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Research Article

Tourism Location Choice of Local and Foreign Tourist: A Perspective through Spatial Analysis

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The economic outreach of tourism businesses has undoubtedly had a significant contribution to the economic growth of countries and regions. Attracting tourists to the tourist provinces is an important regional growth and development issue. The main aim of this study is to present the factors influencing the tourism location choice of both foreign and domestic tourists. Cross-sectional spatial analysis is applied to Turkish province-level data for 2002-2019, and the time and spatial effects of regional tourism demands are considered. Lisa and Geary's cluster maps provide the regional clusters. Accordingly, Bitlis, Siirt and Tunceli are the common low-tourist number provinces surrounded by low-ranking provinces (low-low cluster), whereas Burdur is the common low province surrounded by high-ranking provinces (low-high cluster). Both domestic and foreign tourist location choices were strictly influenced by their choice in 2002, i.e., time consistency in location choice is valid. The location choices do not depend on whether the province is on the seaside or inland, which is contrary to our expectations. Foreign tourists' location choices are influenced by domestic tourists' location choices three times more than that domestic tourists. Most importantly, according to the spatial autocorrelation results, location choice made by foreign tourists is spatially dependent, but this is not true for domestic tourists.

JEL codes: C01, C21, L83

Keywords: Tourism, Location choice, Spatial analysis, Moran's I, Turkey

1 Introduction

The inevitable function of tourism on economic growth at either the regional or the local level has been the focus of many studies in not only tourism literature but also in the economics literature. It is a well-established fact that tourism-related activities or activities of what are considered tourism have a substantial influence on economic development. Therefore, central and local governments are attempting to do their best in order to increase tourism and, as a result, fuel economic growth (Santos & Vieira, 2020). The attention to spatial interaction is beginning to gain a place in econometrics. According to Anselin (1999,

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2003), if a data set disregards the spatial dimensions in the related processes, the outcome of the model proposed will be biased and leads to incorrect estimates. Therefore, spatial effects should be taken into consideration.

Studies that rely on spatial econometric models in tourism take the presence of spatial effects into account. For example, Chhetri et al. (2008) investigated the spatial outline of tourism on model employment patterns. Yang & Wong (2012) and Yang & Fik (2014) set models in order to measure and project the spillover effects on tourism flows and regional growth. On the other hand, Zhang (2009) investigated the effect of regional spatial interaction on tourist flows by using a spatial econometric approach. Also, Ma et al. (2015) dealt with the effect of tourism and spatial autocorrelation on urban economic development. The last four studies were implemented in China, while Paci & Marrocu (2013) analyzed the impact of tourism in terms of economic growth on 179 European regions.

Studies with a focus on economic growth employed the term "tourism-led growth hypothesis" which has been under close scrutiny and hence covered in many papers using a wide range of new techniques (e.g., Brida et al., 2016). One common aspect of papers on tourism-led growth is that spatial implications are often underestimated at national, regional, and even local levels. Despite the fact that the output, in the case of tourism, is often measured in monetary terms on the national scale, as if having one deposit safe, the efficiency of the local factor or location-related factors are not taken into account in the augmented receipt, and this makes the spatial or local issues worthy of scholarly inspections (Capone & Boix, 2008). In this study, our main aim is to fill this gap by analyzing the influence of spatiality on how location affects the choices made by tourists in Turkey.

The remainder of the study is organized as follows. Section 2 examines the theoretical and empirical literature. Section 3 discusses the data and the methodology applied, and Section 4 is devoted to the empirical results. The conclusion and discussion are presented in the final section.

2 Literature Review

The spatial elements hold a key position in terms of the effects of tourism on the regional scale rather than the national scale. The main reason for this is the fact that spatial setups focus on natural attractions rather than solely on the resources available. Thanks to spatial statistics and econometrics methods, the impact of spatial patterns on the distribution of tourism activities is measurable, and the spatial structure of tourism clusters can be decomposed efficiently.

Regional tourism growth is fed by the spatial cluster of tourism activities, and thus, from the perspective of tourists, participation in tourism activities becomes more economical and convenient (Lazzeretti & Capone, 2009). They suggest that, rather than the natural resources, the rate of growth is closely associated with the advantages obtained from the spatial arrangements of the clustered companies, i.e., the location of the economies.

