KOGOD SCHOOL *of* BUSINESS
AMERICAN UNIVERSITY • WASHINGTON, DC

ITEC 610
Applied Managerial Statistics

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Introduction

- Statistics

  Science of collecting, presenting, analyzing, and interpreting data

  Balance between theory and practice

  Provide a good working knowledge

  Make better managerial decisions

Introduction

- Keys to success

  Come to class prepared

  Expect to meet for a full class

  Do more than the minimum number of homework problems

  Don’t fall behind – you can work ahead

Introduction

- Keys to success

  Form study groups

  Ask questions for help

  Check email often

Introduction

- AU technology

  Help

    Help Desk 202-885-2550

    http://status.american.edu

Introduction

- Preparing for class: Study order
  1. Notes
  2. Slides
  3. Homework problems
  4. Textbook

Introduction

- Tools
  - Computer
  - Business calculator

    + - x / mean standard deviation TI-84 plus covered in book (not a must)
  - SPSS Statistics
  - Excel
  - R for Analytics Students

Introduction

- Tools

  All materials are online

Introduction

- Classroom etiquette

  Honor code

    All work is your own

Applications

- Practice of statistics
  - Streets of New York City
  - Location, Location, Location
  - Salinity in Chesapeake Bay
  - Needle exchange

Where Are We Going?

