COVID-19: a territorial view on demographic context and territorial expression of the pandemic

- On 24 February 2021, there were 8,917 new cases in the last 7 days, corresponding to a daily average of 1,274 new cases and the lowest since 13 October 2020. Since 28 January, there has been a progressive decrease in the number of new confirmed cases in the last 7 days. The 14-day incidence rate of COVID-19 was 227 cases per 100,000 population. This rate had reached a maximum on 29 January (1,667).

- At the regional level, the high number of deaths in the Metropolitan Area of Lisboa should be highlighted, which between, 18 January and 14 February, was 1.9 times higher than in the same period of the previous year. Compared to the previous week (7 February), however, there was a reduction in this ratio in all NUTS 2 regions of the country. In 52 municipalities the number of deaths was more than double the number of deaths recorded in the corresponding reference period: there were 69 municipalities in the previous week.

- On 16 February 2021, the date of the last update of data at the county level, the national 14-day cumulative incidence rate of COVID-19 (485) was surpassed by the Metropolitan Area of Lisboa (743), Região Autónoma da Madeira (517) and Alentejo (507) - new cases registered in these three regions represented 53% of the total, with the Metropolitan Area of Lisboa having the highest contribution at the regional level (43%). Compared to 9 February, there was a decrease in the cumulative incidence at 14 days in all regions of the country.

- On 16 February 2021, only 15 Portuguese municipalities were at extremely high risk (119 on 9 February). Compared to the previous week (9 February), 96% of the municipalities recorded a reduction of the cumulative incidence rate, including all municipalities of the metropolitan areas of Lisboa and Porto, and only seven municipalities recorded an increase of the 14-day cumulative incidence rate of COVID-19.

- The combined analysis of the location coefficient and the cumulative incidence rate at 14 days [Figure 10] showed that in recent weeks, since 26 January, the results of the location coefficient indicate a slightly increasing trend in the territorial concentration of new cases (last 14 days), with the value obtained for 16 February (21.3%) close to the value of 20 December 2020 (22.0%). Throughout this period, there was also a reduction in the 14-day cumulative incidence rate, which was accentuated since February 2.

I. Demographic and territorial context indicators

The number of deaths in the Metropolitan Area of Lisboa was 1.9 times higher than in the reference period

Figure 1 - Ratio between deaths in the last 4 weeks and deaths in the same reference period (average for the period from 2015 to 2019), Portugal, weeks between 29 March 2020 and 14 February 2021, weekly
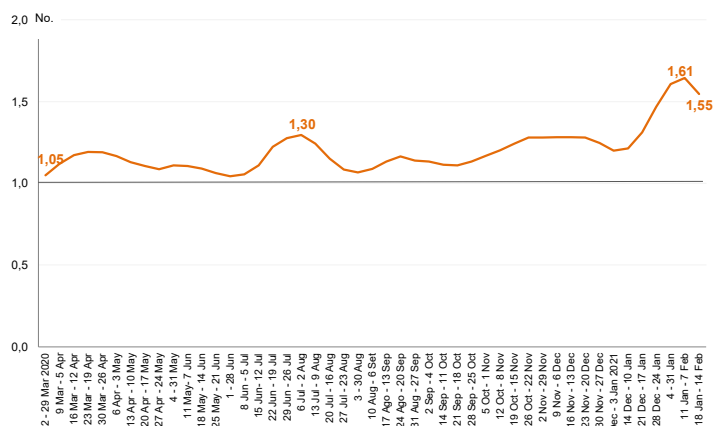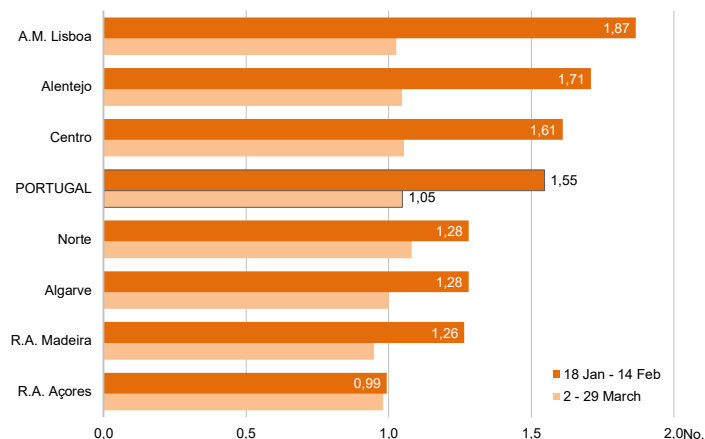
Figure 2 – Ratio between deaths in the last 4 weeks and deaths in the same reference period (average for the period from 2015 to 2019), Portugal and NUTS 2, weeks 29 March 2020 and 14 February 2021

Source: INE, I.P., Statistics on Deaths (Preliminary (2020 and 2021) and Final Results (2015 up to 2019)).

In 134 municipalities the number of deaths between 18 January and 14 February was 1.5 times higher than in the same reference period

