3 July, 2020

Context and socioeconomic impact indicators for the COVID-19 pandemic in Portugal

## COVID-19: a territorial view on demographic context and socioeconomic impact indicators

The impact of the pandemic continues to be characterised by high territorial heterogeneity. Some of the results obtained in this context:

- The preliminary number of deaths between 1 March and 21 June 2020 was 2 745 higher than the number registered in the same period in 2019. This variation compared to 2019 resulted mainly from the increase in the number of deaths in persons aged 75 and over (+ 2 509). In 155 municipalities the number of deaths registered between 25 May and 21 June was higher than the same reference value (average number of deaths in the same period in 2018 and 2019).
- In Portugal, for every 10,000 inhabitants there were 41.6 confirmed cases of COVID-19, more 12% in relation to 17 June (13% between 17 and 3 June). The number of confirmed cases of COVID-19 disease per 10 thousand inhabitants was above the national value in 44 municipalities.
- On 1 July, the relationship between the number of confirmed cases and the number of new confirmed cases (last 7 days) per 10 thousand inhabitants showed 10 municipalities in the Metropolitan Area of Lisboa with values above the national average in both indicators: Amadora, Moita, Sintra, Oeiras, Loures, Cascais, Lisboa, Odivelas, Vila Franca de Xira and Barreiro. These municipalities concentrated 64% of the total of new cases in the country and 89% of the total AML.

The progressive easing of restrictions on mobility and social contact for public health reasons since the declaration of the state of emergency has had an impact in the socioeconomic conditions whose territorial expression is analysed in this press release taking as a reference: (i) purchases through automatic payment terminals per inhabitant and (ii) information at the municipal level of employment centres. In this respect, the following general results are noteworthy:

- In May 2020, in all NUTS 2 regions, the value of purchases via automatic payment terminals per inhabitant increased compared to the previous month, and the decrease compared to the same month of the previous year was lower than in April.
- In May 2020 and in all NUTS 2 regions of the Mainland Portugal, there was an increase in job placements and a decrease in the number of new unemployed registered in employment centres compared to April.

More territorial information with daily updates on the demographic context and the socioeconomic impact of the COVID-19 pandemic in Portugal is available in the application *Dashboard* | Context and Impact[1].

The first cases diagnosed with COVID-19 in Portugal were reported on March 2nd 2020 and the first death as a result of COVID-19 was recorded on March 16th 2020. The WHO (World Health Organization) declared the outbreak of COVID-19 as a pandemic on March 11th 2020.

[1] As part of Statistics Portugal's Statslab, this press release also presents data on population mobility at the regional level provided by Facebook's "Data for Good" initiative.



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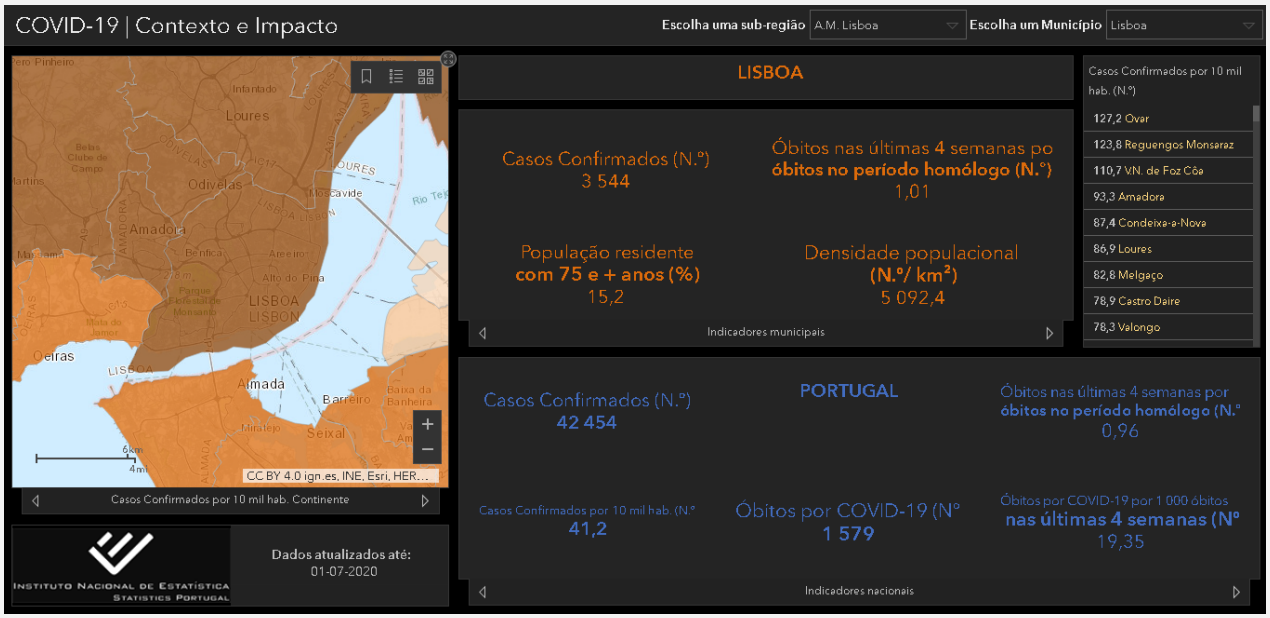
The incidence of the pandemic in the territory has not been homogeneous, which justifies the analysis of context indicators, when possible, at NUTS 3 (Metropolitan Areas and Intermunicipal Communities in Mainland Portugal, and Autonomous Regions) and municipality level. In addition, socioeconomic indicators, on a monthly basis, are presented in this press release to support the analysis of the impact of the pandemic in the different regions and municipalities.

The results of overall mortality refer to deaths (all causes of death) that occurred in the national territory up to June 21st. Information on deaths is obtained through the Civil Register collected under the Integrated Civil Registration and Identification System (SIRIC) until June 30th. This time lag prevents the disclosed information from being subjected to considerable revisions. Even so, the information is preliminary and will be subject to further updates.

The number of confirmed cases with COVID-19 is based on the information released by the Directorate-General of Health. This press release includes information available up to July 1 (data of the situation up to July 2).

Socioeconomic indicators are based on information from the Institute of Employment and Professional Training (IEFP) and the Interbank Services Society (SIBS) (see technical note at the end for more information).

In Statistics Portugal website (www.ine.pt) the *Dashboard* | Context and Impact is available, gathering statistical indicators, updated daily, weekly and monthly, for a territorial analysis of the demographic context and the socio-economic impact of the COVID-19 pandemic in Portugal.



## Demographic and territorial context indicators

*Number of deaths between March 1st and June 21st, 2020 higher than in the same period in 2019 and 2018*

The preliminary total number of deaths between March 1st (the first cases of COVID-19 were registered on March 2 and the first death on March 16) and June 21st 2020 was 2,745 higher than the number registered in the same period in 2019 and 1,206 cases higher than number of deaths registered in 2018. The positive variation in relation to 2019 was due mainly to the increase in the number of deaths of people aged 75 and over (+ 2,509).

**Figure 1 - Cumulative number of deaths in Portugal from March 1st to June 21st (2018-2020)**

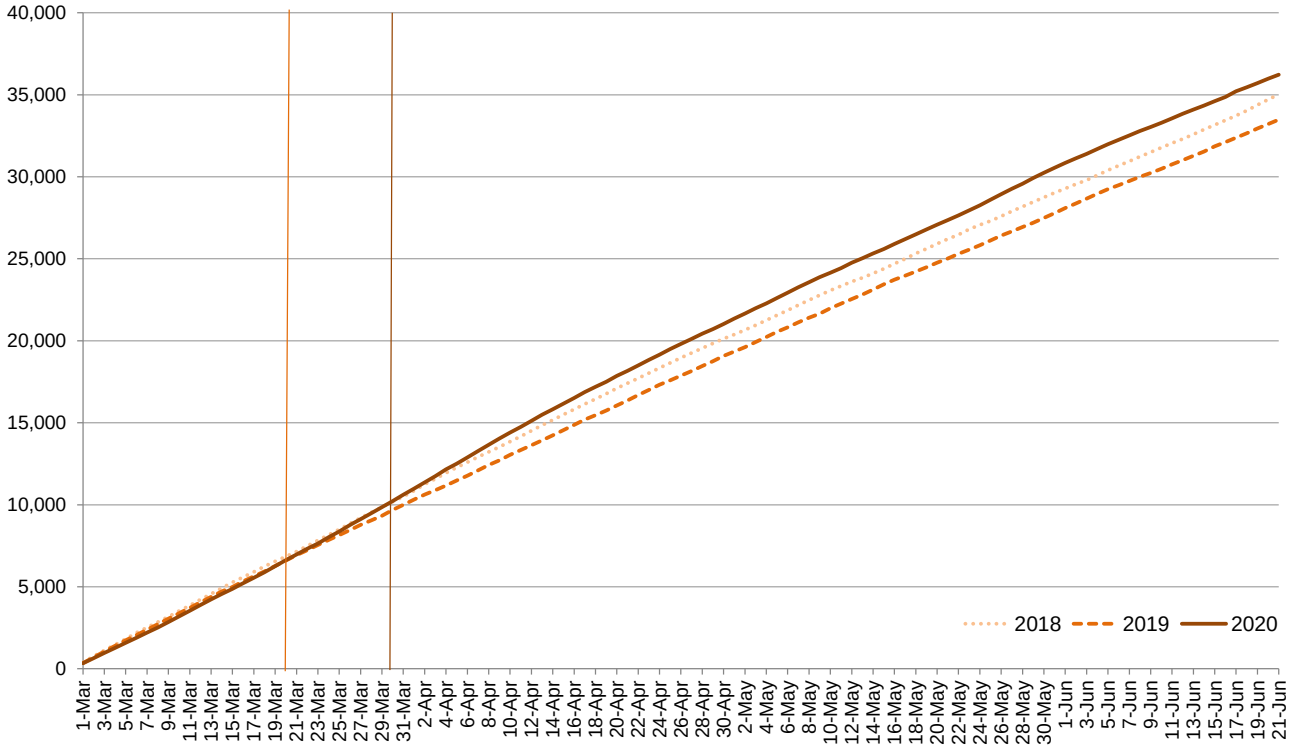
| | Number of deaths | | | Number of deaths per 100 thousand inhabitants | | |
|---|---|---|---|---|---|---|
| | 2018 | 2019 | 2020 | 2018 | 2019 | 2020 |
| Total | 35,020 | 33,481 | 36,226 | 340.3 | 325.8 | 351.8 |
| Males | 17,509 | 16,611 | 17,952 | 359.7 | 342.3 | 369.4 |
| Females | 17,511 | 16,870 | 18,274 | 322.9 | 311.0 | 336.2 |
| Under 64 years | 5,050 | 4,910 | 4,978 | 62.5 | 61.1 | 62.1 |
| 65 to 69 years | 2,113 | 2,140 | 2,169 | 340.9 | 346.2 | 348.2 |
| 70 to 74 years | 2,910 | 2,847 | 2,981 | 558.0 | 528.7 | 542.4 |
| 75 to 79 years | 4,062 | 3,723 | 4,124 | 955.8 | 873.6 | 954.5 |
| 80 to 84 years | 6,288 | 5,805 | 6,273 | 1,799.9 | 1,653.0 | 1,775.8 |
| 85 years and over | 14,595 | 14,053 | 15,693 | 4,905.3 | 4,529.2 | 4,864.4 |
| 65 years and over | 29,968 | 28,568 | 31,240 | 1,354.0 | 1,273.0 | 1,369.9 |
| 75 years and over | 24,945 | 23,581 | 26,090 | 2,327.2 | 2,168.1 | 2,354.9 |

**Source:** Statistics Portugal, Deaths; Statistics Portugal, Annual estimates of resident population

**Notes:**
b) 2020 data: preliminary data based on information registered by the Civil Register Offices and sent to Statistics Portugal until June 30th 2020.
a) The total number of deaths may not correspond to the sum of the partial figures due to the existence of records with unknown age.

