

Email Statistics

1. Most emails are handled within **six seconds** of arrival;
2. after each email interruption, the average time needed to return to the flow of accomplishing a task is **64 seconds**;
3. email language loosens because of the **“online disinhibition effect”**;
4. **we consistently overestimate our ability to communicate effectively with email.**

What is average?

What good is "average"?

Is your pet average?

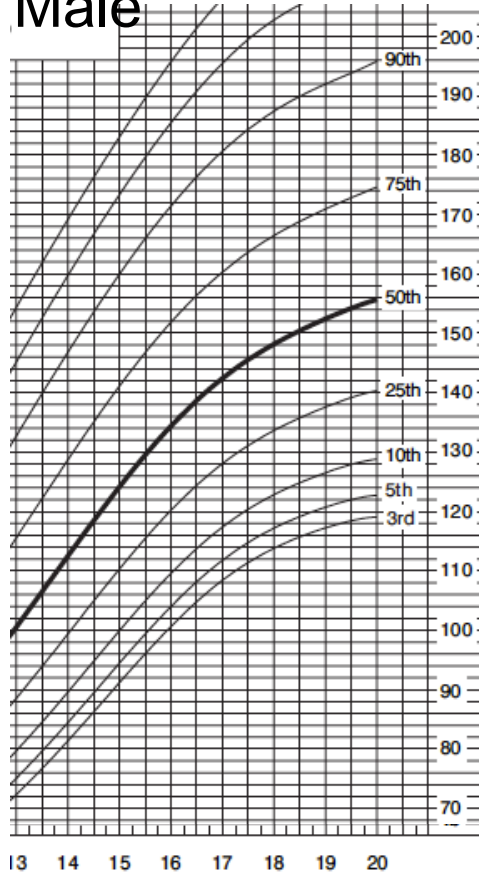


Are you average?

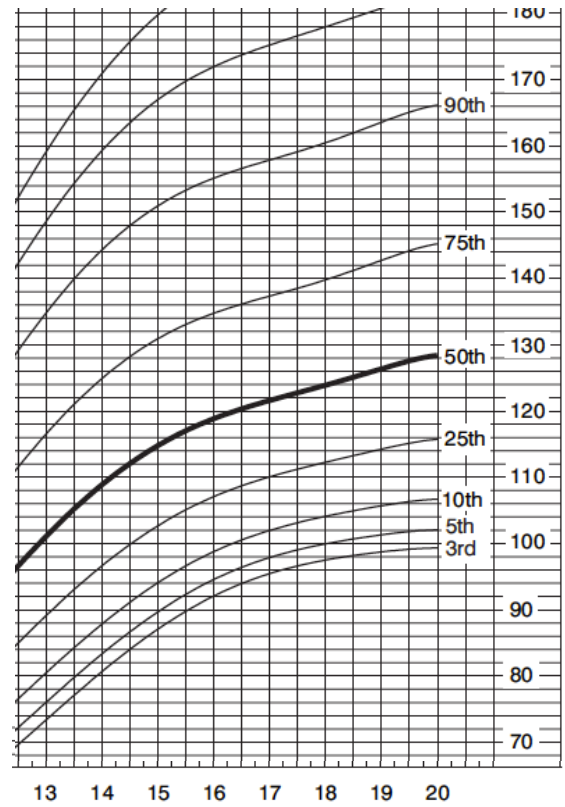
THE 'AVERAGE'
HUMAN IS
A 28 YEAR
OLD, RIGHT-
HANDED CHINESE
MAN WITH A
MOBILE PHONE &
NO BANK ACCOUNT

