9-2020

Health outcomes of tourism development: A longitudinal study of the impact of tourism arrivals on residents' health

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Original Citation

Godovykh, M., & Ridderstaat, J. (2020). Health outcomes of tourism development: Longitudinal study of the impact of tourism arrivals on residents' health. *Destination Marketing and Management, 17*, 1-7. https://doi.org/10.1016/j.jdmm.2020.100462

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Abstract

The present study investigates the influence of the number of tourism arrivals on the physical health of local people in one of the most visited destinations in the world. Although the literature traditionally describes the economic, social, and cultural impact of tourism, there is a gap related to the effects of tourism on residents' health. The methodology involves applying the limited-information maximum likelihood instrumental variable approach. The results demonstrate that tourism arrivals negatively influence residents' health in the short term yet have positive impacts on long-term health outcomes. The study contributes to the theory and practice by offering a new approach to physical health outcomes of tourism, demonstrating the superiority of long-term positive impacts of tourism over short-term negative outcomes, and emphasizing the importance of evaluating the health impacts of tourism for destination marketing and management.

Keywords: destination, residents, impacts of tourism, health, Spain, positive experience, emotions, social interactions.

To cite this article:

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1. Introduction

Tourism plays a vital role in the economic, social, and cultural development of many countries. According to the United Nations World Tourism Organization's World Tourism Barometer (2020), global tourism provided almost 1.5 trillion dollars of tourism expenditures and reached 1.5 billion tourist arrivals in 2019. The main positive outcomes of tourism include economic benefits such as tax revenues, job creation, or diversification of local economies (Gursoy, Ouyang, Nunkoo, & Wei, 2019; Jordan, Spencer, & Prayag, 2019). At the same time, the negative impacts of tourism often outweigh its benefits due to social, cultural, and environmental issues (Dodds & Butler, 2019; Garau-Vadell, Gutierrez-Taño, & Diaz-Armas, 2018). The results of overtourism have led to anti-tourism marches in Venice, Barcelona, Dubrovnik, and other popular destinations (Alexis, 2017; Seraphin, Zaman, Olver, Bourliataux-Lajoinie, & Dosquet, 2019). The recent COVID-19 pandemic has further revealed the negative influence of travel on public health and led to border closures, cancelation of international flights, and restriction of people's mobility.

At the same time, there are several potential pathways of the positive impacts of tourism activities on public health via positive emotions and social interactions between tourists and residents. Tourism experiences are inseparable from tourists' emotions (Filep & Pearce, 2013; Godovykh & Tasci, 2020a; Jordan et al., 2019) and can therefore influence physical health and longevity (Kenny et al., 2019). It has been suggested that frequent experiences of positive emotions lead to a lower chance of developing cardiovascular diseases, inflammation, headaches, weakness, and congestions (Boehm & Kubzansky, 2012; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). Other health outcomes of positive emotional experiences include exercise, healthy eating, improved quality of sleep, and overcoming of bad habits (Pressman & Cohen, 2005). Positive affective experiences are also capable of eliminating the harmful consequences of stressful life events by generating resilience, endurance, and optimism (Salovey, Rothman, Detweiler, & Steward, 2000). Therefore, the positive health impacts of tourism experiences deserve a thorough examination.

Alongside the health outcomes of positive experiences, the literature suggests that positive social interaction directly affects people's health (Chida & Steptoe, 2008; Llewellyn et al., 2019). Tourism activities involve interactions between tourists and residents, leading to positive

emotions for both (Eusebio, Carneiro, & Caldeira, 2016). In addition, positive feelings lead to closer social contact via approach behavior, thereby implying mutual reinforcement of social interactions and positive emotions, leading to more beneficial health outcomes (Kansky & Diener, 2017).

Although existing literature describes the positive effects of travel activities on tourists (e.g. Eusebio et al., 2016; Yarnal & Kerstetter, 2005), few studies have focused on residents' perspectives. Several papers have described the impact of tourism development on residents' well-being, quality of life, and life satisfaction by using subjective (Carneiro, Eusebio, & Caldeira, 2018; Chi, Cai, & Li, 2017; Ivlevs, 2017; Rivera, Croes, & Lee, 2016) and objective indicators (Croes, Ridderstaat, & Shapoval, 2020; Fu, Ridderstaat, & Jia, 2020; Ridderstaat, Croes, & Nijkamp, 2016). However, there is a critical gap in the literature related to the effects of tourism on residents' health. This study aims at investigating the influence of the number of tourism arrivals on the physical health of local residents. Spain was chosen for this case study as one of the most visited destinations in the world, with 81.8 million visitors in 2017 (World Bank, 2020a). The case study approach was applied in order to explore the health outcomes of tourism in a particular destination and provide theoretical propositions (Yin, 2017). The number of international visitors to Spain has dramatically increased, resulting in resistance, protests, and anti-tourism marshes (Coldwell, 2017). Therefore, it is vital to analyze the positive and negative outcomes of tourism development thoroughly, including the impact of positive and negative effects of Spain's tourism on residents' health.

