

IMPACT OF TOURISM ON PORTUGAL'S REGIONAL DEVELOPMENT

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Abstract: *It is widely recognized that tourism is an essential factor in the economic development of the regions. However, the different socio-demographic characteristics of each region can contribute to attracting or not tourists and tourist investment.*

In this chapter, the regional characteristics that contribute to the attraction of tourism are analyzed and carried out through linear regression models.

Likewise, the authors analyze the impact of tourism on the development of regions, in terms of unemployment and wealth creation.

The authors also try to understand the degree of dependence of the regions on foreign tourism, given that the tourism sector was severely affected by the beginning of the pandemic.

This analysis is made in Portugal, by NUTS II, comparing the different regions of the country.

Keywords: *Monetary income, Unemployment, National tourism, Foreign tourism, NUTS II.*

1. INTRODUCTION

The interest in the development of the interior of the countries is growing and has been supported by the European Union, for example, through financing. In a more traditional view, regional policies try to fight regional asymmetries, facilitating the mobility of productive factors and promoting the material and immaterial well-being of territories, through the redistribution and financing of collective facilities in favor of less developed regions (eg. Silva, R., & Ferreira-Lopes, A., 2014 and Aicep 2017).

Portugal, with its accession to the European Economic Community on January 1st of 1986, started to benefit from financial aid provided by the European Structural Funds. And, over the years, investments have been made and measures have been taken to promote competitiveness and development to reduce the economic and social disparities that exist among the regions of Portugal.

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Tourism is a strategic economic activity for the country's economic and social development, namely for employment and for the growth of exports and the strategy advocated by Turismo de Portugal for the next decade is the theme highlighted in this edition of global Portugal, where we detail the main lines of action that aim to position Portugal as one of the most competitive, innovative and sustainable tourist destinations in the world, becoming a reference in the production of goods and services for the tourist activity. The strong growth of this sector in recent years has largely contributed to the development of the national economy - currently, it has a weight of almost 7 percent in the Gross Domestic Product, being today the largest export economic activity in the country, responsible for 16.7 percent of total exports. (Turismo de Portugal, 2017 and Aicep, 2017).

The level of economic development in the region's influence and is influenced by the sociodemographic characteristics of the population, as well as by several other factors, one of which being tourism. Tourism has increasingly assumed itself as one of the main factors that contribute to regional development. These factors are both cause and effect of the economic results of the regions.

In this study, the authors analyze the impact of sociodemographic factors on tourism development in Portugal. Subsequently, the impact of tourism on the development of regions is analyzed, through the analysis of its relationship with unemployment and wealth creation. In other words, this study does not focus on policy analysis and/or support for regional development. The defined objective is to compare the regions of Portugal (NUTS II) regarding the average income of workers, considered here as a representative measure of economic growth and concerning the reduction of the unemployment rate, also considered as a representative measure for the improvement of economic conditions of the population. And to do this, the authors prepared a database at the regional level, with data collected from the PORDATA database (Portugal Contemporary Database).

This work is divided as follows: first, it is presented the literature review where several factors are considered essential to the development of regions and the reduction of asymmetries between them. The description of the variables considered in this study is presented below, as well as the respective descriptive statistics for each of the regions. This is followed by the presentation of the research hypotheses, the estimated regression models, and their analysis, which is complemented by the comparison between regions. Finally, the main conclusions, limitations, and suggestions for future research on this topic are presented.

2. LITERATURE REVIEW

One of the European Union's main objectives is to reduce economic and social inequalities. This goal must be achieved both at the national and regional levels (OECD, 2019). This concern has been increasing in recent years, with policies and support that promote the development of the regions, at the level of NUTS II and NUTS III.

Regional development is a broad term, but it can be seen as a general effort to reduce regional disparities through support (employment and wealth generation) for economic activities in the regions.

In the past, regional development policy tended to try to achieve these goals by developing infrastructure on a large scale and attracting foreign investment. (OECD, 2019)

Previous policies have failed to significantly reduce regional disparities and have been unable to help less developed regions to catch up, despite the allocation of significant public funds. The result is the underutilized economic potential and weakened social cohesion.

