Analysis on Student Loan Relief on Asset Allocation

APAN 5300 Group 9
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Agenda

1. Introduction & Literature Review
2. Operation & Research Design
3. Dataset & Data Security
4. Analytics Plan
5. Simulation & Result
6. Limitations & Uncertainties
7. Conclusion

Introduction

Growing student debt epidemic can lead to long term consequences for a recent graduate's personal financial health and impact the US economy on a larger scale.

The objective of this experimental study is to examine:

1. The impact of debt relief on students' short-term financial benefits
2. Whether implementing different amounts of debt relief has significant different effects on students' financial benefits

Research Review

Extant Studies Perspectives:

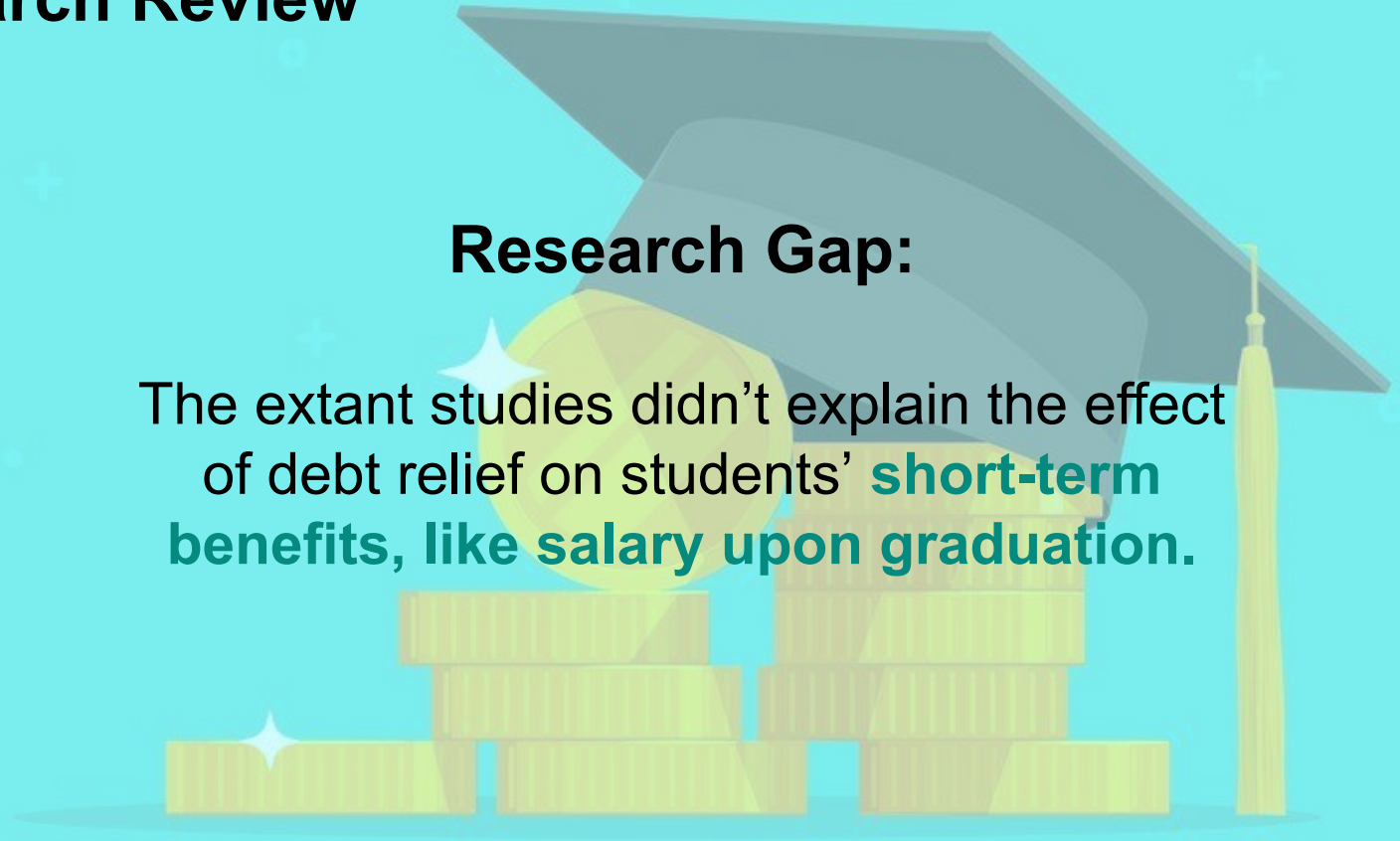
- Student loan debt negatively impacts **the national economy, labor market, and students' life-long wealth** (e.g. wealth accumulation for retirement, house ownership, creditability)

Chris (2020), Alvaro et al., (2020)

- Alleviating student loans (debt relief) has significant improvement on **students' work choices, work-life balance, purchasing behaviors,** and more.

