sciendo

LOGI – Scientific Journal on Transport and Logistics
Vol. 13 No. 1 2022 DOI: 10.2478/logi-2022-0007
© 2022 A.M. Poljičak *et al.* This is an open access article licensed under the Creative Commons Attribution-NonCommercial-NoDerivs License (http://creativecommons.org/licenses/by-nc-nd/3.0/).

Nautical Tourism – Case Study in the Republic of Croatia

Ana-Mari Poljičak[1*], Martina Ljubić Hinić[1] and Antonio Kalac[1]

[1]*Polytechnic of Šibenik, Undergraduate Professional Study Programme Traffic and Transport, Trg Andrije Hebranga 11, 22 000 Šibenik, Republic of Croatia; Email: jankovic@vus.hr, martina@vus.hr, antoniokalac20@gmail.com*

***Corresponding Author:** Ana-Mari Poljičak

Received: 22 February 2022; Revised: 9 March 2022; Accepted: 13 May 2022; Published: 6 June 2022

Abstract: In order to obtain a comprehensive insight into nautical tourism, we analysed the arrivals and overnight stays in nautical charters, as well as the number of registered vessels according to length, the number of ports and marinas and the number of berths. An analysis of the correlation between the observed nautical tourism variables was also conducted. The number of arrivals and overnight stays in nautical charters has been showing an upward trend. The number of yachts or, respectively, boats that are over 12 m in length has also been increasing. The number of marinas varies in the observed period, while nautical tourism ports display a constant growth. The number of berths has also been growing in comparison with the years before, with the exception of 2013 and 2017. The correlation analysis established that the growth in the number of marinas has followed the growth in the number of vessels with lengths between 12 and 15 metres, between 15 and 20 metres and those with lengths exceeding 20 metres. The number of nautical tourism ports and the number of berths have a positive and statistically significant impact on the increase in the number of vessels that are longer than 12 metres.

Keywords: Nautical tourism, nautical ports, berths, Republic of Croatia, analysis

1. Introduction

Nautical tourism is a "*sum of poly-functional activities and relations that are caused by the stays of tourist boaters within or outside of the ports of nautical tourism, and by the use of vessels or other objects related to nautical and tourist activities, for the purpose of recreation, sports, entertainment or for other needs*" [1]. Today, nautical tourism has a very large tourism and economic potential and constitutes an important economic activity with a very high tendency of growth and expansion in the future [2]. The main accent of success must be on the provision of a constant quality of a tourism

product [3]. The reason for this, according to Alkier [4], is that contemporary boaters possess high purchasing power, they are willing to spend significant amounts of their hard-earned funds during their holidays, are constantly in search of luxury experiences and want to obtain the adequate value and experience for money.

Due to its importance for the whole economy, nautical tourism has been attracting growing attention worldwide, including Croatia [5]. Nautical tourism includes various economic branches and activities (maritime activities, ship accommodation, boat rental, shipyards, etc.) and is closely connected with nautical tourism ports. [6]. There is a lot of untapped potential that, with a good plan and a good development strategy, can grow and enable Croatia to compete with other countries in the Mediterranean by offering this potential to possible users [7].

The effort to meet the needs of a nautical tourism demand that is experiencing an accelerated growth entails a positive and a negative aspect. A favourable geographical position, good nautical conditions, an environment convenient for navigation, locations favourable for the construction of various types of tourism ports and other nautical tourism amenities, maritime and other environmental values, recreational and sports options, good transport connections, historical, cultural and traditional elements, social organisations and activities, the mentality of the people, their hospitality etc. are what constitutes the strengths and prerequisites for the further development of nautical tourism in Croatia [8]. Apart from the numerous strengths, there are also weaknesses and factors that limit the development of nautical tourism, reflected in the seasonal character of nautical tourism activities, pollution of the sea with oil and its derivatives, devastation of marine living resources, pollution of the sea with various kinds of waste and impurities, engagement in sport and commercial fishing with illegal means in prohibited areas and at prohibited times, threats to the safety of human lives at sea, the devastation and degradation of landscape and environment due to the construction and use of nautical tourism facilities etc. [9].

The goal of the analysis conducted in this paper is to present the current situation regarding nautical tourism in Croatia and establish whether there is a correlation between vessel length and the specific nautical tourism variables observed, in order to perceive nautical tourism changes and trends in a timely manner and avoid the negative aspects of the growing nautical tourism demand.

