

# Effects of the COVID-19 tourism crisis on the Spanish economy

Esther Vayá, José R Garcia , Jordi Suriñach and Ernest Pons

University of Barcelona, Spain

## Abstract

This study addresses the impact of the COVID-19 pandemic on the Spanish tourism sector and economy in general, at the national and regional levels, through a comparative analysis between the evolution observed in the sector and the evolution that could have happened had the pandemic not occurred. This study was conducted in two stages. First, the total tourist expenditures for 2020 and 2021 were predicted under the assumption that the pandemic had not occurred. In the second stage, the losses in terms of turnover, jobs and the contribution of the tourism sector to the gross domestic product (GDP) that would have occurred without the pandemic were estimated. We applied the input–output method and found that for every €1 000 less of tourist spending due to the pandemic, €1883 less were contributed to the GDP, and for every €100,000 less in spending, 2.8 jobs were lost.

## Keywords

tourism, COVID-19, tourist spending, prediction, economic impact, input–output tables

## JEL Classification

E65, C22, C67, L83, R15

## Introduction

The tourism sector, which is important to the Spanish economy and has high drag effects on other economic sectors, has been one of the industries most affected by the COVID-19 pandemic. In the European Union as a whole ([European Union, 2021](#)), the tourism sector employs 22.6 million people (11% of total EU employment) and accounted for 9.5% of the gross domestic product (GDP) in 2019. Satellite Accounts of Tourism (Instituto Nacional de Estadística [[INE](#)], [2022](#)) indicate that, for Spain as a whole, the tourism sector employs 2.67 million people (12.7% of total Spain

---

employment) and accounted for 157,355 million € (12.6% of its GDP) in 2019.<sup>1</sup> In addition, in some regions (or autonomous communities, CCAA) specialising in this sector, these percentages can be more than double.<sup>2</sup>

COVID-19 has particularly affected this sector as limiting people's mobility has been one of the main measures taken to tackle the pandemic. The objective of this article is to study the impact of the pandemic on the tourism sector and the economy in general, at the national and regional level, through a comparative analysis between the evolution observed in the sector in 2020 and 2021 ('COVID Scenario') and the evolution that this sector would have experienced had the pandemic not occurred ('No-COVID scenario').

This objective was achieved in two stages. First, monthly information was collected for the total tourist expenditure for the maximum number of periods available, and the monthly series for the years 2020 and 2021 was predicted under the assumption that the pandemic had not occurred. Based on this information, we conducted a comparative analysis of the real evolution of the tourist expenditure variable and the no-cost scenario, thus detecting potential losses to the tourism sector.

In the second stage, we estimated the potential economic impact derived from the reduction in tourism spending due to the COVID-19 pandemic in global terms for the entire economy, not only in the tourism sector. To do so, we used the input–output method, which considers the impact of a demand shock, such as a decrease in tourist spending, on all economic sectors – therefore, the multiplier and drag effects (indirect and induced) and not only the direct impact on tourism. In this way, and as in the first stage, the total impact results from both actual tourism spending in the years 2020 and 2021 and tourism spending that would have been recorded had there not been a pandemic. A comparison of the two scenarios allows to estimate the impact of the pandemic on the global economy. This estimate was conducted both at the national level and for a selection of Spanish regions (those for which information is available on total tourist spending, both for residents and non-residents) and was quantified based on the main economic macromagnitudes – production, employment and Gross Value Added (GVA), as well as its impact in terms of contribution to the GDP.

## Literature review

Interest in analysing the impact of the COVID-19 pandemic on the tourism sector and the economy as a whole is undoubtedly high. Extensive literature has addressed this subject, including both the impact already caused by the pandemic and the expected impact.<sup>3</sup> With regards to Spain, [Gago-García et al. \(2021\)](#) analysed the impact on employment in the tourism sector, both from the territorial point of view (municipalities and provinces) and gender, concluding that the most affected territories are highly specialised in the sector (sun and beach tourism), especially due to the fall in international demand, while the most resilient have been rural and mountainous (due to the preferences of national tourism). Along the same lines, [Arbulú et al. \(2021a\)](#) highlight the decline in tourism – especially international – in 2020 and the disparate effect in the Spanish regions (given that national tourism can cover only 10% of overnight stays in the Balearic Islands and Canary Islands but 70% in Castilla-La Mancha). [Rodousakis and Soklis \(2022\)](#) analysed the impact of international tourism on the Spanish and German economies,<sup>4</sup> and [Duro et al. \(2021\)](#) confirmed that the most vulnerable territories in Spain are the Balearic and Canary Islands, the provinces on the Mediterranean coast and the Community of Madrid. More generally, [Minondo \(2021\)](#) analysed the impact of COVID-19 on trade in goods and services for Spanish provinces (with special reference to the tourism sector).

Arbulú et al. (2021b) present points in common with the present paper, having analysed the impact on GDP using input–output models, although based on simulated data. Baños-Pino et al. (2021) also analysed the impact on the variable expenses per person – in this case, for the Spanish province of Oviedo. Internationally, the literature on the impact of the COVID-19 pandemic on the tourism sector and the economy as a whole is extensive. It includes, among others, Sen and Kovaci (2021) for Turkey,<sup>5</sup> Mursalina et al. (2022) for 22 provinces in Indonesia,<sup>6</sup> Škare et al. (2021) for world tourism as a whole and, especially, the European Union's (2021) findings for the set of European tourist regions. All of them have only partially considered the period affected by the pandemic. Thus, Sen and Kovaci (2021) and Škare et al. (2021) only analysed the effect of the first wave of the pandemic (Demir et al., 2021; Rodousakis and Soklis, 2022) or on the effects in the summer of 2020 (Baños-Pino et al., 2021). Mursalina et al. (2022) and Minondo (2021) analysed data up to June 2021 and August 2021, respectively, as did the European Union (2021), with data up to the summer of 2021.

Others, such as Aronica et al. (2022) and Škare et al. (2021), have tried to predict the medium- and long-term consequences of tourist arrivals, indicating that the effects would be heterogeneous depending on the characteristics of health systems, the severity of the shock and the level of uncertainty induced by the pandemic, with emerging and developing countries being the most affected. Arbulú et al. (2021a) highlight the importance of attracting national tourists as a substitute for international tourists. The same authors (2021b) analysed the forecasts for the drop in tourists in the Balearic Islands in 2020 and 2021, highlighting the high level of uncertainty that existed at that time about their evolution. A more up-to-date study is that of the European Union (2021), which examines the expected evolution in European tourist regions and highlights different evolutions according to the type of destination in a general framework of uncertainty. In any case, the diversity of intensity is confirmed, affecting more those who require air travel and are more dependent on international tourism, while the less affected regions are those of coastal and rural tourism and with stronger domestic markets.

