

ECNS 432 ANSWER KEY

Quiz #8  
Fall 2017

\_\_\_\_\_Name

4.) In 1986, Barton County, KS voted to allow the sale of alcohol consumption by the drink in bars and restaurants. In other words, Barton County went from being classified as a “dry” county to being classified as a “wet” county. Before 1986, alcohol by the drink could only be purchased in special clubs and lounges that required paying a membership fee; this greatly limited the opportunities to consume alcohol in public settings. A Barton County public official has asked you to evaluate whether going “wet” increased violent crime.

To evaluate going “wet”, you have decided that you must first select an appropriate control group (i.e. a county that remained “dry” during this same period). Consider the following characteristics of Barton County and the bordering counties of Pawnee, Stafford, and Rice.

	<u>Barton County</u>	<u>Pawnee County</u>	<u>Stafford County</u>	<u>Rice County</u>
% of population that is white	85%	90%	75%	82%
Whether Sunday liquor sales are legal	Yes	No	Yes	No
% of population that voted democrat	40%	35%	35%	85%
County-level unemployment rate	8%	3%	8%	12%
% of population with a HS diploma	81%	90%	75%	60%

a.) (7 points) Assuming you can only choose one, which of the three bordering counties (Pawnee, Stafford, or Rice) would you choose as your control county? WHY did you choose this county?

I would pick Stafford County

**b.) (8 points)** To evaluate the impact on violent crime, you have data on average monthly violent crimes committed per 1,000 people for both Barton County and your control county (which we will just refer to as County X). You have these data for 1985 and 1987 as follows:

	Barton County		County X	
	<u>1985</u>	<u>1987</u>	<u>1985</u>	<u>1987</u>
Violent crime rate	1.5	3.0	2.3	1.8

If you were to **only** use within-Barton County variation in crime, would you likely be over- or under-estimating the true effect of going “wet” on violent crime rates? Using a difference-in-difference method, how much of a change in violent crime would you attribute to going “wet”? Which method is preferred and WHY?

You would understate the effect if only using within-Barton County variation.

Using a DD calculation, you would attribute a 1 unit increase in crime to going wet.

DD is preferred method as it takes into consideration what would have happened to crime rates anyway in the absence of a treatment.

**c.) (8 points)** Now let’s assume you have more “pre-treatment” data on average monthly violent crime rates for Barton County and County X:

	Barton County					County X				
	<u>1979</u>	<u>1981</u>	<u>1983</u>	<u>1985</u>	<u>1987</u>	<u>1979</u>	<u>1981</u>	<u>1983</u>	<u>1985</u>	<u>1987</u>
Violent crime rate	1.0	1.2	1.35	1.5	3.0	2.3	2.3	2.3	2.3	1.8

Given this new information, how does your inference from part b.) change? That is, without the consideration of pre-existing trends in violent crime, is your diff-in-diff estimate from part b.) biased? If so, does your part b.) estimate overstate or understate the true impact of going “wet” on violent crime? You do not necessarily have to do any calculations, I am mainly looking for the correct intuition.

Our DD estimate from part b. will be “too big” if we do not take into account the pre-existing trend in crime. Crime was trending upward in Barton before the wet law went into effect. The crime rate was flat in county X over the same time period.