The effects of spatial spread, also called spatial spillover, on tourism are significant. According to Yang & Fik (2014), spatial spillover is the overall magnitude of the effects on tourism-related industries in a given region as well as in neighbouring regions. The outcome is that there is an interaction among the neighbouring regions due to what is referred to as spatial spillover into the neighbouring regions resulting in aggregate growth. On the other hand, Fingleton & López-Bazo (2006) presented a new argument based on the perspectives of new economic geography theories and endogenous growth models, where spatial nexus throughout a region gives hints about the spillover effect under consideration. To investigate the matter further, an outline was suggested by Yang & Wong (2012) in order to measure the spillover spreads in a given tourism industry, both on demand and supply, and they attempted to explain the mechanism that directs the spreads. The competition in tourism services across the neighbouring regions is aligned to the upsurge in tourism businesses, and this inevitably leads to an increased rate of spillover effect in both local and regional tourism development. The spillover effect in local and regional tourism flows has been documented by many authors (e.g., Gooroochurn & Hanley, 2005; Neumayer, 2004; Yang & Wong, 2012; Lazzeretti & Capone, 2009). Hence, in the empirical model postulated, the main objective of this study is to measure the spillover effect of tourism flows on given regions and the neighbouring regions.

Growth characteristics of a given region in tourism flows exert variability over a region due to spatial heterogeneity. This should be deemed typical, for each region has its own tourism dynamics in terms of the resources and the political decisions along with implementations available, thus taking on a different approach to tourism development. As suggested by Yang & Fik (2014) highlighted the importance and the essence of spatial heterogeneity as the duration of the tourism season in a region will be longer or shorter depending on the availability of resources, services, and geographic location.

Spatial differences in tourism growth are a topic under examination. To illustrate, Eugenio-Martin et al. (2004) investigated infrastructure qualities and found that an underdeveloped destination's infrastructure is more important than a developed region. On the other hand, Khadaroo & Seetanah (2008) concluded that, especially in Asian and African destinations, transportation systems play a leading role in tourism development. Even within a single country, for example, Italy, there are significant differences in developmental strategies for cities and even for districts.

The popularity of spatial analysis is increasing among researchers. For example, Almeida et al. (2021) employed dynamic spatial analysis in order to examine the regional tourist heterogeneity in Spain. They analysed whether there are any regional spillovers as well as the degree of sensitivity to the destinations and tourist arrival fluctuations. The most important finding pertaining to the implementation of spatial analysis is the interplay in the regions with respect to domestic and international tourism and the heterogeneity in the regions to the sensitivity of arrivals.

In a more recent paper, Siano & Canale (2022) used spatial analysis to show the contribution of tourist arrivals to the local economy in Italy at the NUTS3 level. The results of the analyses showed that due to the presence of spatial spillover in the neighbouring destinations, tourism does have an effect on economic growth. In a similar perspective, Zhao & Yu (2021) investigated the spatial correlation of the regional tourism industry in Anhui in China, and they found that there is a positive spatial correlation between the per capita tourism income and the local spatial cluster features, pointing out that the development of domestic tourism goes hand in hand with the spatial cluster process and the economic figures as well as the supply-side attractions.

From a different perspective, Piacentino et al. (2021) emphasised the use of spatial economic data and studies. They suggested that spatial economic studies offer empirical evidence on a variety of items ranging from tourism economics to real estate markets. Here, once again, it has been emphasised that the use of spatial analysis pays off, especially on regional and sub-regional levels, which is also covered in this study. On the other hand, using spatial panel data analysis, Akarsu (2022) examined the relationship between tourism and income equality in Europe, the Balkans and Anatolia and found that, up to a certain point, tourism has a positive contribution to income equality. However, subsequent to certain increases in income, urbanisation, and labour participation, an increase in income inequality was observed, which contradicted previous findings.

Using a spatial economic regression, Yang et al. (2022) set out to identify the elements that are likely to influence tourism efficiency using the panel data of 30 provinces in China. The results suggested that different parts of the selected provinces offer a varying degree of efficiency based on a number of factors such as patents held, traffic congestion levels, financial structures, and governmental issues. From an administrative point of view, Pimantel (2021) employed a spatial analysis of SISTUR, also known as the tourism system, which functions as an interface between administrative issues and tourism geography. Following a case study, he identified a number of areas creating both thematic and general maps with a focus on the concentration of activities in the selected areas, which paved the way for quality information allowing better decision-making and further exploration into the potential flows of tourism in the area. Finally, Lagarias & Stratigea (2021) investigated the effects of urban development on coastal areas across the world, using spatial data provided by Global Human Settlement Layer (GHSL) for Crete, where unsustainable growth is considered a threat. The result suggested that urban sprawl is putting Crete at unsustainable risk, and the destinations under potential risks due to unplanned urban development have been highlighted with specific reference to the location selected in the paper.

A few studies utilised spatial analysis for Turkey. According to Günay Aktaş et al. (2017), the spatial autocorrelation between foreign and domestic tourists is a contradicting result. While there is a spatial dependence on the occupancy rates of foreign tourists, this was not true for domestic tourists. On the other hand, Khan (2018) used the exploratory spatial data analysis (ESDA) technique and found a spatial dependence in both groups, unlike Günay Aktaş et al. (2017). Weighted average centre and standard deviation ellipse, which is a geographical technique, was used in the time and space analysis of tourist accommodation statistics for Turkey. Kervankıran (2015) found that the spatial clustering of tourism in districts decreases over time, and at the province level, Kervankıran & Aktürk (2017) found that the reducing effect of tourism on regional inequality is still in question. With these in mind, this paper aims to analyse whether a tourist's choice of location is spatially dependent for both domestic and foreign tourists in Turkey.

