Grade Inflation Continues to Grow in the Past Decade

EDGAR I. SANCHEZ, PHD
RAEAL MOORE, PHD

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Conclusions

We saw evidence of grade inflation without and with accounting for student and school characteristics. In many of our analyses, grade inflation became apparent in 2020 and 2021, with the rate of grade inflation increasing substantially during those years. Attributing these changes directly to the COVID-19 pandemic is difficult. This study supports the body of literature that has documented grade inflation for high school grade point averages (HSGPA) for decades.

So What?

The well-documented concerns about grade inflation across time and the nonachievement components in HSGPA result in an unstandardized and potentially problematic way to compare students across the country. A standardized comparison provides many benefits in contexts such as college admissions and scholarship applications. A standardized metric provides one way to fairly and quickly evaluate students' mastery of core content and potential for success in college.

Now What?

HSGPA and a standardized metric provide different data and therefore provide complementary information. Grade inflation was prevalent pre-pandemic, and oftentimes, more advantaged students benefit when admissions policies are made more subjective. We recommend a holistic admissions evaluation that examines the whole student through an increased number of applicant inputs, including both HSGPA and a non-subjective metric in the college admissions process. This approach promotes access, equity, and diversity and is based on the premise of increasing the number of factors considered more similiarly, not removing them - particularly when making decisions about college admissions, scholarship applications, and course placement - gives a more holistic review of the applicant.

About the Authors

Edgar Sanchez

Edgar Sanchez is a lead research scientist at ACT, Inc., studying issues of postsecondary admissions, national testing programs, test preparation efficacy, and intervention effectiveness. In his career, Dr. Sanchez has focused on the transition between high school and college and supporting the decision-making capacity of college administrators, students, and their families.

Raeal Moore

Raeal Moore, formerly a principal research scientist at ACT, Inc., specializes in applied research focusing on high-quality evaluation elevating student voices, equity, and policy development. Dr. Moore focuses on providing comprehensive, high-quality research, evaluation, and assessment services to deliver reliable and accurate information about the outcomes of programs and projects and is currently the Executive Director of Evaluation Data Solutions.

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Introduction

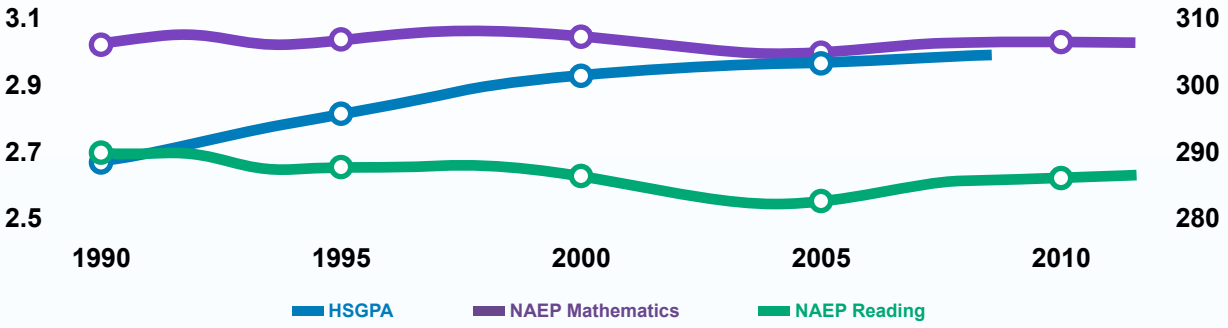
Grades are meant to indicate a student's academic knowledge and skills and, often, the student's preparation for college and career. This said, many students work hard to earn the highest grades possible so that their high school grade point average (HSGPA)—a cumulative measure of what students know and can do—makes them eligible for advancement in sequenced courses and ultimately a high school diploma. HSGPA is also used to support college admissions decisions. Collectively, four-year colleges require a minimum HSGPA for college admittance, and community colleges use it to inform course placement; HSGPA can also be used to determine whether students are eligible for certain scholarships.

