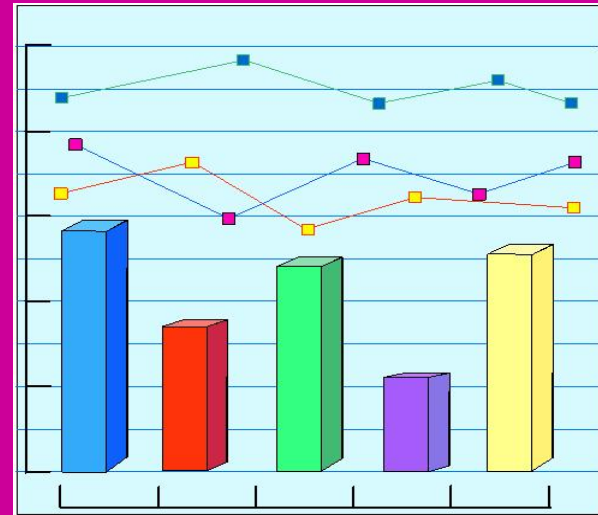
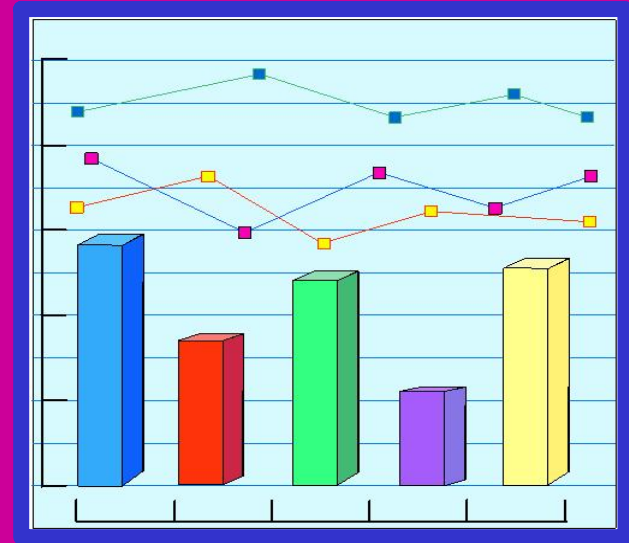


SAMPLES, POPULATIONS, & STATISTICS



PHIL 101
Self, World, & God
Dr. Jeff Johnson
Winter Quarter 2007
Lecture Seven

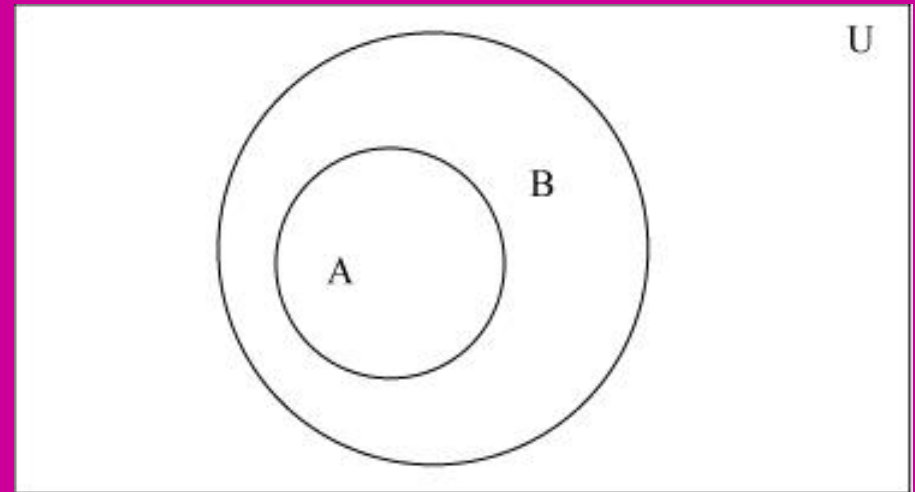
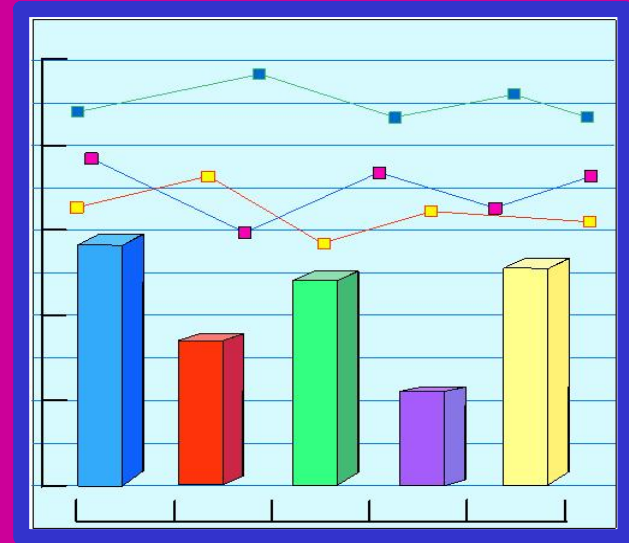
POPULATIONS



- Collections
 - Of people
 - Of things
 - Of abstract things
 - Sets
- Populations
- Questions about populations