3 Method and Data

From the perspective of the new economic theory of geography, it is suggested that externalities (spatial effects) are of great significance. According to Tobler's law of geography (Tobler, 1970, p. 236), "everything is related to everything else, but near things are more related than distant things". Cluster maps and spatial dependency tests, such as like Moran's I, Geary c and Getis Ord, could be implemented (Moran, 1950a,b; Anselin, 1988; LeSage, 1999; Ward & Gleditsch, 2008), are used to determine whether there is spatial dependence between tourism regions. Spatial clustering maps show us if there is clustering in certain regions, as the name suggests. In general, we can mention two clustering maps in the literature: Lisa and Geary clustering maps. Both maps are dependent on spatial autocorrelation tests. The Lisa clustering map[1] is based on Moran's I test, while the Geary clustering map is based on Geary's c test. In our study, the spatial econometric method is implemented rather than the standard OLS model.

The most used and important spatial dependence test is Moran's I test. In simple terms, Moran's I test considers the correlation of the variable y and the spatial lag of it (y_L). Equation (1) provides the Moran's I test in the summation notation (Anselin, 1988, p. 101; Ward & Gleditsch, 2008).

$$I = \frac{(n \sum_i \sum_{j \neq i} w_{ij}) \ (y_i - \bar{y})^2}{(\sum_i \sum_j w_{ij}) \ (y_i - \bar{y})^2} \tag{1}$$

where y is the dependent variable or the variable under consideration, w_{ij} is the $i - j$ elements of the row-standardized weight matrix, and n denotes the number of observations.

The null hypothesis of the Moran's I test states that there is spatial independence or no spatial autocorrelation. The sign of the test is a signal for positive or negative spatial autocorrelation. Anselin (1988) is cautious about how Moran's I should be interpreted since the null hypothesis is explicit, while the alternative is not. The alternative hypothesis may not indicate that there is evidence for spatial autocorrelation, i.e., it should assert the existence of the relationship, although it is not the case here. Ward & Gleditsch (2008, p. 44) warn about the weight matrix, on which the test depends totally on.

The Local Geary Statistic, which was first drafted by Anselin (1995) and later expanded by Anselin (2019), is a Local Indicator of Spatial Association (LISA) with a different measure of attribute similarity. Rather than dissimilar functions, this statistic focuses on squared differences. That is to say, while large values indicate negative spatial autocorrelations, small values indicate positive spatial autocorrelation. Below is the notation of the Local Geary Statistics (Ward & Gleditsch, 2008).

$$LG_i = \sum_j w_{ij} \ (x_i - x_j)^2 \tag{2}$$

The conditional permutation procedure makes inference viable, and the Local Moran statistic is used to interpret the result. The interpretation of the location is not direct for the attribute similarity that has an indirect match with the slope in a scatter plot. However, in order to make an incomplete classification, GeoDa software[2] suggests using the linking capability. The positive spatial autocorrelation (small differences denoting similarity) is determined by the locations with significance and smaller Local Geary statistic, which is lower than its mean. The association can be identified as low-low or high-high for the observations in the upper-right or lower-left quadrants, respectively. On the other hand, negative spatial autocorrelation (large values donating dissimilarity), due to the removal of the sign when squaring, cannot be interpreted.

All the variables are retrieved from the Turkish Statistical Institute at the province, i.e., NUTS3-level. The number of visits to touristic and municipal-certified accommodation

[1] On the map, red regions (high-high) denote higher values and neighbours with higher values. Blue, pale blue, and pink areas indicate low-low, low-high, and high-low regions, respectively. In other words, the stronger the colour, the more positive the global spatial autocorrelation outcome.

[2] GeoDa is an open source software tool developed by Luc Anselin and his team for spatial econometric analysis. For more information, check `https://geodacenter.github.io/`.

facilities was used to determine the tourism location preference. Detailed information with abbreviations and descriptions can be found in Table 1. The greatest limitation of the study stems from the data. The sum of the number of visits to tourism accommodation facilities and the municipal-certified accommodation facilities is used as an indicator of tourism preferences for residents and foreigners. The data includes those who come for different purposes, such as business or health reasons (hospital visits). We do not have the opportunity to distinguish the visitors, but the calculated variable reflects the tourist arrivals as the share of non-tourist visitors is quite low.

