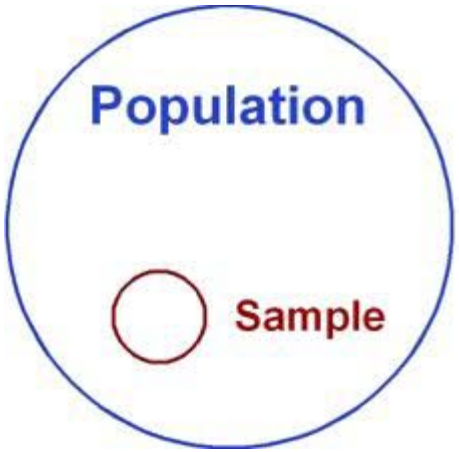
Example of Sampling Schemes


Population
Sample



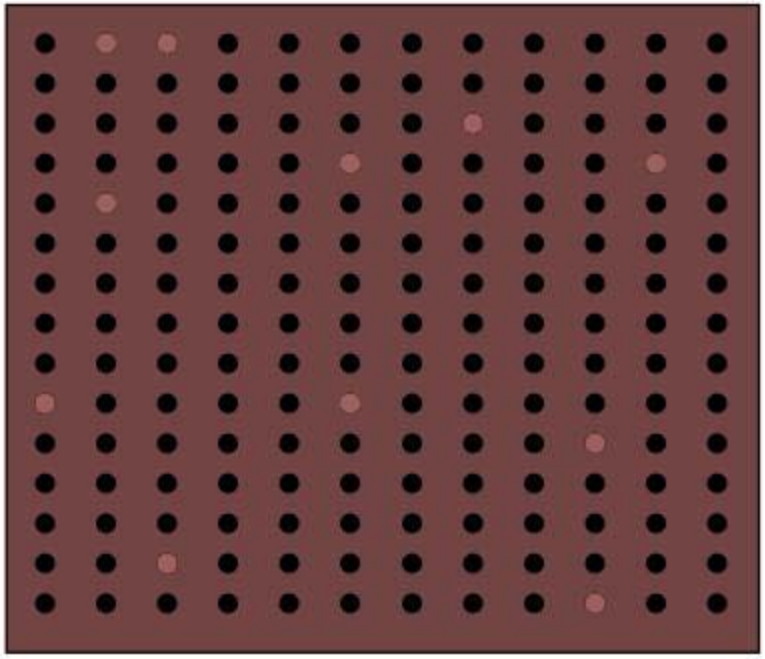
Random Sample

Each Subject Has Same Probability For Selection



Random Sample

Each Subject Has Same Probability For Selection



Examples of Probability Samples

- National Health and Nutrition Examination Survey
- National Health Interview Survey
- Behavioral Risk Factor Surveillance System

National Health and Nutrition Examination Survey

- http://www.cdc.gov/nchs/nhanes.htm
- *“The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations.”*

National Health and Nutrition Examination Survey

- Began in the early 1960s
- Continuous Program since 1999
  - Examines a nationally representative sample of about 5,000 persons each year
  - 15 counties across the country are visited each year
- Selected to represent the U.S. population
- Over-samples older persons (≥ 60), African Americans, and Hispanics to produce reliable statistics
  - Requires weighted analysis

National Health and Nutrition Examination Survey

- NHANES interview includes demographic, socioeconomic, dietary, and health-related questions.
  - Conducted in respondents' homes
- NHANES examination component consists of medical, dental, and physiological measurements, as well as laboratory tests
  - Performed in specially-designed mobile centers
- Data publicly available

Population 1

	Whites	Non-Whites
Young	10 10 10 10 10 10	20 20
Old	20 20	20 20

Mean = 180/12 =15

Population 2

	Whites	Non-Whites
Young	10 10 10 10 10 10	30 30
Old	30 30	30 30

Mean = 240/12 = 20

Population 1
Random Sampling

	Whites	Non-Whites
Young	10 10 10	20
Old	20	20

Mean = 90/6 =15

Population 2
Random Sampling

	Whites	Non-Whites
Young	10 10 10	30
Old	30	30

Mean = 120/6 = 20

Population 1
Over-sampling of Old and Non-Whites

	Whites	Non-Whites
Young	10 10 10	20 20
Old	20 20	20 20

Mean = 150/9 = 16.67

Population 2
Over-sampling of Old and Non-Whites

	Whites	Non-Whites
Young	10 10 10	30 30
Old	30 30	30 30

Mean = 210/9 = 23.33

	Population	Random Sampling	Over-Sampling
Population1	15	15	16.67
Population2	20	20	23.33
Difference	5	5	6.67

National Health Interview Survey

- Monitors the health of the nation since 1957
- Target: civilian non-institutionalized population of the United States
- Cross-sectional household interview survey
- Over-samples African Americans, Hispanics, and Asians

National Health Interview Survey

- Sampling Plan:multistage area probability design
- First Stage: 428 primary sampling units (PSU's)
  - Selected from approximately 1,900 geographically defined PSU's
  - PSU consists of a county, small group of contiguous counties, or a metropolitan statistical area.
- Second Stage sampling within selected PCU’s
- Data publicly available

Behavioral Risk Factor Surveillance System

- World's largest, on-going telephone health survey system
  - Approximately 94% of U.S. households have telephones
- Data collected monthly
  - Information on health risk behaviors, preventive health practices, and health care access
- BRFSS field operations are managed by state health departments
- Data publicly available

Convenience Sampling

Convenience sampling (sometimes known as **grab** or **opportunity sampling**) is a type of non-probability sampling which involves the sample being drawn from that part of the population which is close to hand … readily available and convenient … The researcher using such a sample **cannot scientifically make generalizations** about the total population from this sample because it would not be representative enough.