The methods used in impact analyses have also been various depending on the objectives. Thus, in addition to strictly descriptive analyses, Jayasinghe et al. (2021) use the Autoregressive Distributed Lag (ARDL) and Autoregressive Integrated Moving Average (ARIMA) models; Škare et al. (2021) adopted the Panel Structural Vector Auto-regression model (PSVAR); Verryadi Purba et al. (2021) used the simple regression model; Baños-Pino et al. (2021) adopted several variants of regression models ('regression adjustment', 'inverse probability weighting regression' and 'propensity score matching'); Mursalina et al. (2022) chose regression models with panel data; Arbulú et al. (2021a) used the value-at-risk (VaR); Duro et al. (2021) relied on principal component analysis and regression models; and Arbulú et al. (2021b) adopted Monte Carlo simulations and probabilistic prediction models, also using input–output models. Finally, Rodousakis and Soklis (2022) used a multi-sector, single-production model and data from input–output tables, and Demir et al. (2021) used qualitative data obtained from face-to-face interviews.

It should be noted that the present study has three points of interest. First, the period analysed was that of 2020 and 2021 (the years most affected by the pandemic) in their entirety. Second, it estimated the global economic loss that occurred as a result of the pandemic by comparing the situation observed in 2020 and 2021 with that which would have been obtained had the pandemic not happened, and the trend had continued to rise in recent years in terms of tourist spending. Third, the estimate of the impact is not only quantified considering the direct effects on the sector but also the indirect and induced effects on all sectors, which is a closer approximation to the true impact of the pandemic.

To achieve the proposed objectives, we present the results of the first stage of the study, where the prediction of total tourist spending was made and compared with the real monthly spending for 2020 and 2021. Subsequently, we present the results of the second stage of the study, in which the loss due to the impact on the global economy derived from the reduction in tourist spending observed in 2020 and 2021 due to the pandemic was estimated. Finally, we present the conclusions.

## Comparative analysis of the evolution of total tourism expenditure

This section presents an analysis of the difference between the real evolution of total tourist expenditure and that which would have occurred in the absence of a pandemic, distinguishing between residents in Spain and non-residents, to uncover differences in their behaviour. This analysis was conducted for the country as a whole as well as for the regions of Andalusia, the Balearic Islands, the Canary Islands, Catalonia, the Community of Madrid and the Community of Valencia – the only regions for which disaggregated expenditure information is available between residents and non-residents. Regional analysis is relevant because tourism typologies in different regions differ significantly: sun and beach tourism, water sports and outdoor activities and cultural, gastronomic and urban tourism. The results<sup>7</sup> allow to quantify the total impact of COVID-19 for 2020 and 2021 in terms of billing, GVA and level of occupancy.

In relation to the analysis of the differential behaviour of total spending, the method used was based on comparing the real evolution of these series, as obtained from the Resident Tourism Survey (Familitur) and Tourist Expenditure Survey (Egatur),<sup>8</sup> with respect to a baseline scenario (the no-cost scenario). The method used to obtain the simulated series associated with this scenario was based on the JDEMETRA + application<sup>9</sup> and predicting the future series (March 2020 to December 2021) based on the historical series available before the pandemic. The periodicity of the analysed series was monthly. The JDEMETRA + *software* determines the best ARIMA model associated with each analysed time series, considering deterministic effects, such as seasonality and the Easter effect.

Table 1 shows the variation in total tourist spending in 2020 and 2021 compared with spending in 2019, distinguishing between spending by residents and non-residents. As can be seen, for the national total, a reduction of 69.9% occurred in 2020 compared to 2019, and a certain improvement in 2021 is also observed, although the annual total remained 50.0% below that of 2019. Distinguishing tourists by origin, it is observed that the reduction in spending was much greater in the

**Table 1.** Variation of the total expenditure made with respect to the year 2019: residents and non-residents.

	Total		Residents		Non-residents	
	Year 2020	Year 2021	Year 2020	Year 2021	Year 2020	Year 2021
Spain	–69.9%	–50.0%	–45.2%	–15.3%	–78.5%	–62.0%
Andalusia	–65.3%	–45.1%	–43.2%	–13.8%	–76.8%	–61.6%
Canary Islands	–68.8%	–53.3%	–45.9%	–16.4%	–71.4%	–57.4%
Catalonia	–76.8%	–64.1%	–46.8%	–14.2%	–82.9%	–74.1%
Valencian Community	–66.3%	–41.2%	–46.6%	–8.2%	–74.1%	–54.2%
Balearic Islands	–84.6%	–46.7%	–41.7%	15.4%	–87.6%	–51.0%
Madrid's community	–74.1%	–61.6%	–60.8%	–31.3%	–77.9%	–70.2%

Source: Based on data from the Tourist Expenditure Survey (Egatur) and Resident Tourism Survey (Familitur), INE.

case of non-residents (78.5% in 2020 compared to 45.2% for residents), a fact that is explained by the much greater mobility restrictions placed on non-resident tourists than on resident tourists and the difference in the means of transportation used by both, with a clearly higher incidence of air transport in the case of non-residents.<sup>10</sup> Likewise, the recovery in 2021 appears to have been much more pronounced in residents (15.3% decrease compared to 2019) than in non-residents (62% reduction).

