Assignment 4

Jin

1. (Answer) Obama’s cycle of crime asserts that one-time criminals would be adversely affected by longer incarceration. In other words, an additional year of incarceration for one-time criminals will cause higher rate or criminal activities among one-time criminals.
2. (Answer) My friend’s research design has some problems. An ideal design should make sure that the treatment group and the control group have the same property. However, here we do not know if the treated group(the group that were incarcerated for shorter years) and the control group(the group that were incarcerated for longer years) have the same property. Rather, it is possible that the ones that are sentenced longer already had higher propensity to commit crime than others because of some factors we cannot really measure.
3. Perform a balance test. Does the judge's party really seem to be randomly assigned?

Control Treatment Difference

Republican judge 0.440 0.649 -0.209\*\*\*

Severity of crime 1.559 2.713 -1.155\*\*\*

(Answer) The difference between treatment group and the control group is statistically significant, so it does not really seem to be randomly assigned.

5.

|  |  |
| --- | --- |
|  | (1) |
|  | Months in jail |
| Republican judge | 3.222\*\*\* |
|  | (8.77) |
|  |  |
| Severity of crime | 18.15\*\*\* |
|  | (80.21) |
|  |  |
| \_cons | -19.47\*\*\* |
|  | (-37.46) |
| *N* | 5000 |

*t* statistics in parentheses

*\*p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

Note: The correlation between months in jail and republican judge is statistically significant.

1. Interpret the coefficient on your instrument from the first stage.

(Answer) Controlling for severity of crime, if a criminal is assigned with a republican judge, then the sentence is 3.2 months higher.

7.

|  |  |
| --- | --- |
|  | (1) |
|  | recidivates |
| Republican judge | 0.143\*\*\* |
|  | (11.47) |
|  |  |
| Severity of crime | 0.189\*\*\* |
|  | (24.61) |
|  |  |
| \_cons | -0.114\*\*\* |
|  | (-6.48) |
| *N* | 5000 |

*t* statistics in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

Note: The correlation between recidivates and republican judge is statistically significant.

8. (Answer)

9.

|  |  |
| --- | --- |
|  | (1) |
|  | recidivates |
| Months in jail | 0.0443\*\*\* |
|  | (7.68) |
|  |  |
| Severity of crime | -0.615\*\*\* |
|  | (-5.85) |
|  |  |
| \_cons | 0.748\*\*\* |
|  | (7.10) |
| *N* | 5000 |

*t* statistics in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

Note: There is a treatment effect of months in jail on recidivates, as the coefficient of months in jail is statistically significant.

1. State the F-stat in your writeup. It does not need to go into your table (although, in an actual publication it would). Is it above the conventional threshold?

(Answer) The F-stat in this IV regression is 76.868. It is above the conventional threshold of 10 (reference: <https://www.statisticshowto.com/weak-instrument-definition/>)

1. Compare your answer to question #8 (above) to the IV coefficient in #9.

(Answer) It is the same.

1. Complete these sentences.
   * In the research design above (using randomized judges), the **always-takers** are the criminals who are always serving longer months no matter they are sentenced harshly or generously.

* The **never-takers** are the criminals who are always serving less months no matter they are sentenced harshly or generously.

* The **compliers** are the criminals who are serving longer months only if they are sentenced harshly.

* The **defiers** are the criminals who are serving longer only if they are sentenced generously.

1. Comment on the monotonicity assumption and the possibility of "defiers" in this setting.

(Answer) The defiers in this setting will be those who serve the sentence longer when they are sentenced lightly and serve shorter months when they are sentenced harshly. It does not make sense because criminals cannot decide for themselves whether to serve the sentence or not. Thus, the monotonicity assumption holds and there would be no defiers in this setting.

1. In your dataset, what types of defendants are compliers?

(Answer) The ones who were sentenced harsher and actually served that sentence. (Those that were not remitted or succeeded in escaping from jail)

1. Does the cycle of crime hypothesis appear to be true for the compliers?

(Answer) Yes, because the IV coefficient turned out statistically significant and the treatment group and the control group have both always takers and never takers. Thus, the coefficient provides information about the compliers.