2. Data and Methods

The majority of the Adriatic coastline belongs to the Republic of Croatia. Out of the total length of the Adriatic coastline, which amounts to 8,282 kilometres, 6,278, i.e. 75.8 %, belong to the Republic of Croatia. Out of this, 1,880 kilometres are on the mainland, while 4,398 kilometres are on islands [10]. As, with the length of its coastline and its indented character (numerous islands), the Croatian coast has the prerequisites for nautical tourism and its further development, here we have analysed

the number of arrivals and overnight stays in nautical charters, the number of registered vessels according to length, the number of nautical tourism marinas and ports as well as the number of sailing berths. The analysed data on selected nautical tourism variables refers to an 11-year period (2010-2020). An exception is the number of arrivals and overnight stays in nautical charters, which we analysed over a 15-year period (2005-2019), in order to provide insight into the situation regarding nautical tourism in Croatia. The data used in the analysis performed in this paper was issued by the Ministry of Tourism of the Republic of Croatia and the Croatian Bureau of Statistics.

In order to calculate the correlation between the variables, we used Spearman's correlation as a statistical procedure, whereas for the expression of its value, we used the correlation coefficient [11]. We performed an analysis of the correlation between the variable of the number of vessels (boats) differentiated according to length and the following variables: number of marinas, number of nautical tourism ports and number of berths. In the correlation analysis, we used Spearman's correlation coefficient (rho). It was applied here due to the short time series of data (10 years), because it can be calculated on smaller samples (N<35). Another reason is that Spearman's correlation coefficient does not require linear correlation [11]. The expression for the calculation of Spearman's coefficient of the correlation between the analysed variables is as follows:

$$rho = 1 - \frac{6 \times \sum_{i=1}^{n} d_i^2}{n^3 - n}, \quad (1)$$

where n is the number of pairs with the values X and Y, d_i the difference in the value ranks of the variables X and Y [12].

3. Discussion

Year after year, nautical tourism in Croatia has recorded an increase in the number of arrivals and overnight stays (Fig. 1), which brings about an increase of revenues generated by this type of tourism. Arrivals and overnight stays in nautical charters have been increasing year after year, with the exception of the number of overnight stays in 2009, which might be a consequence of the 2008 global economic crisis [13].

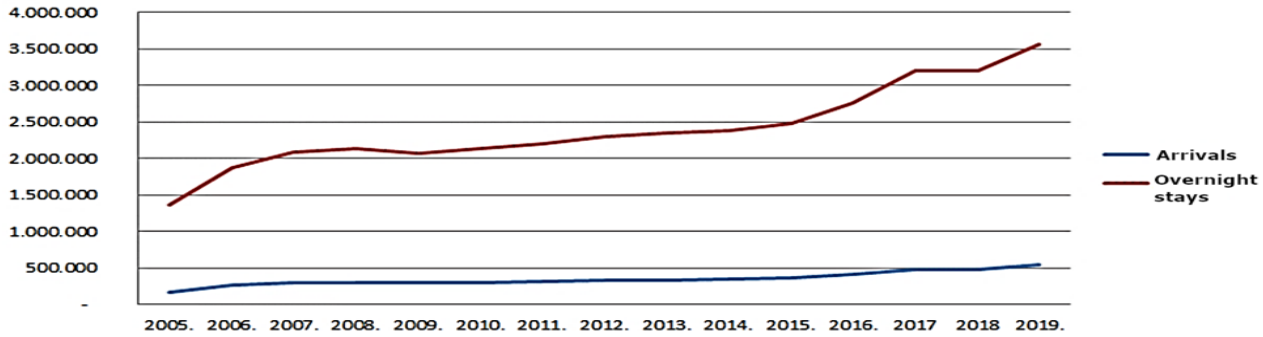


Fig. 1 Arrivals and overnight stays in nautical charters. Source: [14]

The tourism in Croatia is seaside leisure tourism of a seasonal character with pronouncedly seasonal arrivals of passengers. The highest number of overnight stays is achieved in the months of July, August and September, from which it may be concluded that nautical tourism accompanies the nice weather and increases in air temperature in Croatia [13].