The educational phenomenon of "grade inflation"—the assignment of grades that do not align with content mastery—calls into question to what degree we should rely on grades to measure academic achievement or predict future grades (Camara, Kimmel, Scheuneman, & Sawtell, 2003; Gershenson, 2018; Godfrey, 2011). One method to evaluate grade inflation is to assess whether grades align to more objective measures of student academic performance. There have been some arguments made that grades are increasing because students are taking advanced coursework such as honors, advanced placement (AP), and International Baccalaureate courses that may include "bonus" points (see, for example, Camara et al., 2003; Hurwitz & Lee, 2018). Grade inflation, however, is mostly seen as a conflated indicator of students' knowledge and skills with subjective class performance (e.g., effort and attendance). As such, grades can be a misleading indicator of how well students are currently performing academically and how prepared they are for future endeavors such as college. In fact, if grade inflation worsens over time, HSGPA may become less useful as an indicator of academic achievement, for example, in comparing students across schools in admissions decisions. Because of this, it is helpful to compare trends in grades to trends in more objective, standardized measures.

For these reasons, research on grade inflation has been conducted over the last several decades (Goldman, 1985). Generally, this work investigates whether an increase in HSGPA, across years, is matched with an increase in student academic achievement as measured by test scores (Bejar & Blew, 1981). This is most often investigated (a) descriptively by studying trends in HSGPA and test scores across time or (b) inferentially with multiple regression where standardized test scores are regressed on HSGPA. Few analyses have controlled for other measures expected to relate to changes in HSGPA. Regardless of the methodological approach, a mismatch between HSGPA and test scores suggests grade inflation is most likely present. HSGPA across time has been compared to ACT® (Bejar & Blew, 1981; Bellott, 1981) and SAT scores (Godfrey, 2011), NAEP data (U.S. Department of Education, National Assessment of Educational Progress [NAEP], Long-Term Trend Reading Assessments, 2020), and end-of-course exams (Gershenson, 2018). Consistently, analyses have shown that HSGPA has steadily increased over the last several decades, but standardized assessment scores have remained stagnant or have fallen (Bejar & Blew, 1981; Gershenson, 2020).

Figure 1 illustrates grade inflation by comparing HSGPA to NAEP mathematics and reading scores across time. There was growth in average HSGPA from 2.68 in 1990 to 3.0 in 2009 (U.S. Department of Education, Institute of Education Sciences, NCES, High School Transcript Studies, 2005) but very little change across time in NAEP Mathematics scores, which ranged from 305 to 307, or NAEP Reading scores, which ranged from 283 to 290 (U.S. Department of Education, Institute of Education Sciences, NEAP, 2020). These NAEP fluctuations are small in comparison to the standard deviation for these scales.

Figure 1. Growth in High School Grade Point Average Relative to Change in NAEP Mathematics and Reading Scores From 1990 to 2012



Research has also shown that grade inflation tends to vary by school affluence. This seemingly gives already-advantaged students a boost in an academically competitive landscape in which students seek to show their academic worth and vie for their admission into colleges (Gershenson, 2020; Tyner and Gershenson 2020). Instead of making it easier for already-advantaged students to get higher grades, it is imperative to create an equitable landscape where measures of academic performance evaluate content mastery accurately and fairly.

Research on the relationship between gender and test performance has shown that female students have a greater average gain in standardized test scores across time as measured by the SAT, relative to male students. However, female students consistently earn higher average HSGPAs than male students, and both genders increase their average HSGPA at similar rates across time (Camara et al., 2003; Willingham & Cole, 1997). For these reasons, we examine whether such trends in ACT scores also occur.

Overreliance on HSGPA is exacerbated by both high school course grading policy shifts during the COVID-19 pandemic and the push for institutions of higher education to go test optional (or "test blind") in their admissions processes. In response to the COVID-19 virus outbreak, 95% of schools closed their doors and shifted to learning at home (EdWeek, 2020a). However, not all students had access to the technological resources, teacher instruction, or space conducive to learning (Moore, Vitale, & Stawinoga, 2018). In response, some school districts moved away from the traditional A-F letter grading system at the beginning of the pandemic to a more lenient policy dictated by districts, schools, or classroom teachers (Arundel, 2020; Cano, 2020; EdWeek, 2020b). A non-exhaustive list of policies included a pass/fail grade, no grade if it was lower than a C-, a grade that was no lower than the student's grade before the pandemic, and

a policy that no student will receive an F. Under these conditions, grades—and the students' HSGPA based on those grades—are less reflective of differences in academic achievement across students and are more a function of school policies. As a result of the dramatic changes to the way grades were assigned, it is fair to ask whether GPAs assigned during the pandemic are comparable to GPAs assigned prior to it.