Figure 3 - Number of deaths in the last four weeks (14 February 2021) per deaths in the same period of reference (average for the period from 2015 to 2019), Portugal, NUTS 3 and municipality
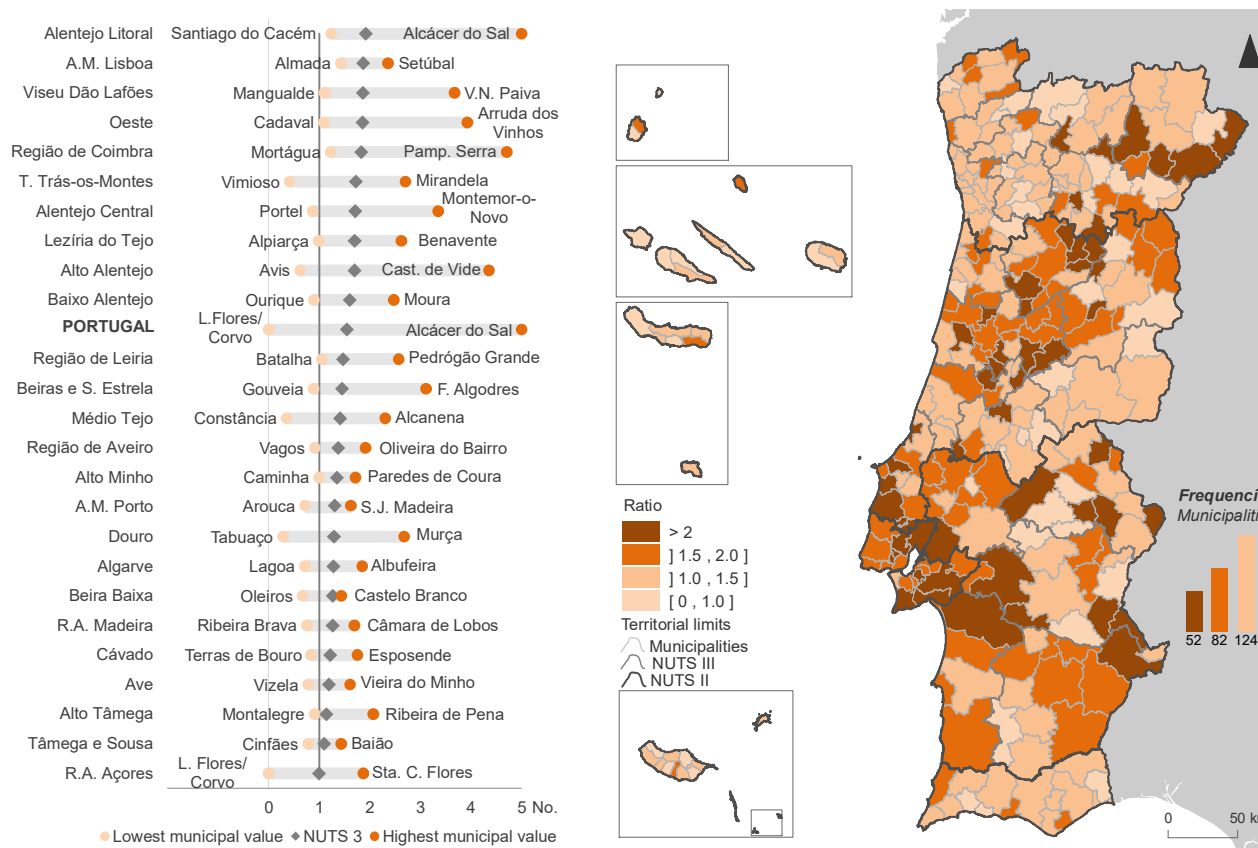

Source: INE, I.P., Statistics on Deaths (Preliminary (2020 and 2021) and Final Results (2015 up to 2019)).

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II. The expression of the pandemic in the municipalities

On 24 February 2021 there were the lowest number of new cases (last 7 days) since 13 October 2020

Figure 4- Number of new confirmed cases (last 7 days) of infection by SARS-CoV-2/COVID-19 and respective rate of change, Portugal, per day (10/3/2020 to 24/2/2021)
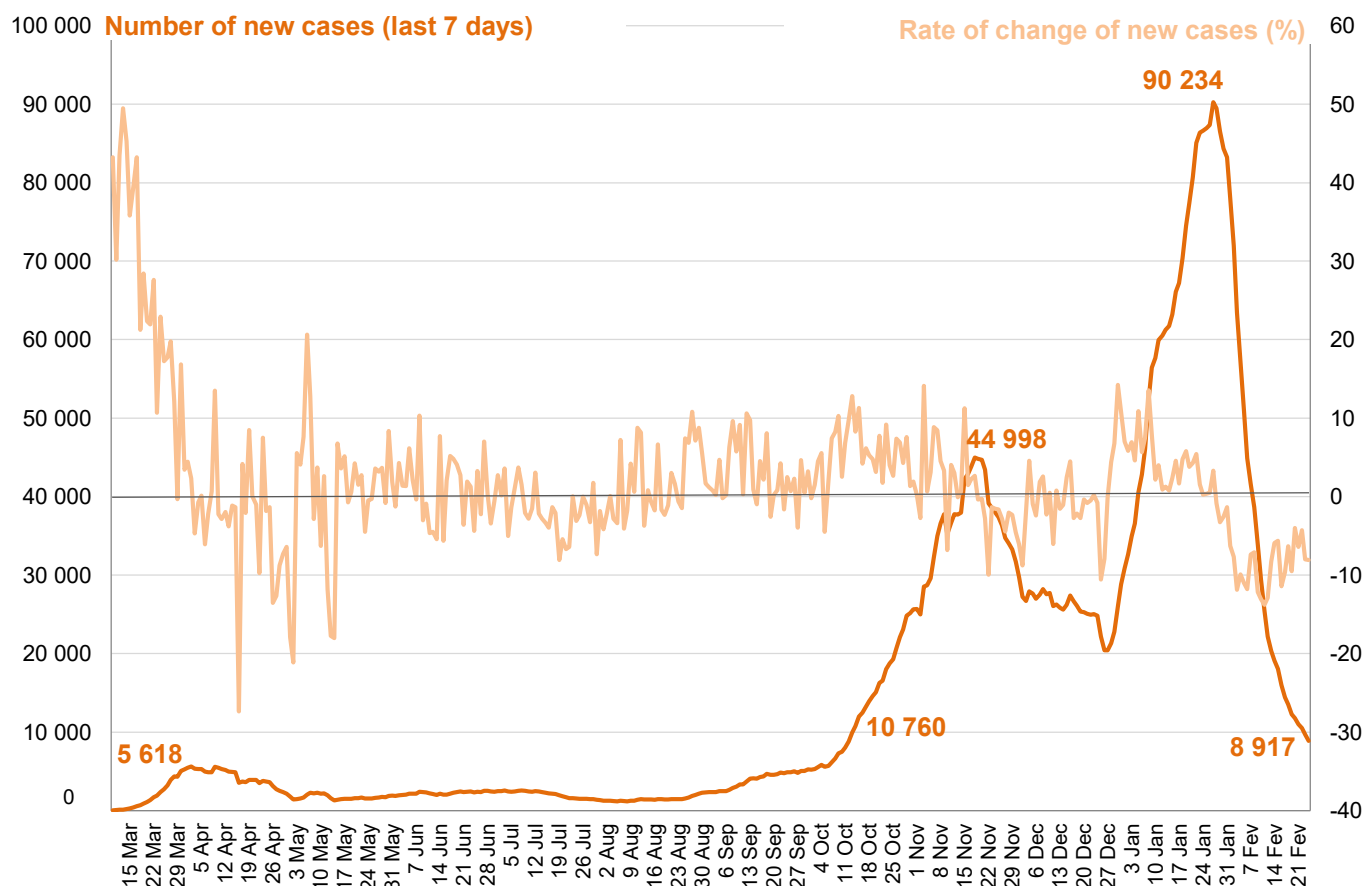
Source: Directorate-General of Health, Daily COVID-19 Status Report (released up to February 25).
Note: The number of new cases includes the +4,375 confirmed cases resulting from the historical update released by the Directorate-General of Health in the COVID-19 Status Report made available on 16 November (data on the situation up to 15 November) with impact on the new cases in the last 7 days for the period 15-21 November. The dates marked on the graph axis correspond to Sundays.