Table 1: Definitions of variables

Variable	The variable
TT02	The sum of local and foreign tourists in 2002
TT19	The sum of local and foreign tourists in 2019
LT02	Number of local tourist arrivals to accommodation establishments in 2002
LT19	Number of local tourist arrivals to accommodation establishments in 2019
FT02	Number of foreign tourist arrivals to accommodation establishments in 2002
FT19	Number of foreign tourist arrivals to accommodation establishments in 2019
SEA	Sea Dummy, =1 if the province is on a coast
BORDER	Border Dummy, =1 if the province is on a border

Note: Tourist numbers are retrieved from the TURKSTAT, and the dummy variables are generated by the authors. See Table B.1 for the list of coastal and inland provinces.

The summary statistics of the variables for the years 2002 and 2019 are shown in Table 2. The provinces with the minimum and the maximum values are explicitly indicated. The total number of tourists increased by 174% from 2002 to 2019[3]. The number of domestic tourists increased by 157%, while the number of foreign tourists increased by 196%. Kilis was the least preferred by both domestic and foreign tourists in 2002, while Bayburt was the least preferred in 2019. While the least preferred province of foreign tourists in 2002 was Çankırı, the province least preferred in terms of both domestic tourists and total tourists in 2019 is Bayburt. Antalya, which was the most preferred province for both domestic and foreign tourists in 2002, continued to be the favourite province for foreign tourists in 2019. Data show that in 2019 domestic tourists preferred İstanbul rather than Antalya.

Table 2: Summary statistics

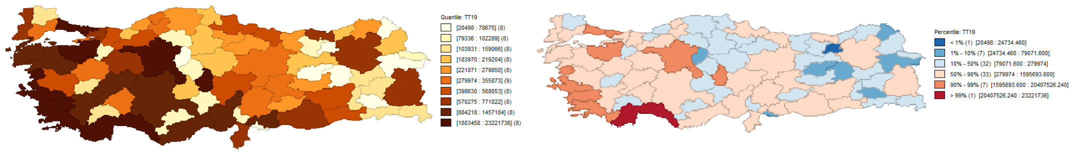
Variable	# of Obs.	Mean	Standard Dev.	Minimun		Maximum	
TT02	81	364,130.5	982,901.1	6,335	Kilis	7,373,184	Antalya
TT19	81	998,355.1	3,019,712.8	20,498	Bayburt	23,221,736	Antalya
LT02	81	202,137.5	348,234.3	5,135	Kilis	2,270,458	Antalya
LT19	81	518,679.0	793,931.5	20,309	Bayburt	4,728,033	İstanbul
FT02	81	161,993.0	655,360.3	0	Çankırı	5,102,726	Antalya
FT19	81	479,676.1	2,343,378.3	189	Bayburt	18,870,842	Antalya

[3] Although the data of the number of visits to tourism accommodation facilities start from 2000, the data of the municipal certified accommodation facilities start from 2002. Tourism accommodation facilities are available separately, either on a monthly or province-based basis. But monthly is not available on a provincial basis. Although province-based data is available until September 2022, it is not possible to use the current data. Primarily due to the availability of post-COVID data. So, to avoid the COVID effect, the end date is the pre-COVID period, i.e., 2019. Among the hypotheses of this study, there is no deciphering of the COVID effect. To analyse the effect of COVID on tourism location preferences is a subject for further studies.

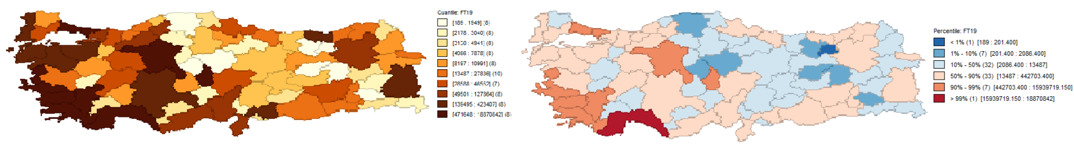
It is also necessary to look at how the top ten most visited cities have changed from 2002 to 2019. As shown in Table 3, the three most visited cities from 2002 to 2019 are Antalya, İstanbul, and Muğla in all three categories (total, domestic, foreign) (except in 2019 for domestic tourists). The main difference between 2002 and 2019 is that, in 2019, the most preferred province for domestic tourists is İstanbul, followed by Antalya and Ankara. While Denizli dropped off the list for the total number of tourists, Mersin entered. Although the ranking did not change for the first three provinces, the ranking changed for the other provinces. Ankara rose from 6^{th} place to 5^{th} place, Bursa from 10^{th} place to 8^{th} place, and Nevşehir from 9^{th} place to 7^{th} place, while Aydın dropped from 4^{th} place to 6^{th} place, and Balıkesir from 8^{th} place to 9^{th} place. When we look at the top ten list for foreign tourists, the top four cities have not changed. In this list, Balıkesir dropped off the list, but Çanakkale entered. Nevşehir rose from 7^{th} place to 5^{th} place, Ankara from 9^{th} place to 8^{th} place, and Bursa from 10^{th} place to 9^{th} place, while Denizli dropped from 6^{th} place to 7^{th} place. When we look at the list of locations for domestic tourists, İstanbul is the most preferred province instead of Antalya. Afyonkarahisar and Nevşehir dropped off the list in 2019, while Mersin and Konya entered. Ankara rose from 4^{th} to 3^{rd} place, İzmir from 5^{th} place to 4^{th} place, Bursa from 8^{th} place to 6^{th} place, Muğla dropped from 3^{rd} place to 5^{th} place, Aydın to 7^{th} place from 10^{th} place, and Balıkesir from 7^{th} place to 8^{th} place.