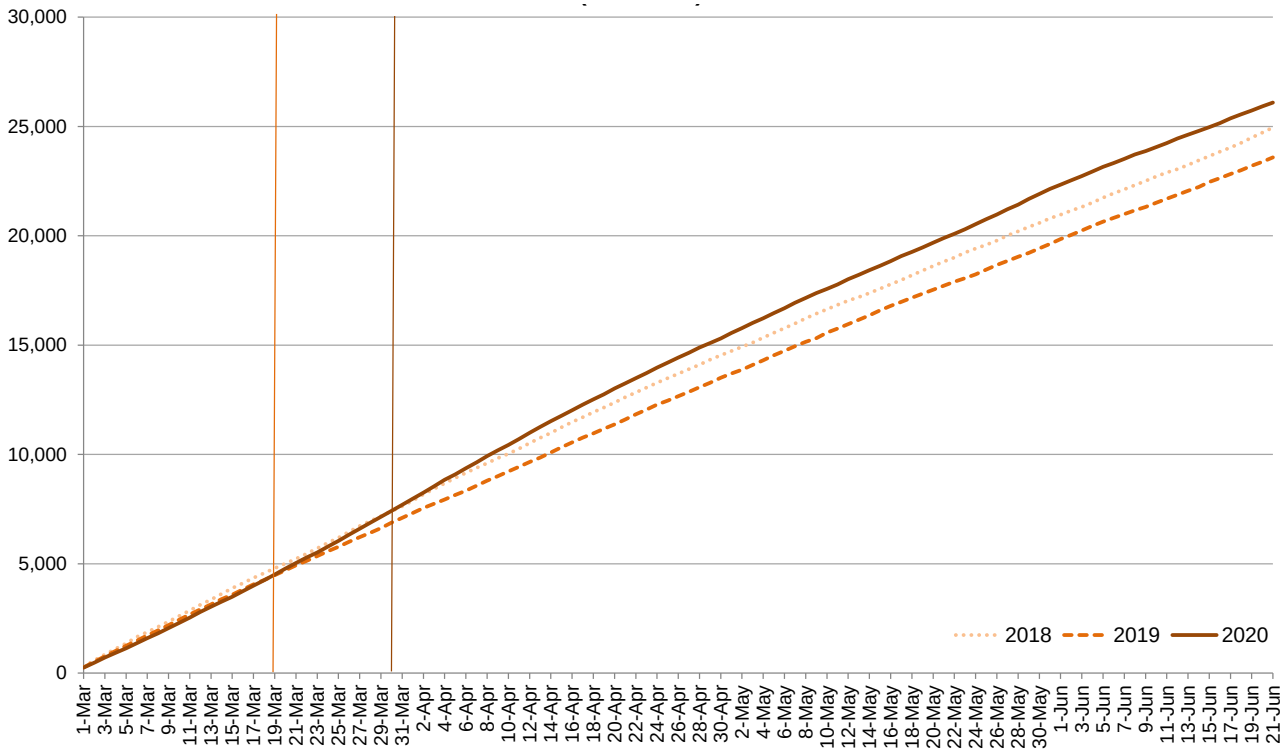
Figures 2 and 3 allow the comparison of the cumulative number of deaths from March to June 21st 2020 with that observed in the same period in 2019 and 2018. The total number of deaths registered in 2020 surpassed those registered in 2018 and 2019 on March 20th and 30th, respectively, identified by the time lines inserted in the figures. Regarding deaths of people aged 75 and over these dates were March 19th and 30th, respectively.

**Figure 2 - Cumulative number of deaths, by day of death, March 1st to June 21st (2018-2020)**




Source: INE, I.P., Statistics on Deaths (Preliminary (2020) and Final Results (2018 and 2019)).

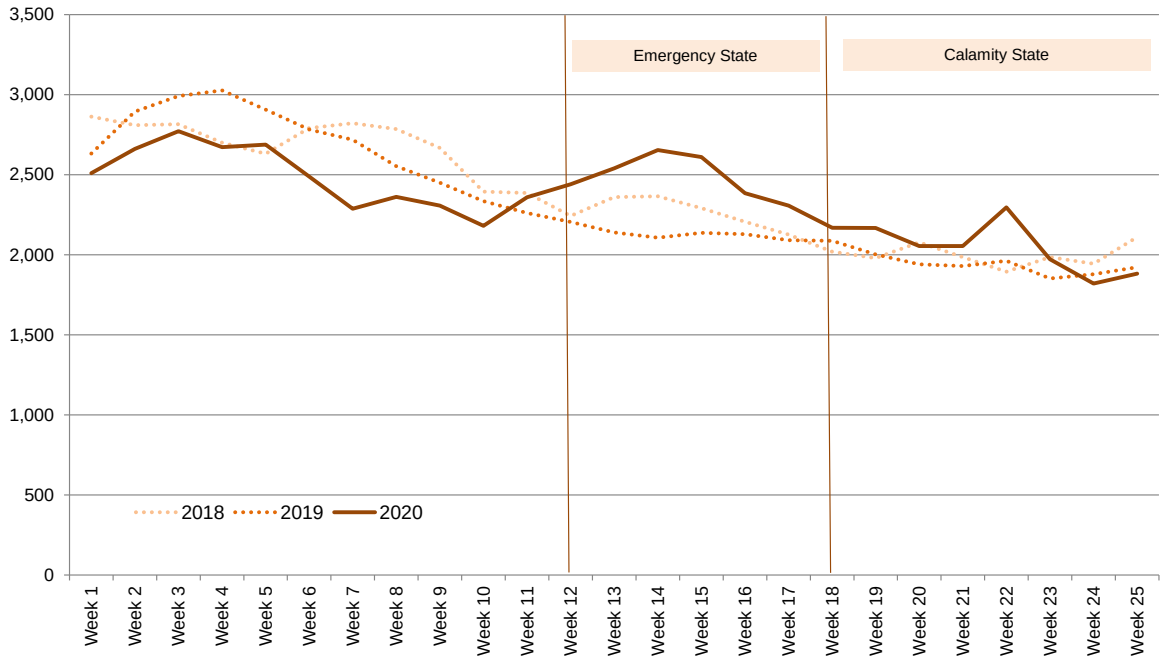
**Figure 3 - Cumulative number of deaths aged 75 and over, by day of death, March 1st to June 21st (2018-2020)**




Source: INE, I.P., Statistics on Deaths (Preliminary (2020) and Final Results (2018 and 2019)).

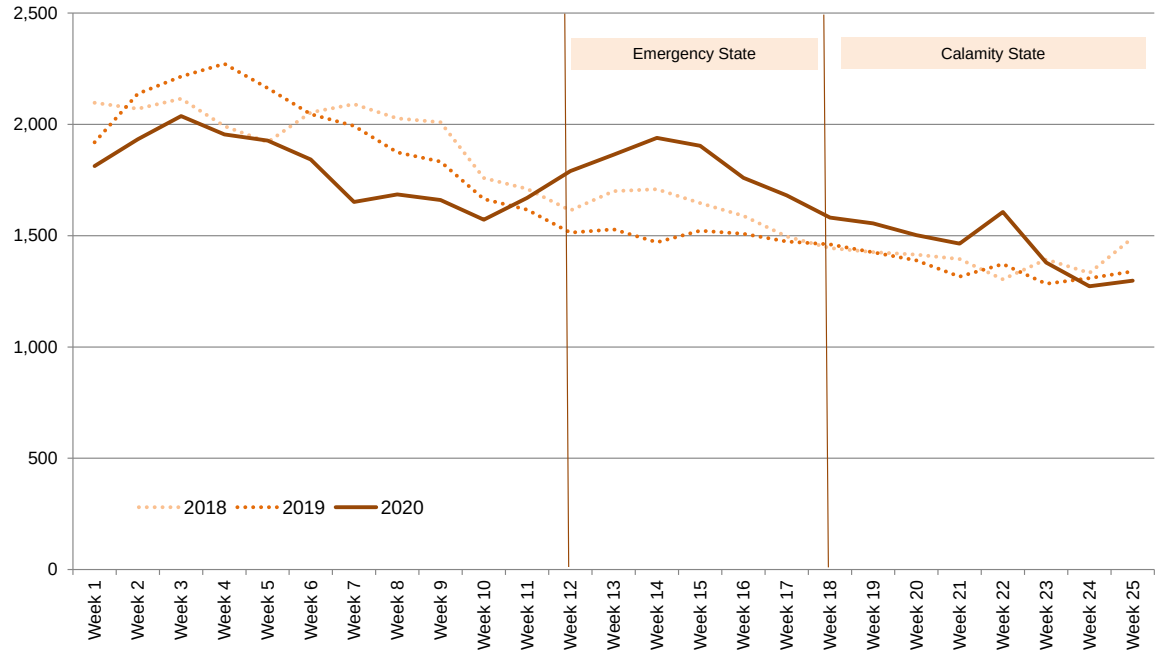
Figures 4 and 5 compare the total number of deaths and the number of deaths of people aged 75 and over, registered in Portugal, per week until the 25th week of 2020 (week from June 15th to 21st), with the same weeks of 2018 and 2019. These show that between weeks 12 (March 16th to 22nd) and 23 (June 1st to 7th), the number of deaths in 2020 exceeded the number of deaths registered in the same weeks of 2018 and 2019, resuming in the weeks 24 and 25 (June 8th to 21st) lower values than the ones registered in 2018 and 2019.