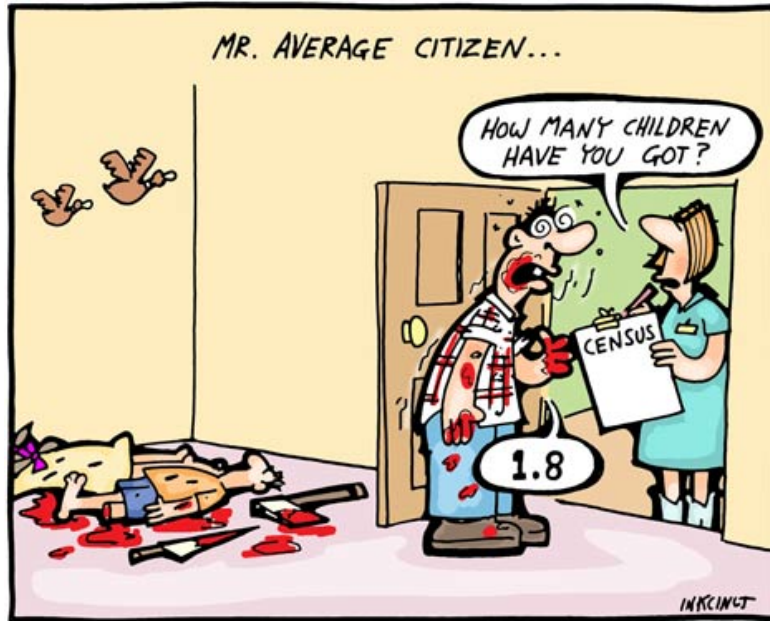


Male



Female





What use is "average"?





What is the average income for a household in the US?

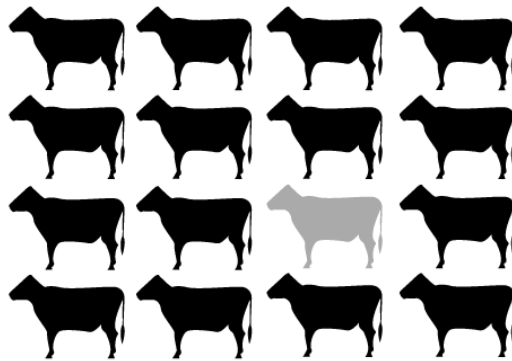
US Income by county

<http://www.census.gov/dataviz/visualizations/019/>

Describing a group.



**A Herd Is a Commingled
Set of Individuals**



Group care is a method of
care for the individual.



Does "average" give enough information about the group?



Using your calculators make a box plot of these two data sets.

L1: 25, 25, 38, 32, 23

L2: 52, 55, 12, 25, 0

1. Calculate the **median** and **mean** of these data sets.
2. Would you describe these data sets as being the same?
3. Explain?

What are the measures of center?

What are the measures of spread?

