

Communication

Inland or Coastal: That's the Question! Different Impacts of COVID-19 on the Tourism Sector in Portugal

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Abstract: The COVID-19 pandemic had severe implications in different economic sectors, among them tourism, with countries where tourism has a relevant economic role, such as Portugal, being greatly affected. However, the impact was different in the various regions of the country, which could be related to some tourism units, being more isolated or with fewer rooms, being seen as more attractive and safer. Based on data from Portuguese firms, and distinguishing their location between coastal and inland, it is possible to conclude that inland tourism units were less affected than coastal ones, which could be related to tourists seeking less densely populated areas, a relevant conclusion for the different agents.

Keywords: COVID-19; inland; population density; tourism



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1. Introduction

The COVID-19 pandemic had a negative effect on the economies in general [1] and the different sectors, including tourism, because of the different measures that had to be adopted, including restrictions on travel [2].

The pandemic had a huge impact on the tourism sector. According to the World Travel & Tourism Council (WTTC), in 2019 the travel and tourism sector accounted for around 10.3% of GDP, with this contribution falling by around half in 2020 (5.3%), with an increase already noted in 2021 (up to 6.1%). In terms of employment, the sector lost around 62 million jobs worldwide, corresponding to about 28.6%. International visitor spending globally fell by 69.7% in 2020, with a 47.4% drop in domestic visitor spending. In 2021, the data point to a recovery, also asymmetric, with spending by domestic visitors increasing by 31.4% in that year, against only a 3.8% increase in spending by international visitors (all these data can be consulted in [3]). In the case of the European Union, the sector contributes to more than 4% of GDP and more than 20% of service exports [4]. With the reopening of tourist activity, and considering the characteristics of tourism, it is expected that there could have been some relocation of tourist destinations, related, for example, to the possibility of more densely populated places representing a greater danger to health [5–8].

This process of deglobalization, recognized for example by [9], was also verified in Portugal, a country where tourism is very relevant. According to data from the World Tourism Organization (WTO), tourism's contribution to GDP rose from 6.5% in 2014 to 8.4% in 2019, dropping to 4.6% in 2020 [10]. According to [11], the number of overnight stays in tourist accommodation fell from around 70 million in 2019 to less than 26 million in 2020, recovering to more than 37 million in 2021. However, the impacts were felt differently in the different types of accommodation where, for example, rural tourism had a significantly smaller decrease than larger hotel units [12]. With the increase in COVID-19 cases at the

end of the summer of 2020, and a new set of restrictions on mobility, tourism in Portugal suffered again, with consequences both in terms of companies' capacity to remain active and employment [13]. In addition to its importance for the economy and employment, tourism is very relevant in efforts to achieve sustainability and regional cohesion [14–17].

The vulnerability of the tourism sector is recognized in the literature and affected by different aspects, such as climate change [18–20], natural disasters [21], terrorist attacks [22], and global economic crises [23,24].

In the particular case of COVID-19, we can find work devoted to analyzing the general impact of the pandemic on tourism. For example, refs. [25,26] refer to a huge impact of the pandemic on the tourism industry, also identifying possible measures which could be considered to reactivate the sector, such as travel insurance, reducing or eliminating charges for changing, but also policies such as protection plans and acting according to travelers' feelings. Moreover, ref. [27] shows that countries with higher international tourism intensity were more exposed to the pandemic, considering the major restrictions in international travel which were imposed around the world.

Several studies assess the impact of the pandemic in specific countries. Ref. [28] refers to the decrease of arrivals and nights spent in Italy and Portugal between 2019 and 2020. Ref. [29] assesses the impact on tourist flows, finding that regions with more confirmed cases are also most affected by the pandemic, with a greater reduction of tourism flows. The authors conclude that it was necessary for the country to search for alternatives to mass tourism, reinforcing the relevance of experiential, rural, and active tourism as well as possible strategies for companies to stimulate the market [30]. Centered on the Greek case, ref. [31] concludes on the immediate impact of the pandemic in the tourist sector, with a strong recovery in 2021, even with the increase in numbers affected, which could also be related to the increased relevance of domestic tourism [32]. In the particular case of Czechia, ref. [33] finds that the decline in tourism was mostly felt in destinations focused on foreign tourists.

