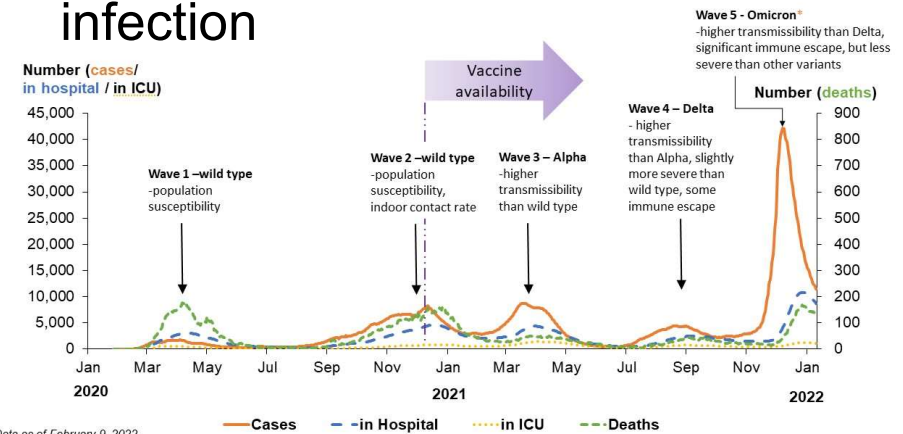


Problem Set – Evolution

- Problem 1 (5 points)
 - Consider seasonal influenza whereby a different strain of influenza infects the population each year.
 - Consider an SIR model
 - Write down a system of equations that allows for a new infected to be infected with a new mutant (i.e., include a mutation rate)

- Problem 2 (5 points)
 - Reflect on the different variants of concern of COVID-19
 - Discuss the competing effects of evolution and cross-immunity with respect to COVID-19 waves of infection



Data as of February 9, 2022

Note: Trend lines reflect 7-day moving averages. Total hospitalizations and ICU admissions include all people in hospital and in ICU on that day. Hospitalizations and ICU counts include data from nine of thirteen Canadian provinces and territories.

*Due to changes in COVID-19 testing policies in many jurisdictions starting in late December 2021, case counts will underestimate the total burden of disease.