The study has important theoretical and managerial implications. First, it offers a new approach to physical health outcomes of tourism unexplored in the previous literature. Second, it contributes to the theory by evaluating the short- and long-term outcomes of tourism. The common practice is to measure short-term impacts, while long-term impacts do not receive empirical attention. However, the long-term effects might surpass the short-term health outcomes and, therefore, be considered as more significant consequences for residents' well-being. Third, the study provides managerial implications, suggesting that destination management and policymakers should recognize the importance of tourism development for the health of local people.

2. Literature review

2.1. Effects of tourism development

Tourism development yields both positive and negative outcomes. Previously examined outcomes of tourism activities for visitors include satisfaction, memorable experiences, positive emotions, and loyalty (e.g. Kim, Ritchie, & Tung, 2010; Kozak & Rimmington, 2000; McCabe, 2005; Sthapit & Coudounaris, 2018). Yet tourism is a complex phenomenon, affecting both tourists and residents' communities (Martinez-Garcia, Raya, & Majo, 2017; Milman & Pizam, 1988; Nunkoo & Ramkissoon, 2010). However, significantly less attention in the literature has been paid to residents' outcomes of tourism development.

Among the positive economic impacts of tourism are a growth of the local economy and new job creation; an increase in living standards and income levels; improvements in investments, infrastructure, and public transportation; an increase in tax revenues; and rise in shopping consumption (Akis, Peristianis, & Warner, 1996; Gursoy et al., 2019; Liu & Var, 1986; Milman & Pizam, 1988; Williams & Lawson, 2001). Positive environmental effects include preservation of the natural environment, improvement of recreation facilities, and conservation of natural habitats (Liu & Var, 1986; Perdue, Long, & Allen, 1990), while sociocultural benefits include improvement of recreation opportunities, increasing demand for cultural events, preservation of historical monuments, development of cultural exchange, and preservation of cultural traditions (Liu & Var, 1986; Milman & Pizam, 1988; Zhuang, Yao, & Li, 2019).

Among the adverse economic effects are increasing prices for housing, land, transportation, goods, and services. (Milman & Pizam, 1988; Vargas-Sanchez, do Valle, da Costa Mendes, & Silva, 2015). The negative environmental impacts are related to water, air, and noise pollution; destruction of natural habitats; traffic congestion; overcrowding; and obstruction of views (Andereck, Valentine, Knopf, & Vogt, 2005; Gursoy et al., 2019). The adverse sociocultural tourism effects lead to increased levels of crime, prostitution, and substance abuse, among other consequences (Biagi, Brandano, & Detotto, 2012; Upchurch & Teivane, 2000). As a result of the adverse tourism outcomes, recent radical changes in residents' perception have led to increasing research interest in overtourism, which is associated with a decrease in the quality of life of local people (Koens et al., 2018). Although recent research has investigated the effects of tourism

development on local communities, there is very little scientific understanding of the influence of tourism on residents' health.

2.2. The direct impact of tourism on health

Tourism products are experiential, and positive tourism experiences are traditionally described as the primary outcomes of tourism activities (Filep, 2016; Hanna, Font, Scarles, Weeden, & Harrison, 2018; Kim, 2014; Tung & Ritchie, 2011) Such positive emotions are described as transitory mental states that feel pleasant and yield significant outcomes related to health and well-being (Fredrickson, 2000). Several studies have emphasized the importance of exploring the role of positive emotions in tourism research (Filep, Laing, & Csikszentmihalyi, 2016; Filep & Pearce, 2013; Godovykh & Tasci, 2020b) and have proposed the idea of developing a positive tourism field in which the consequences of human flourishing in tourism settings is more closely scrutinized. However, most of the literature aims at investigating the positive emotional outcomes and well-being of tourists, neglecting the emotional states of residents.

Tourism studies also emphasize the importance of relationships between tourists and residents. The social context of tourism experiences is expressed in the research of relationships between social contexts/places, communities, and self-improvement (Eusebio et al., 2016; Sharpe, 2005). Although several studies have suggested that positive emotions might arise from social contexts in tourism (e.g. Yarnal & Kerstetter, 2005; Eusebio et al., 2016), the effects of residents' social interactions with tourists and related positive feelings on residents' health and well-being have not received enough empirical attention in tourism research.

