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

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

Despite the progressive spread of the pandemic throughout the national territory, its impact continues to be characterised by high regional heterogeneity, particularly when taking into account, in addition to the absolute numbers of confirmed cases and deaths, relative indicators according to the size and population density per km^2 of the territorial units considered in this analysis. The socioeconomic impact of the pandemic is also different across the territory in the light of monthly indicators. Taking the municipality as a reference unit, the confirmed cases of COVID-19 available on May 6 (2 weeks more than in the previous press release on the same theme) and the socioeconomic impact indicators analysed, it can be seen that:

- On April 22, 2020, in Portugal, for every 10,000 inhabitants there were 26.0 confirmed cases of COVID-19. The number of confirmed cases of COVID-19 disease per 10 thousand inhabitants was above the national value in 51 municipalities and of this group, 36 belonged to the Norte region.

- The analysis of the relationship between the number of confirmed cases per 10 thousand inhabitants and population density highlights a set of 34 municipalities with values above the national average in both indicators.

- The Algarve region recorded the largest increase in the number of unemployed registered in employment centres in March 2020, compared to the same period of the previous year.

- The regions of the Metropolitan Area of Lisbon and the Algarve recorded the largest decreases in the value of national purchases in March 2020, compared to the same period of the previous year.

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.

This press release includes results for the national context on the general deaths (all causes of death) that have occurred in national territory since March 1, 2020. 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 Portugal mainland, and Autonomous Regions) and municipality level. In addition, socioeconomic indicators, on a monthly basis, are presented for the first time 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 from March 1st up to April 26th. Information on deaths is obtained through the Civil Register collected under the Integrated Civil Registration and Identification System (SIRIC). This information was computed on May 5th, and refers to all deaths occurred from 1st March until April 26th, 2020. 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. Data on resident

population are based on the preliminary results of the Annual estimates of resident population, referenced to <u>December 31, 2019</u>.

The number of confirmed cases with COVID-19 is based on the information released for the entire country and by municipality in the 'Daily COVID-19 Status Report' edited by the Directorate-General of Health. This press release includes information available up to May 7 (<u>data of the situation up to May 6</u>).

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 of this press release for more information).

Demographic and territorial context indicators

Number of deaths between March 1st and April 26th, 2020 higher than in the same period in 2019 and 2018

The preliminary total number of deaths between March 1st and April 26th, 2020 is 1,667 higher than the number registered in the same period in 2019 and 580 cases higher than number of deaths registered in 2018. The positive variation in relation to 2019 is due mainly to the increase in the number of deaths of people aged 75 and over (+ 1,597).

The following figures allow the comparison of the cumulative number of deaths from the beginning of March to April 26th, 2020 with that observed in the same period in 2019 and 2018. For the total number of deaths registered, and for the age group 75 and over, two lines were added in order to identify the moment values of cumulated deaths registered in 2020 surpass those registered in 2019 and 2018

Figure 1 - Cumulative number of deaths in Portugal from March 1st to April 26th (2018-2020)

