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The Simulation of Spread of SARS-CoV-2 in a Closed Room GAJENDRA GURUNG, University of Texas at Arlington — The SARS-CoV-2 Virus has a diameter of about 50 -140 nm, and it spread from one infected person to another via airborne droplets. SIER model has been widely used to simulate the spreading of Virus in the past but, none of them seem to quantitatively analyze the effectiveness of face-covering mask and social distancing even though they have been widely used to prevent the spread of the virus as recommended by the CDC. We want to simulate the spreading of the virus to test and quantify the effectiveness and durability of these face masks. For the simulation, we are assuming that two individuals in a 12'x12' room move about randomly using the Markov chain method, otherwise known as the random walk simulation. One of the individuals will be a carrier of Covid-19 while the other is healthy but also susceptible to infection. We assumed that both individuals are breathing regularly at the rate of 12 breathes per minute. The non-infected person is wearing a mask with quantifiable effectiveness, which will be integrated into the simulation. The initial simulation will test how long an individual can remain safe inside the room without becoming infected. Differing scenarios will be tested as well. The results of these simulations will reveal the effectiveness of social distancing and mask-wearing on a populace that follows these protocols.

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