



Analysis of the Massachusetts Education System

Provided by: Angela Kurczewski

Massachusetts Education Project

[By: Angela Kurczewski](#)

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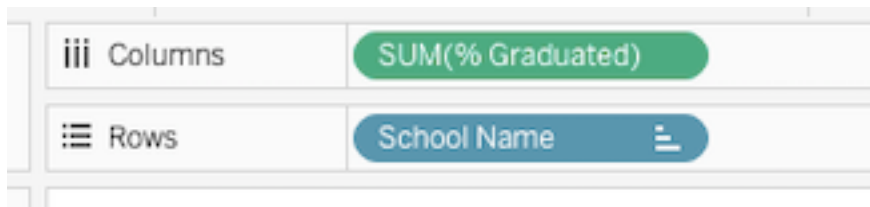
INTRODUCTION

For this project, the State of Massachusetts has requested an analysis of the performance of the schools in their state and how certain factors such as class size and math performance may affect overall graduation rates and future performance. I will address the following questions:

- Which schools are struggling the most?
- Does class size affect the percentage of students attending college?
- Which districts are performing at the highest level on the MCAS 4th grade math assessment?

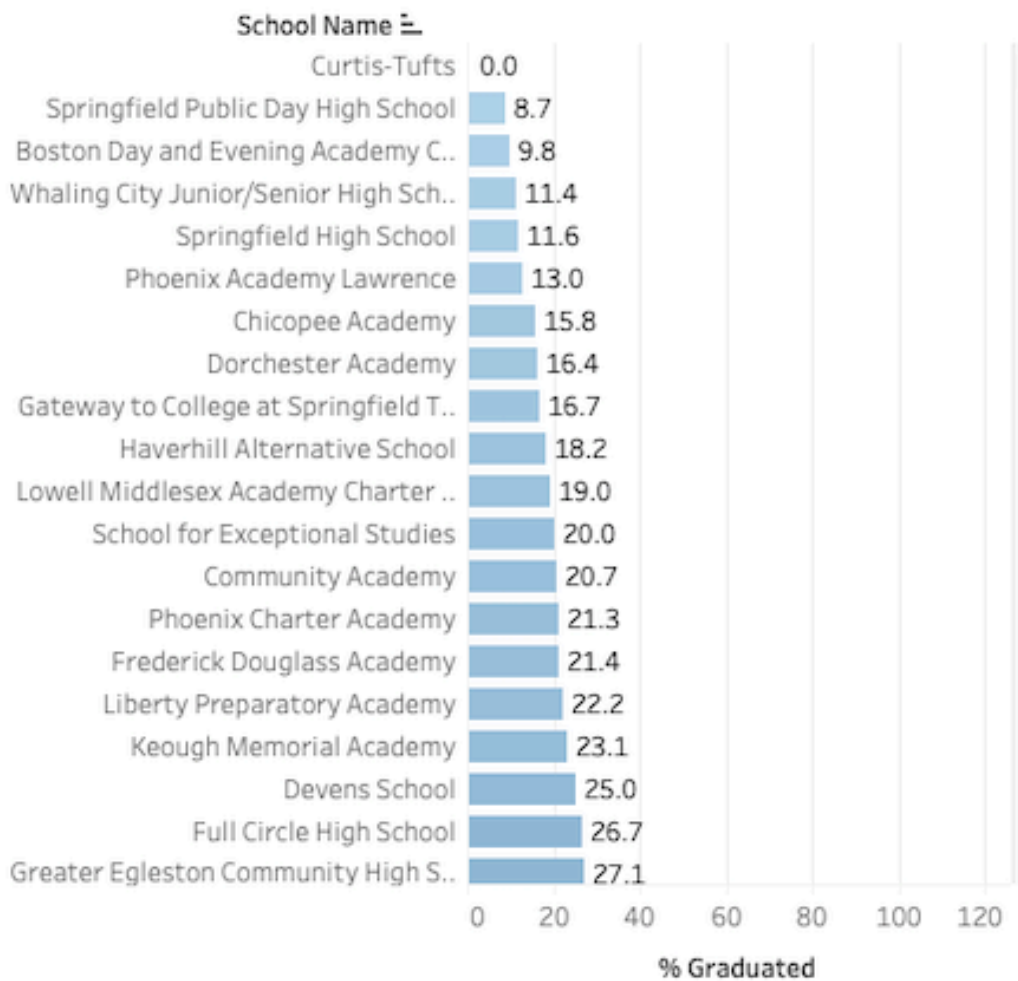
LOWEST PERFORMING SCHOOLS

I began my analysis by creating a bar chart to display the 10 lowest performing schools in the system. Using the following fields, % Graduated and School Name, I sorted using an ascending list to find the lowest performing schools:



