Using Network Modeling to Understand the Relationship Between SARS-CoV-1 and SARS-CoV-2

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https://scholarscompass.vcu.edu/bamm/2020/poster/2

The coronavirus family of viruses contains pathogens including the basic common cold to its more dangerous counterparts. Most recognizably of these counterparts is Severe Acute Respiratory Syndrome (SARS-CoV) that caused a major outbreak in southern China in 2003-2004 resulting in ~8,000 cases of the virus and ~800 deaths. While data is gathered in real-time for the current novel coronavirus outbreak, dubbed SARS-CoV-2, the original data from the SARS outbreak of 2003-2004 has remained unchanged, with no known cases reported worldwide after 2004. In our research, we will be applying various network modelling techniques to the original SARS data to better understand its spread. Then the same techniques will be used to analyze SARS-CoV-2. We hope to draw comparisons between these results to find any similarities between the two coronaviruses.