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The Climate Index-Length of Stay Nexus

Abstract

This study sought to analyze the effect of the climate of tourists' region of origin on their length of stay in a specific inland destination as climate of origin has been ignored in previous analyses. The present study collected data from 674 valid surveys of visitors in the selected destination and applied a zero-truncated negative binomial regression model and a Poisson-inverse Gaussian regression model. The results for this destination suggest that climate of origin affects tourists' length of stay. This finding was obtained via the Poisson-inverse Gaussian regression model because of its greater tolerance to long tail distributions. Similarities and differences were found regarding results for other destinations found in the literature. The present findings further include the non-significant effect of reasons for traveling and tourists' satisfaction and the significant influence of tourists' mode of transport, income, and age on length of stay. Cheaper lodging categories also have an important impact on visitors who prefer extended stays.

Keywords: Climate index; inland destination; length of stay; regional study; zero-truncated negative binomial model

1. Introduction

This study sought to add to knowledge about the implications of climate for tourism. Tourism industry is highly climate dependent (Amelung, Nicholls & Viner, 2007), and understanding patterns in the relationship between climate and tourism is a core factor contributing to more effective tourism planning (Gómez-Martín, 2005). Some scholars have thus begun to research the anticipated consequences of climate change in terms of attracting tourists from different countries (e.g., Bigano, Hamilton, & Tol, 2007; Hamilton, Maddison, & Tol, 2005a; 2005b; Scott, McBoyle, & Schwartzentruber, 2004) or changing tourism supply (Elsasser & Messerli, 2001).

Researchers have generally accepted that a distinction can be made between two sets of motivational variables, namely, push and pull factors (Alén, Nicolau, Losada & Domínguez, 2014), wherein the first set influences the desire to travel while the second affects the choice of destination (Crompton, 1979). Climate can thus act as both a push and pull factor affecting the decisions of potential tourists (Hamilton et al., 2005a). This

factor can be used as a "tourist attractor" (Maddison, 2001) or pull variable that overcomes the barrier of distance and promotes destinations in more distant markets (Nicolau & Mas, 2006) or that strengthens the attractiveness of destinations to tourists.

Climate, therefore, can function in the same way as cultural factors or natural resources do (Kozak, 2002). Its importance is shown, for example, in many tourists' choice to spend their holidays in warm and sunny destinations where they can swim or sunbathe (Lise & Tol, 2002). As a result, some researchers such as Lohmann and Kaim (1999) have placed destinations' climate among the most important criterion of choice, coming behind only price and landscape. In addition, some destination managers have used climatic conditions in their destinations as a differentiating element, taking advantage of this resource to develop their popularity with tourists (Amelung et al., 2007).

However, a set of push factors concerning destination attributes, including climate of origin (Amelung et al., 2007), have still not been adequately researched (Eugenio-Martin & Campos-Soria, 2010). For example, empirical evidence has been found for the significance of the push effect of the United Kingdom's climate on its citizens' propensity to travel abroad (Giles & Perry, 1998). Notably, however, tourists show a greater propensity to spend less in destinations with better climate (Campos-Soria, Inchausti-Sintes & Eugenio-Martin, 2015; Eugenio-Martin & Campos-Soria, 2014). Climate has also been identified as a core factor in tourists' destination choice (Bigano et al., 2007) since the climate of tourists' region of origin is a determining factor in their choice of destination (Eugenio-Martin & Campos-Soria, 2010), showing that the contrast between climate of origin and destination is a possible pull factor.

Regarding the relationship between climate and length of stay, several studies have found proof of a statistically significant positive relationship between climate of destination and duration of stay (e.g., Alén et al., 2014; Barros, Butler, & Correia, 2010; Nicolau & Más, 2009). However, more research is needed on the role played by the climate of tourists' region of origin in tourism demand (Eugenio-Martin & Campos-Soria, 2010). Only Campos-Soria et al. (2015) report finding an indirect relationship between the climate of tourists' place of residence and their length of stay, and this connection was not the main focus of the cited authors' work. The present study thus sought to address this gap in the existing literature by analyzing the relationship

between climate as a push factor and length of stay. To the best of our knowledge, this is the first article to focus on this topic.

