

Statistical Analysis of International Tourists Coming to Uzbekistan

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Abstract:

This work is dedicated to the study and statistical analysis of the dynamics of the flow of foreign tourists to the Republic of Uzbekistan. The main purpose of the research is to determine the change in the number of tourists entering the country. During the research, the main indicators of tourism statistics and their annual changes were analyzed. Based on the results of the analysis, the development of the tourism sector of Uzbekistan is presented. The results of the research are of practical importance for organizations operating in the field of tourism and the government, and help to implement the country's tourism strategy more effectively.

Keywords: Republic of Uzbekistan, foreign tourists, tourism statistics, Republic of Uzbekistan, dynamics of tourists, statistical analysis, tourism development, flow of tourists.

Introduction

President Sh.M. Mirziyayev defined additional tasks for increasing the number of foreign tourists. In particular, the importance of launching flights from China to Samarkand, Bukhara, Khorezm, Surkhandarya and Fergana Valley was shown. For example, the importance of going to all the provinces of China and promoting the touristic potential of the regions, establishing flights from China to Samarkand, Bukhara, Khorezm, Surkhandarya and Fergana Valley was shown¹. The head of state showed that in the current difficult situation in the world, every country is using all its possibilities to attract tourists, and said that it is necessary to work in accordance with such a fierce competition.

Since the number of foreign tourists coming to the Republic of Uzbekistan every year is seasonal, the statistical and development laws of this process can be studied using the theory of dynamic series of mathematical statistics. The main goal is to determine the guaranteed statistical regularities

¹ President.uz

based on the available limited amount of data and analysis, and using them to predict the number of foreign tourists arriving in the future with a 90-95% guarantee.

As mentioned above, in the article, the number of foreign tourists coming to the Republic of Uzbekistan every year is studied as a discrete $\{Y_t, t \in T\}$ stationary dynamic series (according to Data.egov.uz).

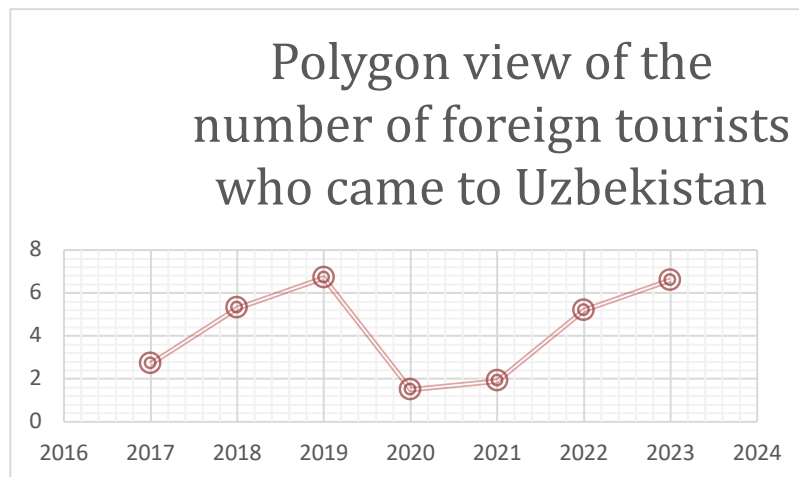
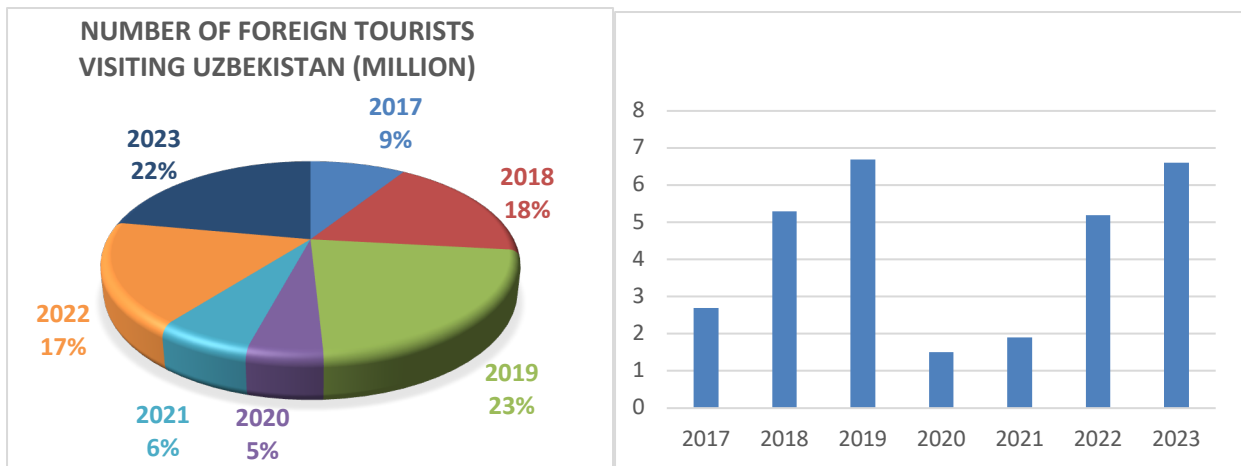
The dynamic (time) series section of mathematical statistics, which is widely used in solving practical problems, has been thoroughly studied and applied to solving practical problems in foreign countries. The following literature on dynamic lines can be indicated: T.V. Anderson [1], M. Kendal, A. Stewart [2], et al.

