14 January, 2022

Higher mobility of the population at Christmas and New Year's compared with the same period of the previous year
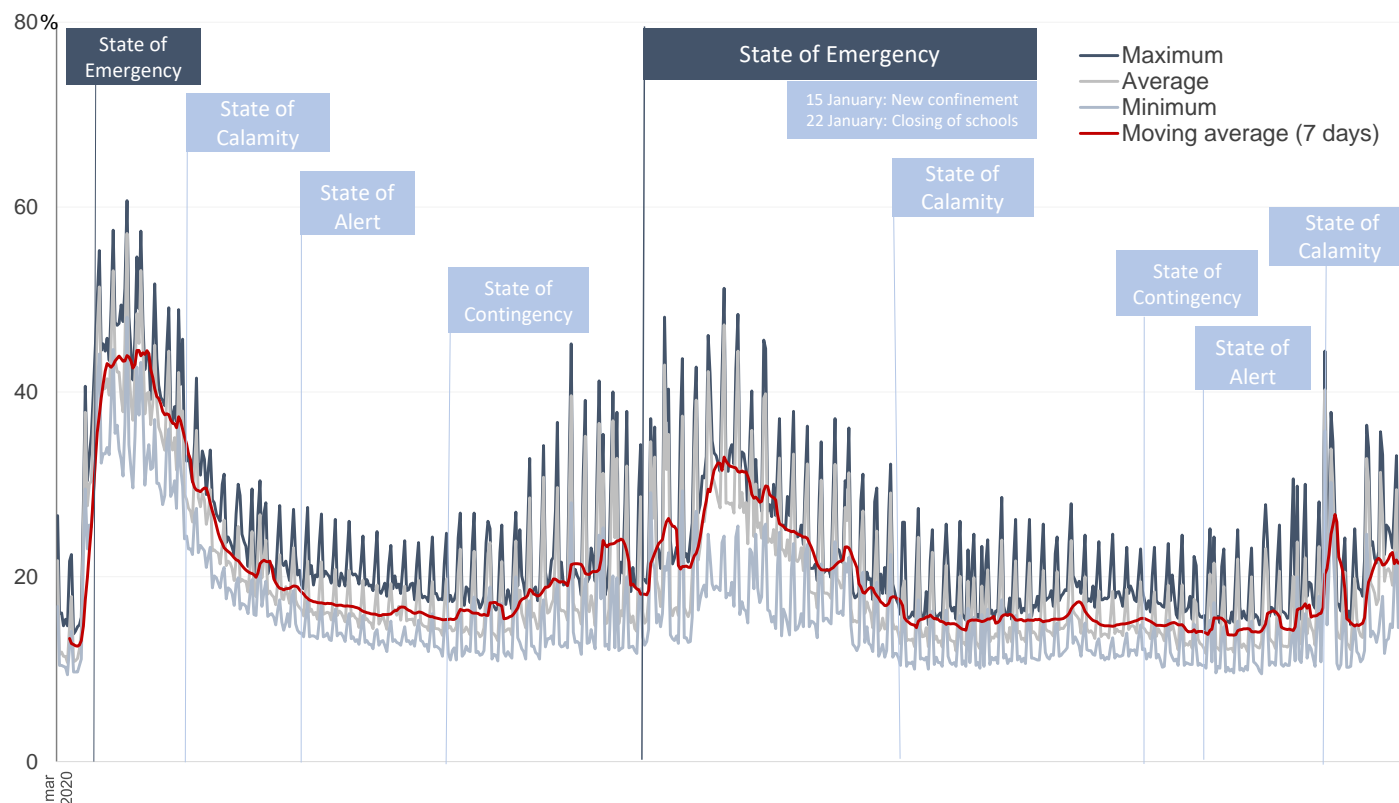
The proportion of the population "staying put" in the period between December 20 and January 10 in 2021 was lower than in the same period one year earlier. In particular, it should be noted that on 25 December 2021 and 1 January 2022 the proportion of the population "staying put" was lower than the one observed on 25 December 2020 and 1 January 2021.

