Assignment 4 (the end! last assignment! no more!)

This assignment is done in groups of two or three, which you have chosen.

Objective: Tell the story of your model using interactive visualizations made in Tableau.
Due date: Sunday Dec 8th, 4pm. Assignments do not receive a grade after the due date.
↑ *It leaves me just enough time to grade it and get it to you on the last class.*
How to submit: On the course website only (no emails or hardcopies accepted). **Send one PDF**.

I. Overview

We are *not* the audience of our own models, in the same way as a chef doesn't cook food for himself/herself. We thus need to explain our models to the intended audience. There are multiple parts to explain:

- why are we even making a model? What's the problem that we're studying?
- can we get a sense of what the model 'does' or 'predicts'?
- how can we use the model?

In this final assignment for the class, we will create interactive visualizations via Tableau that cover all three parts aforementioned. As you create your visualizations, you'll have to actively think and reflect on your visualization choices (why these plots? why such visual features?).

II. The model and data

The model that you will use for this assignment is provided in the "Model" folder. It was created by Docia Loehr and Jenny Yue for the previous TB assignment. Should you be personally interested about the model design, the ODD is provided (but you don't *need* to read it for the assignment).

You can copy/paste the URL of these data sources in your browser. They give some samples of what you may be using, but you're also welcome to use appropriate sources beyond these ones:

- Population estimates
  https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2017_PEPANNRES&src=pt
- TB data: Table 1 in https://www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6711a2-H.PDF
  https://wonder.cdc.gov/TB-v2014.html
  https://www.cdc.gov/tb/statistics/reports/2017/table20.htm
  https://www.lung.org/assets/documents/research/tb-trend-report.pdf
  https://www.scdhec.gov/sites/default/files/docs/Health/docs/TB/South%20Carolina%20Tuberculosis%20Incidence%20Rates%20by%20County%202013-2017.pdf
- Significant diseases in the US
  https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5953a1.htm
- Population changes
  https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2011_PEPTCOMP&prodType=table

III. Your tasks

You will design a Tableau story by making a sequence of five interactive visualizations that work together to convey information. Using Tableau, you'll publish this story on the web.

1) Why should we care about TB generally, and in South Carolina in particular?

Use interactive *two* visualizations of *existing data* to make your point. For instance, you may be (but you're not limited to) using data on the prevalence of TB over different states and/or counties. You may also want to compare TB to other airborne diseases in terms of features such as infectiveness, death if untreated, and so on.

2) How does the model work?

You will use *two* interactive visualizations of *data generated from NetLogo*.

First visualization. Knowing that one time tick of the model stands for 5 days, shows us how the number of healthy or infected individuals changes over the course of two years.

Second visualization. Assume that we don't really know the initial proportion with a weakened immune system: it could be from .05 to .20. Modify the code and use BehaviorSpace with 10 repeated experiments to create data showing how the initial proportion of immunocompromised individuals changes the model's predictions of infected individuals after 1 and 2 years.

3) What does the model say if we start using it?

The purpose of a model is to be used to support decision-making. Policy makers generally want to use models to evaluate the possible impact of interventions that they're considering. Changing the population's genes or prevalence of immunocompromised individuals is *not* a possible intervention. Telling infectious people not to ever cough is not going to work either. Think of one plausible intervention. For instance, it could be the administration of anti-TB drugs after an infection was detected, and knowing that drug resistance will occur.

Implement the intervention in the model, and generate data on the prevalence of infected cases over the course of two years. Create *one* visualization that shows how the prevalence has changed under your implemented policy compared to the model's outcomes without the policy.

IV. What to submit

You'll submit a single PDF organized as follows:

- Your names at the top
- The URL to your tableau story, released online.

  You will not submit any Tableau file. You're only giving the URL of your publicly accessible work. Ensure that it is indeed publicly accessible by using another computer/phone to check.
- A short reflection for each of the five figures about how you made the choice both of plot (e.g., why is it a bar graph? pie chart? line chart?) and visual features (why are you using the hue? or such markers on your line chart?).