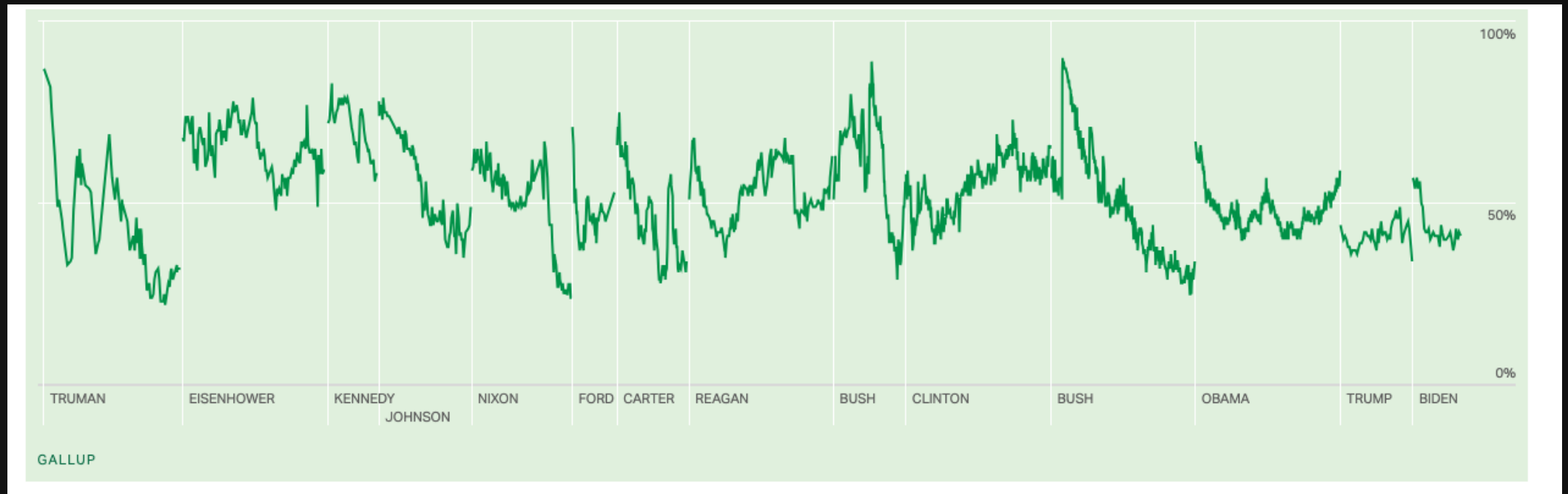


Chapter 5 - Sampling

Gallup Polls

Presidential Approval Polling

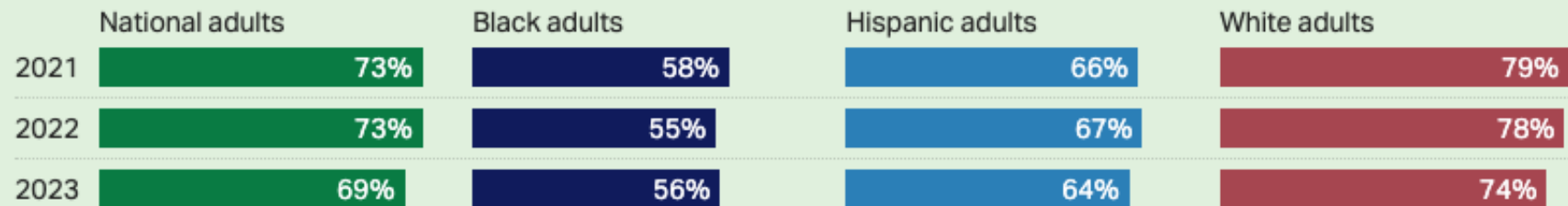


Gallup Polls

Black Adults Confidence in Police

Black Adults' Confidence in Police Still 13 Points Lower Than National Average

In the city or area where you live, do you have confidence in the local police force, or not? (% Yes)



[Get the data](#) • [Download image](#)

GALLUP®

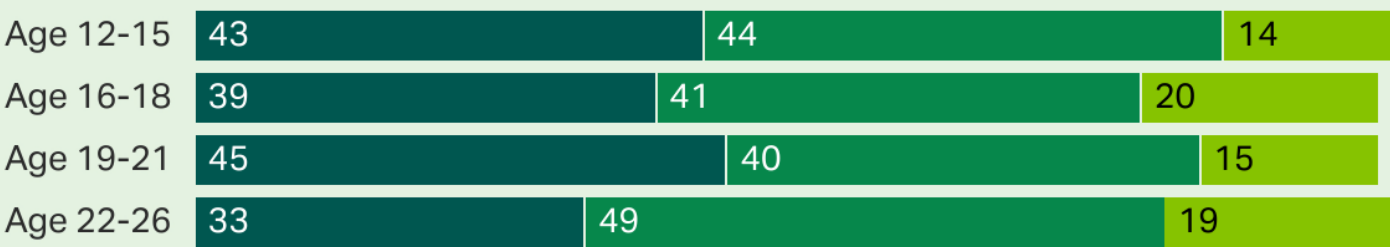
Gallup Polls

Gen Z Opinion on College Education

Youngest Gen Z Most Likely to Say College Education Is Important

How important do you think a college education is today?

