PUI2015 Extra Credit Project Template

The Relationship Between Poverty Level and School Performance in New York

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Abstract: Under Mayor de Blasio tenure, reports has shown that homelessness in NYC is on the rise. The number of evicted household has been increasing and, consequently, more students are affected. Under the assumption that homelessness is an indicator of large percentage of student coming from low income household in any given school, the project seek to explore the relationship between the rate of student experiencing homelessness and the school performance.

The result is inconclusive. Noting that there is only data on charter school, homelessness is not found to be a good predictor for school test performance. Further exploration shows that the extreme poverty level as contextualized by the school zip code yields better result in predicting math and ELA test performance.

Introduction: Education has been the cornerstone of America's foundation and widely cited as one of the most important thing that enabled social mobility. However, economic crisis and policies that widens economic inequality bears an undeniable truth that household experiencing homelessness, along with their children, is on the rise across the states. This problem is magnified in New York City due its status as economic powerhouse that is experiencing a crisis in affordable housing. Even among on means-tested renter, poverty level hovers around 34% with a poverty line of $21,775 of 1-person household. Despite a recent rise of minimum hourly wage from $8.75 to $15, people experiencing homelessness may not directly benefits as they are also challenged by shortage of shelters, social stigma, inflexibility in commuting, and increasingly competitive job market.

One of the concerning byproduct of the condition is that poverty affects education. Despite federal and state level aid has been designed to specifically address this issue,

multiple studies concluded that socioeconomic background is still strongly correlated with student performance in school. Student from low income background are less likely to receive additional tutoring and extracurricular studies due to the household financial insecurity. Moreover, since admittance to school system is largely dictated by school district and commuting distance, the geographical location of the school also determine the composition of its students. Schools located on low income area are also filled with larger percentage of students coming from low income background. Under the assumption that homelessness is proxy of poverty level in any given area, there is a notion that schools having large percentage of homeless students are likely to have lower performance as reflected in test scores.

Data: One of the core dataset that provides detailed landscape on school performance is NYC Department of Education data on Math and ELA (English Language Arts) common core standardized test scores for grade 3 to 8 available in http:// schools.nyc.gov/Accountability/data/TestResults/default.htm. There are 4 classification ("levels") where Level 1 correspond to the lowest performance and 4 the highest.

To determine homelessness, NYC DoE and Department of Homeless Services provided a dataset containing the number of students experiencing homelessness in every school. However, the major deficiency of this dataset is that public schools are aggregated into school district, while the numbers are given on school level for charter schools. This means that the research can only be done on charter schools which constitutes of only 20% in term of numbers of school in NYC.

Due to that concern, another set of poverty indicators were prepared.in the form of median income level per income bracket for every zip code in NYC. This data is collected by US Census as part of American Community Survey 5-year estimate. By having percentage of population per income bracket with an interval of $5,000 on the low end of the spectrum, the number of household experiencing extreme poverty can be obtained on zip code level, which then can be linked to school performance data.

The major assumption in preparing this data are:

1. In general, students are attending the school on the same zip code
2. Desirability of schools is affected by socioeconomic composition of the school area

3. Extreme poverty (sub-$10k annual income) is heavily correlated with homelessness level in any given area
4. There is equal opportunity and mindset that enables homeless children to go to school as part of the struggle to achieve social mobility

Methodology: While there are large amount of factors that can affect a school performance and students homelessness should be evaluated on case-by-case basis (e.g. reason of homelessness, parental guidance), the research will attempt to perform an OLS regression towards homelessness rate in school and extreme poverty rate in the same zipcode as predictor of percentage of students attaining Level 1 (worst) result in Math and ELA subject. By merging school and zipcode-level poverty data through ATS codes, BEDS codes, and zipcode, a complete dataset is constructed.

Conclusions: Homelessness is not found to be a statistically siginificant predictor of test scores in charter schools, with almost zero R-score incidating poor fit and p-value approaching 1. However, extreme poverty level is a statistically significant variable, although less so on charter school compared to public school and R-score of slightly below 0.3. While this is in line with other studies, the result is inconclusive due to a key missing dataset that describes the education performance of each students, as in current dataset it cannot be determined that poor test scores are due to children from low income background. In fact, the result might be interpreted either as schools are not discriminative and provides equal opportunity, or that school performance are abysmal regardless of its students family income. Therefore, even using extreme poverty level data, we can only conclude in the context of school level but not necessarily its students.

Future work: Obtain complete dataset from NY State Education Department Student Information System (SIRS) through FoI request and perform the same analysis. .

this is a great project, worth continuing to work on. there is one major issue which is that of causation and covariance: if you find that school attended by poorer children host children that perform more poorly is it because the schools in those areas are just worst, and have less resources? or is the environment the children are in that causes the low scores?
you mention that in the methodology, but you should start thinking about how to debias this if you want to continue this project.

Bibliography

Institute for Children, Poverty, and Homelessness. *Homeless Students in New York City*. http://www.icphusa.org/index.asp?page=16&report=113&pg=114

The New York State Technical & Education Assistance Center for Homeless Students. http://www.nysteachs.org/

homelessness must overlap w extreme poverty, so you should discuss why one is significant and the oter is nt. why is homelessness is not a good pedictor? .   do you have enough data to say it is in fact not a good predictor? homelessness must overlap w extreme poverty, so you should discuss why one is significant and the oter is nt.

ED100. *How Do Student's Backgrounds Affect Their School Performance?* http://ed100.org/students/poverty/