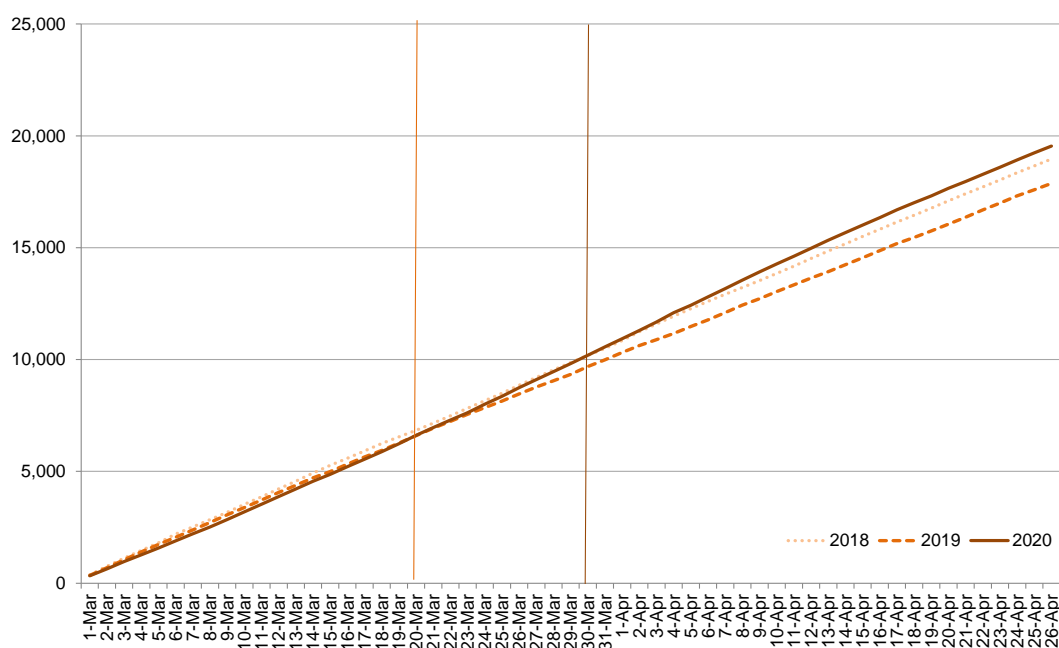|	Number of deaths			Number of deaths per 100 thousand inhabitants		
	2018	2019	2020	2018	2019	2020
Total	18,965	17,878	19,545	184.3	174.0	189.9
Males	9,436	8,892	9,648	193.8	183.3	198.8
Females	9,529	8,986	9,897	175.7	165.7	181.9
Under 64 years	2,593	2,550	2,525	32.1	31.7	31.5
65 to 69 years	1,125	1,122	1,159	181.5	181.5	186.1
70 to 74 years	1,552	1,537	1,591	297.6	285.5	289.7
75 to 79 years	2,168	2,041	2,257	510.1	478.9	523.3
80 to 84 years	3,388	3,146	3,365	969.8	895.8	954.8
85 years and over	8,138	7,480	8,642	2,735.1	2,410.8	2,658.3
65 years and over	16,371	15,326	17,014	739.7	682.9	746.0
75 years and over	13,694	12,667	14,264	1,277.6	1,164.7	1,286.4

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 May 5st 2020.
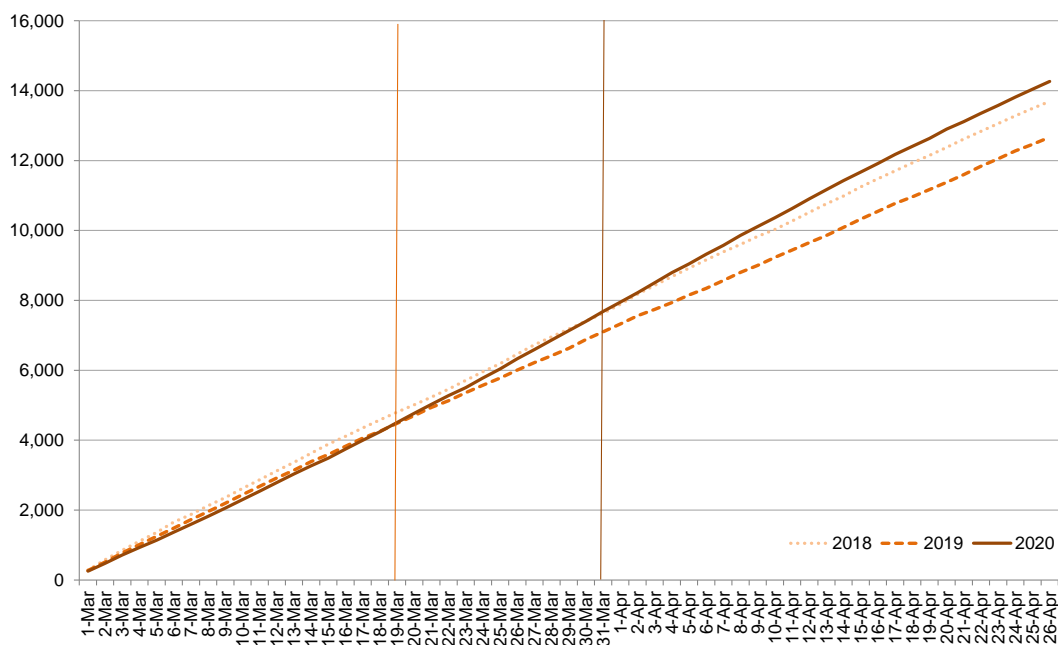a) The total number of deaths may not correspond to the sum of the partial figures due to the existence of records with unknown age.