■ % Very important ■ % Fairly important ■ % Not too important



Gallup and Walton Family Foundation-State of American Youth Survey, April 24-May 8, 2023

GALLUP

Do you think these
polls are *valid*?

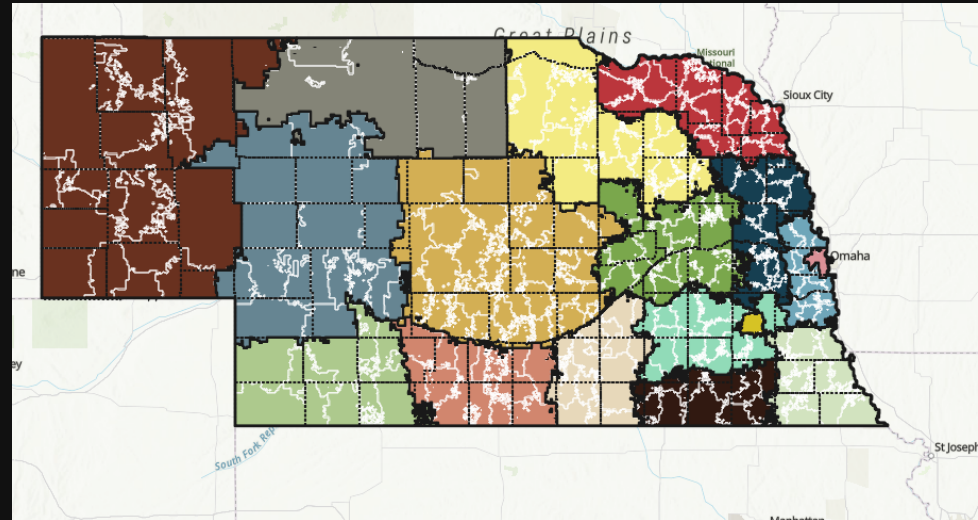
Sample Planning

- So let's say we are a university deciding what major will be the most important for the incoming 2024 freshman cohort.
- We don't have the **time** or **money** to survey the entire population (i.e., every high school student in the US)
- **So what do we do?**

Sample Planning

Define Sample Components

- We create a **study sample** - which is a subset of elements from the population.
- **Which districts do you think that would be?**



(image: NebraskaMaps.gov)

Sample Planning

Define Sample Components

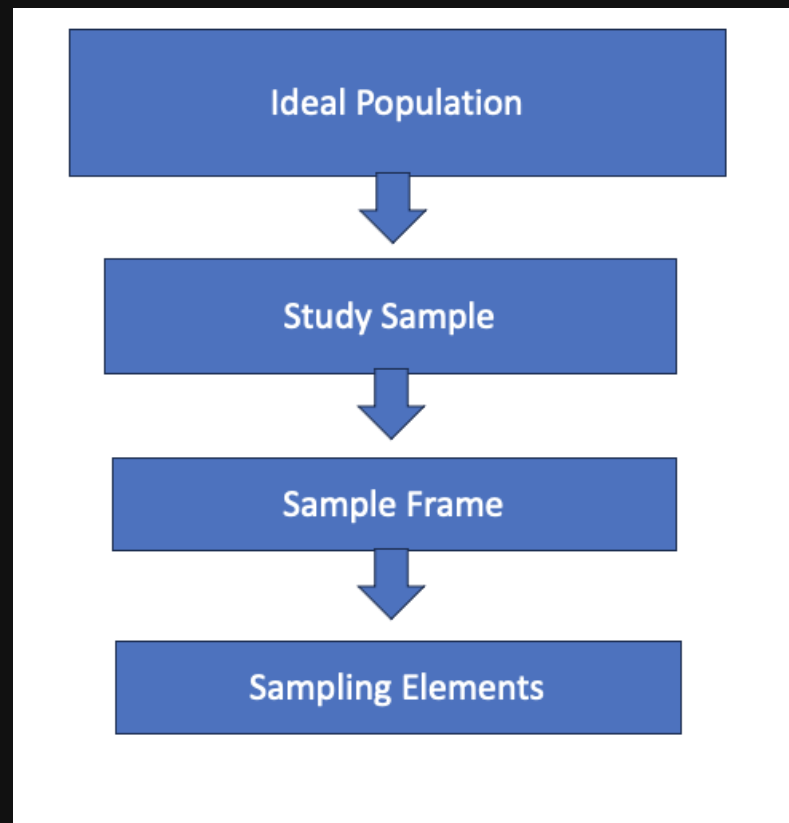
So now we have our **sampling frame**.

