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## **CAMPING TOURISM IN BULGARIA: A TIME-SERIES ANALYSIS OF TOURIST DEMAND**

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### **Abstract**

Camping tourism has become very popular since the beginning of COVID-19 as tourists started to look for socially distanced and yet experiential activities. However, the academic scholarship is relatively thin, particularly in the context of Eastern Europe – a geographical location with rich traditions in outdoor camping and tourism. Drawing on a quantitative methodology based on ARIMA and SARIMA, this study addresses this gap by forecasting the changes in camping tourism development in the short term in Bulgaria. The results indicate a decline of inbound tourism and international visitors but also suggest a positive trend of development for the domestic market.

### **Key words**

Camping grounds • campsites • Bulgaria • trends • tourism • time series

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## Introduction

Tourism is one of the world's largest industries and a major force that drives economic prosperity, brings positive social impacts, and provides developmental opportunities for young people and ethnic minorities (Page, 2014). According to World Travel & Tourism Council (2022), prior to the COVID-19 pandemic, tourism accounted for 1 in 4 of all new jobs and contributed USD 9.6 trillion (10.3% of global GDP). According to CCSA and UNWTO World Tourism Barometer (2021), 2020 was the worst year in the history of tourism. From 1.5 billion international arrivals recorded in 2019 (4% more than the previous year), the industry shrank to 380 million which accounts for a 74% decline. Following the negative consequences of the worldwide COVID-19 pandemic, tourism declined by USD 4.9 trillion in 2020 but partly recovered in 2021 (US\$1 trillion or +21.7% increase) which led to a partial recovery of its contribution to global GDP (from 5.3% in 2020 to 6.1% in 2021).

The academic literature on tourism and COVID-19 includes a growing number of studies that have empirically demonstrated the impact of the pandemic over global mobility, travel restrictions, and short/long term economic consequences (Gaffney & Eeckels, 2020; Lew et al., 2020; Mariolis et al., 2020; Sharma & Nicolau, 2020; Seyfi et al., 2023). Previous studies have indicated various changes to tourism demand, and tourists' accommodation preferences, including a move away from packaged experiences, and an increased demand for outdoor and recreation (Ivanova et al. 2020; Kourgiantakis et al., 2020; Naumov et al., 2020). In this context, alternative forms of tourism have the potential to address those needs and provide self-catering facilities that will allow the tourists to ensure their own safety, sanitation and personal hygiene, and also maintain social distancing. As a result of the COVID-19 pandemic, such facilities are now in high demand as visitors are looking for socially distanced accommodation, recreational areas in open air spaces, and facilities to accommodate

different needs (Naumov et al. 2020; Hidalgo et al., 2022).

Camping tourism is one of the alternative forms of tourism which has developed exponentially during the pandemic of COVID-19. Camping has a long history in the context of tourism that dates back the end of 19<sup>th</sup> and early 20<sup>th</sup> centuries with the establishment of Thomas Hiram Holding and most notably, the Association of Cycle Campers in 1908. In Europe, recorded overnights at camping grounds, recreational vehicle parks and trailer parks have been steadily increasing, particularly in France, Italy, Germany, the Netherlands and Croatia. According to Eurostat (2021), there are 28,000 campsites, two thirds of which are in France, United Kingdom, Germany and the Netherlands. EU campsites were the least affected by COVID-19 tourist accommodation type (-38%) and a preferred option for domestic tourism.

Camping tourism remains a relatively underexplored and under-researched field of study within the tourism spectrum. Camping and outdoor activities at campsites have only started to receive a notable attention with the seminal work of Brooker and Joppe (2013; 2014) who at a time pointed that only 'minimal attention' had been paid (Brooker & Joppe, 2013:1). The lack of research includes the forms and variety of outdoor recreation at campsites (Van Rooij & Margaryan, 2020), the development of caravanning (Lashley, 2015; Mikkelsen & Cohen, 2015), and the development of caravan parks from basic recreational grounds to resort-style facilities (Gilbert, 2013; Caldicott et al. 2018). According to Rogerson and Rogerson (2020a: 349), camping tourism research has expanded in recent years but remains one of the 'poor cousins' of international tourism scholarship, an argument particularly valid for local and regional demand patterns in Europe (Triantafyllidou & Siomkos, 2013; Craig, 2020).

The present study seeks to address this research gap by analyzing the recent developments and trends of camping tourism in Bulgaria. Eastern Europe is one of the least researched regions despite the history and

traditions of camping tourism. Although there is a growing body of research in some countries such as Croatia (Grzinic et al., 2010; Mikulić et al., 2017; Milohnić et al., 2019; Eremić, 2020), there is a substantial gap addressing the current trends and perspectives of development of camping tourism.

Although staying at campsites was popular before 1989, the popularity of camping tourism in Bulgaria after the fall of socialism declined. The economic and political crises during the 1990s stimulated the rise of mass tourism and more specifically, the increased demand for hotel and resort stays (Bachvarov, 1997; Ivanov & Dimitrova, 2014). The case of Bulgaria is particularly relevant for a number of reasons. First, the country has a history of camping tourism development before 1989 which was partly due to its favourable climate, recreational facilities and state-funded initiatives. However, the potential of nature-based activities in general, and camping tourism in particular, has remained underexplored after the political changes. Second, a nationwide initiative has begun in 2021 focused on discussions and debates about the establishment of a national strategy for campsites development and camping tourism. In this context, this research seeks to contribute to those discussions, thus assisting both public and private stakeholders by providing an in-depth analysis of the current state of camping tourism while also discussing future trends for its development.