The Metropolitan Area of Lisboa recorded the highest number of new confirmed cases in the last 14 days

Figure 5 - 14-day cumulative incidence rate of SARS-CoV-2/COVID-19, Sundays - 12 April to 25 October; 10, 19 and 25 November, 2, 8, 17, 20 and 27 December, 5, 12, 18 and 26 January and 2, 9 and 16 February, Portugal and NUTS 2
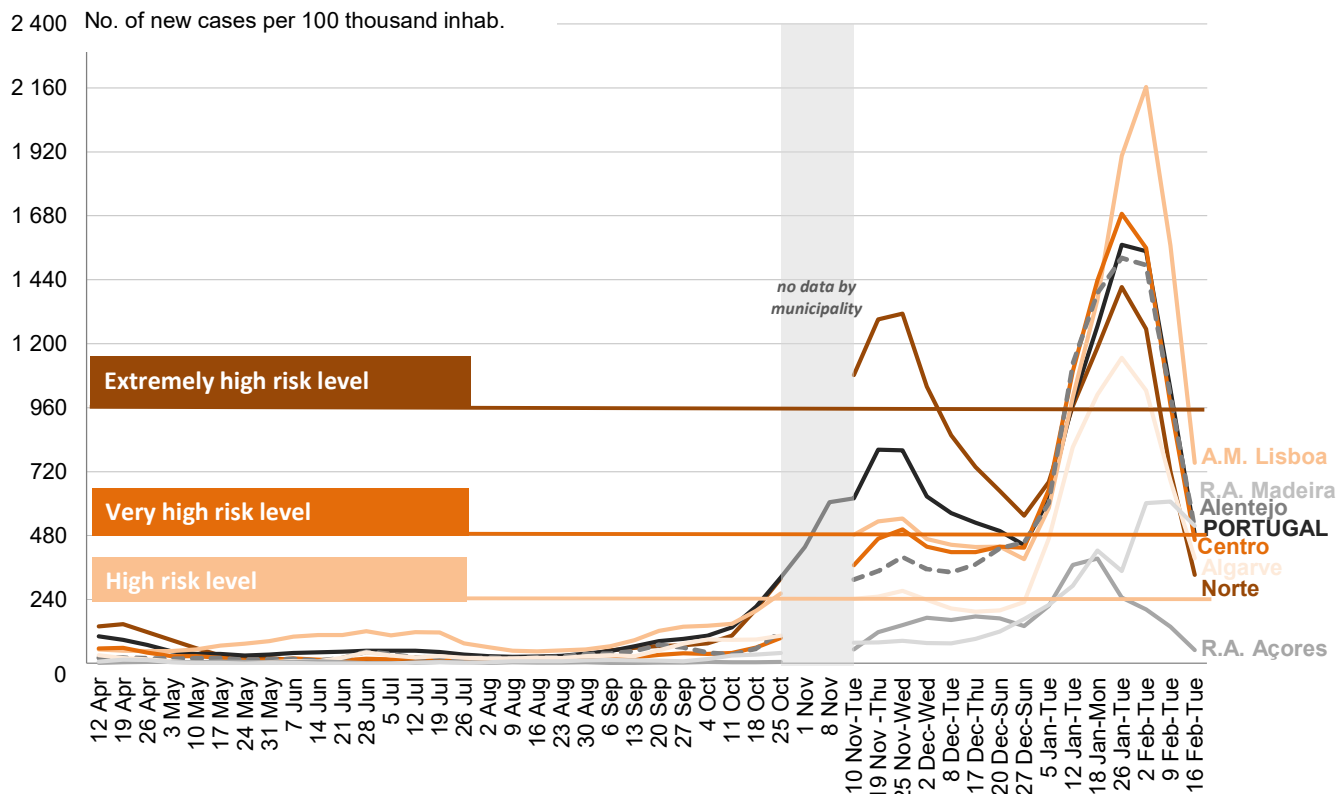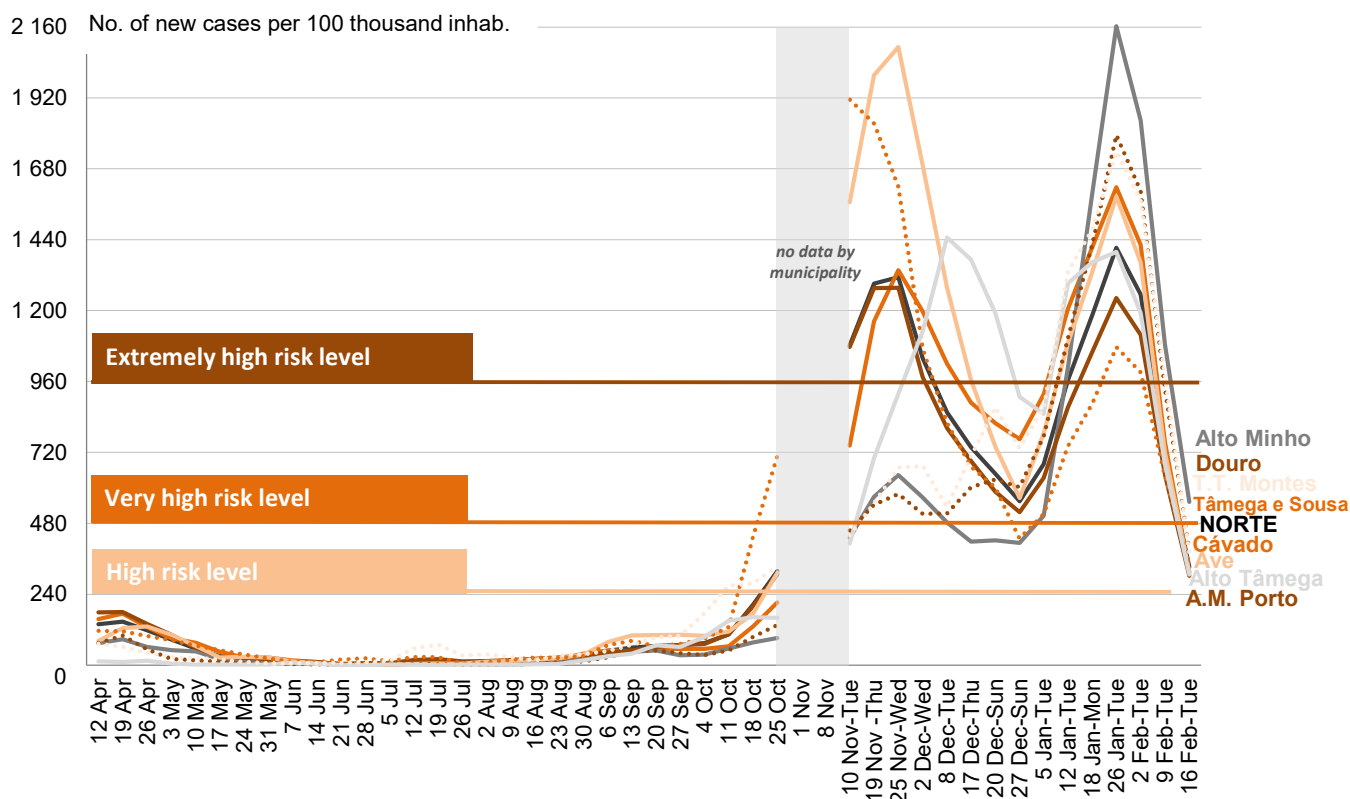