Silva & Ferreira-Lopes (2014) highlight that Portugal remains a country marked by regional asymmetries and that needs better mechanisms and policies for regional governance. These authors developed a study where they create a regional development index (NUTS III) and for that they highlight the importance of factors such as quality of life, tourism, health, and access to knowledge, having later pointed out the importance of political and environmental factors as being equally important to compare equality/inequality between regions. According to these authors, Lisbon occupies the first position in the ranking, although three NUTS III regions in the interior have moved to the first 10 in 2009 - Beira Interior Sul, Baixo Alentejo, and Alentejo - and other NUTS III regions in the interior have improved concerning positions in the ranking.

The increase in interest in local economies and, in particular, in the way they create wealth and increase the quality of life, which agents are involved, which conditions and determining factors, fuels feed the growing interest of academics and policymakers.

According to the Strategy and Studies Office of the Portuguese Ministry of Economy and Digital Transition, regional development policies arise from the need to promote the competitiveness of territories and reduce the economic and social disparities that exist between the regions of Portugal and, in their European funds, also in the EU. Considering that, among other factors, a way to make competitiveness sustainable in the long run may be linked to the development of "clusters" that allow the use of agglomeration economies and positive externalities. The Strategy and Studies Office (2014) highlights the observations of Porter (1990), which indicates that „clusters" have the potential to improve competitiveness in three different ways:

- Increase the productivity of companies.
- Promote the capacity for innovation in products and processes.
- Stimulate the creation of new companies.

Several studies highlight the importance of entrepreneurship to boost regional development (for example, Baptista, Escária, & Madruga, 2008; Rodríguez-Pose, 2013; Šoltés & Repková Štofková, 2016). However, regional development policies consider different dimensions - the role of cities, urbanism, accessibility, and other geographic issues, demographic problems, the environment, macro-regional strategies such as the organization of the territory, etc. - its effectiveness and efficiency are highly dependent on the participation of local agents (Strategy and Studies, 2014).

Pauhofová & Stehlíková (2018) highlight in their study the relationship between unemployment and income from work. These authors report that the problem of high unemployment and expected additional growth appears repeatedly among the main global trends, together with the increase in social instability. In their study, the authors concluded that Slovakia continues to be affected by high rates of unemployment, mainly in the long-term.

Tamásy (2006), in his study, applied to Germany, highlights, among other factors, the impact of startups in reducing inequalities at the regional level. In this sense, it emphasizes the importance not only of the concept of entrepreneurship but of the need to stimulate knowledge and the development of human capital. Gennaioli, Porta, Lopez-De-Silanes & Shleifer (2011)

presented a highly comprehensive study, including 110 countries, where they combine the interregional analysis of the geographic, institutional, cultural, and human capital determinants of regional development with an examination of the several thousand establishments located in these regions. These authors concluded that the evidence points to the primordial importance of human capital in accounting for regional differences in development, but also suggests, based on the model's estimate and calibration, that business inputs and human capital externalities are essential for understanding the data.

In other studies, the emphasis is on innovation and technological development, which is increasingly important for reducing regional inequalities and promoting national and regional economic growth (Grillitsch & Sotarauta, 2020). Correia & Pereira (2007) refer that since the structure of the Portuguese corporate business fabric is characterized by the predominance of medium and small companies, and given the limitations that much of the literature attributes to these companies about their innovative capacity, it makes sense to explore the role that universities - and the research developed there - can play in the process of producing and disseminating knowledge. However, these authors concluded that the results obtained with this work do not allow to prove that the performance of companies is influenced by the proximity of universities.

Related to business activity, innovation and technological development are the conditions for access to information and knowledge sharing. It is in this sense that information and communication technologies (ICT) play an important role in regional development. The growing concern about the effects of the rapid development of ICT and its increasing integration in the daily lives of citizens and organizations has largely influenced the debate in scientific and political circles about the relationship between ICT and regional development. Santinha, Marques, & Anselmo de Castro (2006) emphasize that, on the one hand, there is a legitimate concern to promote equal opportunities, which is why territorial cohesion and harmonization are fundamental. On the other hand, there is a concern to generate agglomeration effects that benefit social and economic development and justify a differentiated action. Basically, it is a matter of avoiding being excluded from the advantages of the current globalization of opportunities.

The environmental topic assumes an increasingly predominant role in academic and political discourses. The awareness of its importance has led to more studies that seek to determine the impact of environmental issues on national and regional development. This importance is present in the political measures implemented and aim to promote the development of the regions, guaranteeing the satisfaction of the population's needs and at the same time assure an adequate use of resources. According to Gibbs (2000), some authors argue that ecological modernization is a much more rigorous approach that focuses on reconciling the tensions between economic development and the ecological crisis to form a new development model for capitalist economies. Gibbs (2000) states that ecological modernization may have more to offer as a theoretical approach where it allows us to think about these policy implementation problems.

