



Video Script: The Power of Sample Size: Part 1

Link to the video: <https://www.youtube.com/watch?v=jW72i8wQZw4&t=18s>

	STORYBOARD IMAGE	NARRATION
1.		Welcome back to the 5 minute evaluation resource series, ...
2.		This series designed to help passionate about education build evidence for educator effectiveness.
3.		In an earlier video, we demonstrated that to determine that your program has an impact, you must have a comparison group that is as similar to your program participants as possible.



4.



In this video we discuss the importance of having enough people so your study results are meaningful.

5.



Evaluators call the number of people in your study, the study sample size. It includes the participants in your program and people in your comparison group.

6.



Even if you use the strongest research design, random assignment, to identify your comparison group...

7.



You will still need to have a large enough sample size to assess whether your program made a difference.



8.



Imagine that you went through all the right steps to plan and implement your evaluation...

9.



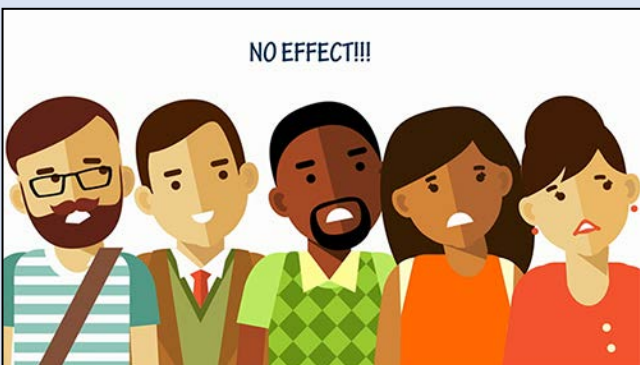
You have a strong research question, the right design, and all the data you need. Your evaluator analyzes the data

10.



...and announces the results as, wait for it... wait for it...

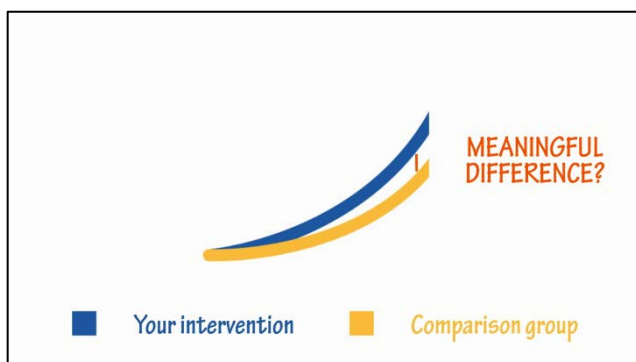
11.



No effect!
Oh Man!

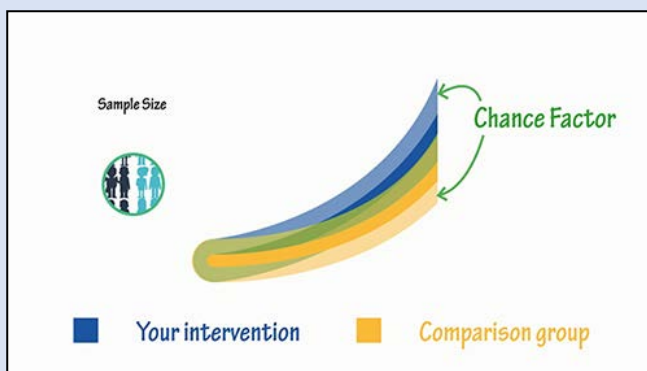


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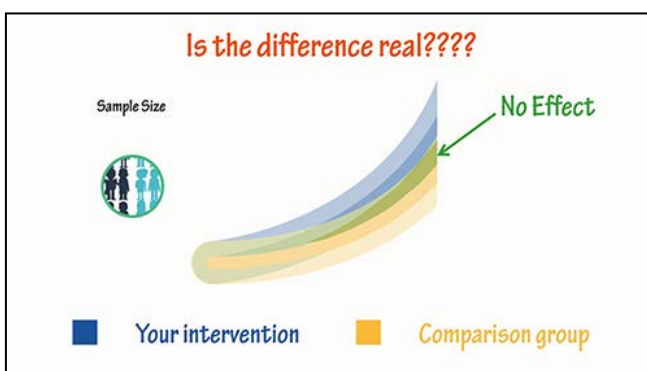
You were certain that your program participants would have better outcomes than the comparison group. Then you look up the numbers. They seem to show that the people in your program did better than the comparison group. So why is the answer no effect?

13.



