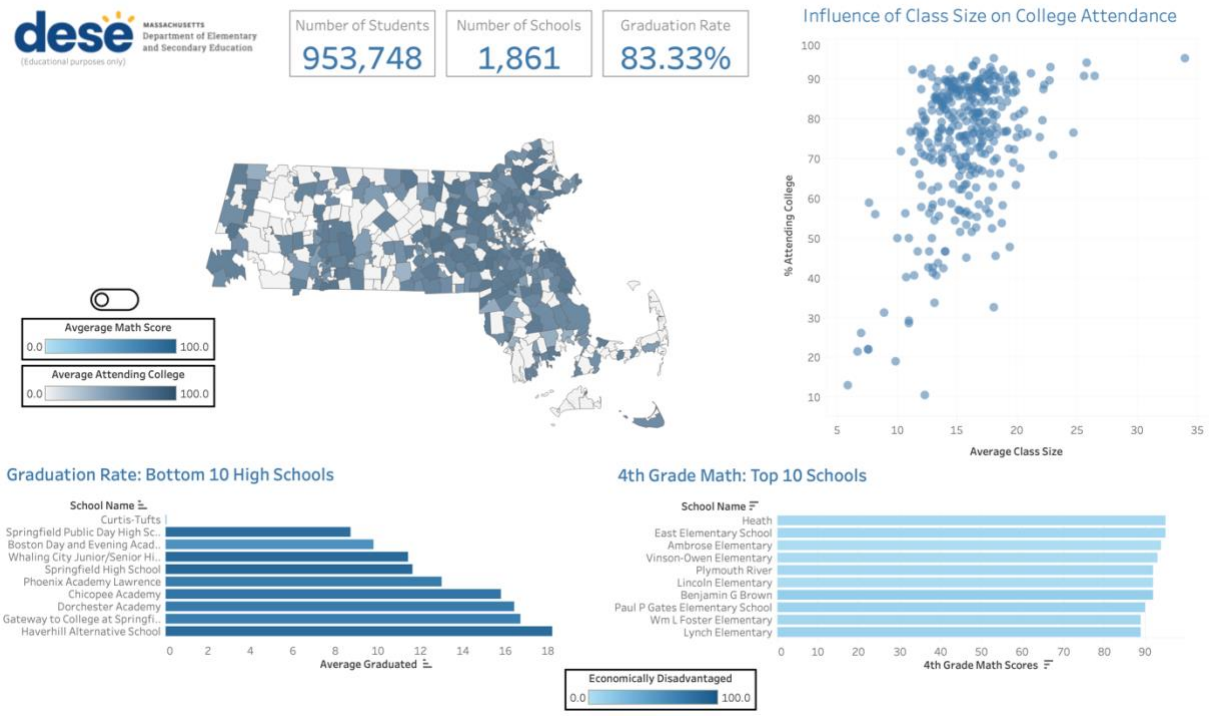


Written from the perspective of a data analyst for the Massachusetts Educational system, the superintendent has inquiries they would like answered. The tasks are as follows:

1. Identify the State of the School System
2. Does class size affect college admission?
3. Identify the top schools in the state.
4. Identify the bottom schools in the state.
5. Inform decision making regarding building more schools to increase college attendance: Will smaller class sizes increase college attendance?
6. Which schools are passing the threshold of 50% in 4th grade math?