Source: Directorate-General of Health, Daily COVID-19 Status Report (released up to February 22). INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: The absence of values at the regional level on 1 and 8 November is due to the interruption in the dissemination of data at the municipality level in the COVID-19 Status reports. The dates marked on the graph axis correspond to Sundays until 8 November and then to the reference days associated with the 14-day cumulative incidence indicator that is now being released weekly by the Directorate-General of Health (see technical note at the end of the press release).

Figure 6- 14-day cumulative incidence rate of SARS-CoV-2/COVID-19, Sundays - 12 April to 25 October; 10, 19 and 25 November, 2, 8, 17, 20 and 27 December, and 5, 12, 18 and 26 January and 2, 9 and 16 February, Norte region and respective NUTS 3 sub-regions
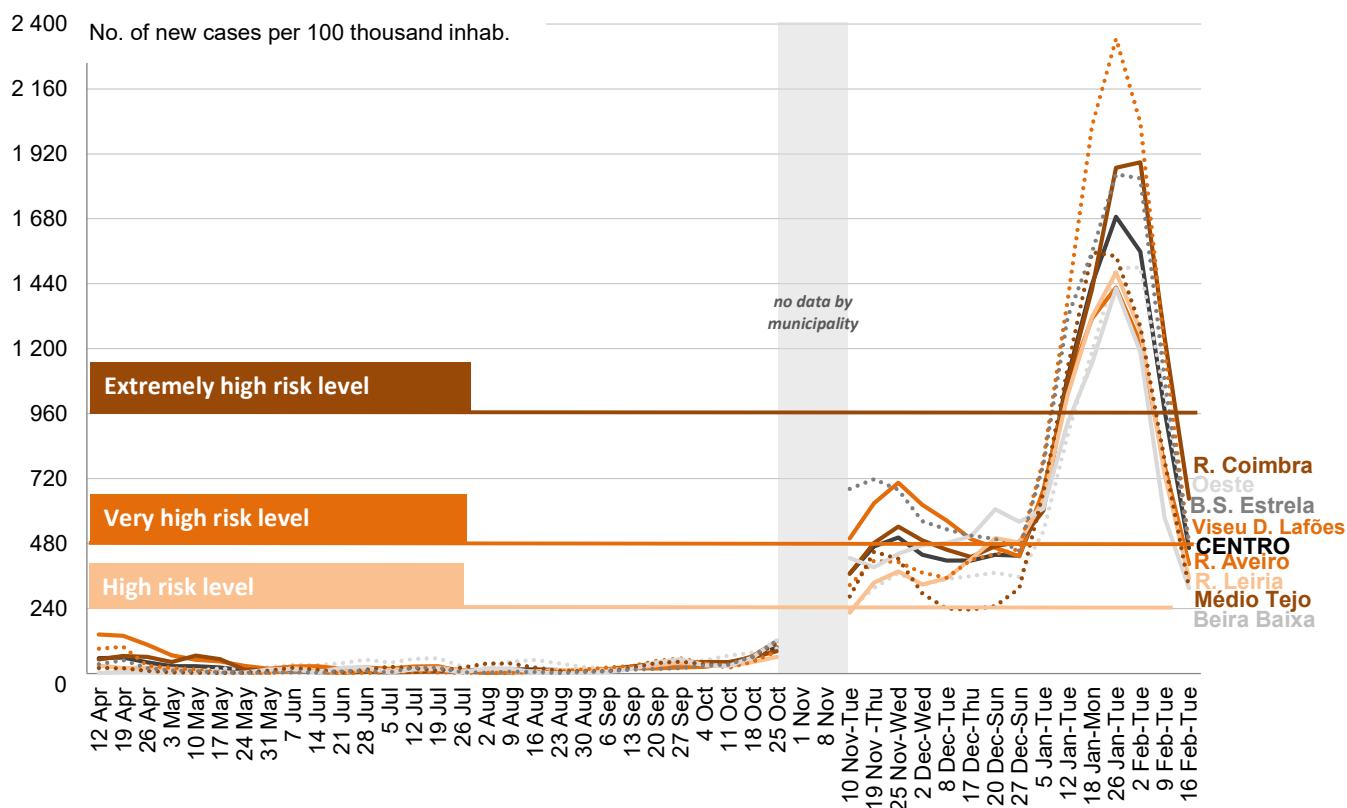

Source: Directorate-General of Health, Daily COVID-19 Status Report (released up to February 22). INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: The absence of values at the regional level on 1 and 8 November is due to the interruption in the dissemination of data at the municipality level in the COVID-19 Status reports. The dates marked on the graph axis correspond to Sundays until 8 November and then to the reference days associated with the 14-day cumulative incidence indicator that is now being released weekly by the Directorate-General of Health (see technical note at the end of the press release).