Spread

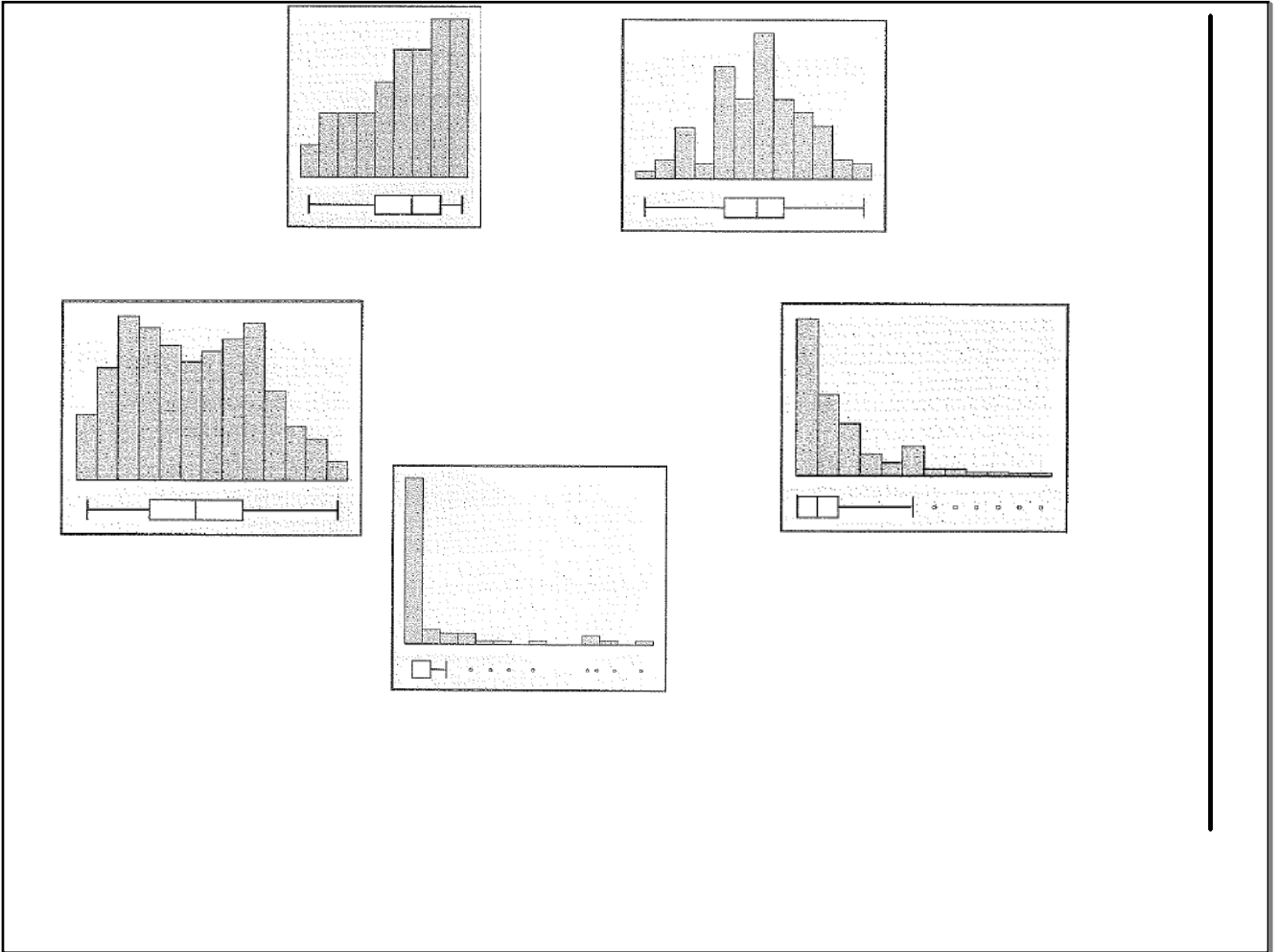


Measures of Spread

What are they used for?

Why do we need them?

Center - Spread - Shape



Measures of Spread

MAD - Mean Absolute Difference

and

sd - Standard Deviation

How to calculate MAD

$$MAD = \frac{\sum |x - \mu|}{n}$$

Use these data to complete the table and calculate the MAD.

$\mu =$	35	45	30	35	40	28	total
$ x - \mu $							

$$MAD = \frac{\sum |x - \mu|}{n}$$

MAD =

Now use your calculator to calc MAD and check your answer.

Calculate the MAD for the class height data.

Calculate the MAD for the hair cut cost data.

What types of data will have a large MAD?

Or a small MAD?

Recap:

Why do we need a measure of spread?

Which do you think has more variability:

Female or male meal cost?

Why do you think that?

Your turn

Assignment: V is for Variation

This assignment uses MAD to explore how spread is calculated and what that tells you about the distribution.

Think about the steps used in the formula and what that says about the individual data points and the distribution as a whole.



Now for standard deviation.

How to calculate sd

$$s_x = \sqrt{\frac{\sum (x - \mu)^2}{n - 1}}$$

$$\sigma = \sqrt{\frac{\sum (x - \mu)^2}{n}}$$

Do not get these terms confused:

- standard deviation
- variance
- variation

Use these data to complete the table and calculate standard deviation (sd).

$\mu =$	35	45	30	35	40	28	total
$(x - \mu)$							
$(x - \mu)^2$							

sd =

Now use your calculator to calc sd.

How does it compare to your calculated sd?

Remember:

Use S_x for sample sd,

use σ for population sd.

