Activity: Discovering Sampling Distributions

In this activity you will be creating random samples to simulate a probability density distribution. We will create distributions of data (x), and see how they differ from the distribution of the average ($\bar{x}$).

Setup

- Each group of assigns one person to be a *roller*, one a *recorder*, and a *plotter*.
- Get a blank plot from Dr. D. and the number of dice specified in the top right of the page.
- The recorder logs into Google drive and opens the designated spreadsheet and identifies the group they are working in.

Phase 1: Create a random sample of x's

- The roller rolls all dice and report the values to the recorder and the plotter.
- The recorder enters the data into their assigned column.
- The plotter draws a dot above the value on the x-axis on the top graph. Stack the dots for repeated rolls vertically.
- Collect as much data as you can in 5 minutes.
- Draw a smooth line over the top of the data points to make a "density" curve.
- Describe the distribution of the x's in your HW07 file. Discuss location, shape, spread.

Phase 2: Create a random sample of $\bar{x}$'s.

- Change rolling/recording/plotting rolls
- The recorder enters the value of each die roll into the colored cells (x).
  - The mean will automatically be calculated and displayed in the gray box.
  - Record this calculated average in the xbar column and tell this number to the plotter.
- The plotter plots this data point as a dot on the bottom graph.
- Collect as much data as you can in 10 minutes.
- Draw a smooth line over the top of the data points to make a "density" curve.
- Describe the distribution of the $\bar{x}$'s in your HW 07 file. Discuss location, shape, spread.

Wrap up

- Take a picture of your plot.
- Upload to the `07 Foundatinos for Inference/Simulation` folder in Google Drive.
- Name this file with your 'group' name (e.g. `3d4`)