Given the COVID-19 pandemic, the way in which contagions develop and the different measures imposed, it is natural that the demand for tourism may have undergone some changes, with tourists looking for smaller and possibly more isolated units (contrary to what was identified in [4–7]). Therefore, considering the Portuguese context and the variation in turnover between 2019 and 2020, this work aims to determine whether there were significant differences in turnover, which to some extent measures the current demand for tourism, between the coastal and inland areas. In fact, inland Portugal, presenting greater economic, social, and demographic fragility, due to the circumstances associated with the COVID-19 pandemic, may be more attractive to tourists. For example, rural tourism units may be more attractive when there is a need for social distancing, as they are mainly located in regions with more traditional lifestyles, lower population density, and are more associated with the outdoors [34,35]. This movement may also be associated with the changing pattern of preferences from international tourism to domestic tourism, which may have served to offset the reduction in domestic activity [36], as had already happened in the past, associated with other events [37].

These factors may have contributed to a possible change in demand patterns, either because of the distancing rules in force in Portugal, or because of people's fear of being in crowded places [38], leading to less densely populated regions becoming more attractive [33,39,40].

Therefore, the main hypothesis to be studied is the following (H1): COVID-19 has a weaker negative impact on inland than on coastal areas. Subsequently, a second hypothesis will be analyzed (H2): the impact of business volume variation is related to population density. Both hypotheses could be related to the findings presented in [33,39,40], i.e., during the pandemic, tourists could have searched for destinations where social distancing was easier, considering that districts with low population density, in Portugal, are mostly inland, as seen in Figure 1 (figures were built using Excel tools and <http://mapinseconds.com/>) (accessed on 15 September 2022).

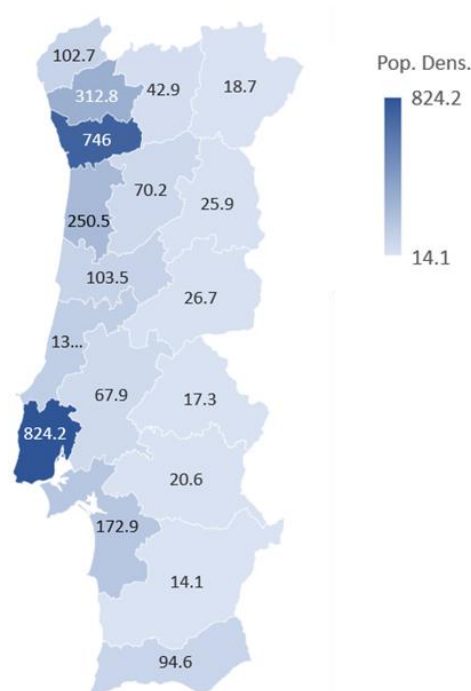


Figure 1. Population density (population per km²) in Portuguese districts. Source: INE.

This could be very relevant information for decision-makers, considering that the planning processes of low-density territories could take the opportunity to form measures to potentiate incoming tourism, searching also for greater sustainability of their territories.

The rest of the article is organized as follows: Section 2 presents the material and methods used in this research, in particular information about the sample and the different tests used; Section 3 shows the results while Section 4 concludes and presents possible implications.

2. Materials and Methods

In order to analyze whether there are differences in the variation in business turnover between coastal and inland tourism units in Portugal between 2019 and 2020, we retrieved data for this variable (turnover) from all companies in the country. Based on the SABI database, we retrieved information for all companies with the following information: (i) Economic activity codes associated with sector 55—Accommodation; (ii) turnover equal to or greater than 1000 euros for each year between 2018 and 2020 (to ensure that the companies in question were already in regular operation for at least one year before COVID-19 was firstly detected); (iii) be based in mainland Portugal (the autonomous regions of Madeira and the Azores were excluded, as travel restrictions could bias the results of these units).