Length of stay is especially important in tourism research as this variable affects both the structure and design of destinations and accommodation businesses. Length of stay also influences tourism policies (Prebensen, Altin & Uysal, 2015), lodging companies' occupation ratios and final income (Alegre & Pou, 2006; Yang, Wong & Zhang, 2011), and the decision processes of both visitors (Decrop & Snelders, 2004) and destination planners (Alegre & Pou, 2006; Salmasi, Celidoni & Procidano, 2012). In addition, length of stay affects total and daily tourist expenditures (Cannon & Ford, 2002; Downward & Lumsdon, 2000; Kastenholz, 2005).

The overall global trend is a decrease in length of stay, which has compromised current models of tourist behaviors and the public and private sectors' pledges to address climate change (Gössling, Scott, & Hal, 2018). Thus, more studies of length of stay are needed. More importantly, a fuller understanding of the main factors that can influence this important variable, such as climate of origin, is crucial to determining the best plans and deployment of communication tools for destination managers. This information on factors allows both hotels and destinations to manage their limited resources to help them deliver better results. However, the factors affecting length of stay do not behave homogeneously in all destinations (Alén et al., 2014), so results can differ significantly between destinations (Gössling et al., 2018). Therefore, generalizations about these variables' influence must be based on analyses of different destinations.

Some examples of the wide variety of destinations in which length of stay patterns have been studied are Bodrum, Turkey (Gokovali, Bahar & Kozak, 2007); Dalian, China (Wang, Fong, Law & Fang, 2012); Madagascar (Peypoch, Randriamboarison, Rasoamananjara & Solonandrasana, 2012); Madeira (Barros & Machado, 2010), the Algarve (Barros et al., 2010), and the Azores in Portugal (Menezes, Moniz & Vieira, 2008); Santiago de Compostela in Spain (Rodriguez, Martinez-Roget, & Gonzalez-Murias, 2018); Norway (Prebensen et al., 2015; Thrane & Farstad, 2012); and South Africa (Scholtz, Kruger & Saayman, 2015). Another example is research by de Oliveira Santos, Ramos, and Rey-Maquieira (2015), who analyzed length of stay in Brazil, applying a multi-destination approach. Salmasi et al. (2012) also focused on several Italian destinations. These studies' findings support the conclusion that the nature of

length of stay and specific destinations prevents researchers from extrapolating conclusions from one destination to another, so research on length of stay in multiple destinations is always justified.

Another group of researchers has focused on analyzing the behavior of length of stay for particular segments of tourists. For instance, Martínez-García and Raya (2008) examined length of stay in low cost tourism, while Ferrer-Rosell, Martínez-Garcia, and Coenders (2014) analyzed the factors determining duration of stay for tourists on inbound airlines to Spain. Alén et al. (2014) focused on senior Spanish tourists' length of stay profiles, and Fleisher and Pizam (2002) did a similar study of senior Israeli tourists' patterns. Barros et al. (2010) specifically analyzed this variable in golf tourism in Portugal's Algarve region, and Thrane (2016) centered his research on length of stay among Norwegian student tourists. Others scholars have focused on the relationship between nationality and length of stay, such as Grigolon, Borgers, Kemperman, and Timmermans (2014) in the case of German tourists and Barros, Correia, and Crouch (2008) with Portuguese tourists in Latin America.

The above research highlight the present study's contributions. This research is the first to incorporate the climate of tourists' place of residence in length of stay analyses, which is an important innovation. In addition, other researchers have compared typical top tier, coastal, or country capital destinations, while the current study focused on a second-level, inland, and emerging destination. The results indicate that this type of destination presents different patterns in the configuration of length of stay.

2. Material and Methods

The choice of method to analyze length of stay presented a notable challenge because this variable is always a positive integer (Ferrer-Rosell et al., 2014), which has resulted in a wide range of mixed methods reported in the literature (Thrane, 2012). This has sparked a debate over the appropriateness of each method. A review of the literature revealed three factions that argue in favor of different methodologies.

For duration of stay analysis, the most widely used method is survival models—also called duration models—which have been used in studies by many authors, such as Barros et al. (2008), Barros and Machado (2010), Gokovali et al. (2007), Martínez-Garcia and Raya (2008), Menezes et al. (2008), and Peypoch et al. (2012). This faction

includes, for example, Wang et al. (2012), who declare that survival models are excellent for the purpose of examining length of stay.

However, others such as Thrane (2012) postulate that the benefits of applying this complex method are only valid in the case of longitudinal models and, within these, only parametric models. Thrane (2015) claims count models are much more complicated and less transparent from a statistical point of view than ordinary least squares (OLS) models, which offer similar results to count models. The cited researcher argues that OLS models' simplicity makes them the best option for length of stay analyses. The latter methodology has been used, for example, by Lee, Alexander, and Kim (2014); Scholtz et al. (2015); Thrane (2012); Thrane and Farstad (2012); and Wang, Fong, Law, & Fang, 2018).