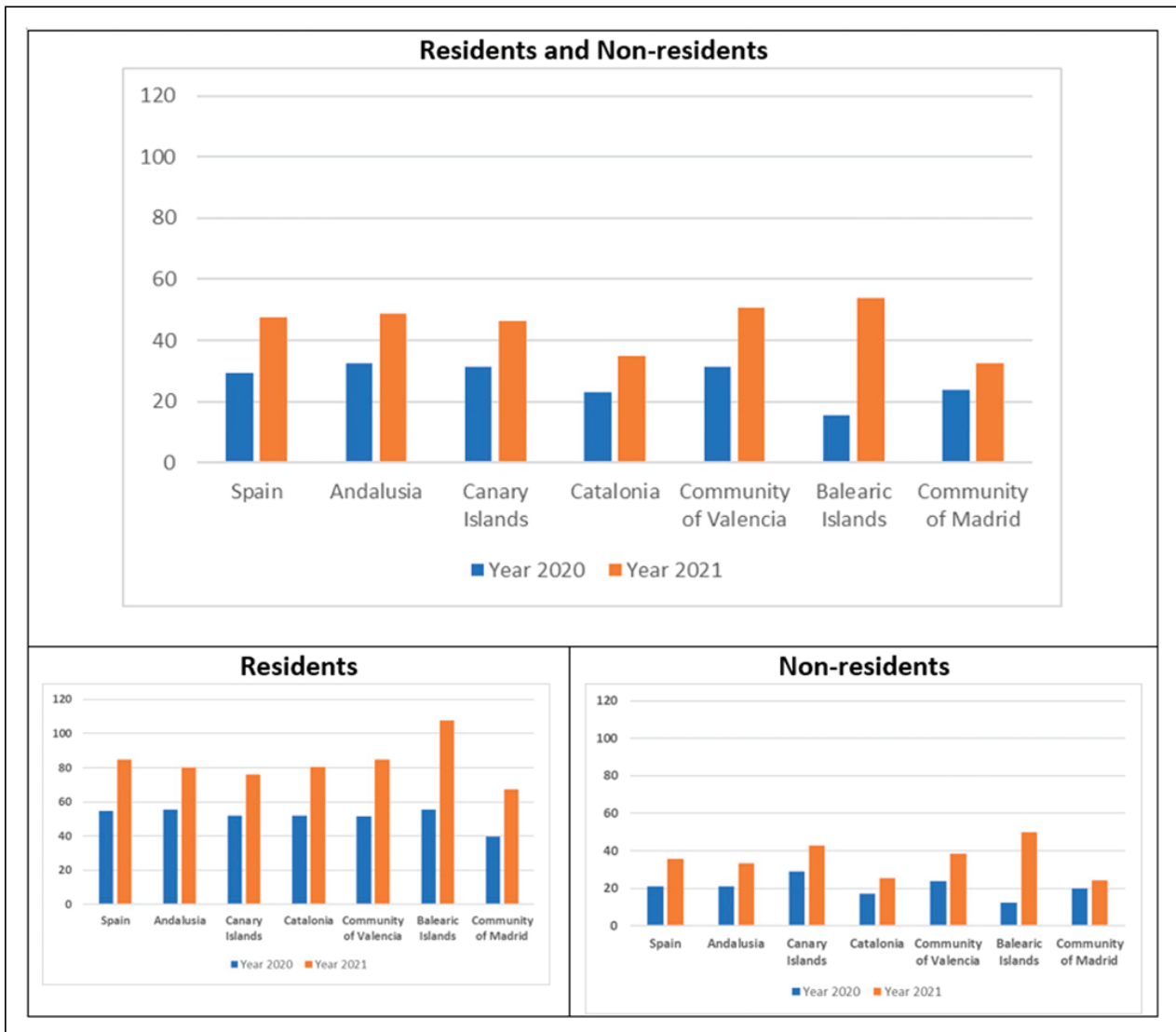
At the regional level, homogeneity was observed in 2020, with the most notable exceptions being the Community of Madrid and the Balearic Islands. Thus, in relation to resident tourists in Madrid, the largest drop in tourist spending occurred in 2020 (60.8% reduction) compared to reductions between 41.7% and 46.8% in the rest of the regions. In the case of tourist spending by non-residents, the greatest drop occurred in the Balearic Islands, with a reduction of 87.6% compared to the 71.4% in the Canary Islands. On the other hand, 2021 showed greater diversity in the impact on tourist spending by residents – from a drop of 31.3% in the Community of Madrid compared to 2019 to an increase in spending in the Balearic Islands of 15.4% (in fact, in the case of the Balearic Islands, the spending of resident tourists in 2021 was higher than in 2019). In the case of non-resident spending, Catalonia and Madrid showed the greatest reductions compared to 2019 (74.1% and 70.2%, respectively), which contrasts with the 51% drop in the Balearic Islands.

Figure 1 shows the behaviour of total tourist spending at the national level and for the six regions, comparing its real value (COVID Scenario) with the value of expenditure that would have been obtained in the absence of the pandemic (the no-cost scenario taken as a baseline). The conclusions are similar to those obtained after comparing the real series for 2020 and 2021 with the 2019 series. Thus, at the national level, it can be seen that the greatest losses in tourist spending occurred in the year 2020, with an expense value that does not reach 30% of the figure that would have been obtained in the case of no pandemic. Although the situation improved in 2021, total spending did not reach 50% of what it would have been in the no-cost scenario. The loss is much more pronounced in the case of spending by non-residents (with a value in 2020 of 20% of what would have been observed in a non-pandemic case) than in the case of residents (close to 55%). In 2021, resident spending was only 15% lower than it would have been in a non-pandemic situation, whereas this figure is almost 65% lower in the case of non-residents.

At the regional level, results are consistent with those obtained at the national level, although certain differences were detected. Thus, it can be seen that, in 2020, the regions that showed the greatest loss of spending compared to a non-pandemic situation were Catalonia (77% lower), the Community of Madrid (76%) and, especially, the Balearic Islands (85% lower). In the case of Madrid, this fact reflects both what happened in terms of spending by residents (in fact, it is the region with the greatest relative loss compared to the rest, with spending by residents being 60% lower than what it would have been without a pandemic) and non-resident spending (76% lower). In the cases of Catalonia and the Balearic Islands, the situation is similar, although both stand out for spending by non-residents, which is much lower than the theoretical figures without the pandemic (83% and 88%, respectively).

In 2021, the gap with respect to the no-COVID scenario decreases in all regions compared to the previous year – especially in the Balearic Islands, where tourist spending was 46% lower than the theoretical value without a pandemic. This reflects the extraordinary recovery in spending by residents in this community, which led to tourism spending being 8% higher than it would have been without the pandemic. Similarly, the Balearic Islands show the smallest gap in terms of spending by non-residents (recovering almost 50% of the spending figure under the no-cost scenario). It should also be noted that Madrid is the region that showed the least recovery in 2021 – 33% lower than the





**Figure I.** Total tourist expenditure. No-COVID Scenario = 100.  
 Source: Based on data from the Tourist Expenditure Survey (Egatur) and Resident Tourism Survey (Familiar), INE.

theoretical figure for resident spending in the case of a non-pandemic situation (15% in Spain) and 76% in the case of non-residents.

### Estimate of the total economic impact derived from the reduction of tourism spending due to the pandemic

Once tourist expenditure predictions for 2020 and 2021 were obtained, the second stage estimated the total economic impact associated with tourist expenditure. For this estimation, a demand approximation based on the application of the input-output method was followed (Pulido and Fontela, 1993; Miller and Blair, 2009; Xie et al., 2018), which is commonly used in this type of study (Murillo et al., 2013; CLIA Europe, 2015; CERTeT Bocconi, 2015; Vaya et al., 2018; IVIE, 2019).

### *Brief description of the method used to estimate the impact*

In the input–output method, the total economic impact is defined as the aggregation of three types of effects: direct, indirect and induced. In this case, the direct effect captures all the activities generated in a territory in response to tourist demand. However, the indirect effect captures the additional activity generated in the territory to cover the demand for the goods and services required by companies to develop their own activities. Thus, companies that supply these goods and services see their billings increase and, in turn, generate new multiplier effects on other companies, from which they also request other goods and services to conduct their activities. Finally, the induced effect arises as a consequence of the purchase of goods and services made by workers who, directly and indirectly, owe their jobs to the expenditure made by travellers in their territory. As a result of these indirect and induced effects, the total impact is clearly higher than the direct impact, not only in magnitude but also in terms of sectoral impact.

