Sample vs. Population Approach

Hypothesis

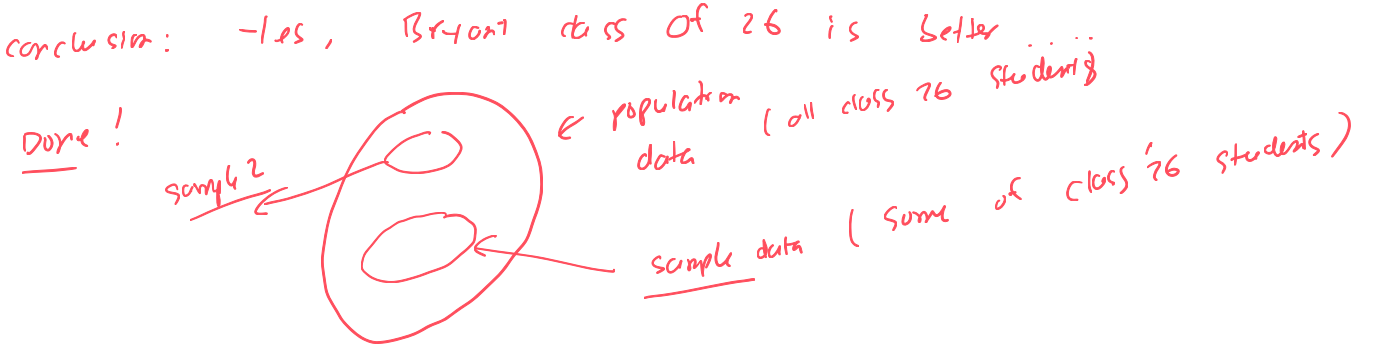
We have a hypothesis and we want to find data to test it.

Hypothesis 1

The average GPA for students at four-year colleges in the US is around 3.15.
Hypothesis: Bryant students class of 2025 are doing better than an average college student.

The "Population" approach:

- Collect the current GPA of ALL Bryant students class 2026. This data is called population data.
- Calculate the average of the collected GPA.
- Compare the calculated average with 3.15 to test the hypothesis.



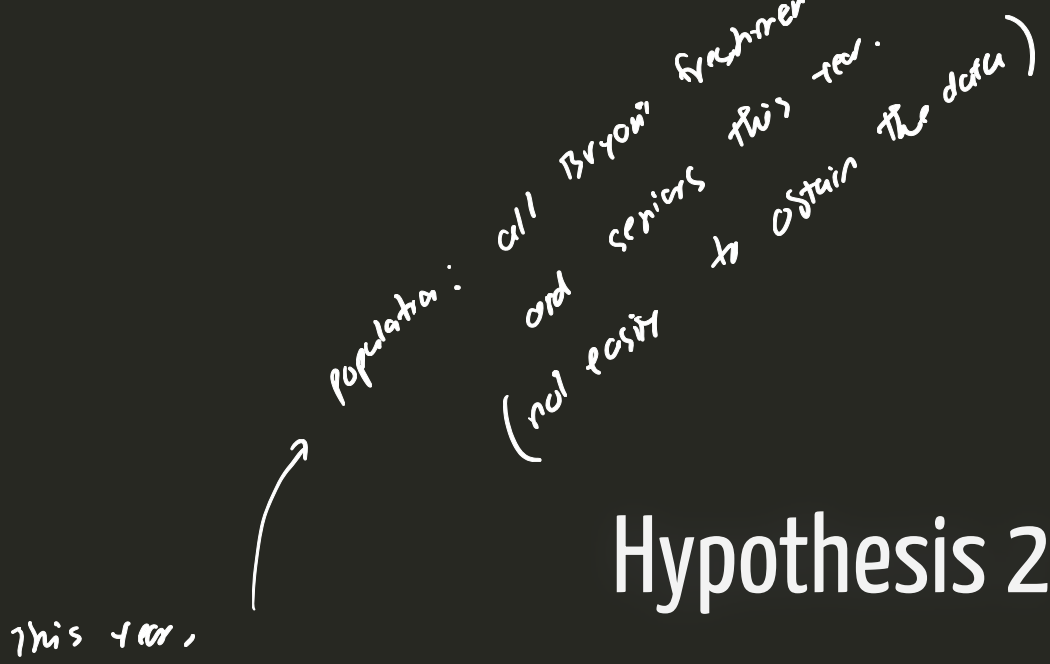
The "Sample" Approach:

- Collect the current GPA of SOME Bryant students class 2025. This data is called sample data.
- Use statistics technique to test the hypothesis

sample data → support the hypothesis → "Class of 2026 is better" to only certain degree of confidence, not 100% confidence

Pros and Cons

- Which approach give us a more "accurate" test? Population approach!
- It's possible that the population data already exists (at the registrar office for example) and The researcher may be able to get access to this data.
- If you can collect the population data, you should not use the "Sample" approach.



Hypothesis 2

Bryant freshman students study more hours than Bryant senior students.

"Population" Approach

- Collect the number of hours spent for studying a week of ALL current Bryant students.
- Calculate the average of number of hours for freshman and senior
- Compare the calculated average to test the hypothesis.

"Sample" Approach:

- Collect the current GPA of SOME Bryant students class 2025. This data is called sample data.
- Use statistics technique to test the hypothesis

Pros and Cons

- The population data very likely do not exist. The researcher needs to manually collect the data
- The researcher needs to ask about 1000 freshmen and 1000 seniors at Bryant.
- "Sample" approach provide a better solution: The researcher just needs to ask about 30 freshmen and 30 seniors. Then use statistics technique to reach the test.

Hypothesis 3

College students who has better sleep quality achieve higher education performances.

- Hypothesis: College students who has better sleep quality achieve higher education performances.
- Population: All college students in the world. This is a very large population that is not easy to get the data from.
- The researcher should collect only a portion of college students then use statistics technique to answer the question.

Examples on The "Sample" approach

https://journals.sagepub.com/doi/abs/10.2466/pr0.96.3.817-824?journalCode=prxa

https://www.researchgate.net/profile/Mussie-Tessema/publication/271077619_Tessema_M_Ready_K_Astanie_M_2014_Does_Part-Time_Job_Affect_College_Students'_Satisfaction_and_Academic_Performance_GPA_The_sized_Public_University_International_Journal_of_Business_Admin/links/57769e4408ae
M-Ready-K-Astanie-M-2014-Does-Part-Time-Job-Affect-College-Students-Satisfaction-and-Academic-Performance-GPA-The-Case-of-a-Mid-sized-Public-University-International-Journal-of-Business.pdf

https://www.businessinsider.com/could-your-gpa-predict-your-income-2014-4