Analyzing NJ COVID-19 responses with Control theory, extending a study from earlier this year.

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February 10 2021

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- COVID-19 infection rates can be reduced through the use of testing, social distancing, contact tracing and now vaccines. We will use control theory and numerical optimization techniques with population and employment data to estimate how different strategies should be applied.

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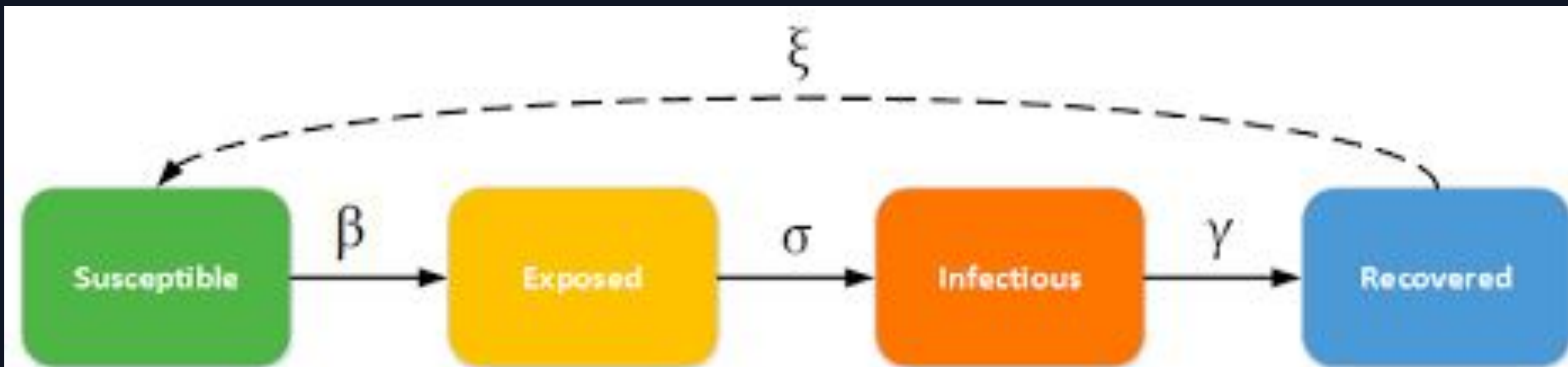

$$
\begin{aligned}
\dot{S}_j &= -u\frac{S_j \sum_{k=1}^{6} a_{kj}\, I_k}{\sum_{k=1}^{6} a_{kj}\, N_k} - w_j \\
\dot{E}_j &= u\,\frac{S_j \sum_{k=1}^{6} a_{kj}\, I_k}{\sum_{k=1}^{6} a_{kj}\, N_k} - \delta E_j \\
\dot{I}_j &= \delta E_j - \gamma I_j \\
\dot{R}_j &= \gamma I_j \\
\dot{V}_j &= w_j
\end{aligned}
$$

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- Goals
  - Build epidemiological computer model which simulates the spreading behavior of a virus when imposed with various conditions.
  - Compare other models to test usefulness

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- Timeframe
  - 02/01/2021
  - 08/01/2021

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- What I hope to learn
  - techniques and best practices with programming
  - Implementing control theory together with Ordinary Differential Equations
  - How the process of collaborative research works

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- Goals for Next Month
  - Have a working Vaccine model
  - Update the data for this model
  - Interpret results