Last but not least, it is necessary to reinforce the importance of tourism for the development of the regions. It is an activity sector that contributes strongly to the creation of wealth and employment, given that, as mentioned by Vigliarolo (2020), it is a strategic sector in which families invest. Other authors like Gibbs (2000) highlight the importance of the relationship between tourism and other determinants of regional development, such as the fact that the growing awareness that the pursuit of environmental goals can stimulate new economic activities and jobs in sectors related to the environment, and also in other sectors, such as tourism and leisure,

which benefit from a cleaner environment. In the same sense, Szymanska (2018) highlights the importance of sustainable tourism, this concept is equally essential to the development of the regions.

Specifically, for Portugal, the study of Silva & Ferreira-Lopes (2014) concluded that Lisbon is expanding in quality tourism. Since more industrialized areas, such as the Setúbal Peninsula, have a considerable level of development, although not in the tourist sector. Northern NUTS III are highly industrialized regions, but in decline, due to increasing competition from China and India in traditional sectors (for example, textiles, footwear, and leather) and with workers exhibiting low skills and productivity. In turn, the NUTS III of the Algarve, Azores, and Madeira base their economic specialization on tourism. The interior regions are mainly specialized in agriculture, a sector in decline. Low-skilled workers in these regions have little incentive to increase their skills, due to the higher rate of unemployment among highly skilled workers in those regions.

In conclusion, it is possible to say that regional development results not from a single factor, condition, or agent, but from all of them together, although differently from region to region.

3. DATA AND METHODOLOGY

The purpose of the study presented in this chapter is to understand what factors influence the development of tourism in the regions of Portugal. It is also intended to analyze the impact that tourism, together with other sociodemographic factors, has on the economic development of the regions. The analysis was made through the differentiation of the regions of Portugal by NUTS (Nomenclature of Territorial Units for Statistical Purposes). This nomenclature was created by Eurostat in the early 1970s, to harmonize the statistics of the various countries in terms of the collection, compilation, and dissemination of regional statistics.

The Pooled OLS method was used to estimate the parameters, considering robust standard errors. Carrying out a panel diagnostic test, the null hypothesis of the adequacy of the Pooled OLS model was not rejected. The nomenclature is subdivided into 3 levels (NUTS I, NUTS II, NUTS III), defined according to population, administrative and geographical criteria.

In this study, it is considered the division by NUTS II, since for some variables under study there is still no information available for NUTS III. In this case, NUTS II refers to the regions: North, Center, Lisbon Metropolitan Area, Alentejo, Algarve, Autonomous Region of the Azores, and Autonomous Region of Madeira.

The factors considered in the analysis were selected based on the following dimensions:

- Tourism,
- Population,
- Education,
- Security,
- Business/entrepreneurship,
- Information and communication technologies,
- Environment quality,
- Culture and sport.

And to achieve these objectives, we collected data from the PORDATA database, Database of Contemporary Portugal, organized and developed by the Francisco Manuel dos Santos Foundation. Our data are annual and referring to the period from 2009 to 2019.

The variables were selected based on the literature review carried out and they are:

- Population density - the average number of individuals per km² (DP),
- Education: Resident population aged 15 and over without secondary education (%) (PD),
- Graduates per 100 students enrolled in higher education (GEE),
- Security: Crimes registered by the police per thousand inhabitants (CRBP),
- Unemployment rate (%) (UR),
- Average monthly basic remuneration of employees in euros (AMBRE),
- Business/entrepreneurship: Density of non-financial companies - the average number of non-financial companies per km² (DNFC),
- ICT: Private households with an Internet connection (%) (PHWIC),
- Environment quality: Expenditure by municipalities on the environment as % of total expenditure (EBMOE),
- Culture and sport: Expenditure of City Councils on culture and sport as % of total expenditure (EBCCCS),
- Tourism by type of resident:
 - The average stay in tourist accommodation: residents in Portugal (ASTAP),
 - The average stay in tourist accommodation: residents abroad (ASTAA)
- Income from tourism by type of accommodation:
 - Income from overnight stays per guest in tourist accommodation (total in euros) (IFOST),
 - Income from overnight stays per guest in tourist accommodation (hotels) (IFOSH).