Macro et al., (2020), Daniels & Smythe (2019)

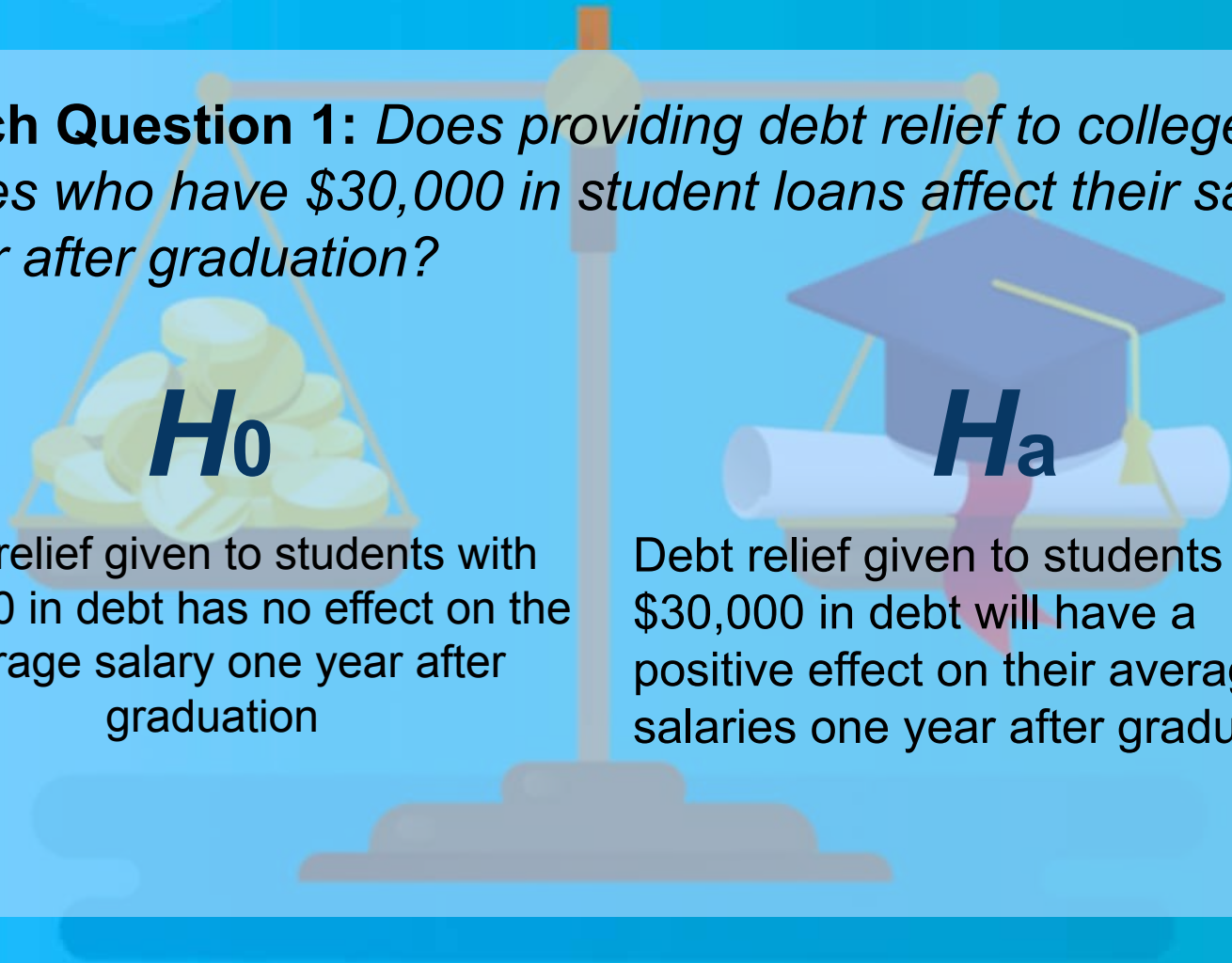
Research Review



Research Gap:

The extant studies didn’t explain the effect of debt relief on students’ **short-term benefits, like salary upon graduation.**

Research Question 1: *Does providing debt relief to college graduates who have $30,000 in student loans affect their salaries one year after graduation?*



H_0

Debt relief given to students with $30,000 in debt has no effect on the average salary one year after graduation

H_a

Debt relief given to students with $30,000 in debt will have a positive effect on their average salaries one year after graduation

Research Question 2: *Does the amount of debt relief given (50% vs. 25% of $30,000) cause a significant difference in salaries between one-year graduates?*

H_0

First year graduates with $30,000 in student debt that receive a 50% debt relief ($15,000) will not have a higher salary than those who have $30,000 in student debt and receive 25% relief ($7,500).

H_a

First year graduates with $30,000 in student debt that receive a 50% debt relief ($15,000) will have a higher salary than those who receive 25% in debt relief ($7,500).