A considerable amount of positive psychology literature has been published regarding the influence of positive experiences on physical health and longevity (Howell, Kern, & Lyubomirsky, 2007; Chida & Steptoe, 2008; Kenny et al., 2019). Several studies suggest that frequent experiences of positive emotions lead to fewer colds, a lower likelihood of cardiovascular diseases, and reduced inflammation (Boehm & Kubzansky, 2012; Cohen, Alper, Doyle, Treanor, & Turner, 2006; Steptoe, O'Donnell, Badrick, Kumari, & Marmot, 2008). Fredrickson et al. (2008) found that presenting positive emotional stimuli to a group of respondents resulted in reductions in chest pain, headaches, weakness, and congestions.

Other health-related outcomes of positive emotional experiences include improved sleep quality, exercise, healthy eating, and lower levels of stress hormones (Pressman & Cohen, 2005). Furthermore, positive affective experiences could eliminate or relieve the harmful consequences of stressful life events. As an example, Salovey et al. (2000) found that positive emotions generate resilience, endurance, and optimism. Since tourism provides positive experiences that affect physical health, the present study suggests that the number of tourist arrivals influences the health of the local people.

H_1: The number of tourism arrivals has an impact on residents' health.

2.3. The indirect impact of tourism on health

The literature suggests that low-income status leads to poor health (Ettner, 1996; Lang, McManus, & Schaur, 2019). Researchers have reported a positive correlation between physical and psychological health and income (Carrieri & Jones, 2017; Feinstein, 1993). The income effects on health have also been explored across different countries, revealing a positive association between individuals' incomes and their state of health (Babones, 2010; Bakkeli, 2016). However, other researchers suggest that direct correlations of income and health are not sufficient to explain the causality of these relationships and that the effect of income on health could be explained by reverse causality (Bartel & Taubman, 1979; Rana, Alam, & Gow, 2020). They argue that people in good health might have higher wage rates and greater job intensity, thereby leading to higher income. Several studies also suggest that the relationships between impact and health are complex and demand additional investigation (Ettner, 1996).

At the same time, previous studies have reported the positive economic impacts of tourism development (Gursoy & Nunkoo, 2019; Zhou, Yanagida, Chakravorty, & Leung, 1997). Such studies suggest that one of the main economic benefits of tourism arrivals is an increase in residents' income (Gursoy et al., 2019; Liu & Var, 1986; Milman & Pizam, 1988; Tosun, 2002). Since residents' income is associated with physical and psychological health (Ettner, 1996; Lang et al., 2019), the present study hypothesizes that residents' income mediates the relationship between the number of tourists' arrivals and residents' health.

H_2: The number of tourism arrivals has an indirect impact on residents' health through residents' income.

3. Data and methodology

3.1. Data on tourism arrivals

The data on arrivals were obtained from the World Bank Development Indicators database (World Bank, 2020b). International inbound tourists refer to tourists who travel to a country other than that in which they usually reside, and which is outside their usual cultural context, for a period not exceeding 12 months and whose primary purpose in visiting is other than an activity remunerated from within the country visited. The graphical assessment of the data for tourism arrivals in Spain in Figure 1 demonstrates an increasing trend, with the exception of a decrease in tourism arrivals in 2008-2009, which might be caused by the decrease in demand from Spain's primary target markets due to the financial and economic crisis of 2007-2008.

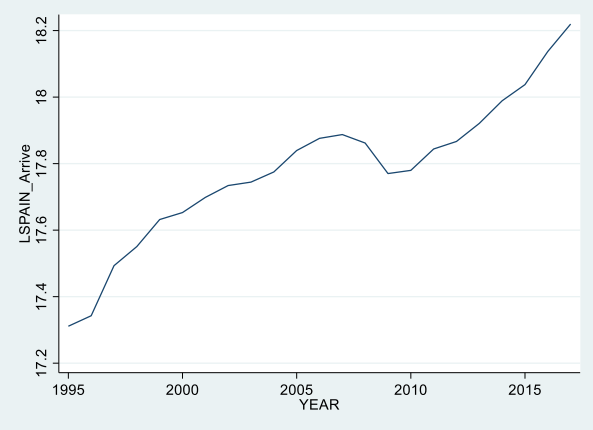

Figure 1. Spain's tourism arrivals for 1995-2018.

