Birthday problem

Day 3 Learning Objectives covered:

- Compute summary statistics from a dataset
- Use computer simulations to build intuition about random variables
- Simulate different kinds of random distributions

1.) Assume there are 70 students in this class. What is the probability (in percent) that another student (or more) in this class has the same birthday as you? Round to one decimal point. (For this and all other parts of this exercise, you can ignore leap years).

Hint: This exercise is similar in structure to the "Four Choice" exercise where students picked an integer between 1 and 4. It might help you to think of this exercise as each student having "picked" a birthday between 1 (1 January) and 365 (31 December).

2.) In the same class of 70, what is the chance that any two (or more) students share the same birthday? (Give your answer in percent, round to one decimal point)

3.) Given a group of N people, what is the probability that any two of them have the same birthday? Compute the probability for N going from 1 to 100 and plot the results.

4.) How big does N have to be such that is is more likely than not that two people share a birthday?

5.) What is the probability that K or more students share the same birthday? Write a function that depends on N (the total number of students) and K. What changes do you need to make to your existing script or function?

6.) In a class with 365 students, what is the chance that 5 or more of them share a birthday?

Versions:

MIS created a version on Learning Catalytics, 09 Sep 2013

MIS wrote .doc after feedback from RTB, 17 Aug 2014