of cases per week, b) cumulative number of cases per day (confirmation date).
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

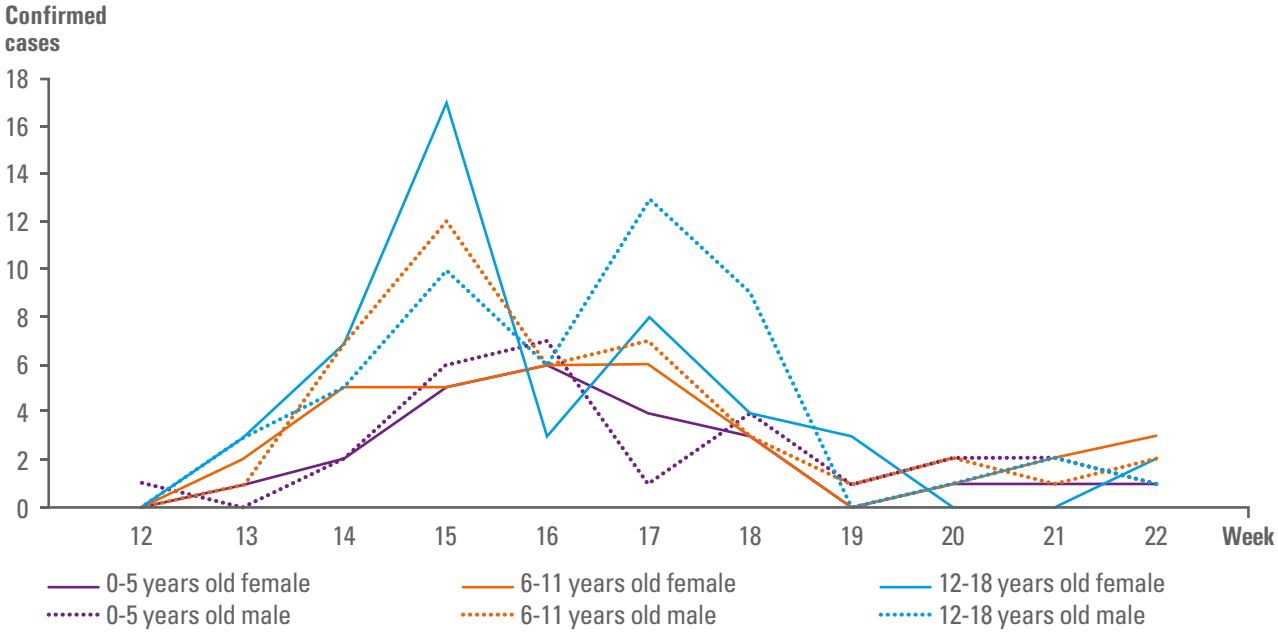


Figure 5. Cuba. Cases of COVID-19 in children and adolescents by sex and epidemiological week.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database

Territorial distribution of COVID-19 cases in children and adolescents aged 0-18 years

Up to 30 May, the last day of epidemiological week 22, at least one child or adolescent had been diagnosed with COVID-19 in 63 out of 168 municipalities in the country (37.5 % of the total). Rural settlements registered[2] 13.45 % of cases and urban settlements registered 86.54 %. The urban incidence rate doubles the rural one (10.57 per 100 000 and 5.77 per 100 000 children and adolescents).

From another territorial perspective, the highest percentage of cases is concentrated in municipal centres and the capital. Figure 6.

Figure 6. Distribution of cases by type of settlements.

SETTLEMENTS	TOTAL CASES	% OF THE TOTAL
Capital	77	34.53
Municipal centres	91	40.81
Other settlements	55	24.66

Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database. Index of Human Settlements. Cepde – ONEI 2017

The distribution of cases according to the category of settlements shows the highest percentages in the cities. However, thirty cases of individuals aged 0-18 have been recorded in rural and scattered villages and communities. Figure 7.

[2] The information is supplied by place of residence; in the case of the population studied it is unlikely that the infection had taken place outside the settlements.