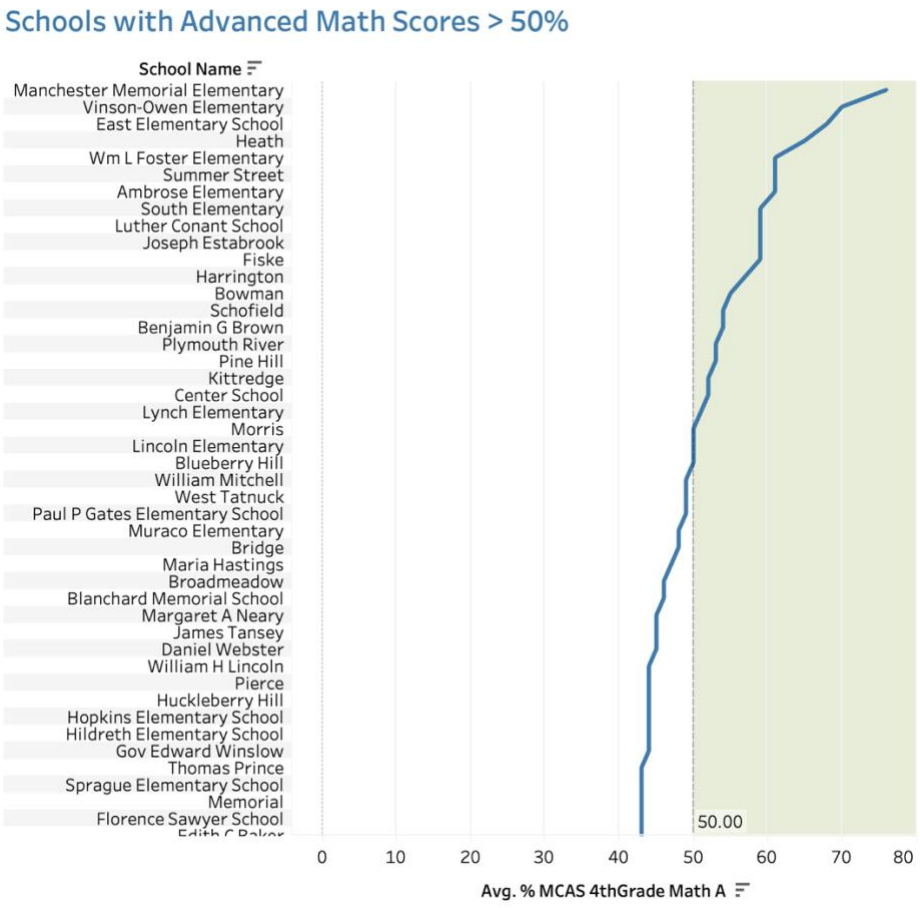
Key Findings:

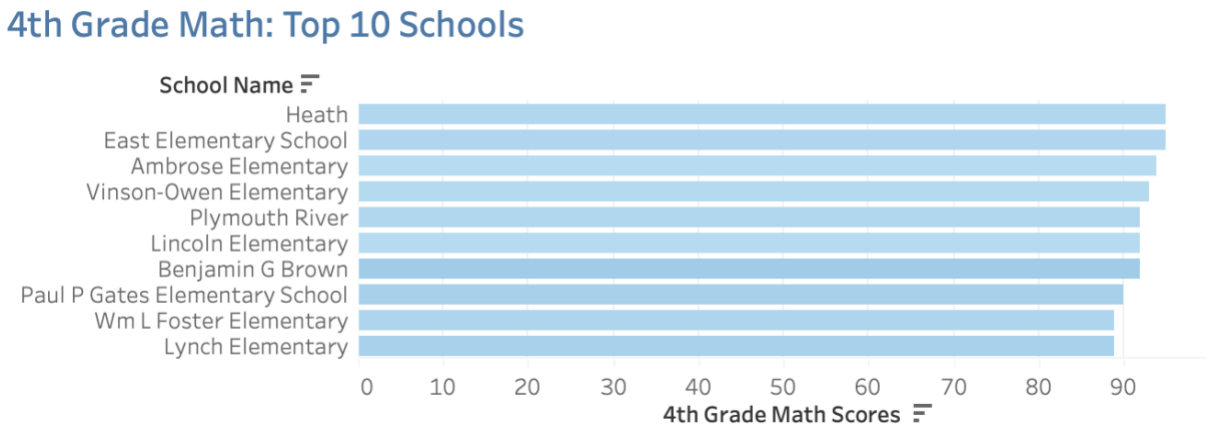
- The state of the Massachusetts Educational system is in a fair state. The overall graduation rate is 83.33% - a couple points below the national average of 85.8% (2023).
- The number of students is 953,748.
- The number of schools is 1,861.
- Economic Disadvantage plays a significant role with top and bottom performing schools.
- Class size does not have sufficient impact on college attendance to justify building more schools in order to lower class sizes.