To achieve the previously defined objectives and based on the literature review carried out, the following research hypotheses were formulated:

- H₁**: population density contributes to the increase in tourists and income from tourism.
- H₂**: the education of the population contributes to the increase in tourists and income from tourism.
- H₃**: lower levels of crime contribute to the increase in tourists and income from tourism.
- H₄**: higher levels of unemployment contribute to the decrease in tourists and income from tourism.
- H₅**: higher levels of income of the resident population contribute to the increase in tourists and income from tourism.
- H₆**: higher levels of entrepreneurship contribute to the increase in tourists and income from tourism.
- H₇**: better ICT conditions contribute to the increase in tourists and income from tourism.
- H₈**: efforts to improve the environment contribute to the increase in tourists and income from tourism.
- H₉**: efforts to improve cultural and sports development contribute to the increase in tourists and income from tourism.
- H_{10a}**: the increase in tourists contributes to the reduction of unemployment in the regions.
- H_{10b}**: the increase in tourists contributes to the increase in the wealth of the regions.
- H_{11a}**: income from tourism contributes to the reduction of unemployment in the regions.
- H_{11b}**: income from tourism contributes to increasing the wealth of the regions.

The correlation matrix between the variables used is presented below, as well as the main descriptive statistics.

First, it is possible to verify that regarding the main variables under analysis, the main differences between the regions of the country are:

- The average stay in tourist accommodations by tourists living in Portugal is an average of 2.2 nights at the national level, and these values vary between 1.5 and 3.7 nights. In other words, Portuguese tourists tend to enjoy short stays in Portugal.
When comparing the different regions of the Portuguese territory, it appears that the autonomous regions of the Azores and Madeira are above the national average, with average stays of 2.4 nights and 3.1 nights, respectively. The biggest difference is found in the Algarve, where tourists residing in Portugal spend an average of 3.5 nights in this region.
- When analyzing the average stay in tourist accommodation residing abroad, it appears that the preference for the previously mentioned regions remains. The national average is 3.3 nights, varying between 1.7 and 6.1 nights. And, there is a clear tendency to stay more nights in the mentioned regions. In other words, foreign tourists spend an average of 3.7 nights in the Azores, 5 nights in the Algarve, and 5.9 nights in Madeira.
- In addition to analyzing the permanence of tourists in each region, it is important to analyze the income generated. In this sense, the average income, nationally, with overnight stays per guest in tourist accommodations (total) is € 101.30. Algarve, Azores, and Madeira remain above average, with an average income of € 151.10, € 102.80, and € 160.20 respectively. Besides, the Lisbon Metropolitan Area has an average income of € 107.40. In this case, even though the Lisbon region does not stand out in terms of the average number of nights in terms of residents' stay, the profits obtained place this region in a prominent position.
- When analyzing income from overnight stays per guest in hotels, where the average income is € 106.30, Lisbon is again highlighted with an average income of € 114.80. The clear highlight remains in the Algarve and the Autonomous Region of Madeira with revenues of € 177 and € 171.90 respectively.
- It is also essential to analyze the development of the different regions and an appropriate indicator for this analysis is the unemployment rate. The average unemployment between 2009 and 2019, at the national level, is 11.4%, having fluctuated between 4.9% and 18.5% during these years. In this case, only the Centro Region and the Autonomous Region of the Azores are below the national average with 8.5% and 11.2% respectively. The remaining regions are slightly above average, with no marked differences between them.
- Equally important for assessing the development of the regions is the population's income, measured through the average monthly base salary of employees. In this case, individuals receive an average of € 871.80, and between 2009 and 2019, the average remuneration varies between € 775.90 and € 1187.10. When comparing regions, there is a clear highlight for Lisbon with an average remuneration of 1,152.40 € and the Madeira region with 875 €. In other words, of the regions with slightly above average unemployment rates, Lisbon and Madeira, remain with higher wages.

