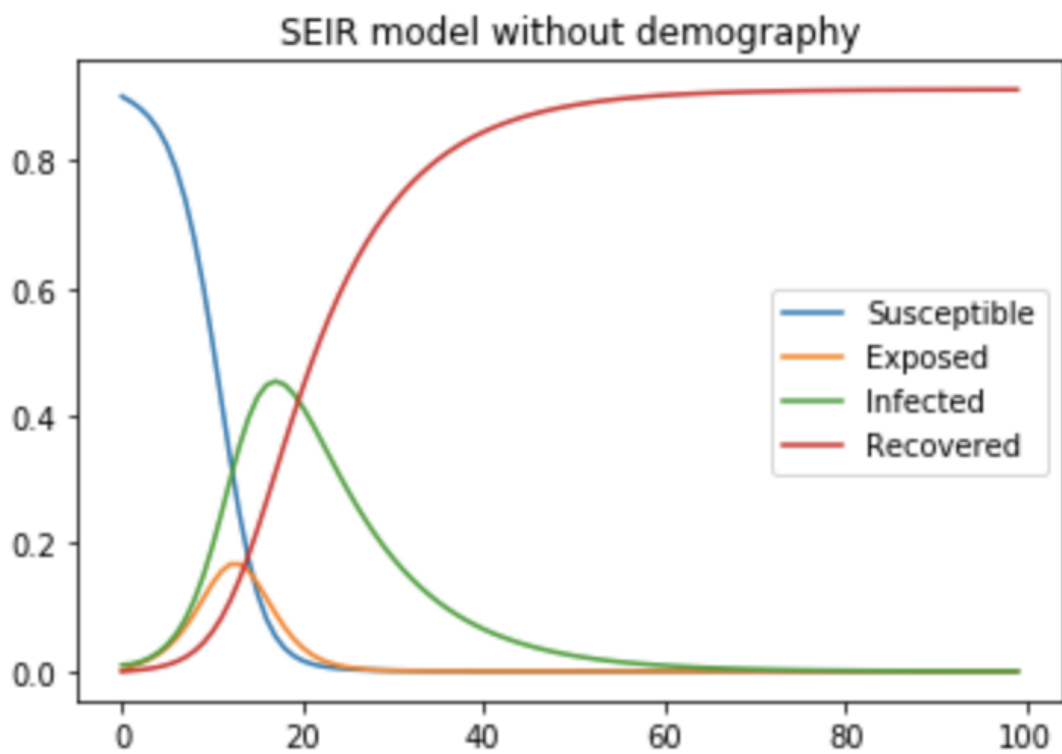
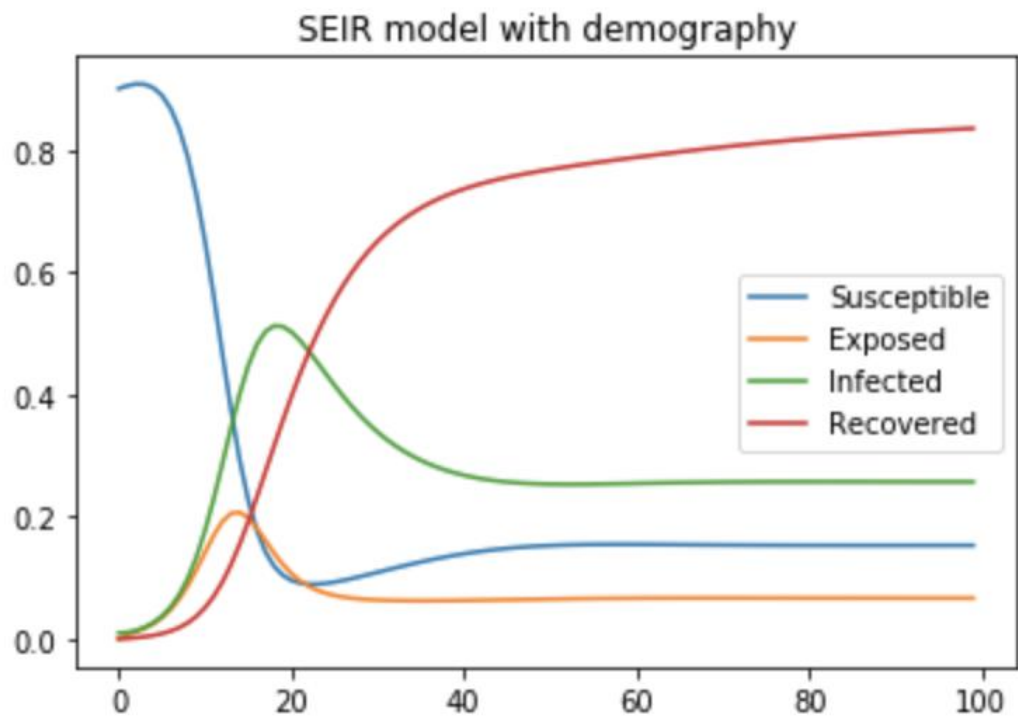


Part 3a report

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When the birth rate is greater than the death rate, the peak of the proportion of the infected people will be higher than when the birth rate is less than the death rate. The increase in the proportion of recovered people will also slow down when the death rate gradually increases.

The longer the incubation period $1/n$, the less likely the infected person will be detected. The system will slowly digest susceptible people.

Compared with the SEIR model without demography, because there have always been births and deaths in our non-constant population SEIR model, susceptible people, exposed people and infected people will always exist in our system instead of converging to 0%. And the recover rate will never reach 100%.