Statistical research methods

In the article, the moving average value, finite differences, least squares method, statistical hypothesis testing and other dynamic series analysis methods are used to solve these problems.

Statistical research results

According to data.egov.uz, the number of foreign tourists who came to the Republic of Uzbekistan in the next 7 years, i.e. in 2017-2023, as a discrete $\{Y_t, t \in T\}$, stationary dynamic series (table- 1, 3 column data), geometrically interpreting it in the Cartesian coordinate system, we can assume that the model of the trend part characterizing the main direction of this process has an approximately linear connection $y = a_0 + a_1t$ (see figure-1):



1-figure Number of foreign tourists visiting Uzbekistan (million)

On the basis of statistical data, by the method of least squares, we find the unknown parameters a_0 and a_1 participating in the linear connection by solving this system of equations.

$$\begin{cases} a_0T + a_1 \sum t = \sum y_t \\ a_0t + a_1 \sum t^2 = \sum y_t t \end{cases}$$

Table-1. Statistical analysis of the dynamics of the number of foreign tourists arriving in the Republic of Uzbekistan

1	2	3	4	5	6
N	Years observed	y_t -number of tourists (millions)	t	t^2	$y_t t$
1	2017	2,7	-3	9	-8,1
2	2018	5,3	-2	4	-10,6
3	2019	6,7	-1	1	-6,7
4	2020	1,5	0	0	0
5	2021	1,9	1	1	1,9
6	2022	5,2	2	4	10,4
7	2023	6,6	3	9	19,8
	SUMMA	29,9	0	28	6,7

Using the calculations presented in Table-1, we determine the unknown parameters involved in the linear connection using the above formula:

$$\sum y_t = 29,9 \text{ million} \quad a_0 = \frac{1}{T} \sum y_t = \frac{29,9}{7} = 4,27 \text{ million}$$

$$a_1 = \frac{1}{\sum t^2} \sum y_t t = \frac{6,7}{28} = 0,239 \text{ million}$$

Based on the above calculations, the equation of the trend part representing the dynamics of the number of foreign tourists arriving in the Republic of Uzbekistan and its connection with t-years is as follows:

$$y(t) = 0,239t + 4,27$$

The main reason for the decrease in passengers is the spread of the infectious disease COVID-19 throughout the world. Since the total number of tourists who came to the Republic of Uzbekistan in the next two years was approximately 5.2 million in 2022, and 6.6 million in 2023, it means that the number of foreign tourists who came to our republic has also increased dramatically².

Conclusion

The number of foreign tourists who came to the Republic of Uzbekistan in 2010-2022 can be presented as a discrete $\{Y_t, t \in T\}$, static dynamic series:

- 1) The number of foreign tourists who came to the Republic of Uzbekistan in 2010-2022 can be presented as a discrete $\{Y_t, t \in T\}$, static dynamic series:
- 2) The trend part characterizing the main direction of the number of foreign tourists arriving in the Republic of Uzbekistan has a linear connection as follows

$$y(t) = 0,239t + 4,27$$

² Markayev, Z. E., & Fayziyev, A. A. (2024). O'ZBEKISTON RESHUBLIKASIGA KELGAN TASHQI TURISTLAR DINAMIKASINI STATISTIK TAHLILI. *Science and innovation*, 3(Special Issue 20), 241-248

3) the annual average number of foreign tourists is $y(t) \equiv 4.27$ million people, the interval statistical estimate of the average number of foreign tourists with a 95% guarantee is (7 million)

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