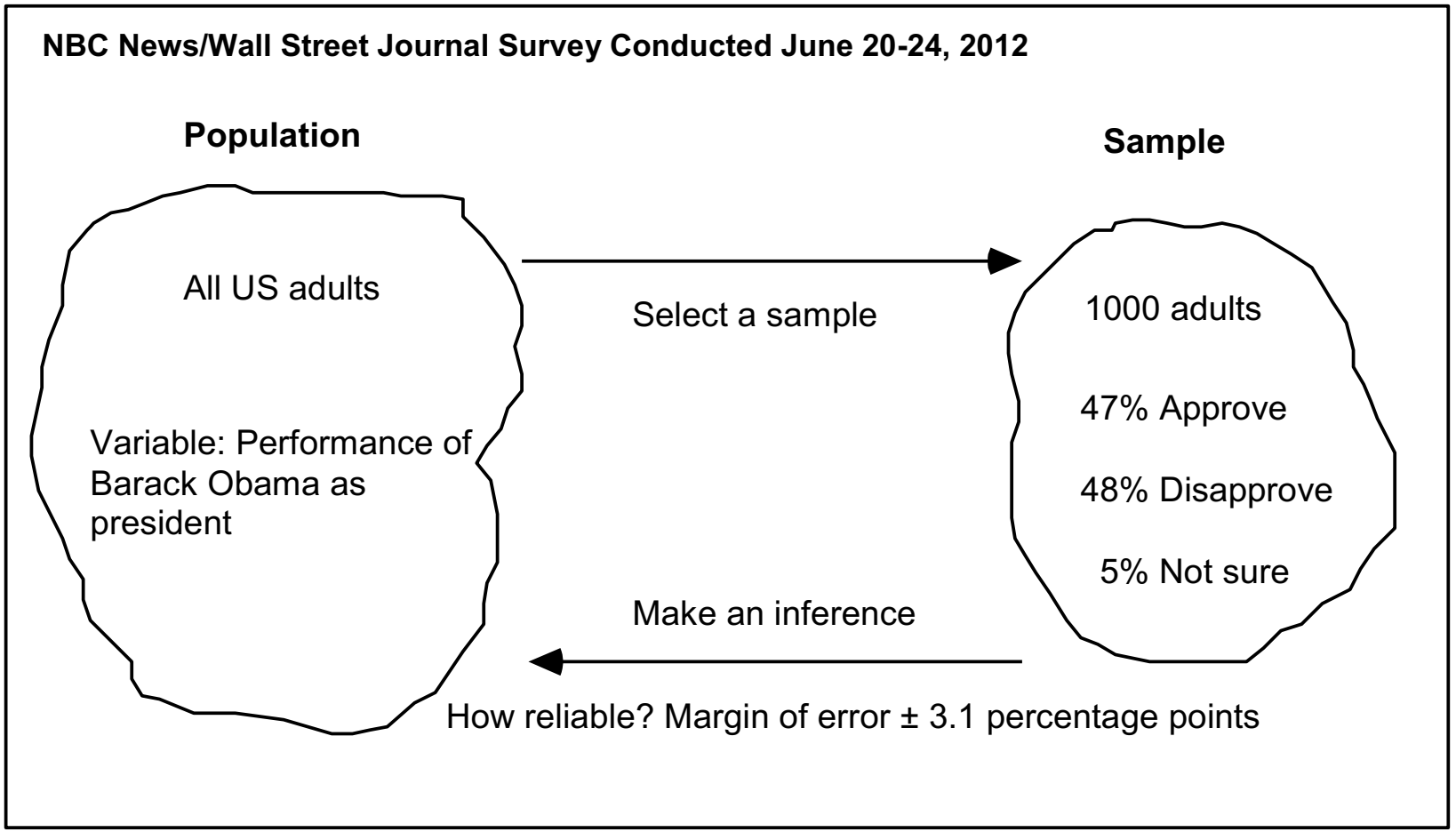
- Descriptive statistics

  Describe, summarize, and present information revealed in a data set

- Inferential statistics

  Use sample data to make estimates and predictions about a large data set

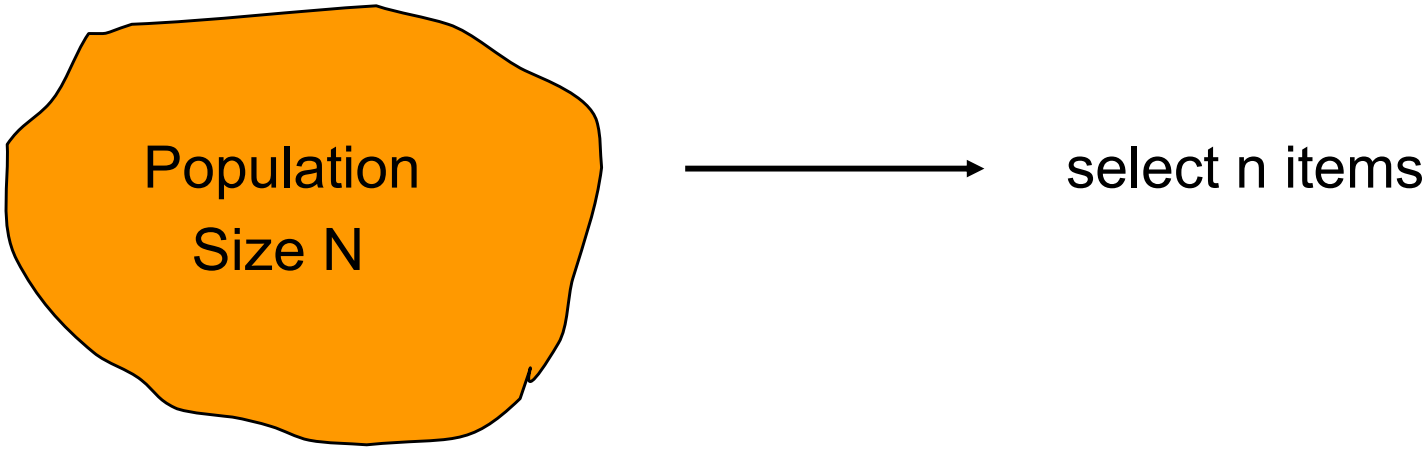
Elements of Statistical Inference



Basics of Sampling

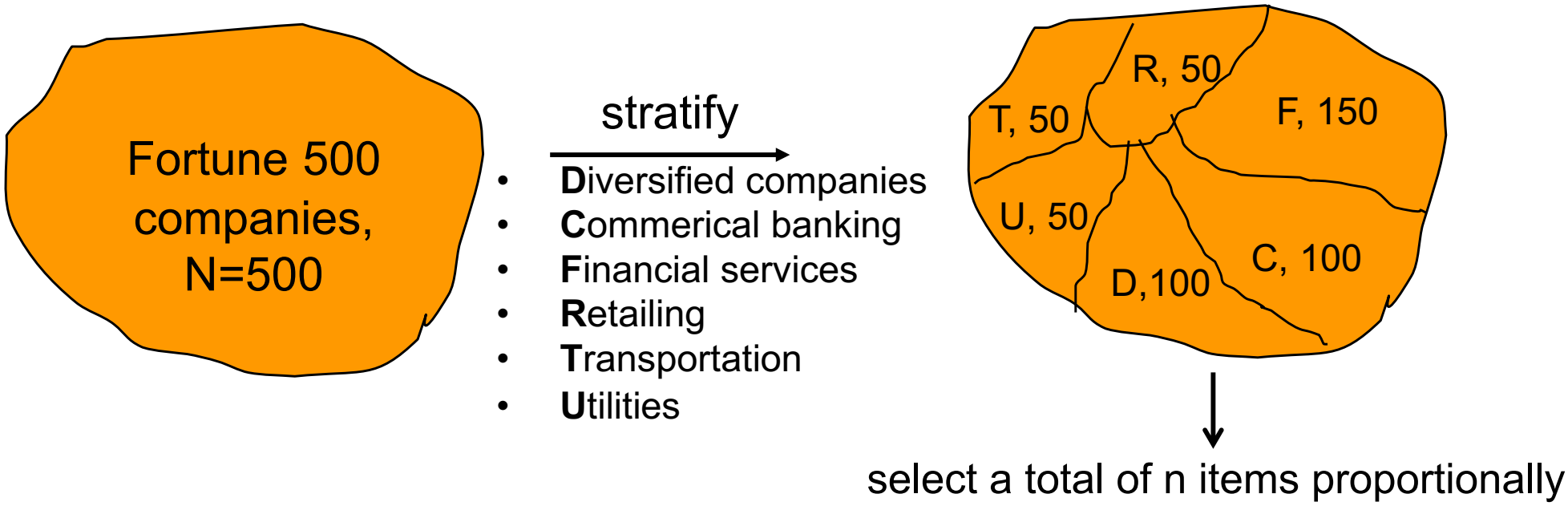
- Census not possible, turn to sampling
  - Timely results
  - Cost at a reasonable level
- Describe sampling designs
  - Guidelines for selecting a sample that is representative of the population

Simple Random Sample



- Every set of n elements in the population has an equal probability of being selected
- Implemented sequentially

Stratified Random Sample



- Determine total sample size (e.g., n=100)
- Pick a simple random sample from each strata proportionally, e.g., pick 50/500*100=10 from utilities

Other Sampling Designs

- Random sampling
  - Cluster
    - (randomly select a set of m clusters and do a census within each cluster)
  - Systematic
    - (select every kth element where k is the sampling interval)
- Nonrandom sampling
  - Convenience
  - Judgment