Figure 2 - Cumulative number of deaths, by day of death, March 1ˢᵗ to April 26ᵗʰ (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 April 26ᵗʰ (2018-2020)
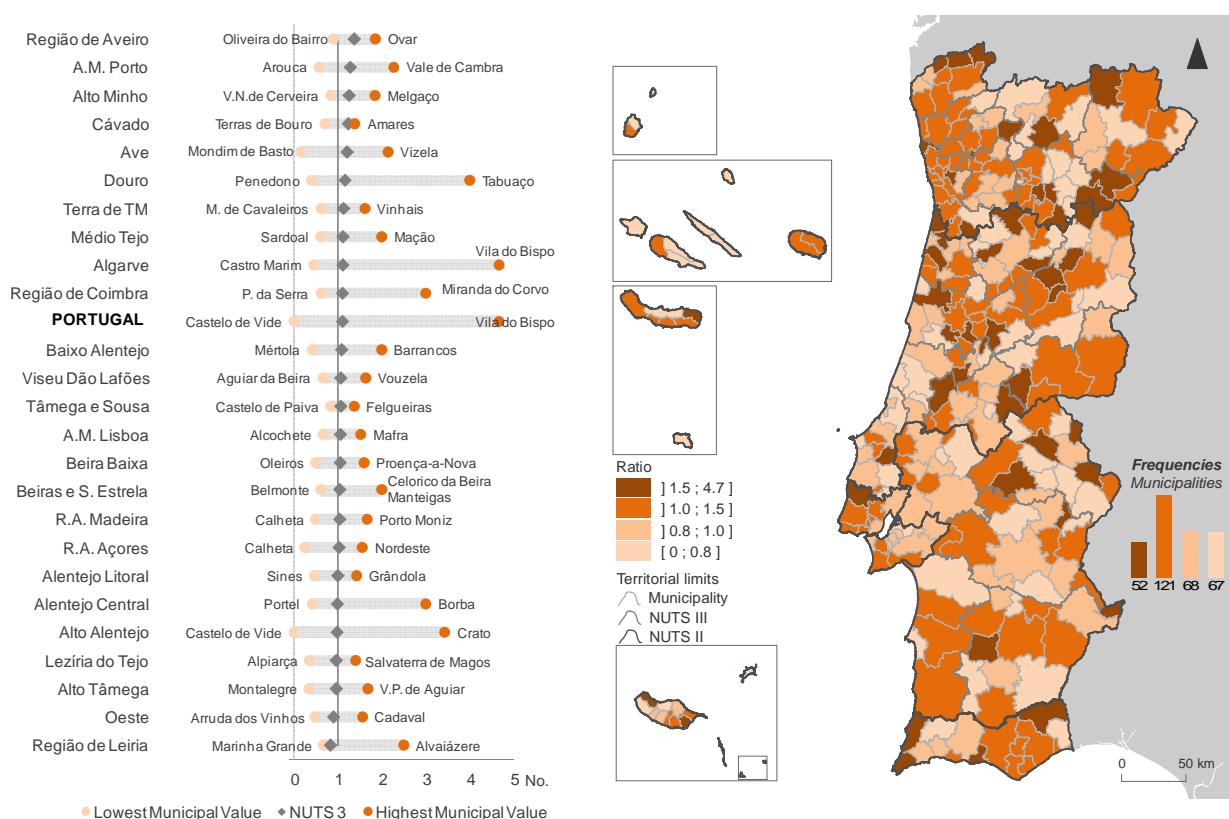

Source: INE, I.P., Statistics on Deaths (Preliminary (2020) and Final Results (2018 and 2019)).

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In 173 municipalities the number of deaths registered in the last four weeks (between 30 March and 26 April, 2020) was higher than the corresponding reference value

In 173 out of the 308 Portuguese municipalities the number of deaths registered in the last four weeks (between 30 March and 26 April, 2020) was higher than the corresponding reference value (average number of deaths in the same period in 2018 and 2019). Of this total, 52 municipalities registered a number of deaths 1.5 times higher than in the same period of reference. For the remaining 135 municipalities (44% of the total number of municipalities) the number of deaths registered in the last four weeks was equal or lower than the number observed in the reference period.

Figure 4- Number of deaths in the last four weeks (30 March to 26 April) 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)).

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

On May 6, 2020, in Portugal, for every 10 thousand inhabitants there were 26.0 confirmed cases of COVID-19, which represents an increase of 20% compared to April 22, the reference date analysed in the last press release. Between April 22 and 7 (reference date of the first press release) there was a 70% increase in the number of confirmed cases per 10 thousand inhabitants.

The number of confirmed cases of COVID-19 disease per 10 thousand inhabitants was above the national value in 51 municipalities. In the Norte region, 36 municipalities registered a value above the national average, and a set of contiguous municipalities in the Metropolitan Area of Porto stood out, with more than 40 confirmed cases per 10 thousand inhabitants Valongo, Matosinhos, Maia, Gondomar, Porto, Santo Tirso and Vila Nova de Gaia. Some municipalities in the Centro (12), Metropolitan Area of Lisboa (the municipality of Lisboa), Alentejo (the municipality of Moura) and Região Autónoma dos Açores (the municipality of Nordeste) also scored values above the national value [Figure 5].