This economic impact has been calculated for the main macromagnitudes of an economy, such as billing, gross value-added generation and full-time equivalent jobs (FTEs). The procedure was as follows. First, we compiled the latest symmetric input–output tables (IOT) available for each analysed territory: Spain (IOTS-2016), Andalusia (IOTA-2016), Catalonia (IOTC-2011), Valencian Community (IOTCV-2000), Balearic Islands (IOTBI-2014), Canary Islands (IOTCI-2005) and the Community of Madrid (IOTM-2010).<sup>11</sup> Next, we obtained the matrices of technical coefficients, extended technical coefficient matrix, inverse Leontief matrix and inverse extended Leontief matrix for each case. In the second stage, we assigned the sectoral distribution of tourism spending observed in 2019 and 2020 (COVID Scenario) and 2021 (COVID Scenario), and for 2020 and 2021, the tourism spending predicted under the no-cost scenario. For this distribution, we used the Tourism Satellite Accounts of Spain for 2019 and 2020,<sup>12</sup> assigning expenses to the following sectors: accommodation and food and beverage services; transport services; travel agency services; tour operators; creative, artistic and entertainment services; sports, recreation and entertainment services; rental services; real estate services; and retail trade services.<sup>13</sup> In the third stage, once the direct impact vector was defined in terms of turnover<sup>14</sup> for each territory, year and scenario, the remaining direct impacts were estimated: GVA-generated and FTE jobs.<sup>15</sup> In the fourth stage, the estimate of the corresponding indirect impact was obtained by applying the input–output method, while the induced impact was estimated in the fifth stage. The estimated total impact was obtained for each territory, year and scenario as an aggregation of the three previously calculated impacts – direct, indirect and induced. In this way, it was possible to estimate the economic losses in each territory due to the pandemic.

As the objective was to estimate the impact of COVID-19 on the tourism sector and economy in general at the national (Spain) and regional levels, we compare the impact of tourist spending actually recorded in 2020 and 2021 with respect to what would have occurred had the pandemic not existed.

### *Impact derived from tourist spending: National total*

Table 2 presents the estimates obtained from the total economic impact derived from tourism spending in terms of billing, GVA, number of FTE jobs and contribution to GDP for 2020 and 2021, following the method explained above. This table shows the results of the impact associated with both the year 2019 and the 2020–2021 period observed from the real tourist expenditure of those 2 years (COVID Scenario 2020 and COVID Scenario 2021), as well as the impact associated with

**Table 2.** Estimate of the impact derived from Tourism Expenditure: Spain.

	Tourist spending (€M) <sup>(1)</sup>	Total billing (€M) <sup>(2)</sup>	Total jobs FTE <sup>(3)</sup>	Total GVA (€M) <sup>(2)</sup>	Contribution to GDP (%)
Year 2019	127,347	462,015	3,753,987	235,434	20.3% <sup>(4)</sup>
'COVID' 2020	38,500	139,679	1,205,555	69,093	6.9%
'COVID' 2021	62,012	224,982	1,941,787	111,288	10.2%
'No COVID' 2020	130,631	473,930	3,850,803	241,506	21.1% <sup>(5)</sup>
'No COVID' 2021	133,957	485,999	3,948,868	247,656	20.6% <sup>(5)</sup>
'COVID' 2020–2019	–88,846 (–69.8%)	–322,335 (–69.8%)	–2,548,432 (–67.9%)	–166,341 (–70.7%)	–13.4 pp <sup>(6)</sup>
'COVID' 2021–2019	–65,334 (–51.3%)	–237,033 (–51.3%)	1,812,199 (–48.3%)	–124,146 (–52.7%)	–10.1 pp <sup>(6)</sup>
'COVID' – 'No COVID' 2020	–92,131 (–70.5%)	–334,251 (–70.5%)	–2,645,248 (–68.7%)	–172,413 (–71.4%)	–14.2 pp <sup>(6)</sup>
'COVID' – 'No COVID' 2021	–71,945 (–53.7%)	–261,018 (–53.7%)	–2,007,080 (–50.8%)	–136,368 (–55.1%)	–10.4 pp <sup>(6)</sup>

Source: The author's elaboration based on expenditure data from the Tourist Expenditure Survey (Egatur) and the Resident Tourism Survey (Familitur), INE.

<sup>1</sup>All monetary figures are expressed in millions of € (€M) at 2021 prices.

<sup>2</sup>The total impacts are the result of adding the direct, indirect and induced impacts.

<sup>3</sup>The employment data correspond to full-time equivalent jobs (FTEs).

<sup>4</sup>Said estimate is higher than the 12.4% contribution of tourism to the GDP of the Spanish economy estimated by the INE in the Spanish Tourism Satellite Account for 2019 (INE).

<sup>5</sup>To obtain the contribution to GDP, the predictions of the BBVA (Regional Observatory of Spain) made in 2019 for the GDP of the years 2020 and 2021 have been used.

<sup>6</sup>Percentage point (PP).

This is due, among other reasons, to the fact that, unlike the estimates presented here, said impact is estimated considering the direct and indirect effects of tourism spending (without considering the induced effects). The estimate obtained in this study when only direct and indirect effects were considered was 11.9%, which is very close to the previous value of 12.4%. If only the direct effects were considered, its contribution would be 6.02%.

2020 and 2021 obtained from the forecast of tourism spending for those 2 years under the assumption of no pandemic (no-COVID scenario 2020 and no-COVID scenario 2021).

As can be seen, the predictions show that if the pandemic had not occurred, tourist spending in 2020 would have been €130,631 million (close to €127,347 million in 2019) – a much higher figure than that actually observed in that year, which was close to €39,000 million. Thus, in 2020, real tourist spending would have been 70.5% lower than that predicted under the no-cost scenario. In 2021, these differences, although minor, were still notable, such that predicted tourism spending without the pandemic would have reached almost €134,000 million compared to €62,000 million in actual spending (€72,000 less, 53.7% lower than predicted).

If, based on the amount of tourist expenditure, the total impact is estimated (considering direct, indirect and induced effects), it is observed that in 2020, the estimated real total billing<sup>16</sup> would be €139,679 million compared to €473,930 million, which would have been invoiced in the absence of a pandemic. In this way, the loss in terms of total billing would have been greater than €334,000 million, or approximately €915 million per day. In addition, it should be noted that the reduction in tourist spending observed as a result of the restrictions derived from the pandemic had a



significant impact, affecting not only the branches of activity directly linked to tourism but also all other economic sectors.

In turn, the total theoretical jobs that would have existed in 2020 under the COVID Scenario would have been 1.2 million compared to 3.85 in the no-COVID scenario; thus, it is estimated that a maximum of 2.65 million jobs would have been ‘lost’. It must be taken into account that these estimates of jobs are obtained by applying the ratio of jobs per thousand euros of production that is derived from the symmetrical input–output table for Spain corresponding to 2016. Therefore, the estimated changes in jobs are consistent with the linear reductions in billing, assuming a labour market without friction, restrictions or interventions. For this reason, these variations do not necessarily reflect what happened in the labour market. In this regard, the total non-elasticity of variations in employment to variations in production, together with the consolidation of the figure of the Temporary Employment Regulation Files (TERF) in Spain during the pandemic, means that the estimates presented for variations in work positions derived from the decrease in tourist spending must be considered a theoretical estimate and must be considered in any case as the maximum decrease that could have occurred.

Analysing the impact in terms of GVA, it is found that the contribution to GDP under the COVID Scenario would have been €69,093 million compared to €241,506 million under the no-COVID scenario – a loss of €172,413 million. If these last figures are relative to the GDP actually observed in Spain in 2020 and to that predicted for that year<sup>17</sup> (had the pandemic not occurred), the tourism sector would have contributed 21.1% to the national GDP in the no-COVID scenario – 14.2% points higher than what was actually observed (6.9%).