Table 1. Correlation Matrix
 Correlations between all the variables present in the study

	DP	PD	GEE	CRBP	UR	AMBRE	DNFC	PHWIC	EMBOE	EBCCCS	ASTAP	ASTAA	IFOST	IFOSH
DP	1	-.607**	,088	,164	,130	,976**	,992**	,349**	,590**	-.412**	-.143	-.001	,298*	,302**
N		77	77	70	77	59	70	77	70	70	77	77	73	72
PD		1	-.035	-.133	,131	-.741**	-.660**	-.724**	-.271*	,281*	,062	,124	-.258*	-.282*
N			77	70	77	59	70	77	70	70	77	77	73	72
GEE			1	-.526**	,196	,012	,001	,124	,408**	-.425**	-.093	,130	-.012	-.027
N				70	77	59	70	77	70	70	77	77	73	72
CRBP				1	,133	,171	,216	-.062	-.191	,073	,463**	,256*	,332**	,395**
N					70	59	70	70	70	70	70	70	66	65
UR					1	,066	,099	-.232*	,153	-.456**	,094	,149	-.011	-.001
N						59	70	77	70	70	77	77	73	72
AMBRE						1	,982**	,488**	,495**	-.464**	-.197	-.083	,235	,219
N							59	59	59	59	59	59	56	55
DNFC							1	,388**	,516**	-.345**	-.158	-.052	,276*	,282*
N								70	70	70	70	70	66	65
PHWIC								1	,242*	-.340**	,120	,135	,432**	,405**
N									70	70	77	77	73	72
EMBOE									1	-.645**	,309**	,533**	,611**	,580**
N										70	70	70	66	65
EBCCCS										1	-.413**	-.561**	-.636**	-.631**
N											70	70	66	65
ASTAP											1	,924**	,871**	,888**
N												77	73	72
ASTAA												1	,892**	,886**
N													73	72
IFOST													1	,989**
N														72
IFOSH														1

* p-value <0.1, ** p-value <0.05, *** p-value <0.01

Table 2. Descriptive statistics of all the variables present in the study by the country

	N	Minimum	Maximum	Mean	Standard Deviation
Portugal					
DP	77	22,3	946,8	247,3	297,4
PD	77	48,2	80,9	67,6	7,4
CRBP	70	23,7	64,0	36,0	9,4
UR	77	4,9	18,5	11,4	3,6
AMBRE	59	775,9	1187,1	871,8	124,4
DNFC	70	2,4	121,6	27,7	35,2
PHWIC	77	38,5	88,7	65,9	12,4
EMBOE	70	5,1	18,7	8,9	3,5
EBCCCS	70	4,0	16,9	9,6	2,3
ASTAP	77	1,5	3,7	2,2	0,7
ASTAA	77	1,7	6,1	3,3	1,5
IFOST	73	51,9	180,4	101,3	42,3
IFOSH	72	48,3	209,7	106,3	51,6
Norte					
DP	11	167,9	174,3	170,8	2,5
PD	11	60,9	77,9	68,8	5,6
CRBP	10	27,9	34,0	30,9	2,4

UR	11	6,7	17,1	12,2	3,3
AMBRE	9	793,1	887,4	824,6	29,8
DNFC	10	16,4	20,3	18,2	1,2
PHWIC	11	47,3	77,9	63,8	10,5
EBMOE	10	6,6	8,5	7,6	0,7
EBCCCS	10	9,3	11,3	10,4	0,7
ASTAP	11	1,5	1,6	1,6	0,1
ASTAA	11	2,0	2,1	2,1	0,0
IFOST	11	56,8	84,6	65,4	10,7
IFOSH	11	58,8	90,8	69,4	11,6
Centro					
DP	11	78,6	83,0	80,8	1,6
PD	11	60,7	78,8	68,6	6,0
CRBP	10	25,5	33,5	29,6	3,2
UR	11	4,9	11,7	8,5	2,3
AMBRE	9	775,9	852,0	799,3	24,7
DNFC	10	8,2	9,4	8,9	0,4
PHWIC	11	41,4	76,7	61,2	11,5
EBMOE	10	6,1	7,8	6,9	0,6
EBCCCS	10	10,0	11,5	10,8	0,5
ASTAP	11	1,6	1,7	1,7	0,1
ASTAA	11	1,9	2,1	2,0	0,1
IFOST	11	51,9	61,0	54,9	3,5
IFOSH	11	51,1	59,7	54,8	3,1
Lisbon					
DP	11	931,4	946,8	937,2	4,9
PD	11	48,2	64,4	55,9	5,6
CRBP	10	37,6	48,2	42,3	4,1
UR	11	7,1	18,5	12,3	3,8
AMBRE	9	1137,4	1187,1	1152,4	16,1
DNFC	10	101,2	121,6	110,9	7,4
PHWIC	11	55,4	88,7	75,1	10,7
EBMOE	10	9,9	13,9	12,1	1,1
EBCCCS	10	6,8	16,9	8,3	3,1
ASTAP	11	1,7	1,8	1,8	0,0
ASTAA	11	2,5	2,6	2,5	0,1
IFOST	8	53,5	133,2	107,4	25,8
IFOSH	7	55,5	143,4	114,8	30,6
Alentejo					
DP	11	22,3	24,2	23,3	0,7
PD	11	62,8	78,8	70,2	5,2
CRBP	10	27,7	34,3	30,5	2,0
UR	11	6,9	16,9	11,8	3,3
AMBRE	9	789,7	849,9	810,8	18,1
DNFC	10	2,4	2,7	2,6	0,1
PHWIC	11	38,5	73,9	56,5	11,4
EBMOE	10	5,5	8,4	6,6	1,0
EBCCCS	10	10,4	12,7	11,7	0,7
ASTAP	11	1,7	1,8	1,7	0,1
ASTAA	11	1,7	1,9	1,8	0,1
IFOST	11	56,0	80,4	64,8	7,9
IFOSH	11	48,3	65,4	53,9	5,6
Algarve					
DP	11	87,8	89,8	88,7	0,7
PD	11	59,9	71,3	64,9	3,8