## Literature review

### Camping and camping tourism

Camping is defined as a recreational activity that involves staying “at least one night in a recreational vehicle (RV), caravan, cabin or other type of temporary shelter where the comforts of home can be enjoyed” (Brooker & Joppe 2014: 335). Camping tourism is considered as a form of outdoor recreation and as such, involves a broad range of activities such as trekking and walking but also relaxation, recreation and socializing

(Manning, 2011; MacLeod, 2017). Early conceptualisations of camping refer to short stays at nature settings, basic and inexpensive accommodation, and little to none additional facilities. However, as Brooker and Joppe (2014: 335) observe, the notion of camping has matured beyond those definitions, evolving into “a highly fragmented niche tourism sector”. Camping has evolved significantly since the development of scenic-drive tourism, and particularly, the availability of ‘mobile homes’ such as RVs, caravans, campervans and motor homes (Caldicott & Scherrer, 2013: 128). In this context, camping tourism has evolved to include staying at specifically designed areas and where tourists can bring their ‘mobile home’ (Prideaux, 2020). The inclusion of recreational vehicles has also convinced scholars to introduce terms such as ‘caravanning tourism’ (Patterson et al., 2015) and ‘caravan tourism’ (Dogantan & Emir, 2019). Both could be understood as a special form of activity that puts the caravan both as a means of transportation and accommodation (Brooker & Joppe, 2013; Lashley, 2015; Patterson et al., 2015). In the same vein, Brooker and Joppe (2014) note the differences in the used terminology internationally. For example, the term ‘boondocking’ is widely used in Australia and New Zealand and refers to staying in a tent at rural areas with limited or no services whereas, purposefully designed commercial parks are linked to caravan parks and holiday parks. The term ‘campsite’ is mainly used in Europe and refers to camping and caravanning whereas the same in North America refers to a single campground. In this study, we adopt the term ‘campsites’ and define it as recreational areas that provide facilities for temporary stays, including ones for campervans and caravans.

Camping tourism has strong linkages to nature-based tourism and the need to escape from busy daily routines, particularly at urban areas. Escapism is a well-documented motivation for camping and outdoor recreation (Hardy et al. 2012) as individuals are attracted by the opportunities to change

the scene and environment. Tourists interested in camping tend to choose nature areas and spend some time outdoors (Brochado & Perreira, 2017). For them, camping is an opportunity to immerse into a natural setting, to connect with nature (Shannon et al. 2015) in various ways. The location of campsites in the majority of countries where camping tourism is developed is geographically situated around coastal areas (Rogerson & Rogerson, 2019; Rogerson & Rogerson, 2020b) but there is a notable presence of them at protected areas such as nature parks which also demonstrates the importance of non-coastal areas and the diversity of spatial distribution of camping facilities (Timothy & Teye, 2009).

Camping tourism is among the dominant forms of tourism worldwide such as North America (Timothy & Teye, 2009), Australia (Desailly et al., 2014), New Zealand (Collins et al., 2018), Croatia (Milohnić et al. 2019), Germany (Dogantan & Emir, 2019), Spain (Saló et al., 2020), United Kingdom (Lashley, 2015) and South Africa (Van Heerden, 2020; Rogerson & Rogerson, 2021). Caldicott (2011) notes that caravan parks comprise the second largest type of accommodation for domestic visitors in Australia, while Timothy and Teye (2009) estimate an approximate number of 16,000 campgrounds in USA. As Mikulić et al. (2017: 227) argue, despite its seasonal nature, camping tourism has developed so significantly that it may even be considered as a mainstream-tourism product.

### From camping to glamping

In its classic definitions, camping experiences are primarily characterised by basic and inexpensive facilities available for recreation and leisure. As noted by Collins and Kearns (2010: 59), campsites are on the other end of the luxury hotels and resorts. However, campsites and their facilities have evolved in the recent decades. Brooker and Joppe (2014) argue that camping could be understood as a form of outdoor hospitality whereas Crabeck (2013) note that campsites now have facilities

to cater for both budget and luxury experiences. The latter is closely linked to the emergence of glamping, a novel and innovative form of accommodation which has recently emerged to provide luxury hospitality (Brochado & Perreira, 2017; Madsen & Madsen, 2022). Derived from safari experiences and the provision of luxury hospitality, glamping combines 'glamorous' outdoor hospitality experiences with camping facilities and a close contact to nature (Brochado & Brochado, 2019) and often includes non-traditional accommodation types such as treehouses, yurts and dessert camps (Hrgović et al., 2019). As argued by Boscoboinik and Bourquard (2011), glamping addresses the main criticism and negative perceptions associated with campsites, namely basic tents, poor sanitation and primitive facilities for catering and hospitality by replacing them with luxury cabins and pampered stays.

The growing interest to uncrowded destinations and nature-based recreation is observed after health crises such as SARS epidemic (Zeng et al., 2005). Similar trends have been observed during the COVID-19 pandemic (Derks et al., 2020; Craig & Karabas, 2021; Shartaj et al., 2022). The tourists prefer to stay in less popular destinations because of the lower risk of virus transmission (Park et al., 2022). Camping tourism is form of outdoor and relatively secluded recreation and as such, is considered as a relatively safe and social-distancing friendly form of tourism (Shartaj et al., 2022). There are several studies on the preferences of the campers that show they prefer uncrowded settings for camping tourism and accept it only if they are embedded in an attractive social environment (Oh et al., 2007; Saló et al., 2020).

### Study area: campsites in Bulgaria

Bulgaria is located in southeastern Europe occupying a major part of the Balkan Peninsula. The country's geographical location and favorable weather conditions are the main reasons for the popularity of summer recreation tourism (May-Sep), winter ski tourism

(Dec-Mar), and a number of alternative tourism types such as cultural tourism, religious tourism, spa tourism, slow tourism (Naumov, 2017; Varadzhakova, 2017, 2018).

Tourism is a vital sector in the national economy of Bulgaria. Official figures for 2010-2019 suggest that tourism is one of the largest export industries contributing between 10%-12% and 40% of country's services export. For the same period, Bulgaria has recorded an average yearly increase of 5% in terms of international arrivals with an average spend of \$440-\$590 per tourist (UNWTO Tourism Dashboard, 2021). For 2019, Bulgaria occupied 20th place in terms of international arrivals among European states and 24th in terms of tourist expenditure (UNWTO Tourism Dashboard, 2021). During the pandemic, the decline of international arrivals was equally devastating as other EU states, and inbound tourism in 2020 recorded a decline of 63% in comparative figures to 2019. The outbound tourism also declined, most notably holidays and escorted trips, by almost 90% and most

Bulgarians decided to travel domestically or not have a holiday at all (NSI, 2022).

The beginning of camping tourism in Bulgaria dates to 1970s and the first establishments of basic facilities for youth and families. In their seminal work on campsites and camping grounds, Avramov and Dimova (1972) explained that despite the basic facilities, campsites were very popular and pointed out the need for their classification and categorisation in accordance to the facilities offered. After 1989, and the notable changes to public ownership, over- and illegal construction at nature-based parks and camping grounds, most of the pre-1989 facilities have been forever lost. As per Nikov (2019), 111 campsites were in operation in 1980 but only 8 remained active in 2014. This has resulted in declined interest to camping tourism activities.