So now we need to go one level deeper and define our **sampling elements**.

- Which, is just the student that filled out the survey.
- But, what's the step before they fill out the survey?
(hint: think of the Minneapolis domestic violence experiment)
- What would be another limitation to our sample elements?

Sample Planning

Define Sample Components



Sample Planning

Evaluate Generalizability

Sampling error is the difference between characteristics of the sample and characteristics of the population from which it was selected.

The larger the sampling error, the less representative the sample, and thus the less generalizable our findings.

Evaluating Generalizability

Let's recall what we know about the psychopathy population

- What percent of individuals have psychopathy in prison?
 - ~30%
- What percent of individuals have psychopathy in community?
 - ~2%
- With this information, can you create a case with **high** sample error?

Sample Planning

Assess Population Diversity

If all units in the population were identical, there'd be no need to sample.

For example, if a chemist were examining several H₂O molecules, they would not need to sample. They could measure the properties of the elements (since there are only two hydrogen and oxygen) and differentiate it that way.

This is what makes **social science so difficult**. We do have to **sample**.

Sample Planning

Consider a Census



(image: US Department of Commerce)

Recap

Sample Planning

- Study population
- Study sample
- Sample frame
- Sample elements

Sample Methods

Probability Sampling Methods

Things to know:

- These methods **require** that the probability of selection is *known* and is not zero.
- Nothing but **chance** determines which elements are included in the sample.
- There is no **systematic bias** due to random selection.
- Do you think there will be sample error?

Sample Methods

Probability Sampling Methods

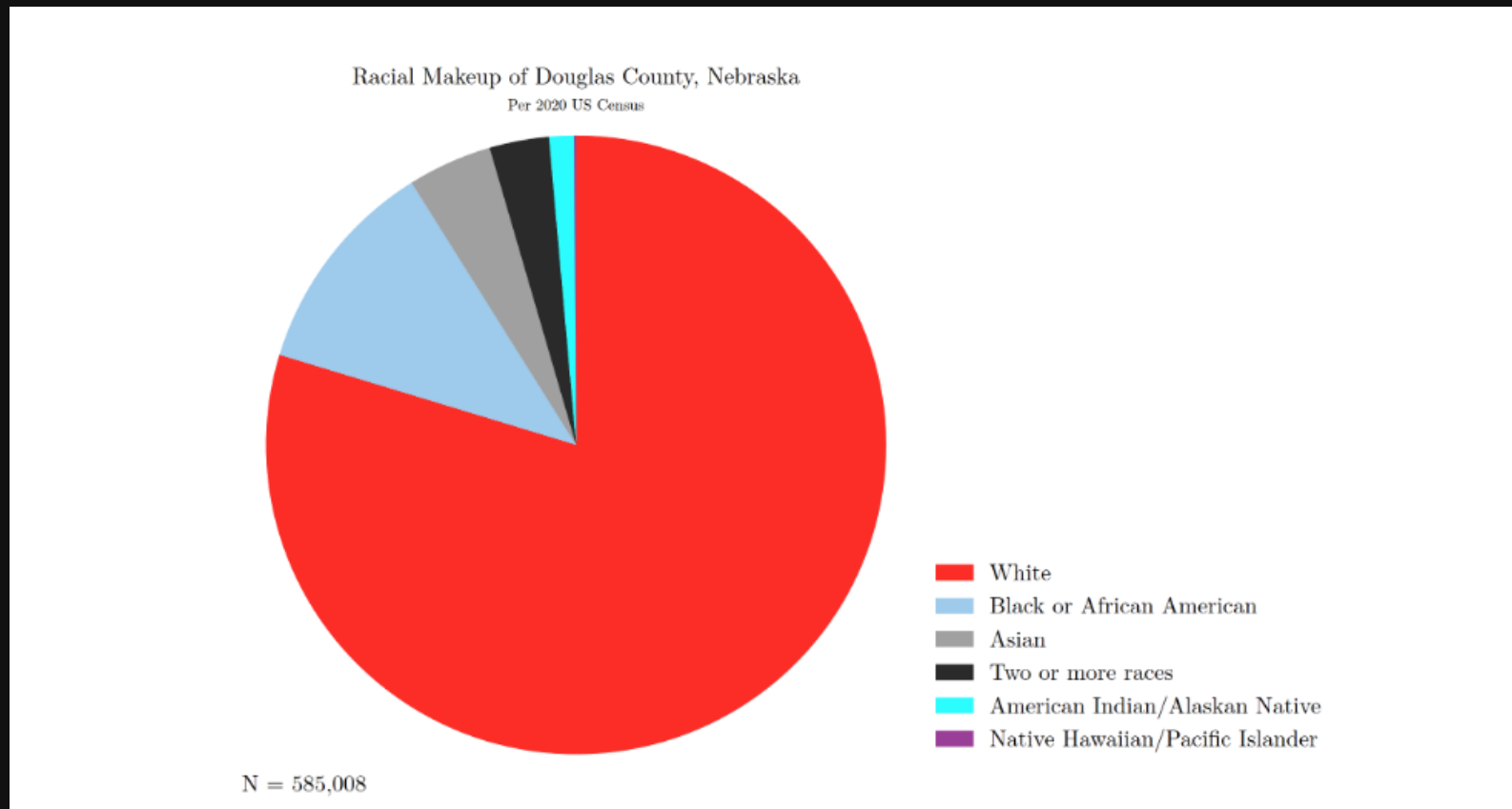
A couple other important things:

