Determination of the Key Parameters in SIR Compartment Model for Novel Coronavirus Pneumonia Propagation

Zhai, Jiayi (School: Hefei No 6 High School)

To research the spread of the novel coronavirus, and prevent and control the widespread of the virus, this project investigated the spread of the novel coronavirus pneumonia epidemic from the perspective of infectious disease dynamics. SIR compartment model had been applied to establish the model of infectious dynamics of pneumonia, and predict the future propagation characteristics. In order to solve two key parameters of the model, the scale coefficient and the removal rate coefficient, three calculation methods were proposed based on the data of Italy from March 20, 2020 to May 20, 2020, and the calculation accuracy was compared. The scale coefficient and the removal rate coefficient of the infectious disease dynamics model were obtained, which were consistent with the actual data. The results show that the existing epidemic data can be simulated by SIR compartment model, which can effectively predict the spread of infectious diseases, give advice to government and doctors to control the spread of the disease, and provide strong support for epidemic prevention.

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