In total, data were obtained for 5237 companies, which were later controlled by the different municipalities and districts of mainland Portugal, with the districts of Beja, Bragança, Castelo Branco, Évora, Guarda, Portalegre, Santarém, Vila Real and Viseu being considered as inland (as well as the respective municipalities). Coastal and inland districts are seen in Figure 2, as well as the number of tourist units considered in the analysis, showing that inland territories have fewer units than coastal ones. It should be noted that the district of Beja has a strip of territory on the coast, but as this is small, the district was considered as inland.

Table 1 shows some descriptive statistics for the business volume in 2019 and 2020, showing that between those dates that variable decreased by about 60.5%. However, the situation is different if we consider the different districts and municipalities, as we will see in the following section. After an analysis of the results, we will perform the usual tests (Kolmogorov–Smirnov to assess normality, t-test for equality of means and Mann–

Whitney non-parametric tests) to identify possible differences in statistical significance between inland and coastal territories, considering the variation in business volume. We also perform a regression analysis to this database.



Figure 2. Portuguese districts. The left panel identifies with darker/lighter shading coastal/inland territories. The right panel identifies the number of tourist units used in the study, in each district.

Table 1. Descriptive statistics for business volume in 2019 and 2020.

	Business Volume 2019	Business Volume 2020
Total (thousand €)	4,278,502.18	1,688,957.62
Mean	816.98	322.50
Maximum	98,848.62	31,064.01
Minimum	1.19	1.00
Standard. Deviation	3456.67	1197.58

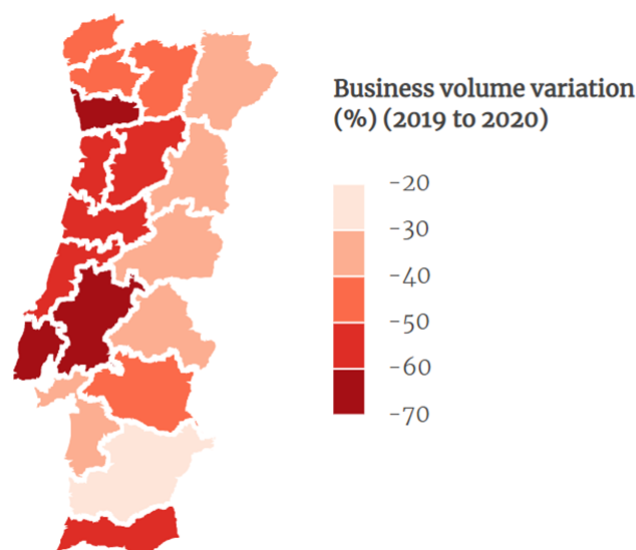
3. Results

We began by analyzing the behavior of business volume variation, between 2019 and 2020, in the different Portuguese districts, with the results presented in Table 2 and in Figure 2. This shows that the smallest decrease was in Beja (28.81%) while the biggest was in Lisbon (66.06%). Moreover, the information in Figure 3 seems to show that inland districts have less variation in business volume. This could be related to the findings already stated in [33,39,40], seeming to confirm that, at the end of lockdown, tourists searched for low-density territories. Combining this with the lower number of tourist units could explain the lower values in districts such as Beja, Bragança, Castelo Branco, and Guarda, which probably also have units with more reduced capacity, unlike Lisbon or Porto, where there is more mass tourism.

In fact, average business volume variation is -40.86% in inland districts and -52.77% in coastal ones, being statistically different, as identified in Table 3. We applied the Kolmogorov–Smirnov test to analyze the normality of the data, with no rejection of the null hypothesis. Considering the reduced number of observations, we also applied a non-parametric test, confirming that the results are different between coastal and inland districts.

Table 2. Business volume variation in tourism units, between 2019 and 2020, in Portuguese districts.