3.2. Data on health

The literature describes health as one of the most important components of people's quality of life (Bowling, 1995). Traditional public health indicators include obesity, suicide and life expectancy, health care financing, social protection, non-medical determinants of health, health expenditures, and demographic characteristics (OECD, 2020). The most frequently used indicator of health status is life expectancy at birth, which presents how long a newborn is

expected to live if death rates do not change. Life expectancy at birth is attributed to many factors, including living standards, lifestyle, education, and access to quality health services, and is widely used in medical, economic, and sociological research (Cervantes, López, & Rambaud, 2020).

The health dimension of the study is assessed by life expectancy at birth from the Human Development Index (Human Development Reports, 2020). Life expectancy at birth summarizes the mortality pattern that prevails across all age groups—children and adolescents, adults, and the elderly—and is defined by the World Health Organization as an average number of years that a newborn is expected to live if current mortality rates continue to apply. The graphical assessment of the data is demonstrated in Figure 2, showing the increasing trend for heath in 1995-2018, which is consistent with the global increase in life expectancy due to medical progress and better living conditions.

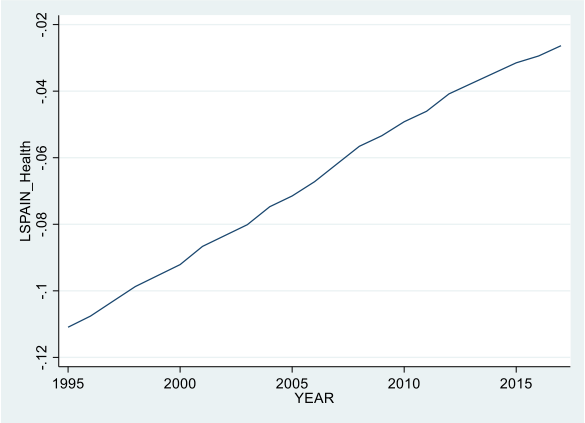

Figure 2. Health rates for 1995-2018.

3.3. Data on income

The most widely applied measure of a country's income is its gross national income, which includes all income earned by its residents (Todaro & Smith, 2015; World Bank, 2020a). The gross national income per capita is calculated by dividing the gross national income by the country's population. The annual income in the study was measured by gross national income per capita from the Human Development Index (Human Development Reports, 2020). The graphical assessment of the data in Figure 3 shows that the level of income was increasing in

2003-2008. However, there is a decreasing trend in 2008-2015, which may also be due to the global financial crisis.

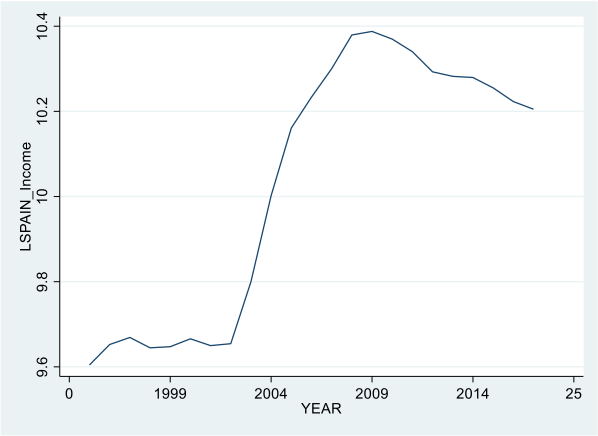

Figure 3. Income rates for 1995-2018.

3.4. Conceptual scheme of relationship

This study investigates the relationship between tourism arrivals and public health. The schematic overview of the study is presented in Figure 4. The study suggests a direct relationship between the number of tourism arrivals and health, which is operationalized as an average life expectancy at birth. The second relationship path is connected with the influence of income on public health, which could interact with tourism arrivals or mediate the relationship between tourism arrivals and public health based on the previous literature.

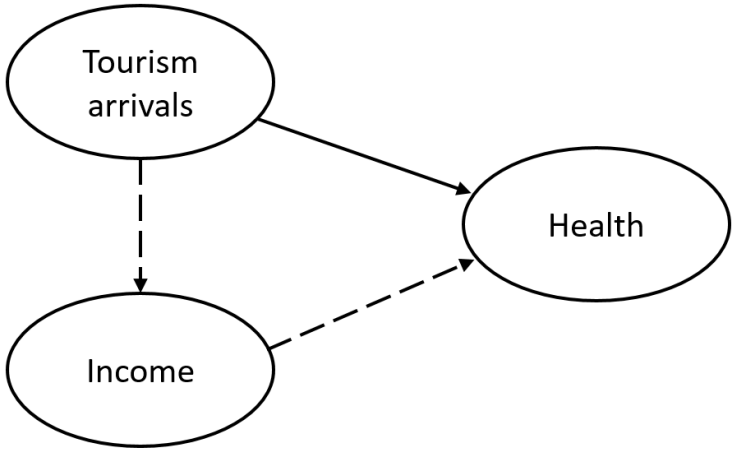

Figure 4. Relationship between tourism arrivals, income, and health.