The camping tourism activities are mainly offered during the summer season but also in the immediate months before and after (April and October). According to the Bulgarian

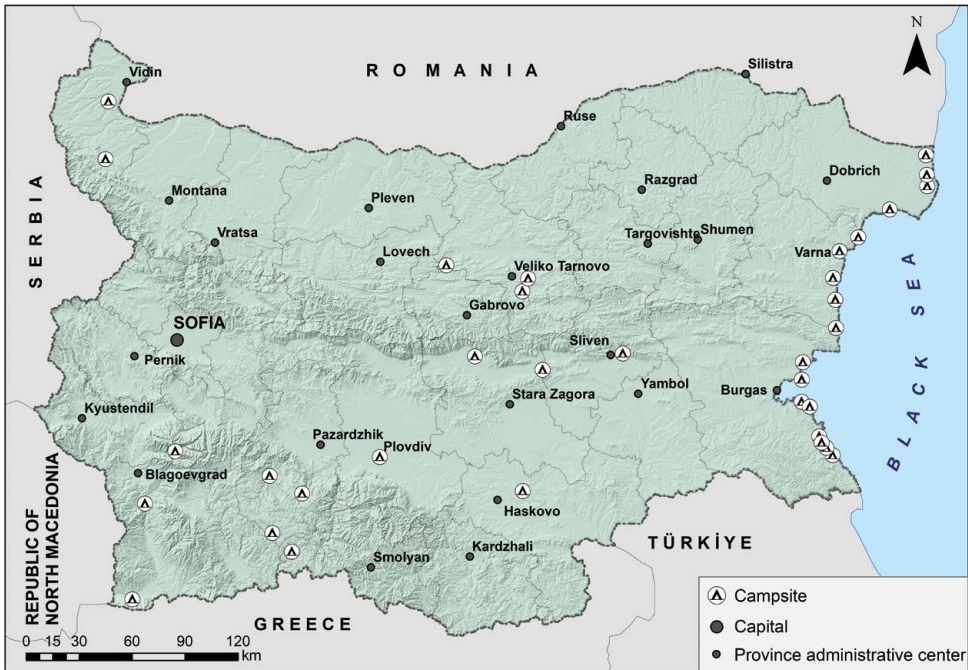


Figure 1. Campsites in Bulgaria

Tourism Act, camping/campsite is defined as “a guarded area with the appropriate infrastructure and the necessary conditions for tourists to stay with their own or rented tent or caravan, as well as for parking cars and offering tourist services. A campsite includes bungalows, caravans (temporarily mobile (wheeled) accommodation (without mandatory requirement for kitchenette and bathroom), other accommodation, dining and trade”. By the end of 2021, 42 campsites are in operation in Bulgaria (Fig. 1). They are located in 13 of the 28 Bulgarian provinces. Most campsites are located in the eastern part of the country due to the popularity of the region during the summer holiday season. More than half (26) are located on the three provinces on the Black Sea Coast – Dobrich, Varna and Burgas, which are the top tourism destinations for both domestic and international visitors. More specifically, majority of them are situated in Burgas Province – 15. The average capacity is between 20 and 400 guests and most common accommodation facilities are bungalows, campers and camper vans. There is a tendency for further development, including stationary campers and camping facilities. The average occupancy is 80%.

Campsites are ranked by using a star rating system (1-3 stars). Only two of them are categorized as 3 stars and four as 2 stars. There is one thermal camping and one glamping in the country. A large part of the country's campsites includes not only spaces for caravans, motorhomes and other recreational motor vehicles, but also bungalows, and in some cases, these are located around lodges or other massive accommodation establishments.

Bulgarian camping catalog conditionally divides the country into 7 camping areas: North-western Bulgaria, Danubian camping area, North Central Bulgaria, South Balkan, Rhodopes, South Western and Black Sea coast camping area. There are 7 camping routes in the aforementioned areas:

- Route 1 (240km): passes entirely through the Northwestern Bulgaria camping area between the capital city of Sofia and Vidin on the Danube river coast.

- Route 2 (370km): known as the “Danubian camping route”. Covers the Danube river from Vidin to Ruse. This route follows the Northern border of Bulgaria with Romania.
- Route 3 (200km): crosses North Central Bulgaria covering an area from Ruse to the north to Kazanlak to the south.
- Route 4 (300km): located in the South Balkan camping area covering Plovdiv to the west to Burgas to the east (on the Black Sea Coast).
- Route 5 (500km): entirely located in the Rhodopes mountain in the south part of the country. Includes campsites between Velingrad to the west and Svilengrad to the east (on the border with Turkey).
- Route 6 (180km): crosses southwestern Bulgaria. Covering the area from the capital city of Sofia to Petrich to the south (at the border with Greece)
- Route 7 (350km): covers the campsites along the Black Sea coast.

Previous studies on camping tourism have indicated the huge of potential of campsites and camping tourism (Popova & Marinov, 2018; Marinov, 2019a; Marinov, 2019b; Nikov, 2019). For example, in their research on youth (15-34) preferences to stay at campsites, Popova & Marinov (2018) demonstrated the attractiveness of campsites as places for recreation, escape from home, spending time outdoors, and spending time with family and friends. Similar findings have been reported by Nikov (2019) who studied the provision of recreational facilities at campsites and the profile of camping visitors. Nikov (2019), Popova and Marinov (2018) and Marinov (2019) agree about the current challenges and drawbacks of campsites. In general, there is a lack of infrastructure, which is very much dated, out of use, or unable to respond to the needs of camping-goers. This is partly due to the absence of state-centralised system for their maintenance and development but also lack of business interests and a high level of seasonality. Popova & Marinov (2018) explicitly highlight that for young generations, lack of basic facilities, illegal construction and

lower levels of eco-friendly facilities are the main reasons that discourage young people to stay at campsites.

In order to analyze the recent developments and trends of camping tourism in Bulgaria, we studied 12 campsites that fulfill the criteria *NACE Rev.2, 55.30 Camping grounds, recreational vehicle parks and trailer parks* following the Statistical classification of economic activities in the European Community of Eurostat (National Tourism Register, 2022; Eurostat, 2022). This classification includes provision of accommodation in campgrounds, trailer parks, recreational camps and fishing and hunting camps for short stay visitors; provision of space and facilities for recreational vehicles; accommodation provided by protective shelters or plain bivouac facilities for placing tents and/or sleeping bags.