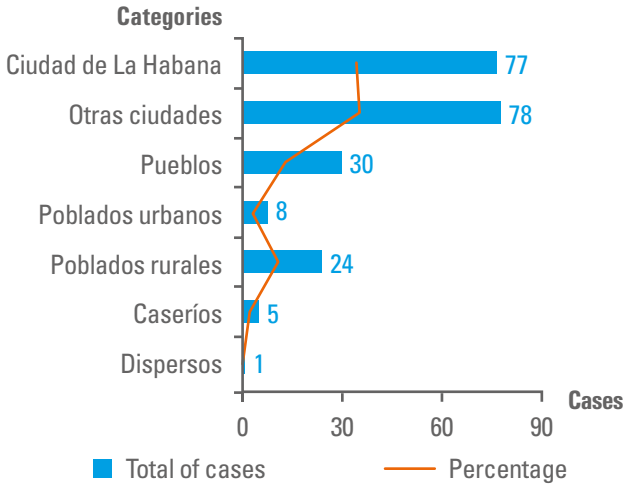


Figure 7. Distribution of cases by category of settlements.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database. Index of Human Settlements. Cepde – ONEI 2017.

In some provinces, confirmed cases of COVID-19 in population aged 0-18 years are concentrated in cities. In others cases, are more prevalent in rural settlements, like in the Güanes municipality, Pinar del Río Province (66.6 %), where 10 out of 15 cases confirmed are found in rural settlements. The distribution of cases by province shows that just over 50 % of cases are concentrated in 2 of the 15 provinces in the country, La Habana (34.53 %) and Villa Clara (16.14 %).

According to the rate of territorial distribution, which considers Cuba=1, six provinces in the country have been at a disadvantage compared to the general evolution of the epidemics in the country. The provinces above register the highest numbers, with a rate of 2 or above, the rest of the provinces are in a favourable situation, with Las Tunas registering the lowest rate. The province of Matanzas, with values close to 1, is balanced in relation to the spread of the COVID-19 in the country. Figure 8.

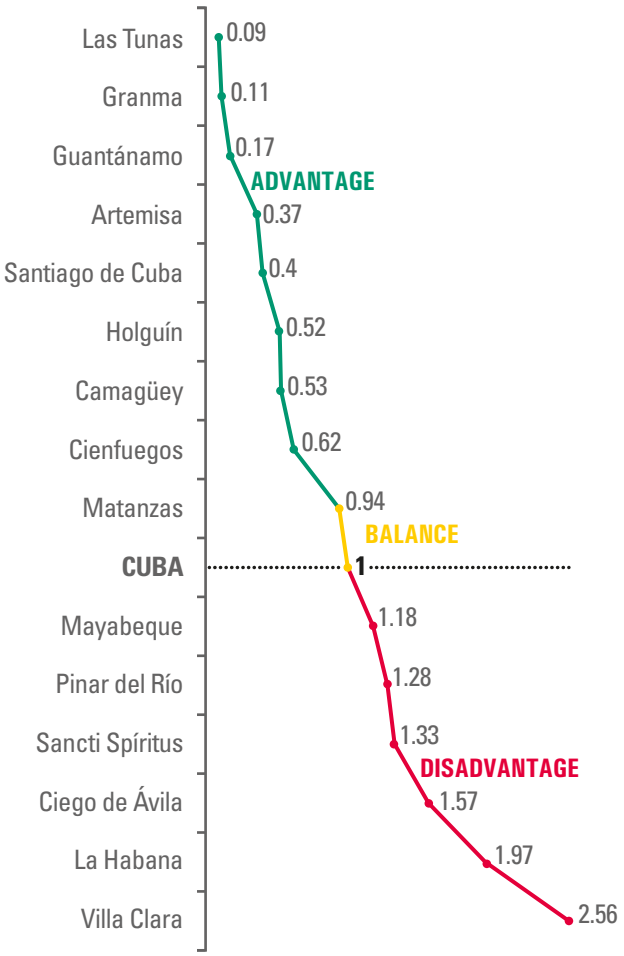


Figure 8. Rate of territorial distribution of cases by province.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

The distribution of confirmed cases by municipality shows Santa Clara, in central Cuba, with 14 cases.

This municipality has the highest number of cases, which coincides with the highest number of confirmed cases in total population for the period of time analysed. Santa Clara is followed by other two municipalities – Taguasco and Camajuaní - also in central Cuba, regarding the amount of confirmed cases.

In four municipalities in Havana, nine cases have been recorded, which represent the highest amount in the province with most cumulative cases. Only in the municipality of Cotorro, one child under 18 had been diagnosed up to the date of the analysis. Figure 9, Map 1.