Operations

Population:

- University Students in USA who have accumulated $30,000 in student debt
- Graduating in Spring 2022
- Eligible to work in the United States of America after graduation

Sample

Control Group:
Students who do not receive any debt relief
(0% student debt relief)

Treatment Group:
Students who do receive debt relief

- $7,500 student debt relief (25%)
- $15,000 student debt relief (50%)

Research Design

Sample Selection

Random Sampling

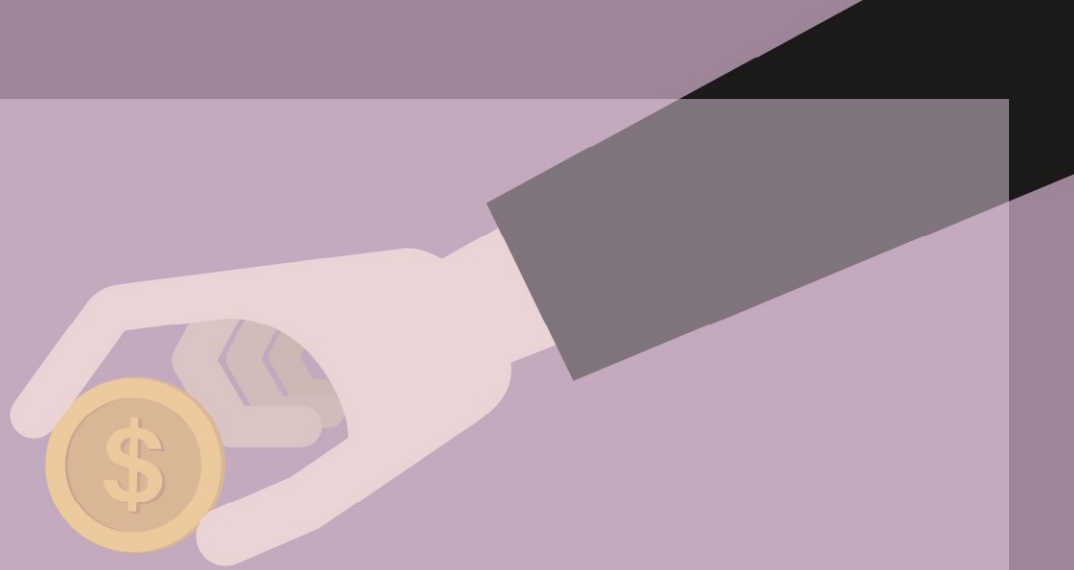
Treatment V.S. Control Group

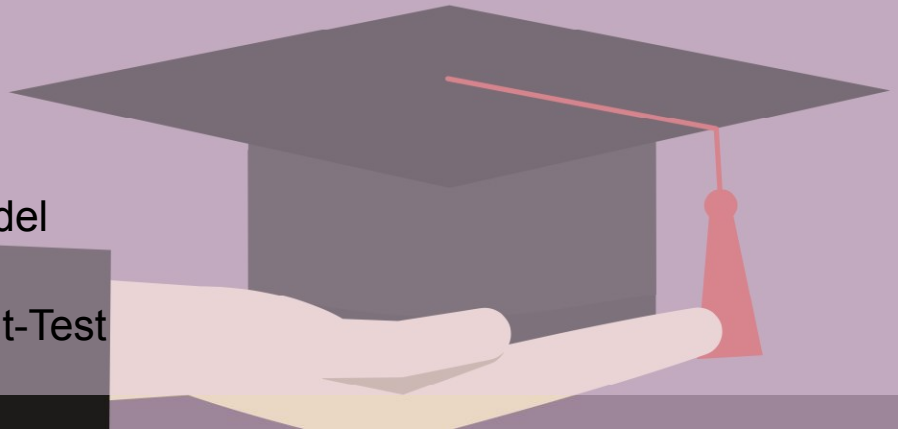
No relief on student loans VS $7500/$15000 relief on student loans