The differences in mobility levels between 2021 and 2020 in the holiday season becomes even more evident when the indicator on the proportion of the population "staying put" is contextualised against the 14-day cumulative incidence rate of new COVID-19 cases. However, contextualising the proportion of the population "staying put" in relation to the registered COVID-19 deaths instead suggests higher levels of mobility in the 2020 holiday season than in 2021.

As part of Statistics Portugal's Statslab, this press release deepens the analysis of population mobility based on data provided by Meta's "Data for Good" initiative (see technical note at the end of the report), namely by comparing the mobility levels registered between 20 December 2021 and 10 January 2022, with the corresponding days of the previous year. This period covers the days associated with Christmas and New Year's celebrations, as well as the return to school.
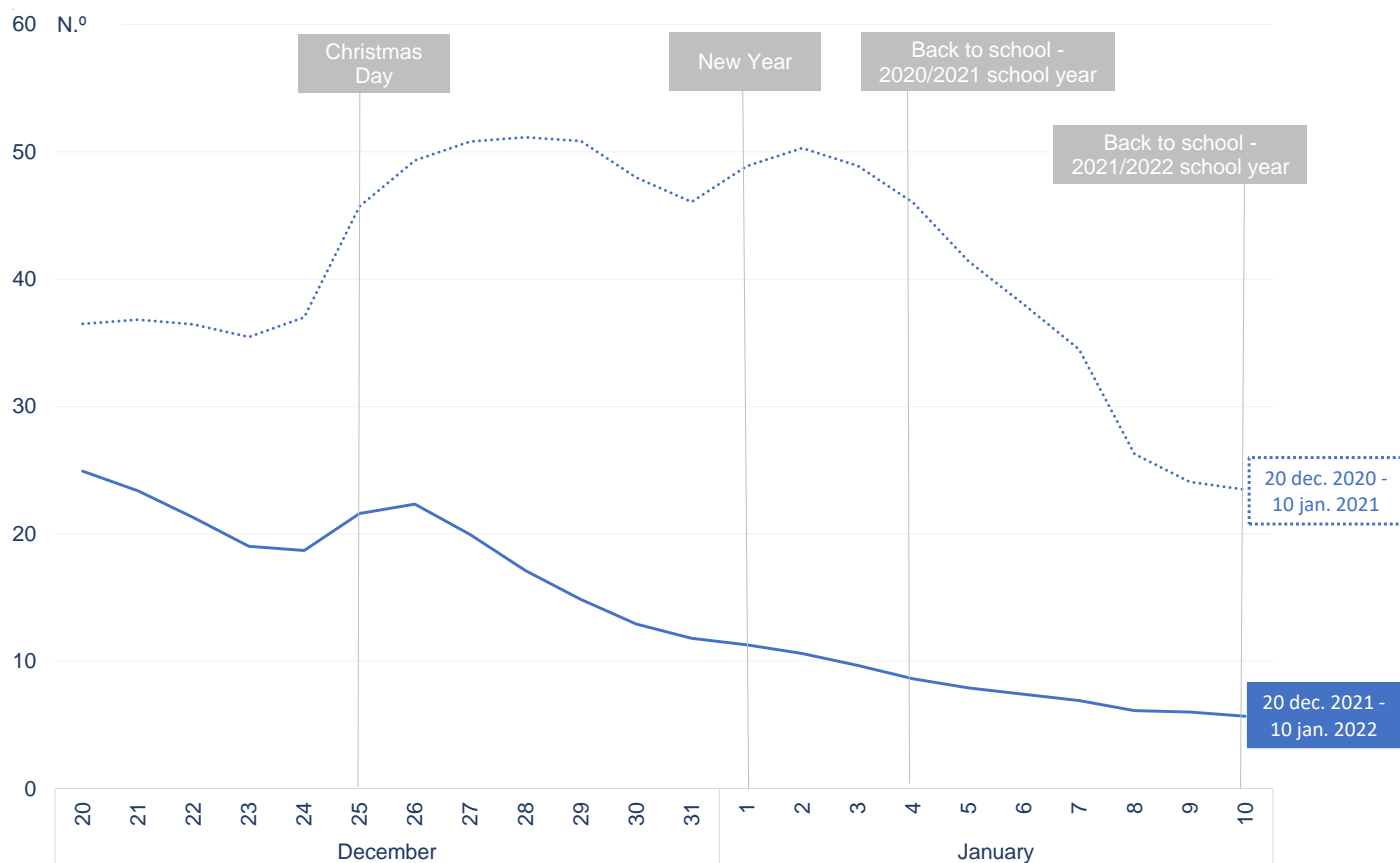
Population mobility at regional level in the context of the COVID-19 pandemic