3.5. Case of study

Spain is one of the most visited countries, with 81.8 million visitors in 2017 (World Bank, 2020a). Tourism generates 2.6 million jobs in Spain, comprising 12.8% of the country's total employment, and contributes 11.7% to its gross domestic product (INE, 2019). In addition, the number of international visitors in Spain has dramatically increased during the last five years, leading to resistance and protests by local residents (Coldwell, 2017). It is worth noting that the economic recession led to a significant drop in tourism demand from some of Spain's largest tourist target markets (UK, France, Germany) in 2008-2011, resulting in even higher levels of growth after the global crisis. Numerous studies have investigated different aspects of tourism demand in Spain (Almeida-Garcia, Peláez-Fernández, Balbuena-Vázquez, & Cortés-Macias, 2016; Gonzalez & Moral, 1996; Rossello-Nadal, 2001), yet none have investigated the effects of Spain's tourism on residents' health.

3.6. Methods

The purpose of this study is to analyze the influence of tourism arrivals in Spain on the physical health of its residents. The data analysis consists of several stages. The first stage involves several initial procedures related to data decomposition, descriptive analysis, and graphical representation of the data. The data were transformed into logarithms in order to narrow their range and compensate for outliers (Wooldridge, 2016).

The second stage involves testing three variables (health, arrivals, and income) for stationarity by using the augmented Dickey–Fuller test (ADF), the Phillips–Perron test (PP), and the Kwiatkowski–Phillips–Schmidt–Shin test (KPSS) (Dickey & Fuller, 1979; Kwiatkowski, Phillips, Schmidt, & Shin, 1992; Phillips & Perron, 1988). The stationarity test was conducted for level and first difference forms of the variables LSAPIN_Health, LSPAIN_Arrive, and LSPAIN_Income. Stationarity means that the mean and variance of the variables are constant over time, and covariance between periods depends only on the distance between them (Gujarati, 2015). Otherwise, the results of time-series regression with non-stationary variables will be spurious.

The next stage involves testing a cointegration between the number of tourism arrivals, health, and income using the Eagle-Granger cointegration test. Cointegration is described as an analysis of the long-term relationship between non-stationary variables (Engle & Granger, 1987). The next step of the data analysis involves testing causality, or the ability of the variables to cause other variables. There are four possible outcomes of causality for each pair of variables:

$$X \rightarrow Y\text{: Variable X causes Y;}$$

$$X \leftarrow Y\text{: Variable Y causes X;}$$

$$X \leftrightarrow Y\text{: Both variables cause each other;}$$

$$X \neq Y\text{: Neither Y nor X cause each other.}$$

The last step of data analysis involves using the limited-information maximum likelihood instrumental variable approach to estimate the short- and long-term relationships between the number of tourism arrivals, income, and health.

4. Results

All estimates were obtained using Stata version 16. The data contain levels of health, income, and arrivals in Spain for 1995-2018. The graphical assessment of the data is demonstrated in Figure 5.

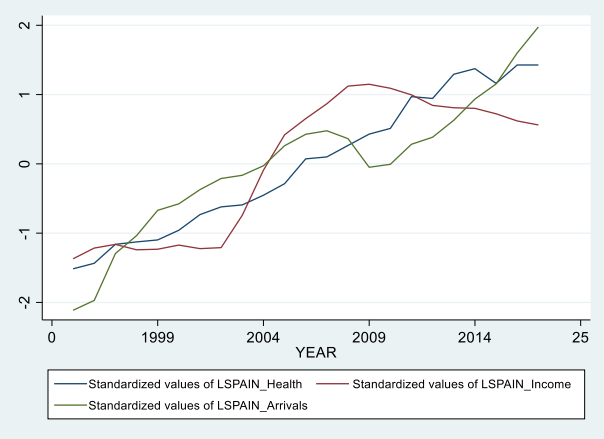

Figure 5. Graphical assessment of the standardized data.