Nonetheless, as Prebensen et al. (2015) suggest, using an OLS model with length of stay may violate the continuity assumptions of the dependent variable. This issue thus makes count models the most adequate method, especially given the particular characteristics of length of stay. The alternative of Poisson or negative binomial models has been considered most appropriate by, for example, Alén et al. (2014); Brida, Meleddu, and Pulina (2013); Prebensen et al. (2015); and Salmasi et al. (2012). The present study, therefore, applied this approach rather than an OLS model.

While the above three factions in this field of study are the largest groups, some researchers are proponents of still other methodologies. These include, among others, Alegre, Mateo, and Pou (2011), who argue in favor of latent class models, and Ferrer-Rosell et al. (2014) and Yang et al. (2011), who prefer to employ ordered logit models. Another relevant example is Rodriguez et al. (2018), who recently used the Heckman selection model to discriminate between tourists and hikers (i.e., same-day visitors). Grigolon et al. (2014), in turn, conducted their research with a dynamic mixed multinomial logit model. However, multinomial logit models have disadvantages that are the result of the multiple alternatives for length of stay, which prevent these models from achieving efficient estimates. Count models do not have this problem because of their simplicity and adaptability when processing data (Alén et al., 2014). The present study, therefore, opted for a count model and, in particular, zero-truncated negative binomial regression.

Based on Alén et al.'s (2014) work with counting models, length of stay analysis can focus on negative binomial distribution, applying Formula (1):

$$P(y_t) = \frac{\Gamma(\alpha^{-1}+y_t)}{\Gamma(\alpha^{-1})\Gamma(y_t+1)}\left(\frac{\alpha^{-1}}{\alpha^{-1}+e^{\sum_{k=1}^{k}\beta_k x_{tk}}}\right)^{\alpha^{-1}}\left(e^{\frac{\sum_{k=1}^{k}\beta_k x_{tk}}{\alpha^{-1}+e^{\sum_{k=1}^{k}\beta_k x_{tk}}}}\right)^{y_t}_{\forall y_t=\{0,1,2,\dots\}} \quad (1)$$

In this formula, given the probability that the individual t will choose the number of days y_t for a gamma function represented by Γ, χ_{tk} represents the inherent characteristics of the subject, and β_k is the parameter associated with the characteristic k. In addition, α is the parameter that covers the dispersion of observations so that one method of validating the binomial model against the Poisson model is by testing the null hypothesis of $\alpha = 0$.

In this context, Poisson models are a particular form of negative binomial models in which $\alpha = 0$, so both the mean and variance have the same value (Gurmu & Trivedi, 1996), which makes Poisson models more restrictive than negative binomial models (Thrane, 2015). Thus, binomial models are more commonly used with empirical data because these models tolerate overdispersion (Englin & Shonkwiler, 1995; Gurmu & Trivedi, 1992; Winkelmann & Zimmermann, 1995). However, given the nature of length of stay, the function requires an additional modification since the value 0 is not a valid value for the number of days of a tourist stay. The model needs to be adjusted (Greene, 2012) by using—as did Alén et al. (2014)—a zero-truncated negative binomial regression whose final expression, according to Cameron and Trivedi (1998), can be expressed as Formula (2):

$$P(y_t|y_t>0) = \frac{\Gamma(\alpha^{-1}+y_t)}{\Gamma(\alpha^{-1})\Gamma(y_t+1)}\left(\frac{\alpha^{-1}}{\alpha^{-1}+e^{\sum_{k=1}^{k}\beta_k x_{tk}}}\right)^{\alpha^{-1}}\left(e^{\frac{\sum_{k=1}^{k}\beta_k x_{tk}}{\alpha^{-1}+e^{\sum_{k=1}^{k}\beta_k x_{tk}}}}\right)^{y_t}\left(\frac{1}{1-(1+\alpha\cdot e^{\sum_{k=1}^{k}\beta_k x_{tk}})^{\alpha^{-1}}}\right)_{\forall y_t=\{1,2,\dots\}} \quad (2)$$