Figure 1 - Proportion of the population "staying put" between 1 March 2020 and 10 January 2022 – minimum, average and maximum values of NUTS 3 sub-regions
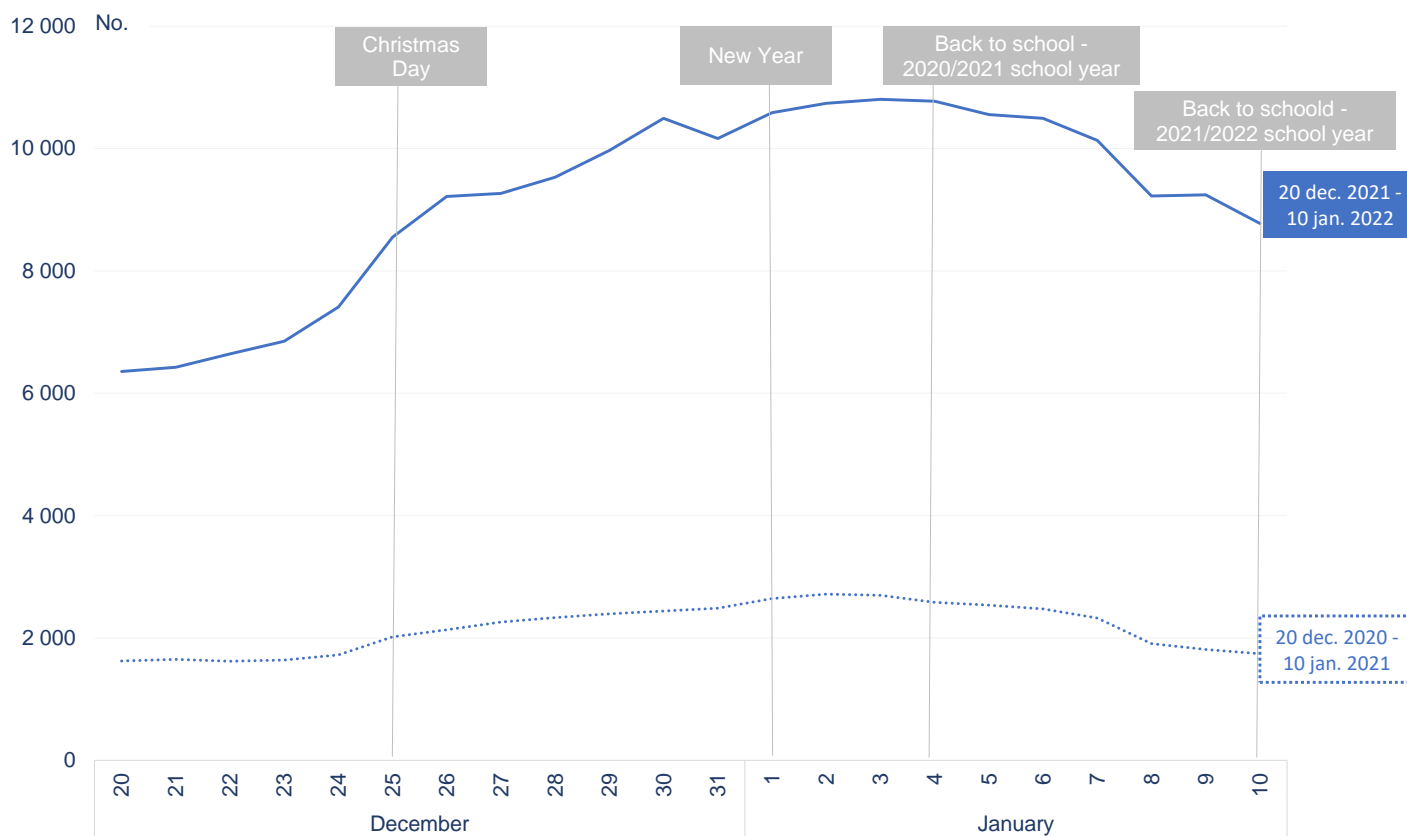