The visual representation shows an increasing linear trend for health in 1995-2018. The level of income follows a similar trend, but shows a decrease for 2008-2015, which is possibly related to

the global financial crisis. Figure 5 also shows a decrease in tourists' arrivals in 2008-2009, which could be related to the decrease in demand from Spain's primary target markets (UK, France, Germany) due to the financial and economic crisis of 2007-2008. Table 1 provides a description and overview of the health, income, and arrival variables. The mean value for LSPAIN_Health is 4.39, the mean for the LSPIN_Income is 17.78, and the mean for the LSPAIN_Arrivals is 10.03.

Table 1. Descriptive statistics of applied variables.

Variable	Description	Mean	Std. Dev.	Min.	Max.
LSPAIN_Health	Average life expectancy at birth in Spain	4.39	.02	4.35	4.42
LSPAIN_Income	Gross national income per capita in Spain	17.78	.22	17.31	18.22
LSPAIN_Arrivals	The number of tourists who travel to Spain for a period not exceeding 12 months	10.03	.31	9.60	10.38

The data for annual tourism arrivals, income, and health in Spain for 1995-2018 were initially transformed into logarithms to reduce the variability of the data. The Christiano-Fitzgerald filter was applied to LSPAIN_Health, LSPAIN_Arrivals, and LSPAIN_Income variables (Christiano & Fitzgerald, 2003) was applied to decompose data into trends and cycles by using band-pass approximation strategies. The trend and cyclical components for LSPAIN_Health, LSPAIN_Arrivals, and LSPAIN_Income are demonstrated in Figure 6.

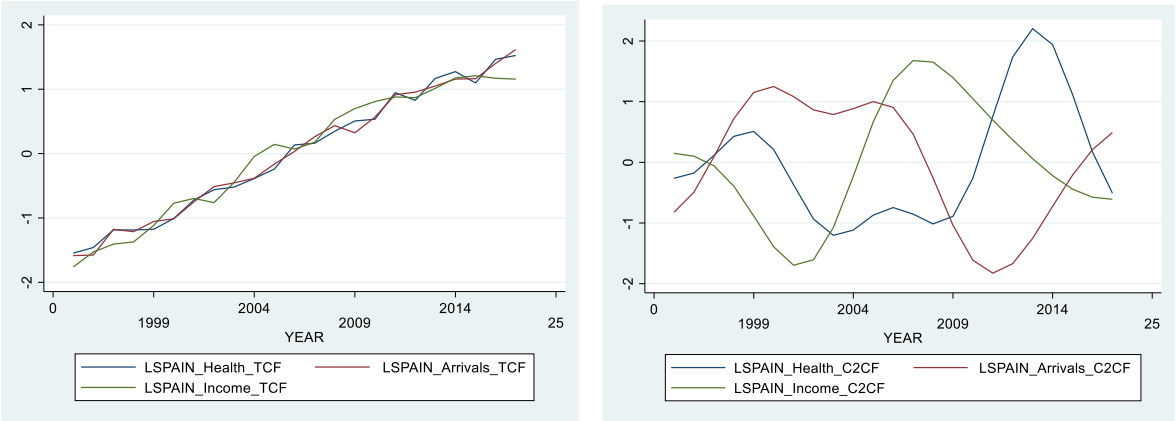

Figure 6. Trend and cyclical components for LSPAIN_Health, LSPAIN_Arrival, and LSPAIN_Income.

A critical assumption in time series regression is that the series needs to be stationary. Stationarity means that the mean and variance of the concurrent variable are constant over time, and the value of the covariance between two time periods depends only on the distance between the two periods. An augmented Dickey–Fuller unit root test, Phillips–Perron unit root test, modified Dickey–Fuller (DF-GLS) unit root test, and KPSS unit root test were conducted to analyze the stationarity of the variables. The maximum number of lags was determined by using the method devised by Schwert (2002):

$$Pmax = int\ [12 \times (N/100)^{1/4}],$$

where N is the number of observations, and Pmax is the maximum number of lags. Table 2 demonstrates the results of the stationarity tests for the standardized trend components of health, arrivals, and income, where all three variables are stationary at the level and first difference form.

Table 2. Unit root test results for the trend components.

