

## Forecast of the development of the COVID-19 epidemic situation in Moscow in 2022–2023

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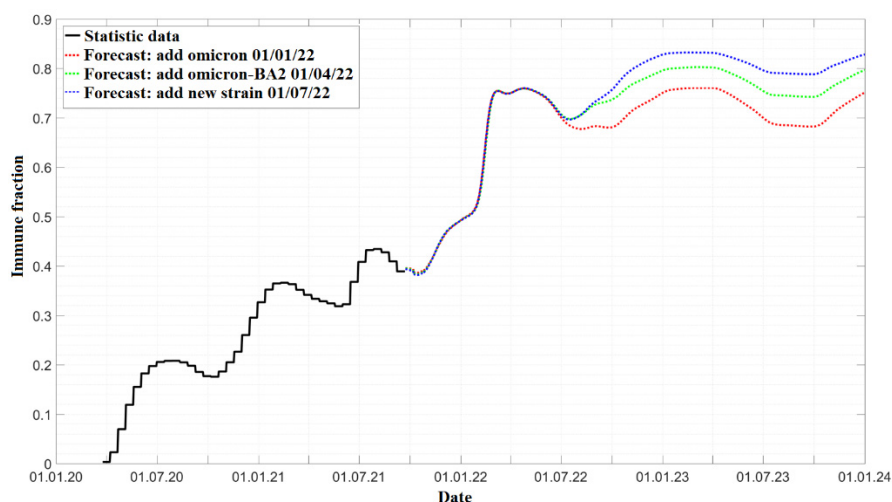
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*Motivation and Aim:* The COVID-19 pandemic is a global challenge. The analysis of the development of the epidemic situation and its forecasting for the governments of many countries has been a problem for the last two years. The purpose of our work is to obtain an assessment of the development of the situation in Moscow and the UK in the coming years.

*Methods and Algorithms:* We have created an agent-based stochastic model for predicting the development of the epidemiological situation in the focus of the spread of viral infection through daily social contacts [1]. When constructing an epidemiological model, numerical parameters of the virtual epidemic process are coordinated with retrospective actual data from the beginning of the epidemic. The forecast is constructed as a continuation of the obtained epidemiological model within the framework of the selected assumptions: the appearance of new strains, seasonal factors and possible actions of the authorities. To analyze the ways of development of the epidemic situation, we also use the results of unique population studies in the UK conducted under the REACT [2] and ZOE [3] programs.

*Results:* An epidemiological model has been built for Moscow, according to which a forecast for the next two years has been made. Using the example of Moscow, it is shown that the appearance of omicron in January 2022 and its faster "descendants" will lead to the circulation of the virus, in which the immune layer will be maintained at the level of 70–80 %, which indicates continuous infection of people with a drop in their immunity six months after the previous disease. The analysis of population studies in the UK does not contradict the obtained modeling results.



*Conclusion:* Two years of the Covid-19 pandemic have not led to a decline in the circulation of the virus in human communities. The example of the UK shows that the circulation of the virus has moved from an outbreak mode to a continuous one. It is suggested that it is difficult to change strains to more transmissible ones due to the small proportion of susceptible ones in the population and the inability to realize their advantages relative to already circulating strains. A decrease in the importance of the seasonal factor in the spread of COVID-19 infection was noted.

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### References

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