Problem Set 5

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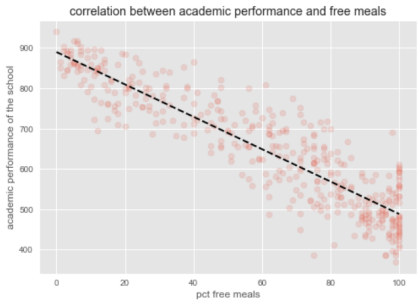
I will be using a data file that was created by randomly sampling of 400 California elementary schools were randomly sampled from California Department of Education's API dataset for the year 2000.[1]. A number of measures related to school performance were collected, including a measure of academic performance: API 2000 (academic performance index, on a scale of 200 to 1000; a composite score indicating a school's overall academic performance, based on statewide testing) as well as other attributes of elementary schools thought to be related to school performance: class size, enrollment, percent of students receiving free lunch, etc.

Visualization 1

The percent of the schools students receiving free or reduced price meals measures the extent of poverty in a school. In order to see the correlation between the academic performance (api score) and free meals, I plot the following graph:



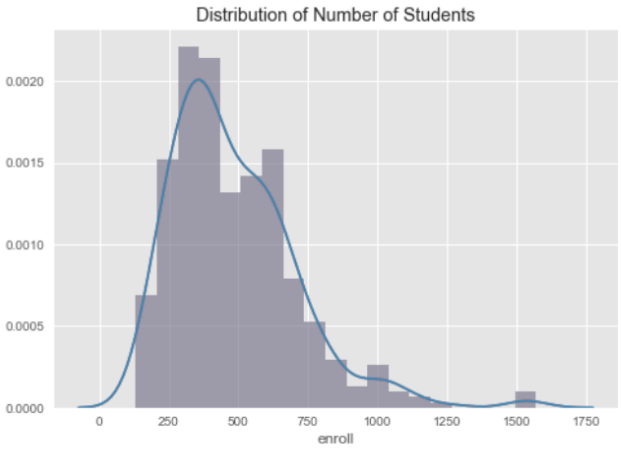
[1]This is not the actual data I want to work on. My data is not ready to make any inference yet, so I downloaded this data to work on temporarily for this project

It is widely known that environmental, psychological and physical factors hugely influence the academic career of poor children (Ferguson et al. 2013). We see from this graph that an increase in children who receive free meals in a school (meaning that this child is more likely to be poor), would decrease the api score for that school.

Visualization 2

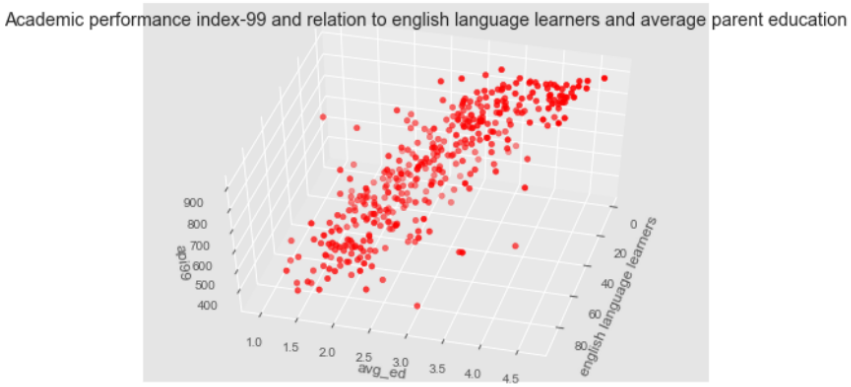
Now, I want to see the distribution of number of students by using enrollment numbers.

The following histogram shows that the distribution looks skewed to the right, so most of the sample values are clustered on the right side of the histogram. The peak of the data occurs about 350-400 students.



Visualization 3

In order to see how academic performance index in 1999 related to average parent education and English language learners, we can look the following graph:



It looks like there is a positive correlation between academic performance index and average parent education and English language learners. The findings are not surprising. There are studies that shows the parental education effect on student success. For example Chiu & Khoo (2005) estimated 15-year-old students test scores correlated significantly with mothers mean years of schooling. In a study among black and white men born from 1907-1946, Kuo & Hauser (1995) found that at least half the variance in educational attainment was attributed to family background, including parental schooling. On the other hand, according to Child Trends, a non profit organization, there is a achievement gap between ELL and non-ELL student about 40 percentage points in both fourth-grade reading and eighth-grade math.

References

Chiu, M. M. & Khoo, L. (2005), 'Effects of resources, inequality, and privilege bias on achievement: Country, school, and student level analyses', *American Educational Research Journal* **42**(4), 575–603.

Ferguson, K. T., Cassells, R. C., MacAllister, J. W. & Evans, G. W. (2013), 'The physical environment and child development: An international review', *International Journal of Psychology* **48**(4), 437–468.

Kuo, H.-H. D. & Hauser, R. M. (1995), 'Trends in family effects on the education of black and white brothers', *Sociology of Education* pp. 136–160.