Despite this differentiation, the estimated location coefficient[1] for March 25th and May 6th 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 6].

Figure 5 - Number of confirmed cases of COVID-19 disease per 10 thousand inhabitants until May 6, 2020, by municipality
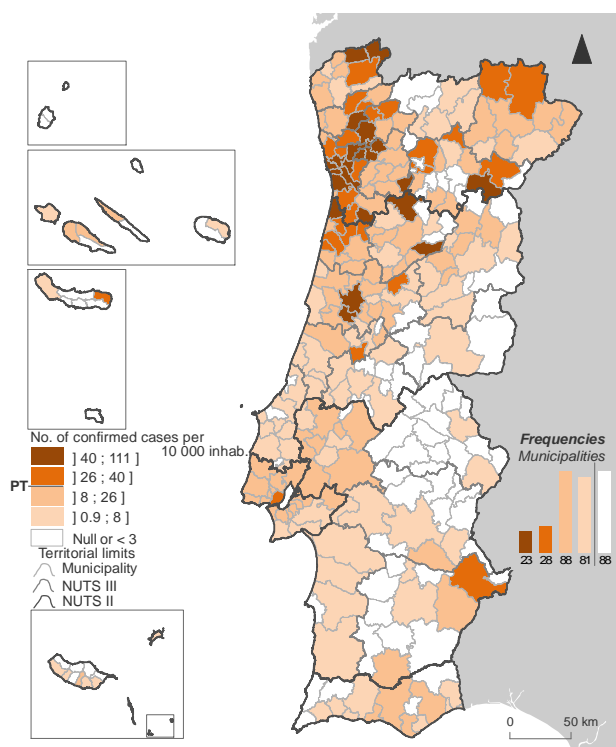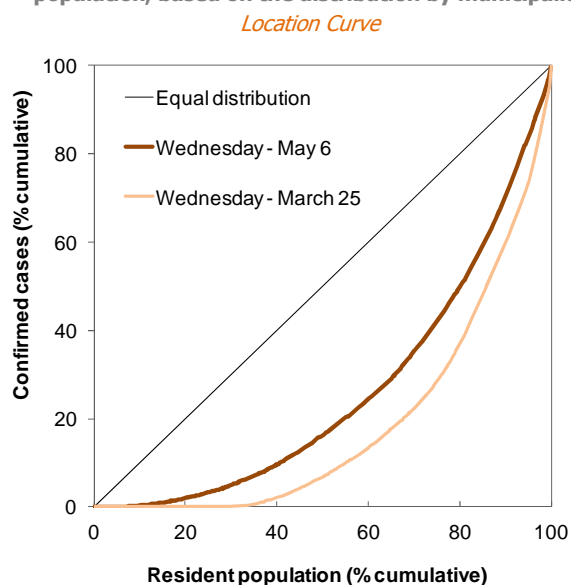
Figure 6 - Territorial concentration of COVID-19 confirmed cases until March 25 and until May 6 in relation to the resident population, based on the distribution by municipality