In addition to the negative binomial regression and Poisson models, the present research introduced another model called the Poisson-inverse Gaussian model (Holla, 1967) in order to determine if climate of origin has an impact on visitors' length of stay. The latter model can be an alternative to a negative binomial model because both share key mathematical properties that make them ideal for this type of data (Willmot, 1987). While the negative binomial model combines Poisson and gamma distributions, the

inverse Gaussian model does the same with Poisson and inverse Gaussian distributions (Hilbe, 2014). The Poisson-inverse Gaussian model is better able to adapt to the long tail distribution typically observed in trip data (Narukawa & Nohara, 2018). Similar to negative binomial distribution, the form of summands distribution is known (Karlis & Xekalaki, 2005). According to Hilbe (2014), the Poisson-inverse Gaussian distribution can be given as:

$$f(y;\mu,\alpha) = \sqrt{\frac{\propto^{-1}}{2\pi y^3}} \exp\left(\frac{-\propto^{-1}(y-\mu)^2}{2\mu^2 y}\right) \quad (3)$$

in which y, μ, and ∝ are positive.

The Poisson-inverse Gaussian distribution has a larger range of skewness than that of negative binomial and generalized Poisson distributions (Nikoloulopoulos & Karlis, 2008). In addition, prior research has indicated that this approach can be used to model count data with a high initial peak and strong right-skewed distribution (Hilbe, 2014), which makes this model more flexible when dealing with count datasets with diverse heavy-tailed distributions (Zhu & Joe, 2009).

The inverse Gaussian distribution's properties mean this type of model has great descriptive and predictive potential in research on length of stay (Whitmore, 1975). This model can coexist with the other methodologies in length of stay analyses, particularly within medical research. Some researchers such as Karadeniz, Bekiroglu, Karaca, Guler, and Guler (2012) suggest that Poisson-inverse Gaussian models are better than survival models in terms of giving patients with a fatal illness an estimate of how much time they have left to live. Due to the same reasons described previously for other models, this type of model's use of zeros needs to be adjusted, resulting in a zero-truncated Poisson-inverse Gaussian model. The present research applied this approach using Stata 13 software and Hilbe's (2014) handbook.

2.1 Database

In order to determine the role of the climate index variable in tourists' length of stay at the inland destination under study, data were gathered with a questionnaire on the ground. A total of 674 valid questionnaires were collected during the summer of 2016 for use in subsequent analyses. During the high season running from June to September,

most overnight stays are concentrated in the region under study (Observatorio de Sostenibilidad Turística, 2016). Thus, summer was considered the most important season in which to concentrate on gathering questionnaires. This ensured an acceptable margin of error of 4.96% with a confidence level of 99%, assuming an infinite population. The questionnaire was designed to focus on the variables most used in the literature on length of stay, which were classified into four categories of variables.

The destination selected for this research was the interior of the province of Malaga, Spain. This destination accounts for approximately 28% of all establishments and 13% of the accommodation facilities in this province (Observatorio de Sostenibilidad Turística, 2016). The number of bed available in inland Malaga surpass those offered by Andalusian provinces such as Jaen or Cordoba (Empresa Pública para la Gestión del Turismo y del Deporte de Andalucía, 2016). The area's most common type of housing is rural and tourist accommodation houses, which account for more than 80% of establishments in the interior and appear in about 44% of the region's rooms (Observatorio Turístico de la Costa del Sol, 2016).

More than half of the tourists in this destination are domestic, of which one out of two are Andalusians, while the foreign tourists are predominantly British, French, and German (Observatorio Turístico del Interior de la Provincia de Málaga, 2015). Based on data from the Observatorio de Sostenibilidad Turística (2016), this destination received over a million tourists in 2016, with this flow showing a strong increase close to 12% in the same year. Overall, this destination is still a young and growing interior destination, which has significant differences from its neighbor, the Costa del Sol, on which abundant research has already focused (e.g., Fernández-Morales & Mayorga-Toledano, 2008; Jurado, Damian & Fernández-Morales, 2013; López-Sánchez & Pulido-Fernández, 2016).

2.2 Variables and Measures

The first group of variables included in the present study are sociodemographic variables, whose influence on length of stay has been confirmed as significant (Barros & Machado, 2010; Salmasi et al., 2012). Within this group, perhaps the most important variable is age, which has an extensively documented relationship with length of stay (e.g., Barros & Machado, 2010; Barros et al., 2010; Martínez-García & Raya, 2008;

Wang et al., 2012). The effect of age is normally positive and usually attributed to a greater availability of time, especially for senior tourists (Alén et al., 2014).