Statistical Tests

Linear Regression Model

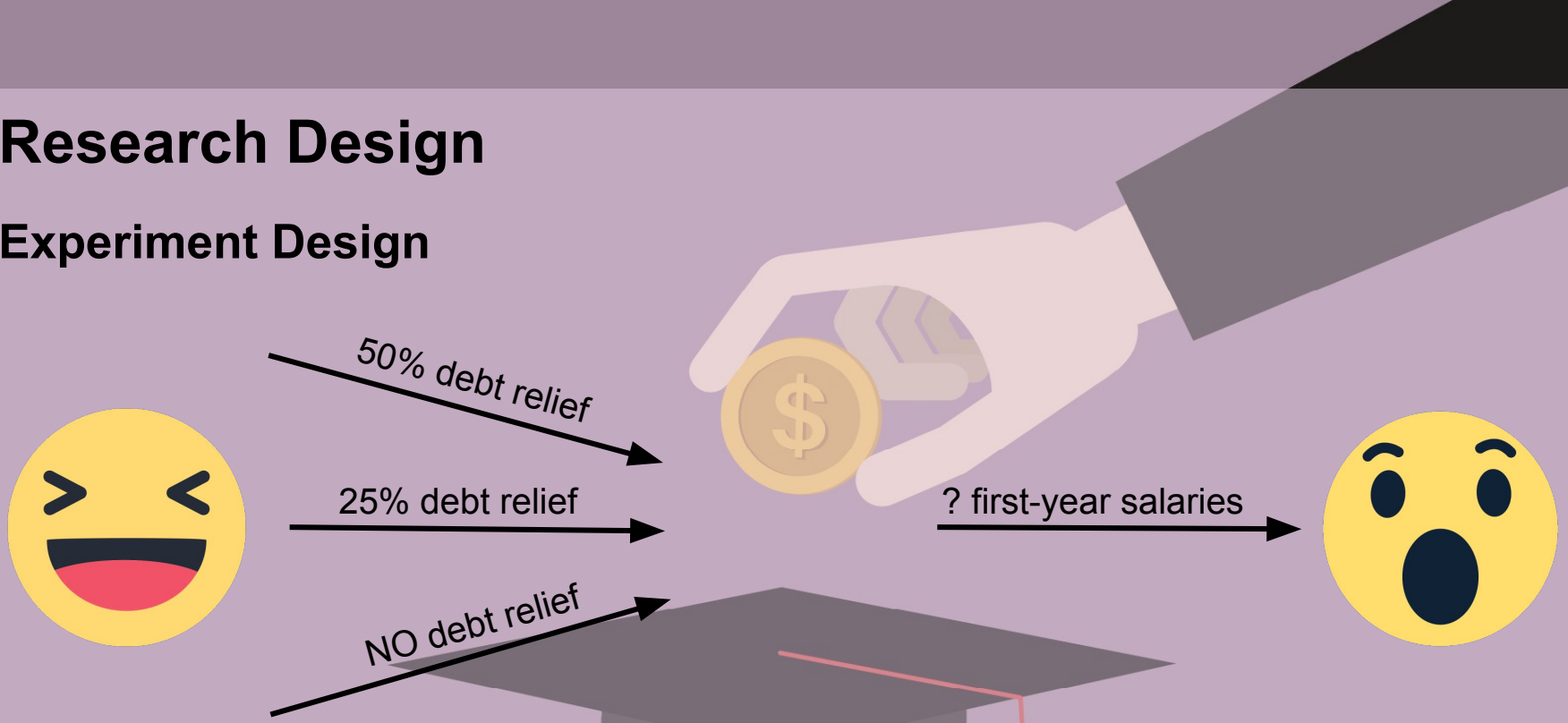
One-way Two Sample t-Test





Research Design

Experiment Design



Experimental process

Randomly selecting students with $30,000 loans to give them 50%/25%/0 debt relief

Dataset & Data Security

Data Collection

Process: Random sampling

Amount: 600 people, split to 3 groups (200 each)

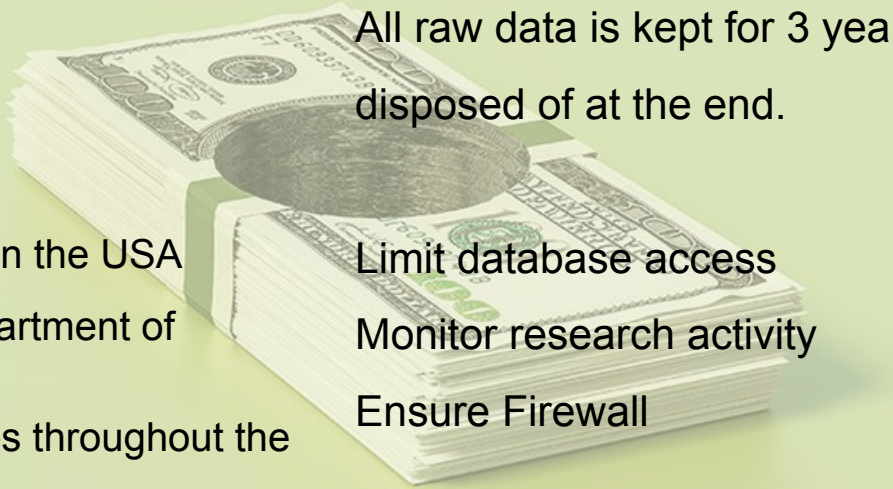
Conditions:

Currently In the USA

$30,000 in debt

Eligible to work and will work in the USA

Database of the United State's department of education
We partnered with 1,244 universities throughout the USA



Data Security

Encryption of classification information (Name, student id)

All raw data is kept for 3 years only and disposed of at the end.