**Figure 4 – Number of deaths by week of death, weeks 1 to 25 (2018-2020)**




Source: INE, I.P., Statistics on Deaths (Preliminary (2020) and Final Results (2018 and 2019)).

**Figure 5 – Number of deaths ages 75 and over by week of death, weeks 1 to 25 (2018-2020)**

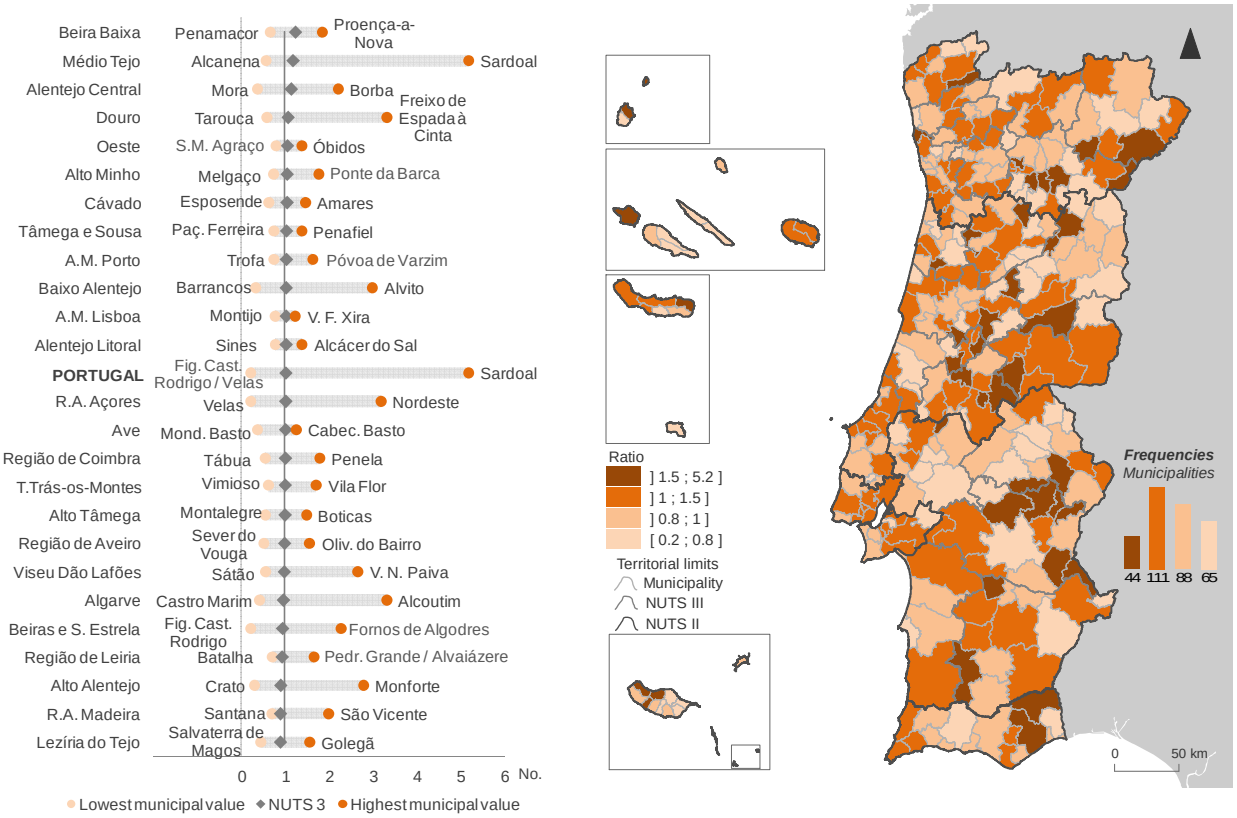



Source: INE, I.P., Statistics on Deaths (Preliminary (2020) and Final Results (2018 and 2019)).

*In 155 municipalities the number of deaths registered in the last four weeks (between 25 May and 21 June, 2020) was higher than the corresponding reference value*

In 155 out of the 308 Portuguese municipalities the number of deaths registered in the last four weeks (between 25 May and 21 June, 2020) was higher than the corresponding reference value (average for the same period in 2018 and 2019). Of this total, 44 municipalities registered a number of deaths 1.5 times higher than in the same period of reference. For the remaining 153 municipalities the number of deaths registered in the last four weeks was equal or lower than the number observed in the reference period [Figure 6].

**Figure 6- Number of deaths in the last four weeks (25 May to 21 June) per deaths in the same period of reference, Portugal, NUTS 3 and municipality**




Source: INE, I.P., Statistics on Deaths (Preliminary (2020) and Final Results (2018 and 2019)).

*44 municipalities with confirmed cases of COVID-19 disease per 10 thousand inhabitants above the national value*

On July 1, 2020, in Portugal, for every 10 thousand inhabitants there were 41.6 confirmed cases of COVID-19, which represents an increase of 12% compared to June 17, the reference date of the last press release. Between June 17 and 3 this increase was 13%. Between May 3 and May 20 and between May 6 and 20 there was an increase of 12% in both periods. Between May 6 and April 22 a 20% increase was registered and between April 22 and 7 (reference date of the first press release of this series) there was a 70% increase.

The number of confirmed cases with COVID-19 disease per 10 thousand inhabitants was higher than the national value in 44 municipalities. In the Norte region, 22 municipalities registered a value above the country, with 11 contiguous municipalities in the Metropolitan Area of Porto (AMP) and neighbouring territories standing out, with more than 50 confirmed cases per 10 thousand inhabitants: Valongo, Matosinhos, Maia, Gondomar, Porto, Santo Tirso and Vila Nova de Gaia in the AMP; the municipalities of Felgueiras, Lousada and Paços de Ferreira in Tâmega e Sousa; and Vizela in the sub-region of Ave.

In the Metropolitan Area of Lisboa (AML) 10 municipalities presented values above the national reference: Moita, Cascais, Oeiras and Barreiro, and Amadora, Loures, Odivelas, Sintra, Lisboa and Vila Franca de Xira stood out with more than 50 cases confirmed by 10 thousand inhabitants. Also some municipalities in the Centro (8), Alentejo (the municipalities of Reguengos de Monsaraz, Moura and Azambuja) and in Região Autónoma dos Açores (the municipality of Nordeste) had values higher than the national value [Figure 7].

Despite this differentiation, the estimated location coefficient[2] for March 25 and July 1 suggests a decrease in territorial concentration of cases, i.e., a progressive spatial dissemination throughout the country. The location curves graphically reflect this trend by the approximation to the straight line of equal distribution between the number of confirmed cases and the resident population in the municipalities [Figure 8].

[2] The Location coefficient varies between 0 and 100, with values closer to 100 reflecting greater inequality in the distribution of confirmed cases of COVID-19 against the total resident population.

**Figure 7 - Number of confirmed cases of COVID-19 disease per 10 thousand inhabitants until July 1 , 2020, by municipality**

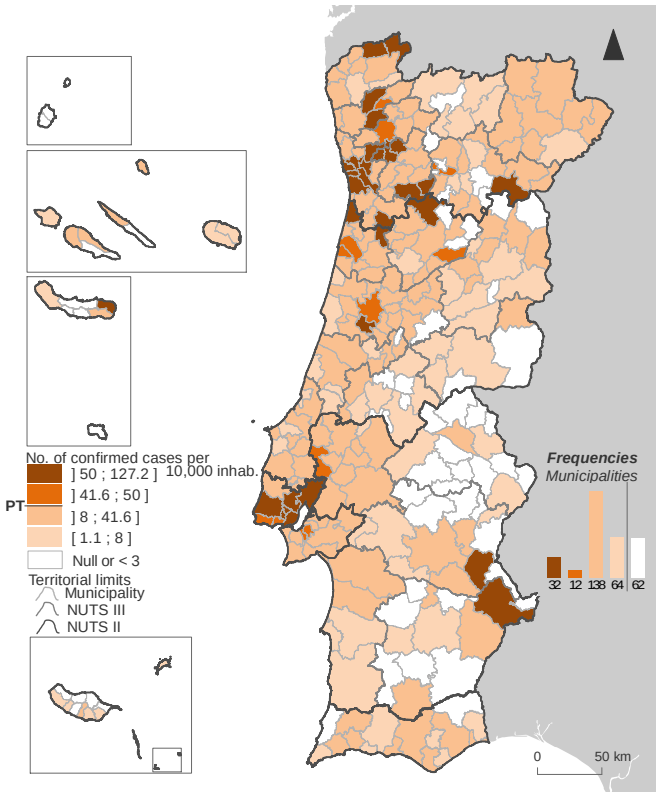
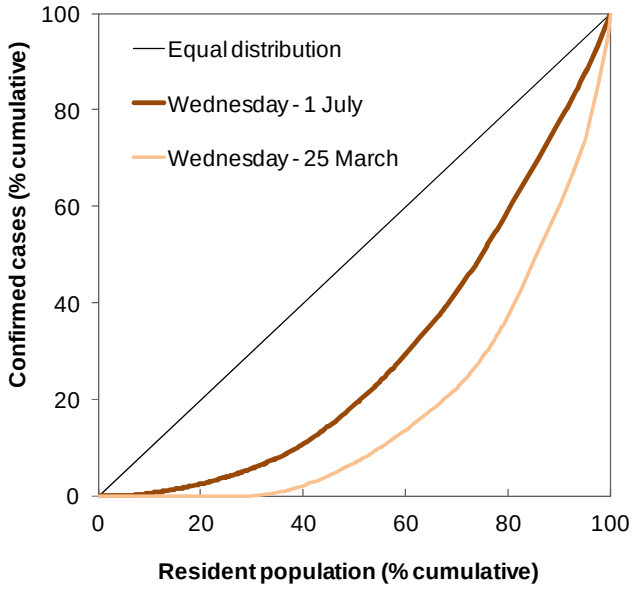



**Figure 8 - Territorial concentration of COVID-19 confirmed cases until March 25 and until July 1 in relation to the resident population, based on the distribution by municipality**