Gender is another determinant of length of stay, with men having a greater propensity to travel longer compared with women (Barros & Machado, 2010; Meng & Uysal, 2008). This group of variables also includes nationality (Gokovali et al., 2007; Thrane & Farstad, 2012), which is usually associated with a longer duration of stay for foreign tourists who try to counterbalance higher travel costs with a greater number of days. Domestic tourists can afford to make weekend getaways or shorter trips.

For similar reasons, some researchers have used distance to the destination. The results usually show a positive relationship between distance and length of stay (e.g., Nicolau & Más, 2019; Yang et al., 2011). However, some research, such as Alén et al. (2014), has not found evidence for this connection. Internal tourist demand is of great importance in many regions of the world, although it has often been eclipsed in the literature by analyses of international tourism (Eugenio-Martin & Campos-Soria, 2010).

The second group of variables is life cycle characteristics (Grigolon et al., 2014), which can include aspects such as tourists' marital status (Salmasi et al., 2012) or household composition (Grigolon et al., 2014). For example, traveling with children tends to require more detailed planning of each trip and thus these trips usually are longer (Grigolon et al., 2014; Scholtz et al., 2015).

This category can also include aspects such as income level (Gokovali et al., 2007; Wang et al., 2012), with most researchers finding a positive relationship between income and duration of stay (e.g., Ferrer-Rosell et al., 2014; Fleischer & Pizam, 2002; Gokovali et al., 2007; Grigolon et al., 2014; Mak, Moncur, & Yonamine, 1977; Mak & Nishimura, 1979; Peypoch et al., 2012; Salmasi et al., 2012; Wang et al., 2012). Employment status (Alén et al., 2014), although often related to income, is more closely associated with the availability of leisure time to travel, as in the case of retired tourists (Fleischer & Pizam, 2002). Along these lines, Campos-Soria et al. (2015) found proof that, in times of crisis when income is reduced, the most popular strategies to cut back on travel costs are to reduce length of stay or find cheaper accommodations.

The third set of variables is travel motivations (de Oliveira Santos et al., 2015; Yang et al., 2011), which includes distinguishing between reasons for traveling (i.e., push

factors) or the basic purpose of trips. These variables appear in almost all the literature on length of stay, and their relationship with length of stay has been shown to be significant by various studies (e.g., de Oliveira Santos et al., 2015; Hellström, 2006). Others possible variables within this category are push factors such as the desire to travel (Thrane, 2012) and motivations to stay or return (i.e., satisfaction) (Neal, 2004; Neal, et al., 2007).

The last group of variables comprises determinants of trip duration such as characteristics of trips (Ferrer-Rosell et al., 2014; Salmasi et al., 2012; Wang et al., 2018). These include, among others, type of accommodation and board and mode of travel, as well as with whom tourists travel. This category also covers the main travel costs. As stated previously, tourists usually increase their length of stay to compensate for their extra traveling costs (Nicolau & Más, 2009). In the existing research, transportation costs were always closely related to distance (Gössling et al., 2018) until the proliferation of low-cost airlines helped reduce length of stay by favoring an increase in the number of trips (Barros & Machado, 2010). However, according to Gössling et al. (2018), travel costs may not necessarily translate into increased length of stay for individual destinations since tourists can take advantage of a trip to visit adjacent destinations.

The city-level data on the relevant tourists' region of origin were acquired via a survey in order to calculate the climate index of their regions of origin. This allowed the elimination of the nationality variable, which was redundant because of the climate index used. The distance variable was eliminated for the same reason, and mode of travel was used alone. Mode of travel not only has a relationship with distance but also with travelers' budget priorities. Given the growing importance of low-cost tourism in Spain (Martínez-García & Raya, 2008), the present study assumed that mode of travel would be more useful than the distance traveled.

The present research was based on Mieczkowski's (1985) work on the composition of the climate index. For this purpose, the monthly temperature needed to be collected, which was found to be in the range of 15 to 35º C. The number of rainy days per month also had to be recorded. Mieczkowski (1985) suggests that 10 or less than 10 days per month of rainfall is "good" weather. Finally, the volume of this precipitation was needed, which was less than or equal to 60 millimeters per month for the destination in

question. These components determine which months have good weather. The number of months with good weather constitutes the climate index.