Table 3: The most visited cities

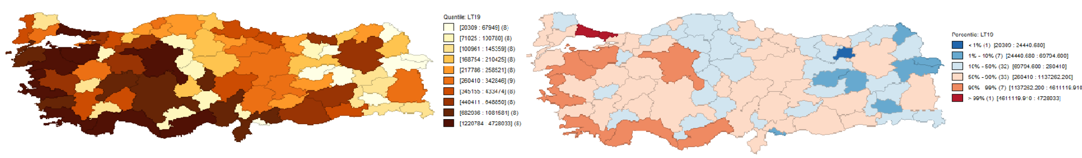
	2002			2019		
Total	TR611	Antalya	7,373,184	TR611	Antalya	23,221,736
	TR100	İstanbul	3,735,691	TR100	İstanbul	14,143,640
	TR323	Muğla	3,158,830	TR323	Muğla	4,520,044
	TR321	Aydın	1,626,180	TR510	İzmir	3,431,467
	TR310	İzmir	1,437,969	TR310	Ankara	2,888,542
	TR510	Ankara	1,153,694	TR321	Aydın	2,295,059
	TR322	Denizli	779,537	TR411	Nevşehir	2,051,550
	TR221	Balıkesir	762,509	TR714	Bursa	1,803,458
	TR714	Nevşehir	735,270	TR622	Balıkesir	1,457,184
	TR411	Bursa	629,545	TR221	Mersin	1,433,820
Foreigners	TR611	Antalya	5,102,726	TR611	Antalya	18,870,842
	TR100	İstanbul	2,262,570	TR100	İstanbul	9,415,607
	TR323	Muğla	1,813,593	TR323	Muğla	2,797,528
	TR321	Aydın	1,032,049	TR321	Aydın	1,229,769
	TR310	İzmir	599,078	TR310	Nevşehir	1,214,805
	TR322	Denizli	553,361	TR714	İzmir	1,142,910
	TR714	Nevşehir	390,262	TR510	Denizli	538,522
	TR221	Balıkesir	254,038	TR411	Ankara	471,648
	TR510	Ankara	195,627	TR322	Bursa	423,407
	TR411	Bursa	137,048	TRB21	Çanakkale	289,018
Locals	TR611	Antalya	2,270,458	TR611	İstanbul	4,728,033
	TR100	İstanbul	1,473,121	TR100	Antalya	4,350,894
	TR323	Muğla	1,345,237	TR510	Ankara	2,416,894
	TR510	Ankara	958,067	TR310	İzmir	2,288,557
	TR310	İzmir	838,891	TR323	Muğla	1,722,516
	TR321	Aydın	594,131	TR411	Bursa	1,380,051
	TR221	Balıkesir	508,471	TR321	Mersin	1,305,956
	TR411	Bursa	492,497	TR622	Balıkesir	1,220,784
	TR332	Afyonkarahisar	372,260	TR221	Konya	1,081,581
	TR714	Nevşehir	345,008	TR714	Aydın	1,065,290