- **Sample size** - The larger the sample, the more confidence we have in the representation of the population from which it was drawn.
- **Homogeneity** (sameness) - The more homogeneous the population, the more confidence we can have in the representatives of a sample of any size.

Sample Methods

Probability Sampling Methods

Simple Random Sampling

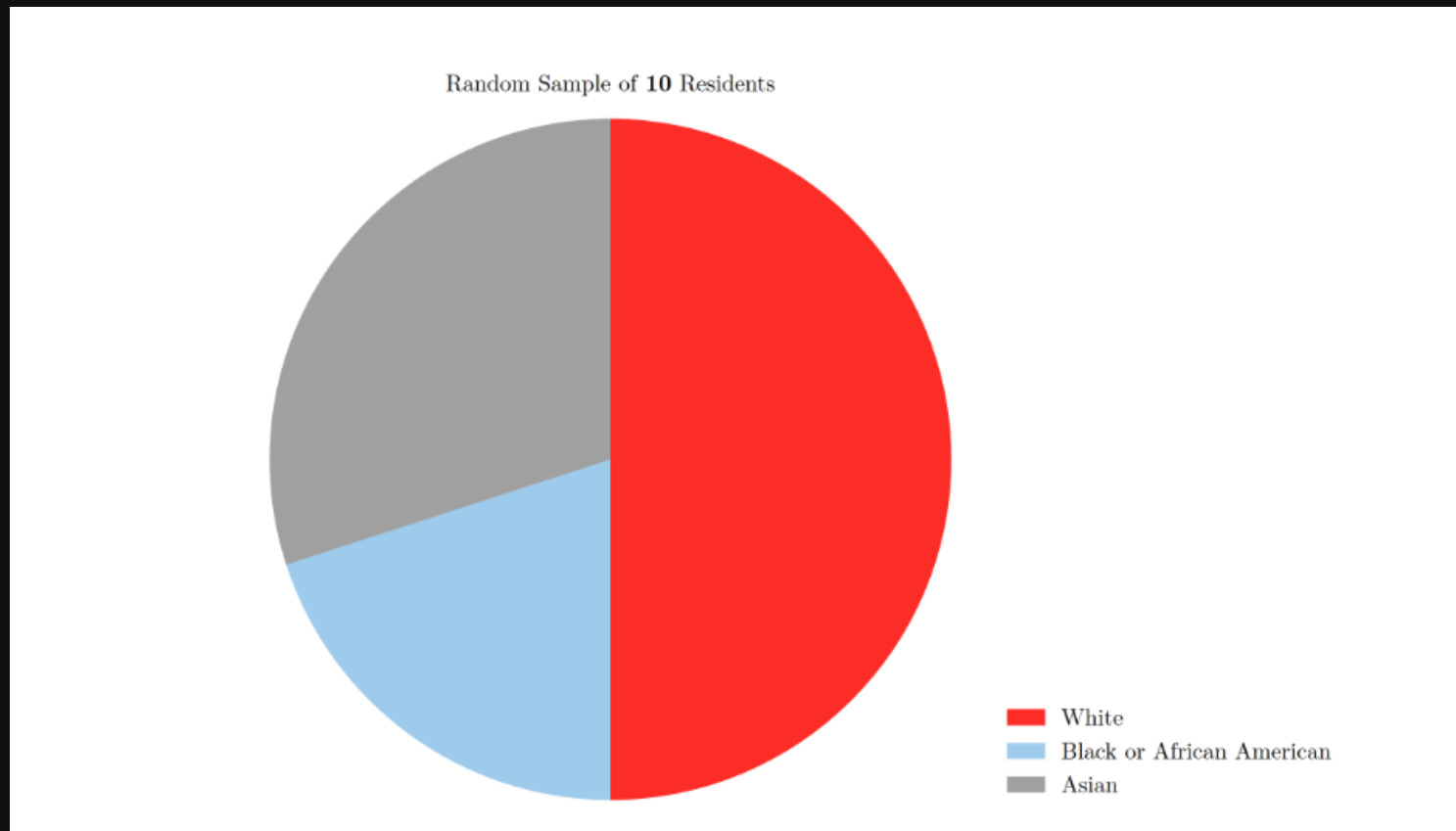


(image: Justin Nix's Lecture 4)

