Special Issue

Mathematical Modeling and Statistical Methods for Epidemiology

Message from the Guest Editor

During the last decade, the field of epidemiology has experienced a significant surge, driven by factors like increasing global connectivity, emerging and re-emerging infectious diseases, and the availability of increasingly detailed, multimodal health data. At present, effective public health responses rely heavily on robust analytical tools, such as mathematical models and statistical methods, to decipher disease dynamics, predict future trends, and provide evidence-based intervention policy support. This Special Issue aims to showcase cutting-edge advancements in mathematical modeling and statistical methods applied to understanding and controlling diseases and broader public health challenges. The topics of interest for publication include, but are not limited to: mechanistic modeling, network and agent-based modeling, Bayesian inference, advanced epidemic data analysis techniques, application of AI/ML/DL to disease modeling, detection, and prediction, modeling the impact of intervention policies (e.g., vaccination and non-pharmaceutical interventions), and the integration of 'One Health' approaches into epidemiological investigations.

Guest Editor

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Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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