CRBP	10	47,1	64,0	52,9	6,4
UR	11	6,4	17,6	11,9	4,0
AMBRE	9	780,5	836,1	795,5	17,7
DNFC	10	10,9	14,7	12,5	1,3
PHWIC	11	50,6	80,3	65,8	9,4
EBMOE	10	6,9	9,0	7,7	0,7
EBCCCS	10	6,5	12,5	9,3	2,0
ASTAP	11	3,4	3,7	3,5	0,1
ASTAA	11	4,4	5,4	5,0	0,3
IFOST	11	130,6	180,0	151,1	20,6
IFOSH	11	151,3	209,7	177,0	23,3
A.R.Azores					
DP	11	104,6	106,6	105,9	0,7
PD	11	69,6	80,9	75,0	4,5
CRBP	10	35,7	43,8	39,6	3,2
UR	11	6,7	17,0	11,2	3,7
AMBRE	5	795,9	857,5	823,3	26,9
DNFC	10	10,5	12,2	11,2	0,5
PHWIC	11	46,7	86,5	70,3	13,5
EBMOE	10	5,1	6,9	6,0	0,5
EBCCCS	10	8,3	12,3	10,5	1,5
ASTAP	11	2,3	2,6	2,4	0,1
ASTAA	11	3,3	4,1	3,7	0,2
IFOST	11	93,2	117,6	102,8	7,7
IFOSH	11	90,3	118,0	101,0	9,0
A.R.Madeira					
DP	11	317,0	333,7	324,6	6,5
PD	11	62,3	77,1	70,1	5,1
CRBP	10	23,7	30,9	26,4	2,5
UR	11	6,9	18,1	12,0	4,1
AMBRE	9	855,1	902,4	875,0	14,3
DNFC	10	25,6	34,8	29,4	3,0
PHWIC	11	49,7	86,1	68,5	12,8
EBMOE	10	11,7	18,7	15,8	2,4
EBCCCS	10	4,0	7,7	6,2	1,4
ASTAP	11	2,9	3,1	3,1	0,1
ASTAA	11	5,6	6,1	5,9	0,2
IFOST	11	140,4	180,4	160,2	12,1
IFOSH	11	144,0	196,2	171,9	16,8

4. RESULTS

The first four regression models presented intend to analyze which are the determinants to attract more tourists (national and foreign) and increase the profits obtained in tourist accommodations (total and hotels). These first models, allow testing the validity of hypotheses H_1 to H_9 .

Table 3. Model 1 (Dependent variable: ASTAP)

intercept	-3.443** (1.16)
DP	-0.002*** (0.0005)
PD	0.018* (0.099)

CRBP	0.067*** (0.001)
UR	-0.042*** (0.009)
AMBRE	0.004*** (0.001)
DNFC	-0.016** (0.006)
PHWIC	0.018*** (0.002)
EBMOE	0.107*** (0.016)
EBCCCS	-0.234*** (0.027)

Standard deviation between brackets, $R^2=0.9854$, $F=237.09***$, $N=7$, $t=8$

* p-value <0.1, ** p-value <0.05, *** p-value <0.01

The residuals are normally distributed and are not autocorrelated.