District	Business Volume Variation %
Aveiro	−50.07
Beja	−28.81
Braga	−48.23
Bragança	−31.83
Castelo Branco	−36.81
Coimbra	−54.16
Évora	−44.44
Faro	−57.90
Guarda	−34.54
Leiria	−54.37
Lisbon	−66.06
Portalegre	−30.45
Porto	−64.93
Santarém	−65.24
Setúbal	−31.03
Viana do Castelo	−48.20
Vila Real	−44.70
Viseu	−50.89

**Figure 3.** Business volume variation in tourism units, from 2019 to 2020, as a percentage, for the different Portuguese districts. Darker colors mean a bigger decrease in business.**Table 3.** Business volume variation mean and median, for Portuguese districts. The statistical test values refer to the t-test for equality means and to the Mann–Whitney for equally shaped distributions, with * indicating that the respective null hypothesis is rejected at 5% significance.

District Type	Mean	Statistical Test (T-Test)	Median	Statistical Test (Mann–Whitney)
Inland	−40.86%	−2.267 *	−36.81%	−2.075 *
Coastal	−52.77%		−54.16%	

If we disaggregate the results into municipalities, we find more detailed and interesting results. For the whole set of 278 Portuguese mainland municipalities, we have information about tourism units in 275 municipalities (just Cuba, Fronteira and Sardeal do not have tourism units available, considering the imposed conditions). Even with the COVID-19 pandemic, 15 municipalities had positive business volume variations between 2019 and 2020, ranging from a positive increase of 1.12% (in Alvito) to an increase of 130.2% (in Borba). Of the 15 municipalities with positive values, 11 belong to inland districts. On the

other hand, of the 50 municipalities with the greatest variation in business volume, only 13 belong to inland districts.

Figure 4 shows the business volume variation in the different municipalities. Although difficult to identify clearly, since the number of municipalities is relatively high, the shading seems to be darker along the coast. To confirm this, we perform the same tests which were made for the districts, with the results presented in Table 4. Considering the large number of municipalities, and the possible approximation to normal distribution, we started with the t-test, confirming with the use of a non-parametric test as the Kolmogorov–Smirnov test rejected the hypothesis of normality. Nevertheless, both the t-test and Mann–Whitney test confirm the statistical significance of the difference between coastal and inland municipalities.

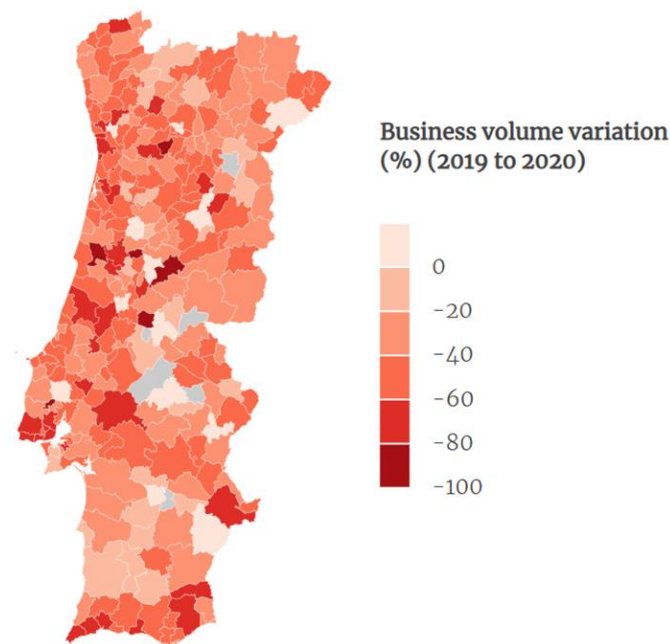


Figure 4. Volume of business variation in tourism units, from 2019 to 2020, as a percentage, for the different Portuguese municipalities. A darker color means a greater decrease in business variation.

Table 4. Business volume variation mean and median, for Portuguese municipalities. The statistical test values refer to the t-test for equality means and to the Mann–Whitney for equally shaped distributions, with ** and * indicating that the respective null hypothesis is rejected at 1% or 5% significance.