	Variable type	**ADF**	**PP**	**DF-GLS**	**KPSS**	**Integration**
LSPAIN_Health (Basic model)	Level (lag=8)	-2.224**	-1.009	-4.731***	.126*	
	First difference (lag=1)	-1.744*	-3.786	-8.164***	.166*	
	Integration	I(0)/I(1)		I(0)/I(1)	I(0)/I(1)	I(0)/I(1)
LSPAIN_Arrivals (Basic model)	Level (lag=7)	-2.769***	-0.938	-2.077	.146**	
	First difference (lag=7)	-0.719	-3.169***	-0.602	.21***	
	Integration	I(0)	I(1)		I(0)/I(1)	I(0)/I(1)
LSPAIN_Income (Basic model)	Level (lag=7)	-4.746***	-1.427	-3.842***	.147**	
	First difference (lag=7)	-1.219	-2.516**	-6.363***	.183**	
	Integration	I(0)	I(1)	I(0)/I(1)	I(0)/I(1)	I(0)/I(1)

Note: The symbols ***, **, and * indicate, respectively, the 1%, 5%, and 10% significance levels.

Table 3 demonstrates the results of the unit root tests for the standardized cyclical components of health, arrivals, and income, where all three variables are stationary at the level and first difference form.

Table 3. Unit root test results for the cyclical components.

	Variable type	ADF	PP	DF-GLS	KPSS	Integration
LSPAIN_Health	Level (lag=8)	-328.001***	-1.616*	-99.315***	.131*	
(Basic model)	First difference (lag=8)	-11.551***	-1.785*	-10.128***	.143*	
	Integration	I(0)/I(1)	I(0)/I(1)	I(0)/I(1)	I(0)/I(1)	I(0)/I(1)
LSPAIN_Arrivals	Level (lag=8)	-23.794***	-1.667*	-19.380***	.125*	
(Basic model)	First difference (lag=8)	-12.418***	-1.679*	7.989	.151**	
	Integration	I(0)/I(1)	I(0)/I(1)	I(0)	I(0)/I(1)	I(0)/I(1)
LSPAIN_Income (Basic model)	Level (lag=7)	-22.826***	-1.622*	-34.166***	.128*	
	First difference (lag=7)	-56.706***	-1.649*	-19.352***	.145*	
	Integration	I(0)/I(1)	I(0)/I(1)	I(0)/I(1)	I(0)/I(1)	I(0)/I(1)

Note: The symbols ***, **, and * indicate, respectively, the 1%, 5%, and 10% significance levels.

Cointegration tests are usually used for non-stationary time series with means, and variances vary over time (Rao, 2007). Since trend and cyclical components of all three variables (LSPAIN_Health, LSPAIN_Arrivals, and LSPAIN_Income) were stationary at the level and first difference form, cointegration does not exist between variables.

The estimated short- and long-term effects of LSPAIN_Arrivals and LSPAIN_Income on LSPAIN_Health are provided in Table 4. The regression results show the significant effects of trend components of SD_LSPAIN_Arrivals on SD_LSPAIN_Health (F=1110.83, sig.=0.00), as well as the significant effects of cyclical components of SD_LSPAIN_Arrivals on SD_LSPAIN_Health (F=6.14, sig.=0.008). The limited-information maximum likelihood test results show that the model is not underidentified. The calculated statistic is higher than the critical values for rejecting weak identification, and all the instruments are valid.

Table 4. Estimated short- and long-term effects of tourism arrivals and income on health.

	LSPAIN_Health		LSPAIN_Income	
	Long-Term (trend)	*Short-Term (cycles)*	*Long-Term (trend)*	*Short-Term (cycles)*
L_SPAIN_Arrivals	1.006***	-0.829***	1.055***	-1.238***

L_SPAIN_Income	-0.003	-0.523***		
F-test statistics	1110.83***	6.14***	540.60***	20.21***
Underidentification test (Kleibergen-Paap rk LM statistic)	7.599**	11.793***	17.040***	9.980***
Weak identification test (Cragg-Donald Wald F statistic)	5.285	7.930	32.765	12.239
Hansen J statistic (Overidentification test of all instruments)	0.283	0.476	0.151	0.056
Endogeneity test	1.355	0.349	7.219	10.236

Note: The symbols ***, **, and * indicate, respectively, the 1%, 5%, and 10% significance levels.

Table 4 demonstrates the estimated short- and long-term effects for the dependent variable LSPAIN_Health. These short- and long-term effects should not be interpreted in a chronological sense, as they can coincide, where short-term changes can be explained as deviations from the long-term movements. The results show that tourism arrivals have both short- and long-term effects on residents' health. A 1% growth in tourism arrivals leads to an estimated 0.829% decrease in residents' health in the short term and about a 1.006% increase in residents' health in the long term.

There are also significant short-term effects of residents' income on their health. A 1% growth in residents' income leads to an estimated 0.523% decrease in residents' health in the short term, which can be explained by the fact that people who work more intensively have higher levels of stress, which leads to negative effects on health. However, the study did not reveal any significant long-term effects of residents' income on health. The results also demonstrate that tourism arrivals have short- and long-term effects on residents' income. A 1% growth in tourism arrivals leads to an estimated 1.238% decrease in residents' income in the short term and about a 1.055% increase in residents' income in the long term.

