The Weight of Health Coverage

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Recap

We are trying to answer…

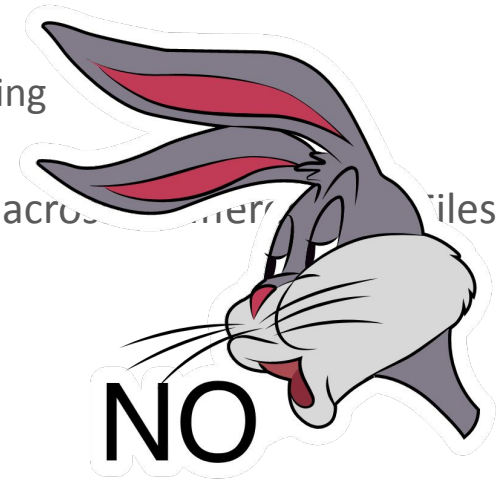
- Is there a causal relationship between having **health insurance** and **obesity**?
    - If yes -> which insurance-related variables can be attributed to this causal effect?
    - If not -> what about other medical conditions ?

Why do we even care?

- Worrying trend of increasing obesity rates
- Alternative perspective to obesity

The Dataset

- Oregon Health Insurance Experiment
  - Treatment = Medicaid vs Control = No health insurance
  - Randomized Control Trial 😊
  - Method of Randomization and Data Recording
- 74,922 Individuals and Hundreds of Variables acro[illegible]iles
  - Should we use all of them?



Pre-Processing and Cleaning the Data

- Which programming languages we use
- How did we simplify the dataset?
  - Identified relevant CSV files
  - Combined them based on a shared variable
  - Outlined the useful variables
  - Filtered out the unnecessary columns / variables
  - Excluded the individuals - whose relevant information wasn't complete
    - who had other health insurance

Back to Health Insurance vs Obesity…

Compute the Differences in mean Body Mass Index:

BMI (Total Population)

control	treat	ATE
29.80	29.72	**-0.08**

Obesity % (Total Population)

control	treat	ATE
41.19	40.09	**-1.10**

Minor changes in magnitude, compared to the pre-existing average

What if we partition the dataset based on Age or Gender?

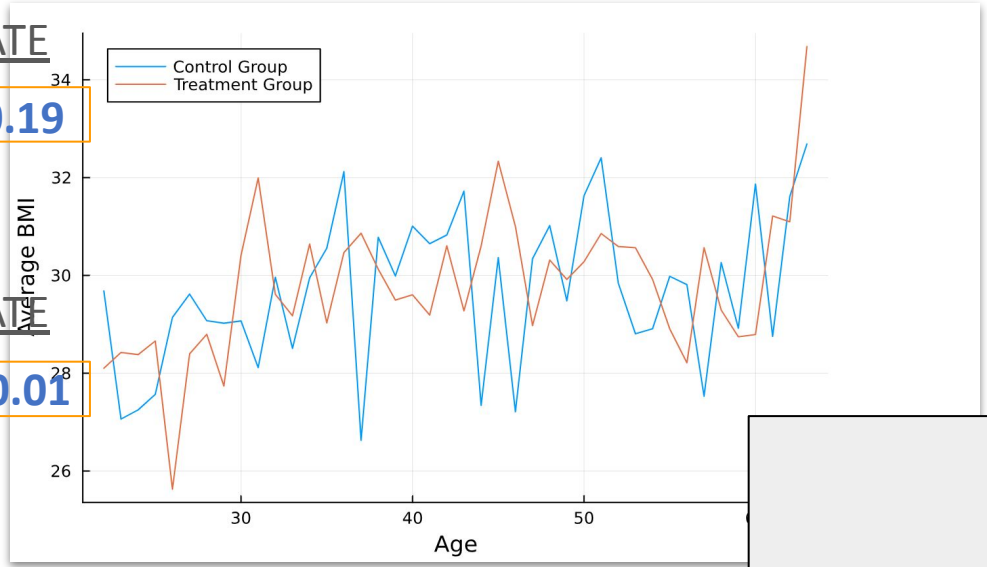
Male BMI

control	treat	ATE
29.02	28.83	**-0.19**

Female BMI

control	treat	ATE
30.42	30.41	**-0.01**

Age vs BMI



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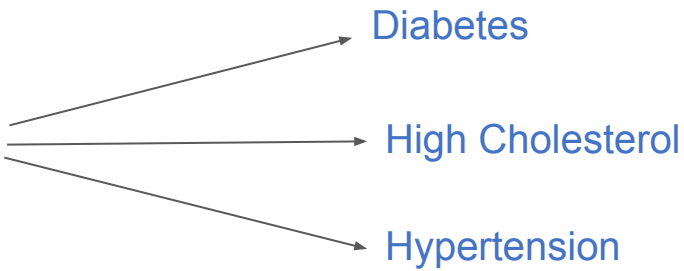
Our Initial Expectations

- BMI would be **lower** due to the increased availability of health services and medication
- BMI would be **greater** because having health insurance could give an incentive to gain weight

Other Medical Conditions

- Is the situation similar for others?
- **There is data ⇒ We can check!**



We check the final in-person measurements of people who had been diagnosed with their respective medical condition prior to the experiment

Medical Condition	Measurement	Treatment	Control	ATE	ATE in %
Diabetes	Hemoglobin (A1C)	6.65	6.71	-0.06	**0.87 %**
High Cholesterol	Total Cholesterol	211.02	213.91	-2.89	**1.37 %**
Hypertension	Systolic BP	129.88	130.35	-0.47	**0.36 %**
	Diastolic BP	82.32	83.15	-0.82	**0.99 %**

- Once again, there is no significant difference!
- Treatment group got **minimal benefit** from having Health Insurance

What could explain the lack of difference?

- Treatment group didn’t take advantage of increased healthcare availability
- Medicaid Program is ineffective

How to check?

- Ask participants!
    - Qualitative measurements
    - Quantitative measurements

Quality

	Treat	Control	Effect
Got all needed Medical Care (0-1)	0.66	0.60	**10.34%**
Got all needed Medication (0-1)	0.77	0.73	**6.31%**
Quality of medical care (1-5)	3.08	2.62	**17.26%**

Quantity

	Control	Treat	Effect
# of doctor visits	6.34	8.04	**26.75%**
# of hospitalizations	0.24	0.35	**43.5%**
# of emergency department visits	0.42	0.58	**38.46%**

Well, there is an increase

Difference in Diagnosis Rates

	Treat diagnosed during the program	Control diagnosed during the program	Effect
Diabetes	2.64%	1.56%	**+68.65 %**
High cholesterol	9.79%	6.42%	**+52.82 %**
Hypertension	9.54%	6.91%	**+38.39 %**

again, an increase

Evaluation

- Treatment group made use of their health insurance!
  - More likely to seek medical care
  - Happier with the medical care
- Is Medicaid ineffective?
  - No significant improvement in medical conditions
- Any other possible contributing factors?

Final Words…

- Possible explanations:
  - Treatment of some medical conditions might be more complex
  - We could change our interpretation
  - Only one dataset!
- What does it say to us about the effect having health insurance?

Thank You For Listening!
Q&A

Subjective

	Treat	Control	Effect
Got all needed medical care(0-1)	0.66	0.60	**10.34%**
Got all needed medication (0-1)	0.77	0.73	**6.31%**
Quality of medical care (1-5)	3.08	2.62	**17.26%**

Is this really a significant increase?

Objective

	Treat	Control	Effect
# of doctor visits	6.34	8.04	**26.75%**
# of hospitalization	0.24	0.35	**43.5%**
ED Low Uninsured	0.42	0.58	**38.46%**