## Methodology

### Data and metadata

In order to explore the trends in the camping tourism in Bulgaria, the relevant data have been investigated. During our investigation we found out that the only official data on the camping tourism in Bulgaria were available on the website of Eurostat<sup>1</sup> as follows:

- Monthly time series for the total number of the nights spent by the local and the foreign tourists at camping grounds, recreational vehicle parks and trailer parks for the period January 2012 – September 2022.
- Monthly time series for the total number of arrivals by the local and the foreign tourists at camping grounds, recreational vehicle parks and trailer parks, starting from January 2012 until September 2022.

The above mentioned time series are available at the Eurostat website section concerning the “Industry, trade and services”, in particular the “Tourism” industry. According to the metadata, the statistics

on the occupancy and capacity of the tourist accommodation establishments, which is the basis for the production of the abovementioned data, is based on the Regulation (EU) 692/2011 of the European Parliament and of the Council. The latter defines the main “framework” of the data collection process as follows:

- The data on the occupancy and capacity of the tourist accommodation establishments (including the nights spent and number of arrivals at camping grounds, recreational vehicle parks and trailer parks) are collected by the national authorities of the EU Member States.
- The data are compiled according to a harmonized methodology established by EU regulations before the transmission to Eurostat.
- Mainly, the data are collected via sample or census surveys including visitor surveys and border surveys.
- The surveys on the occupancy of accommodation establishments are conducted on a monthly basis.
- The statistical population, concerning the surveys consists of all local kind-of-activity units (tourist accommodation establishments) under NACE 55.1, NACE55.2 and NACE 55.3<sup>2</sup> in use during the reference period (specific month of a given year), providing paid short-stay accommodation services.
- The concepts and definitions used in the data collection shall conform to the specifications described in the Methodological manual for tourism statistics<sup>3</sup>.

<sup>2</sup> The ‘Tourist accommodation establishment’, as defined in the Annex to Council Regulation (EEC) No 696/93, refers to a local kind-of-activity unit providing as a paid service short-term or short-stay accommodation services as described in groups 55.1 (hotels and similar accommodation), 55.2 (holiday and other short-stay accommodation) and 55.3 (camping grounds, recreational vehicle parks and trailer parks) of NACE Rev. 2.

<sup>3</sup> Methodological manual for tourism statistics: <https://ec.europa.eu/eurostat/documents/3859598/5925845/KS-GQ-13-007-EN.PDF/bb88fb0a-a1de-4790-b1c5-df45bb900c88?version=1.0>

<sup>1</sup> Eurostat is the statistical office of the European Union. Website: <https://ec.europa.eu/eurostat>

The group of interest (a.k.a. Class NACE 55.3 "Camping grounds, recreational vehicle parks and trailer parks") includes the following services:

- provision of accommodation in campgrounds, trailer parks, recreational camps and fishing and hunting camps for short stay visitors;
- provision of space and facilities for recreational vehicles<sup>4</sup>.

The domestic tourism comprises of the activities of a resident visitor within the country of reference or the domestic country (in our case Bulgaria) either as part of a domestic trip or part of an outbound trip. A person is considered to be a resident in a country if the person has lived for most of the past year or 12 months in that country or has lived in that country for a shorter period and intends to return within 12 months to live in that country. The inbound tourism (foreign tourism) comprises the activities of a non-resident visitor within the country of reference or the domestic country (in our case Bulgaria) on an inbound trip. Foreign tourists are classified according to their country of residence, not according to their citizenship.

Based on the data available on the Eurostat website, concerning the tourism at the Bulgarian camping grounds, recreational vehicle parks and trailer parks, we have prepared the following monthly time series for the subsequent analyses:

- Total number of nights spent, January 2012-September 2022;
- Number of nights spent by local tourists, January 2012-September 2022;
- Number of nights spent by foreign tourists, January 2012-September 2022;
- Total number of arrivals, January 2012-September 2022;
- Number of arrivals by local tourists, January 2012-September 2022;
- Number of arrivals by foreign tourists, January 2012-September 2022.

The monthly time series on the total number of the nights spent and the number of arrivals by the local tourists and the foreign tourists at camping grounds, recreational vehicle parks and trailer parks have been additionally aggregated on yearly basis in order to conduct the basic time series analysis of these data.

Also, we derived the stay duration (in days) for each of the two main yearly time series (for local tourists and for the foreign tourists) from the ratio between the number of nights spent and the number of arrivals.

## Data analysis

The exploration of the trends in the Bulgarian camping tourism time series data has been done on the following stages:

### Stage 1 – Basic time series analysis

Firstly, using the growth and the growth rates we have analyzed the year-to-year changes in the data on the total number of the nights spent, the total number of arrivals and the stay duration by the local and the foreign tourists at camping grounds, recreational vehicle parks and trailer parks as follows:

$$\Delta y_{t/1} = y_t - y_1$$

where:

$\Delta y_{t/1}$  - the value of the growth;

$y_t$  - number of the nights spent, the number of arrivals or the stay duration for a given year  $t$ ;

$y_1$  - the same indicator but for the first year of the time period (in our study that is the year of 2012).

$$R_{t/1} \% = \left( \frac{y_t}{y_1} - 1 \right) 100$$

where:

$R_{t/1} \%$  - the value of the growth rate in percent.

Secondly, we explored the main trend in each of the yearly time series using the following equation:

$$\hat{y}_t = f(t) + \varepsilon_t$$

<sup>4</sup> The NACE 55.3 excludes: mountain refuge, cabins and hostels.

where:

$\hat{y}_t$  - estimated values of the number of the nights spent, the number of arrivals or the stay duration for a given year  $t$  using the best trend model,

$f(t)$  - the trend model type as a function of the time variable  $t$ ,

$\varepsilon_t$  - error term.

