Data and Methods Appendix

Newsweek developed a ratio to rank America's high schools, the number of Advanced Placement (AP) and/or International Baccalaureate (IB) tests taken by all students, divided by the number of graduating seniors. Although Newsweek claims that this is one of the "best measures available to compare a wide range of students' readiness for higher-level work," this measure only uses one factor to rank high schools. Ranking high schools with such a simple measure of high school performance and college readiness may result in an incomplete picture of high school quality.[1]

Researchers at the Texas Educational Excellence Project (TEEP) developed a multi-indicator measure to assess the performance of Texas high schools.[2] Rather than simply relying on the number of Advanced Placement and/or International Baccalaureate tests, the measure developed by TEEP takes five academic indicators into account. The first measure included in the index is graduation rates. High school graduation rates reflect a school's ability to keep students in school and provide them with the minimum requirement for college: a high school diploma. The second indicator included is the high school's pass rate for the Texas Assessment of Knowledge and Skills exam (TAKS). All public schools in Texas are required to annually administer the standardized exams to students in a variety of grades. Since these rankings focus on high schools, we only include the TAKS pass rates for 11th grade students. This exam is a high-stakes test; that is, students must pass the 11th grade TAKS exams in order to graduate.

The next three measures that were included in the index we used to rank high schools focus on high-end student performance. The percentage of students taking Advanced Placement (AP) and/or International Baccalaureate (IB) tests is one such measure. Also included is the percentage of students who pass the AP/IB tests. Finally, we include a measure of the percentage of students in the high school who score above an 1110 on the SAT (or ACT equivalent). These three measures explicitly assess a school's level of college readiness.

These five variables were standardized and then used to create a single scale to measure the "Best" high schools in Texas.[3] However, data on all five measures were not available for every high school. Rather than excluding schools that were missing one of these variables, we simply added the standardized variables and divided them by the number of variables used. Thus, if the TEA did not report graduation rates for a high school, for example, only the other four variables were used to rank that high school. Since this measure includes at least four – and in most cases five – indicators of high school performance to rate schools, it is a more complete indicator of high school performance and college readiness than the Newsweek scale, which essentially only considers one variable.

---

[1] The validity of this measure may also be questioned since the number of AP/IB tests is divided by the number of graduating seniors. This measure potentially inflates scores for schools with high dropout rates.
[2] We only analyze Texas schools because we do not currently have data on all high schools.
[3] These variables were obtained from the Texas Education Agency's website. These five variables were standardized by dividing each variable by its own standard deviation. This makes the metric on each variable comparable (i.e., standard deviations).

Perhaps the most significant methodological problem with the Newsweek rankings is that it treats all high schools as equals in terms of resources and constraints. However, the level of available resources across schools in America and even Texas is not equal. Indeed, academic research on education has clearly demonstrated that student performance is greatly influenced by environmental factors such as school resources, teacher quality, and environmental constraints. This implies that schools that have more resources and better students to begin with will perform better. If factors such as school quality and resources are ignored, then the schools with the most resources and fewest constraints will be considered the best, but not because of anything they did to improve student learning. In order to properly determine how well a high school has done at educating students, environmental factors should be considered when making comparisons across schools. For example, the Newsweek ranking method would rank two schools the same if they had the same AP/IB ratio, regardless how different the two districts were in terms of resources. However, if one of the districts had significantly fewer resources than the other, yet was still able to prepare students for college at the same level as the richer school, this school clearly does a better job at preparing students, given its resources. This is something Newsweek does not take into account.

Research on education has pointed to several general factors that influence student performance, namely, environmental constraints, teacher qualification, school district policies, and financial resources. Environmental constraints primarily involve poverty, which in this case we define as the percentage of students in the school who are eligible for free or subsidized lunch (a common measure of student poverty). While the Newsweek rankings report this poverty measure, they do not statistically control for its effect on performance. To account for the effect of teacher qualification, we consider the average number of years of teacher experience. While this measure does not capture every aspect of teach qualification, teacher qualification and teacher quality do tend to be positively correlated.

School district policies have also been found to influence student performance. In our analysis we control for school district policies by including class size (student to teacher ratio), student attendance, and instructional expenditures as measures of school district policies. Schools with larger class sizes tend to do more poorly than schools with smaller classes. Conversely, higher student attendance is associated with improved performance. We also control for the percentage of total school expenditures that are used on instruction. This variable has also been found to positively influence student performance. Finally, our analysis takes financial resources into account. The average teacher salary in the school measures this. Schools that pay higher salaries tend to have more financial resources and thus higher student performance.

Using a statistical technique called multiple regression analysis, we can control for these factors and then make comparisons across schools. By using this statistical technique, we can predict how well a high school is expected to do based on its resources and constraints. The predicted scores are then subtracted from the schools' actual scores. If a school performs better than the model predicts it would, the school receives a positive score. If a school does worse than expected based on its resources and constraints, then it receives a negative score. All of the schools are then ranked based on how well they did compared to how well they were expected to

do based on their level of resources.[4] Since we use a broader definition of student success as well as controlling for a variety of factors that influence performance, our school rankings more accurately reflect how good a job a school is doing at preparing students for college rather than simply reflecting how wealthy a district is.

Some schools that do not rank well overall, however, may do well at decreasing the disparity in college readiness that between Anglo students and minority students. Thus, in addition to ranking Texas high schools on an overall measure of student performance, we ranked high schools based on how well they prepare Latino and African-American students for college. To do this, we developed a measure of college readiness identical to the one used to rank schools overall, except we used measures of Latino and African-American performance instead of overall performance.[5] These rankings recognize schools that do a good job preparing minority students for college.

---

[4] Charter schools were excluded from this analysis. Another 338 very small schools (less than 50 students) were also excluded. The final analysis was conducted on 1081 school districts.
[5] For this analysis, we only include high schools whose student bodies are at least two percent Latino (black).