Limit database access

Monitor research activity

Ensure Firewall

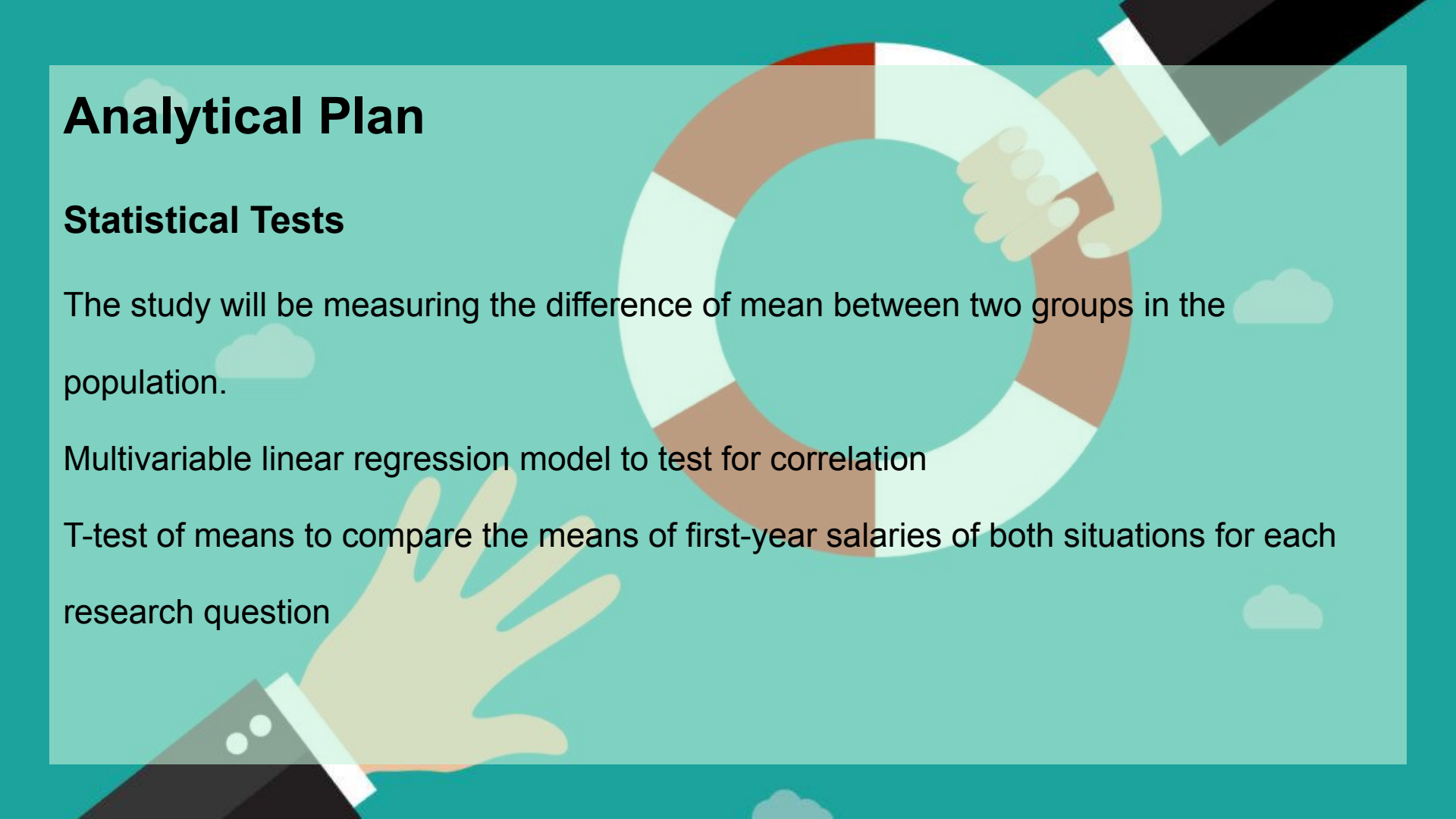
Analytical Plan

Statistical Tests

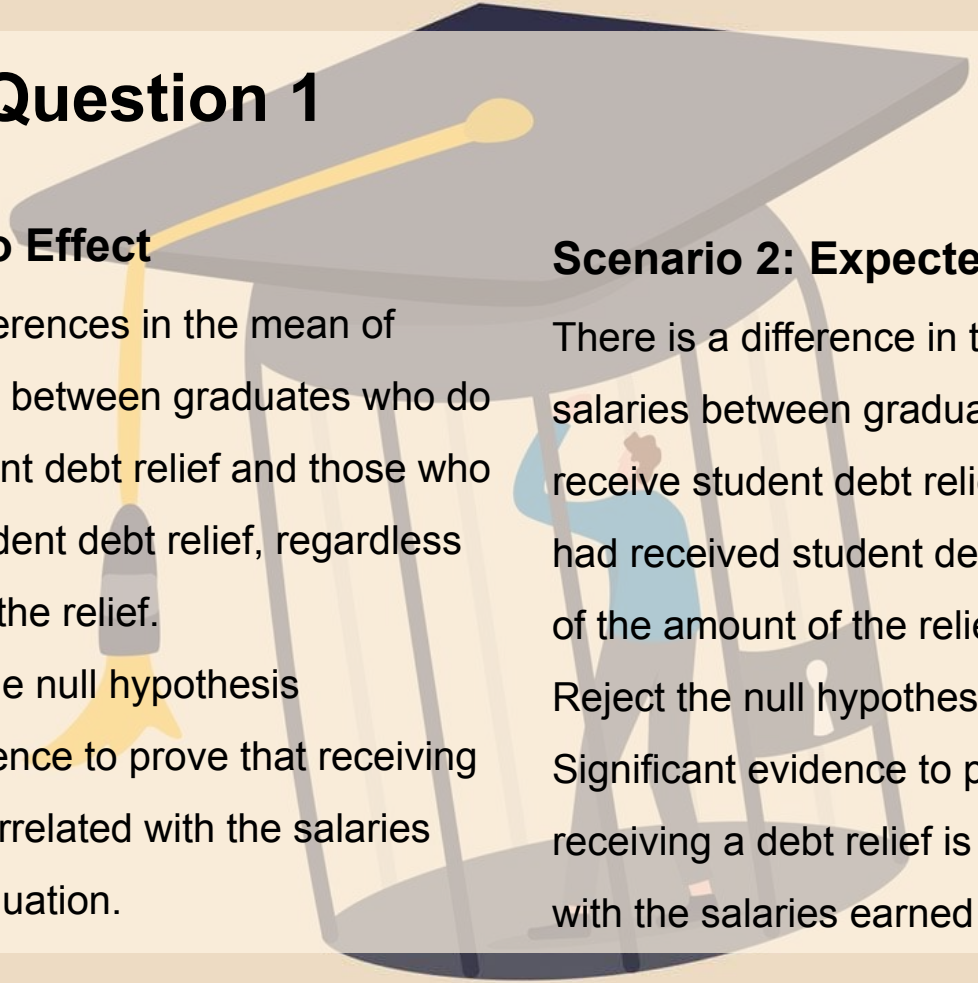
The study will be measuring the difference of mean between two groups in the population.

Multivariable linear regression model to test for correlation

T-test of means to compare the means of first-year salaries of both situations for each research question



Research Question 1



Scenario 1: No Effect

There are no differences in the mean of first-year salaries between graduates who do not receive student debt relief and those who had received student debt relief, regardless of the amount of the relief.

Failed to reject the null hypothesis

Not enough evidence to prove that receiving a debt relief is correlated with the salaries earned after graduation.