The models used in our trend analyses of the yearly data are as follows:

Linear:  $\hat{y}_t = \beta_0 + \beta_1 t + \varepsilon_t$

Quadratic:  $\hat{y}_t = \beta_0 + \beta_1 t + \beta_2 t^2 + \varepsilon_t$

Cubic:  $\hat{y}_t = \beta_0 + \beta_1 t + \beta_2 t^2 + \beta_3 t^3 + \varepsilon_t$

Quintic:  $\hat{y}_t = \beta_0 + \beta_1 t + \beta_2 t^2 + \beta_3 t^3 + \beta_4 t^4 + \beta_5 t^5 + \varepsilon$

Power:  $\hat{y}_t = \beta_0 + t^{\beta_1}$

where:

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  - are the parameters of a given model.

The criteria for the selection of the best trend model for each time series considered are: the highest coefficient of determination (R-squared), presence of model adequacy (ANOVA) and statistically significant model parameters.

For the calculation of the growth, growth rates and the selection of the best model for each time series explored we have used the Microsoft Excel software.

**Stage 2 – Advanced time series analysis**

Considering the great variety of the statistical methods and the specialized literature available on the analysis and forecasting of time series on the tourism domain (Song & Li, 2008; Frechtling, 2012; Hassani et al., 2017; Rice et al., 2019) we concluded that the seasonal auto-regressive (AR) integrated moving average (MA) models (SARIMA) are the best choice for the aims of our study. Moreover, most of the statistical methods do not take into consideration the specific seasonal

“nature”<sup>5</sup> of the touristic time series which in our study is crucial.

SARIMA models are special type of ARIMA models which incorporate the analysis of the both trend and seasonal components of the given time series.

The general form of the model is (Graves, 2020):

$$SARIMA = (p,d,q) (P,D,Q) s$$

where the parameters for these types of models are as follows:

- $p$  - non-seasonal AR polynomial order;
- $d$  - non-seasonal differencing order;
- $q$  - non-seasonal MA polynomial order;
- $P$  - seasonal AR polynomial order;
- $D$  - seasonal differencing order;
- $Q$  - seasonal MA polynomial order;
- $s$  - time span of repeating seasonal pattern<sup>6</sup>.

Also the model can be presented more formally as:

$$\Phi_p(B)^s \Phi_p(B)(1-B)^d(1-B^s)^D y_t = \Theta_q(B)\Theta_Q(B^s)\alpha_t$$

where:

$$\Phi_p(B) = 1 - \Phi_1 B - \Phi_2 B^2 - \dots - \Phi_p B^p$$

- are the non-seasonal auto-regression polynomial of order  $p$ ;

$$\Theta_q(B) = 1 - \Theta_1 B - \Theta_2 B^2 - \dots - \Theta_q B^q$$

- are the non-seasonal moving averages polynomial of order  $q$ ;

$$\Phi_P(B)^s = 1 - \Phi_P B^s - \Phi_P B^{2s} - \dots - \Phi_P B^{Ps}$$

- are the seasonal auto-regression polynomial of order  $P$ ;

$$\Theta_Q(B)^s = 1 - \Theta_Q B^s - \Theta_Q B^{2s} - \dots - \Theta_Q B^{Qs}$$

- are the seasonal moving averages polynomial of order  $Q$ ;

$(1-B^s)^D$  - is the order of the seasonal differencing;

$\alpha_t$  - Gaussian white noise sequence with mean zero and a variance;

$y_t$  - time series values.

<sup>5</sup> Due to the specific weather conditions in Bulgaria during the period October – May there are virtually no camping tourists at the camping grounds, recreational vehicle parks and trailer parks.

<sup>6</sup> As the explored time series exhibit repeating seasonal pattern with time span of 12.

### Stage 3 – Forecasting using SARIMA

To provide adequate forecasts for the camping tourism demand side, considering the time series seasonality, we have used the SARIMA models separately for each of one of the monthly time series specified above (see Data and metadata section).

To choose the best SARIMA model for each time series examined, including the usage of each of the models for forecasting, we have used the *auto.arima* function in the *forecast* package of the open-source software R.

This function is based on a modification of the Hyndman-Khandakar algorithm (Hyndman & Athanasopoulos, 2008), automizing the following actions:

- Determination of the AR order;
- Determination of the MA order;
- Determination of the degree of differencing;
- Running repeated Augmented Dickey-Fuller (ADF) test;
- Running Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test;
- Running Osborn-Chui-Smith-Birchenhall (OCSB) test;
- Running Phillips-Perron (PP) test;
- Running Hylleberg-Engle-Granger-Yoo (HEGY) test
- Running Canova-Hansen (CH) test;

- Minimization of the AIC;
- Running unit root tests.

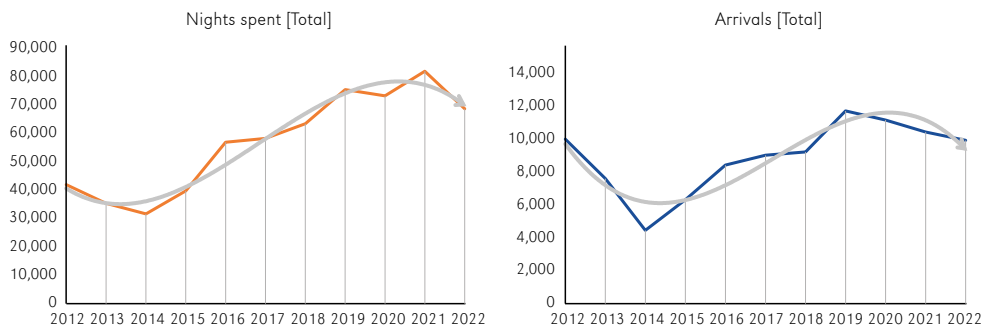
The horizon for the Bulgarian camping tourism time series forecasts is 24 months. The forecast values and their stochastic errors (80% and 95% CI) are calculated and presented graphically at the “Results” section of this paper.

## Results

Using the yearly time series<sup>7</sup> on the camping tourism in Bulgaria, for 2012-2022<sup>8</sup>, the trends of the main indicators (number of nights spent and number of arrivals at camping grounds, recreational vehicle parks and trailer parks) are estimated. The results are outlined in the below sections.

At the beginning of the time series period (2012) the total number of the nights spent at the campings in Bulgaria are approx. 42,1 thous. [Fig.2, left] which almost doubles at the peak in 2021 (82,1 thous.) but in 2022 the number falls to 68,8 thous. nights spent. The total number of arrivals in 2012 amounts to 10,0 thous. [Fig.2, right] which remains almost the same in 2022 (9,9 thous.).