Sample Methods

Probability Sampling Methods

Simple Random Sampling

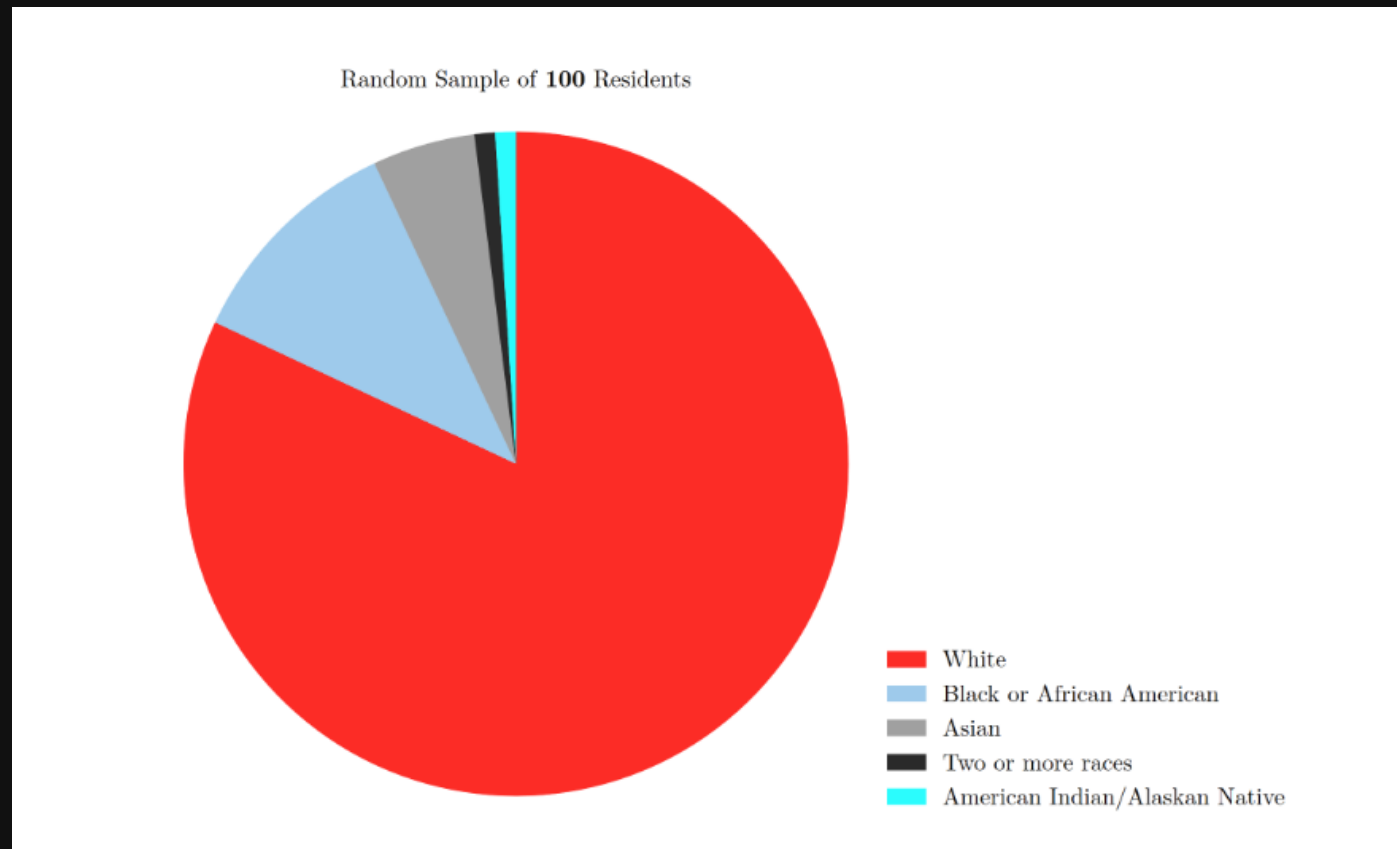


(image: Justin Nix's Lecture 4)