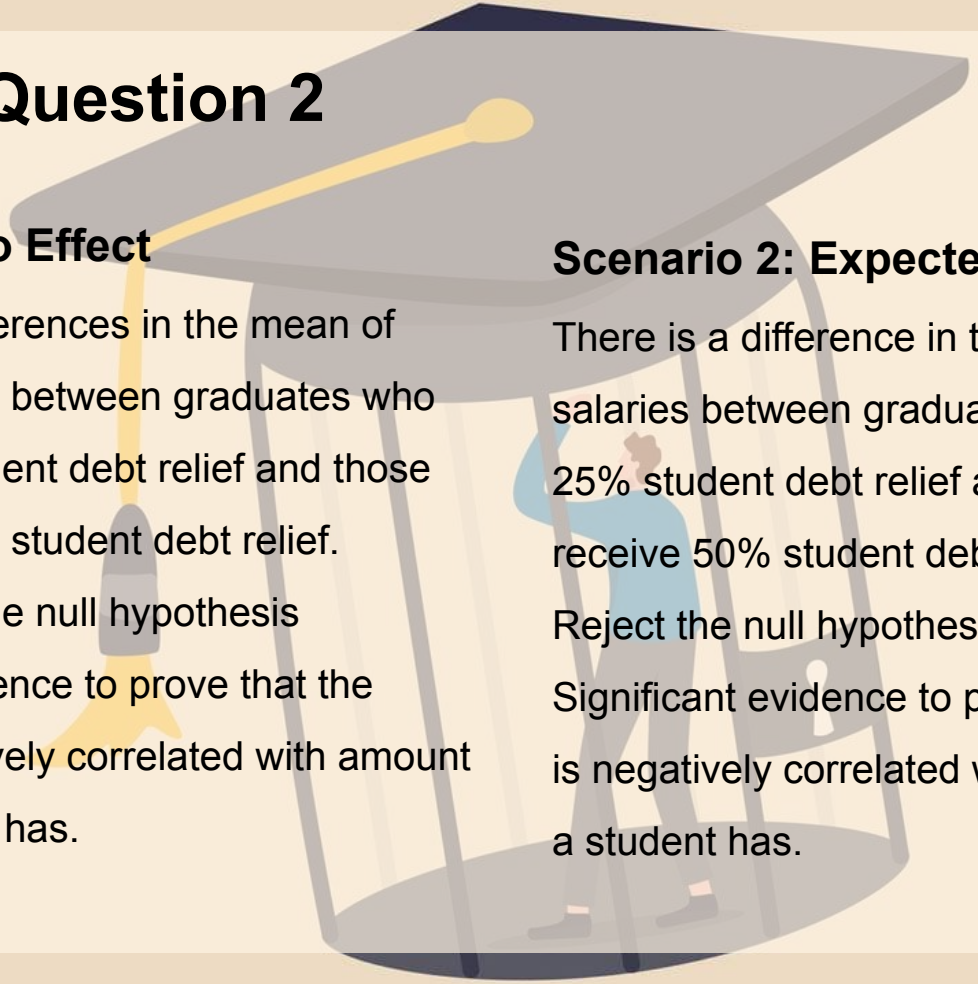
Scenario 2: Expected Effect

There is a difference in the mean of first-year salaries between graduates who do not receive student debt relief and those who had received student debt relief, regardless of the amount of the relief.

Reject the null hypothesis

Significant evidence to prove that that receiving a debt relief is positively correlated with the salaries earned after graduation.

Research Question 2



Scenario 1: No Effect

There are no differences in the mean of first-year salaries between graduates who receive 25% student debt relief and those who receive 50% student debt relief.

Failed to reject the null hypothesis

Not enough evidence to prove that the income is negatively correlated with amount of debt a student has.