Source: Meta's "Data for Good" Initiative. Data provided by Carnegie Mellon University. Statistics Portugal Annual estimates of resident population, 31 December 2020.
Note: The dates marked on the graph axis correspond to Sundays. It was not possible to include data for 15 November 2021, 8, 13 and 14 December 2021.

Figure 2 - Ratio between the proportion of the population "staying put" (moving average - last 7 days) and the Number of new cases (last 14 days) per 100 inhabitants - 20 December to 10 January

Source: Meta's "Data for Good" Initiative. Data provided by Carnegie Mellon University. Directorate-General of Health, Daily COVID-19 Status Report (released up to 11 January 2022). Statistics Portugal, Annual estimates of resident population, 31 December 2020.

Figure 3 - Ratio between the proportion of the population "staying put" (moving average - last 7 days) and the Number of COVID-19 deaths (last 14 days) per 100 inhabitants - 20 December to 10 January
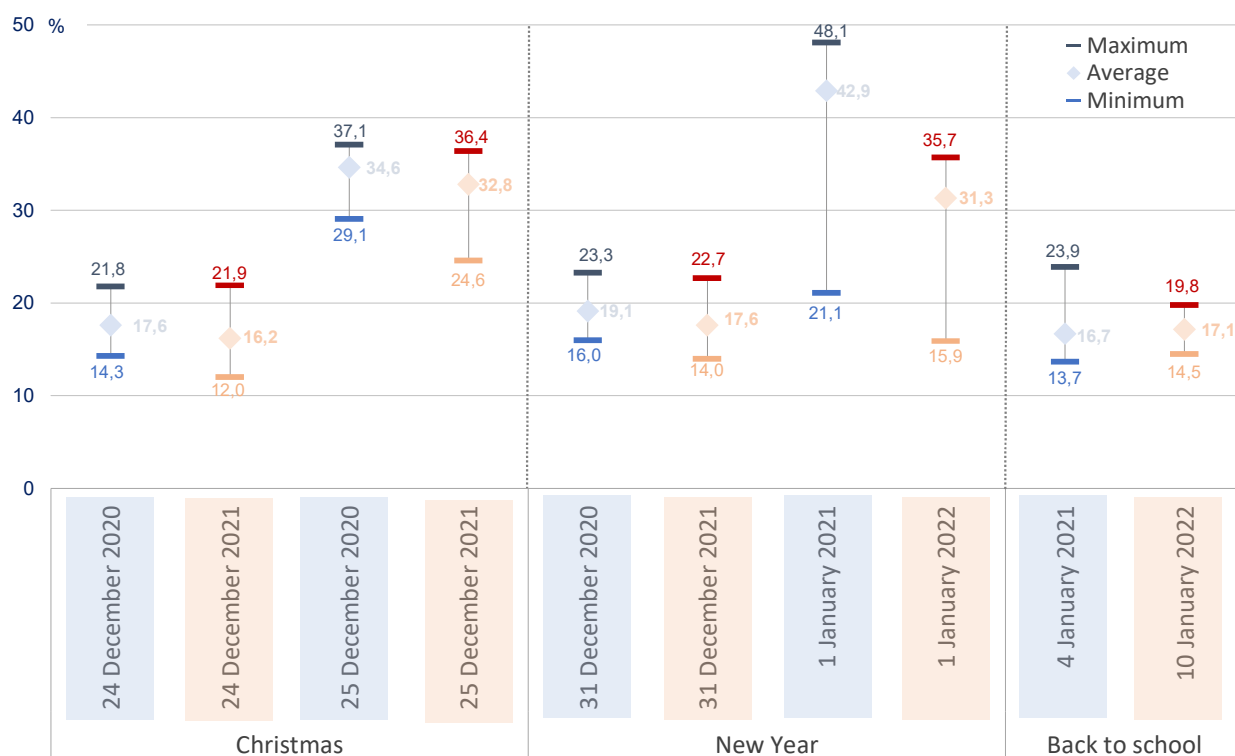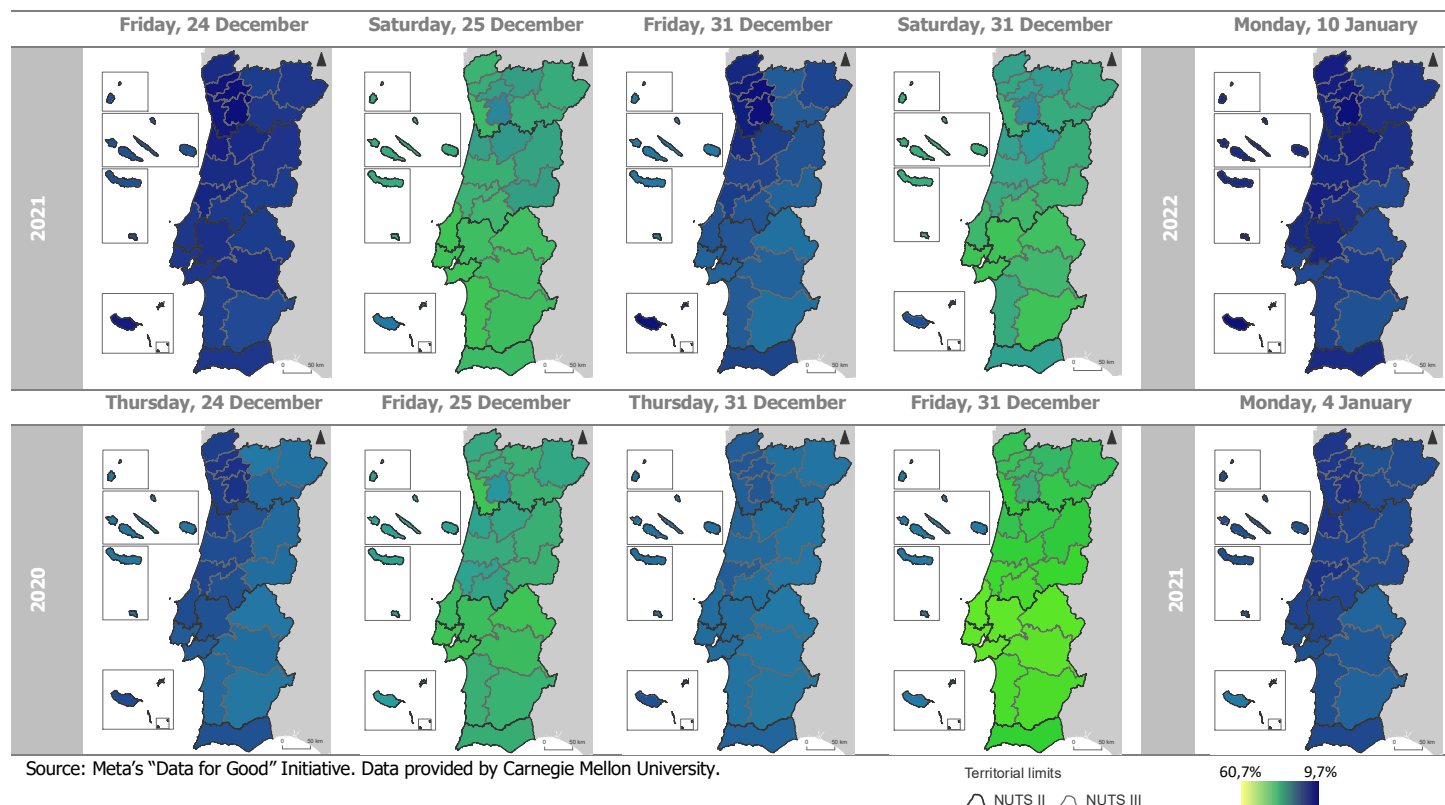