An analysis of the number of registered vessels according to length (Fig. 2) displays an increase in the number of vessels that are 12-15 m in length and yachts that are 15-20 m in length. At the same time, there is a tendency of decline in the number of vessels that are up to 10 m in length, divided in groups of up to 6 m, 6-8 m and 8-10 m [13]. In the observed period in Italy, there is also a decrease in the number of boats up to 10 m in length, with an average annual decrease of 3.03% [15, 16].

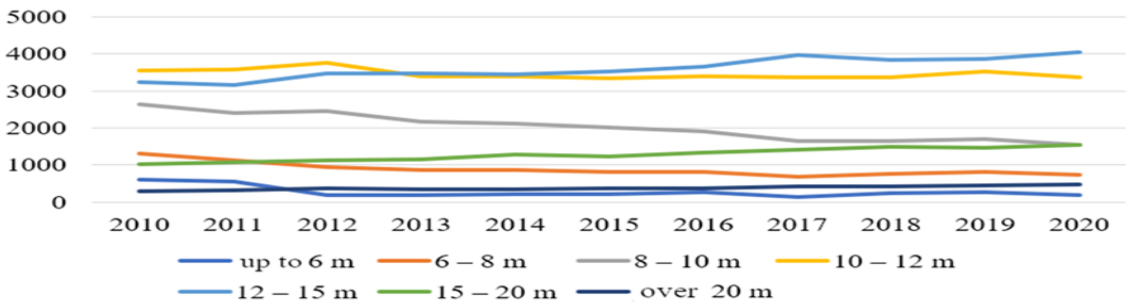


Fig. 2 Chart of the number of registered vessels according to length. Source: [17-27]

The number of ports and marinas varied in the last 11 years (Fig. 3). A growth in the number of marinas was recorded in 2013, followed by a decline by 16.41% as early as in 2014. In the period from 2014 to 2018, the number of marinas experienced a mild growth. A more significant increase in the number of marinas occurred in 2019, when it increased by 34.48% in comparison with 2018. Unlike marinas, in the last 11 years, the number nautical tourism ports recorded a constant growth. In the period from 2010 to 2020, the number of nautical tourism ports increased by 141, i.e. by 320.45%.

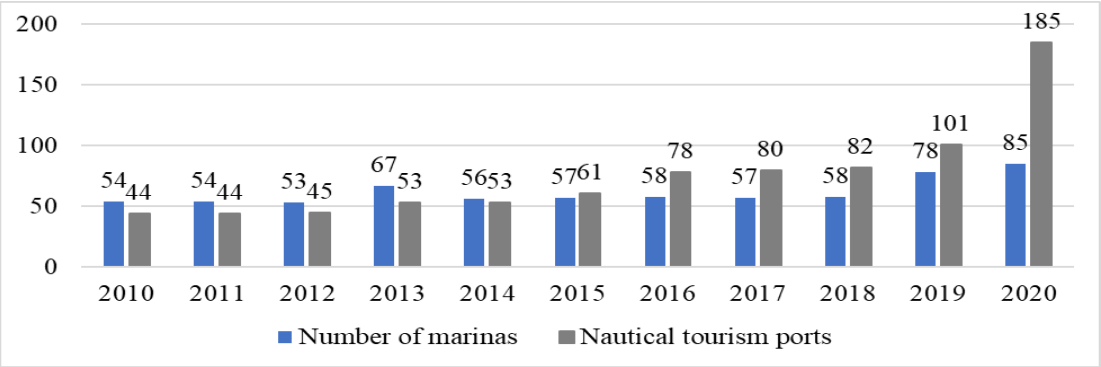


Fig. 3 Ports and marinas. Source: [28-37]