Scenario 2: Expected Effect

There is a difference in the mean of first-year salaries between graduates who receive 25% student debt relief and those who receive 50% student debt relief.

Reject the null hypothesis

Significant evidence to prove that the income is negatively correlated with amount of debt a student has.

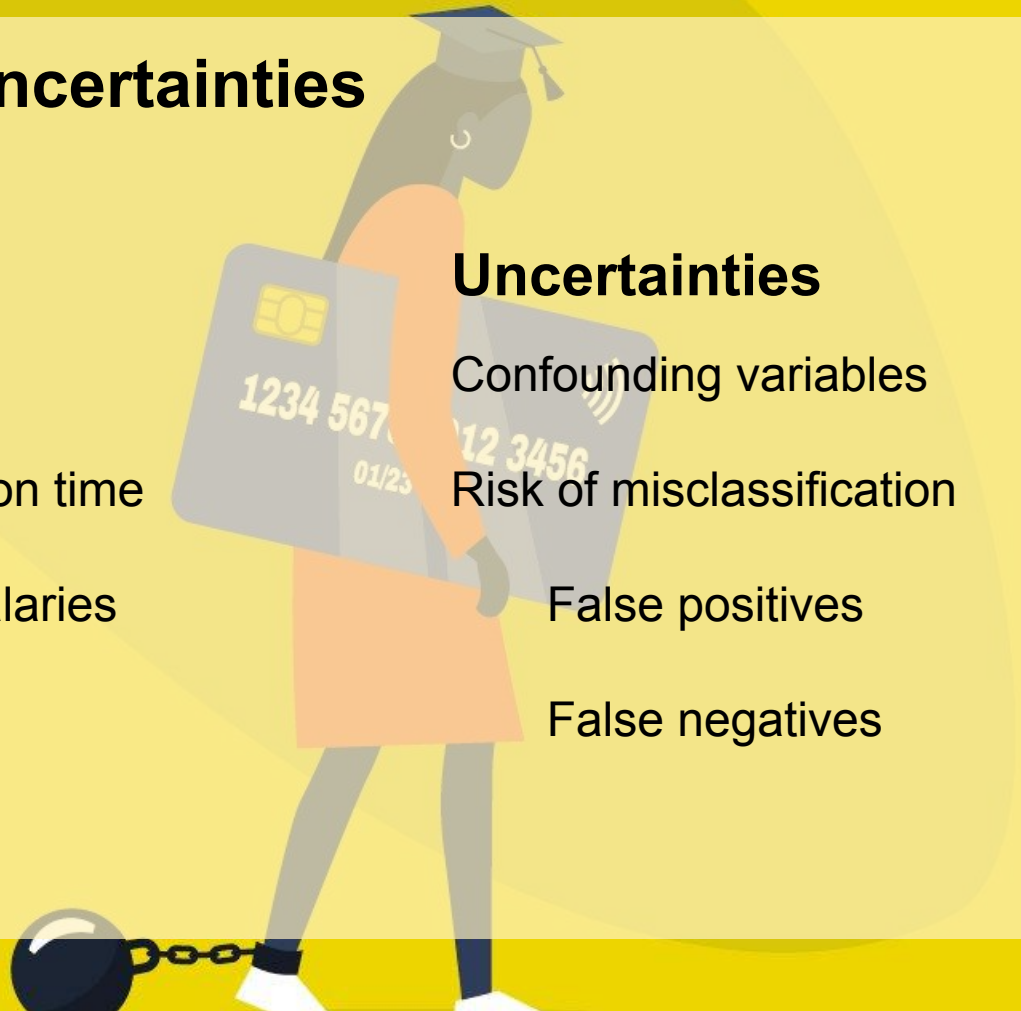
Limitation & Uncertainties

Limitation

Unable to find a job

Unable to graduate on time

False reporting of salaries



Uncertainties

Confounding variables

Risk of misclassification

- False positives
- False negatives

Result

Scenario 1: No effect

A debt relief and does not impact the asset allocation in the future

The amount of debt relief have no difference in the influence on the asset allocation in the future