Sample Methods

Probability Sampling Methods

Simple Random Sampling

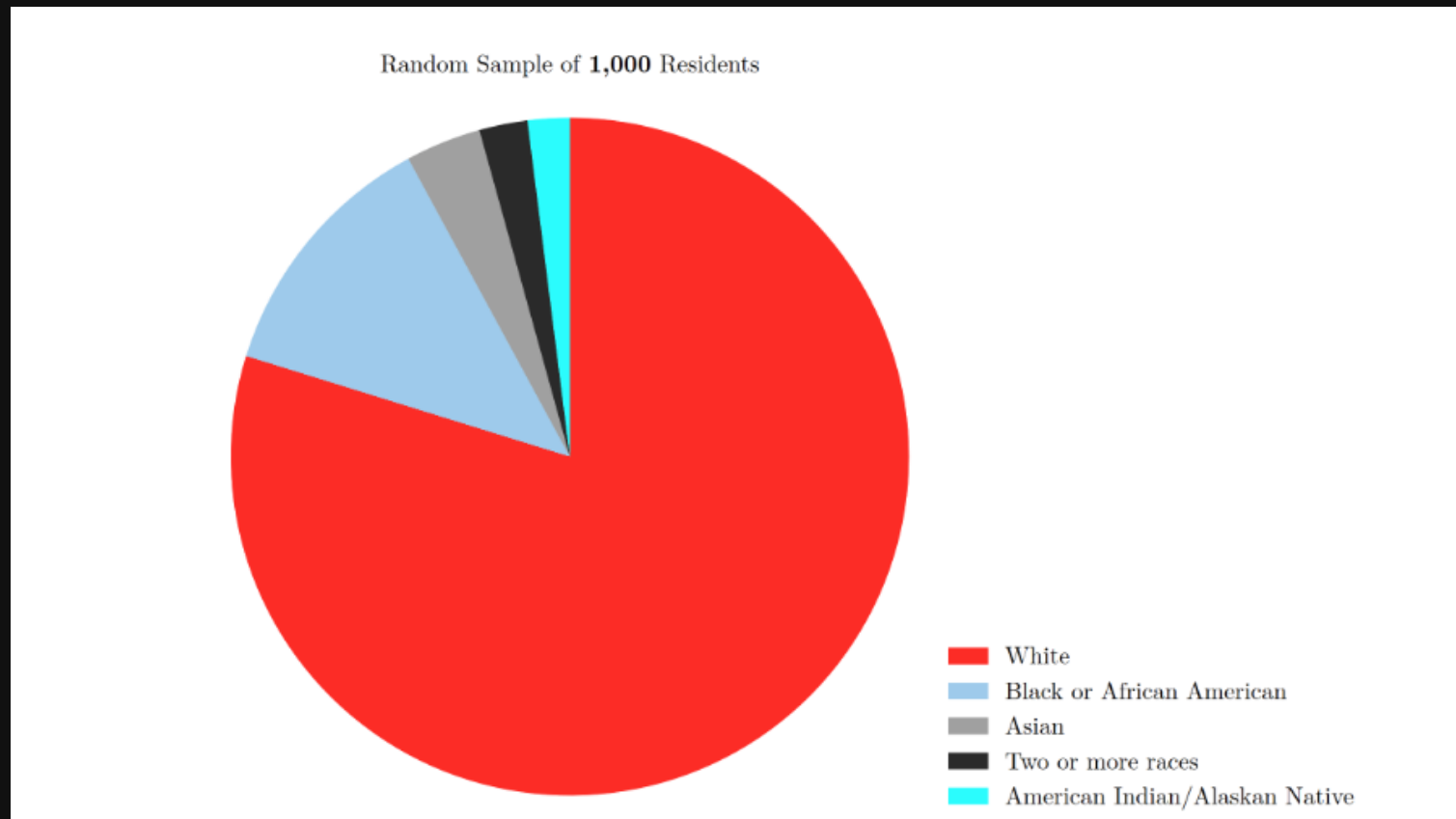


(image: Justin Nix's Lecture 4)

Sample Methods

Probability Sampling Methods

Simple Random Sampling



(image: Justin Nix's Lecture 4)

Sample Methods

Probability Sampling Methods

Systematic Random Sampling

A sampling method where every **n**th item in a population is selected after a random start, ensuring a representative sample.

Population, or **N**

Random sample, or **n**

Systematic sampling interval, or **k**

$$k = N/n$$

Probability Sampling Methods

Systematic Random Sampling

Let's say we have a population, **N**, of 1000, and we want to draw a random sample, **n**, of 20.