Location Curve

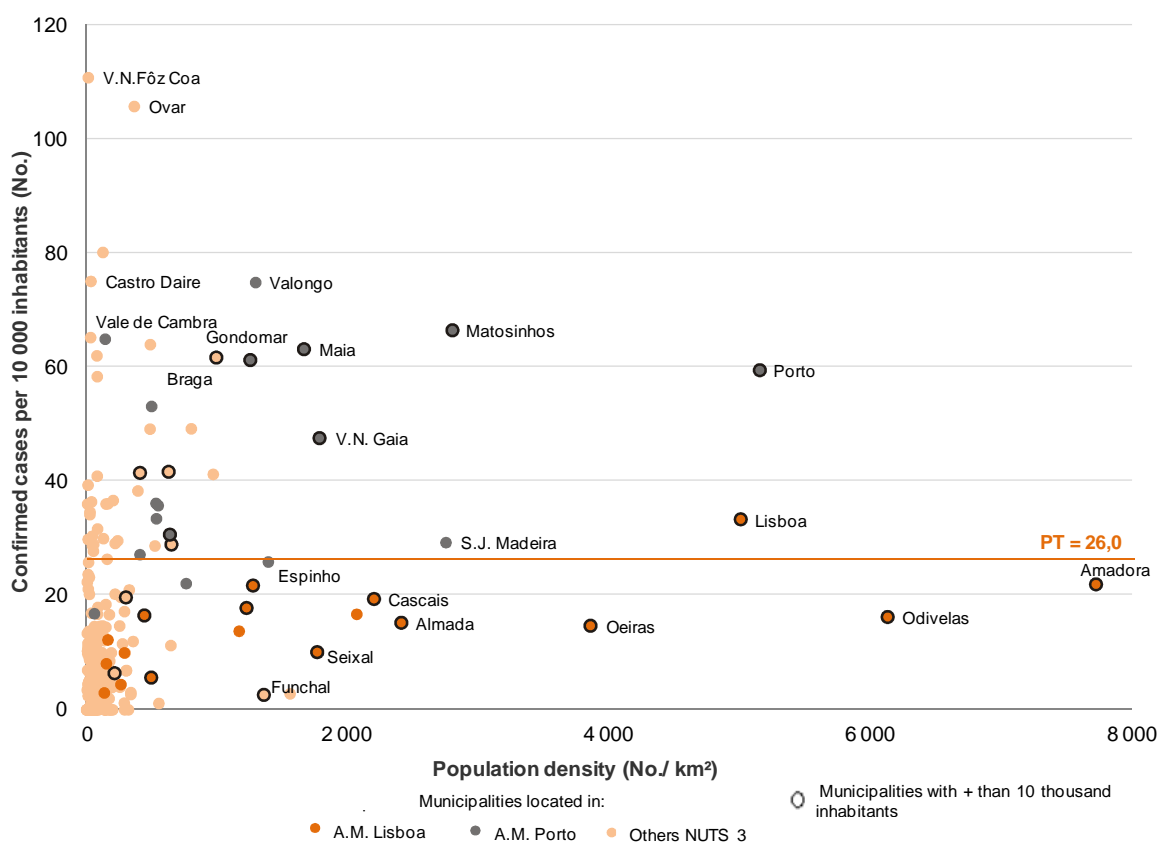| Location coefficient	
Wednesday – May 6	35.9
Wednesday - March 25	47.7

Source: Directorate-General of Health, Daily COVID-19 Status Report (released on May 7); INE, I.P., Annual estimates of resident population, 31 December 2019 (Preliminary Results). 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).

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[1] 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.

34 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 for the country's municipalities. Of the 51 municipalities with a number of confirmed cases per 10 thousand inhabitants above the value for Portugal, 34 also had population density values above the national average. From this set of 34 municipalities, the municipalities of Ovar (105.8) and Condeixa-a-Nova (80.2) in Região de Aveiro, the municipalities of Valongo (74.9), Matosinhos (66.5), Vale de Cambra (65.0), Maia (63.1), Gondomar (61.2), Porto (59.5) and Santo Tirso (53.2) in the Metropolitan Area of Porto, the municipality of Felgueiras (64.1) in Tâmega e Sousa and the municipality of Braga (61.7) in Cávado stood out with more than 50 confirmed cases per 10 thousand inhabitants. Like the municipality of Porto, the municipality of Lisboa has a high population density, registering, on May 6, a total of 33.3 confirmed cases per 10 thousand inhabitants, a value that is above the national average. It should also be noted that 179 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 7 - Number of confirmed cases per 10 thousand inhabitants on May 6, 2020 and Population density, by municipality

Source: Directorate-General of Health, Daily COVID-19 Status Report (released on May 7); INE, I.P., Annual estimates of resident population, 31 December 2019 (Preliminary Results).

Socioeconomic impact indicators

Metropolitan Area of Lisboa and Algarve with greater decreases in the value of purchases per inhabitant in March 2020, compared with the same period of the previous year

The analysis of the evolution of national withdrawals at ATMs per inhabitant in the period from January 2019 to March 2020 shows a continuous decrease in the value of national withdrawals per inhabitant since the beginning of the year 2020 in Portugal, and generally in the seven NUTS 2 regions of the country. In March 2020, in Portugal, there was a decrease of -20.1% in the value of withdrawals per inhabitant compared to the same month of the previous year. This trend was common to all NUTS 2 regions in the country, with the Metropolitan Area of Lisboa (-23.3%) and the Algarve (-20.2%) standing out, with year-on-year variations higher than that recorded at national level [Figure 8].

The evolution of national purchases through automatic payment terminals per inhabitant, in the period from January 2019 to March 2020, follows a trend similar to that seen for withdrawals, with a continuous decrease in the value of purchases per inhabitant since the beginning of 2020 in Portugal and in the seven NUTS 2 regions of the country. In March 2020, there was a decrease of about -14.4% in the value of purchases per inhabitant in Portugal compared to the same month of the previous year and at regional level this decrease was higher than the national value in the Metropolitan Area of Lisboa (-19.6%) and in the Algarve region (-14.5%) [Figure 9].