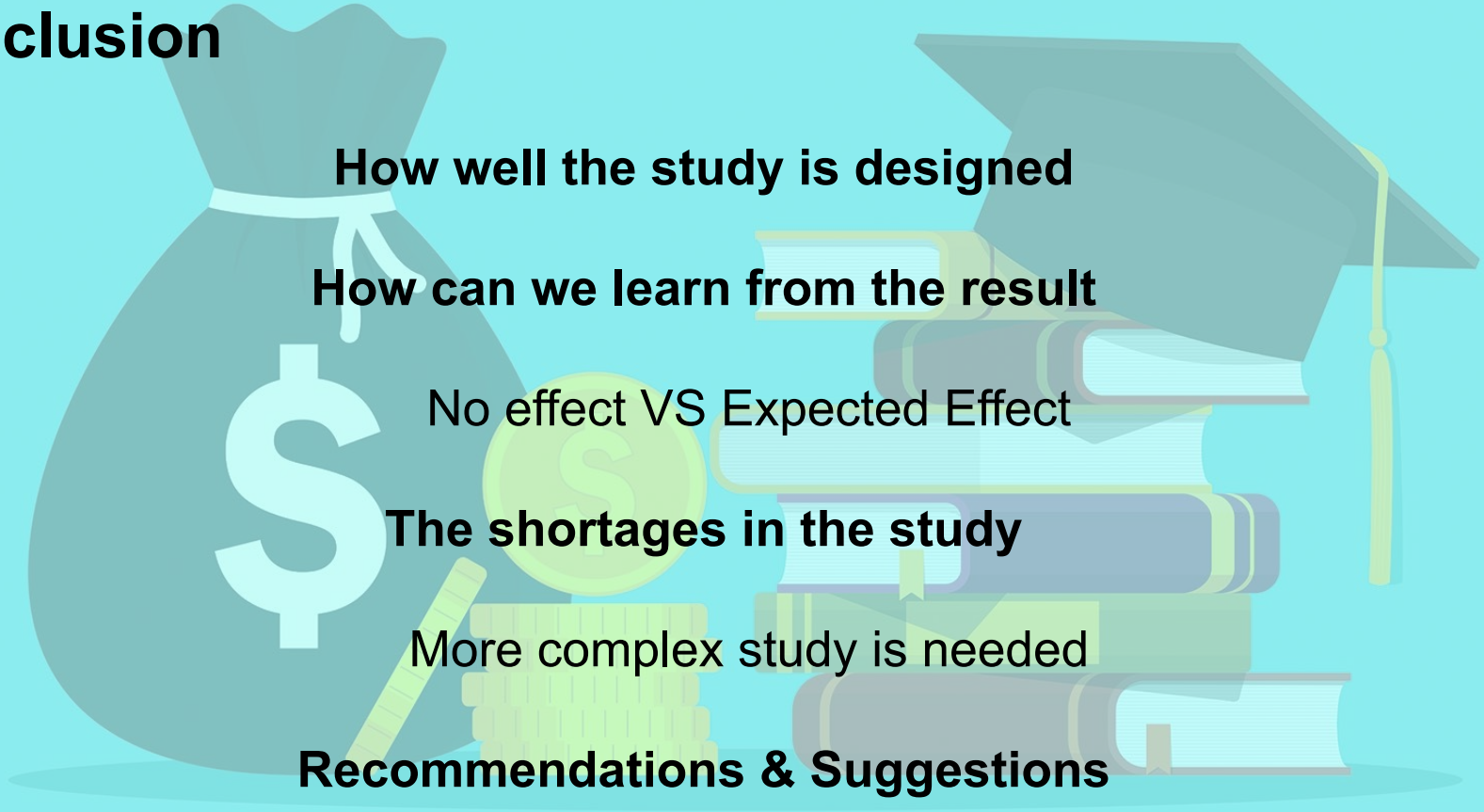
Scenario 2: There is an effect

There is an impact of debt relief on the asset allocation in the future

The amount of debt relief have different influence on the asset allocation in the future

To help students achieve a better future with their financial capabilities, offering debt relief which are able to remove a large portion of the debt of students would be a feasible strategy

Conclusion



How well the study is designed

How can we learn from the result

No effect VS Expected Effect

The shortages in the study

More complex study is needed

Recommendations & Suggestions

Thank You!