(a) Total



(b) Foreign



(c) Local

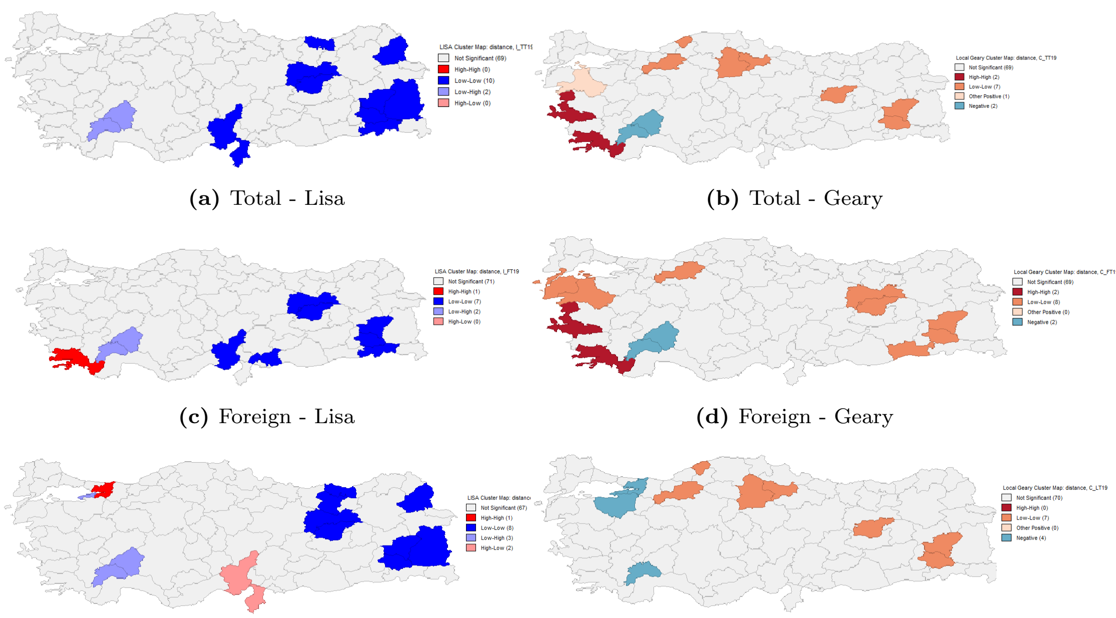
Figure 1: Tourist Arrivals in 2019

The location choices of tourists in 2019 are depicted in Figure 1[4], in which provinces are equally divided in quantiles (81 provinces by 10 different colours) on the left side, whereas provinces are distributed normally with percentiles on the right side. The darker colour on the left indicates the most preferred provinces. As can be seen from the maps, the favourite provinces are the Mediterranean and Aegean Sea coastal provinces. The most and least preferred provinces, respectively, are Antalya and Bayburt in all categories (total, foreign and domestic tourists).

To show the spatial dependence between the provinces in 2019, Lisa and Geary cluster maps are depicted in Figure 2. The Lisa Cluster Map is depicted by using Moran's I test, and Geary's Cluster Map utilizes Geary's c test. The Geary Cluster Map demonstrates high-high and low-low clusters and indicates positive spatial autocorrelation. High-high clusters indicate the provinces with a high number of tourists surrounded by all high provinces, and low-low clusters demonstrate low provinces around low ones, while negative indicates low provinces around high ones, or vice versa, i.e., high provinces around low ones. In the Lisa Cluster Map, it is possible to distinguish between low provinces nearby high provinces (or vice-versa), which is not probable in the Geary Cluster Map, where low-high and high-low clusters are exhibited as "negative" only. Looking at the total number of tourists, we observed ten low-low clusters (Adana, Bitlis, Erzincan, Hatay, Kars, Siirt, Şırnak, Trabzon, Tunceli, Van) and two low-high clusters (Burdur, Isparta). For the number of foreign arrivals, there are seven low-low clusters (Adana, Bitlis, Erzincan, Gaziantep, Siirt, Şırnak, Tunceli), two low-high clusters (Burdur, Isparta), and one high-high cluster (Muğla). On the other hand, for the locals, there are eight low-low clusters (Bitlis, Erzincan, Gümüşhane,

[4] The choices of tourists in 2002 are shown in Figure A.1.

Kars, Siirt, Trabzon, Tunceli, Van); three low-high clusters (Burdur, Isparta, Yalova), as well as one high-high (Kocaeli) and two high-low (Adana, Hatay). All the low clusters are either in central Anatolia or the south/southeast Anatolia region.



(a) Total - Lisa
(b) Total - Geary
(c) Foreign - Lisa
(d) Foreign - Geary
(e) Local - Lisa
(f) Local - Geary

Figure 2: Lisa and Geary Cluster Maps for 2019

Geary's cluster demonstrates a totally different picture than that of Lisa. Results totally depend on which test has been used. In the Geary Cluster Map, there are two high-high clusters (İzmir, Muğla) and seven low-low clusters (Amasya, Bitlis, Bolu, Bartın, Tunceli, Siirt) for the total number of tourists. On the other hand, for foreigners, there are two high-high clusters (İzmir, Muğla) and eight low-low clusters (Balıkesir, Çanakkale, Bitlis, Bolu, Erzincan, Mardin, Siirt, Tunceli). For domestic tourists, there are no high-high clusters and seven low-low clusters (Amasya, Bartın, Bolu, Bitlis, Çorum, Siirt, Tunceli). Two provinces (Burdur, Isparta) have negative spatial autocorrelation for both total and foreign tourists concurrently, and for domestic tourists, three provinces (Burdur, Bursa, Kocaeli) have negative spatial autocorrelation.