According to Eugenio-Martin and Campos-Soria (2010) and Miezkowski (1985), the tourism climate index *(W_r)* can be expressed as Formulas (4) through (9):

$$W_r = \sum_{m=1}^{12} W_{rm} \tag{4}$$

in which:

$$W_{rm} = DT_{rm}.DR_{rm} \tag{5}$$

$$DT_{rm} = \begin{cases} 1 \; if \; 15 \leq AT_{rm} \leq 35 \\ 0 \qquad otherwise \end{cases} \tag{6}$$

$$DR_{rm} = DDR_{rm}.DTR_{rm} \tag{7}$$

$$DDR_{rm} = \begin{cases} 1 \; if \; R_{rm} \leq 10 \\ 0 \; if \; R_{rm} > 10 \end{cases} \tag{8}$$

$$DTR_{rm} = \begin{cases} 1 \; if \; TR_{rm} \leq 60 \\ 0 \; if \; TR_{rm} > 60 \end{cases} \tag{9}$$

and:

- AT_{rm} = Average temperature of region *r* during month *m*
- R_{rm} = Days of rainfall in region *r* during month *m*
- TR_{rm} = Total rainfall in region *r* during month *m*
- DT_{rm} = Dummy variable for temperature
- DDR_{rm} = Dummy variable for days of rainfall
- DTR_{rm} = Dummy variable for total rainfall

3. Results

Table 1 is a compilation of details on the sample's composition. The average length of stay in the sample is longer than a week (7.654 days), but the median value is 4 days and the third quartile is even lower than the average (7 days). Based on these statistics and the graphs in Figure 1, a high initial peak could be detected.

INSERT TABLE 1 HERE

INSERT FIGURE 1 HERE

The data also produced skewness and kurtosis values for length of stay of 9.927 and 118.015, respectively. According to Hilbe (2014, p. 181), a zero-truncated Poisson-inverse Gaussian model "is ideal for highly skewed data and highly over dispersed data that cannot have zero counts." Thus, this sample was judged appropriate for an application of a long tail model such as Poisson-inverse Gaussian regression.

The sample consisted mainly of men, with the most common age group being individuals between 40 and 49 years. In this sample, the fundamental travel motivation is holidays, and these tourists travel mainly in groups, especially as part of a couple, but without dependent children. The sample was, therefore, consistent with the tourist profile defined by the Observatorio Turístico del Interior de la Provincia de Málaga (2015) and Observatorio de Sostenibilidad Turística (2016), which suggests that the present sample closely matched the region's general tourist profile. Their preferred type of accommodation is mainly hotels, especially those with three stars. Regarding the respondents' scores, the most valued destination companies are accommodations, followed by restaurants and bars and, finally, those dedicated to leisure activities. However, all companies received ratings at levels close to 8 out of 10.

The results of the regression analyses are shown in Table 2. The first result that needs to be emphasized is the sigma values, which meant that the null hypothesis of equality between mean and variance could be discarded. This finding justified the application of the negative binomial regression model versus the Poisson model (Cameron & Trivedi, 1998; Stasinopoulos, Rigby & Akantziliotou., 2008).

INSERT TABLE 2 HERE

4. Discussion

The first important result is the non-significant relationship in the zero-truncated negative binomial regression between the climate index and length of stay. This finding differs from the results for the zero-truncated Poisson-inverse Gaussian model, as well as Campos-Soria et al.'s (2015) findings. With respect to the disparity of results

between models, an important aspect to bear in mind is that the coefficient in the negative binomial regression is on the verge of statistical significance at 0.109. This disparity in the significance results may be due to the Poisson-inverse Gaussian regression's greater adaptability regarding long-tail data (Dean, Lawless & Willmot, 1989). The above explanation can be considered to be in line with the Akaike and Schwarz's Bayesian information criterions' values obtained, both of which are lower for the zero-truncated Poisson-inverse Gaussian model, suggesting that the latter model fits the data better. Climate may even, as suggested by Eugenio-Martin and Campos-Soria (2010), affect the choice of destination to visit, so climate index analysis is a mandatory aspect of managing tourist destinations successfully.

In addition, the current research's results confirm the potential value of substituting tourists' nationality with variables that until now have not been taken into account in analyses of factors that affect length of stay. Foreign tourists' longer duration of stay may compensate for their higher travel costs, or domestic tourists may find weekend breaks or shorter trips worthwhile despite the considerable cost of traveling by airplane. Overall, the importance of tourists' nationality to their duration of stay cannot be devalued. Clear evidence has been found that nationality influences length of stay and even creates different patterns of impact on length of stay when national and foreign tourists coexist at same time in destinations (Soler, et al., 2018).

