

Stat 101: Lecture 5

Describing Distributions Numerically

Weight of contents of regular cola.

368, 367, 369, 370, 369, 370
366, 373, 365, 362, 378, 368

1

Describing Distributions Numerically

Weight of contents of regular cola.

36		2
36*		5678899
37		003
37*		8

2

Describing Distributions Numerically

- What is a “typical” value?
- Look for the center of the distribution.
- What do we mean by “center”?

3

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Measures of Center

- Sample Midrange
 - Average of the minimum and the maximum.
 $(362+378)/2=370$ grams
 - Greatly affected outliers.

4

Measures of Center

- Sample Median
 - A value that divides the data into a lower half and an upper half.
 - About half the data values are greater than the median about half are less than the median.

5

Sample Median

36 | 2
36* | 56788 99
37 | 003
37* | 8

Median = $(368+369)/2$
= 368.5 grams

6

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Describing Distributions Numerically

- How much variation is there in the data?
- Look for the spread of the distribution.
- What do we mean by “spread”?

7

Measures of Spread

- Sample Range
 - The distance from the minimum and the maximum.
 $(378 - 362) = 16$ grams
 - The length of the interval that contains 100% of the data.
 - Greatly affected outliers.

8

Quartiles

- Medians of the lower and upper halves of the data.
- Trying to split the data into fourths, quarters.

9

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Quartiles

Lower quartile = $(366+367)/2$
= 366.5 grams

36 | 2
36* | 56 788 99
37 | 0, 03
37* | 8

Upper quartile = $(370+370)/2$
= 370.0 grams

10

Measure of Spread

- Inter-Quartile Range (IQR)
 - The distance between the quartiles.
IQR = $370 - 366.5 = 3.5$ grams
 - The length of the interval that contains the central 50% of the data.

11

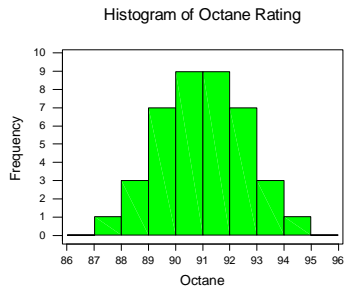
Five Number Summary

- Minimum 362 grams
- Lower Quartile 366.5 grams
- Median 368.5 grams
- Upper Quartile 370 grams
- Maximum 378 grams

12

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Symmetric Distribution



3

Octane Rating

87.4, 88.4, 88.7, 88.9, 89.3, 89.3, 89.6, 89.7
89.8, 89.8, 89.9, 90.0, 90.1, 90.3, 90.4, 90.4
90.4, 90.5, 90.6, 90.7, 91.0, 91.1, 91.1, 91.2
91.2, 91.6, 91.6, 91.8, 91.8, 92.2, 92.2, 92.2
92.3, 92.6, 92.7, 92.7, 93.0, 93.3, 93.7, 94.4

14

Symmetric Distributions

- Measure of Center

- Sample mean

$$\bar{y} = \frac{\text{Total}}{n} = \frac{(\sum y_i)}{n}$$

15
