Florida International University

CAP 5768 Fall 2018

Final Project Proposal

Effect of School Funding Inequalities on School Performance and Juvenile Crime

**Problem Statement and Goals**

This project will be focused on public education in the United States. Specifically, we will be investigating how states allocate funds for public schools and determine if there is any significant correlation between school funding and juvenile crime rates. This will be done at a state level, and then at a county level for the state of Florida. We will increase the scope of the project by considering a third variable: school performance metrics. We are curious to see if school funds are related to school performance, along with juvenile crime rates. Particularly, we will be asking the following questions:

* Is there a significant relationship between school funding attributes and juvenile crime on a national level?
* In the case of Florida public schools:
  + Is there a significant relationship between school funding attributes and juvenile crime at a county level?
* How does funding impact school performance? School performance is measured as follows:
  + School grades
  + School improvement ratings
  + State assessment scores

**Motivation**

The motivation for this project lies behind the rise of teacher-led strikes and protests and portrayal of their dire struggle by the media. For instance, teachers across Oklahoma went on strike to protest low pay, overcrowded classrooms, and decreased education spending in April of this year. The strike ended 10 days later after an agreement to increase salaries and funding was reached. Once a macro-view of school funding characteristics across the nation is created, a more detailed investigation into the funding crisis in Florida will be conducted. We are concentrating on only one state because each state has a different funding process.

The Florida Department of Education (FLDOE) oversees the Florida Education Finance Program (FEFP) which is the primary mechanism for funding school districts in the state. This program is supposed to guarantee that each student in the public education system has opportunities to programs and services appropriate to his or her educational needs, which are equal to a similar student. The FEFP formula is based on an individual student participating in a particular program and considers several factors, including varying property taxes, program costs, and costs of living. The FLDOE claims the formula doesn’t discriminate where students live or their economic factors. While this may be true, theoretically, we’ll be examining whether systemic funding inequalities still arise and their impact.

**Hypotheses**

In this research we’ll analyze the correlation between the amount of juvenile delinquents and the amount of funding a school receives (per county). We have reason to cogitate counties with lower educational funding are susceptible to high crime rates.

Although charter funding also includes the same sources as standard public schools, they have access to federal funds through a competitive grant process. The concept of charter schools started in the mid-nineties, a concept that began less than 20 years ago. We hypothesize that charter schools choose to reside in districts that receive more funding and therefore perform better than non-charter schools.

**Approach/Methodology**

We will begin our project by exploring and gaining a deep understanding of the different data sets we’ll be using. We’ll begin by cleaning the data sets with key attributes critical for our analysis. Then, we will proceed to create various graphs that produces the data for the reader and provides a visual interpretation of what we are seeing across the Floridas and its counties. In this introductory period, the reader can expect bar plots showing how fund allocations, juvenile crime rates, and school performances vary by state, or by counties in Florida when applicable.

Once we get a clear understanding of the data, the data sets will be merged, as needed, in order to perform different analysis. We will begin by performing a linear regression model on the different attributes of school funding versus juvenile crimes rates. This model will allow us to predict juvenile crime rates with the different attributes corresponding to school funding and will give us an r-squared value that will let us know how much of the variation in juvenile crime rates is due to the school funding attributes. The same procedure will be conducted by observing the relationship between school funding and school performances on different standardized tests (SAT/ACT scores, State Assessments, etc.)

Once a regression analysis is performed, we can continue to perform more robusts methods on the data sets. For example, we can utilize different clustering methods and regression trees among others, to define a relationship between the school funding attributes and juvenile crime rates. All with the same question in mind: Can school funding help predict juvenile crime rates? The same processes will be conducted with school performances, constantly seeking if a relationship exists with school funding. Time permitting, we will transform the data sets to see if any association rules arise and bring to light some surprising relationships between the different attributes.

We will conclude the project by comparing the performance of the different models. A section of the data set will be allocated for testing, and we are able to see how this data set performs with the different models created. We will discuss any interesting findings and give some recommendations on possible improvements.

**Data sources**

1. School funding by district from Census.gov
   1. The United States Census Bureau conducts annual surveys to assess the finances of elementary and high schools. Also included is a summary of data from the NAEP (National Assessment of Educational Progress).
   2. <https://www.kaggle.com/noriuk/us-educational-finances>
2. Juvenile arrests statistics from the Office of Juvenile Justice and Delinquency Prevention
   1. Data is available at the national, state, and county level for 29 detailed offense categories. This source will be used for state level information because the data becomes incomplete at the county level.
   2. <https://www.ojjdp.gov/ojstatbb/ezaucr/>
3. Florida data for juvenile arrests at county level from the Uniform Crime Reporting system
   1. <http://www.fdle.state.fl.us/FSAC/Data-Statistics/UCR-Arrest-Data.aspx>
4. Florida school grades and improvement ratings by school or district
   1. <http://www.fldoe.org/accountability/accountability-reporting/school-grades/>
5. Florida Standards Assessment scores
   1. [http://www.fldoe.org/accountability/assessments/k-12-student-assessment/results](http://www.fldoe.org/accountability/assessments/k-12-student-assessment/results/)
6. Florida ACT/SAT data
   1. <http://www.fldoe.org/accountability/accountability-reporting/act-sat-ap-data/>
7. Master file of all active Florida public schools
   1. <http://doeweb-prd.doe.state.fl.us/EDS/MasterSchoolID/index.cfm>

**Deliverables**

We’ll be providing a project report, Jupyter notebooks (for all code), github page (to provide detailed representation of data), and a Powerpoint presentation to illustrate our research to our peers.

**References**

“Funding for Florida School Districts,” Florida Department of Education, rep., 2013.

D. Goldstein and E. Dias, “Oklahoma Teachers End Walkout After Winning Raises and Additional Funding,” *The New York Times*, The New York Times Company, 12-Apr-2018.