*Location Curve*



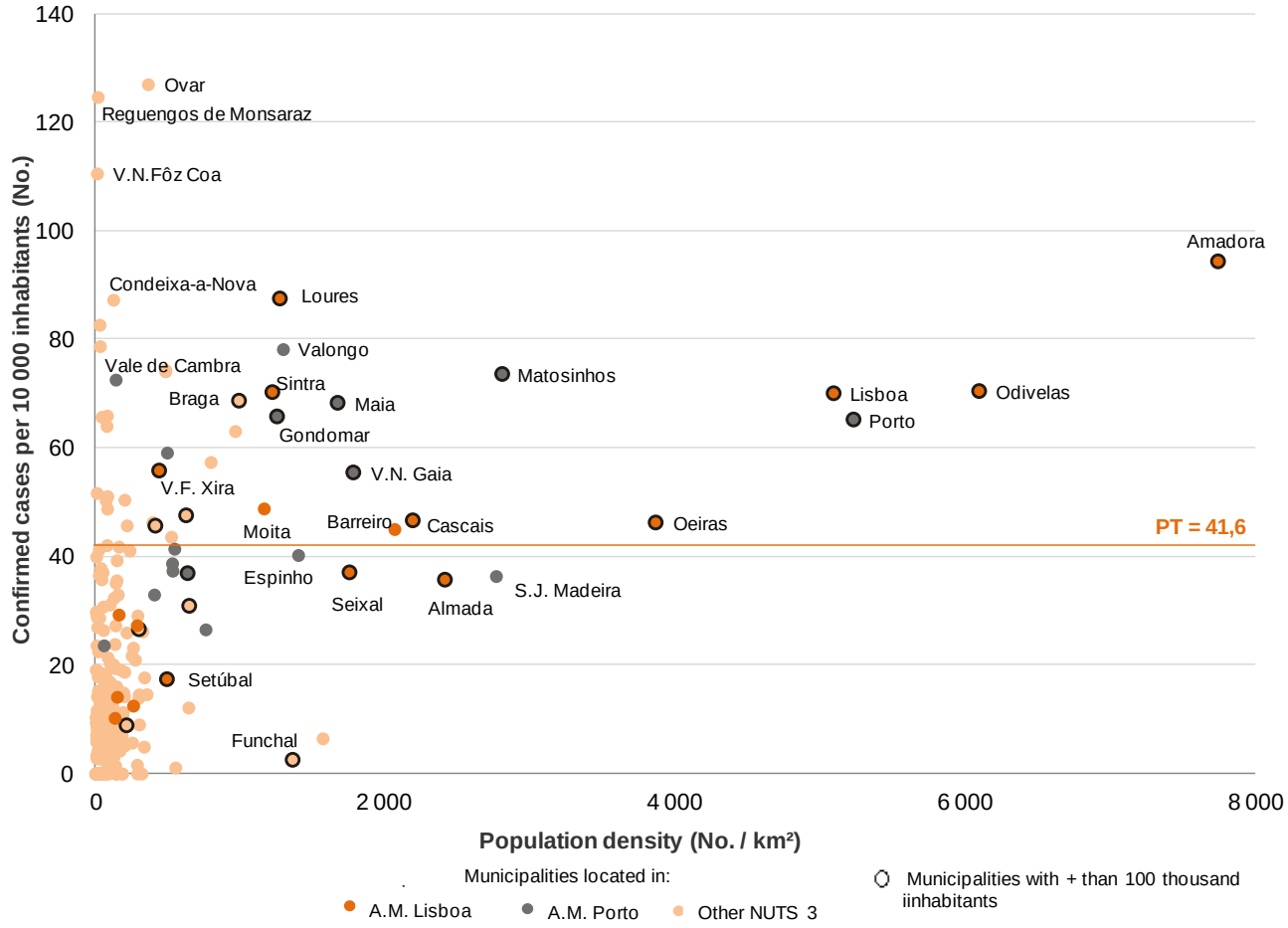

| *Location coefficient* | |
|---|---|
| Wednesday – July 1 | 31.3 |
| Wednesday - March 25 | 47.6 |

Source: Directorate-General of Health, Daily COVID-19 Status Report (released on July 2); 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 report (0 or < 3 cases).

## *32 municipalities registered both a number of confirmed cases per 10 thousand inhabitants and population density values above the national reference*

The following figure illustrates the relationship between population density and the number of confirmed cases per 10 thousand inhabitants. Of the 44 municipalities with a number of confirmed cases per 10 thousand inhabitants above the value for Portugal, 32 also had population density values above the national average. From this set of 32 municipalities, the municipalities of Ovar (127.2), in Região de Aveiro; Condeixa-a-Nova (87.4) in Região de Coimbra; Amadora (94.5), Loures (87.6), Odivelas (70.5), Sintra (70.3) and Lisboa(70.1), in the Metropolitan Area of Lisboa; Valongo (78.3), Matosinhos (73.7), Vale de Cambra (72.7), Maia (68.4), Gondomar (65.8) and Porto (65.3), in the Metropolitan Area of Porto; Felgueiras (74.4) and Lousada (74.2) in Tâmega e Sousa; Braga (68.8) in Cávado; and Vizela (63.2) in the sub-region of Ave, stood out with more than 60 confirmed cases per 10 thousand inhabitants. It should also be noted that 184 of the 308 municipalities in the country had a number of confirmed cases per 10 thousand inhabitants and population density below the national reference.

**Figure 9 - Number of confirmed cases per 10 thousand inhabitants on July 1, 2020 and Population density, by municipality**



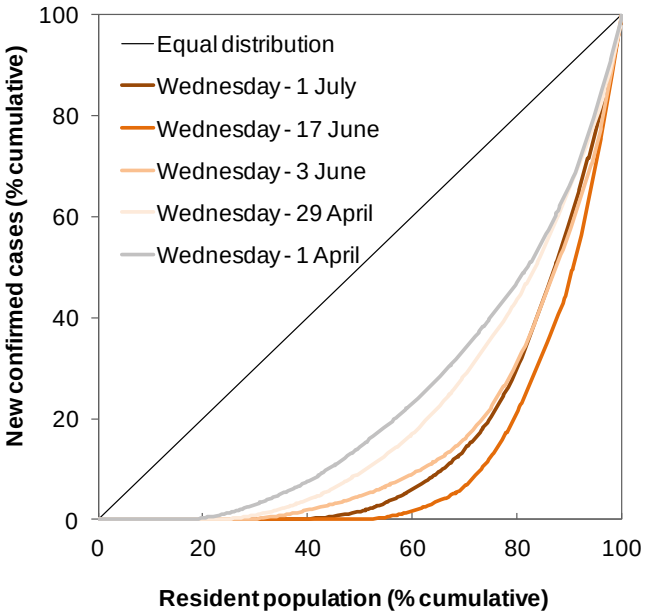

Source: Directorate-General of Health, Daily COVID-19 Status Report (released on July 2); INE, I.P., Annual estimates of resident population, 31 December 2019.

The calculation of the location coefficient considering the new confirmed cases (last 7 days) for April 1 and 29 and June 3 and 17 suggests an increase in the territorial concentration of the new confirmed cases of COVID-19.

In relation to the new cases registered on July 1, and compared to June 17, there is a decrease in the location coefficient, which translates into a slight reduction in the concentration of new cases in relation to the population distribution in the municipalities, with the location curve on July 1 approaching the one registered on June 3 [Figure 10].

**Figure 10 – Territorial concentration of new confirmed cases of COVID-19 (last 7 days) for April 1, April 29, June 3 and June 17 in relation to the resident population, based on the distribution by municipality**

*Location curve*

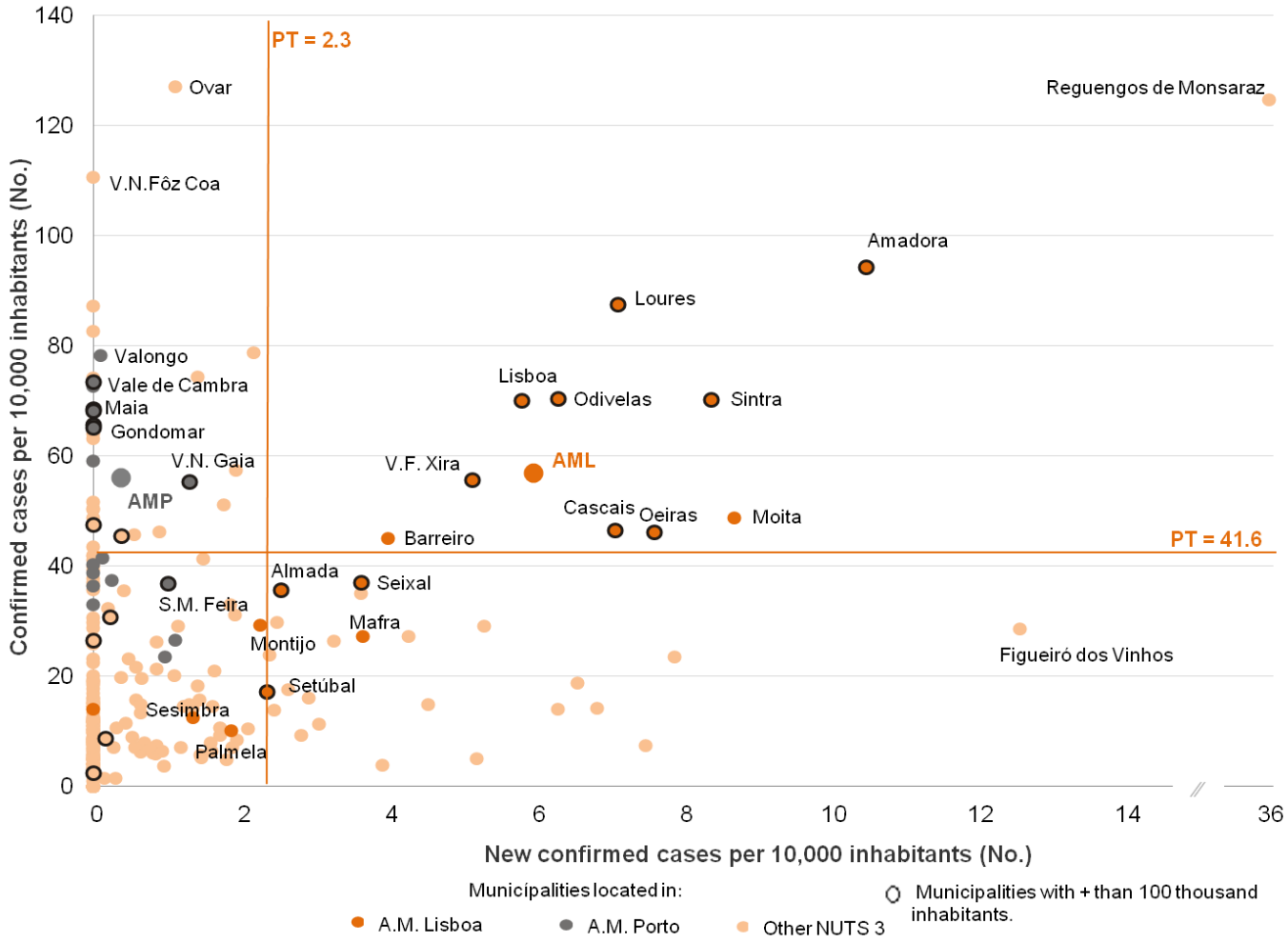



| *Location coefficient* | |
|---|---|
| Wednesday – July 1 | 56.5 |
| Wednesday – June 17 | 63.5 |
| Wednesday – June 3 | 54.1 |
| Wednesday – April 29 | 43.1 |
| Wednesday – April 1 | 37.1 |

Source: Directorate-General of Health, Daily COVID-19 Status Report (released on July 2); 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 report (null or less than 3 cases).