Using these parameters, filtering out any NULL values, and adding color and labels, I created the following bar chart:

Low Grade%

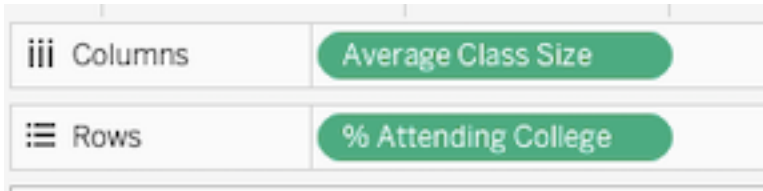


I see first of all that Curtis-Tufts has a 0% graduation rate, which would require further research to determine if this data is accurate. For this analysis I am excluding Curtis-Tufts in my calculations. The lowest 10 performing schools have an average graduation rate of 14.06%.

CLASS SIZE AND COLLEGE ATTENDANCE

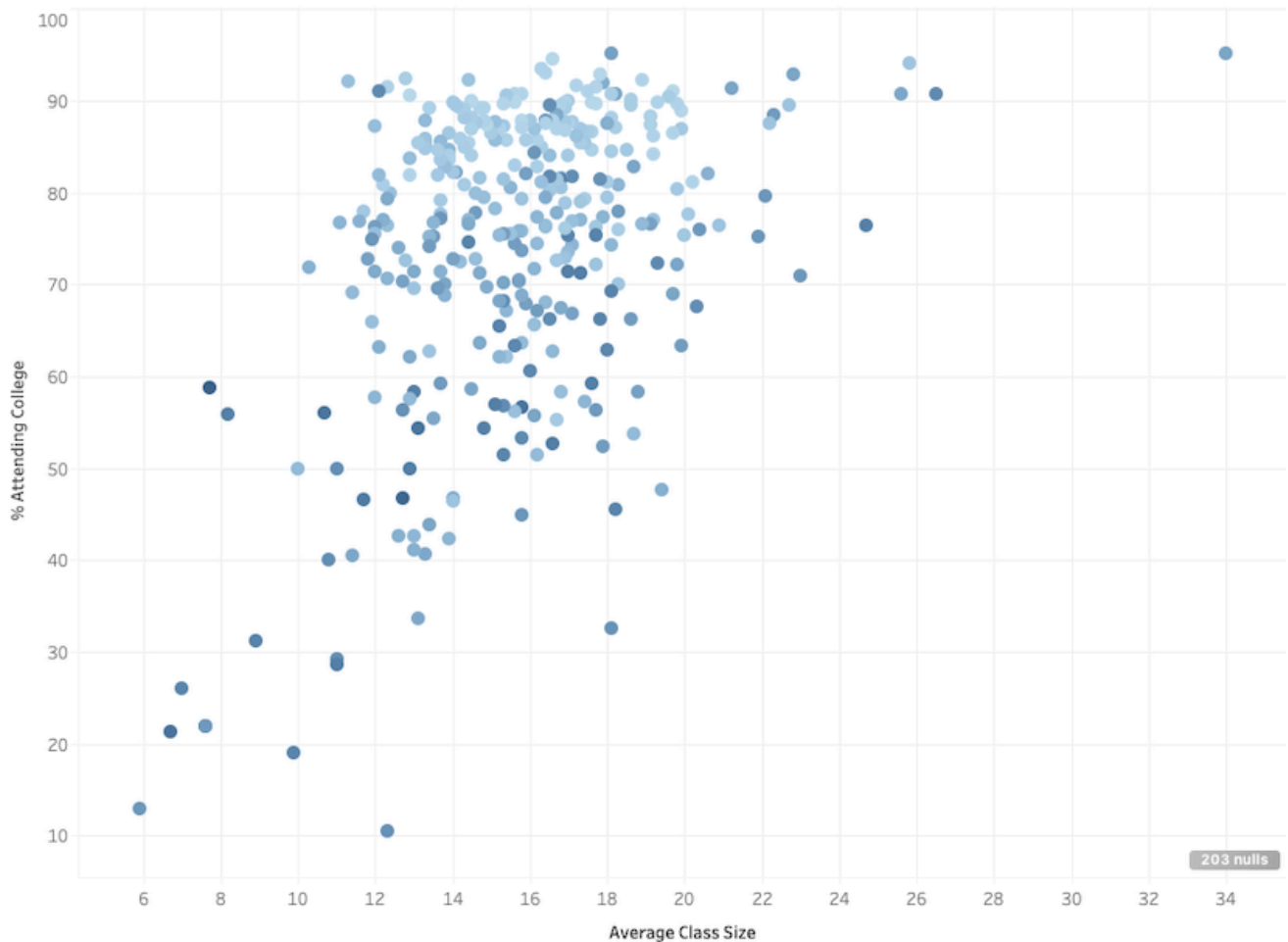
The superintendent shared that he would like to increase college attendance. I will evaluate if school class size has any effect on college attendance rates.