Despite the two-year decrease [Fig.2] in the total number of the nights spent and the total number of arrivals at the Bulgarian campings during 2013 and 2014 (55% less



**Figure 2.** Trends in time series for the total number of nights spent and total number of arrivals at camping grounds, recreational vehicle parks and trailer parks

<sup>7</sup> The yearly time series data is based on the aggregation of the monthly time series data.

<sup>8</sup> January to September 2022, but usually there is no camping tourism during the period October-December.

arrivals in 2014 than 2012), there is a clear upward trend in both time series – nights spent (until 2021) and arrivals (until 2019). During the following period there is a slight decline in the nights spent (16% less in 2022 than 2021), but also the number of arrivals keeps its recession at average yearly drop of 0,6 thous. arrivals (2019-2022).

The trend in time series for the nights spent by foreign tourists [Fig.3, left] shows a steep decline that starts (in 2012) at 19,6 thous. nights and concludes at 3,0 thous. nights in 2022. Overall, this downward trend resulted in 1,3 thous. average yearly decrease<sup>9</sup> of the nights spent for the last decade. The number of arrivals by the foreign tourists [Fig.3, right] changes considerably during the period 2012-2022. There are 2 peaks in the arrivals in 2017 (1,1 thous.) and 2019 (1,4 thous.), followed by a significant drop in 2020 (0,4 thous.) and obvious upward trend during the next 2-year period: 0,8 thous. arrivals in 2021 and 1,3 thous. arrivals in 2022.

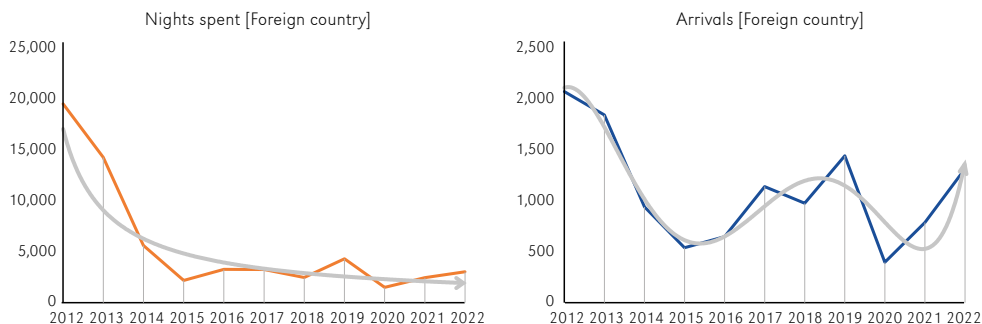
For the period 2012-2022, the Bulgarian (domestic) tourists intensified their interests [Fig.4, left] into the camping starting from 22,5 thous. nights spent in 2012 and ending at the peak in 2021: 79,6 thous. nights (approx. 3,5 times higher than 2012). The upward trend resulted in approx. 6,0 thous. yearly average increase of the number of nights

spent by the domestic tourists. At the end of the study period (2022) there is a drop in the number of the nights spent which resulted in 65,8 thous. nights.

Despite the decline of the number of the camping arrivals by locals at the beginning of the period 2013-2014 [Fig.4, right], the upward trend during the period 2015-2020 led to 0,9 thous. yearly increase in the number of arrivals on average, and 10,8 thous. arrivals in total at its peak in 2020. At the end of the time period (2021-2022) there is an obvious decrease in the number of the arrivals as follows: 9,6 thous. in 2021 (10,4% less arrivals than 2020) and 8,6 thous. in 2022 (20,0% less than 2020).

As a result from the trends observed in the time series of the number of arrivals and the number of night spent at the Bulgarian camping sites, the stay durations<sup>10</sup> show two main tendencies [Fig.5]:

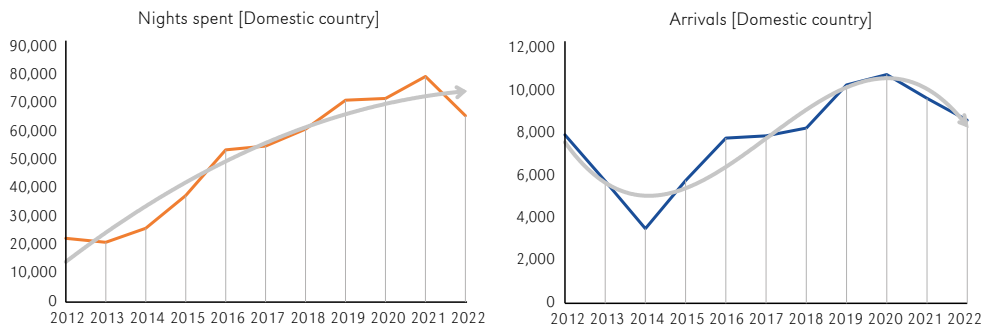
- Upward trend in the stay duration for the local tourists, starting from 2,8 nights per stay and concluding at 7,6 nights per stay at 2022 (yearly average increase approx. 0,38 nights);
- Downward trend in the stay duration for the foreign tourists, starting at 9,4 nights per stay and ending at 2,3 nights per stay (yearly average decrease by approx. 0,60 nights for the foreign tourists).



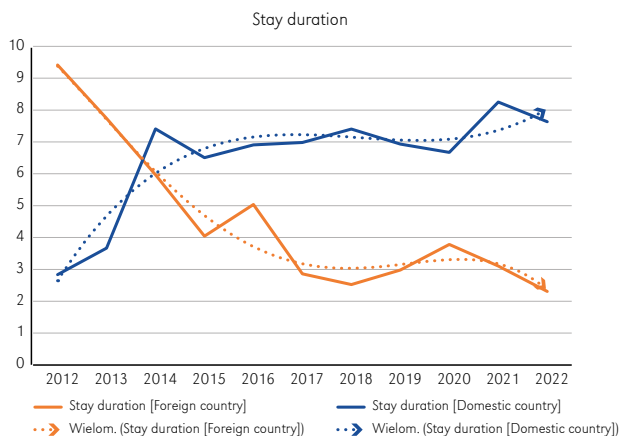
**Figure 3.** Trends in yearly time series on the number of nights spent and number of arrivals at camping grounds, recreational vehicle parks and trailer parks from foreign tourists, 2012-2022

<sup>9</sup> The average changes are based on the linear trend slope coefficient.