The following figure illustrates the relationship between the total number of confirmed cases per 10,000 inhabitants by July 1 and the number of new cases registered per 10,000 inhabitants on July 1 (last 7 days). Of the 44 municipalities with a number of confirmed cases per 10,000 inhabitants above the figure for Portugal, 11 also had new confirmed cases per 10,000 inhabitants above the national average. With the exception of the municipality of Reguengos de Monsaraz (35.9 new cases per 10,000 inhabitants), located in Alentejo Central, the remaining 10 municipalities were located in the Metropolitan Area of Lisboa: Amadora (10.5), Moita (8.7), Sintra (8.4), Oeiras (7.6), Loures (7.1), Cascais (7.1), Lisboa (5.8), Odivelas (6.3), Vila Franca de Xira (5.1) and Barreiro (4.0). In the seven days ended in July 1, these municipalities represented 64% of the new cases in the country and 89% of AML.

**Figure 11 – Number of confirmed cases per 10 thousand inhabitants on July 1, 2020 and Number of new confirmed cases per 10 thousand inhabitants on July 1 2020 (last 7 days), by municipality**

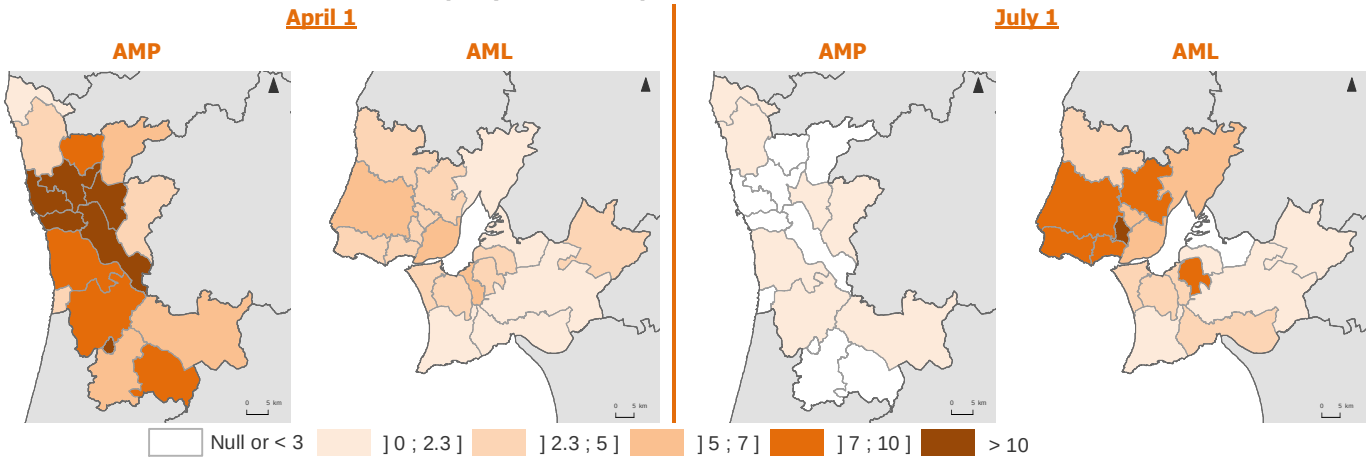



Source: Directorate-General of Health, Daily COVID-19 Status Report (released on July 2); INE, I.P., Annual estimates of resident population, 31 December 2019.

Given the high population density that characterizes the two metropolitan areas, the dynamics of new confirmed cases of COVID-19 in these territories is particularly relevant.

The following figure shows the number of new cases of COVID-19 per 10 thousand inhabitants for the municipalities of the Metropolitan Area of Porto (AMP) and the Metropolitan Area of Lisboa (AML) on April 1 and July 1 (last 7 days), and allows the observation that at the beginning of April the incidence of new cases per 10 thousand inhabitants was more evident in the municipalities of the Metropolitan Area of Porto, particularly the contiguous municipalities of Valongo, Gondomar, Matosinhos, Maia and Porto, and also the municipality of São João Madeira, which reported on April 1 more than 10 new cases per 10 thousand inhabitants. In turn, the most current situation, assessed on July 1, shows that the emergence of new cases particularly affects the municipalities of the Metropolitan Area of Lisboa, highlighting Amadora, as the only municipality with more than 10 new cases per 10 thousand inhabitants, as well as the municipalities of Moita, Sintra, Oeiras, Loures and Cascais that reported more than seven new cases per 10 thousand inhabitants.

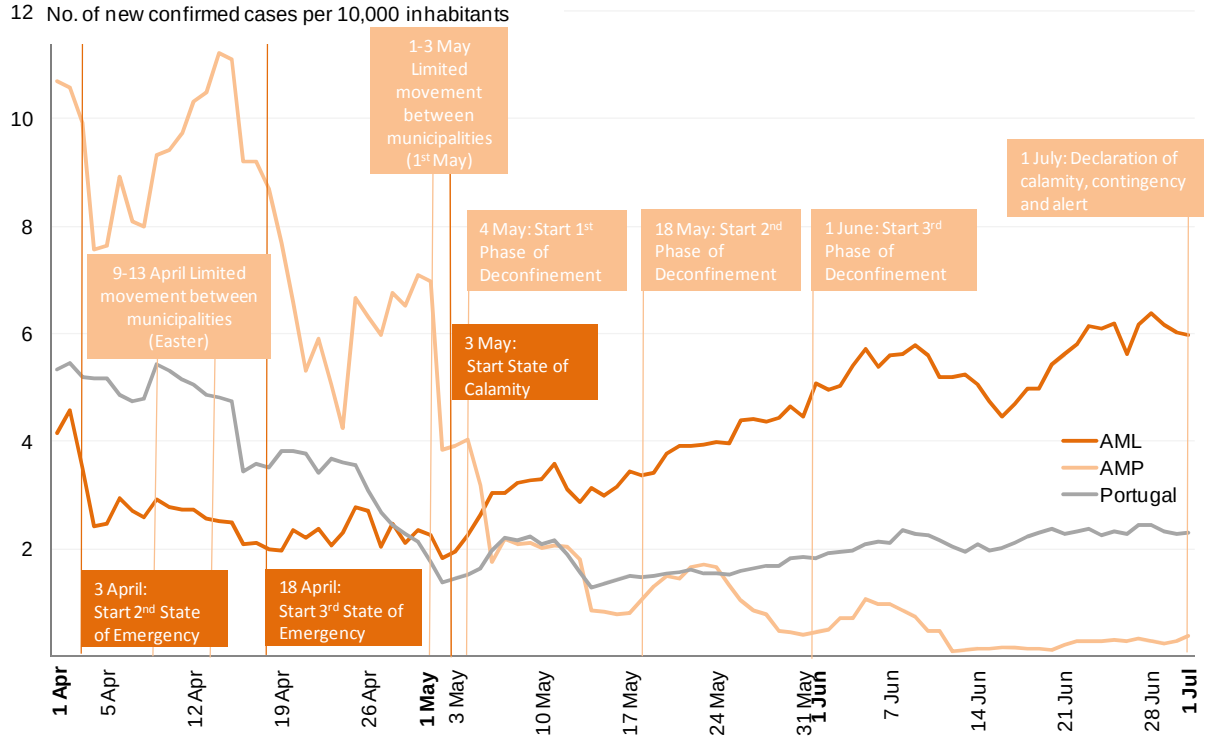
**Figure 12 – New confirmed cases of COVID-19 (last 7 days) per 10 thousand inhabitants in the days of April 1 and July 1 by municipality in the metropolitan area of Lisboa and Porto**




Source: Directorate-General of Health, Daily COVID-19 Status Report (released on July 2); INE, I.P., Annual estimates of resident population, 31 December 2019.

The following figure shows the number of new cases registered in the last seven days per 10 thousand inhabitants for the total of the country and for the metropolitan areas of Porto and Lisboa for the period from April 1st to July 1st. In this context, the progressive slowdown in the number of new cases registered in the Metropolitan Area of Porto should be highlighted, and, in turn, the progressive increase in the number of new cases in the Metropolitan Area of Lisboa (AML), with this region registering figures above the national average since 30 April. In the seven days ending on July 1st, AML represented 72% of the new cases in the country (28% of the resident population in 2019).

**Figure 13 – New confirmed cases in the last seven days per 10 thousand inhabitants, by day, Portugal, metropolitan areas of Lisboa (AML) and Porto (AMP)**




Source: Directorate-General of Health, Daily COVID-19 Status Report (released on July 2); INE, I.P., Annual estimates of resident population, 31 December 2019.
Note: The dates marked on the graph axis correspond to the first days of the month and Sundays.

## Socioeconomic impact indicators

*In May 2020, 234 municipalities presented values of national purchases through automatic payment terminals lower than the value for the corresponding month of the previous year*

In May 2020, the value of national withdrawals at ATMs per inhabitant was 176 Euros at national level, representing an increase of +24% compared to the previous month and a decrease of -26% compared to the same period in the previous year. In relation to April 2020, there was an increase in the value of national withdrawals at ATMs per inhabitant in the seven NUTS 2 regions in May 2020, with Região Autónoma da Madeira standing out with the highest increase: +30%. Despite this improvement compared with the previous month, when compared with the values for May 2019, there was a decrease in the value of national withdrawals at ATMs per inhabitant in all NUTS 2 regions of the country, with Metropolitan Area of Lisboa (-33%), Região Autónoma dos Açores (-27%) and Algarve (-26%) standing out with decreases above the national average [Figure 14]. It should be noted that the reduction in May compared with the same period in the previous year was lower than that recorded in April in all regions.