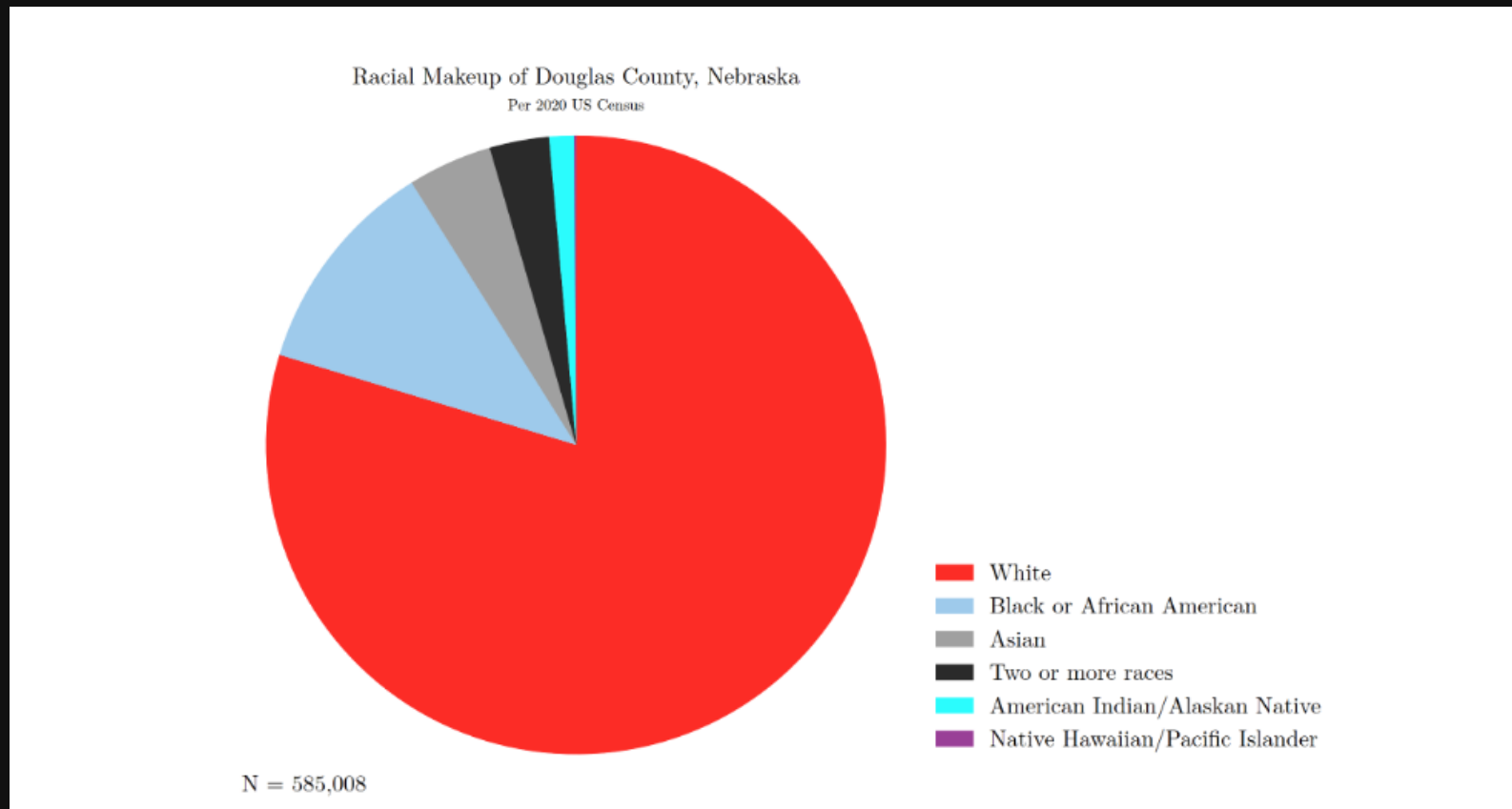
Our systematic sampling interval, or **k**, is:

$$k = N/n$$

Sample Methods

Probability Sampling Methods

Stratified Random Sampling

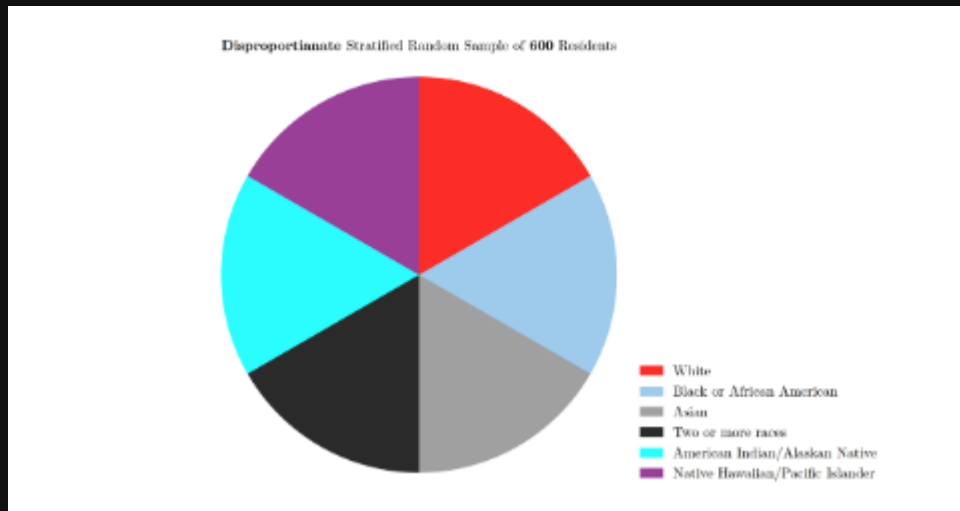


(image: Justin Nix's Lecture 4)