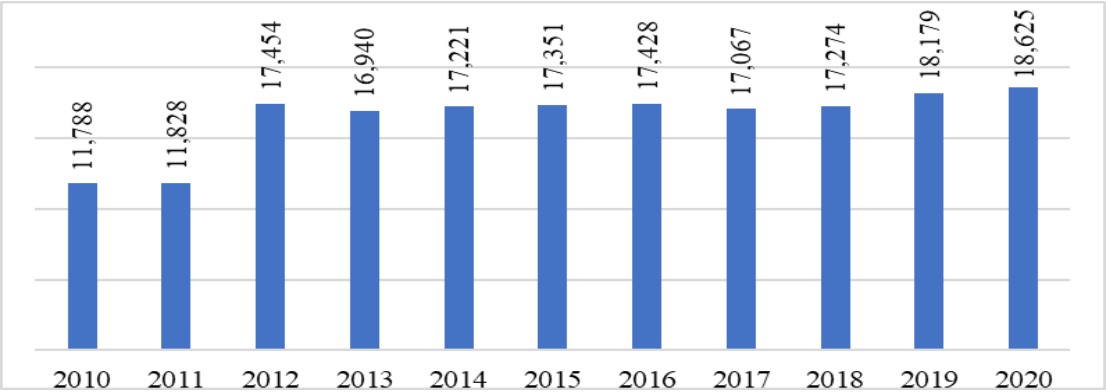


Fig. 4 Sailing berths by year. Source: [28-37]

The number of berths has also been growing in comparison with the years before, except for 2013 and 2017. A high leap in the number of berths occurred in 2012 [13], when it grew by 5,626, i.e. 47.56 %, which is also visible on Figure 4. In the observed period, the number of berths also increased in Italy, with an average annual growth of 0.58% [15, 16].

The correlations between the number of marinas and the number of vessels (boats) according to length, the number of nautical tourism ports and the number of vessels according to length as well as the number of berths and the number of vessels according to length were examined by applying the correlation analysis. The results of the correlation analysis are presented in tables 1 to 3.

Table 1 Analysis of the correlation between the number of marinas and the number of vessels according to length. Source [28-37]

	N	**rho**	**t(N-2)**	**p***
Number of marinas & total vessels	11	-0.37	-1.20	0.262
Number of marinas & vessels up to 6 m	11	-0.09	-0.28	0.783
Number of marinas & vessels 6–8 m	11	-0.64	-2.50	**0.034**
Number of marinas & vessels 8–10 m	11	-0.76	-3.51	**0.007**
Number of marinas & vessels 10–12 m	11	-0.46	-1.54	0.157
Number of marinas & vessels 12–15 m	11	0.77	3.61	**0.006**
Number of marinas & vessels 15–20 m	11	0.77	3.66	**0.005**
Number of marinas & vessels over 20 m	11	0.67	2.69	**0.025**

Based on the data in Table 1, we established a statistically significant negative correlation between the number of marinas and the number of vessels with the length between 6 and 8 metres (rho = -0.64; p = 0.034), and between the number of marinas and the number of vessels with the length between 8 and 10 metres (rho = -0.76; p = 0.007). There is a positive correlation between the number of marinas and the number of vessels with the length between 12 and 15 metres (rho = 0.77; p = 0.006), the number of marinas and the number of vessels with the length between 15 and 20 metres (rho = 0.77; p = 0.005), as well as between the number of marinas and the number of vessels that are over 20 metres in length (rho = 0.67; p = 0.025). No correlations between the number of marinas and the number of vessels of other lengths were established (p>0.050).

Table 2 Analysis of the correlation between nautical tourism ports and the number of vessels according to length. Source [28-37]

	N	**Rho**	**t(N-2)**	**P***
Nautical tourism ports & total vessels	11	-0.32	-1.01	0.338
Nautical tourism ports & vessels up to 6 m	11	-0.24	-0.74	0.477
Nautical tourism ports & vessels 6–8 m	11	-0.86	-5.02	**0.001**
Nautical tourism ports & vessels 8–10 m	11	-0.95	-9.59	**<0.001**
Nautical tourism ports & vessels 10–12 m	11	-0.58	-2.16	0.059
Nautical tourism ports & vessels 12–15 m	11	0.95	9.59	**<0.001**
Nautical tourism ports & vessels 15–20 m	11	0.97	12.55	**<0.001**
Nautical tourism ports & vessels over 20 m	11	0.94	8.31	**<0.001**

There is a negative and statistically significant correlation between the number of nautical tourism ports and the number of vessels that are 6-8 metres long (rho = -0.86; p = 0.001), as well as between the number of nautical tourism ports and the number of vessels that are 8-10 metres long (rho = -0.95; p < 0.001). A positive and statistically significant correlation has been established between the number of nautical tourism ports and the number of vessels that are 12-15 metres long (rho = 0.95; p < 0.001); this is also the case with the correlation between the number of nautical tourism ports and the number of vessels that are 15-20 metres long (rho = 0.97; p < 0.001) and between the number of nautical tourism ports and the number of vessels that are over 20 m in length (rho = 0.94; p < 0.001). The correlation between the number of nautical tourism ports and the number of vessels that are 10-12 metres long (rho = -0.58; p = 0.059) is of no statistical significance; the same holds true regarding the correlation between the number of nautical tourism ports and the number of vessels that are up to 6 metres long (rho = -0.24; p = 0.477), as is displayed in Table 2. The correlation between the number of nautical tourism ports and the total number of boats is of no statistical significance (rho = -0.32; p = 0.338).