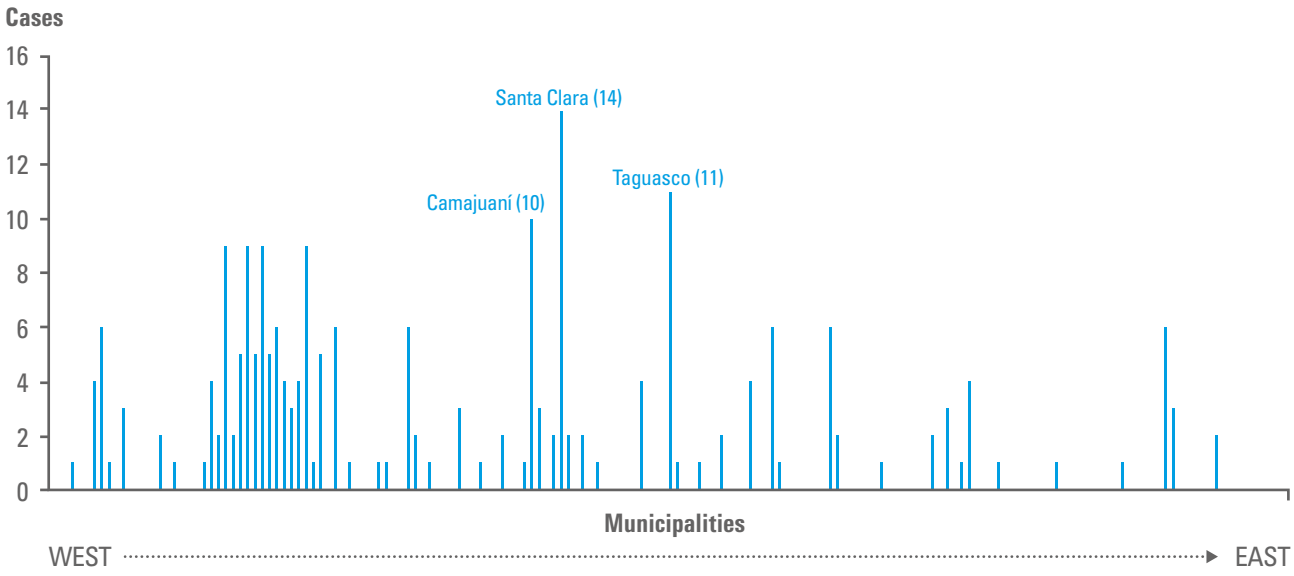
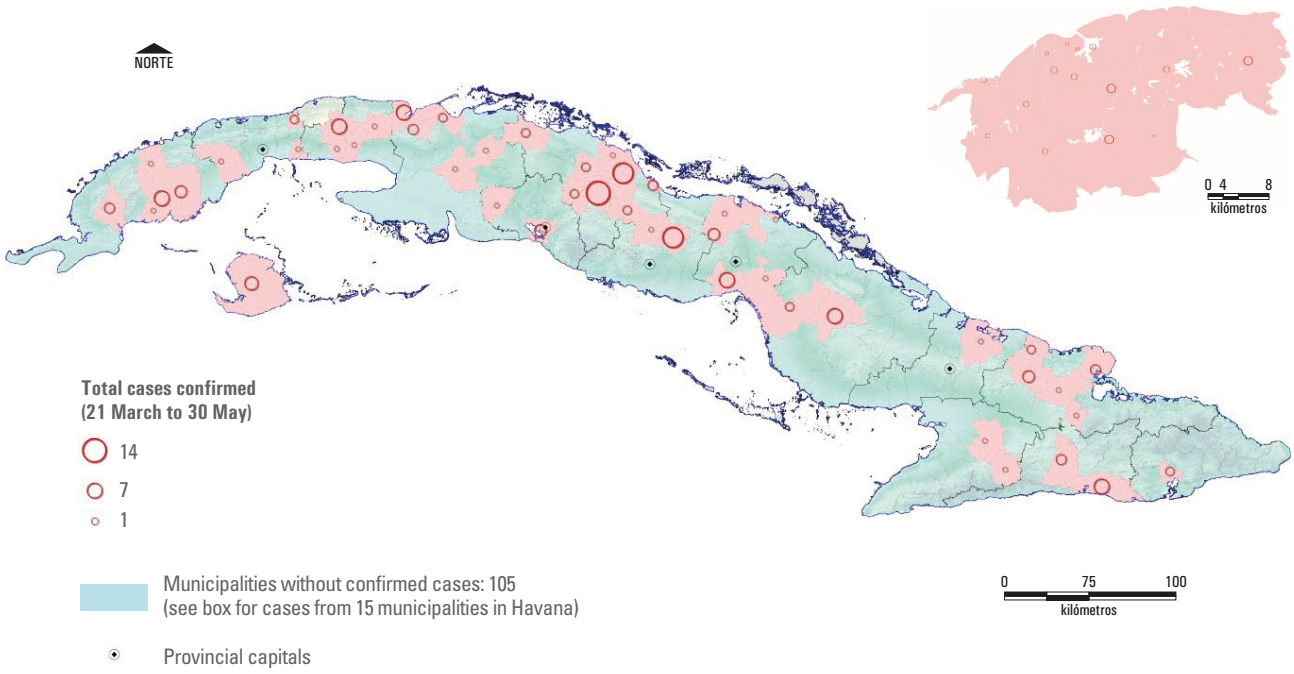