<sup>10</sup> The stay duration for given year is calculated as a ratio between the number of the nights spent and the number of arrivals for the year.



**Figure 4.** Trends in yearly time series on the number of nights spent and number of arrivals at camping grounds, recreational vehicle parks and trailer parks from Bulgarian tourists, 2012-2022



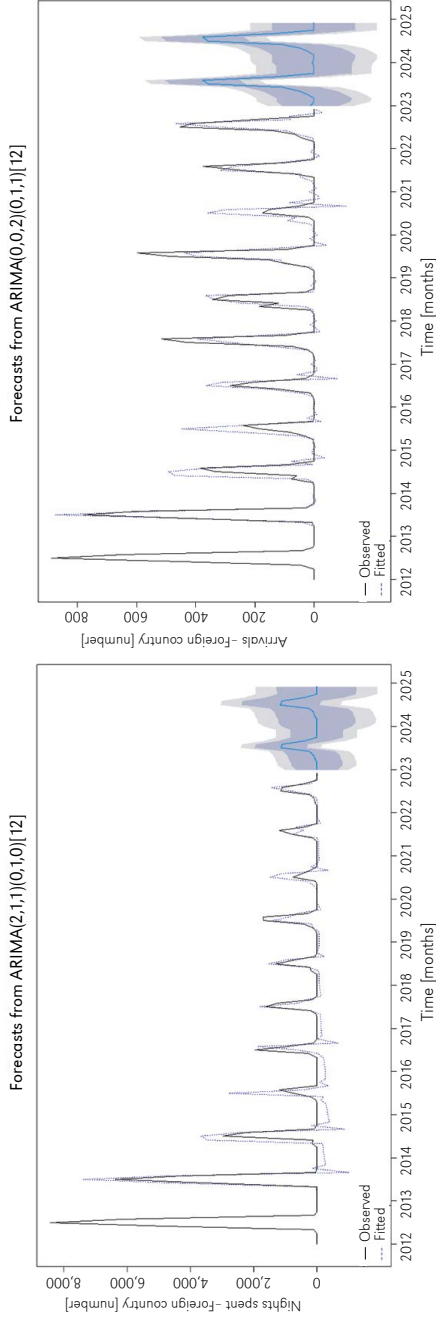
**Figure 5.** Trends in yearly time series on stay duration at camping grounds, recreational vehicle parks and trailer parks from foreign and local tourists, 2012-2022

Considering the specific features (seasonality) of the monthly time series data on the number of the nights spent and the number of arrivals at Bulgarian camping grounds, RV parks and trailer parks by foreign and local tourists, seasonal ARIMA models are estimated (incl. forecasts based on those models) as follows:

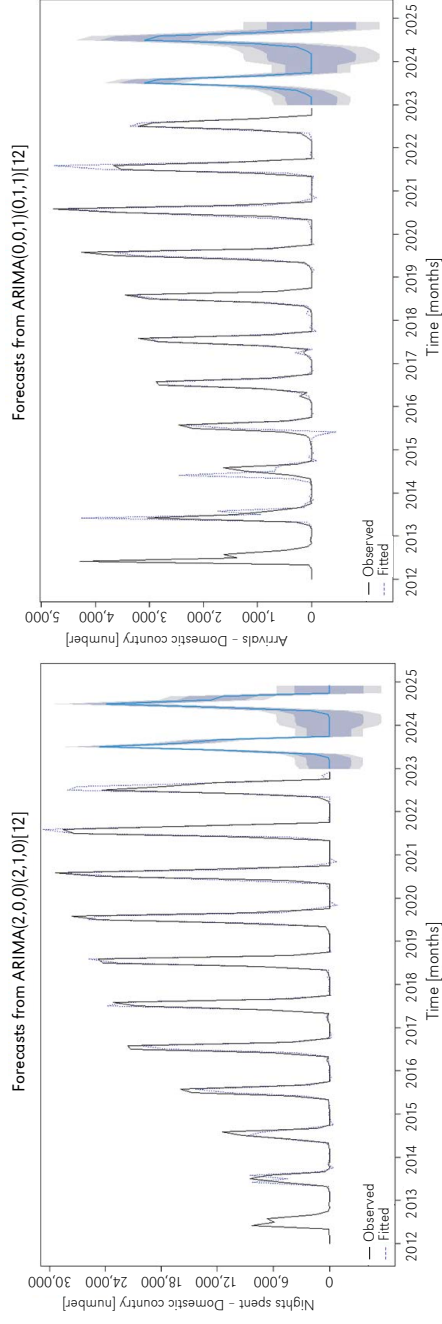
The specifics of the weather in Bulgaria (hot summer and cool rest of the year) define the vivid seasonality in the camping tourism in the country. There are obvious peaks [Fig.6] in the number of the nights spent and the number of visits at the Bulgarian camping sites during the summer months (June, July, August and September) and virtually no camping tourism during the rest of the year.

The overall tendency in the time series shows gradual attenuation in the summer peaks although there still will be some moderate interest in the Bulgarian camping sites (measured by the number of arrivals) but for shorter periods of time (measured by the nights spent) by the foreign tourists for the next 2 years (Tab. 1).

Bulgarians tend (Fig. 7) to visit more and more the local camping sites (except for the slight decline at the end of the period) for longer periods of stay. For summer 2023 and summer 2024 the ARIMA forecasts show (Tab. 2) relatively high number of arrivals (a little bit lower than the previous years) by the local tourists at the camping sites and for slightly longer periods of time.