District Type	Mean	Statistical Test (T-Test)	Median	Statistical Test (Mann–Whitney)
Inland	−33.19%	−3.808 **	−37.55%	−4.228 *
Coastal	−44.12%		−47.79%	

Considering the possible relationship between the impact of tourism and population density, and because we have population density disaggregated for the different municipalities, we analyze the correlation between those two variables. The Pearson correlation coefficient between business volume variation and population density in the municipalities is equal to -0.179 , meaning that inland municipalities have less variation in business volume. Although a weak correlation [41], it is statistically significant (the p -value of the test is equal to 0.003). If we use the Spearman correlation, a non-parametric measure to analyze the correlation of the order of the variables, it is equal to -0.375 , with a p -value of 0.000.

In order to complement our analysis, we performed a regression analysis, considering the variables which were previously used for the municipalities. In particular, we perform the following relationship:

$$\Delta business\ variation_i = \beta_0 + \beta_1 inland_i + \beta_2 density_i + u_i \quad (1)$$

with $\Delta business\ variation$ as the business variation in the municipality i , $inland$ a binary variable equal to 1 if the municipality is *inland* and $density$ the population density of the municipality.

$$\Delta business\ variation_i = \frac{-0.4215}{(0.0223)} + \frac{0.0914}{(0.0299)} inland_i - \frac{0.00035}{(0.00002)} density_i \quad (2)$$

when both variables are simultaneously controlled, we continue having a positive impact of *inland* as well as a negative impact of the population density in the variation volume, confirming the relevance of the variables. Moreover, both variables have significant regressors, with p -values being, respectively 0.002 and 0.046. The r-square of the regression is 0.0643, although significant, implicating the relevance of the relationship.

The application of a simple pooled OLS regression, with only two variables related, with the nature of the data, being a limitation of the actual analysis. The existence of a longer sample, to be obtained in the future, will allow to extend this work, including performing panel data analysis.

4. Discussion and Conclusions

The COVID-19 pandemic had a significant impact on the economic activity and on practically all sectors of activity, largely due to the different confinements and the consequent paralysis of these sectors. With low levels of mobility, both nationally and internationally, tourism was one of the most severely affected sectors.

With the gradual reopening of economic activities in 2020, and with the easing of some of the restrictions, it was possible for this sector to recover somewhat. However, due to the different characteristics of tourist areas, and considering the Portugal situation, where there is some duality between the coast and inland, namely in relation to the possible agglomeration of people, it is relevant to analyze whether there are significant differences among them.

Based on this possibility and on data from companies operating in Portugal, and distinguishing between tourist units operating on the coast or inland, it was possible to identify significant differences in the variation of business volume due to location of the tourist unit. Particularly, tourist units located in inland districts present significantly less reduction of activity than those on the coast, which confirms both hypotheses, and is in line with the studies identifying that during the pandemic tourists probably looked for less densely populated areas [33,39,40].

These results are particularly relevant at several levels. In sociological terms, this result indicates there may have been a search for less densely populated areas, probably searching for greater security (consistent with the results presented, for example, in [4–7]). In economic terms, the results are also relevant at several levels. First, they allow the owners of these tourist units to continue to draw attention to this type of issue, even more so at a time when, despite more moderate levels in terms of effects, the pandemic is still present. Secondly, and perhaps more importantly, regional authorities themselves and even regional tourism directorates can use this type of information to create and/or reinforce measures to boost the tourist potential of inland areas. This type of initiative is very relevant because these areas generally have some economic weaknesses, and measures and policies can be designed for the medium-long term, allowing more sustainable levels of growth and economic development.

This study finds a preliminary set of results, which could be developed in future research, crossing, for example, with macroeconomic indicators such as unemployment, other variables related to tourism, such as tourist flows, seasonality, or the typology of the company (for example, if it is a hotel, motel, house, villa and so on, as well as the respective size) or even with firm demography data, such as the opening or closure of new companies. Another possible path for future research is the possibility of differentiating between internal and external visitors, or analysis of the impact of measures drawn up after the reopening of tourism activity, aiming to attract tourists to niche markets, as opposed

to mass tourism, as referred to in [28]. This kind of information is not available in the database used, and nor is there any information for more recent economic years, which are limitations which could be overcome in future studies.

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