If the same analysis is replicated for 2021, it can be seen that as a result of the pandemic, the lower tourist spending observed compared to that predicted under the no-COVID scenario has caused a loss of slightly more than €261,000 million in turnover, 2 million fewer theoretical jobs and almost €136.5 billion less of contribution to the GDP. Thus, if, under the COVID Scenario, the contribution of the tourism sector in that year was quantified at 10.2% of the observed GDP, this figure would have been 20.6% in the absence of a pandemic (10.4% points less).

If, based on the previous results, a sectoral disaggregation of the impacts is conducted, and the impacts relative to the subgroup of tourism sectors are calculated on the one hand<sup>18</sup> and those relative to the subgroup that contains the rest of the sectors on the other, one obtains the information shown in [Table 3](#). As can be seen, while direct billing losses (i.e. tourist spending) are concentrated in all cases in the tourism sector group, in the case of the rest of the estimated magnitudes, these losses affect all sectors.

When the comparison focuses on the estimated impact under the real COVID Scenario compared to the predicted Non-COVID Scenario for 2020, the results show, after the €92,131 million in lower tourist spending, an estimated loss of €148,616 million of total turnover in the case of the tourism sectors (€185,635 million for the other sectors), 1.5 million less theoretical FTE jobs (1.2 million for the other sectors) and €86,126 million less GVA (€86,287 million for the other sectors).

Upon repeating the same exercise but for 2021 (€71,945 million of less tourist spending), the results show estimated losses for the tourism sectors of €116,055 million of total turnover, 1.1 million jobs theoretical FTE and €68,910 million of GVA (for the other sectors, these figures would be €144,963 million less total turnover, 897,261 fewer theoretical jobs and €67,458 million less GVA).

**Table 3.** Estimate of the losses derived from the reduction of tourist expenditure for the national total. Comparison between grouping of sectors.

		Comparative estimated impacts 'COVID' Scenario vs 'No-COVID' Scenario, Year 2020.	Comparison estimated impacts scenario 'COVID' vs 'No COVID' Scenario, year 2021.
Losses in direct billing (M€) (1)	Tourism sectors	−92,131	−71,945
	Other sectors	0	0
	Total	−92,131	−71,945
Billing losses total (M€) (1)	Tourism sectors	−148,616	−116,055
	Other sectors	−185,635	−144,963
	Total	−334,251	−261,018
Total job losses (2)	Tourism sectors	−1,480,409	−1,109,819
	Other sectors	−1,164,839	−897,261
	Total	−2,645,248	−2,007,080
GVA losses total (M€) (1)	Tourism sectors	−86,126	−68,910
	Other sectors	−86,287	−67,458
	Total	−172,413	−136,368

Source: The author's elaboration based on expenditure data from the Tourist Expenditure Survey (Egatur) and the Resident Tourism Survey (Familitur), INE.

<sup>1</sup>All monetary magnitudes are expressed in millions of € and in 2021 prices.

<sup>2</sup>The employment data correspond to full-time equivalent jobs and are estimated from the input-output tables.

Finally, if the results of the comparison between the COVID and the no-COVID scenarios are related to the loss of tourist spending, it can be concluded that, on average global terms for 2020–2021, for every €1000 that tourists did not spend in the country due to COVID-19-related mobility restrictions, Spain stopped billing €3628 and decreased its contribution to the GDP by €1883. In turn, for every €100,000 less that these tourists spent, a maximum of 2.8 FTE jobs would have been lost (data on estimated losses in the absence of TERF and under the assumption of a labour market without restrictions, friction or interventions).

### *Impact derived from tourism spending: Regional analysis*

After analysing the impact of the pandemic generated by a drastic reduction in tourist spending on the national total, we briefly analyse the six regions for which complete information on tourist spending is available for both residents and non-residents. To contextualise the different starting situations, Table 4 shows a comparison of the impact of tourism spending for 2019 for the regions analysed. Catalonia is the region with the highest tourist spending in 2019 (more than €26,000 million), followed by Andalusia and the Canary Islands (a little more than €19,000 million), while the Communities of Madrid and Valencia show the lowest expenditure in absolute terms (close to €14,000 million). When the indirect and induced billings generated are added, it is found that due to tourism spending, Catalonia managed to bill almost €60,000 million in total – a figure close to €58,000 million for the Canary Islands and to €55,000 million in Andalusia. The Communities of Madrid and Valencia are located in the lower band, with a total turnover of slightly over €28,000 million. If direct and total billings are compared, it can be concluded that the

**Table 4.** Estimated economic impact derived from Tourism Expenditure for the year 2019: regional comparison.

	Andalusia	Catalonia	Community Valencian	Balearic Islands	Canary Islands	Community from Madrid
Tourist spending (M€) (1)	19,491.8	26,218.5	13,725.9	16,401.6	19,247.4	13,745.8
Total turnover (M€) (1)	54,913.9	59,790.0	28,381.4	36,761.8	57,756.1	28,267.1
Total jobs (FTE) (2)	528,393	509,450	308,461	341,046	623,572	247,470
Total contribution to GDP (%)	19.4%	14.6%	15.4%	66.5%	74.8%	6.5%

Source: The author's elaboration based on expenditure data from the Tourist Expenditure Survey (Egatur) and the Resident Tourism Survey (Familitur), INE.

<sup>1</sup>All monetary magnitudes are expressed in millions of € and in 2021 prices.

<sup>2</sup>The employment data correspond to full-time equivalent jobs and are estimated from the input-output tables.

Canary Islands and Andalusia have the greatest multiplier effect; thus, for every €1000 of direct billing, an additional €2000 of billing is generated indirectly and induced in the Canary Islands and €1800 in Andalusia. In contrast, Valencia and Madrid have the smallest multiplier effect: For every 1000 direct billings, 900 and 1100 additional billings are generated, respectively.

In terms of employment, the Canary Islands and Andalusia show the greatest impact in terms of total jobs (623,572 and 528,393, respectively). Madrid generates the fewest jobs derived from tourism spending (130,813 direct and 247,470 total). When analysing the contribution to GDP derived from tourist spending, it is clear that the Balearic and Canary Islands have a higher total contribution and are far removed from the rest. Thus, tourist spending contributes 74.8% to the GDP of the Canary Islands and 66.5% to that of the Balearic Islands. These figures contrast with the values between 14.6% and 19.4% of the total contribution to the GDP of Andalusia, Catalonia and the Community of Valencia, while, in the case of Madrid, tourist spending contributes 6.5% overall.

Table 5 compares the impacts of actually observed tourism spending (COVID Scenario) with the tourism spending that would have occurred in the absence of the pandemic (no-cost scenario) in 2020 and 2021. The highest direct spending and total billing losses in absolute terms occurred in Catalonia, while the highest relative losses occurred in the Balearic Islands. In the case of jobs, the greatest job losses in absolute terms occurred again in Catalonia but above all in the Canary Islands, whereas the greatest losses in relative terms occurred in the Balearic Islands. In relation to the contribution of the tourism sector to the GDP, it can be seen that if the pandemic had not occurred, its contribution would have been close to 70% in the case of the Balearic and Canary Islands, whereas, under the COVID Scenario, it decreased to 26.4% in the case of the Canary Islands (42.8% points lower than expected in the case of no pandemic) and 13.3% in the Balearic Islands (54.1% points less).