In both tests and for all three groups, Bitlis, Siirt, and Tunceli are the common low provinces surrounded by low provinces (low-low clusters), whereas Burdur is the common low province encircled by high provinces (low-high clusters). In conclusion, low-high clusters, for example, Burdur, have the potential to attract tourists that are visiting neighbouring provinces. Salda Lake is an example which shows the tourism potential of Burdur to attract both domestic and foreign tourists (Ongun et al., 2015). Low-low clusters have no potential to attract tourists as the provinces surrounding them also have low tourist interest.

4 Econometric Results

The central focus of this study is to reveal the factors of domestic, foreign, and total tourism location choice. Tourists may stick to their primary choice, and tourism destinations attract more tourists. Location choice is also affected by whether the province is near the seaside or located inland. The main hypothesis of this study is to examine if the location choices of tourists are spatially dependent or not.

The first three columns of Table 4 are for domestic tourists, while the fourth to sixth is for foreign tourists. Since the choice of location by tourists has not changed significantly over time, our main dependent variable is the tourist location choice in 2019. We include a seaside and a border dummy for the choice of location. Seaside provinces are preferred

Table 4: OLS estimation results with spatial tests

	LT19	LT19	LT19	FT19	FT19	FT19
LT02	2.128*** (0.092)	2.101*** (0.000)	2.057*** (0.000)			
FT02				3.475*** (0.095)	3.514*** (0.099)	3.307*** (0.16)
Sea, =1 if coastal		53,109.0 (72,545.2)	55,646.8 (73,590.2)		-158,989.0 (135,720.0)	-211,330.0 (137,960.0)
Border, =1 if on border		-2,686.2 (83,901.5)	-4,468.6 (84,669.8)		94,834.9 (160,275.0)	116,846 (159,092.0)
FT19			0.007*** (0.028)			
LT19						0.224* (0.136)
Constant	88,630.8** (36,952.6)	76,137.2* (45,467.9)	81,016.3* (49,193.3)	-83,258.7 (63,611.3)	-52198.2 (83,482.3)	-120,691.0 (92,476.2)
R-Square	0.871	0.872	0.872	0.945	0.946	0.948
Jarque-Bera	505.5 0.000	516.8 0.000	467.52 0.000	1,675.8 0.000	1,575.9 0.000	1,315.1 0.000
Breusch-Pagan	166.92 0.000	176.19 0.000	337.86 0.000	58.85 0.000	97.4 0.000	104.9 0.000
Koenker-Bassett	23.75 0.000	24.8 0.000	49.76 0.000	5.1 0.024	8.68 0.034	10.24 0.037
Moran's I (error)	0.172 0.054	2.004 0.045	1.985 0.047	5.325 0.000	5.603 0.000	5.58 0.000
LM (lag)	0.178 0.673	0.126 0.723	0.142 0.706	0.811 0.368	0.705 0.401	0.693 0.405
Robust LM (lag)	0.388 0.533	0.471 0.492	0.419 0.517	10.102 0.000	10.029 0.002	9.599 0.002
LM (error)	3.02 0.082	2.859 0.091	2.753 0.097	25.502 0.000	26.657 0.000	26.269 0.000
Robust LM (error)	3.231 0.072	3.204 0.074	3.03 0.082	34.793 0.000	35.98 0.000	35.175 0.000
LM (SARMA)	3.409 0.182	3.329 0.189	3.172 0.205	35.604 0.000	36.686 0.000	35.868 0.000

Notes: Standard errors of coefficients are in parentheses, and probability values of tests are given below the tests.

by most tourists for 3S (Sun, Sea, and Sand; Brau (2008); Mestanza-Ramón et al. (2020)). The border dummy will show us whether easing passage through customs would increase tourism levels. The choices of domestic tourists are used as regressors for the foreign tourists and vice-versa to understand whether these two groups are influenced by each other.

Both domestic and foreign tourists stuck to their choices in 2002. Over these 17 years, the number of domestic tourists has doubled while the number of foreign tourists has tripled. As opposed to our expectations, being on the seaside or border does not have a major influence on the location choices of either group. It is found that for domestic tourists, the seaside location has a positive, while the border location has a negative influence. For foreign tourists, it is the opposite, but the dummies are not significant. This is also an indicator of the main difference between the location choices of domestic and foreign tourists. Each group's location choice is influenced by the other's choice, but foreign tourists are influenced by domestic tourists' location choices three times more than that domestic tourists. Regarding the explanatory power of the models, the variables which are used in the models explain 87-95% of the location preferences of both tourist groups. While Moran's I spatial autocorrelation statistics are on the limits of the 5% significance level, the null hypothesis of no spatial autocorrelation is not rejected for domestic tourists at the 1% significance level. However, it is rejected for foreign tourists at the 1% and 5% levels. Moreover, LM error, LM lag, and LM-SARMA tests indicate no spatial correlation for domestic tourists, although it exists for foreign tourists. The main conclusion is that a foreign tourist's choice of location is spatially dependent, but this is not true for domestic tourists.