Table 3 Analysis of the correlation between the number of berths and the number of vessels according to length. Source [28-37]

	N	rho	t(N-2)	p*
Number of berths & total vessels	11	0.03	0.08	0.937
Number of berths & vessels up to 6 m	11	-0.26	-0.79	0.449
Number of berths & vessels 6–8 m	11	-0.46	-1.57	0.151
Number of berths & vessels 8–10 m	11	-0.55	-2.00	0.077
Number of berths & vessels 10–12 m	11	-0.13	-0.38	0.709
Number of berths & vessels 12–15 m	11	0.65	2.54	**0.032**
Number of berths & vessels 15–20 m	11	0.65	2.60	**0.029**
Number of berths & vessels over 20 m	11	0.82	4.27	**0.002**

No correlation has been established between the number of berths and the total number of vessels (Table 3) (rho = 0.03; p = 0.937), while there is a positive and statistically significant correlation between the number of berths and the number of vessels that are 12-15 metres long (rho = 0.65; p = 0.032), the number of berths and the number of vessels that are 15-20 metres long (rho = 0.65; p = 0.029), and between the number of berths and the number of vessels that are over 20 metres long (rho = 0.82; p = 0.002). Other correlations are of no statistical significance (p>0.050).

4. Conclusion

Tourism in Croatia is of a seasonal character, with pronouncedly seasonal arrivals of passengers and nautical tourists. Croatia is rich in natural beauty, an indented coast and islands and historical and cultural heritage, wherefore it has all the prerequisites for the further development of nautical tourism. The negative aspects of the continuous development of nautical tourism and the lack of adequate solutions for meeting the needs of the increasing demand for nautical tourism are already visible. In the last 11 years, there has been a growth in the number of arrivals and overnight stays in nautical tourism. The number of ports and marinas and the number of berths have been growing, accompanying the growth in the number of vessels and tourists. In the observed period, we established a growth in the number of berths and the number of vessels with the length of over 12 m and a decline in the number of vessels that are up to 10 metres in length.

On the basis of the conducted research, it can be concluded that there is a pronounced commercialisation occurring in the field of nautics, with sailboats and motor vessels of over 12 m entering the stage, while the significance of smaller vessels used for personal needs is decreasing. The research established no statistically significant correlation between the number of vessels and the number of nautical tourism ports, as well as the number of berths.

As is the case worldwide, this type of tourism has been experiencing an extraordinarily fast development, which is only bound to increase in future. Nautical tourism is a dynamic type of tourism

that requires constant monitoring and research, in order to observe and explain market changes in a timely manner, with the intention of establishing Croatia's position on the tourism market as a recognizable tourist and nautical destination with a higher level of quality and diversity in the tourism offer. In future, nautical tourism should certainly be developed in accordance with the demand, but environmental protection is definitely also something to be taken into consideration, if one wishes to minimise and avoid undesirable consequences.

References

[1] Luković, T. (2012). Nautical Tourism and Its Function in the Economic Development of Europe. In M. Kasimoglu (Ed.), Visions for Global Tourism Industry – Creating and Sustaining Competitive Strategies, 399-430. London, InTech. Retrieved January 7, 2022, from Intechopen database on the World Wide Web: https://www.intechopen.com/5. DOI: 10.5772/38058.

[2] Gračan, D., Gregorić, M. & Martinić, T. (2016). Nautical tourism in Croatia: current situation and outlook. In 23rd Biennial International Congress, Tourism and Hospitality Industry 2016, Trends and Challenges, 28-29 April 2016, (pp. 66-79). Rijeka, Croatia: Faculty of Tourism and Hospitality Management, University of Rijeka. Retrieved January 7, 2022, from Crosbi database on the World Wide Web: https://www.bib.irb.hr/909780

[3] Vitasović, A. & Dujmović, M. (2017). Experience in Tourist Destination. In II. International Conference on Tourism Dynamics and Trends, Proceedings Book II, 26-29 June 2017 (pp. 76-94). Seville, Spain: Faculty of Tourism and Finance, University of Seville.