Figure 9. COVID-19 cases in children and adolescents. Each bar represents a municipality (21 March – 30 May).
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

Map 1. Cuba. Incidence of COVID-19 in children and adolescents. (March 21st – May 30th).



Sourse: Ministry of Health's daily briefings.
Digital cartographic database 1:1000 000 Geo Cuba.
Author: Luisa Iñiguez Rojas, FLACSO, University of Havana
Ángel Miguel Germán Almeida. IPK. MINSAP

In 59 % of the municipalities where cases have been reported, the incidence of COVID-19 is 1 or less per 10 000 children and adolescents. Four municipalities in central Cuba report the highest numbers, and all of them coincide with local transmission outbreaks.

No cases have been reported in municipalities from provincial capitals in Artemisa, Santi Spiritus, Ciego de Ávila and Las Tunas. The rest have reached relatively low rates, except for San José de las Lajas, provincial capital of Mayabeque. Figure 10. Map 2.

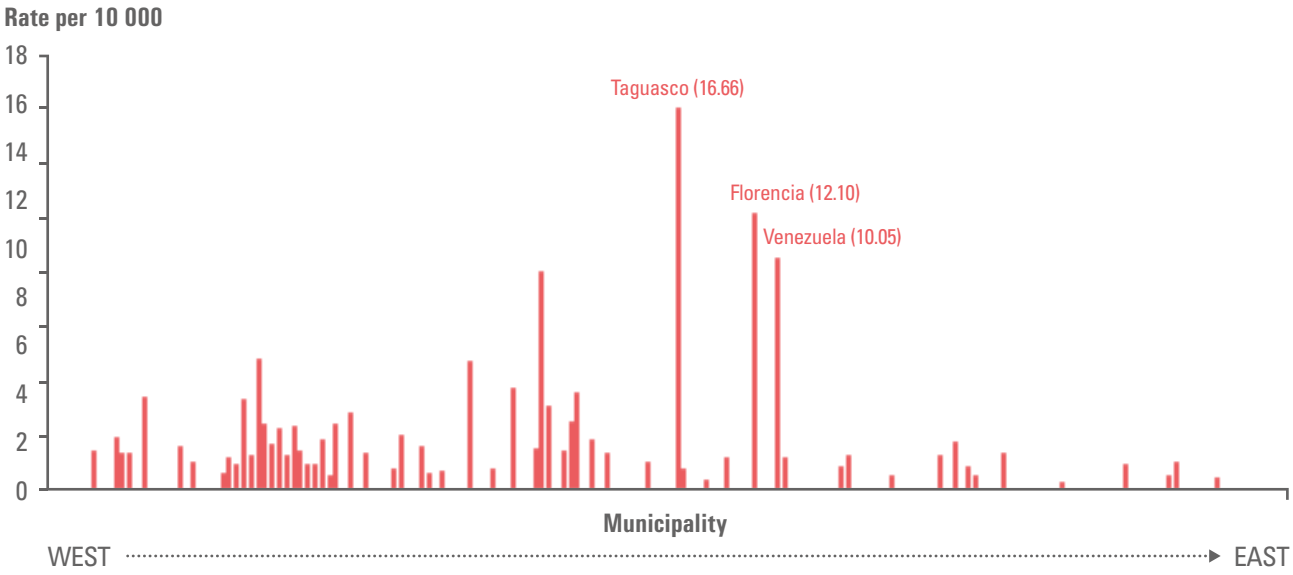
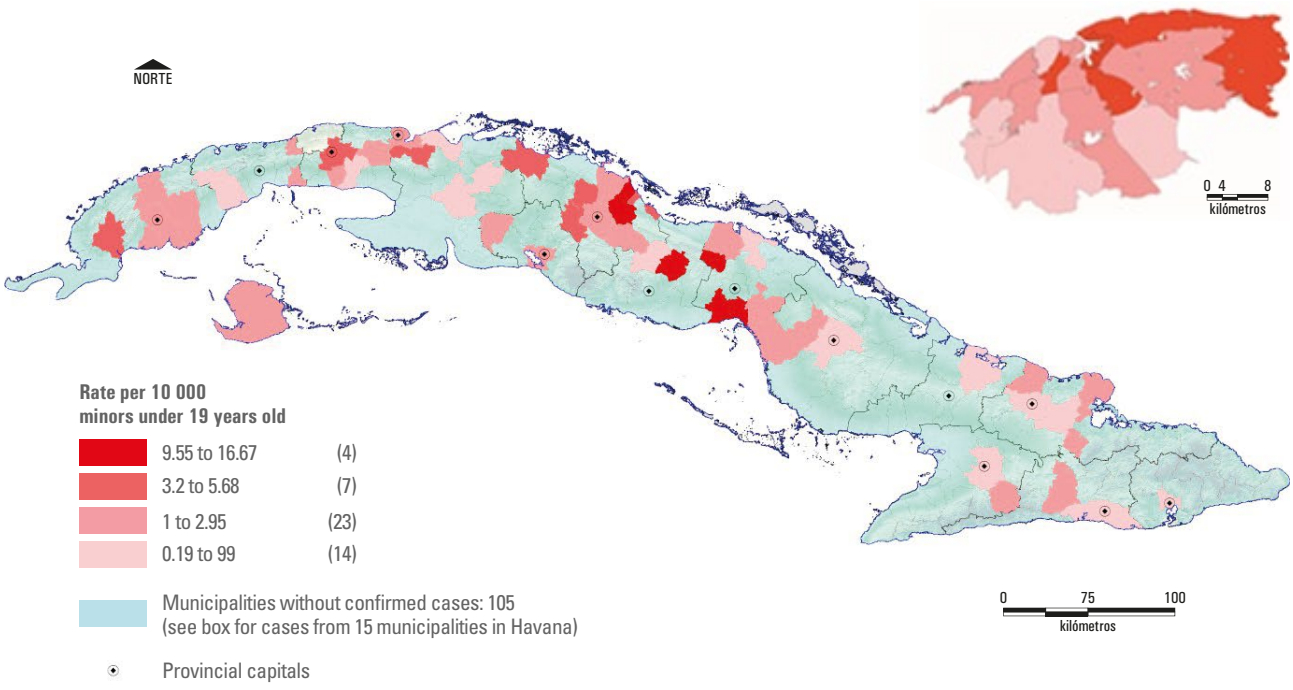


Figure 10. Incidence of COVID-19 in population aged 0-18 per municipality. Each bar represents one municipality (21 March to 30 May).
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

Map 2. Cuba. Incidence of COVID-19 in children and adolescents (21 March – 30 May).



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The highest rates, close to or over 10 cases per 10 000 people aged 0-18 years, were registered in 4 municipalities. These cases represent more than a 60 % of total confirmed cases in the municipality of Taguasco, or 25 % in Florencia. Figures 11 and 12.

Figure 11a. COVID-19 rates and number of cases in children and adolescents from selected municipalities.

MUNICIPALITY	TOTAL POPULATION	TOTAL CASES	RATE PER 10 000
Taguasco	6 602	11	16.66
Florencia	3305	4	12.1
Venezuela	5970	6	10.05
Camajuaní	10 468	10	9.55

Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

In these four municipalities, distribution by sex shows differences, with a prevalence of females in Camajuaní and Taguasco, and males in Florencia. Similarly, the distribution by age group is irregular, with a predominance of the age group 12-18 in Taguasco (91 %) and Camajuaní (70 %), while the age group 6-11 prevails in Florencia (75 %) and Venezuela (67 %).