In turn, if the comparison between the COVID Scenario and the no-COVID scenario is related to the loss of tourist spending in each region, it can be concluded that, on average global terms, for every €1000 that tourists stopped spending as a consequence of mobility restrictions, a total of between a minimum of €2056 euros in the Community of Madrid (€1073 of contribution to GDP) and a maximum of €3001 in the Canary Islands <sup>19</sup> (€1677 of contribution to GDP) would have been lost.

In turn, for every €100,000 euros less spent by tourists, between a minimum of 1.8 FTE jobs in the Community of Madrid and a maximum of 3.1 jobs in the Canary Islands (if there were no TERF

**Table 5.** Estimated economic impact derived from Tourism Expenditure (2020–2021). Regional comparison between the ‘No-COVID’ and ‘COVID’ Scenario.

	Andalusia		Catalonia		Com. Valencian		Balearic Islands		Canary Islands		Madrid's community	
	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation
<b>SPENT TOURIST</b>												
(1)												
‘COVID’ 2020	6786		6095		4644		2522		5966		3575	
‘No COVID’ 2020	20,880		26,429		14,858		16,344		18,945		14,923	
‘COVID’ 2021	10,392		9182		7850		8469		8752		5155	
‘No COVID’ 2021	21,945		27,136		15,994		16,229		19,334		16,295	
Var. ‘COVID’ vs ‘No COVID’ 2020	-14,095	-67.5%	-20,333	-76.9%	-10,214	-68.7%	-13,823	-84.6%	-12,979	-68.5%	-11,349	-76.0%
Var. ‘COVID’ vs ‘No COVID’ 2021	-11,553	-52.6%	-17,954	-66.2%	-8143	-50.9%	-7760	-47.8%	-10,582	-54.7%	-11,141	-68.4%
<b>BILLING TOTAL</b>												
(1)												
‘COVID’ 2020	19,117		13,900		9602		5,652		17,903		7351	
‘No COVID’ 2020	58,826		60,269		30,722		36,633		56,848		30,688	
‘COVID’ 2021	29,276		20,940		16,233		18,983		26,263		10,600	
‘No COVID’ 2021	61,825		61,882		33,071		3,376		58,017		33,510	
Var. ‘COVID’ vs ‘No COVID’ 2020	-39,709	-67.5%	-46,369	-76.9%	-21,121	-68.7%	-30,981	-84.6%	-38,945	-68.5%	-23,337	-76.0%
Var. ‘COVID’ vs ‘No COVID’ 2021	-32,549	-52.6%	-40,943	-66.2%	-16,838	-50.9%	-17,393	-47.8%	-31,754	-54.7%	-22,910	-68.4%

(continued)

**Table 5. (continued)**

	Andalusia		Catalonia		Com. Valencian		Balearic Islands		Canary Islands		Madrid's community	
	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation	Figures absolute	Relative variation
TOTAL JOBS (FTE) (2)												
'COVID' 2020	196,024		125,202		113,090		56,263		208,198		68,038	
'No COVID' 2020	566,037		513,532		333,900		340,874		613,771		268,666	
'COVID' 2021	300,190		188,607		191,191		188,966		305,408		98,115	
'No COVID' 2021	594,892		527,280		359,427		338,478		626,390		293,373	
Var. 'COVID' vs 'No COVID' 2020	-370,012	-65.4%	-388,330	-75.6%	-220,810	-66.1%	-284,611	-83.5%	-405,573	-66.1%	-200,627	-74.7%
Var. 'COVID' vs 'No COVID' 2021	-294,702	-49.5%	-338,672	-64.2%	-168,235	-46.8%	-149,512	-44.2%	-320,981	-51.2%	-195,258	-66.6%
CONTRIBUTION TO GDP												
'COVID' 2020	7.6%		4.0%		5.9%		13.3%		26.4%		1.9%	
'No COVID' 2020	21.1%		14.9%		16.9%		67.5%		69.2%		7.1%	
'COVID' 2021	10.6%		5.7%		9.4%		39.2%		36.0%		2.5%	
'No COVID' 2021	20.9%		15.7%		17.2%		63.6%		67.8%		7.4%	
Var. 'COVID' vs 'No COVID' 2020	-13.5	-64.0%	-10.9	-72.9%	-11.1	-65.3%	-54.1	-80.2%	-42.8	-61.9%	-5.2	-73.6%
Var. 'COVID' vs 'No COVID' 2021	-10.3	-49.3%	-10.0	-63.8%	-7.8	-45.2%	-24.4	-38.4%	-31.9	-47.0%	-4.9	-66.0%

Source: Own elaboration based on expenditure data from the INE Tourism Expenditure Survey (Egatur) and Resident Tourism Survey (Familiarit) and predicted GDP data from BBVA.

<sup>1</sup>All monetary magnitudes are expressed in millions of € and at 2021 prices.

<sup>2</sup>The employment data corresponds to full-time equivalent jobs.



and under a labour market with the aforementioned characteristics of no friction, no restrictions and no interventions) would have been lost.

## Conclusions

This study aimed to examine the impact of the pandemic on the tourism sector and economy in general through a comparative analysis between the evolution actually observed in the sector in 2020 and 2021 and the evolution that would have happened had the pandemic not occurred. The analysis was conducted for the national total and at the regional level, choosing six regions for which representative information on tourist spending by both residents and non-residents was available.

The analysis shows results of interest. First, an estimate is offered on what the economic impact would be if a situation like the one experienced were to occur again and mobility restrictions such as those imposed during the pandemic were applied. Second, it was possible to approximate what the potential job losses might have been if the TERF had not been applied. Third, due to multiplier effects (indirect and induced impacts), the drastic reduction in tourism spending has had notable repercussions that are not confined to typical tourism sectors but extend to the entire economy. The loss of potential turnover in the Spanish economy could have tripled the loss of direct tourist spending. In addition, the significant impact of the pandemic has been verified, especially in regions such as the Balearic and Canary Islands, where the year before the pandemic the contribution of tourism spending to GDP had been 66.5% and 74.8%, respectively; in other regions, the impact is lower in relative terms but also considerable. Thus, as the Spanish economy depends to a large extent on tourism, it is important to take measures to guarantee its sustainability and diversify the economy to reduce vulnerability to health, economic or tourism sector crises.

Finally, it should be noted that the analysis has limitations. The first one is related to the use of the input–output method, whose starting hypothesis conditions the results obtained (constant technical coefficients, constant returns to scale, absence of restrictions on productive factors, no substitution between inputs, no response of wages to variations in demand, static single impact etc.). Likewise, the estimates made only allude to the impact of the pandemic in terms of the reduction in tourist spending and its consequences for the economy but do not consider other impacts caused in other sectors where the effect was the opposite (the pandemic generated, e.g. increased activity in sectors such as health or those related to information and telecommunications). Nevertheless, estimating a general equilibrium model to overcome the aforementioned limitations is highly complex, especially as regards its estimation at the regional level.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Generalitat de Catalunya.; Project 2020PANDE00060.