[4] Alkier, R. (2019). Perspectives of Development of Luxury Nautical Tourism in the Republic of Croatia. Pomorski zbornik 56(1), 109-124. Retrieved January 8, 2022, from Hrčak database on the World Wide Web: https://hrcak.srce.hr/. DOI: 10.18048/2019.56.07.

[5] Kovačić, M. & Luković, T. (2007). Spatial characteristics of planning and construction of nautical tourism ports. Geoadria 12(2), 131-147. Retrieved January 8, 2022, from Hrčak database on the World Wide Web: https://hrcak.srce.hr/. DOI: 10.15291/geoadria.119.

[6] Jugović, A. & Kovačić, M. (2013). Nautical Tourism in Croatia as a Function of Destination Development. Pomorski zbornik (Naval Almanac) 47-48(1), 61-72. Retrieved January 7, 2022, from Hrčak database on the World Wide Web: https://hrcak.srce.hr/clanak/178123

[7] Ivanić, K., Perić Hadžić, A. & Mohović, Đ. (2018). Nautical Tourism: Generator of Croatian Economy Development. Pomorstvo 32(1), 59-66. Retrieved January 11, 2022, from Hrčak database on World Wide Web: https://hrcak.srce.hr/. DOI: 10.31217/p.32.1.7

[8] Brčić, A. & Radić Lakoš, T. (2012). Indicators of nautical tourism development in 2010 with emphasis on the Šibenik-Knin County. Proceedings of the Polytechnic of Šibenik 6(1-2), 55-68. Retrieved January 3, 2022, from Crosbi database on the World Wide Web: https://www.bib.irb.hr/619739

[9] Jadrešić, V. (2001). Tourism: in interdisciplinary theory and application: a collection of research. Zagreb, Croatia: Školska knjiga.

[10] Vokić Žužul, M. & Filipović, V. (2015). The boundaries of the submarine areas of the Adriatic states. Poredbeno pomorsko pravo (Comparative Maritime Law) 54(169), 9-56. Retrieved January 11, 2022, from Hrčak database on the World Wide Web: https://hrcak.srce.hr/clanak/212990

[11] Udovičić, M., Baždarić, K., Bilić-Zulle, L. & Petrovečki, M. (2007). What we need to know when calculating the coefficient of correlation. Biochemia Medica 17(1), 10-15. Retrieved January 15, 2022, from Biochemia Medica database on the World Wide Web: https://www.biochemia-medica.com/en. DOI: 10.11613/BM.2007.002.

[12] Rozga, A. (2013). Statistics for economists. Split, Croatia: Faculty of Economics, University in Split.

[13] Kalac, A. (2020). Analysis of nautical tourism. Final paper. Šibenik, Croatia: Polytechnic of Šibenik

[14] Croatian National Tourist Board. (2020, May). Nautical tourism in Croatia - nautical charter. Retrieved January 17, 2022, from https://www.htz.hr/sites/default/files/2021-02/Nauti%C4%8Dki%20turizam%20Hrvatske%20-%20nauti%C4%8Dki%20charter%20-izdanje%202020.pdf

[15] Ministry of Infrastructure and Transport (in Italian) (2010). Il Diporto Nautico in Italia. Retrieved March 17, 2022, from https://www.mit.gov.it/node/8607

[16] Ministry of Sustainable Infrastructure and Mobility (in Italian) (2020). Il Diporto Nautico in Italia. Retrieved March 17, 2022, from https://www.mit.gov.it/node/16320

[17] Croatian Bureau of Statistics (2011, March). Nautical tourism – Capacities and operation of nautical ports, 2010. Retrieved January 19, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2010/04-04-05_01_2010.htm

[18] Croatian Bureau of Statistics (2012, March). Nautical tourism – Capacities and Turnover of ports, 2011. Retrieved January 19, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2011/04-04-05_01_2011.htm