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Figure 7- 14-day cumulative incidence rate of SARS-CoV-2/COVID-19, Sundays - 12 April to 25 October; 10, 19 and 25 November, 2, 8, 17, 20 and 27 December, and 5, 12, 18 and 26 January and 2, 9 and 16 February, Centro region and respective NUTS 3 sub-regions
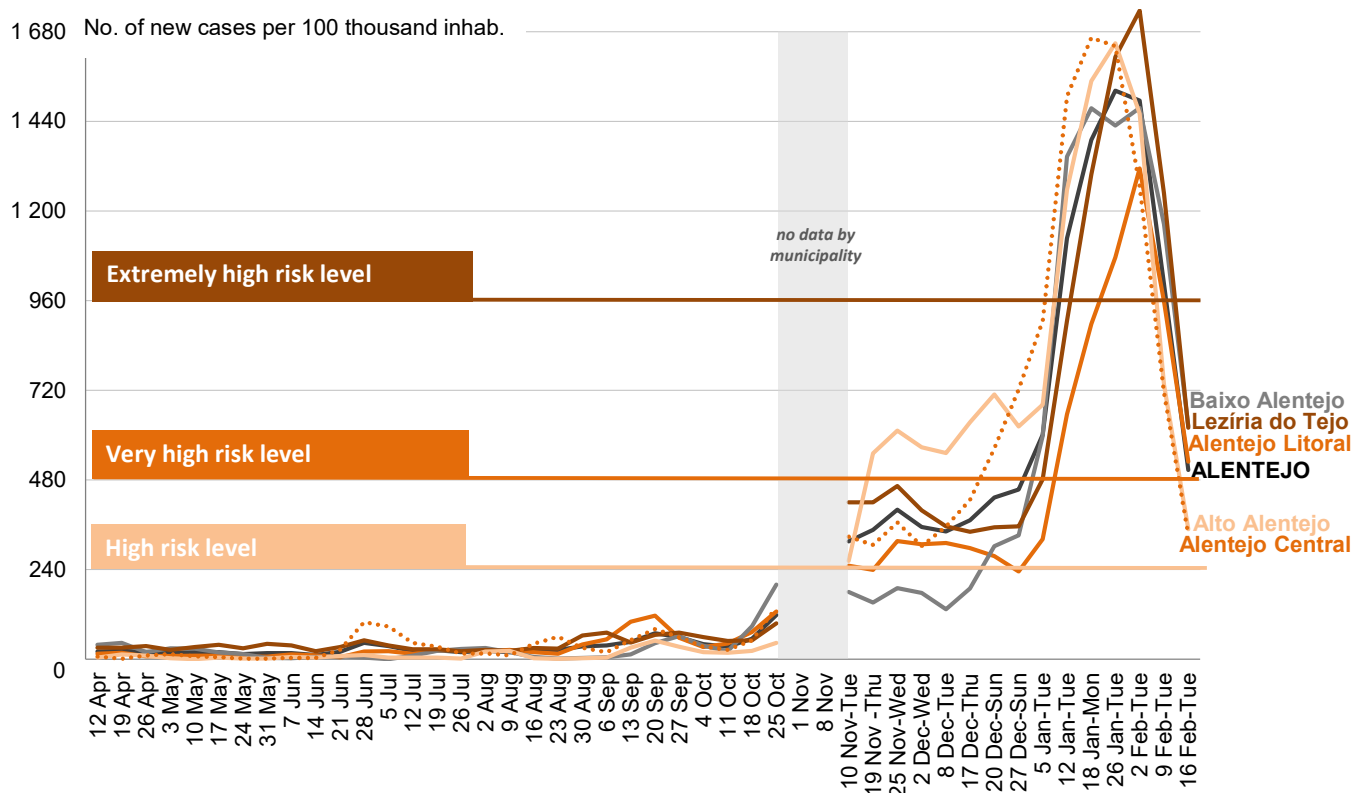

Source: Directorate-General of Health, Daily COVID-19 Status Report (released up to February 22). INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: The absence of values at the regional level on 1 and 8 November is due to the interruption in the dissemination of data at the municipality level in the COVID-19 Status reports. The dates marked on the graph axis correspond to Sundays until 8 November and then to the reference days associated with the 14-day cumulative incidence indicator that is now being released weekly by the Directorate-General of Health (see technical note at the end of the press release).

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Figure 8- 14-day cumulative incidence rate of SARS-CoV-2/COVID-19, Sundays - 12 April to 25 October; 10, 19 and 25 November, 2, 8, 17, 20 and 27 December, and 5, 12, 18 and 26 January and 2, 9 and 16 February, Centro region and respective NUTS 3 sub-regions

Source: Directorate-General of Health, Daily COVID-19 Status Report (released up to February 22). INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: The absence of values at the regional level on 1 and 8 November is due to the interruption in the dissemination of data at the municipality level in the COVID-19 Status reports. The dates marked on the graph axis correspond to Sundays until 8 November and then to the reference days associated with the 14-day cumulative incidence indicator that is now being released weekly by the Directorate-General of Health (see technical note at the end of the press release).

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On 16 February 2021, only 15 Portuguese municipalities were at extremely high risk (119 on 9 February)

Figure 9 – 14-day cumulative incidence rate of infection by SARS-CoV-2/COVID-19 on 16 February, Portugal NUTS 3 and municipality
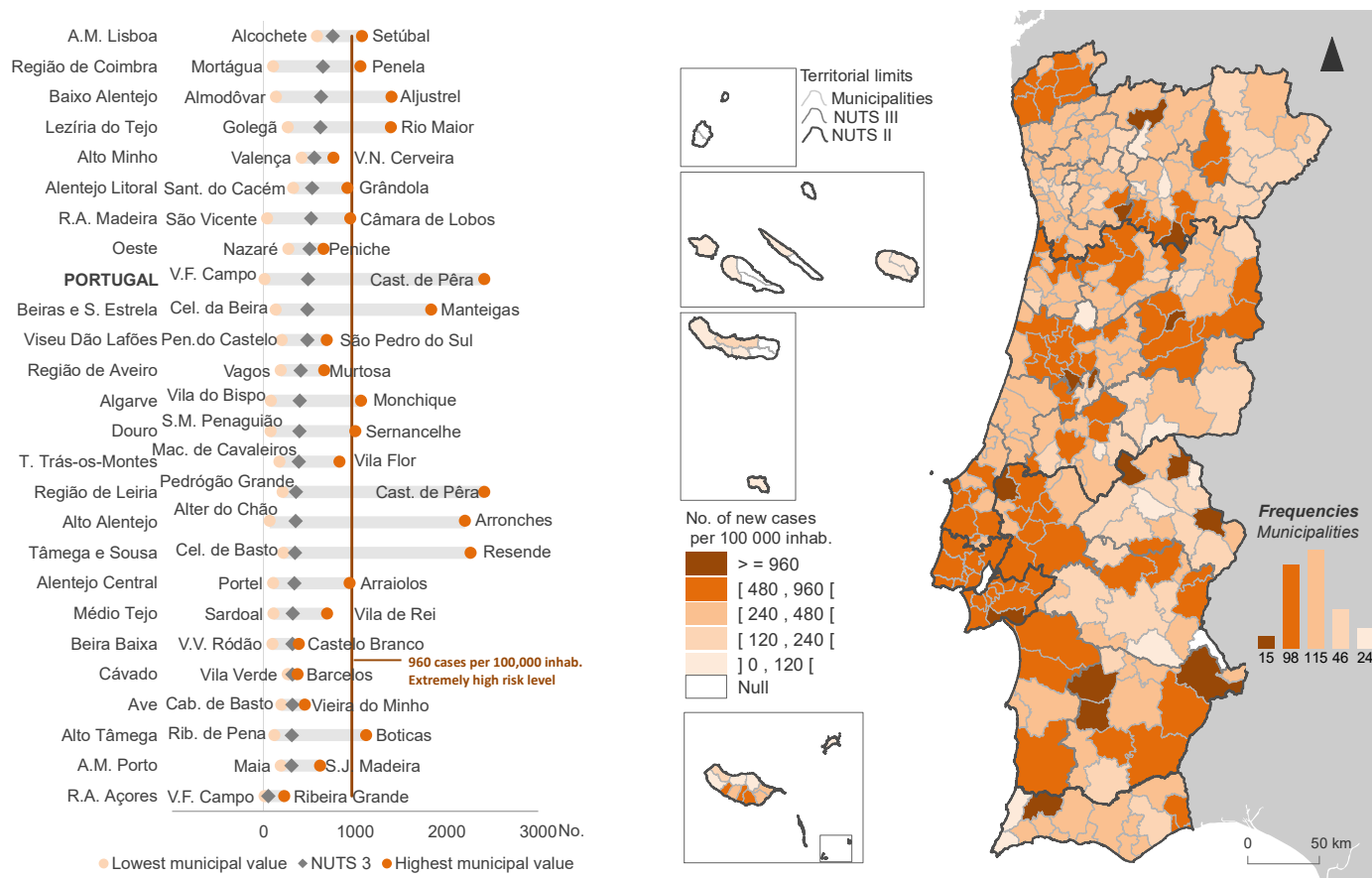
Source: Directorate-General of Health, Daily COVID-19 Status Report (released on February 22); INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: In the graph, in NUTS 3 sub-regions with zero data status, the municipalities with the lowest value in the indicator are identified.