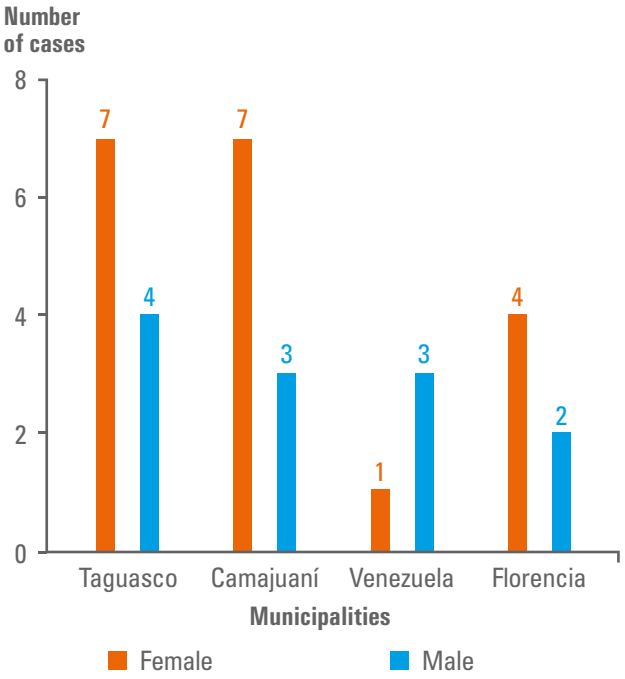


Figure 11b. Children and adolescents diagnosed with COVID-19 in selected municipalities, by sex.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

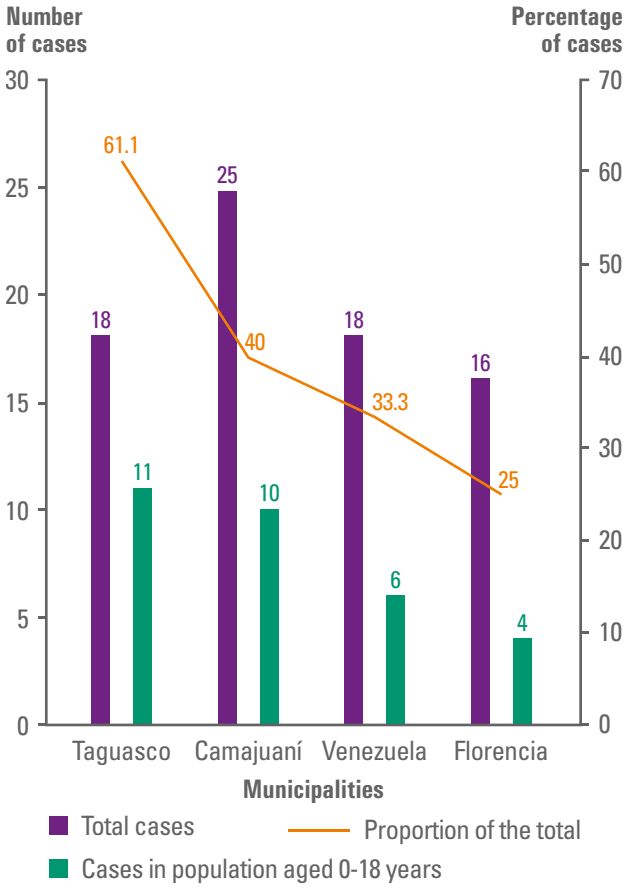


Figure 12a. Proportion of confirmed cases in children and adolescents out of the total confirmed cases in the municipality.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