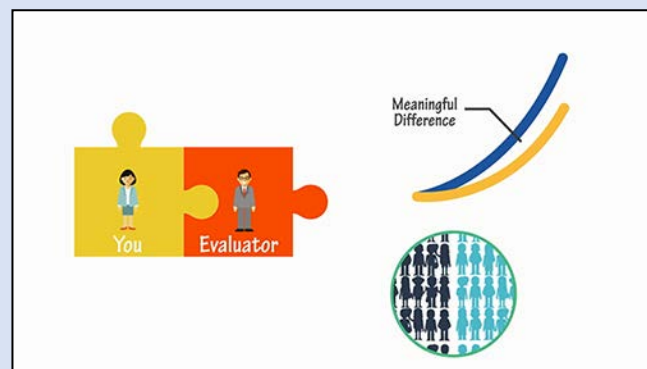
Because in this case, not enough people were in your study to be confident enough that the difference in the outcome wasn't due to chance.

14.



In other words, we can't know that there was truly no effect, or if there was an effect, but the study did not have enough people to prove it.

15.



To avoid that from happening, you and your evaluator can work together to figure out how big your sample size needs to be to detect whether your program made a meaningful difference.

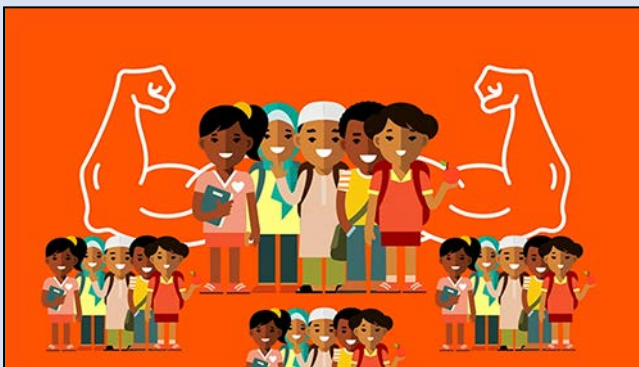


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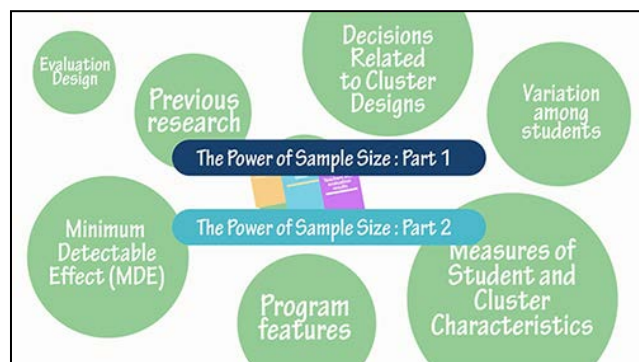
This process is called a power analysis.

17.



The more power you have in a study, the less chance that the study results will suggest no effect when in fact, there was an effect.

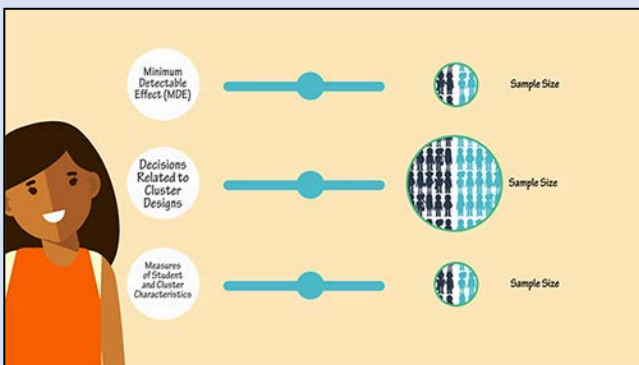
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Many factors affect the size of the sample you need. A lot of it is based on educated guesswork.

This video and our next video highlight some of the more important factors.

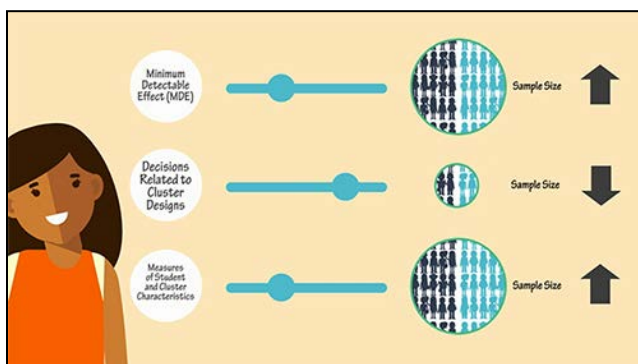
19.



To help you see the difference these decisions make on the sample size, we provide a simple example.



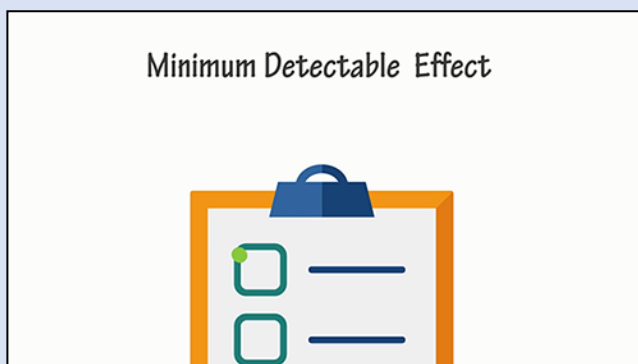
20.