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Figure 10- Territorial concentration of new confirmed cases of infection by SARS-CoV-2/COVID-19 (last 14 days), in relation to the resident population and 14-day cumulative incidence rate of infection by SARS-CoV-2/COVID-19, Portugal
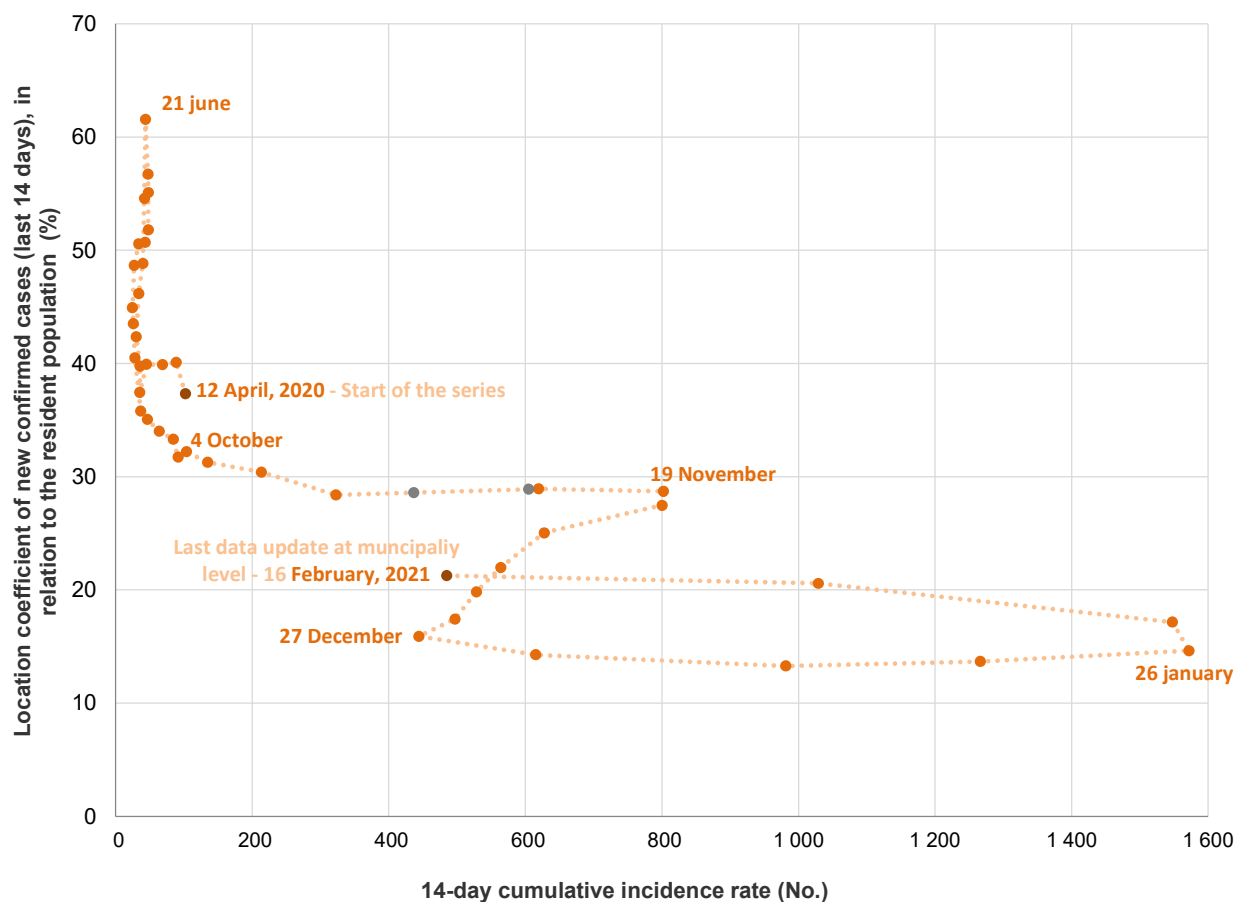
Source: Directorate-General of Health, Daily COVID-19 Status Report (released on February 22); INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: For the calculation of the location coefficients zero cases were considered for the municipalities with no value in the Directorate-General of Health Status report (0 or< 3 cases). The values of the location coefficient were estimated for 1 and 8 November, due to the absence of data at the municipality level in the COVID-19 Status reports. The number of new cases includes the +4,375 confirmed cases resulting from the historical update released by the Directorate-General of Health in the COVID-19 Status Report made available on 16 November (data on the situation up to 15 November).

