The Effects of Alcohol Consumption: Extension of Regression Discontinuity Designs

Parent characteristics and new outcomes

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Earlier this Semester:

Carpenter and Dobkin (2009)

With data from the National Health Interview Survey (NHIS), the authors employed a regression discontinuity design (RDD) to study how alcohol consumption changed at the age cut-off of 21 and how this affected mortality. They found statistically significant and substantial results: “the increase in alcohol consumption that occurs at age 21 results in an immediate 9 percent increase in mortality”
Hypotheses and Goals

Of all the papers we have covered, I found these results to be amongst the most important and relevant to policy. I wanted to expand on these findings in the following ways...

Goals:

- Carpenter and Dobkin focus only on mortality as an outcome variable. However, although alcohol-related mortality rates are definitely concerningly high, still only a small number of total young drinkers are affected by mortality: according to the Social Security Administration, 21 year olds have a 0.08% change of dying in a given year. Because of this, Carpenter and Dobkin’s results might not capture the full, broad effects of alcohol consumption. In this paper, I include outcomes such as **mental health** (anxiety, depression), **social interactions**, **aspirations**, **sexual behavior**, **arrests**, etc. I hypothesize that alcohol consumption will have insignificant effects on these outcomes, so mortality results may paint a more bleak picture.

- **Family behavior and decisions** have often been suggested as an explanatory factor in young drinking behaviors (*i.e.*, you may be more likely to drink if your parents drink as well). Unlike Carpenter and Dobkin, our dataset has access to parental variables that allow us to analyze possible effects. However, I predict that these effects will also likely be small.
Carpenter and Dobkin (2009): Mortality

- Uses RDD and finds significant increase in mortality that is largely caused by increase in amount and frequency of consumption, not in whether or not individuals have ever consumed alcohol.

Yörük and Yörük (2012): Psychological Well-being

- Uses RDD and find no significant effects on psychological well-being:

“This result suggests that although stricter alcohol control targeted toward young adults may result in meaningful reductions in alcohol consumption, the immediate spillover effects of such policies on psychological well-being are relatively limited.”

Fletcher (2018): Risky Behaviors

- Uses RDD and finds relatively large behavioral effects

“This paper uses the Add Health data combined with a regression discontinuity approach to examine the effects of alcohol access on sexual behavior, drunk driving, violence, and other outcomes. The results suggest relatively large effects that appear concentrated in men.”
In 1968, the University of Michigan began to survey individuals in the United States about demographics and economic measures.

Over time, they have added people to the survey, as people are born into families.

In 2005, they began a supplementary survey called the Transition into Adulthood survey (TAS), which includes detailed data on the behavior, health, and demographics of young adults.

Variables include mental health, physical health, education, self-reported health, economic outcomes, employment, relationships, etc.

Well suited to this purpose as the alcohol variables (whether ever had alcohol; drinks per day; days binged; whether alcohol problem) are similar to those in Carpenter and Dobkin
The Model:

Model 1:

\[ y_{ai} = \beta^y X_{ai} + g^y(a) + \pi^y D_{ai} + \nu^y_{ai} \]

Model 2:

\[ y_{ai} = \beta^y X_{ai} + g^y(a) + \pi^y D_{ai} + \gamma^y PAR_{ai} + \delta^y (D_{ai} \ast PAR_{ai}) + \nu^y_{ai} \]

We then take averages of outcome variable for each age to find full effects.

*I also include Year and State Fixed Effects*
Tentative Results: Whether Ever Consumed Alcohol
Tentative Results: Amount Alcohol (Among Drinkers)

Drinks Per Day

Days More Than 4-5 Drinks
Tentative Results: Other Outcomes (College Aspirations?)
### Tentative Results: Parent Characteristics

<table>
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<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>p-Value</th>
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<td>0.076</td>
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<tr>
<td>WtrParentDrink=1</td>
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<td>AgeSq</td>
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<td>Constant</td>
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| N                         | 8099        |
| r2                        | 0.149       |

* p<0.05, ** p<0.01, *** p<0.001
Conclusions and Questions

Conclusions

1. Carpenter and Dobkin found meaningful and significant effects of alcohol consumption on mortality; however, mortality as an outcome is not able to encapsulate broader effects.
2. Using PSID, the 21 age cut-off is found to significantly increase the proportion of individuals who have ever drunked, but not drinks per day or binge drinking (different than C&D)
3. Individuals with parents who drink are more likely to drink when they turn 21

Questions

1. What do I do when the interview month is same as birth month?
2. Should I include year fixed effects?
3. Is it okay that individuals can appear multiple times in the regression?