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Spatial analysis of determinants affecting the total number of Covid-19 cases of provinces in Turkey

The Covid-19 which is accepted as a pandemic by the World Health Organisation, has created a global panic effect all over the world. To stop this epidemic, in which more than 4 million people died as of July 2021, researches are being carried out on all kinds of issues related to the disease. In this study, a spatial econometric analysis of the determinants of the total number of Covid-19 cases in the provinces in Turkey between February 8, 2021, and May 7, 2021, was conducted. The existence of spatial autocorrelation was investigated through the Moran I test, and as a result, the Spatial Lagged Model (SAR) was found to be the most appropriate model. According to the results of the spatial analysis, it has been determined that the change in the total number of cases in a province will be in the same direction in the neighboring provinces of that province. A spatial interaction finding was obtained between the provinces and a significant and positive relationship was found between the total number of Covid-19 cases and the population density and the number of people over the age of sixty. Similarly, a significant and negative relationship was found with the average temperature and the total number of healthcare workers, and no significant relationship was found with the literacy rate.

Keywords: spatial analysis; Covid-19; spatial lag model; Moran I test; LM test.

JEL classification: C31; I18; C54.

1. Introduction

The new coronavirus disease (Covid-19) is a virus that emerged in China's Wuhan province in late December 2019 and was first identified on January 13, 2020, as a result of research conducted in a group of patients who developed respiratory symptoms. The outbreak was initially detected in seafood and animal markets in this region. Later, it spread from person to person and spread to other cities in Hubei province, other provinces of the People's Republic of China, and from there to other countries of the world, turning into a global epidemic. The World Health Organization (WHO) declared the outbreak an international public health emergency of concern on 30 January 2020 and a Pandemic on 11 March 2020².

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² See <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.