



## Selection Bias: Lesson Plan

Topic	
Selection bias is a phenomenon that occurs when research subjects in studies are chosen improperly or nonrandomly, which creates a sample that isn't representative of the actual target population of the study.	
Possible subjects/classes	Time needed
<ul style="list-style-type: none"> <li>• Statistics</li> <li>• Psychology</li> <li>• Sociology</li> </ul>	30-45 minutes
Video link:	
<a href="https://academy4sc.org/topic/selection-bias-dont-forget-about-me/">https://academy4sc.org/topic/selection-bias-dont-forget-about-me/</a>	
Objective: <i>What will students know/be able to do at the end of class?</i>	
Students will be able to... <ul style="list-style-type: none"> <li>• Define selection bias</li> <li>• Explain representation in samples of target populations.</li> <li>• Identify selection bias if given an example of a study's recruitment steps.</li> </ul>	
Key Concepts & Vocabulary	
Selection Bias, Sample Population vs. Target Population, Representation, Random vs. Nonrandom Sampling	
Materials Needed	
Computer to search for an example of a scenario to read aloud to the class	
Before you watch	
<b>Turn &amp; Talk:</b> Students should turn to the person next to them and discuss what they think selection bias is and where they think it occurs.	
While you watch	



1. Is a sample population and target population the same? Explain.
2. What is the type of selection bias that occurs as a result of an unequal probability of being recruited for a study?
3. In the example of the study about White Americans and African Americans, what type of selection bias is this? Self-selection or sampling bias? Explain.

#### After you watch/discussion questions

1. Why does selection bias occur?
2. Can selection bias be avoided? If so, explain how you would avoid it if you were a recruiter for a study.
3. Can you think of a study you have learned about that utilizes selection bias?

#### Activity Ideas

- Role play activity: Two students act as the recruiters of a study and demonstrate selection bias by "recruiting" other students in class for their study
- Students work in pairs or small groups and imagine that either their class, grade, or whole school is their target population for study. Each group thinks of 4 recruitment methods that would lead to selecting a representative sample for their study. The teacher can apply other parameters to the study design based on what else students have been learning.
- Teacher reads a scenario of a study they find from the internet and students have to identify if selection bias occurred in the scenario, as well as state the type of selection bias.

#### Sources/places to learn more

1. Catalogue of Bias Collaboration, Nunan D, Bankhead C, Aronson JK. Selection bias. Catalogue Of Bias 2017: <http://www.catalogofbias.org/biases/selection-bias/>
2. Tripepi, Giovanni, et al. "Selection bias and information bias in clinical research." *Nephron Clinical Practice* 115.2 (2010): c94-c99.
3. Berger, Vance. Selection bias and covariate imbalances in randomized clinical trials. Vol. 66. John Wiley & Sons, 2007.