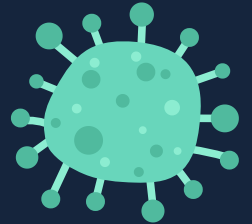


Distressing Math Collective Presents

# MODELING THE SPREAD OF INFLUENZA IN URBAN ENVIRONMENTS USING TWO-DIMENSIONAL RANDOM WALK SIMULATIONS



Presented By: Christine Yang '24

AS A HIGHLY CONTAGIOUS RESPIRATORY ILLNESS, INFLUENZA PRESENTS SIGNIFICANT PUBLIC HEALTH CHALLENGES DUE TO ITS RAPID TRANSMISSION AND SEASONAL FLUCTUATIONS. THIS RESEARCH AIMS TO EXPLORE THE PATTERNS OF INFLUENZA SPREAD IN URBAN ENVIRONMENTS USING RANDOM WALK MODELS, A STATISTICAL TOOL THAT REPRESENTS PATHS CONSISTING OF A SERIES OF RANDOM STEPS.

IN THIS PROJECT, WE WILL EMPLOY TWO-DIMENSIONAL RANDOM WALK SIMULATIONS TO MODEL THE SPREAD OF INFLUENZA IN AN URBAN SETTING. EACH INDIVIDUAL IN THE SIMULATION IS REPRESENTED AS AN AGENT THAT MOVES RANDOMLY IN A TWO-DIMENSIONAL GRID, MIMICKING REAL-LIFE HUMAN MOVEMENT PATTERNS. WE WILL BEGIN BY EXPLAINING THE THEORY OF THE TWO-DIMENSIONAL RANDOM WALK. SUBSEQUENTLY, WE WILL INCORPORATE VARIOUS FACTORS SUCH AS CONTACT RATES, POPULATION DENSITY, AND MOVEMENT PATTERNS DERIVED FROM REAL-WORLD DATA FROM SOURCES LIKE THE CDC AND WHO. THE SIGNIFICANCE OF THIS RESEARCH LIES IN ITS POTENTIAL TO ENHANCE OUR UNDERSTANDING OF DISEASE TRANSMISSION IN URBAN ENVIRONMENTS, LEADING TO MORE EFFECTIVE PUBLIC HEALTH INTERVENTIONS.

When: September 25th, 2024 at 7pm

Where: Park 245 or via Zoom

Zoom Info:

Meeting ID: 958 0798 2212

Passcode: 792030

