Activity: Empirical Tools of Public Economics
Econ 308

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1 Air Quality and Covid-19

There have been a number of recent studies that estimate a positive association between regions with poor air quality and Covid-19 mortality rates.[1]

  a. Write-ups about such studies in the popular press often suggest that poor air quality increases the severity of illness from Covid-19. Why might this inference be unwarranted?

  There are other confounders like poverty, population density, etc. that affect the rate of mortality

  b. Suppose you were tasked with empirically testing the hypothesis that poor air quality impacts Covid-19 mortality rates.

   i. Suggest a randomized controlled trial to test this hypothesis. Assume away any legal, financial, or ethical constraints.

   Take two groups, put one in a polluted area and one in a clean area, and give both groups Covid

   ii. Suggest a plausible quasi-experiment to test this hypothesis.

   LA County mortality rate on days with vs. without inversion.

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[1]https://www.lung.org/blog/covid-19-mortality-and-air-pollution

2 Gruber 3.14: Tax Cut Effects

Your state introduced a tax cut in 2017. You are interested in seeing whether this tax cut has led to increases in personal consumption within the state. You observe the following information:

Year	Consumption in Your State
2012	330
2014	350
2016	370
2018	430

a. Your friend argues that the best estimate of the effect of the tax cut is an increase in consumption of 60 units, but you think that the true effect is smaller because consumption was trending upward prior to the tax cut. What do you think is a better estimate?

40 units (trend before vs. trend after)

b. Suppose that you find information on a neighboring state that did not change its tax policy during this time period. You observe the following information in that state:
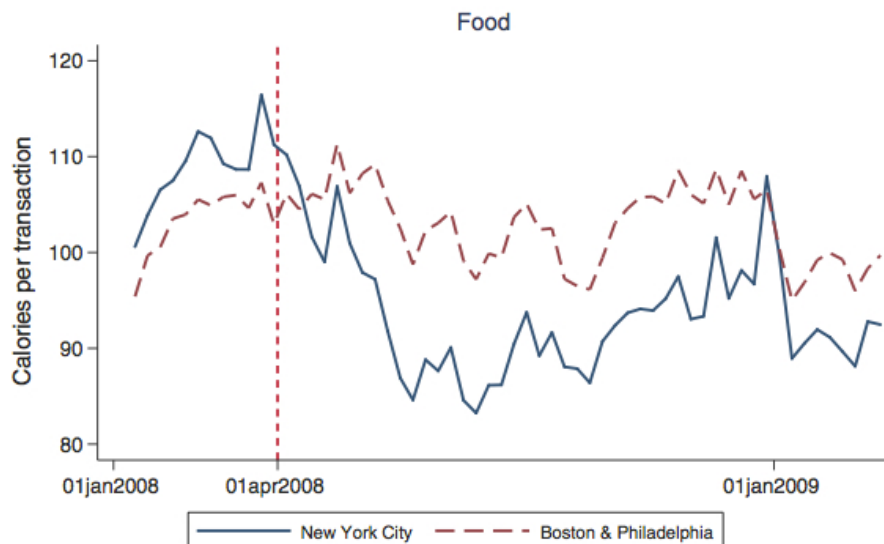
Year	Consumption in Neighboring State
2012	300
2014	320
2016	340
2018	350

Given this information, what is your best estimate of the effect of the tax cut on consumption? What assumptions are required for that to be the right estimate? Explain.

50 units (assuming similar trend would otherwise happen)

3 Bonus: Starbucks Calorie Posting

The Affordable Care Act (Obamacare) included nutritional labeling requirement for restaurants with at least 20 locations. A similar policy was enacted on April 1, 2008 in New York City (but nowhere else). Bollinger et al. (2011) study the effect of the New York City law on caloric purchases at Starbucks, summarizing their data in the figure below:

The average food calories per transaction were:

	New York City	Boston and Philadelphia
Before Law	107	102
After Law	87	96

a. What is the difference-in-differences estimate of the causal effect of the NYC labeling law?

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b. Do you find this to be a surprising result? Why or why not?

No, people tend to be self-conscious.

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