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Between 9 and 16 February, 96% of the municipalities recorded a decrease in the 14-day cumulative incidence rate

Figure 11- Rate of change and territorial concentration of new confirmed cases of infection by SARS-CoV-2/COVID-19 (last 14 days), in relation to the resident population, based on the distribution by municipality, Portugal and municipality

Rate of change (9 February / 16 February)

Location Coefficient

Rate of change
] 0 , 150]
] -45 , 0]
] -60 , -45]
] -100 , -60]
not applicable
Territorial limits
Municipalities
NUTS III
NUTS II

Frequencies
Municipalities

7   73   131   93

0   50 km

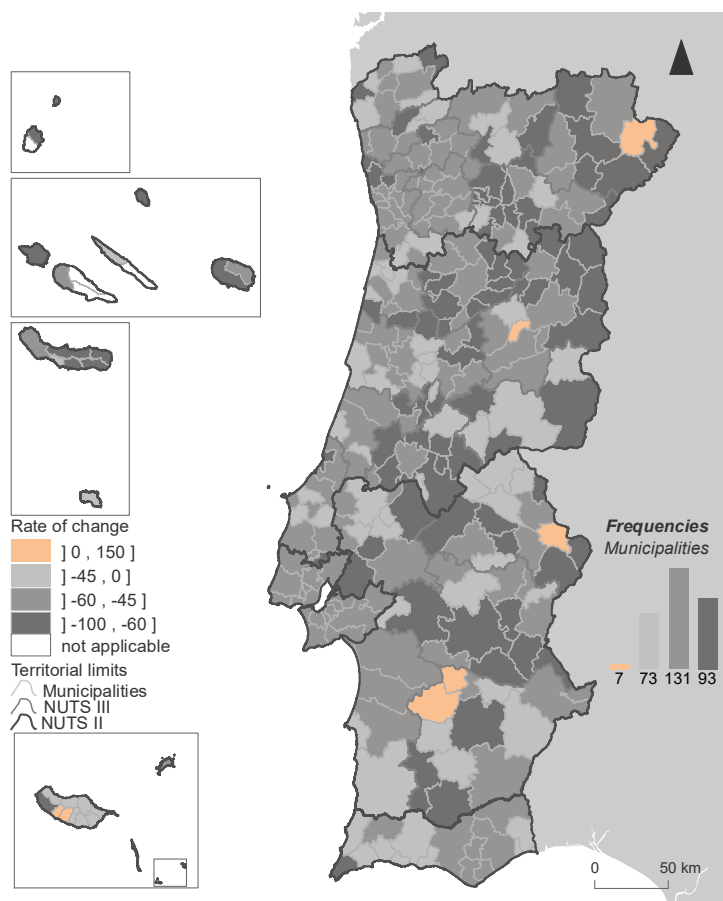|	LC	
16 February - Tuesday		21.3
9 February - Tuesday		20.6
2 February - Tuesday		17.2
26 January – Tuesday		14.6
18 January – Monday		13.7
12 January – Tuesday		13.3
5 January – Tuesday		14.3
27 December – Sunday		15.9
20 December – Sunday		17.4
17 December –Thursday		19.8
8 December – Tuesday		22.0
2 December – Wednesday		25.1
25 November – Wednesday		27.5
19 November – Thursday		28.7
10 November – Tuesday		28.9
Sundays	25 October	28.4
	18 October	30.4
	11 October	31.3
	4 October	32.2
	6 September	35.1
	9 August	44.9
	12 July	51.8
	21 June	61.6
	17 May	39.8
	19 April	40.1

Source: Directorate-General of Health, Daily COVID-19 Status Report (released up to February 22); INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: For the calculation of the location coefficients zero cases were considered for the municipalities with no value in the Directorate-General of Health Status report (0 or< 3 cases).

Population mobility indicators at regional level: an analysis based on information from Facebook's "Data for Good" Initiative

Taking advantage of Facebook's "Data for Good" initiative, the figure below shows the proportion of the population "staying put" between 1 March 2020 and 23 February 2021, namely the minimum, average and maximum values calculated based on the NUTS 3 sub-regions. The proportion of population that "stayed put" is based on the number of Facebook users associated with a single reference grid of 600mx600m during 8 am and 8 pm on day x, requiring at least three occurrences during that time period.

It is possible to observe that on Sundays there is generally less mobility of the population than on other days of the week. It is also noteworthy that after the first confirmed cases of COVID-19 and following the declaration of the first State of Emergency, there is a decrease in the mobility of the population, followed by an increase in the levels of mobility after the implementation of the de-confinement measures.

