Forecasting the spread of COVID-19 according to the effect of interventions in Republic of Korea

Hyojung Lee
National Institute for Mathematical Sciences (NIMS), Busan, Korea
hjlee@nims.re.kr

ABSTRACT

The novel coronavirus outbreak has rapidly spread out from Wuhan, Hubei Province, China to other countries since December, 2019. The World Health Organization (WHO) declared the COVID-19 outbreak a global pandemic on March 11, 2020. More than 130,000 cases have confirmed since the first case was reported on 20 January, 2020 as of 31 May 2021 in South Korea. The Korean government implemented the combined interventions including social distancing, and work-at-home policies. In this research, first, the epidemiological characteristics are analyzed in seven geographical areas in Korea. Second, we construct a mathematical model to estimate the effective reproduction numbers by geographical area, which assess the effect of control interventions. Finally, we forecast the COVID-19 cases under the different effect of control interventions using mathematical model approach on the COVID-19 spread.