In Portugal, the value of national purchases through automatic payment terminals per inhabitant was 264 in May 2020, representing an increase of +26% over the previous month and a decrease of -21% over the same month in the previous year. The evolution of national purchases through automatic payment terminals per inhabitant at the regional level, in May 2020, follows a trend similar to that seen for withdrawals, with an increase compared to the previous month and a decrease compared to the same period in the previous year, which was common to the seven NUTS 2 regions of the country. As with withdrawals, also in the case of purchases, the reduction observed in May compared to the same period in the previous year was lower than that recorded in April in all regions. Metropolitan Area of Lisboa (-31%) and Algarve (-23%) scored, in May 2020, year-on-year variations above the national reference [Figure 15].

**Figure 14 – National withdrawals at ATMs per inhabitant, monthly, Portugal and NUTS 2**

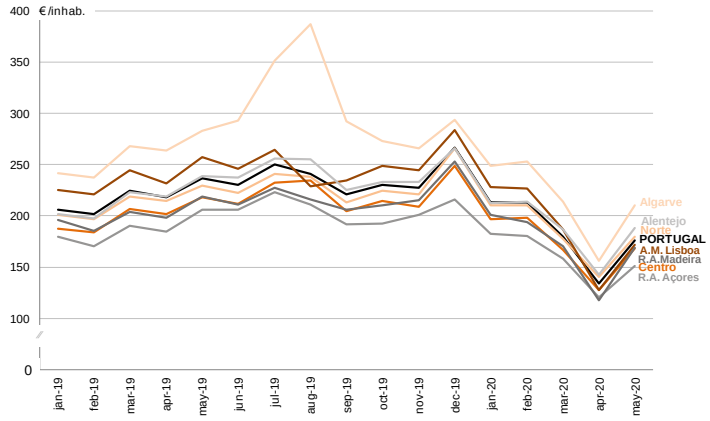
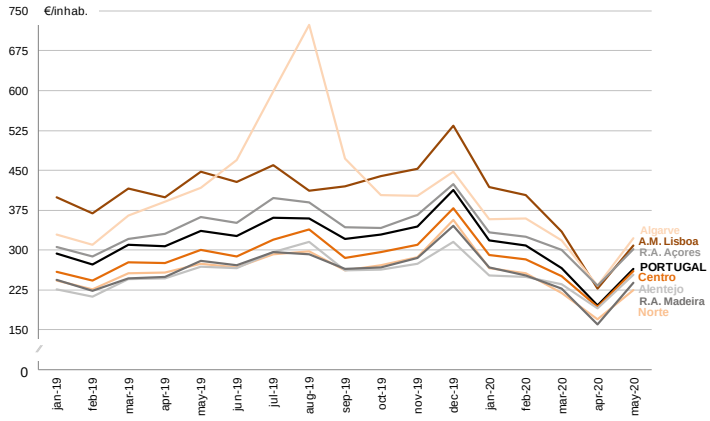


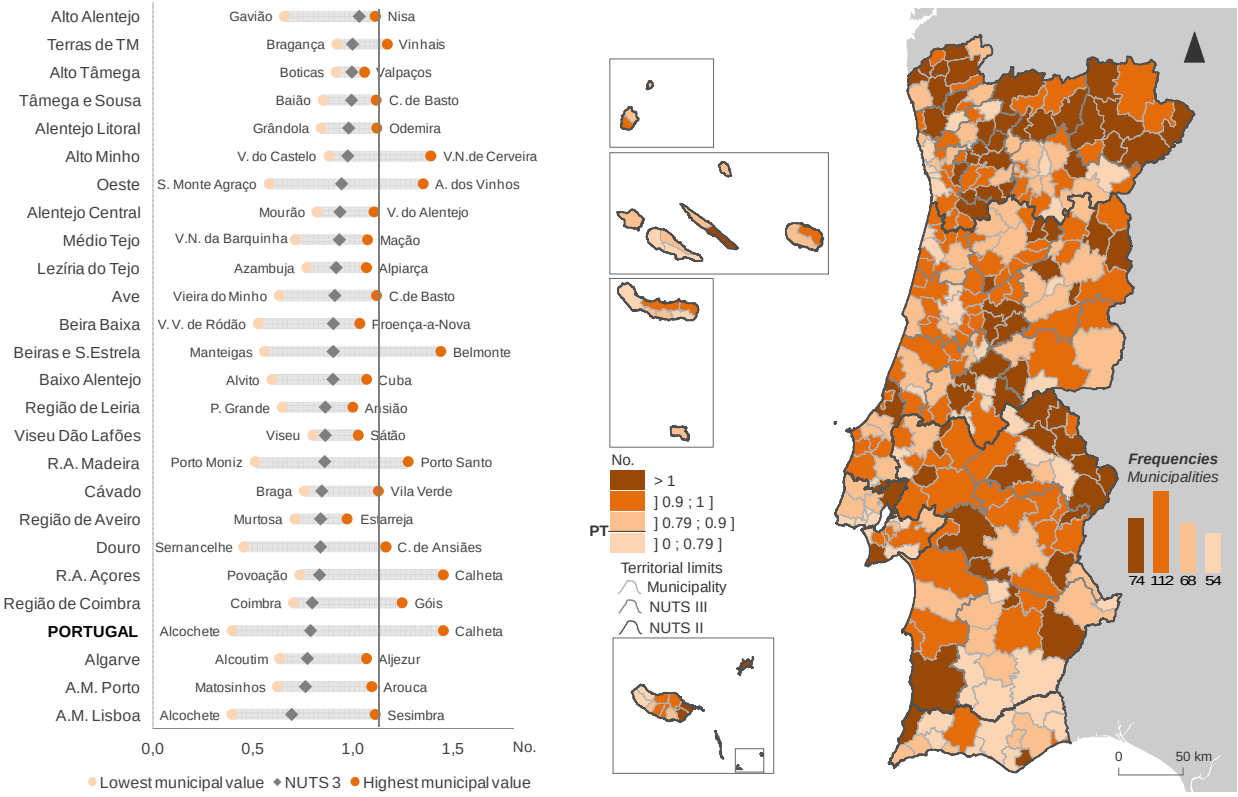

**Figure 15 – National purchases through automatic payment terminals per inhabitant, monthly, Portugal and NUTS 2**




Source: Interbank Services Society (SIBS).

In May 2020, in 76% of the Portuguese municipalities (234 out of a total of 308), the value of national purchases through automatic payment terminals was lower than the value for the corresponding month of the previous year. Of these, 54 municipalities, mostly located in the Metropolitan Area of Lisboa (8 out of a total of 18) and Porto (5 out of 17), Algarve (7 out of 16) and Baixo Alentejo (5 out of 13), stand out as having a lower ratio than the one registered for the country [Figure 16]. In April 2020, the value of national purchases through automatic payment terminals had been lower than the value for the corresponding month of the previous year in 289 municipalities.

**Figure 16 – Value of national purchases through automatic payment terminals in May 2020 compared to the same period of the previous year, Portugal, NUTS 3 and municipality**




Source: Interbank Services Society (SIBS).

*In May 2020 and in all NUTS 2 regions of Mainland Portugal there was an increase in jobs placements and a decrease of new unemployed compared to April 2020*

In May 2020, 0.7 new job placements were made in Mainland Portugal with candidates presented by employment centres per thousand inhabitants of working age (15-64 years), with Algarve (0.2), Metropolitan Area of Lisboa (0.3) and Norte (0.6) standing out for presented a lower number of job placements per thousand inhabitants of working age than the reference for Mainland Portugal. In May 2020, there was an increase in the value of this indicator compared to the previous month and a decrease compared to the same period of the previous year in the five NUTS 2 regions of Mainland Portugal, with the Algarve region standing out with a year-on-year variation of -88% [Figure 17]. In this context, it should be noted that the reduction in new job placements in May, compared to the same period in the previous year, was lower than that reported in April in all regions.

In May 2020, there were 7.1 new unemployed registered in employment centres per thousand inhabitants between 15 and 64 years old, in Mainland Portugal, representing a decrease of -42% compared to the previous month and an increase of +24% compared to the same period in the previous year. At regional level, this ratio was higher than the reference for Mainland Portugal in Algarve (10.3) and in Metropolitan Area of Lisboa (8.3). In May 2020, for Mainland Portugal and for the respective five NUTS 2 regions, there was a decrease in the number of unemployed per thousand inhabitants of working age in relation to April 2020 and an increase compared to the same month in the previous year, with Algarve region (+99%) and Metropolitan Area of Lisboa (+43%) standing out with the highest year-on-year variations [Figure 18].

It should be noted that the increase in the number of unemployed in May compared with the same period in the previous year was lower than that recorded in April in all regions.

