1163-92-1519 **Natalie Petruzelli*** (ngp01978@sjfc.edu) and **Keegan Kresge**. *Analyzing Epidemic Thresholds on Dynamic Network Structures.*

COVID-19 epidemics in parts of the U.S. have shown unexpected shifts from exponential to linear growth in the number of daily new cases. We explore a network-based epidemic model that interpolates between lattice-like and configuration model networks while keeping the degree distribution and reproduction number (R_0) constant to show these dynamics. This model gives nodes locations and connects them to their nearest neighbors, rearranging a proportion p of the edges in a configuration model subnetwork. As p increases, we observe a shift from linear to exponential growth. Real human contact networks have many local interactions and fewer long-distance ones, so social distancing affects the effective reproduction number R_t and the proportion of long-distance connections. While the impact of changes in R_t is understood, less is known about the effect of subtle changes in network structure. Our analysis finds that the threshold between dynamics occurs with a low percentage of reconfigured edges. Furthermore, the total infections in an epidemic substantially increase around the threshold even with a constant R_0.This study reveals that enacting and relaxing social distancing restrictions has more complex and dramatic effects on epidemic dynamics than previously thought. (Received September 15, 2020)