Figure 8 - National withdrawals at ATMs per inhabitant, monthly, Portugal and NUTS 2
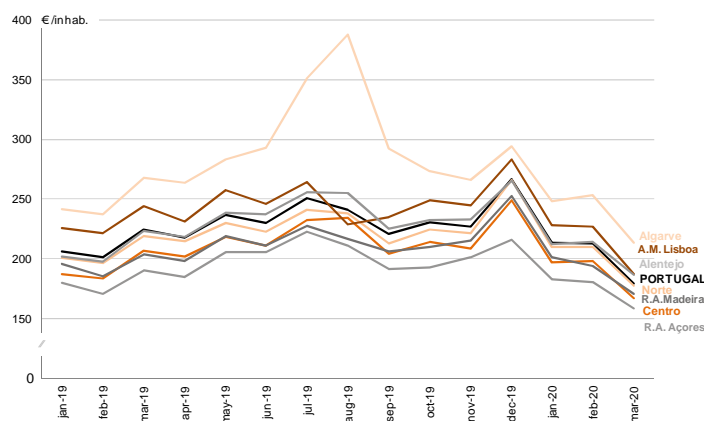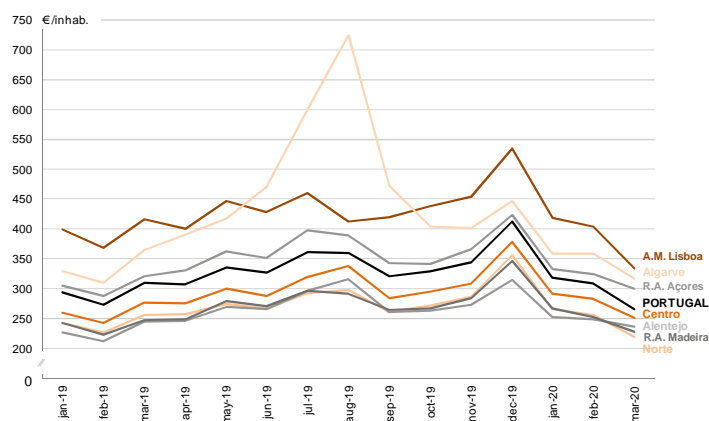

Figure 9 - National purchases through automatic payment terminals per inhabitant, monthly, Portugal and NUTS 2

Source: Interbank Services Society (SIBS).

In March 2020, in more than half of the Portuguese municipalities (158 out of a total of 308), the value of national purchases through automatic payment terminals was equal to or less than the value for the corresponding month of the previous year. Of these, 43 municipalities, mostly located in the Metropolitan Area of Lisboa (8 out of a total of 18) and Porto (5 out of 17), stand out as having a lower ratio than the one registered for the country [Figure 10].

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Figure 10 – Value of national purchases through automatic payment terminals in March 2020 compared to the same period of the previous year, Portugal, NUTS 3 and municipality

