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Math Class Student Progress Analysis

Introduction:

Our dataset contains the progress of students in five different schools each with a varying number of sections. Progress is quantified by placing the students in one of 6 categories and marking the total number of students in the data sheet. To better understand the story of the data we will conduct a two-part examination of the data: first we will group the data by the school variable and create a smaller, easier to read table and bar graph. Second, we will draw some conclusions from the structure and specifics of the data.

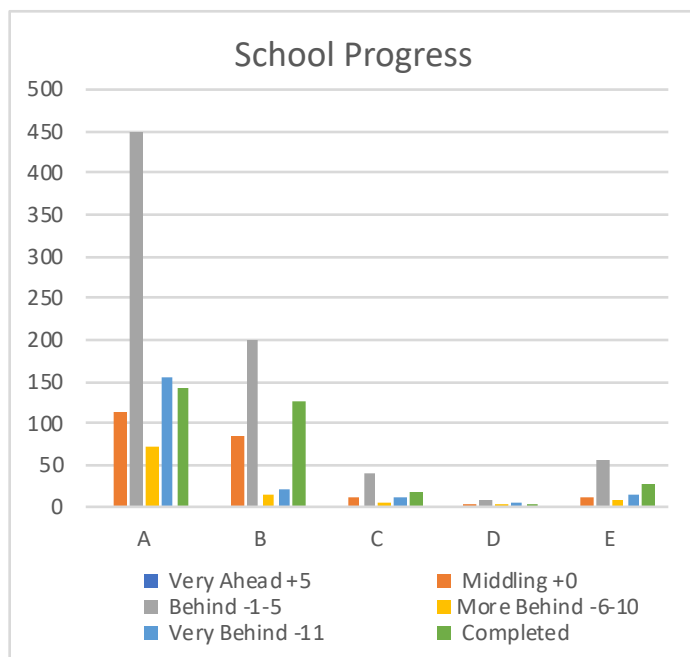
Analysis:

Because each school was broken down into different sections the source data was extensive to analyze; grouping the data by schools and discarding the sections column we can make a smaller, easier to analyze

table. Using the table (Table 1) we can conduct some high-level analysis, mainly we can see that all schools are recording a majority of their students ranging from behind to very behind with no students in the 'very ahead' category. From this information we can gather that the math course should be made easier or the lessons should contain less content so the teachers and students at these schools can keep up with the schedule. Additionally, we can see that each school has a certain group of pupils who are very advanced and have completed the course

Table 1

School	Very Ahead	Middling	Behind	More Behind	Very Behind	Completed
A	0	113	450	73	154	142
B	0	84	201	14	22	125
C	0	11	39	4	12	19
D	0	3	8	2	6	3
E	0	11	56	7	15	27
Totals:	0	222	754	100	209	316



already. Perhaps these students should be grouped within each of their schools and placed into a more advanced class section. In addition to a condensed table we can use a bar graph to better compare each of the schools to each other and uncover hidden trends. By looking at the shape of each bar cluster we can see a common trend: all schools place a majority of their students behind in the math class. Interestingly enough the second largest group of students in most schools are the ones so far ahead that they have completed the course already (green). We can further infer some information about the schools by comparing the shapes of each of the bar clusters. For example, assuming school A and B are both large schools ($n > 400$) but school A places much more students

very behind compared to school B. Some possible reasons for this could include the fact that school A is larger with a higher student to teacher ratio compared to other schools. This increased ratio allows for more students at school A to fall very far behind in the curriculum; out of 209 students being rated as 'very far behind', 154 (73%) of them belong to school A. Some advice for school A or any other schools of this size would be to create more class sections to allow a teacher to give more attention to each student ensuring only the most challenged students fall behind. From this data we can infer that larger schools face much more challenges in teaching students effectively and need to adopt different strategies to attain desirable results. Furthermore, we can see what a normal distribution of understanding might look like for a school where students get enough attention.

Conclusion:

The data tells us a story of the challenges faced by schools both large and small. In the process of implementing a new curriculum, insight was gained into the effectiveness of large classrooms over smaller ones. We found the larger schools to be more prone to leaving students farther behind than their smaller counterparts. For school A implementing more sections is the answer; this solution is modeled in school B's solution. School B is roughly half the size of school A yet has nearly the same amount of class sections (12) thereby allowing much fewer students to fall very behind. This is evidence that a lower student to teacher ratio is what school A needs to keep its students caught-up with the mandated curriculum.

