5.2.2 Interactive: Bus Stop Paradox Part 2

As in Bus Stop Paradox Part 1, we are comparing riders' waiting times for buses in Blissville vs. Blotchville. In Part 1, you choose where to put the riders on the timelines. In this part, the riders' arrival times at the bus stop are *random*, generated by picking 25 i.i.d. Uniform points on each timeline.

Bus Stop Simulation Part 2 - Directions for Use

1. Press "Add Buses" to add buses to the timelines for each town. Just like before, Blissville has a fixed schedule, while Blotchville's buses follow a Poisson process (so there are i.i.d. Exponential interarrival times).
2. Then the button becomes "Add 25 People Randomly to Each Bus Stop". Check out the sample mean and sample standard deviation for each town.
3. You can use "Go to Next Day's Buses" to simulate another day and accumulate more data, or "Reset" to start over.
4. As before, you can adjust the slider to change the average time between bus arrivals.

What You'll Notice:

- The timelines for buses (orange dots) and people (green dots) in each town.
- The sample mean and sample standard deviation of time spent waiting for a bus, for the riders in each town.

> You should try:
>
> - For an average time between buses of 60 minutes, in Example 5.8.6 a rider's waiting time was Uniform between 0 minutes and 60 minutes in Blissville, but Exponential with mean 60 minutes in Blotchville. What does this imply for the mean and standard deviation waiting time for a rider in each town? Explore the waiting times via this simulation. Intuitively, should the mean in each town be much less, slightly less, very close to, slightly more, or much more than the theoretical mean based on Example 5.8.6?

Controls

Average time between buses:

60 minutes

Add Buses

Waiting Time Statistics

Blissville

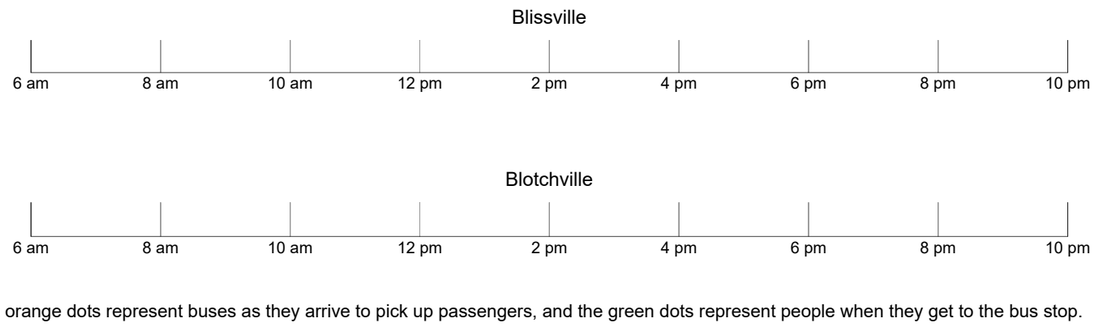
mean:

standard deviation:

Blotchville

mean:

standard deviation:



The orange dots represent buses as they arrive to pick up passengers, and the green dots represent people when they get to the bus stop.