In Model 1 we can see the variables PD, CRBP, AMBRE, PHWIC, and EBMOE contribute positively to explain ASTAP, and the variables DP, UR, DNFC, and EBCCCS contribute negatively to explain ASTAP.

Table 4. Model 2 (Dependent variable: ASTAA)

intercept	-8.534*** (2.01)
PD	0.083*** (0.018)
CRBP	0.0105*** (0.099)
UR	-0.067*** (0.022)
DNFC	-0.025*** (0.049)
PHWIC	0.049*** (0.005)
EBMOE	0.033*** (0.039)
EBCCCS	-0.24* (0.102)

Standard deviation between brackets, $R^2=0.89$, $F=602.65***$, $N=7$, $t=10$

* p-value <0.1, ** p-value <0.05, *** p-value <0.01

The residuals are normally distributed and are not autocorrelated.

In Model 2 we can see the variables PD, CRBP and PHWIC contribute positively to explain ASTAA, and the variables UR, DNFC and EBCCCS contribute negatively to explain ASTAP.

Table 5. Model 3 (Dependent variable: IFOST)

intercept	-310.968** (85.16)
DP	-0.197*** (0.039)
PD	1.703** (0.547)

GEE	-2.841* (1.427)
CRBP	2.668*** (0.206)
UR	-2.088 (0.595)
AMBRE	1.51** (0.146)
PHWIC	7.4*** (1.0127)
EBMOE	7.4*** (1.027)
EBCCCS	-12.481*** (2.048)

Standard deviation between brackets, $R^2=0.89$, $F=456,725^{***}$, $N=7$, $t=10$

* p-value <0.1, ** p-value <0.05, *** p-value <0.01

The residuals are normally distributed and are not autocorrelated.

In Model 3 we can see the variables PD, CRBP, AMBRE, PHWI and EBMOE contribute positively to explain IFOST and the variables DP, GEE, UR and EBCCCS contribute negatively to explain IFOST.

Table 6. Model 4 (Dependent variable: IFOSH)

intercept	155,91** (28.0228)
DP	0.329*** (0.069)
CRBP	3.458*** (0.331)
UR	-5.972*** (0.835)
DNFC	-3.355*** (0.541)
PHWIC	1.361*** (0.278)
EBCCCS	-19.0897*** (1.0127)

Standard deviation between brackets, $R^2=0.809$, $F=1776,893^{***}$, $N=7$, $t=10$

* p-value <0.1, ** p-value <0.05, *** p-value <0.01

The residuals are normally distributed and are not autocorrelated.

In Model 4 we can see the variables DP, CRBP, and PHWIC contribute positively to explain IFOST, and the variables UR, DNF, PHWIC, and EBCCCS contribute negatively to explain IFOSH.

The results of these models allow us to verify that the population density can be attractive for the increase of non-resident tourists, as well as for the increase of tourist revenues. It is not the same regarding resident tourists, possibly because tourists residing in the country seek other types of tourism than city tourism. In this way, the H_1 is partially validated (only for foreign tourists).

It is expected that the areas with the highest population density will also be those with the highest levels of crime, so hypothesis H_3 is rejected. In other words, the results obtained suggest that, for the case of Portugal, the levels of crime do not influence the attraction of national or foreign tourists.

One factor that appears to be important for attracting tourists is the education of the population. Thus, hypothesis H₂ was validated. In the same sense, hypothesis H₄ is valid, where it was expected that regions with lower levels of unemployment become more attractive for national and non-national tourists. In turn, higher levels of income of the population are a determining factor to attract more resident tourists and also for the increase of gains obtained in the sector (partially validating hypothesis H₅).

The H₆ hypothesis has not been validated. In other words, entrepreneurship does not influence tourist attraction. This may be related to the conclusions of previous studies and referred to in the literature review, which reveals that the regions of Portugal with industrial characteristics are the ones that least developed the tourism sector.

Two factors that are decisive for this sector of activity are the development and access of ICT, as well as improvements in the environment. Hypotheses H₇ and H₈ have been validated.

On the other hand, efforts to boost cultural and sports development do not stop being a determining factor in influencing the choices of national and foreign tourists, hypothesis H₉ having been rejected.

After analyzing the determinants of the attraction of national and foreign tourists, as well as the income obtained in this sector of activity, it is important to analyze in what aspects tourism may be contributing to the development of the regions. Models 5 and 6 allow us to analyze the determinants of this development, having been used as dependent variables the unemployment rate (Model 5) and the average income of the population (Model 6).

