

**WHY DO GOOD rx AND
ANALYZE W/ STATS?**

Observer/Experimenter Bias and Effect

Hindsight Bias –
you think you
knew all along



Overconfidence – we think we
know more than we do



Illusory Correlation – perceived
relationships where none exist



Statistics

I. Descriptive Stats (describe data)

A. Measures of Central Tendency

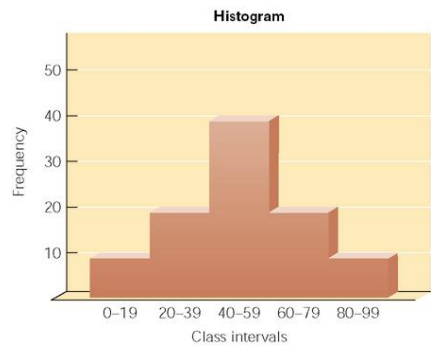
- Mean (average)
- Median (middle score)
- Mode (most common)
- Frequency distribution

3, 4, 4, 4, 5, 5, 6, 7

- Mean: 4.75
- Median: 4.5
- Mode: 4

3, 4, 4, 4, 5, 5, 6, 7, 15

- Mean: 4.75 5.9
- Median: 4.5 5
- Mode: 4 4



Statistics

B. Measures of Dispersion

- Range - diff from high to low score
- Standard Deviation – how much the scores differ from the mean
 - Listed as z-scores

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

1. Find the mean of your data
2. Find the difference between each number and the mean
3. Square each individual difference
4. Add up all of the squared numbers
5. Divide by the number of data points (This value is referred to as the variance. Variance is the average difference between individual data points in the distribution and the mean.)
6. Find the square root of the quotient from #5

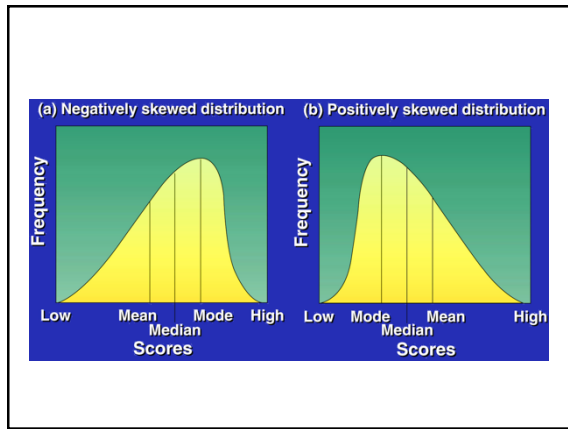
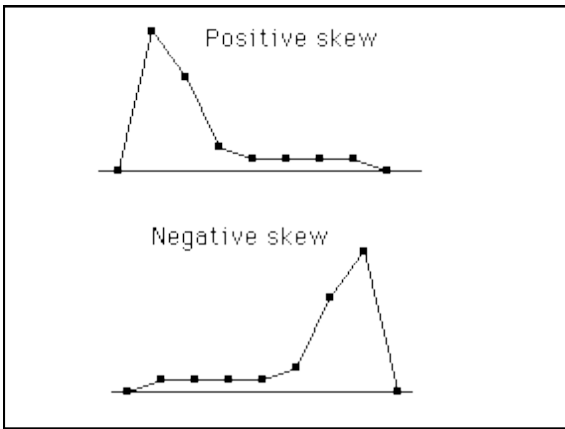
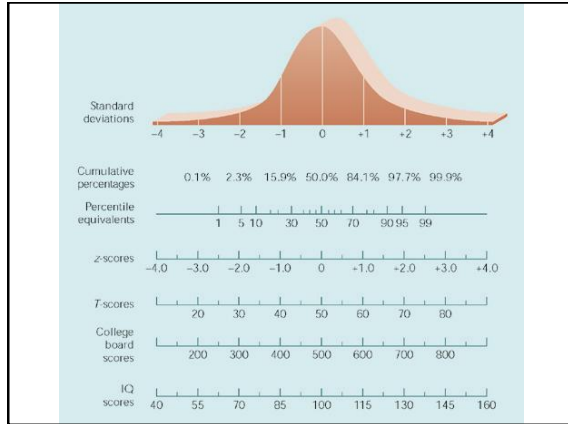
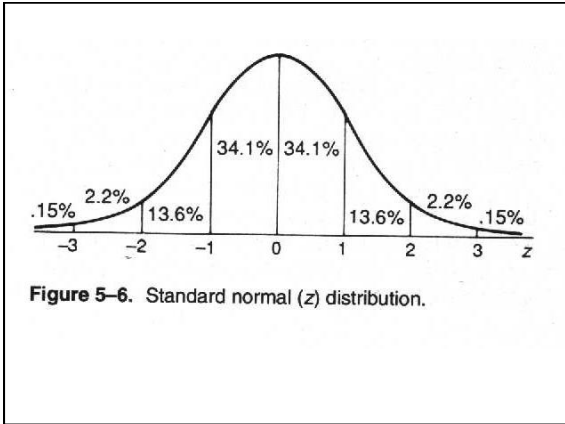
Data	Deviation from the mean	Squared deviation
7	2	4
15	6	36
20	11	121
4	5	25
8	1	1
5	4	16
4	5	25
Mean of data: 9	Sum of squares: 228	

$$\sqrt{\frac{\text{Sum of squared deviations}}{\text{Number of scores}}} = 5.707$$

Statistics

C. Normal Distribution

- Bell Curve
- Negatively skewed
- Positively skewed



Statistics

D. Types of scores

- Raw scores
- Percentile

Statistics

II. Inferential Stats

Statistical Significance
Probability (p value) - likelihood of chance