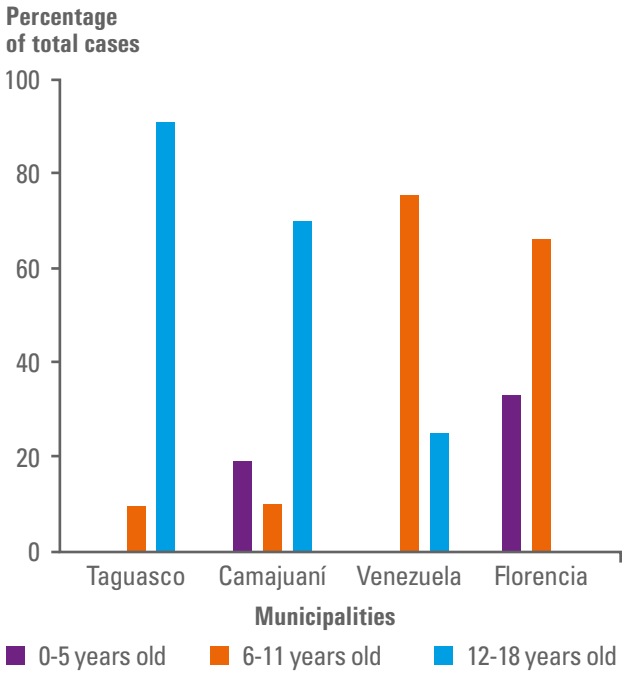


Figure 12b. Children and adolescents diagnosed with COVID-19 in selected municipalities, by age.
Source: Ministry of Health's daily briefings, Department of Health Surveillance's Database.

Distribution of cases by human settlements

By looking closer at the localization of cases by place of residence and using the Index of Human Settlements as a source, it was confirmed that cases in population aged 0-18 years had been confirmed in 59 out of the 7 014 settlements in the country.[3] Urban settlements reported 53 of them, while 16 were registered in rural settlements and 1 in spread population.

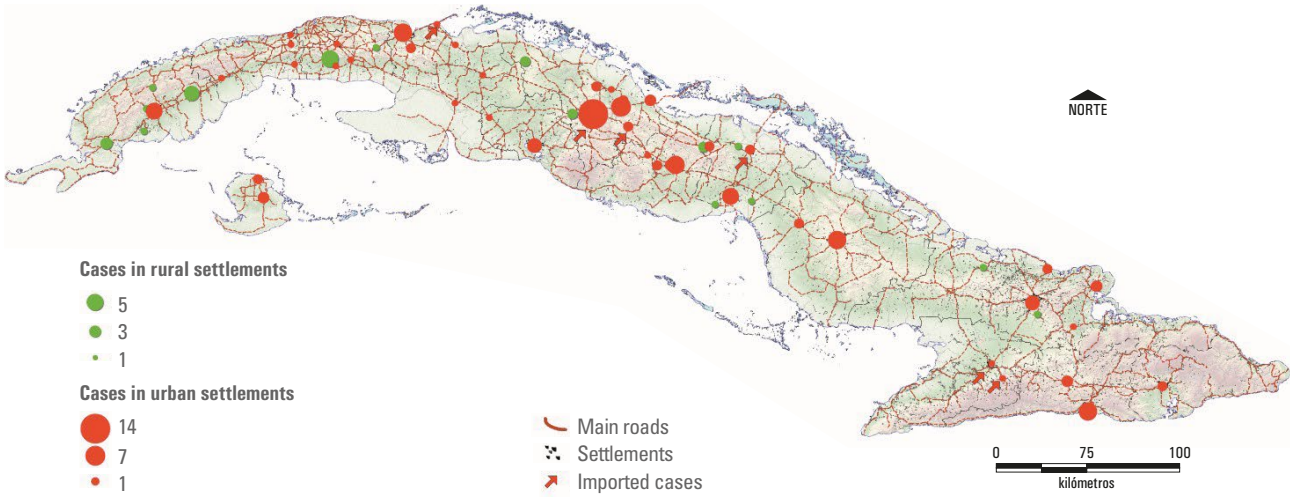
Havana, which is considered a single settlement by the country's Human Settlement System,[4] accumulates 77 cases (34.53 % of the total) distributed across 15 municipalities. The concentration of cases in the municipalities of Centro Habana, Cerro, San Miguel del Padrón and Arroyo Naranjo is evident. Maps 3 and 4.[5]

[3] Index of Human Settlements. Population and Housing Census 2012. CEPDE-ONEI 2017.

[4] Institute of Physical Planning 2012.

[5] Due to the cartographic scale of representation, Havana is shown separately from the rest of Cuba.