Number of Students	Number of Schools	Graduation Rate
953,748	1,861	83.33%

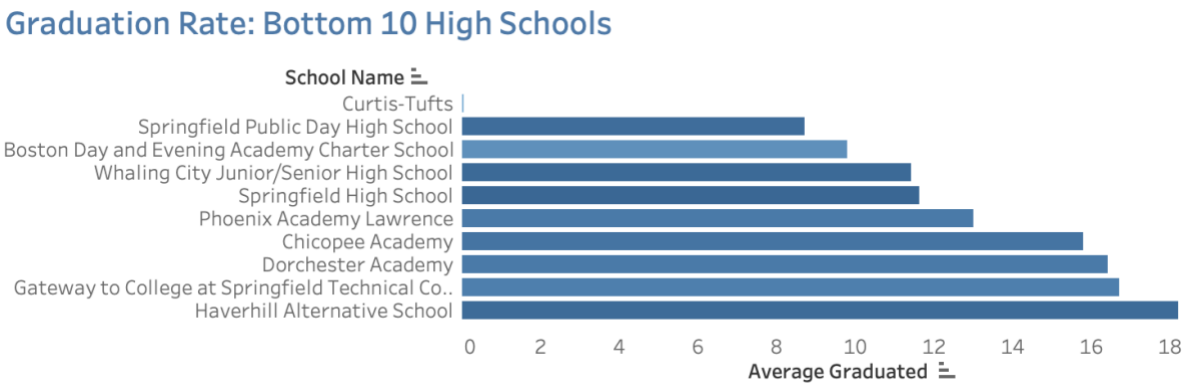
School Performance

The superintendent believes 4th Grade Math scores are instrumental the success of the students. They would like to invite teachers with high success rates in 4th Grade math to speak to the teachers and improve 4th grade math scores across the state. The graph below identifies schools that have advanced 4th Grade Math scores above the 50% threshold.