Grade inflation may be further exacerbated by a growing interest in test-optional or test blind policies whereby colleges no longer require standardized assessments of students' knowledge and skills to be considered in college admissions decisions, leaving universities to rely on HSGPA as the sole indicator of academic performance. This practice runs counter to the best practices in educational testing outlined by the Standards (American Educational Research Association [AERA], American Psychological Association, & National Council on Measurement in Education, 2014), which advocates for the use of multiple measures (e.g., essays, letters of recommendations, coursework taken, etc.) when evaluating applicants' college readiness, cautioning against the overreliance on any single measure.

The present study employs hierarchal linear modeling to examine whether high school grade inflation occurred between 2010 and 2021, including for students who were tested during the pandemic. We do so while simultaneously accounting for student and school characteristics. This is the first study, to the current authors' knowledge, that makes use of this analytic approach in understanding grade inflation. That said, we sought to understand the degree to which both individual-level and school characteristics might be related to grade inflation across years and whether such characteristics had a differential effect across time. This study largely concerns itself with these research questions:

Is there evidence of grade inflation between 2010 and 2020 for students who took the ACT as graduating seniors? Is grade inflation similar across different points in the ACT scale?

Does grade inflation vary by racial/ethnic background, gender, percentage of students eligible for Free or Reduced-Price Lunch (FRL) at the school, or percentage of students of color at the school while controlling for other student and school characteristics?[1]

Does the evidence of grade inflation among ACT test takers extend to students who graduated in 2021, the first full year of data available during the COVID-19 pandemic?

Methods

Analytical Sample

The data for the study included the 2010 to 2021 ACT-tested high school graduating classes.[2] The graduating class includes students' most recent ACT score for students who took the ACT more than once. The current sample was limited to public schools that were matched to the National Center for Education Statistics (NCES) Common Core of Data (CCD), which is the Department of Education's primary database on public elementary and secondary education in the United States (U.S. Department of Education, Institute of Education Sciences, NCES, High School Transcript Studies, 2005). Schools were required to have some data for all years being examined. Additionally, we required data on at least 30 students per school to be included in the sample. In the hierarchical model, the sample was reduced to the years 2010, 2012, 2014, 2016, 2018, 2020, and 2021 because we needed complete data and also because of computational limitations.[3] The analyses included 4,393,119 students from 4,783 schools.

Our analytical sample had a smaller percentage of schools that provided FRL services and of schools with fewer students of color than in the CCD population. Our sample was similar to the CCD population in terms of schools' gender composition.

Measures

Student profile section. As part of the ACT registration process, students are asked to self-report certain demographic information. We used the following student characteristics in the study: race/ethnicity, family income, and gender.

Course grade information section. Students also provided information related to their courses taken in high school and their grades in those courses. Self-reported grades in up to 23 courses in English, mathematics, social studies, and natural science were averaged to calculate students' cumulative HSGPA.[4] It has been shown that students' self-reported HSGPA correlates highly with students' transcript GPA (Sanchez & Buddin, 2016), and other research has shown self-reported data to be a good substitute for transcript-reported grades for research purposes (Camara et al., 2003; Kuncel, Credé, & Thomas, 2005; Shaw & Mattern, 2009). We also included the percentage of students who responded that they had taken any advanced coursework in English, math, social studies, or natural science in high school (e.g., AP and honors courses).

High school characteristics. The following school characteristics were included in the study: percentage of students eligible for FRL, percentage of students of color, percentage of female students, percentage of students taking advanced coursework, and the percentage of ACT-tested students at a school. These data came from the CCD, and CCD results were available only through 2020. For 2021, we used results from the 2020 survey.

Data Analysis

We began by describing the sample of ACT test takers in our analyses and the schools in which they are enrolled. Then, we investigated HSGPA across time without adjusting for other variables in the analysis. Finally, we used a hierarchical model to estimate adjusted HSGPA for student and school characteristics (see Appendix). Therefore, students were considered nested within schools. In the model, HSGPA was regressed on race/ethnicity, gender, family income, year, percentage of students participating in the FRL program at a school, percentage of students of color at a school, percentage of female students at a school, percentage of students at a school taking advanced coursework, and percentage of students in the school that took the ACT and have taken advanced coursework in English, mathematics, social studies, or natural science. At level 2 intercepts were allowed to vary randomly.[5] Interactions were included between year and gender, race/ethnicity, family income, percentage of students participating in the FRL program at a school, and percentage of students of color at a school. Missing data on family income were imputed using Multiple Imputation with the same variables as used in hierarchical linear modeling (HLM) (see the "Overall grade inflation" section).