5. Discussion

The outcomes of tourism development are not limited by the hedonic utility that might impact the well-being, quality of life, and health of tourists and residents. This study explored the influence of the number of tourism arrivals on the physical health of local people in one of the

most visited destinations in the world. The results confirmed that tourism arrivals have both short- and long-term effects on residents' health. A growth in tourism has a decreasing effect on residents' health in the short term and an increasing effect on residents' health in the long run. The short-term effects may be explained by the negative impacts of tourism arrivals related to overcrowding, increase in crime levels, traffic congestion, and other outcomes that negatively affect residents' stress levels and health. Recent issues related to the COVID-19 pandemic have also demonstrated that tourists might spread viruses (Ying, Wang, Liu, Wen, & Goh, 2020). At the same time, there is likely a significant positive impact of tourism arrivals on health in the long term because of the effects of positive experiences and social interactions with tourists on physical health and longevity (Kenny et al., 2019).

The results provide support for the study hypotheses. While the growth of international tourism arrivals negatively impacts residents' health in the short term, the long-term effects of tourism on the health of local people are positive and significant. The short-term negative effects are related to the negative impacts of tourism arrivals, including traffic congestion, crowding, crime level, and other stressful factors (Andereck et al., 2005; Gursoy et al., 2019). The positive long-term health outcomes of tourism arrivals can be explained by the influence of positive experiences and social interactions on physical health and longevity (Chida & Steptoe, 2008; Howell et al., 2007; Kenny et al., 2019). The literature suggests that diverse social relationships lead to lower risks for morbidity and premature mortality (Eusebio et al., 2016; Yarnal & Kerstetter, 2005). Since diverse interactions of local people with tourists provide positive experiences that could affect physical health, it is possible that the number of tourist arrivals positively influences the health of the local people in the long run. At the same time, the hypothesis of the mediating effect of income based on a few previous studies was not confirmed for the long-term trend, which supports the direct long-term effects of tourism development on health. The lack of significant long-term effects of residents' income on health can be related to the combined influence of increased levels of stress and obesity that are traditionally associated with higher income (Lenhart, 2019) and better healthcare opportunities, which also increase in tandem with rising income.

These findings provide important theoretical implications by offering a new approach to considering tourism benefits from the perspective of residents' health, which was not described

in the previous literature. The results reveal the complex temporal dynamics of relationships between tourism arrivals and residents' health, including different short- and long-term effects of independent and mediating variables. Tourism arrivals negatively influence residents' health in the short run but have positive effects in the long run. Therefore, there is a need for more longitudinal studies of the outcomes of tourism development as the long-term positive impacts might outweigh the short-term negative effects that are traditionally evaluated in empirical studies (and vice versa).

The study results provide important managerial implications as well. Destination marketers and managers, as well as other destination decision-makers, should recognize the importance of tourism development for the health of local people. While the traditional impacts of tourism arrivals are measured in numbers of inbound tourists, overnight stays, tourism expenditures, new jobs, and taxes (Dodds & Butler, 2019), it may be more important to evaluate the potential health impacts, since health is considered a primary human value (Bowling, 1995). It is also possible that tourism brings positive health outcomes up to a certain level of tourism development, after which the negative effects related to residents' stress outweigh the positive outcomes connected with positive emotions and social interactions. Therefore, destination marketing and management organizations and policymakers should regularly measure these outcomes by using both objective and subjective indicators and make appropriate modifications to tourism programs and policies.

Several limitations can be associated with this study. First, there are potential effects of many confounding variables related to residents' health and income. The average life expectancy might be influenced by access to healthcare, advanced diagnostics, level of education, and heredity, to name a few (World Health Organization, 2020), while income coefficients can also be affected by population, inflation, unemployment, poverty, or government actions (Fleurbaey & Blanchet, 2013). The time-series data on national health and income collected by global organizations do not provide an opportunity to investigate the effects of additional variables. Therefore, future studies should examine the effects of additional confounding variables in relationships between tourism arrivals and residents' health. Furthermore, using subjective measures of income and health may shed additional light on the outcomes of tourism development and the pathways of the effects of tourism on health. Therefore, future studies should conduct surveys of Spain's

residents in order to verify and extend the findings of this study. Further research should also explore the effects of tourism arrivals on residents in other countries to reveal the similarities and differences between groups of tourism destinations.

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