Sample Methods

Probability Sampling Methods

Stratified Random Sampling



(image: Justin Nix's Lecture 4)

Sample Methods

Probability Sampling Methods

Multistage Cluster Sampling

Multistage sampling

Step 1:
Define the population



Step 2:
Cluster the population



Step 3:
Randomly select clusters



Step 4:
Randomly sample units from
within the selected clusters



 Scribbr

[Click to enlarge](#)

(image: Scribbr)

Sample Methods

Non-Probability Sampling Methods

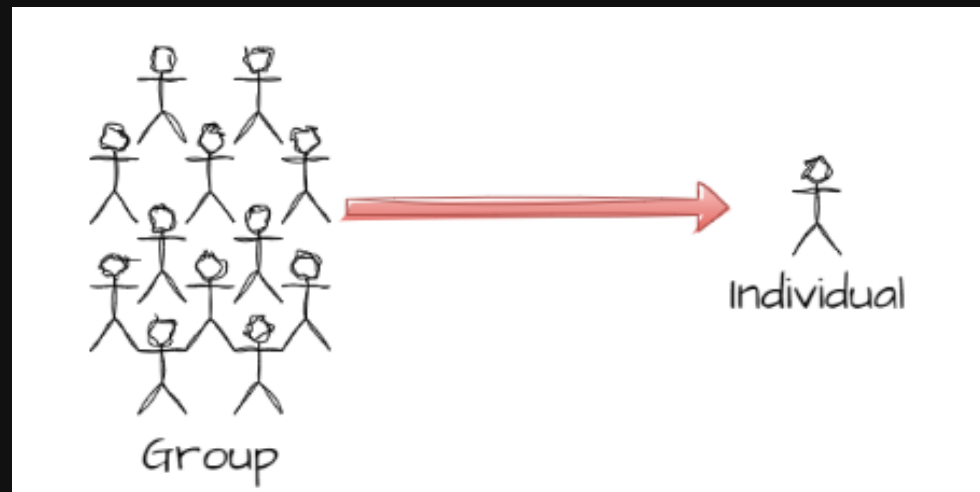
- **Availability Sampling**
- **Quota Sampling**
- **Purposive Sampling**
- **Snowball Sampling**

Units of Analysis

Units of Analysis and Errors in Causal Reasoning

Ecological Fallacy

Drawing conclusions about individual-processes from group level data



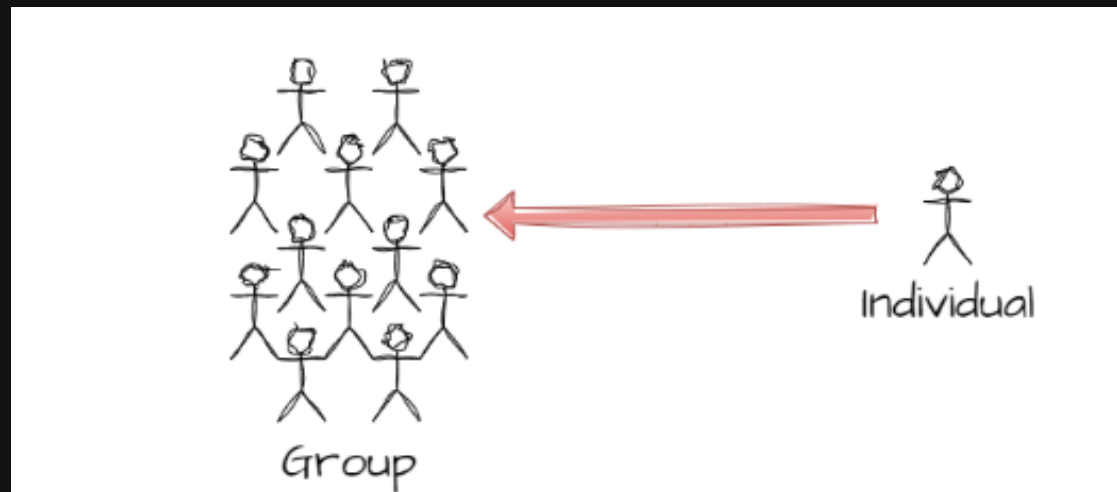
(image: Justin Nix's Lecture 4)

Units of Analysis

Units of Analysis and Errors in Causal Reasoning

Reductionism

Drawing conclusions about group-level processes from individual level data



(image: Justin Nix's Lecture 4)

Have a great day!!



(image: giphy.com)