● Lowest municipal value   ◆ NUTS 3   ● Highest municipal value
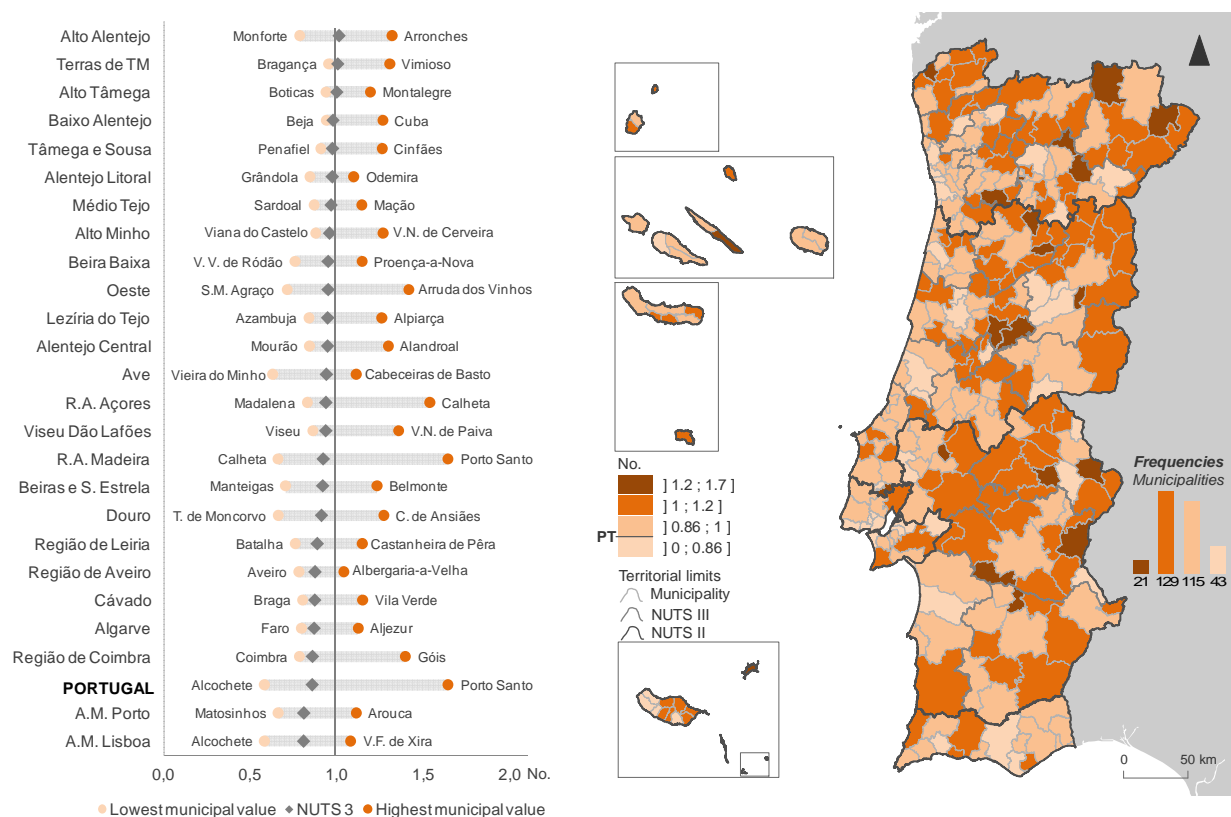
Source: Interbank Services Society (SIBS).

Algarve with highest increase of unemployed registered in employment centres per thousand inhabitants in March 2020, compared to the same period of the previous year

In March 2020, 0.9 new job placements were made in mainland Portugal with candidates presented by employment centres per thousand inhabitants of working age (15-64 years). At regional level, the Algarve (2.5), Centro (1.5) and Alentejo (1.0) presented a higher number of job placements per thousand inhabitants of working age than the reference for mainland Portugal. In March 2020, there was a decrease in the value of this indicator compared to the same period of the previous year in the five NUTS 2 regions of mainland Portugal, with the Algarve (-53.8%) and Metropolitan Area of Lisboa(-37.6%) standing out [Figure 11].

In March 2020, there were 8.2 new unemployed registered in employment centres per thousand inhabitants between 15 and 64 years old, in mainland Portugal. At regional level, this ratio was higher than the reference for mainland Portugal in Alentejo (10.5) and Algarve (16.0) regions. In March 2020, there was an increase in the number of unemployed per thousand inhabitants of working age for mainland Portugal and for the respective five NUTS 2 regions, compared to the same month in the previous year, with the greatest variations being registered in the regions of Algarve (+152.5%) and Alentejo (+57.5%) [Figure 12].

Figure 11 - Job placements per thousand inhabitants between 15 and 64 years old, monthly, mainland Portugal and NUTS 2
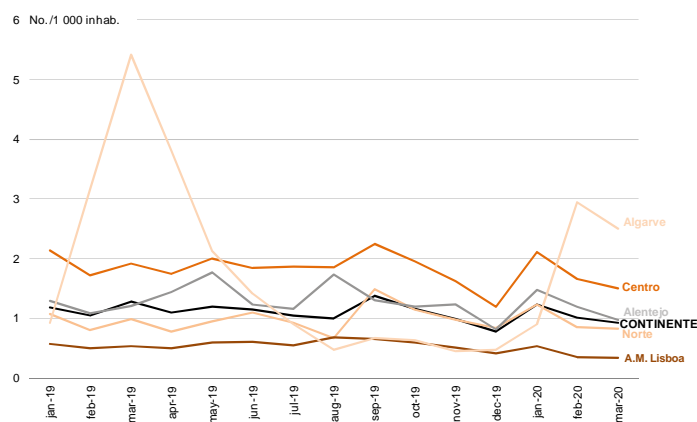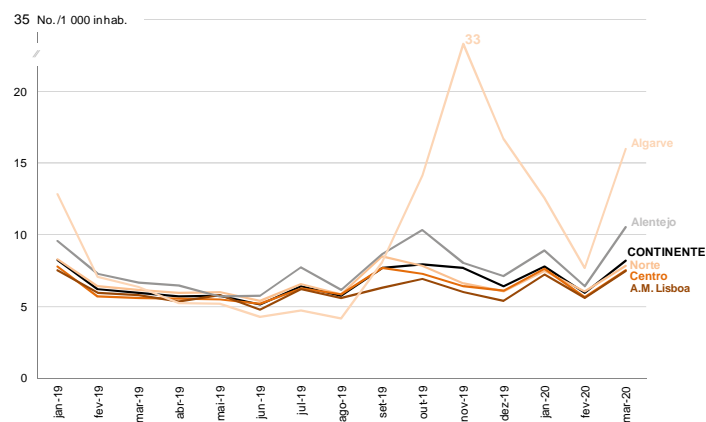