## ORCID iD

José R Garcia  <https://orcid.org/0000-0003-2087-5106>

## Notes

1. The Tourism Satellite Accounts quantify the impact of the tourism sector by adding two effects: the direct effect, which considers only those sectors that are recipients of tourism demand, and the indirect effect, which also considers all the effects on the rest of the economic sectors that appear as a consequence of the intersectoral relations of purchase of goods and services arising within the productive process.
2. For example, in [IBESTAT \(2022\)](#), the Official Institute of Statistics of the Balearic Islands, in the Input-Output Framework (2014), estimated that the tourism sector accounts for 34.8% of the GDP of the Balearic Islands.
3. [Utkarsh and Sigala \(2021\)](#) compiled 177 articles published up to January 2021 and grouped them into four major themes, one of which is the impact of COVID-19 on tourism and hotel agents (especially on the well-being of employees and employers).
4. Quantifying a fall, in the year 2020, of 0.58% in German GDP and 4.54% in Spanish.
5. The impact is a 69% decline in tourist arrivals and a 65% decline in tourism receipts, and the foreign trade deficit coverage rate of tourism receipts in Turkey decreased by almost 80% in 2020.
6. It examines the effect of the COVID-19 pandemic on tourist arrivals and investment (domestic and foreign investment) and on the economic growth of the tourism sector in Indonesia.
7. The authors can provide the numerical results of the actual values and the predictions.
8. Both surveys come from the INE.
9. JDEMETRA + is a software application developed by the National Bank of Belgium in collaboration with the Deutsche Bundesbank and Eurostat, and it is officially recommended to members of the European Statistical System and the European System of Central Banks for seasonal and calendar adjustment in official statistics.
10. Although the results are not included in this article, the series of travelers and average spending per traveler have also been analysed. In this sense, it should be noted that the average cost per tourist is clearly higher in the case of non-residents than residents. The larger decrease in the number of non-resident tourists, together with their higher spending, would explain the greater impact in terms of total spending by non-residents than by residents.
11. See [INE \(2016\)](#), [Institute of Statistics and Cartography of Andalusia \(2016\)](#), [Idescat \(2011\)](#), [IVIE \(2000\)](#), [IBESTAT \(2022\)](#), [ISTAC \(2005\)](#) and [IE \(2010\)](#).
12. It was decided to use the Spanish Tourism Satellite Account to conduct the sectoral distribution of tourist spending in all the territories analysed since not all the selected regions had updated their Satellite Accounts for the years of study.
13. The item 'other non-characteristic products' was assigned to the retail trade sector.
14. The direct billing generated corresponds to the identified tourist spending.
15. In all cases, the corresponding price-level correction was made according to the year of disposal of each IOT used.
16. It is important to emphasise that this decrease in billing is estimated as a consequence of the reduction in tourist spending. However, this estimate does not reflect the final change in the country's billing since, as a result of the pandemic, other non-tourism economic sectors also saw their business significantly affected, both positively and negatively.
17. The predictions of the BBVA (Regional Observatory of Spain) made in 2019 for the GDP of 2020 and 2021 were used.
18. It should be noted that the sectors defined as tourism and in which the direct impact of tourism spending is concentrated are the following: retail trade services, except for motor vehicles and motorcycles; ground transportation services; maritime and inland waterway transport services; air transport services; accommodation and food and drink services; real estate services; rental services; travel agency, tour operator

and other reservation services; creative, artistic and entertainment services, library, archive, museum and other cultural services; and sports, recreation and entertainment services.

19. Andalusia would closely follow the Canary Islands, with a total turnover loss of €2817 for every €1000 of lost tourist spending.

## References

- Arbulú I, Razumova M, Rey-Maqueieira J, et al. (2021a) Can domestic tourism relieve the COVID-19 tourist industry crisis? The case of Spain. *Journal of Destination Marketing and Management* 20: 100568. DOI: [10.1016/j.jdmm.2021.100568](https://doi.org/10.1016/j.jdmm.2021.100568)
- Arbulú I, Razumova M, Rey-Maqueieira J, et al. (2021b) Measuring risks and vulnerability of tourism to the COVID-19 crisis in the context of extreme uncertainty: the case of the Balearic Islands. *Tourism Management Perspectives* 39: 100857. DOI: [10.1016/j.tmp.2021.100857](https://doi.org/10.1016/j.tmp.2021.100857)
- Aronica M, Pizzuto P and Sciortino C (2022) COVID-19 and tourism: what can we learn from the past? *The World Economics* 45: 430–444 Special Issue: COVID 19, Trade and Trade Policy. DOI: [10.1111/twec.13157](https://doi.org/10.1111/twec.13157)
- Baños-Pino JF, Boto-García D, Del Valle E, et al. (2021) The impact of COVID-19 on tourists' length of stay and daily expenditures. *Tourism Economics* 29(2): 437–459. DOI: [10.1177/13548166211053419](https://doi.org/10.1177/13548166211053419)
- CERTeT Bocconi (2015) *Analysis dell'impatto Socio - Economic Delle Attivita Crocieristiche of the Port of Civitavecchia, PORTI of ROMA and LAZIO*. Milan, Italy: Università Commercial Luigi Bocconi.
- CLIA Europe (2015) *The Cruise Industry. Contribution of Cruise Tourism to the Economies of Europe*. 2015 Edition. Brussels: Cruise Lines International Association.
- Demir M, Demir ŞŞ, Dalgıç A, et al. (2021) Impact of COVID-19 pandemic on the tourism industry: an evaluation from the hotel managers' perspective. *Journal of Tourism Theory and Research* 7(1): 44–57. DOI: [10.24288/jttr.857610](https://doi.org/10.24288/jttr.857610)
- Duro JA, Perez-Laborda A, Turrion-Prats J, et al. (2021) Covid-19 and tourism vulnerability. *Tourism Management Perspectives* 38: 100819. DOI: [10.1016/j.tmp.2021.100819](https://doi.org/10.1016/j.tmp.2021.100819).
- European Union (2021) *Regional Impacts of the COVID-19 Crisis on the Tourist Sector (CCI 2020CE16-BAT074)*. Final Report. Directorate-General for Regional and Urban Policy. DOI: [10.2776/179573](https://doi.org/10.2776/179573).
- Gago-García C, González-Relaño R, Serrano Cambronero M, et al. (2021) Impact of the COVID-19 crisis on employment in the tourism sector in Spain: territorial and gender perspectives. *Bulletin of the Association of Spanish Geographers* 91. DOI: [10.21138/bage.3162](https://doi.org/10.21138/bage.3162)
- IBESTAT (2022) Institute of statistics of the balearic Islands (IBESTAT). Input-Output Framework of the Balearic Islands. [https://ibestat.caib.es/ibestat/page?&p=px\\_tablas&nodeId=1fd68a0c-76ad-4d7e-acaf-db32e51c7ba7&path=economia%2Fcomptes-economiques%2Fmarc-input-output&lang=is](https://ibestat.caib.es/ibestat/page?&p=px_tablas&nodeId=1fd68a0c-76ad-4d7e-acaf-db32e51c7ba7&path=economia%2Fcomptes-economiques%2Fmarc-input-output&lang=is).
- Idescat (2011) Statistical institute of Catalonia (Idescat). Input-Output Framework of Catalonia. <https://www.idescat.cat/estad/mioc?lang=es>.
- IE (2010) Statistics institute. Input-Output Framework of the Community of Madrid. <https://www.madrid.org/iestadis/fijas/estructu/economicas/contabilidad/estructumio.htm>.
- INE (2016) National Statistics Institute. *Annual National Accounts of Spain: Input-Output Tables*. [https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica\\_C&cid=1254736177058&menu=resultados&idp=1254735576581](https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736177058&menu=resultados&idp=1254735576581).
- INE (2022) National statistics institute. Tourism Satellite Accounts of Spain. <https://www.ine.es/consul/serie.do?d=true&s=DCE4>.
- Institute of Statistics and Cartography of Andalusia (2016) Input-output framework of Andalusia 2016. <http://www.juntadeandalucia.es/institutodeestadisticaycartografia/mioan/mioan2016/index.htm>.