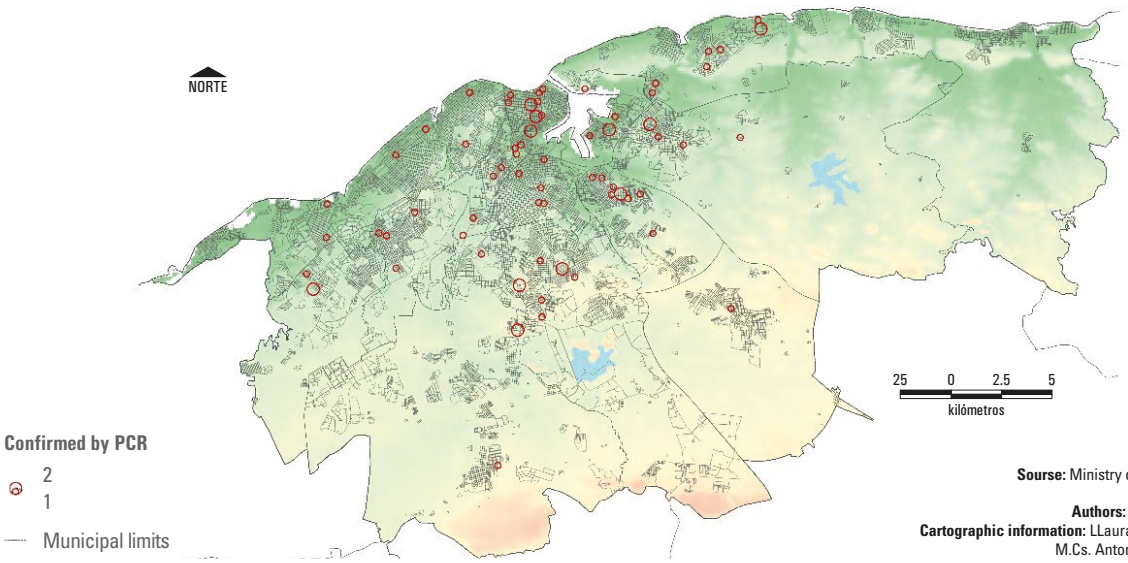
Map 3. Cuba. Confirmed cases of COVID-19 in population under 9 years old (21 March – 30 May).



Sourse: Ministry of Health's daily briefings, Ministry of Health's Database. Index of Human Settlements. Population and Housing Census 2012 ONEI 2017.Digital Cartographic base 1:1000 000 GeoCuba.
Autores: Luisa Iñiguez Rojas, FLACSO, Universidad de La Habana, Edgar Figueroa Fernández. Cepde ONEI 2017.

* Notified by place of residence or visit.
** The nearly one hundred cases in Havana are represented in a different map due to the need to change the scale.

Map 4. Children diagnosed with COVID-19 in Havana.



Sourse: Ministry of Health's daily briefings.
Base: 1:2000 GeoCuba.
Authors: Luisa Iniguez Rojas, PhD.
Cartographic information: LLaura E. Almora Andarcio, BS; M.Cs. Antonio Herrada Hidalgo, MS.

Preliminary considerations

In the period analysed, no significant differences by sex have been found in confirmed cases of population aged 0-18 years. The highest number of cases has been registered among ages 12-18 during several weeks and cumulative cases.

Cases have been confirmed in all 15 provinces, in 63 of the 168 municipalities (53.38 % of the total) and in 59 of the 7 014 human settlements in the country (0.84 % of the total).

No relation has been established between the amount of child and adolescent population in the municipalities and the amount of COVID-19 confirmed cases. The absence of confirmations in in 4 of the municipalities in condition of provincial capitals proves that a higher concentration of population, does not always take part in the spatial diffusion.

The localization by human settlements shows two patterns of spatial spreading of the COVID-19. The first one is the concentration of cases in cities and the capital, and a second one in rural towns and communities. It is significant that, in many municipalities, confirmed cases are not located in the centre but in small villages, relatively distant from the centre. Although the urban incidence rate per 10 000 among ages 0-18 doubles the rural rate, the latter would increase significantly if cases in small urban settlements were considered.

A second report in preparation studies the results in more detail, analyses spreading of COVID-19 in the country, identifies spatial clusters and types, and covers up to epidemiological week 30.

The figures used in this report are preliminary. They could be susceptible to variations, as repairs are made in the databases.

110 June 2020

First task report of project "COVID-19 in children and adolescents in Cuba". Health and Social Sciences Topics. FLACSO-Cuba. University of Havana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