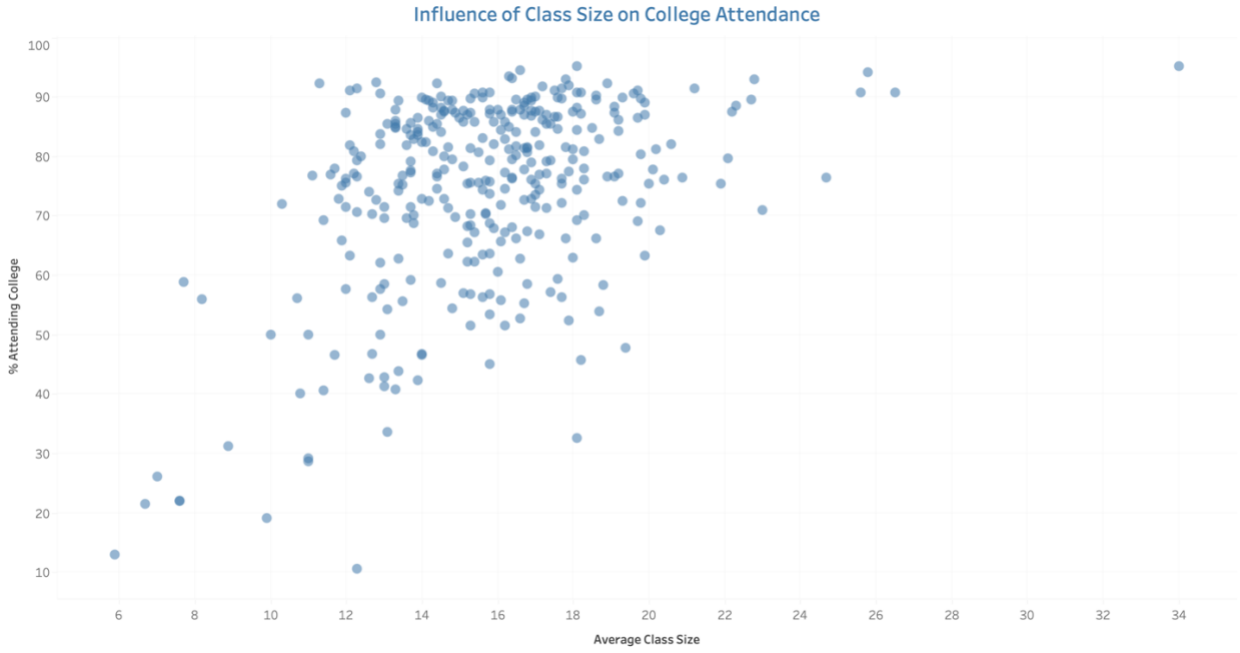


The graph above identifies the Top 10 highest scoring schools in Math overall (Advance + Proficient). The graph below identifies the schools with the lowest graduation rates. It cannot be ignored that a major difference between the top performing schools and the bottom performing schools is the economic disadvantage. The top performing schools have very little economic disadvantage, and the bottom performing schools have high economic disadvantage.

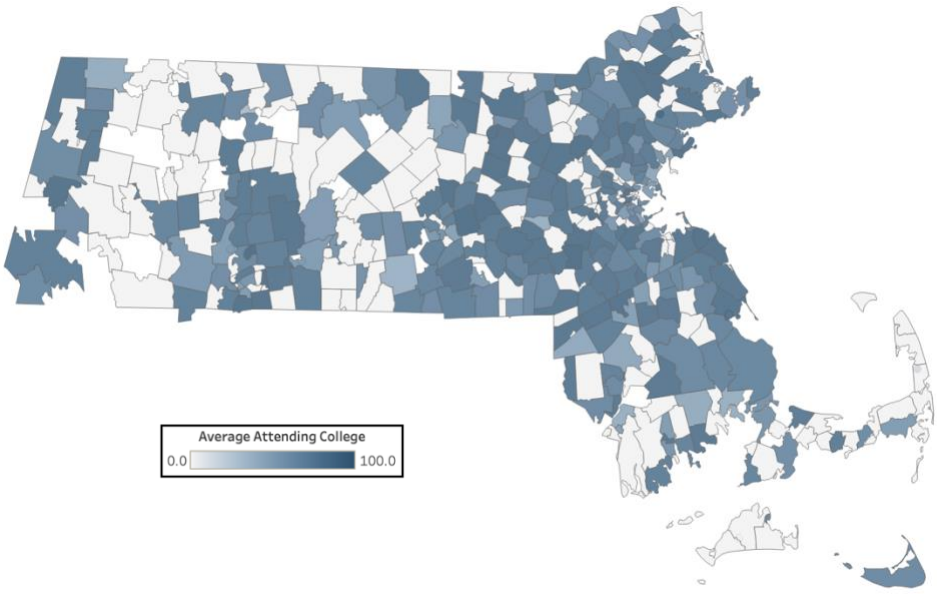


Does Class Size Matter?

The influence of class size on college attendance does not seem to be a very strong one. There is too much scatter on the visual below to draw a strong enough correlation that justifies the investment of building more schools to achieve smaller class sizes.



The map below depicts the college attendance average by zip code. The darker the color of the zip code, the higher the average college attendance in the area. The concentrations of higher attendances seem to be in urban areas, also those with prestigious universities nearby.



Conclusions:

- College attendance is not dependent on class size, therefore new schools should not be built to lower class size.
- Economic Disadvantage is likely to play a role in student success.
- Teachers from the top 10 schools should be invited to speak to other teachers to improve 4th grade math scores.
- Average college attendance is higher in urban areas.
- Massachusetts average graduation rate is slightly below the national average.

Original Data: https://www.kaggle.com/datasets/ndalziel/massachusetts-public-schools-data

Data Dictionary: https://profiles.doe.mass.edu/help/data.aspx