With regard to the selected destination's patterns, the results, not unexpectedly, show some similarities and differences from what was found in the literature review, as this destination has its own unique set of characteristics affecting length of stay. The most striking finding is that, except for education, travel motivations do not condition duration of stay. This contrasts strongly with what is generally reported in the literature (e.g., Alén et al., 2014; de Oliveira Santos et al., 2015), so the present finding could be due to various factors that future studies will need to investigate.

One set of reasons refers to the motives for choosing a destination when planning trips, in which the time available for traveling could significantly condition duration of stay. The selected destination is not a weekend escape destination because tourists' average length of stay is longer than the week. Therefore, this category of reasons could be further supported by the non-significant influence of tourists' satisfaction levels on duration of stay, but this is not indicated by, for example, Yang et al.'s (2011) results. It

may also be possible, in this case, to adjust the research model to address the disparities found in the model applied in the present study, as suggested by Thrane and Farstad (2012) (i.e., non-significance for OLS models and negative significance in Cox regressions).

However, in other destinations, trip planning variables are also significant, although this does not diminish the importance of tourists' travel motivations. In line with the literature, the results for the destination under study confirm that significance of type of accommodation, especially the positive effect of cheaper establishments, as noted by Martínez-García and Raya (2008). Similar to Alegre and Pou's (2006) findings, the present research found indications of a significant relationship between type of board and length of stay. The same connection was confirmed for mode of travel, in line with, for example, Alén et al. (2014) and Salmasi et al.'s (2012) results, as well as the influence of traveling with children (e.g., Grigolon et al., 2014; Scholtz et al., 2015).

The particular features of the destination under study could also be key factors. For example, the destination may be a complementary destination to other beach destinations, or the amount of tourism resources in the inland destination may condition duration of stay. The available data does not support the elimination of either option. Length of stay could even be due to a combination of both factors, given highly fragmented forms of travel ranging from more limited to freer modes (i.e., planes vs. private cars).

The present results highlight that destination managers should avoid indiscriminately applying the findings of studies of other destinations, including increasing length of stay by appealing to travel motivations or focusing on specific motivational segments. These efforts will most likely be an inefficient use of resources. In the case of length of stay, the above results and the literature reviewed indicate that the most significant variables are sociodemographic and life cycle factors, although even this conclusion needs to be qualified. For example, age is considered significant in much of the literature (e.g., Barros et al., 2010; Barros & Machado, 2010; Martínez-García & Raya, 2008; Wang et al., 2012). However, its effect can follow different patterns depending on the functional form given to this variable within the model (de Oliveira Santos et al., 2015).

With respect to gender—unlike what is customarily reported in the literature (e.g.,

Barros & Machado, 2010; Meng & Uysal, 2008; Peypoch et al., 2012; Prebensen et al., 2015; Wang et al., 2012)—the present results suggest that, in this inland destination, women stay for longer than men do. This finding has a precedent in the research carried out by Menezes and Moniz (2011) in the Azores. As in the cited study, the current results also suggest that being married is not clearly associated with significant variations in duration of the stay, although being divorced has a significant negative impact. Along similar lines, Salmasi et al. (2012) found a positive significant relationship between being single or a widow or widower and length of stay versus the negative effect of being married.

The negative and significance relationship between income and length of stay also merits discussion, given that the present results differentiate the destination under study from the findings commonly found in the literature (e.g., Ferrer-Rosell et al., 2014; Fleischer & Pizam, 2002; Gokovali et al., 2007; Grigolon et al., 2014; Mak et al., 1977; Mak & Nishimura, 1979; Peypoch et al., 2012; Salmasi et al., 2012; Wang et al., 2012). Although similar results are reported by Blaine, Mohammad, and Var (1993), Brida et al. (2013), and Mak and Nishimura (1979), the present findings need to be put in context, as discussed below.

Length of stay is significantly lower at all levels of income compared with a level of income of less than €500, that is, those with incomes less than €500 have a longer length of stay than other tourists. This could mean a longer stay for tourism activities that require less spending, such as backpacking, which would differentiate this inland destination from others. This finding may be in line with Fleischer, Peleg, and Byk's (2011) results, which indicate that a higher level of income could encourage tourists to take shorter but more frequent trips. However, the present finding may be due to the functional form of the variable in the model applied.