Source: Meta's "Data for Good" Initiative. Data provided by Carnegie Mellon University. Directorate-General of Health, Daily COVID-19 Status Report (released up to 11 January 2022). Statistics Portugal, Annual estimates of resident population, 31 December 2020.

Figure 4 - Proportion of the population "staying put " on 24 and 25 December 2020 and 2021, 31 December 2020 and 2021, 1 January 2021 and 2022, 4 January 2021 and 10 January 2022 - minimum, average and maximum values for NUTS 3

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

Figure 5 - Proportion of the population "staying put" by NUTS 3 on 24 and 25 December 2021 and 2020, 31 December 2021 and 2020, 1 January 2022 and 2021, 10 January 2022 and 4 January 2021

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

COVID-19 and Population mobility

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Technical note

Data on the number of confirmed cases and number of COVID-19 deaths are based on those published daily in the Directorate-General of Health COVID-19 Status Report for the entire country.

This press release includes the resident population data as of December 31, 2020, released on June 14, 2021.

STATS lab

The mobility data from Facebook's "Data for Good" Initiative correspond to location updates collected from mobile devices of Facebook application users that have the "location history" option turned on. Only location accuracy (GPS) data of less than 200 meters is considered and if a user has multiple locations resulting from more than one associated mobile device, Facebook only considers the data with the highest location accuracy.

Obtaining results for the NUTS 3 level implies a minimum of 300 unique users per sub-region. The proportion of the population "staying put" is measured by the number of Facebook users associated with a single 600mx600m reference grid during 8 am and 8 pm on day x, requiring at least three occurrences during that time period. The reference grid, as a "residence" *proxy*, is measured daily based on the largest number of locations observed between 8 pm and midnight on day x-1 and between 0 am and 8 am on day x, requiring at least three occurrences during that time period. The information associated with the 600mx600m grids is allocated to the respective NUTS 3 sub-region. Since a grid cell can intercept more than one sub-region, 9 sample points are generated in each grid, assigning 1/9 of the grid population to each point in the sample.

The average figures presented for the total of Portugal and by NUTS 3 classification category according to the proportion of the population living in municipalities at high risk were calculated on the basis of the population weighted average (Statistics Portugal, Annual Estimates of Resident Population, 2020) in the respective NUTS 3 sub-region.

Facebook's "Data for Good" initiative aims to provide data for research on humanitarian issues and has allowed results to be published in scientific articles particularly in the United States. Obviously, Statistics Portugal's use of this data source in the Statslab domain is not motivated by any publicity motive, but by the public interest of the information. Statistics Portugal thanks researcher Miguel Godinho Matos[1] for his support in the analytical preparation of this information.

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COVID-19 and Population mobility