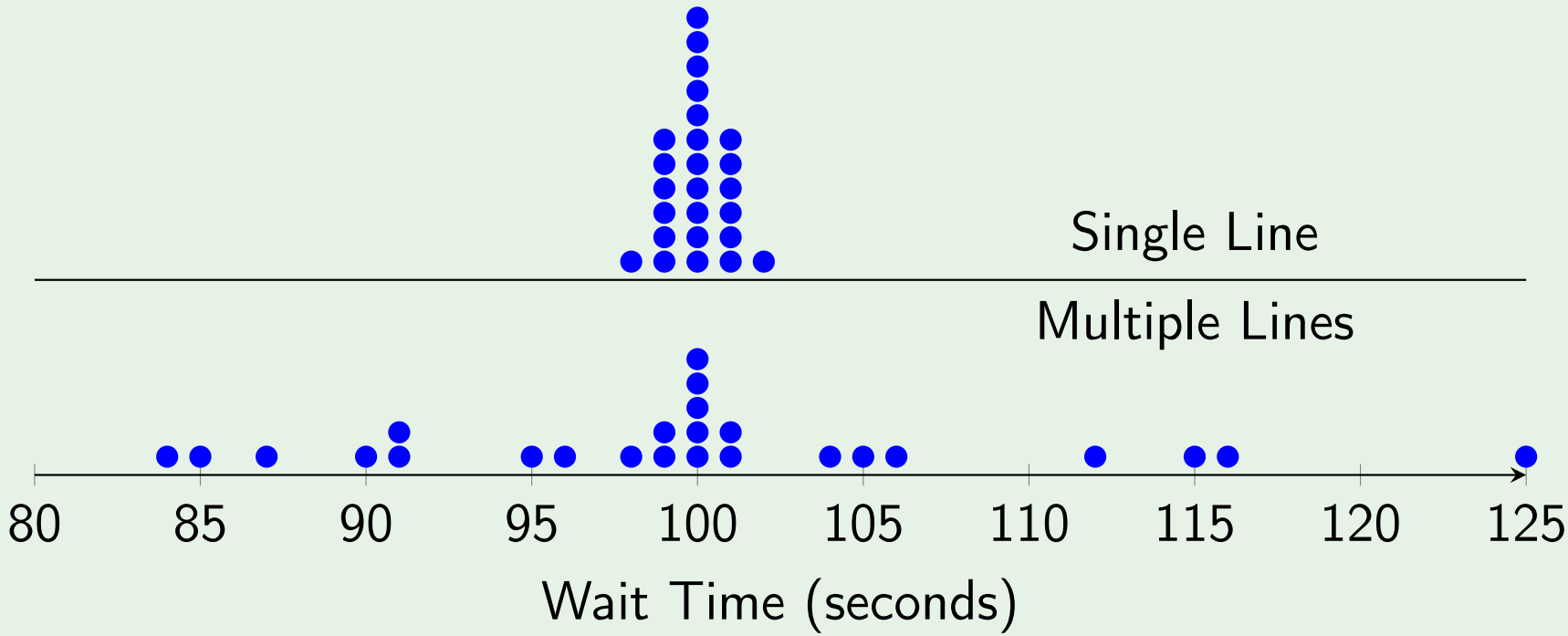
Measures of Variation

Colby Community College

Example 1

Consider the dotplot of waiting times at a bank.



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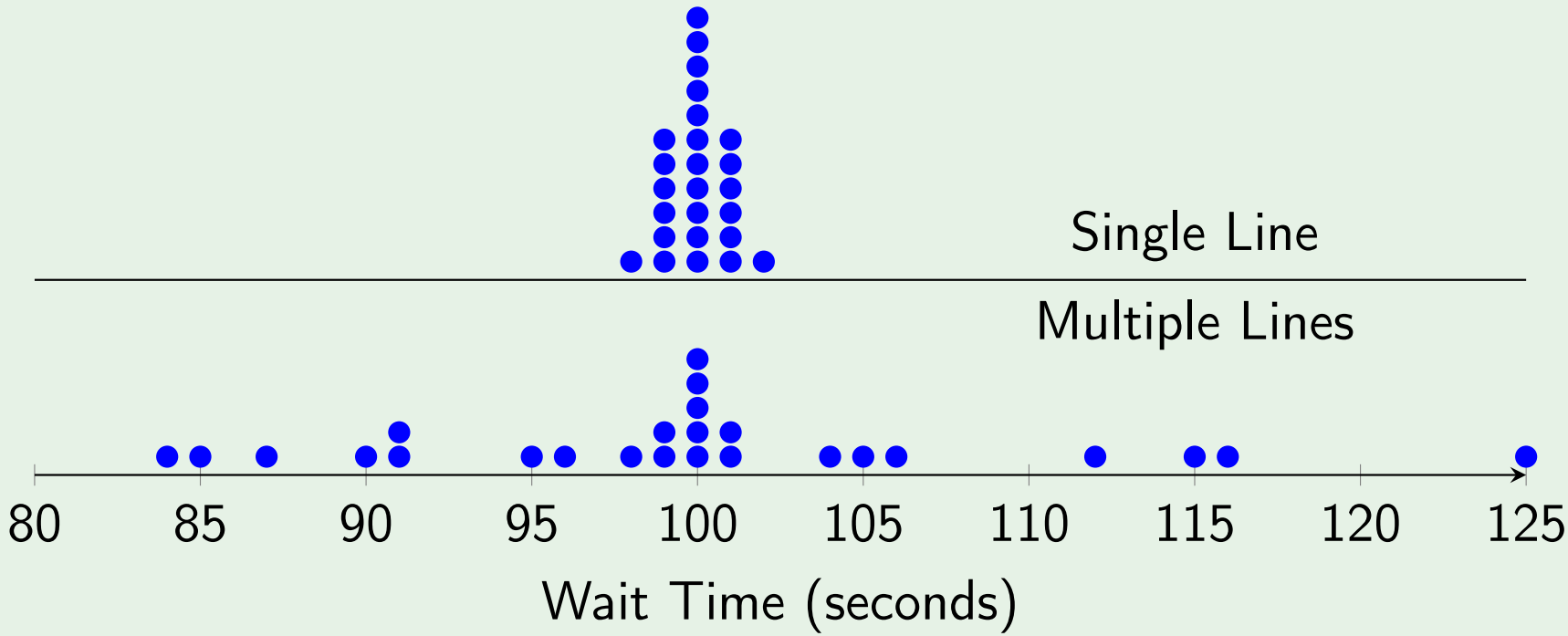