For this analysis, I created a scatter plot using the parameters Average Class Size and % Attending College.



Even though the data has outliers in both directions, the majority of the data points form the shape of a square in the middle, therefore showing there really isn't much of a relationship between the two variables. In order to analyze further, we added a 3rd variable to the color shelf: Average % Economically Disadvantaged, which are represented by the darker blue circles.

% College vs Class Size

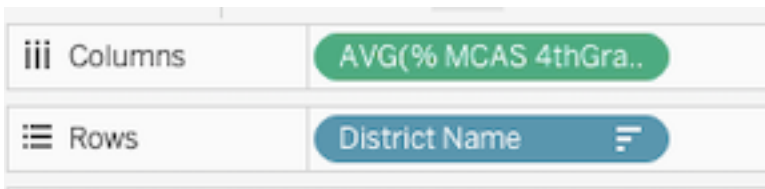


It does appear that the majority of the schools with a higher % of students attending college (65%-95%) appear to correlate to lower classroom sizes between 12-20 students. You can also see that a majority of the economically disadvantaged schools benefit from a smaller classroom size, but there is still a good number of those schools (with a smaller classroom size) that have college attendance rates lower than 60%.

I also reviewed the average class size of the lowest 10 performing schools, and I found the average was 11.8, which would also reinforce the fact that class size does not play a role.

DISTRICT PERFORMANCE - 4TH GRADE MATH

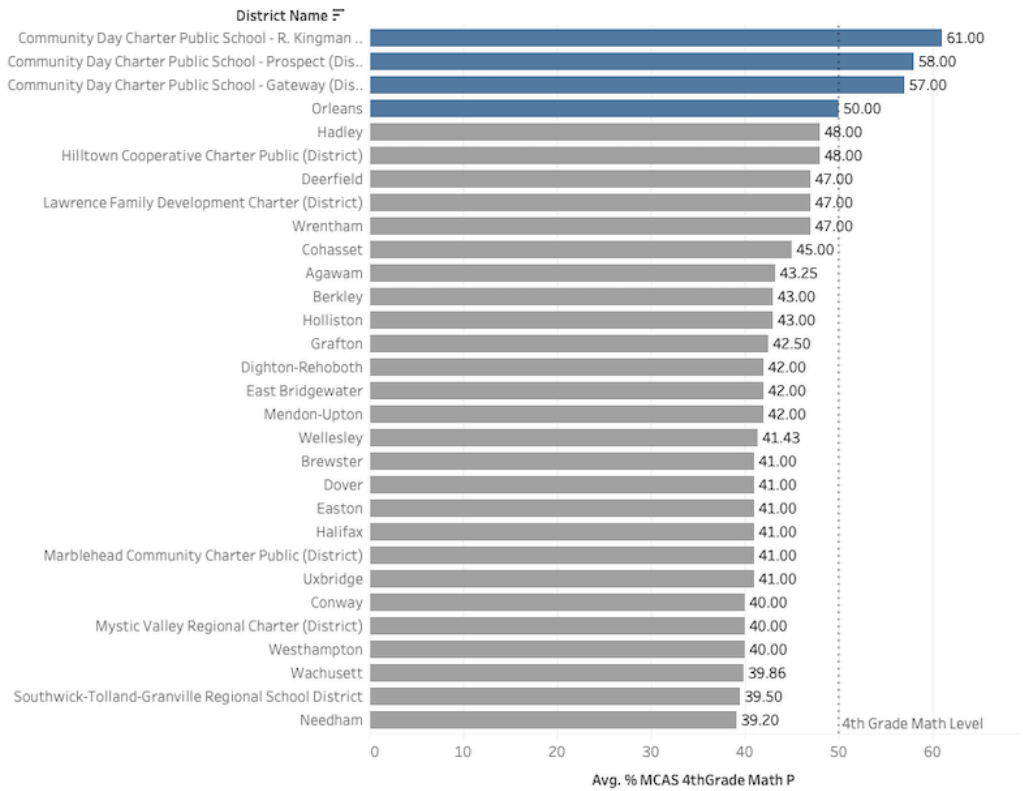
Finally, I will evaluate the performance of schools in 4th grade Mathematics. The superintendent is certain that performance in this area is key in determining the future performance of a student. Therefore, he wants to focus on increasing passing scores in this area. In order to analyze, I created a bar chart to show which districts fall above the 50% passing threshold for the District on the state assessment program test (MCAS) which is represented by %MCAS 4th Math P, with "P" meaning Proficient.