Table 7. Model 5 (Dependent variable: UR)

intercept	41.416 *** (7,257)
DP	0.042 *** (0.01)
PD	-0.176 ** (0.066)
CRBP	0.442** (0.12)
DNFC	-0.489*** (0.11)
EBCCCS	-2.076 *** (0.319)
ASTAP	-5.985* (3.039)
IHOST	0.149* (0.068)
IFOSH	-0.115* (0.049)

Standard deviation between brackets, R²= 0.6283, F= 348.52***, N=7, t=10

* p-value <0.1, ** p-value <0.05, *** p-value <0.01

The residuals are normally distributed and are not autocorrelated.

In Model 5 we can see the variables DP, CRBP and IFOST contribute positively to explain UR, and the variables PD, DNFC, EBCCCS, ASTAP and IFOSH contribute negatively to explain UR.

In Model 6 we can see the variables DP, EBCCCS, and IFOST contribute positively to explain AMBRE, and the variables PD, ASTAA, and IFOSH contribute negatively to explain AMBRE.

The results of Model 5, allow us to highlight that higher levels of education of the population, as well as higher levels of entrepreneurship and investments in culture and sport, are factors that contribute to the reduction of the unemployment rate in the regions. Instead, higher population density and higher crime rates appear to contribute to the increase in unemployment.

Regarding the average number of nights that tourists spend in tourist accommodations in the regions, it appears that tourists residing in Portugal seem to contribute to the reduction of unemployment. This is not the case for foreign tourists and, therefore, the H_{10a} hypothesis is partially validated. The H_{11a} hypothesis is also partially validated, given that only the income obtained by hotels has an impact on reducing the unemployment rate.

Table 8. Model 6 (Dependent variable: AMBRE)

intercept	898,456*** (0.346)
DP	0.346*** (0.008)
PD	-2.847*** (0.337)
EBCCCS	4.181*** (0.601)
ASTAA	-12.333*** (1.822)
IFOST	2.79*** (0.44)
IFOSH	-0.195*** (0.343)

Standard deviation between brackets, $R^2=0.9879$, $F=27928^{***}$, $N=7$, $t=9$

* p-value <0.1, ** p-value <0.05, *** p-value <0.01

The residuals are normally distributed and are not autocorrelated.

Finally, the results of Model 6, which aims to analyze the factors that contribute to the average increase in the income of the population in the regions of Portugal, suggest that the average number of nights that tourists stay in tourist accommodations does not contribute to the income of the population and in this way the H_{10b} hypothesis is not validated. In turn, the H_{11b} hypothesis is partially validated, given that the income obtained in most tutoring accommodation has a positive impact on the average income of the population. In other words, the results suggest that for each € 1 more per day obtained in tourists' stays, the average monthly income of individuals increases € 2.79.

5. CONCLUSIONS, LIMITATIONS AND HYPOTHESES FOR FUTURE RESEARCH

The study presented in this chapter highlights the importance of better understanding the impact of sociodemographic factors in attracting tourists. Likewise, the impact of tourism on the development of the regions was analyzed.

As expected, factors such as population density and efforts to improve the environment of each region, as well as providing better conditions and cultural and sporting attractions, are factors that contribute positively to the increase in the number of tourists and gains obtained with tourism. Equally, higher levels of education of the population, lower unemployment rates, and the higher average income of the resident population appear to contribute positively to tourism.

When analyzing the impact of this sector on the development of the regions, it is confirmed that in general there is a positive relationship between tourism and the development of the regions. However, given the current pandemic situation, it is essential to deepen the knowledge about the degree of economic dependence of the tourism sector, mainly regarding foreign tourists. This is because the current pandemic situation is leading to a paradigm shift in terms of individuals' choices about their touristic options.

The regions of Portugal that have shown the greatest results in tourism are the Autonomous Region of the Azores, the Autonomous Region of Madeira, and the Algarve. These are the regions that attract the most tourists. The Metropolitan Area of Lisbon falls into this group when it comes to assessing revenues from tourism, possibly being one of the most expensive regions in the country.

The study presented has as main limitations the fact that it is not yet possible to contemplate the conditions resulting from the current pandemic situation. This information is extremely useful to consider in a future study. It was not possible to carry out this study with analysis by NUTS III, which limits the information obtained. This study is part of a work in progress and the possibility of trying to relate the impact of the tourism sector with other equally important sectors of economic activity should be considered.

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