**Figure 17 - Job placements per thousand inhabitants between 15 and 64 years old, monthly, Mainland Portugal and NUTS 2**

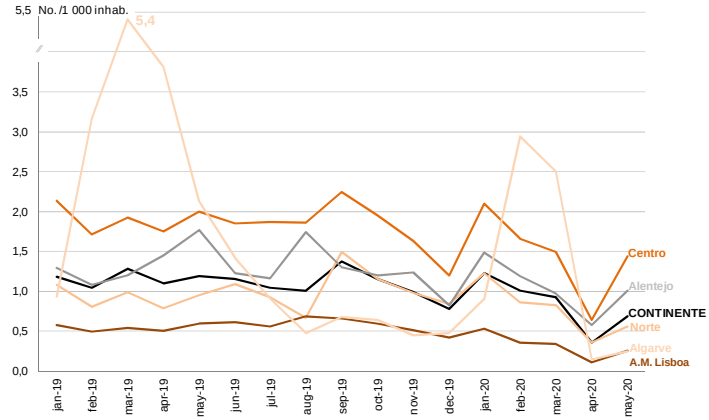
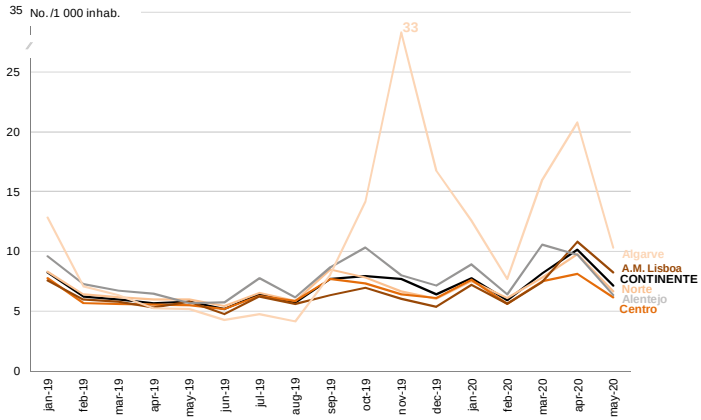


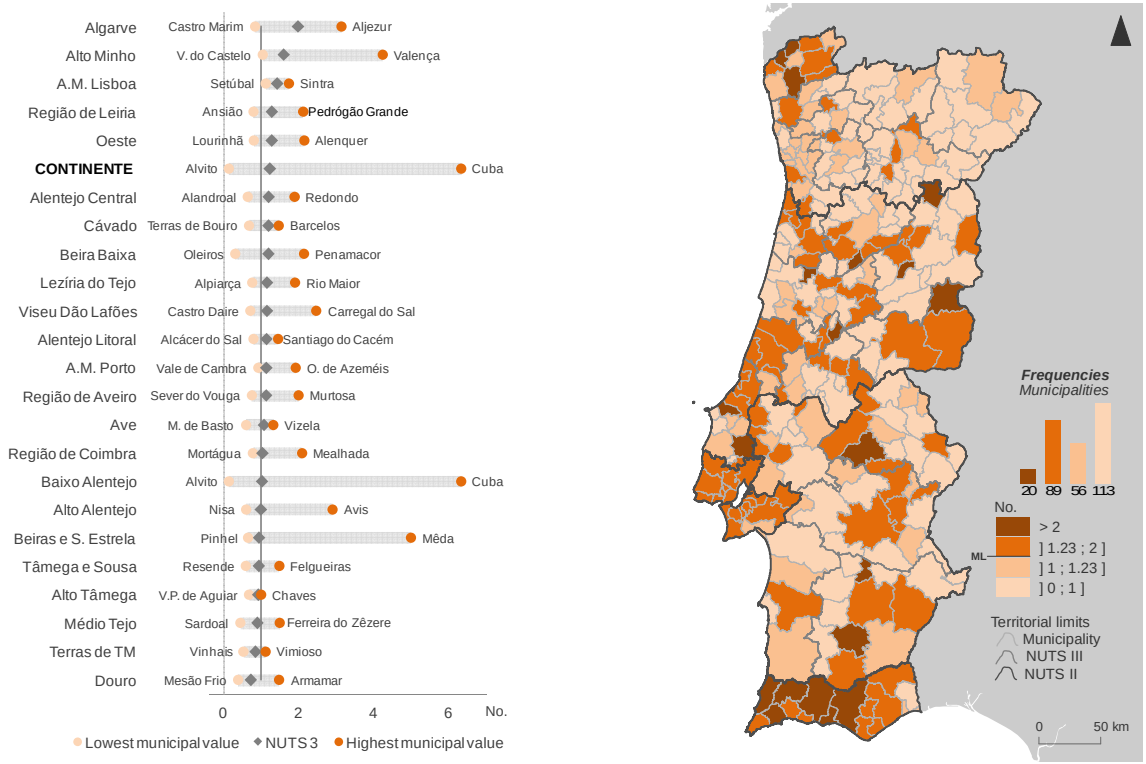

**Figure 18 – Unemployed registered at IEFP employment centres throughout the month per thousand inhabitants between 15 and 64 years old, monthly, Mainland Portugal and NUTS 2**




Source: Institute of Employment and Professional Training (IEFP).

In 165 of the 278 municipalities in Mainland Portugal, the number of unemployed registered in employment centres during the month of May 2020 was higher than the corresponding flow in the same period of the previous year. Of these, 20 municipalities, mostly located in the Algarve (6 out of a total of 16), stand out for presenting, in May 2020, a flow of unemployed more than two times higher than the one registered in the same month of the previous year [Figure 19]. In April 2020, the number of unemployed registered in employment centres had been higher than the same flow registered in the same period of the previous year in 214 municipalities.

**Figure 19 – Number of unemployed registered in IEFP employment centres over May 2020 compared to the corresponding flow in the same period of the previous year, Mainland Portugal, NUTS 3 and municipality**




Source: Institute of Employment and Professional Training (IEFP).

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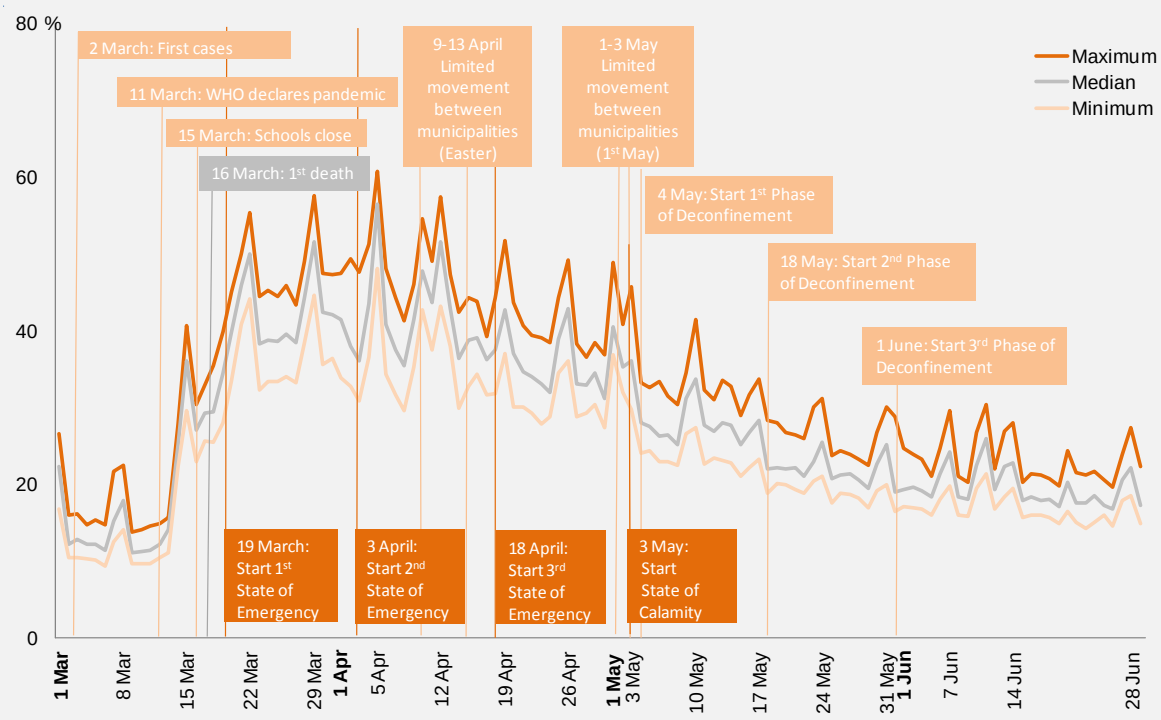
## Population mobility indicators at regional level: an analysis based on information from Facebook's "Data for Good" Initiative

In this box, taking advantage of Facebook's "Data for Good" Initiative, population mobility indicators at NUTS 3 level in the national territory are released.

The data represented in the figure below correspond to the proportion of population "staying put" between March 1st and June 29th, namely minimum, median and maximum values obtained from the 25 NUTS 3 sub-regions of the country. For a better contextualization of the information, the figure includes the main key moments associated with the COVID-19 pandemic in Portugal.

**Figure 20: Proportion of the population "staying put" between March 1st and June 29th – minimum, median and maximum values of NUTS 3**




Source: Facebook's "Data for Good" Initiative. Data provided by Carnegie Mellon University.
Note: The dates marked on the graph axis correspond to the first days of the month and to Sunday. Data for Sunday June 21 is not available.

The following figures show this indicator at NUTS 3 level for the days corresponding to Sundays [Figure 21] and Mondays [Figure 22], since the beginning of March. It can be seen that the days corresponding to Sundays indicate, overall, less mobility of the population than the days corresponding to Mondays. In particular, there is a reduction in mobility levels with the beginning of the State of Emergency on March 19 (maps of March 22 and 23). On the contrary, a progressive increase in mobility has been registered with the transition from the State of Emergency to the State of Calamity on May 3, followed by the first phase of implementation of the deconfinement measures (maps on May 3, 4, 10, 11 and 17 May), by the second phase of deconfinement on May 18 (maps on May 18, 24, 25 and 31 and June 1), and by the third phase of deconfinement (maps on June 1, 7, 8, 14, 15, 22, 28 and 29 June).