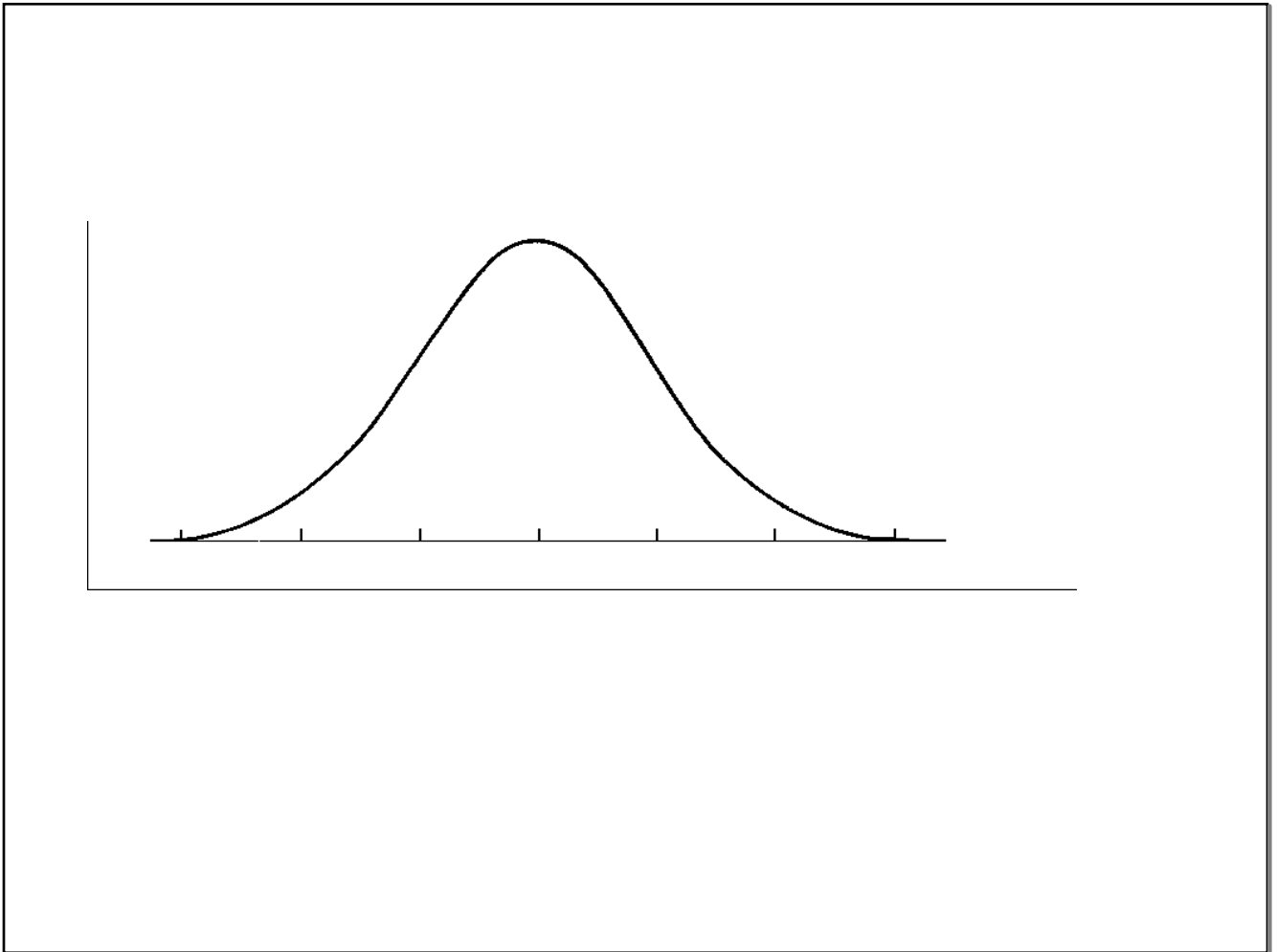
The Empirical Rule

or

How we know if the data are normally distributed.

Remember these numbers:

68%, 95%, 99.7%



Use the class survey data to determine if the class height is Normally Distributed.

Now you know the test for "Normal" you need to include this to your written descriptions.

Center:

Spread:

Shape:

