

Sampling Principles and Strategies

Colby Community College

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It is often prohibitively expensive to collect data from every member of a population.

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Note

Such evidence may be true and verifiable, but it may only represent extraordinary cases.

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What kind of students do you think she might collect?

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Sample selection is often done by computer.

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Call-in polls, where people are asked to call a special number to register an opinion.

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57% of respondents said yes.

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Example 11

One major hurdle for the U.S. Census is getting marginalized groups to respond. Since the number of congressional districts are determined by the results of the census, marginalized groups are often under-represented in government.

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Example 13

As of 2021, BIC, which is headquartered in France, has 25 factories around the world.

If an executive wanted to study how efficient the company manufactures pens, but only collected data in the French factories, the sample would not be representative of all pens the company makes.

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Hospitals will at times perform chart reviews, where they gather the records of all patients that underwent a specific procedure. They will then review the documents and make recommendations.

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Does this mean sunscreen causes cancer?

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This study didn't track sun exposure, which is a confounding variable. If someone is in the sun all day, they are more likely to both use sunscreen and get skin cancer.

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Example 18

Suppose a polling company maintains a list of all phone numbers active in the country. When they want to conduct a survey, a computer will randomly pick phone numbers from this list to call.

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To ensure that a sample is half men and half women, researchers can group all women in one strata and all men in another. They then randomly pick 50 from each strata, giving a sample with 100 people.

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Suppose an eraser factory produced 1000 lots a day. To perform quality control, the company randomly selects 5 lots and tests all erasers in the chosen lots.

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We will primarily be considering simple random samples in the course, since advanced methods needed to analyze the more complicated sampling methods.