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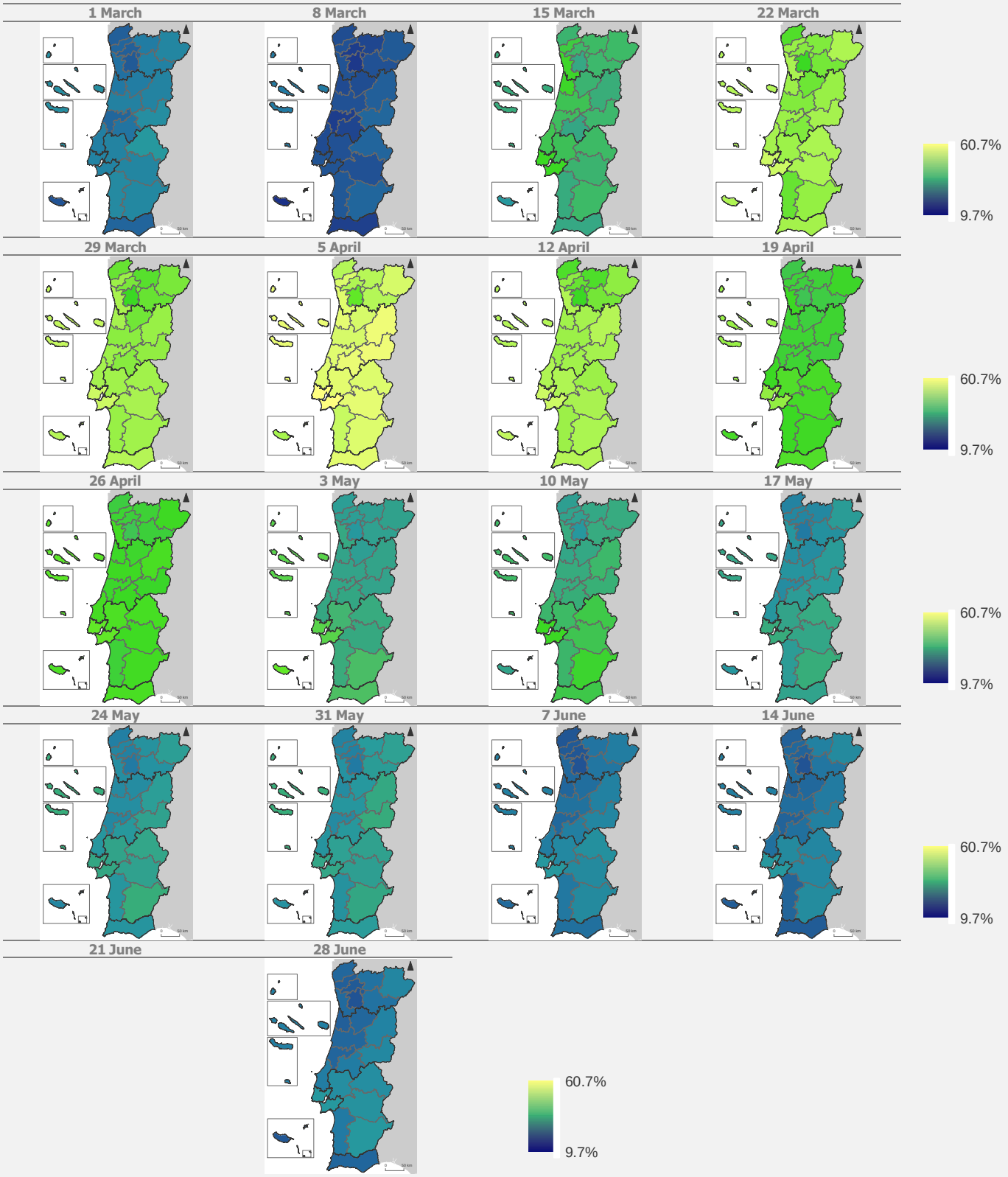
Figure 21: Proportion of the population "staying put" on Sundays between March 1st and June 28th by NUTS 3




Source: Facebook's "Data for Good" Initiative. Data provided by Carnegie Mellon University. Note: Data for Sunday June 21 is not available.

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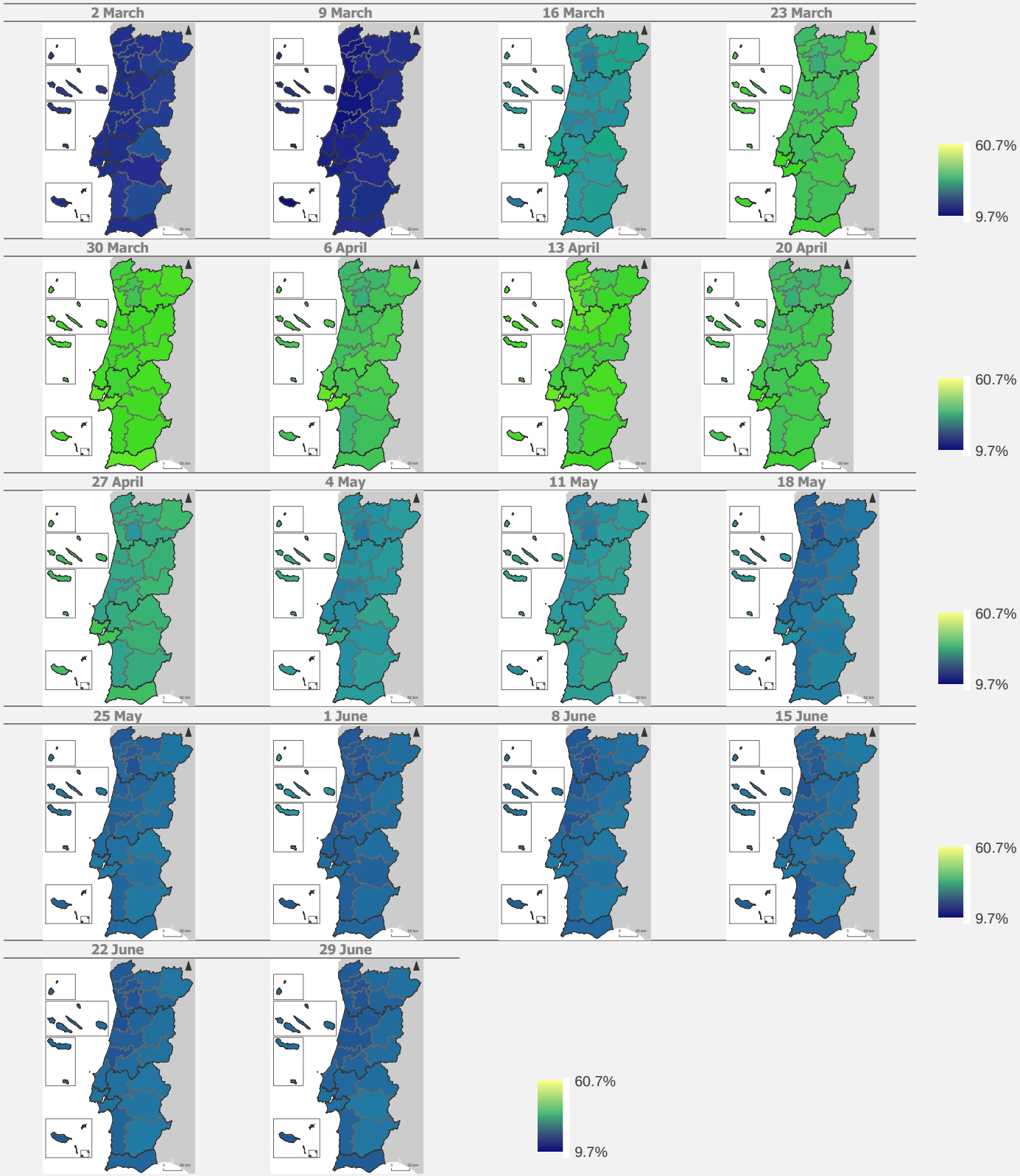
Figure 22: Proportion of the population "staying put" on Mondays between March 2nd and June 29th by NUTS 3




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

## Technical note

### Data sources

Data on **Deaths** correspond to general deaths (all causes of death) occurring in the national territory since March 1st, 2020 and until the Tuesday of the week prior to publication. The information is preliminary and is obtained from statistical operations of direct and exhaustive collection on deaths occurring in Portuguese territory using facts that are subject to compulsory civil registration (death) in the *Sistema Integrado do Registo e Identificação Civil* (SIRIC). In addition to administrative information obtained from Civil Register Offices, Statistics Portugal collects an additional set of variables identified as statistically relevant to the National Statistical System (NSS) and the European Statistical System (EES). Data are recorded and sent electronically, in compliance with the requirements set out by Statistics Portugal and laid down in liaison with the *Instituto de Registos e Notariado* (IRN) and the *Instituto de Gestão Financeira e Equipamentos da Justiça* (IGFEJ).

Data on the number of confirmed cases are based on those published daily in the **Directorate-General of Health COVID-19 Status Report** for the entire country and by municipality. The confirmed cases are referenced to the municipality of occurrence and correspond to the total of clinical notifications in the SINAVE (National System of Epidemiological Surveillance) system. For the reference dates considered in this press release –July 1 – data by municipality corresponded, respectively, to 91% of confirmed cases in the national territory. This proportion reflects data confidentiality by municipality, but also limitations in the process of spatial referencing of information. In fact, when the confirmed cases by municipality are fewer than 3, for confidentiality reasons, data are not disclosed by the Directorate-General of Health.

The information on the labour market is based on the publication **Unemployment Registered by Municipality - Monthly Statistics** of the Institute of Employment and Professional Training (IEFP). Monthly Registered Unemployment data refers to the number of registers during the month for individuals aged 16 or over (subject to the reservations provided by law), registered in the Employment Centres to obtain a job as an employee, who do not have a job and are immediately available for work. The monthly data of Placements refer to Job Vacancies (available jobs reported by employers to the Job Centres) satisfied with candidates submitted by the Employment Centres.

Data on withdrawals at ATMs and purchases through Automatic Payment Terminals (TPA) are based on information recorded by Interbank Services Society (SIBS) and comprise movements made on cards issued by national institutions. Data by municipality is based on the location of the ATM and of the TPA.

This press release includes the resident population data as of December 31, 2019 released on June 15.

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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 8am and 8pm 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 8pm 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 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.

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[3] for his support in the analytical preparation of this information.

[3] Associate Professor at Católica Lisbon School of Business & Economics and visiting research scholar at the Carnegie Mellon University.

**Disseminated Indicators**

Number of total deaths, by sex or age group

Number of deaths in the last 4 weeks per deaths in the same reference period

Number of confirmed cases of COVID-19 disease per 10 thousand inhabitants

Population density

Number of new confirmed cases of COVID-19 disease in the last 7 days per 10 thousand inhabitants

Proportion of resident population with 75 or more years old

National withdrawals at ATMs per inhabitant

National purchases through automatic payment terminals per inhabitant

Value of national purchases through automatic payment terminals in May 2020 compared to the same period of the previous year

Job placements per thousand inhabitants between 15 and 64 years old

Unemployed registered at IEFP employment centres throughout the month per thousand inhabitants between 15 and 64 years old

Number of unemployed registered in IEFP employment centres over May 2020 compared to the corresponding flow in the same period of the previous year

Location coefficient

The location coefficient (LC) is obtained using the following formula:

$$LC = \left( \frac{1}{2} \sum_{j=1}^{n} \left| x_j - y_j \right| \right) \times 100$$ where:

$x_j$ corresponds to the ratio of the number of confirmed cases of COVID-19 in each municipality *j* to the number of confirmed cases of COVID-19 for the total country;

$y_j$ corresponds to the ratio between the resident population in each municipality *j* and the total resident population in the country.

The Location coefficient varies between 0 and 100, with values closer to 100 reflecting greater inequality in the distribution of confirmed cases of COVID-19 against the total resident population and, in this sense, indicates situations of greater territorial concentration.

The location curve (or Lorenz concentration curve) corresponds to a graphical representation that relates the cumulative distribution of two variables. This representation also includes the straight line of equal distribution, and the greater the distance from it, the greater is the concentration of the variable represented in the ordinate axis (in this analysis, the confirmed cases of COVID-19, by period of reference) versus the variable represented in the abscissa axis (in this analysis, the total resident population).