5 Conclusion

The main aim of this study is to reveal the factors behind the location choices of domestic and foreign tourists. The main focus is on the spatial dependence of a tourist's location choice. The most preferred locations in Turkey between 2002 and 2019 have remained almost the same, with some changes in the ranking. Although the ranking of provinces has changed, the most developed provinces have remained in the high cluster group over the past 15 years). According to the Lisa cluster maps, positive low clusters are seen in central and south/southeast Anatolia. According to the Geary cluster map, positive high clusters are seen in the Aegean region, and low high clusters are seen in the Black Sea Region. Low-high clusters also indicate the provinces which have the potential and attract tourists from popular nearby provinces.

The econometric analysis demonstrates that both domestic and foreign tourists stuck to their location choice in 2002. Probably these are tourist cities. The location choice of tourists did not change over seventeen years; the number of tourists just doubles for domestic tourists and tripled for foreign tourists. The seaside and border provinces are not statistically significant influences on the choice of tourists, contrary to expectations and existing literature. Foreign tourists' location choices are affected by domestic tourists, and also vice versa is true, although the degree of this effect is different for both groups. Results show that foreign tourists are influenced by domestic tourists' location choices three times more than that domestic tourists.

According to the spatial autocorrelation tests, the main finding of this study is that foreign tourists' location choices are spatially dependent and statistically significant. However, this is not true for domestic tourists, which is in line with the findings of Günay Aktaş et al. (2017). This may indicate that foreign tourists prefer certain regions spatially and visit more than one province. In other words, while the surrounding cities being tourists affects foreigners, this is not true for domestic tourists. Tourists also have alternative accommodation choices, such as staying in a tent/caravan or with relatives/friends. Since the data is only based on the number of tourists staying in hotels, it is not possible to reach more realistic results because we cannot isolate the hotel stays and tourism choices and thus cannot include the touristic stays at facilities other than hotels.

As a result, both domestic and foreign tourists are consistent in their preferences over time (i.e., they stick to their first preferences) and are affected by each other's preferences. Although there is spatial dependence in the province preferences of foreign tourists, for domestic tourists, there is not. For further analysis, the effect of COVID-19 on tourist choice location can be studied when post-COVID data becomes available.

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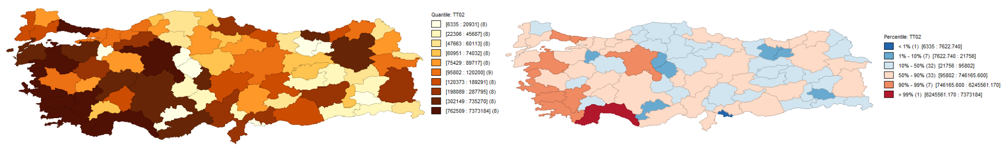
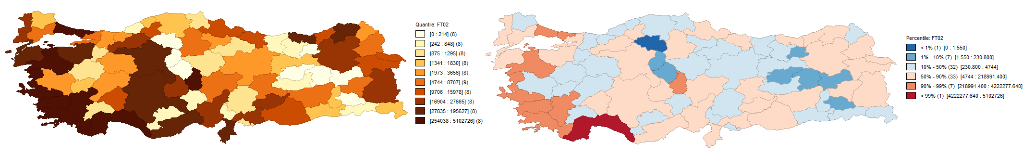
Appendices

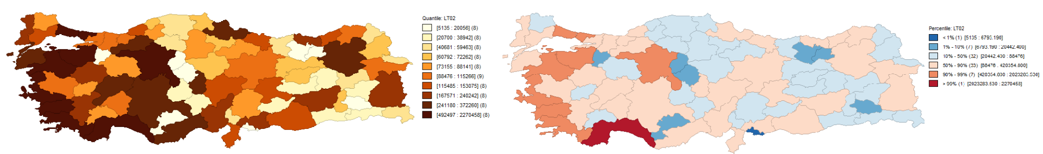
Appendix A: Tourist arrivals in 2002



(a) Total



(b) Foreign



(c) Local

Figure A.1: Tourist Arrivals in 2002

Appendix B: List of coastal and border cities

Table B.1: List of coastal and border cities

Coastal	Kırklareli, Edirne, Tekirdağ, Çanakkale, İstanbul, Kocaeli, Sakarya, Düzce, Zonguldak, Bartın, Kastamonu, Sinop, Samsun, Ordu, Giresun, Trabzon, Rize, Artvin, Hatay, Adana, Mersin, Antalya, Muğla, Aydın, İzmir, Balıkesir, Bursa, Yalova.
Border	Kırklareli, Edirne, Artvin, Ardahan, Kars, Iğdır, Ağrı, Van, Hakkari, Şırnak, Mardin, Şanlıurfa, Gaziantep, Kilis, Hatay.