Considering the moving average of the last 7 days there has been an overall reduction in the average levels of mobility following the declaration of the State of Emergency on November 9 and subsequent renewals. In this context, the days before Christmas and after New Year are the exception, where there is an increase in mobility due to the general cancelling of measures restricting circulation. This tendency to reduce mobility is accentuated after the entry into force, on January 15, 2021, of extraordinary measures to limit the spread of the pandemic, including a new confinement period, followed by the closing of schools on January 22. More recently, namely from the second week of February onwards, there has been a slight overall increase in mobility levels, even though a new renewal of the State of Emergency came into force on 15 February.
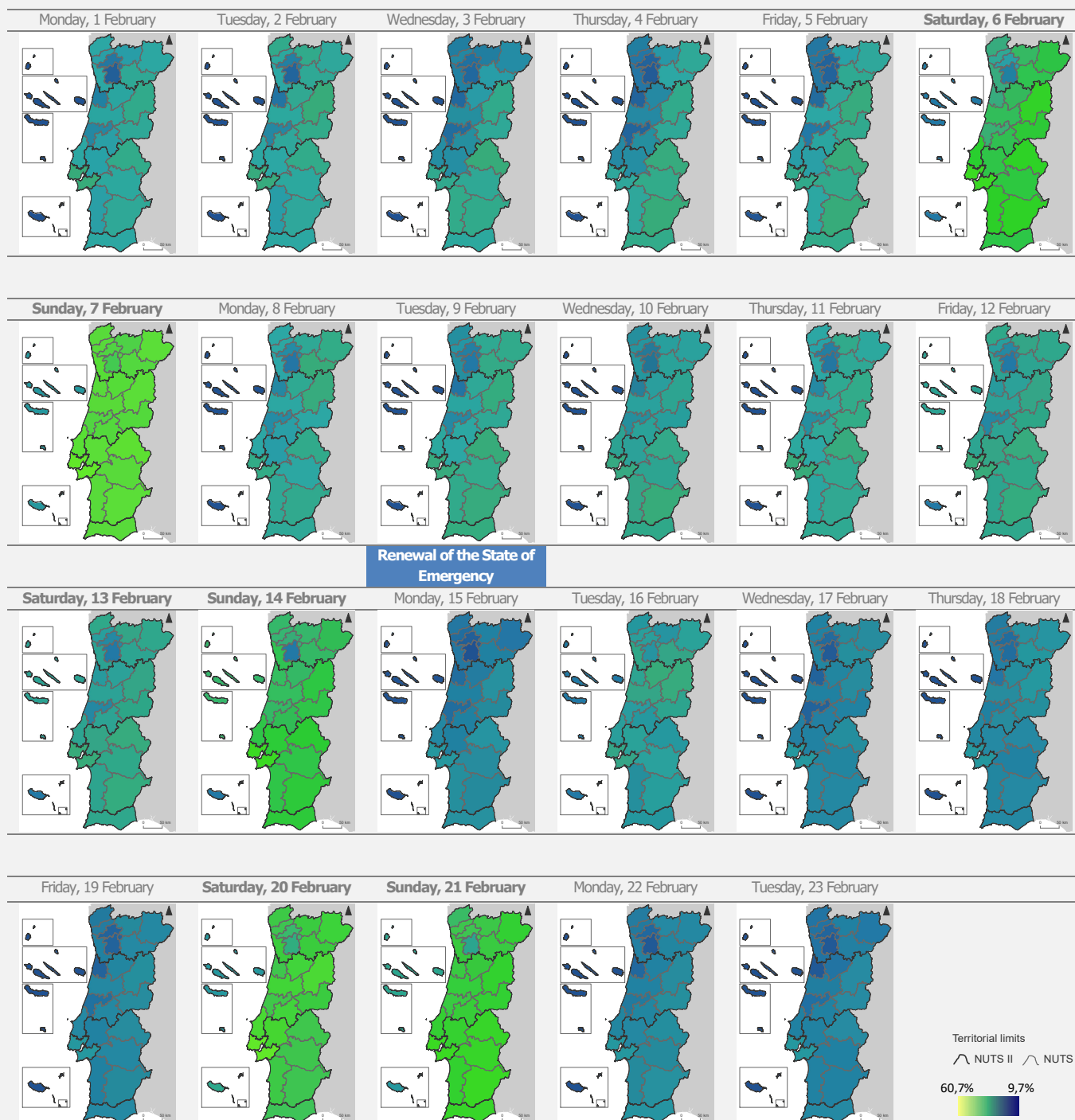
Proportion of the population "staying put" between 1 March and 23 February – minimum, average and maximum values of NUTS 3 sub-regions
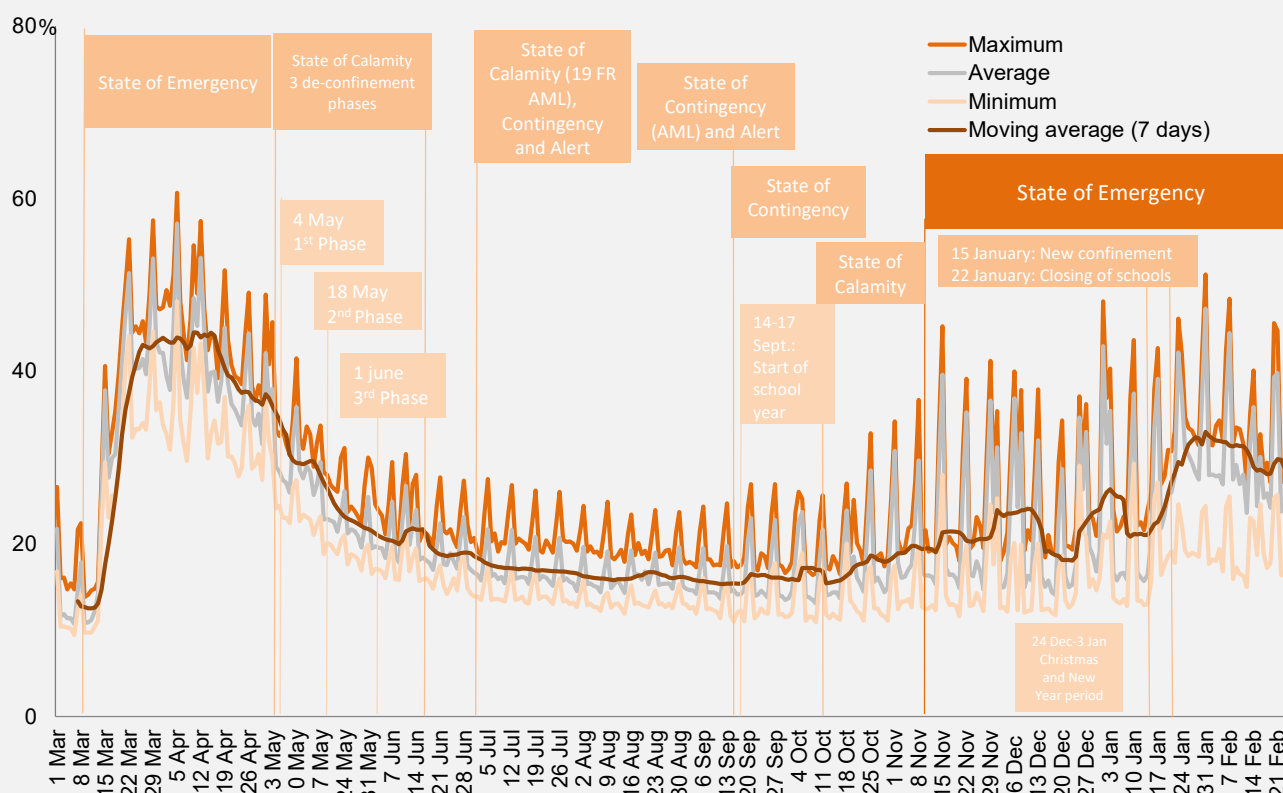
Source: Facebook's "Data for Good" Initiative. Data provided by Carnegie Mellon University. Note: The dates marked on the graph axis correspond to Sundays.

The following figure shows the mobility levels of population between 1 and 23 February 2021 for the 25 NUTS 3 sub-regions. Overall, there are lower levels of mobility at weekends, particularly on Sundays. It should also be noted that there is, globally, a tendency for an increase in the levels of mobility in the different NUTS 3 sub-regions from 15 February onwards - in comparison with the values for the same day of the immediately preceding week, particularly noteworthy is the increase in mobility verified in all the NUTS 3 sub-regions of the Mainland Portugal for 15 February (compared with 8 February) and in all the NUTS 3 sub-regions of the country on 23 February (compared with 16 February).

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Proportion of the population "staying put" between 1 and 23 February 2021 by NUTS 3

Monday, 1 February	Tuesday, 2 February	Wednesday, 3 February	Thursday, 4 February	Friday, 5 February	**Saturday, 6 February**

Sunday, 7 February	Monday, 8 February	Tuesday, 9 February	Wednesday, 10 February	Thursday, 11 February	Friday, 12 February

Renewal of the State of Emergency

Saturday, 13 February	**Sunday, 14 February**	Monday, 15 February	Tuesday, 16 February	Wednesday, 17 February	Thursday, 18 February

Friday, 19 February	**Saturday, 20 February**	**Sunday, 21 February**	Monday, 22 February	Tuesday, 23 February	

Territorial limits
NUTS II   NUTS III
60,7%   9,7%

Source: Facebook's "Data for Good" Initiative. Data provided by Carnegie Mellon University.

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12/12