5. Conclusions

This study focused on the relationship between climate of origin and destination and length of stay. The results show that this relationship may be significant, although one of the models applied (i.e., the zero-truncated negative binomial regression model) did not support this conclusion. These contrasting results could be due to the model's problems dealing with long-tail data, the proximity of the significance value, and the

statistical significance results for the alternative model (i.e., the zero-truncated Poisson-inverse Gaussian model).

Another interesting perspective implicit in the above research is the option of considering the differential factor between climate indexes of origin and destination. Since the latter remained a constant in the present study, referring to differences did not make much sense in this research context. Future studies, therefore, need to examine the climate of origin and destination-length of stay relationship using a differential climatic index. This approach's most obvious practical implication would be to help destination stakeholders achieve their goal of increasing tourists' average length of stay.

A multi-destination analysis of this differential climatic index could also offer an improved framework that would allow a better understanding of the relationship between climate and length of stay. Causal relationships between climate and tourists' decision processes could be identified. Climate may thus be confirmed to be a trigger of psychological constructs that condition consumer behavior in decisions such as trip distance, length of stay, and level of expenditure. The current study sought to stimulate research along these lines that would include other variables including, among others, cultural distance or the presence of complementary destinations.

These results are immediately applicable to any effort to promote the province of Malaga's interior, especially regarding summer tourists. Given that the influence of type of destination on duration of stay does not behave in the same way for all destinations, the present findings justify further research on this possible relationship, including a systematic review of all studies on this topic. The present results are a source of first-hand information for decision-making for managers in the destination under study. In this inland destination, tourists with longer duration of stay appear to be those with a low level of income who prefer to spend less on accommodations and who are over 30 years old and more likely to be women. Both accommodation facilities and destination managers need to analyze whether this tourist profile is profitable in terms of their level of expenditure in this destination and implement the appropriate segmentation and timely promotion strategies. Future research can also look for homogenous patterns of behavior in length of stay to facilitate comparisons between different destinations. The particularities of the destination under study may condition the method of planning for trips in the region so that tourists' length of stay is conditioned by another series of

factors. These may be due to the differences in ways to make the most of holidays in interior destinations versus, for example, beach destinations.

Inland regions' tourism resources are more likely to determine tourists' length of stay. Notably, climate is a push factor that conditions length of stay in the destination under study, as well as being one of the conditions that makes tourists travel. As for many other variables studied in this field, their relationships' significance and sign clearly depend on the destination studied, confirming that generally accepted principles in this area must be built on the sum of individual studies' results. Researchers need to analyze previous findings to discover if an overarching pattern is shared by the destinations in question that can explain similarities and differences in findings. The profile of tourists who visit the region may change with the seasons and, therefore, these visitors' length of stay could vary.

Further research could specifically focus on how the factor of differences in climate between origins and destinations is strongly dependent on which climates are involved, for example, sun and beach or snow destinations. Another possible line of investigation could be analyses of significant shifts in the evolution of climate indices, origins, and destinations based on a moving average climate index with a range of 12 months. This research could delve into weather variations' possible effects on destinations.

This study also sought to contribute to the debate on how best to treat the idiosyncrasies of length of stay, relying on the validity of arguments made for using a count model—in this case, a zero-truncated negative binomial model. In addition, the results indicate the usefulness of zero-truncated Poisson-inverse Gaussian model as a way to adjust better to long-tail distributions. This study appears to be the first to apply the latter model in analyses of tourists' length of stay. Much like other count models, this model is not free of controversy since, as discussed previously, it shares many properties and similarities with negative binomial regression. However, in this research, zero-truncated Poisson-inverse Gaussian model proved to be satisfactorily accurate and simple and extensive enough to justify its use in this context.

Finally, this study's results have some limitations. The most obvious is that analysis of length of stay needs to be carried out in different destinations and that managerial decisions cannot be extrapolated from one destination to another, so the findings

applicability are restricted to a specific destination and season. Further research is thus required to address this limitation by checking if these results hold true for other destinations and/or seasons. Ideally, the set and type of destinations should be expanded and subjected to simultaneous multi-destination analyses, which could have important repercussions on various levels.

In addition, future studies may want to include new variables that could produce similar results to those found for the climate index of origin. For example, measures of distance or traveling costs could prove much more valuable than nationality. Further research may benefit from using quantitative spending variables instead of constructs included in the category of trip characteristics. However, to obtain accurate assessments, researchers must ensure a level of participation among respondents that is difficult to obtain. Another interesting avenue of future research could be to analyze the influence of cultural distance between tourists' origin and destination on their length of stay.

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