The example will demonstrate how some decisions can increase or decrease the number of people you need in your study.

However, every study is unique, so the actual number of people needed will be different for your study.

21.



To determine the sample size needed for your study, your evaluators will first need to determine what they call, the minimum detectable effect, or MDE.

22.



The MDE is the smallest impact your program could make, that would be considered meaningful in practice. This is a substantive decision that you should be a part of.

23.



Let's say your program is a teacher professional development program, designed to improve students' math skills. At the end of the program, would you consider it a meaningful success if students being taught by these teachers received, on average, 20 more points on the achievement test? Or 40 points? What is the smallest positive outcome that would make the program worth implementing on a larger scale?



24.



Your evaluator will consider this decision and also look at similar studies to get a sense of what effect size you might expect.

25.



If you want to detect a very small effect, you need a lot of people in your study.

26.



If you are only interested in large effects, you can get by with fewer people.

27.



Let's say you want to detect a 20 point increase in test scores. Taking all the unique factors of your program and design study into account, your evaluator calculates that you will need around 800 people.



28.



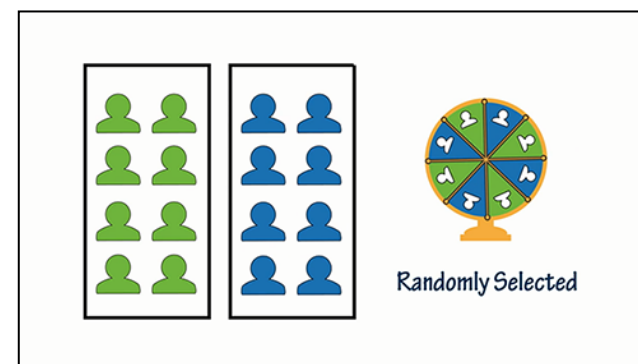
However, if you and your evaluator believe that a 40 point increase is likely, then you will need far fewer people: around 200 individuals.

29.



This estimation for the effect size is important. If you decide to only recruit 200 individuals, and the real effect size is a 30 point increase, rather than the 40 point increase that you had expected, then your study will not have the power to detect whether differences between your program participants and the comparison group were due to chance, or real.

30.



In this example, we assume that students were randomly selected to be in your program or to the comparison group.

31.



Without considering their classroom, school, or district. This is called a simple experimental design.

However in most studies of educator effectiveness...



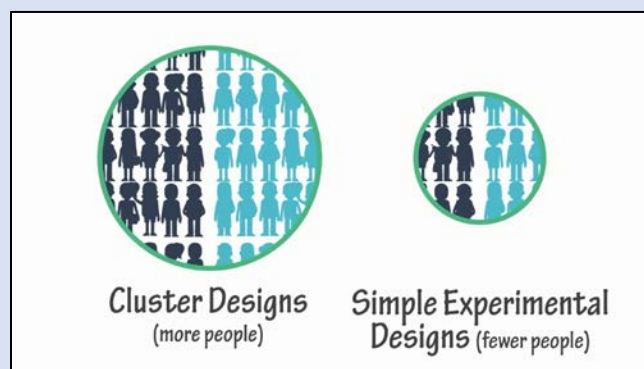
32.



...individuals are compared within clusters, at the class, school, or even district level, rather than individually.

Studies that reflect this context are called Cluster Designs.

33.



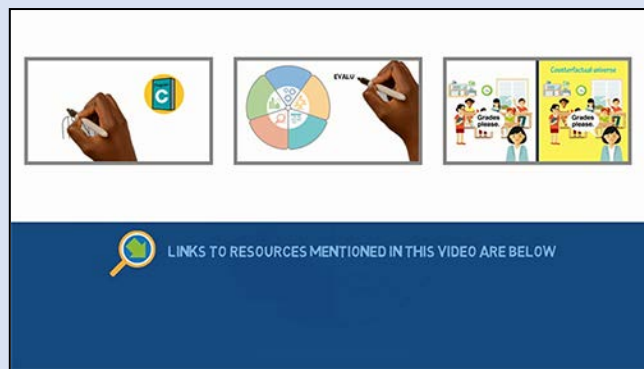
These studies require a larger sample size than simple experimental designs.

34.



Please check out our next video to learn about clusters, and how different decisions related to them can increase or decrease the number of people you need in your study.

35.



And, if you haven't already, check out our other 5-minute evaluation resources.

The Power of Sample Size Part 2 Video:
<https://www.youtube.com/watch?v=NeAbxHkvai0>

5-minute evaluation resource series:
<https://innovation.ed.gov/what-we-do/teacher-quality/supporting-effective-educator-development-grant-program/building-evidence/>

Evaluation for educators—video:
https://www.youtube.com/watch?v=M4f4XD_56hU

Evaluation Resource Database: <https://innovation.ed.gov/what-we-do/teacher-quality/supporting-effective-educator-development-grant-program/evaluation-resources/>