Wikipedia

Example: Sample of People Walking by Moana Surfrider on a Saturday Night

Faulty Generalization:

Honolulu has:

Example: Sample of People Walking by Moana Surfrider on a Saturday Night

Faulty Generalization:

Honolulu has:

1. Lots of newlyweds

Example: Sample of People Walking by Moana Surfrider on a Saturday Night

Faulty Generalization:

Honolulu has:

1. Lots of newlyweds
2. Lots of couples celebrating anniversaries

Example: Sample of People Walking by Moana Surfrider on a Saturday Night

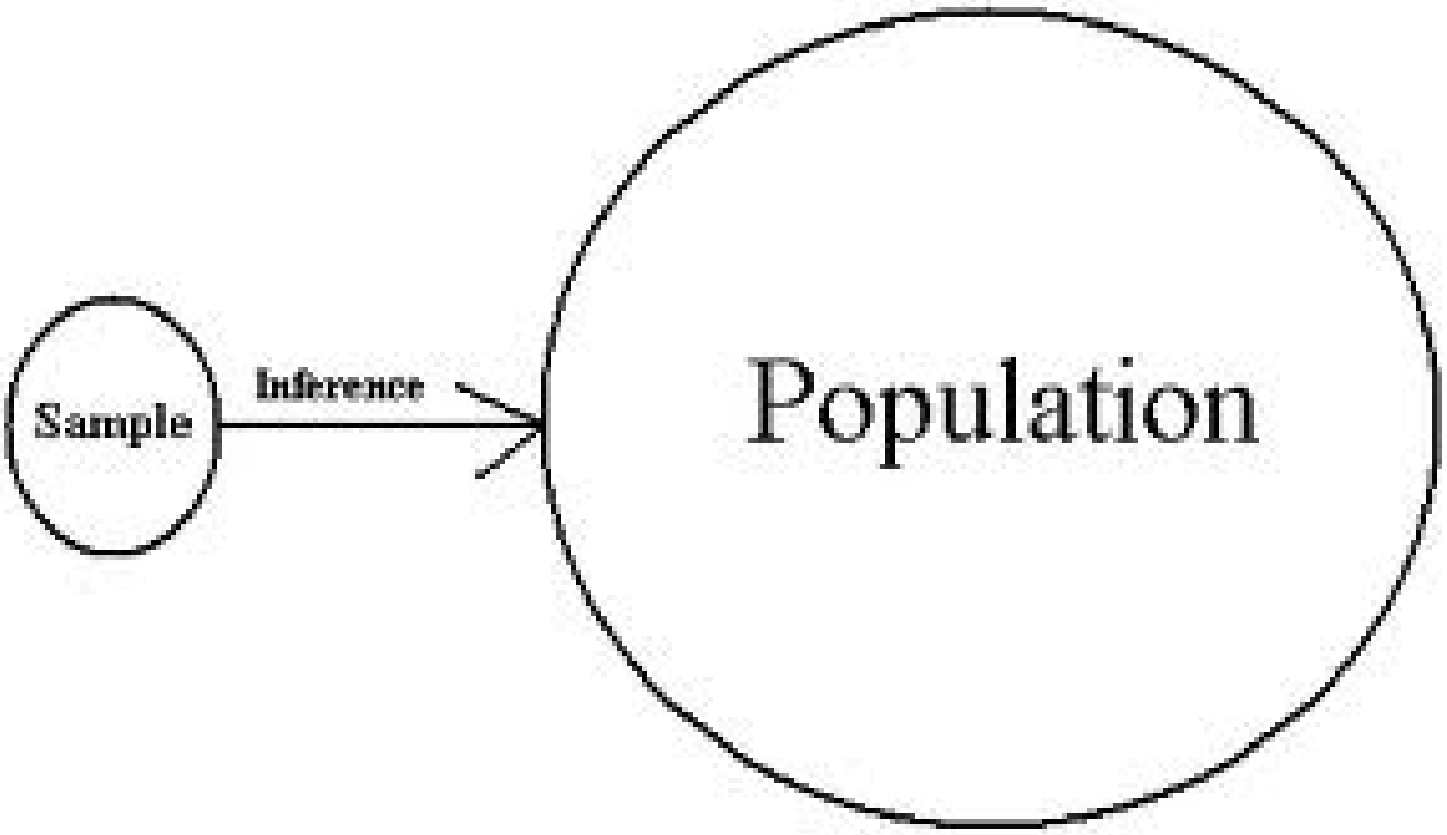
Faulty Generalization:

Honolulu has:

1. Lots of newlyweds
2. Lots of couples celebrating anniversaries
3. ABC stores in every block

What Are Potential Problems of Using Children Visiting a Community Health Center to Estimate the Prevalence of Overweight and Obesity?

Statistical Inference




George Clooney
UP IN THE AIR
From the Director of "Juno"
The story of a man ready to make a connection.

Potential Problems

- Children attending clinic more often are more likely to be sampled – Frequent Fliers
- Sicker?
  - Limit to well children visits?
- Better insurance?
- Less barriers