[19] Croatian Bureau of Statistics (2013, March). Nautical tourism – Capacities and Turnover of ports, 2012. Retrieved January 19, 2022, from https://www.dzs.hr/hrv_eng/publication/2012/04-03-05_01_2012.htm

[20] Croatian Bureau of Statistics (2014, March). Nautical tourism – Capacities and Turnover of ports, 2013. Retrieved January 19, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2013/04-03-05_01_2013.htm

[21] Croatian Bureau of Statistics (2015, March). Nautical tourism – Capacity and Turnover of ports, 2014. Retrieved January 19, 2022, from https://www.dzs.hr/hrv_eng/publication/2014/04-03-04_01_2014.htm

[22] Croatian Bureau of Statistics (2016, March). Nautical tourism – Capacity and Turnover of ports, 2015. Retrieved January 19, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2015/04-03-04_01_2015.htm

[23] Croatian Bureau of Statistics (2017, March). Nautical tourism – Capacity and Turnover of ports, 2016. Retrieved January 20, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2016/04-03-04_01_2016.htm

[24] Croatian Bureau of Statistics (2018, March). Nautical tourism – Capacity and Turnover of ports, 2017. Retrieved January 20, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2017/04-03-04_01_2017.htm

[25] Croatian Bureau of Statistics (2019, March). Nautical tourism – Capacity and Turnover of ports, 2018. Retrieved January 20, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2018/04-03-04_01_2018.htm

[26] Croatian Bureau of Statistics (2020, March). Nautical tourism – Capacity and Turnover of ports, 2019. Retrieved January 20, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2019/04-03-04_01_2019.htm

[27] Croatian Bureau of Statistics (2021, March). Nautical tourism - Capacity and Turnover of ports, 2020. Retrieved January 20, 2022, from https://www.dzs.hr/Hrv_Eng/publication/2020/04-03-04_01_2020.htm

[28] Ministry of Tourism and Sport of the Republic of Croatia (in Croatian) (2012). Turizam u brojkama 2011. Retrieved January 25, 2022, from https://mint.gov.hr/UserDocsImages/arhiva/2011-turizamubrojkama.pdf

[29] Ministry of Tourism and Sport of the Republic of Croatia (2013). Tourism in figures 2012. Retrieved January 25, 2022, from https://www.htz.hr/sites/default/files/2017-06/Tourism-in-Figures-2012.pdf

[30] Ministry of Tourism and Sport of the Republic of Croatia (2014). Tourism in figures 2013. Retrieved January 25, 2022, from https://www.htz.hr/sites/default/files/2017-06/Tourism-in-Figures-2013.pdf

[31] Ministry of Tourism and Sport of the Republic of Croatia (2015). Tourism in figures 2014. Retrieved January 25, 2022, from https://www.htz.hr/sites/default/files/2017-06/Tourism-in-Figures-2014.pdf

[32] Ministry of Tourism and Sport of the Republic of Croatia (2016). Tourism in figures 2015. Retreived January 25, 2022, from https://www.htz.hr/sites/default/files/2017-06/Tourism%20in%20figures%202015.pdf

[33] Ministry of Tourism and Sport of the Republic of Croatia (2017). Tourism in figures 2016. Retrieved January 26, 2022, from https://www.htz.hr/sites/default/files/2017-06/Tourism_in_figures_ENG_2016.pdf

[34] Ministry of Tourism and Sport of the Republic of Croatia (2018). Tourism in figures 2017. Retrieved January 26, 2022, from https://mint.gov.hr/UserDocsImages/AA_2018_c-dokumenti/180608_HTZTUBENG_2017.PDF

[35] Ministry of Tourism and Sport of the Republic of Croatia (2019). Tourism in figures 2018. Retrieved January 26, 2022, from https://www.htz.hr/sites/default/files/2019-06/HTZ%20TUB%20ENG_2018_0.pdf

[36] Ministry of Tourism and Sport of the Republic of Croatia (2020). Tourism in figures 2019. Retrieved January 26, 2022, from https://www.htz.hr/sites/default/files/2020-07/HTZ%20TUB%20ENG_2019.pdf

[37] Ministry of Tourism and Sport of the Republic of Croatia (2021). Tourism in figures 2020. Retrieved January 26, 2022, from https://www.htz.hr/sites/default/files/2021-06/HTZ%20TUB%20ENG_2020.pdf