- ISTAC (2005) Canary institute of statistics (ISTAC). Input-output framework of the canary Islands. <http://www.gobiernodecanarias.org/istac/estadisticas/economiageneral/cuentasenomicas/contabilidadregional/C00019A.html>.
- IVIE (2000) Institut Valencia d'Estadística. Input-Output Framework and Regional Accounting of the Valencian Community. <https://pegv.gva.es/es/temas/economia/cuentasenomicas/marcoinputoutputycontabilidadregionaldelacomunitatvalenciana>.
- IVIE (2019) La Contribución Socioeconómica de las Universidades Públicas Valencianas. [http://dx.medra.org/10.12842/SUPV\\_2019](http://dx.medra.org/10.12842/SUPV_2019).
- Jayasinghe M, Selvanathan S and Selvanathan EA (2021) The Asian tsunami and tourism industry: impact and recovery. In: *Economic Effects of Natural Disasters*. Australia: Academic Press, pp. 335–358. ISBN 9780128174654. DOI: [10.1016/B978-0-12-817465-4.00021-2](https://doi.org/10.1016/B978-0-12-817465-4.00021-2)
- Miller RE and Blair PD (2009) *Input–Output Analysis: Foundations and Extensions*. 2nd edition. New York: Cambridge University Press.
- Minondo A (2021) Impact of COVID-19 on the trade of goods and services in Spain. *Applied Economic Analysis* 29(85): 58–76. DOI: [10.1108/AEA-11-2020-0156](https://doi.org/10.1108/AEA-11-2020-0156)
- Murillo J, Wow E, Romani J, et al. (2013) How important to a city are tourists and daytrippers? The economic impact of tourism on the city of Barcelona. *Tourism Economics* 19(4): 897–917. DOI: [10.5367/te.2013.0225](https://doi.org/10.5367/te.2013.0225)
- Mursalina M, Masbar R and Suriani S (2022) Impact of covid-19 pandemic on economic growth of the tourism sector in Indonesia. *International Journal of Quantitative Research and Modeling* 3(1): 18–28. <http://journal.rescollacomm.com/index.php/ijqrm/article/view/261>.
- Pulido A and Fontela E (1993) *Input-Output Analysis: Models, Data and Applications*. Madrid: Editorial Pyramid.
- Rodousakis N and Soklis G (2022) The COVID-19 multiplier effects of tourism on the German and Spanish economies. *Evolutionary and Institutional Economics Review* 19: 497–510. DOI: [10.1007/s40844-021-00222-4](https://doi.org/10.1007/s40844-021-00222-4)
- Sen S and Kovacı S (2021) The impact of the COVID-19 pandemic on the tourism economy: evidence from bursa istanbul. In: *Handbook of Research on the Impacts and Implications of COVID-19 on the Tourism Industry*. pp. 155–176. DOI: [10.4018/978-1-7998-8231-2.ch008](https://doi.org/10.4018/978-1-7998-8231-2.ch008)
- Škare M, Ribeiro-Soriano D and Porada-Rochoń M (2021) Impact of COVID-19 on the travel and tourism industry. *Technological Forecasting and Social Change* 163: 120469. DOI: [10.1016/j.techfore.2020.120469](https://doi.org/10.1016/j.techfore.2020.120469)
- Utkarsh and Sigala M (2021) A bibliometric review of research on COVID-19 and tourism: reflections for moving forward. *Tourism Management Perspectives* 40: 100912. DOI: [10.1016/j.tmp.2021.100912](https://doi.org/10.1016/j.tmp.2021.100912)
- Vaya E, Garcia JR, Murillo J, et al. (2018) Economic impact of cruise activity: the case of Barcelona. *Journal of Travel and Tourism Marketing* 35(4): 479–492.
- Veryadi Purba JH, Fathiah R and Steven (2021) The impact of COVID-19 on the tourism sector in Indonesia. *Rise: jurnal aplikasi Ekonomi* 3(1): 389–401.
- Xie Y, Ji L, Zhang B, et al. (2018) Evolution of the scientific literature on input–output analysis: a bibliometric analysis of 1990–2017. *Sustainability* 10(9): 3135. DOI: [10.3390/su10093135](https://doi.org/10.3390/su10093135)

## Author biographies

José Ramón García ([jrgarcia@ub.edu](mailto:jrgarcia@ub.edu)) is an Associate Professor at the Department of Econometrics, Statistics and Applied Economy of the University of Barcelona (Spain). He obtained PhD in Economics and Management from the University of Barcelona, and he is a member of the Regional Quantitative Analysis Research Group (AQR-IREA research group). He is specialised in impact

studies. He has participated in different competitive projects related to impact studies, and he published various papers about this topic, specially focused on tourism economic impact.

**Ernest Pons Fanals** ([epons@ub.edu](mailto:epons@ub.edu)) is an Associate Professor of Applied Economics at the University of Barcelona. He has a graduate degree in Economics and obtained PhD in Applied Economics and MA in Education. He is an expert in econometrics and statistical analysis of time series. His research has focused on economic forecasting, economic indicators, measuring economic impacts and quantitative analysis of the economic situation.

**Jordi Suriñach** ([jsurinach@ub.edu](mailto:jsurinach@ub.edu)) is a full-time professor of Applied Economics and Director at the Department of Econometrics, Statistics and Applied Economy at the University of Barcelona. He obtained PhD in Economics and Management Science from the same university. He is a member of the Regional Quantitative Analysis Research Group (AQR-IREA). His expertise is related with regional and urban issues, focused on quantitative techniques, economic impact, public policy evaluation, economic forecasts and tourism. His research activity has been published in more than 125 scientific articles (74 Web of Science and 69 Scopus), and he participated and coordinated several International, European and national Research projects.

**Esther Vaya** ([evaya@ub.edu](mailto:evaya@ub.edu)) is an Associate Professor at the Department of Econometrics, Statistics and Applied Economy of the University of Barcelona (Spain). She obtained PhD in Economics and Management from the University of Barcelona, and she is a member of the Regional Quantitative Analysis Research Group (AQR-IREA research group). She is specialised in impact studies and spatial econometrics. She has participated in a lot of competitive projects related to impact studies, and she has published various papers about this topic, specially focused on tourism economic impact.