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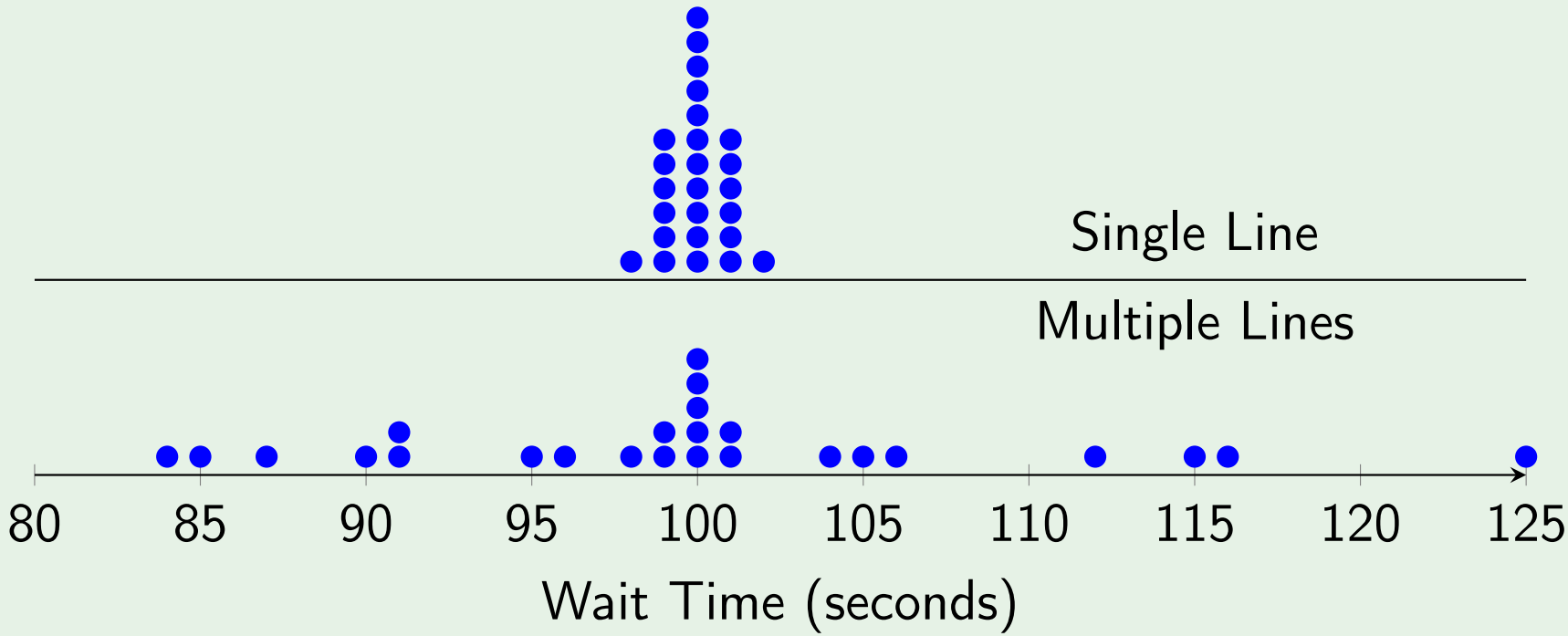

Both of these data sets have the same mean, but there are clearly different.

The bank didn't switch to multiple lines because it made them more efficient, nor because customer wait times were reduced, but because customers prefer waiting times with less variation.

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- The range is very sensitive to extreme values.
- Because the range only uses two values it does not reflect the true variation among all of the data values.

Example 2

Data set 32 "Airport Data Speeds" in Appendix B includes measures of data speeds of smartphones from four different carriers. The table contains five data speeds, in megabits per second (Mbps), from the data set.

Verizon	38.5	55.6	22.4	14.1	23.1

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$$\text{Range} = 55.6 - 14.1 = 41.50 \text{ Mbps}$$