Figure 12 – Unemployed registered at IEFP employment centres throughout the month per thousand inhabitants between 15 and 64 years old, monthly, mainland Portugal and NUTS 2

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

In 123 of the 278 municipalities in mainland Portugal, the number of unemployed registered in employment centres during the month of March 2020 was higher than the corresponding flow in the same period of the previous year. Of these, 35 municipalities, mostly located in the Alentejo and Algarve regions, stand out for presenting, in March 2020, a flow of unemployed two times higher than the one registered in the same month of the previous year [Figure 13].

Figure 13 – Number of unemployed registered in IEFP employment centres over March 2020 compared to the corresponding flow in the same period of the previous year, mainland Portugal, NUTS 3 and municipality
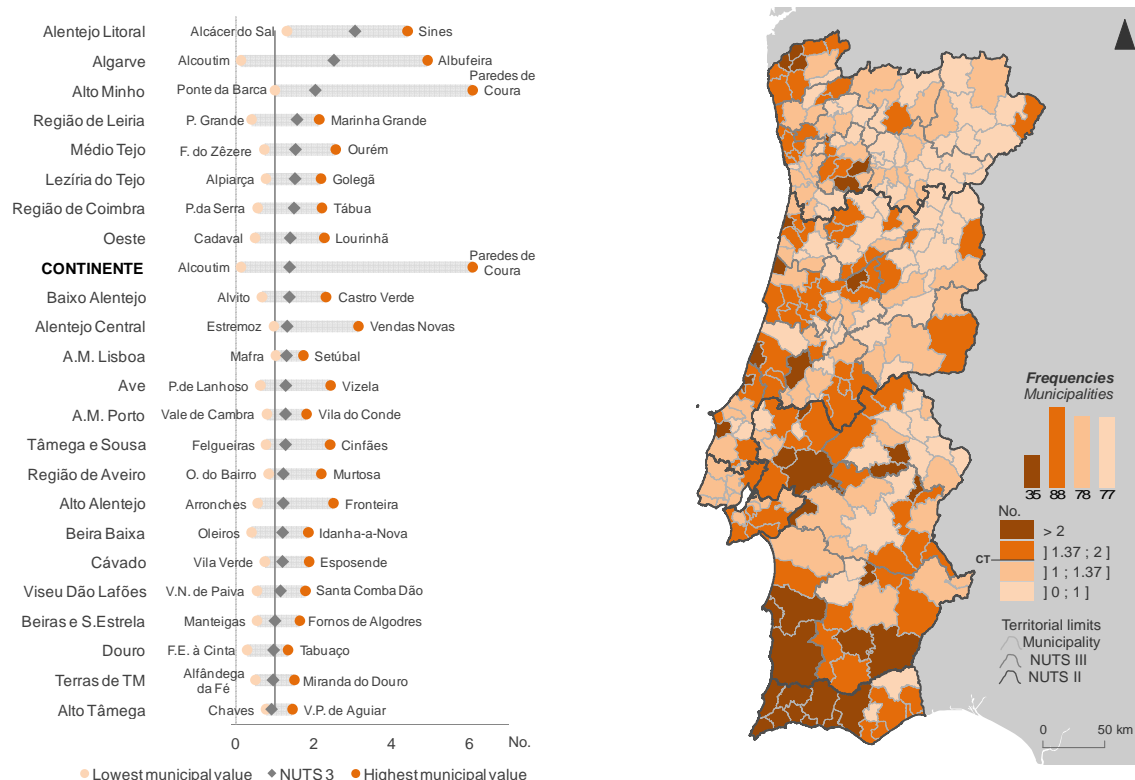
Source: Institute of Employment and Professional Training (IEFP).

Technical note

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. When the confirmed cases by municipality are fewer than 3, for confidentiality reasons, data are not disclosed by the Directorate-General of Health. For the reference dates considered in this press release –May 6 – data by municipality corresponded, respectively, to 88% 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.

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.

The resident population data referenced to December 31, 2019 correspond to preliminary estimates, not yet disseminated.

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

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 March 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 March 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:

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

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).