Last class

Sample vs. Population
Central Limit Theorem
Z-scores

} Std. Dev.
} Variance

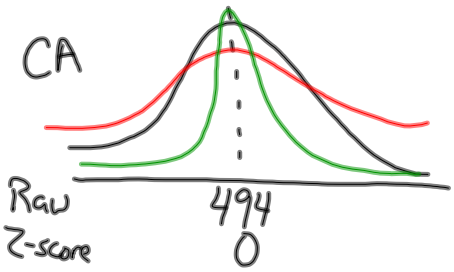
↳ 

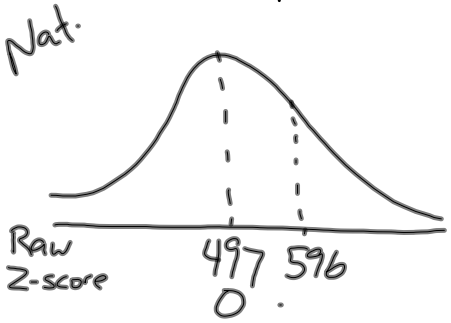
$n \to \infty$

Z-score

Normal Dist → Standard Normal

If you know the mean and standard deviation, then you can locate the percentage rank for any range of obs.
e.g. test scores.





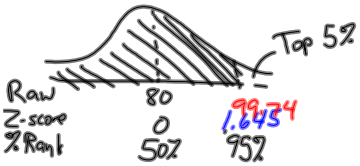
$$Z = \frac{X_i - \mu}{\sigma}$$

Take the i^{th} observation for variable X and use the formula to translate into the Z-score

- Z-score is used to find the % rank.
- % rank and find the raw score that corresponds to it.

Ex: Test scores. $\mu = 80$
$\sigma = 12$

What score denotes scoring above 95% of other students?



Z-score to Raw score formula

$$Z\sigma + \mu = X_i$$

$$\rightarrow (1.645)\,12 + 80 = 99.74$$

Ex: $\mu = 80$, $\sigma = 12$

What score corresponds to the top 2.5%?
Bottom 2.5%?

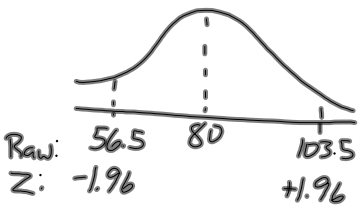
$(1 - 0.025)$

$$(1.96)(12) + (80) = 103.5$$

$$(-1.96)(12) + (80) = 56.4$$

Six-Sigma

(accurate or knowledge within six standard dev



-6 +

%: 99

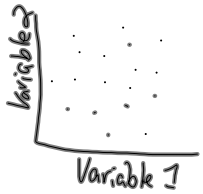
6

Air Pollution

→ Import the data i Excel

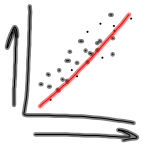
Correlation

- Inferential statistics
  - Measuring relationships between two or more variables
  - Graphically: Scatterplot

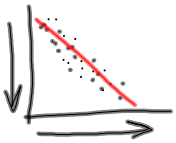


Types of relationships

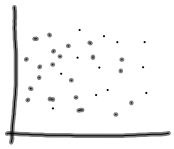
Direction ~~positive~~



Negative



No relationship



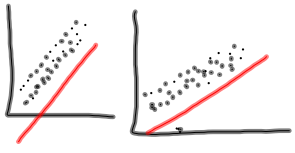
Strength

- Strongly

- Weak

Slope

- The direction of the relationship
- Amount of trade.



- Correlation
  - Direction of relat