**Question 1.**

Obama’s "cycle of crime" implies that harsh sentencing directly causes the creation of more criminals.

**Question 2.**

My friend’s research design assumes that correlation implies causation, which most likely is incorrect. Length of the prison sentence is likely not randomly assigned, so my friend does not have a clean identification strategy. For instance, there could be an omitted third variable, such as a person’s involvement in certain types of criminal organizations which could make them more likely to commit the types of crimes that are subjected to longer prison sentences. At the same time, this third variable could also be positively related to the main dependent variable, as people in this criminal organizations might tend to return to the organizations after serving their sentences, thereby committing and being convicted for crimes a second time. My friend’s research design does not account for such a spurious relationship.

**Question 4.**

**Table 1.** Balance Table over Judge’s Party.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Control | Treatment | Difference |
| Severity of Crime | 1.979 | 1.966 | 0.014 |

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

**Note:** This table reports the means and the differences between the means of our treatment (Republican appointed judge) and control groups (Democrat appointed judge) for our main covariate, *Severity of Crime*. The table clearly shows that average severity of crime does not vary significantly Republican and Democratic judges, suggesting that our data is balanced. As such, this indicates that the political affiliation of judges in our dataset are randomly assigned.

**Question 5.**

In the first state of the IV design, I will predict the length of a defendant’s prison sentence using a judge’s political party as an IV. Since the severity of one’s crime also impacts the length of their sentence, I will control for it in my model.

**Table 2.** First stage IV design estimates: Effect of a judge’s political party on the length of a defendant’s sentence.

|  |  |
| --- | --- |
|  | Months in Jail |
| Republican Judge | 3.2\*\*\* |
|  | (.37) |
| Severity of Crime | 18\*\*\* |
|  | (.23) |
| Constant | -19\*\*\* |
|  | (.52) |
| Observations | 5000 |
| *R*2 | 0.565 |

Standard errors in parentheses

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

**Note:** The table above reports our First stage IV design regression estimates of months a defendant is sentenced in prison (*Months in Jail*) as a function of the political party affiliation of a judge (*Republican Judge*), and the severity of the defendant’s crime. *Republican Judge* is our IV instrument, and it equals 1 for judges appointed by a Republican. Standard OLS standard errors are reported.

**Question 6.**

The coefficient of the instrument (*Republican Judge*) suggests that on average, the length of prison sentences is longer by 3.2 months when a judge is appointed by Republicans.

**Question 7.**

**Table 3.** Reduced form regression estimates: Effect of a judge’s political party on a defendant’s recidivism.

|  |  |
| --- | --- |
|  | Recidivates |
| Republican Judge | .14\*\*\* |
|  | (.012) |
| Severity of Crime | .19\*\*\* |
|  | (.0077) |
| Constant | -.11\*\*\* |
|  | (.018) |
| Observations | 5000 |
| *R*2 | 0.128 |

Standard errors in parentheses

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

**Note:** The table above reports our reduced form regression estimates of whether a defendant was convicted of a second crime after he/she was out (*Recidivates*) as a function of the political party affiliation of a judge (*Republican Judge*), and the severity of the defendant’s crime. Standard OLS standard errors are reported.

**Question 8.**

Ratio of the reduced form = 0.14/3.2 = 0.44.

**Question 9.**

**Table 4.** Two-stage least square estimates: Effect of the length of a defendant’s sentence on his / her recidivism.

|  |  |
| --- | --- |
|  | Recidivates |
| Months in Jail | .044\*\*\* |
|  | (.0058) |
| Severity of Crime | -.62\*\*\* |
|  | (.11) |
| Constant | .75\*\*\* |
|  | (.11) |
| Observations | 5000 |
| *R*2 | -0.944 |

Standard errors in parentheses

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

**Note:** The table above reports IV regression estimates of whether a defendant was convicted of a second crime after he/she was out (*Recidivates*) as a function of the severity of their crime, and the length of their sentence (*Months in Jail*) instrumented by the political party affiliation of a judge (*Republican Judge*. Standard OLS standard errors are reported.

**Question 10.**

F-stat = 75.7, which is far above the conventional threshold.

**Question 11.**

The two values are equal.

**Question 12.**

Complete these sentences.

* + In the research design above (using randomized judges), the **always-takers** are the defendants who are always going to receive longer sentences no matter the judge’s political affiliation.
* The **never-takers** are the defendants who are never going to receive longer sentences no matter the judge’s political affiliation.
* The **compliers** are the defendants who are going to receive longer sentences only if they are adjudicated by a Republican judge.
* The **defiers** are the defendants who are going to give longer sentences only if they are they are adjudicated by a Democratic judge.

**Question 13.**

The monocity assumption states that although the instrumental variable may not have an effect on some people, all those who are affected are affected in the same direction. Thus, it implies that there are no defiers. In this setting, the monotonicity assumption is violated if there are defendants who receive longer sentences only if they are adjudicated by a Democratic judge. They could perhaps be identified using mean *Months in Jail*, such that conditional on the severity of a defendant’s crime, those defendants who received a longer than average sentence from a Democratic judge are defiers. A better way might be to look through each record in the dataset and use our best judgement based on the available data to decide of someone is a defier.

**Question 14.**

The defendants who receive longer sentences only if they are adjudicated by Republican judges are compliers in the dataset. They could perhaps be identified using mean *Months in Jail*, such that conditional on the severity of a defendant’s crime, those defendants who received a shorter than average sentence from a Democratic judge are compliers. A better way might be to look through each record in the dataset and use our best judgement based on the available data to decide of someone is a complier.

**Question 15.**

Yes, the cycle of crime hypothesis appears to be true for the compliers. The model shows that that every additional month in jail increases a defendant’s probability to be convicted of a second crime after he / she is released by 0.04 points (statistically significant). Although a coefficient of 0.04 may appear to be small, but if we consider the effect of an additional year of prison sentence, the model indicates that it would increases someone’s probability to recidivate by 0.04\*12 = 0.48, i.e. almost half a probability point. The F-statistic is also much higher than the convectional threshold, and the balance table suggests random assignment, both of which give me further confidence in the hypothesis being supported. Finally, I think the exclusion restriction assumption holds in our model since it is very unlikely that the instrumental variable, a judge’s party affiliation, directly impacts our main dependent variable of interest, a defendant’s recidivism.