

Project Proposal

Practical Data Science I

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Topic

Expulsions and suspensions, known as an exclusionary discipline, have commonly been used to punish students who disrupt or create dangerous situations in academic environments. The intentions of suspensions are to disconnect a student from his or her peers as punishment and give the student time to reflect on his or her actions. However, most suspensions are more harmful than beneficial. Research has shown that by temporarily dismissing students, schools are not holding students accountable. Students return to school behind on material and continue to become more disconnected from their academics as a result. Suspensions increase a student's probability of dropping out and being in the juvenile legal system. One leading cause of suspensions pre-2015 was willful defiance, which is defined as "disrupting school activities or otherwise willfully defying the valid authority." In California, in 2012, there were more than 600,000 suspensions with 43% of them being for willful defiance.¹ It has been shown that students who are suspended or expelled are nearly three times more likely to encounter the juvenile justice system the following year.² In this paper, we investigate whether measures aimed at eliminating suspension due to willful defiance reduced juvenile arrest rates in California.

Project Question

On January 1st, 2015, the state of California passed new legislation that favored a new approach to schools' management of suspension and expulsion rules. This policy, known as AB-420, aimed to reduce the number of suspensions and expulsions due to willful defiance. Suspension and expulsion would only be used under extreme circumstances, such as weapon possession. Researchers have noted that the overuse of suspensions and expulsions has contributed significantly to dropout rates in schools. Thus, this policy prioritizes creating a safe environment over punishing illicit behavior.

Our question is the following: did policies aimed at reducing suspensions due to willful defiance decrease juvenile felony arrest rates in California?

Project Hypothesis

We hypothesize that juvenile arrest rates decreased as a result of the enactment of AB-420 (2015). By analyzing the records of suspensions and juvenile arrests per county in California between 2012 and 2018, we can measure the effectiveness of the policy intervention using a pre-post comparison and difference-in-difference analysis against states that did not have a policy change. Having data points for each country enables us to generate a linear regression model to fit the data.

Model Results

Predictions of the regression model for the pre-post comparison are shown in the figure below.

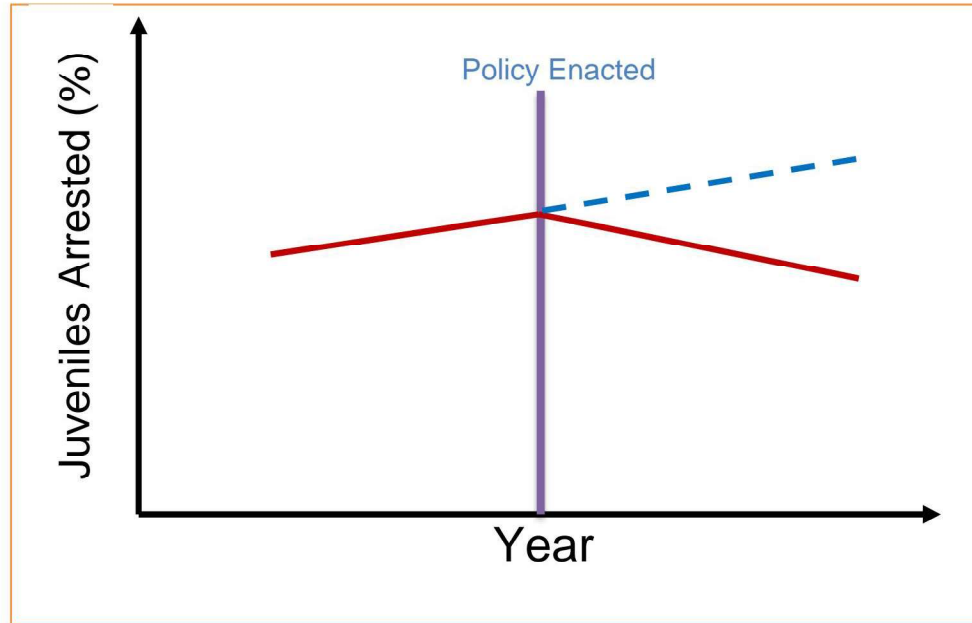


Figure 1: Expected Pre-post Analysis of AB-420 on Juvenile Arrest Rates

The red line indicates that the hypothesis was true, meaning that the policy helped reduce the percentage of future juvenile arrest rates. The blue dotted line indicates that the hypothesis was false, meaning that the enactment of AB-420 had no impact on reducing future juvenile arrest rates.

Final Variables Required

The final variables we need to conduct this analysis are the following:

1. County demographic/population
2. Cumulative enrollment per year of each school
3. Total suspensions per school
4. Total juvenile arrests per county
 - a. $\text{Percentage arrested} = \frac{\text{juveniles arrested per county}}{\text{student population across all schools per county}}$
5. Reason for suspension (counts for all and for each reason)
 - a. Violent
 - i. Injury and no injury
 - b. Weapons possession
 - c. Illicit drug-related
 - d. Defiance only
 - e. Other
6. Reason for arrest

7. Year

We will merge the county population dataset with the student suspension and arrest datasets by merging on county name and year. This merged dataset will contain all the variables we need to perform the analysis.

Data Sources

Data sources for this project are listed below:

1. Background information for introduction:
 - a. http://www.publiccounsel.org/press_releases?id=0088
2. Fabelo, Tony et al., Council of State Gov'ts Justice Ctr. & Pub. Pol'y Res. Inst., Breaking Schools' Rules: A Statewide Study of How School Discipline Relates to Students' Success and Juvenile Justice Involvement xii (2011), available at http://justicecenter.csg.org/files/Breaking_Schools_Rules_Report_Final.pdf .
3. Policy Change: https://www.ecs.org/wp-content/uploads/Suspension_and_Expulsion.pdf
4. Suspension Data (CA): <https://www.cde.ca.gov/ds/sd/sd/filesd.asp>
5. Bills enacted:
 - a. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB667 (2017)
 - b. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB1360 (2017)
 - c. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB420 (2015)
6. County demographic data:
 - a. <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>