Columns	AVG(% MCAS 4thGra..
Rows	District Name

After filtering out any schools with a NULL value, we sorted descending by pass rate so the top schools districts would appear at the top. We also added a reference using using a parameter of 50%, the pass rate provided by the superintendent. In order to highlight the districts with passing rates above 50%, we created 2 groups: 1) Passing (blue) and 2) Needs Work (gray).

4th Grade Math



4th Grade Math Level

Passing Threshold

- Passing
- Needs Work

To summarize my analysis, I created two separate worksheets to calculate the following KPIs: number of schools and number of students, to place at the top of my dashboard.

Number of Schools

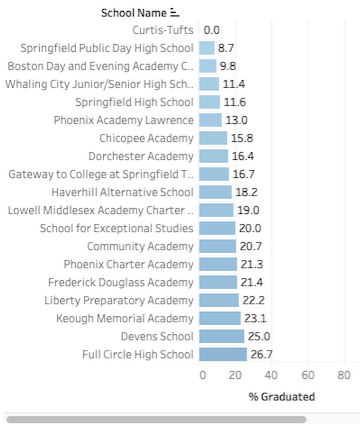
1,861

Massachusetts Education Overview

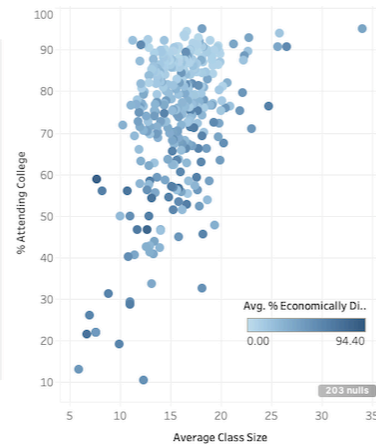
Number of Students

953,748

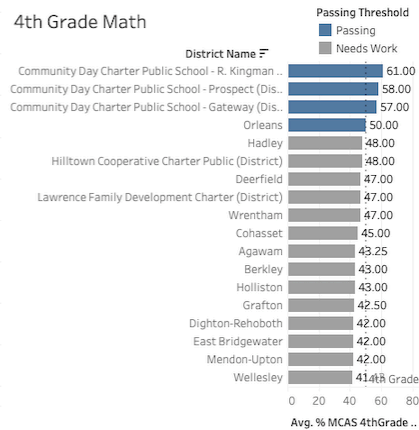
Low Grade%



% College vs Class Size



4th Grade Math



RECOMMENDATIONS

1. Since the lowest 10 performing schools have an average graduation rate of 14.06%, I would target these schools to determine factors such as teacher-student ratios, attendance rates, rate of dropouts and staff satisfaction.
2. Based on the graph presented earlier, there does not seem to be a strong correlation between class size and students attending college. I also reviewed the average class size of lowest 10 performing schools, I found the average was 11.8, so I am inclined to suggest the superintendent NOT pursue plans to build additional schools to decrease class size. Based on this information, small class size does not seem to be a factor in college attendance.
3. In the last bar graph, the top 4 school districts were the only ones with a average pass rate over the 50% threshold for the MCAS 4th Grade Math Assessment. The schools are listed below:
 - Community Day Charter Public School - R. Kingman Webster
 - Community Day Charter Public School - Prospect
 - Community Day Charter Public School - Gateway
 - Orleans

My recommendation would be to first evaluate the best practices of the top performing schools. State officials should spend time in these schools observing the top teachers and how administration interacts with the students. State officials would then create a strategic plan along with administrators from the school districts requiring assistance.

CONCLUSION

I hope you enjoyed my analysis the Massachusetts educational system, and I would welcome any feedback and suggestions. Please feel free to connect with me on [LinkedIn!](#)

** This data was taken from the Massachusetts Department of Education Website from the year 2017, and can be found here: <https://profiles.doe.mass.edu/statereport/>*