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OMNI-REUNIS Super-Spreader Seminar Series

These seminar series is intended to provide faculty members, OMNI-RÉUNIS affiliates and HQPs a platform to present their research, share experiences and foster collaboration among OMNI-RÉUNIS, the Emerging Infectious Disease Modelling (EIDM) networks, and the scientific community.

INVESTIGATING THE CLIMATE INFLUENCE ON NOROVIRUS SPREAD IN THE UNITED STATES

Zoom (Virtual Seminar) | Thursday, March 14, 2024 | 11:00 am-12:00 pm EDT

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SHOHEL AHMED

MEET THE PRESENTER

Shohel Ahmed is a Ph.D. student in Applied Mathematics at the University of Alberta, where he is a key member of the Interdisciplinary Lab for Mathematical Ecology & Epidemiology (ILMEE) under the guidance of Dr. Hao Wang. His research delves into the realms of Deterministic and Stochastic models within Mathematical Biology, with a particular focus on Ecological Stoichiometry and the modelling of Infectious Disease transmission. Currently, his work is centered on exploring how climate factors influence the modelling of various infectious diseases. As a mathematician with a passion for uncovering the intricate biological patterns in nature, Shohel is dedicated to linking these discoveries to his field of study, aiming to contribute significantly to our understanding of ecological and epidemiological dynamics.

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SEMINAR TITLE AND ABSTRACT

INVESTIGATING THE CLIMATE INFLUENCE ON NOROVIRUS SPREAD IN THE UNITED STATES

Norovirus, responsible for causing severe gastroenteritis and foodborne illnesses in the United States, demonstrates a notable sensitivity to environmental conditions. This study introduces a novel foodborne disease model incorporating indirect incidence rates to analyze how temperature and humidity influence norovirus transmission dynamics. By utilizing weekly average climate data alongside confirmed norovirus case reports from four distinct U.S. regions (Southern, Northeastern, Midwestern, and Western), we assess the virus's mortality rates and calculate its transmission rates using an inverse methodology. Our analysis confirms a seasonal pattern, with norovirus outbreaks peaking during colder months. Interestingly, our findings indicate that warmer temperatures and higher humidity levels may significantly reduce norovirus spread during warmer seasons. Leveraging climate data, we employ a generalized boosting machine learning approach to predict transmission rates and infection cases with up to eight weeks of foresight.

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