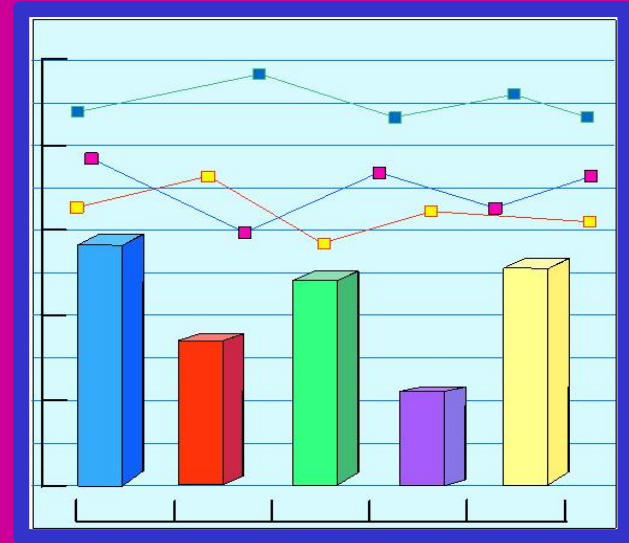
SAMPLES

- Part of a collection
- Subset
- Sample
- What does the sample look like?
- Inferences from samples to populations



ITTBE

- The sample has some property P
- Why do we observe P ?
- Because the whole population has P - **Representative sample**
- Other answers
 - It's just a fluke that the sample had P -- **Chance**
 - Something about how the sample was put together is why we see P - **Sample Bias**



e_1 . Sample has P .

=====

t_0 . Population has P

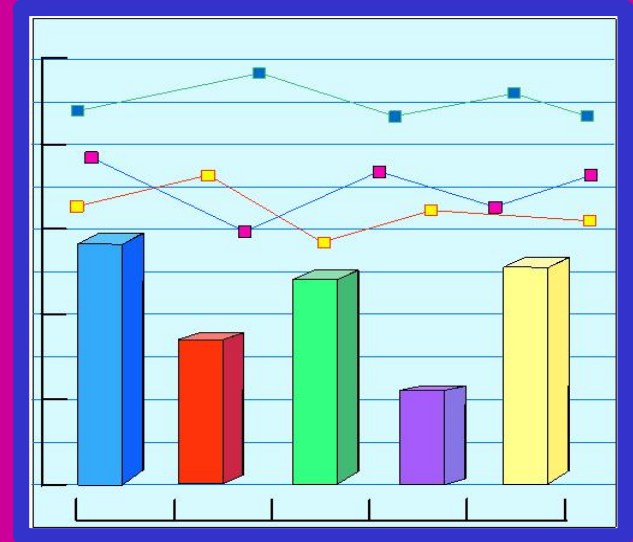
Rivals:

t_1 . Chance

t_2 . Sample bias

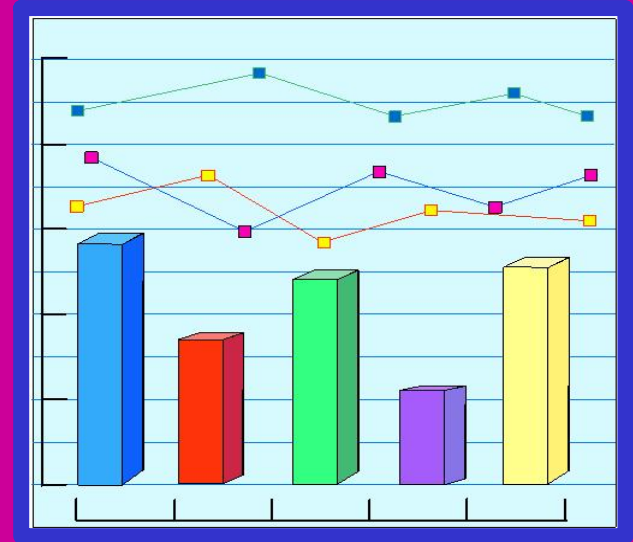
t_3 . Other

LITERARY DIGEST POLL



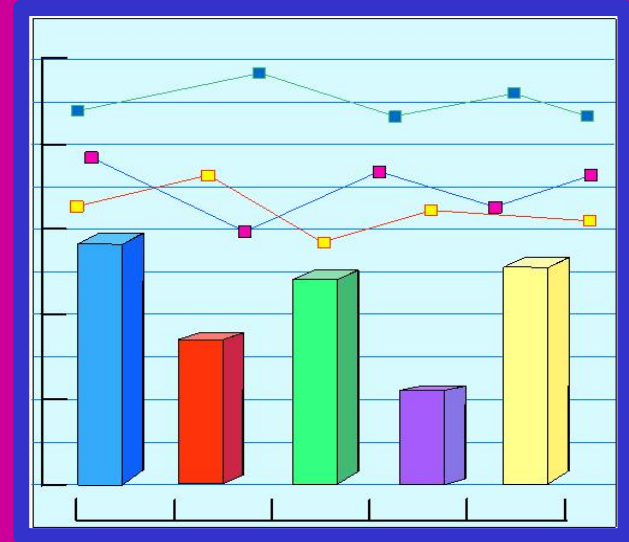
- 1936 election
- The *Literary Digest* had predicted the winner since 1916
- Surveyed 2.4 million Americans
- Only 43% favored Roosevelt
- Roosevelt - 62%; Landon - 38%
- *Literary Digest* sample - 10 million
- Confounding variable - poverty

AVOIDING SAMPLE BIAS



- Technical randomness
- Practical randomness
- Awareness of confounding variables
- General reliability of major polls
- The coming election

STATISTICAL SIGNIFICANCE



- Probability
- Statistical significance
- Sample size
- Statistical significance
- Giere's "rule of thumb" - 100: +/- 10%;
500: +/- 5%; 2000: +/- 2%; 10,000:
+/- 1%