**Figure 6.** Observed time series data, ARIMA fitted values and forecasts for the number of the nights spent and number of arrivals by foreign tourists (incl. Confidence Interval - CI) at Bulgarian campings



**Figure 7.** Observed time series data, ARIMA fitted values and forecasts for the number of nights spent and number of arrivals by the local tourists (incl. CI) at the Bulgarian campings

**Table 1.** Seasonal ARIMA point forecasts for the number of the nights spent and number of arrivals by the foreign country tourists at Bulgarian campings for summer 2023 and summer 2024 (thousands)<sup>11</sup>

Month	Year	Nights spent	Arrivals
June	2023	0.25	0.11
July	2023	1.15	0.36
August	2023	1.11	0.38
September	2023	0.39	0.14
June	2024	0.25	0.11
July	2024	1.16	0.36
August	2024	1.11	0.38
September	2024	0.40	0.14

**Table 2.** Seasonal ARIMA point forecasts for the number of the nights spent and number of arrivals by the local tourists at Bulgarian campings for summer 2023 and summer 2024 (thousands)<sup>12</sup>

Month	Year	Nights spent	Arrivals
June	2023	11.35	1.04
July	2023	24.62	3.09
August	2023	15.87	2.82
September	2023	12.11	1.02
June	2024	11.75	1.04
July	2024	23.87	3.09
August	2024	12.64	2.82
September	2024	11.48	1.02

## Discussion

This study has examined the demand for camping tourism in Bulgaria drawing on essential indicators such as overnights spent, number of visitors and duration of stay and their seasonal dynamics. Using ARIMA/

SARIMA, a commonly used instrument in previous studies (for example, Rice et al., 2019; Mondaca-Marino et al., 2020), our analysis takes into account domestic and international tourists to analyse the characteristics of camping tourism in the country. The statistical figures for 2012-2022 demonstrate notable differences between domestic and international tourists. In the last few years, the domestic market has registered a significant increase. Despite the marginal decrease in 2017 and 2018, the number of overnights by domestic visitors has risen. A similar trend has been observed for the overall number of tourists with the exception of 2014. After the removal of border closures and pandemic measures in 2021, the number of domestic arrivals has decreased. The seasonal ARIMA forecasts result indicates a slight increase in realised overnights in 2021. In terms of international arrivals, the average overnight stay has significantly declined in 2012-2015 and low numbers were reported until 2022. Similar trends are observed in terms of number of international arrivals. These findings are consistent with previous studies in Romania where the volume of inbound camping tourism is significantly lower than domestic market (Marin-Pantelescu, 2015). The lowest figures were recorded in 2020 which is motivated by the numerous mobility restrictions and border closures due to the spread of COVID-19.

In terms of average overnight stay, low figures had been reported until 2015 but a slight increase has been recorded for 2016-2022. The seasonal ARIMA forecasts results indicate a slight increase of international visitor numbers but overnight stays is expected to remain low in the following years. The expected increase of international tourists demonstrates a recovery of international tourism demand but with expected short stays.

It is noteworthy to highlight the constantly increasing number of camping grounds and campsites across the country. This is motivated by the demand for nature-based tourism, and more specifically, the need for

<sup>11</sup> For the rest of the year the number of nights spent and the number of arrivals at camping sites approximates zero.

<sup>12</sup> For the rest of the year the number of nights spent and the number of arrivals at camping sites approximates zero.

recreational experiences and leisure time in nature areas, particularly wild camping which has been a subject of various restrictions in the past. The introduction of specific requirements for the classification of campsites as accommodation establishments as well as the new national strategy for camping tourism development are expected to increase the overall quality of services at campsites nationwide. The main market is high spending visitors from urban areas which could also motivate the introduction of more contemporary campers, campervans and recreational vehicles which to provide additional comfort, and also attract different market segments.

After the political changes in 1990s, the camping tourism market in Bulgaria has been seriously influenced by perceptions of insecurity and lack of policies and procedures. This has resulted in low quality of products and services and decline of both domestic and international markets, particularly for the first fifteen years after the political reforms. Another essential factor for this decline is the purposeful placement of campsites in the eastern part of the country, on the Black Sea coastline. This is in contrast with other European countries such as Italy, France and Croatia where campsites are located at various parts of their territories. In the same vein, the location of campsites on the Eastern part of the country also adds to the travel distance for people arriving in their own cars from Central and Western Europe. This is a potential issue for the foreseeable future considering the rising oil prices in many European nations.

This research has also established some major limitations in the context of data collection and data analysis. Firstly, the time series analysis is based on a relatively short data set which only allows a short-term forecast to be established. Statistical records and availability of data concerning campsites and camp stays changed after 1990 and at times, data were not available. After 2012, however, a new methodological framework has been introduced and Eurostat is now

the universal statistical database which provides secondary data for camp stays and campsites. Secondly, there are few notable differences in the specific terminology used by Ministry of Tourism (in Bulgaria) and the terminology used by Eurostat. Further, the National Statistical Institute (NSI) of Bulgaria does not publish specific figures for campsites which in turn means that their own register of accommodation providers could not be used for the purposes of this research. Instead, statistics readily available by Eurostat from 2012 onwards has been used to form the basis of our research instruments. It was observed that the number of registered campsites by the public authorities is greater than those in the Eurostat database. This demonstrates the differences mentioned above but also further exemplifies that the potential for camping tourism development is even greater than initially anticipated.

Part of the analysis in this paper covers a period defined by the widespread of COVID-19 which influences the forecast and expected trends of development. It is safe to say that border closures and mobility restrictions have led to a notable decrease of international visitors and significant increase of domestic ones. The camping tourism in Bulgaria is defined by distinctive seasonality and mainly lasts between June and September which is very similar to some of the neighbouring markets such as Croatia (Eremić, 2020).

## Conclusion

This research is among the very first attempts to analyse the provision of camping facilities and the development of camping tourism in Bulgaria. The results indicate a notable decline of inbound tourism and the volume of international visitors. At the same time, however, the findings also suggest a more positive trend of development for the domestic market, particularly important for the sector during the spread of COVID-19. The limitations demonstrate the need for a systematic

data collection and analysis, including a unified approach to report statistical figures and disseminate current and future trends. These will help researchers and practitioners to collect empirical data and forecast future demand and trends for a long-term policy planning and development.

The results of this study will help practitioners to gain valuable insights about the current international and domestic demand for camping tourism allowing them to inform their planning and management decision-making processes. On the other hand, the study assists public authorities and decision-makers (e.g. destination managers) by providing them with valuable data and empirical analyses which will help them to introduce and/or revise legal frameworks and regulations concerning camping tourism development.

Our analysis is based on secondary data and statistical reports about the history and development of camping tourism in Bulgaria. However, further research is needed to specifically focus on the observed trends and patterns and identify the correlation between

different factors which play a role in the long-term planning and development of the sector. More research will surely help destination managers and planners to optimize their marketing and advertising strategies and identify the most appropriate market segments.

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Editors’ note:

Unless otherwise stated, the sources of tables and figures are the author's, on the basis of their own research.

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