Results

Descriptive Statistics

Table 1 summarizes the students in the analyses. From the academic year of 2010 until 2021, roughly 50% of all tested students were female. That percentage decreased slightly over time. The percentage of students planning to complete a bachelor's degree after high school decreased over time. From 2010 until 2021, the number of low-income students who tested decreased from 24% to 11%. The number of White students tested decreased, and the number of Hispanic students tested increased slightly; the number of Black students tested remained steady. In general, prior to 2021, the number of students who had taken advanced courses in English, mathematics, social studies, and natural sciences held steady. This contrasts with the 2021 cohort in which fewer students reported taking advanced coursework.

Beginning in 2013, the percentage of students in the graduating class whose most recent test records were from a State and District ACT administration began to rise relative to those from the ACT National testing program. In 2016, more than 30% of the tested population's most recent record was from State and District testing. This percentage continued to grow through 2021 when 63% of students' most recent test record was from a State and District administration. The State and District testing program administers the ACT to most students within a state or district. In many cases, student scores are used for accountability purposes. In these situations, all students—including non-college-bound students—in a school are tested. The ACT National test is most often taken by college-bound students who plan to send their scores to postsecondary institutions. The number of students testing under the National testing program has declined, and one contributor to this shift in test-taking populations is the move by colleges and universities to no longer require college entrance exams such as the ACT or the SAT in students' college applications.

The COVID-19 pandemic also contributed to the decline in the number of students in the ACT National testing program, particularly in 2021. On March 11, 2020, the World Health Organization declared COVID-19 a global pandemic (WHO, 2022). This triggered the shutdown of many schools across the country. As schools transitioned to online learning or hybrid models, ACT canceled the April 2020 National test administration and resumed limited testing in June 2020.

For schools, the average percentage of students eligible for FRL at the schools in the sample increased as did the percentage of students of color. The average percentage of students taking advanced coursework at the schools in the sample tended to increase from 2010 to 2019, but it decreased in 2020 and 2021. At the same time, the percentage of students at the schools taking the ACT increased slightly.

Table 1. Demographic Characteristics

Characteristic	2010	2012	2014	2016	2018	2020	2021
Gender							
Missing	0	0	1	2	1	2	5
Female	54	54	53	52	52	52	49
Male	45	46	46	46	47	46	45
Other*						0	1
Testing program							
National testing program	88	87	80	65	58	54	37
State & District testing program	12	13	20	35	42	46	63
Race/ethnicity							
Missing	3	1	2	3	5	5	8
Black	13	13	13	13	13	13	12
Native American	1	1	1	1	1	1	1
White	65	62	59	56	54	54	53
Hispanic	9	12	13	15	15	15	14
Asian American	4	4	4	4	5	5	4
Native Hawaiian/other Pacific Islander**	0	0	0	0	0	0	0
Two or more races	3	3	4	4	5	5	4
Prefer not to respond	2	4	3	3	3	3	3
Family income							
Missing	23	25	25	26	32	43	53
<36K	24	23	22	22	19	15	11
36K-60K	18	16	16	16	13	10	8
60K-100K	20	19	18	18	15	13	10
>100K	15	17	18	19	20	19	18

Characteristic	2010	2012	2014	2016	2018	2020	2021
Taken advanced courses in English							
Yes	42	42	44	42	40	36	31
No	59	58	56	58	60	63	69
Taken advanced courses in math							
Yes	35	35	37	37	35	32	28
No	65	65	63	63	65	68	72
Taken advanced courses in social studies							
Yes	36	37	39	38	36	33	28
No	64	64	61	62	63	67	72
Taken advanced courses in natural sciences							
Yes	34	35	37	36	35	31	27
No	66	65	63	64	66	69	72
Percentage of students eligible for FRL at the school	32	36	38	39	39	40	40
Percentage of students of color at the school	28	29	31	32	33	34	33
Percentage of female students at the school	49	49	49	49	49	49	49
Percentage of students taking advanced coursework at the school	11	14	16	17	15	9	9
Percentage of students at the school taking the ACT	16	16	17	18	19	17	1

Characteristic	2010	2012	2014	2016	2018	2020	2021
Cumulative HSGPA (mean)	3.22	3.24	3.25	3.22	3.28	3.37	3.39
ACT Composite (mean)***	21.40	21.45	21.42	21.06	20.83	20.71	20.17

Note. June and July 2020 testing dates, which occurred during the COVID-19 pandemic, are included in the 2020 graduating class cohort to maintain consistency across years.

* In the 2020-2021 academic year, additional gender options were included beyond male and female. These include “another gender” and “prefer not to respond.”

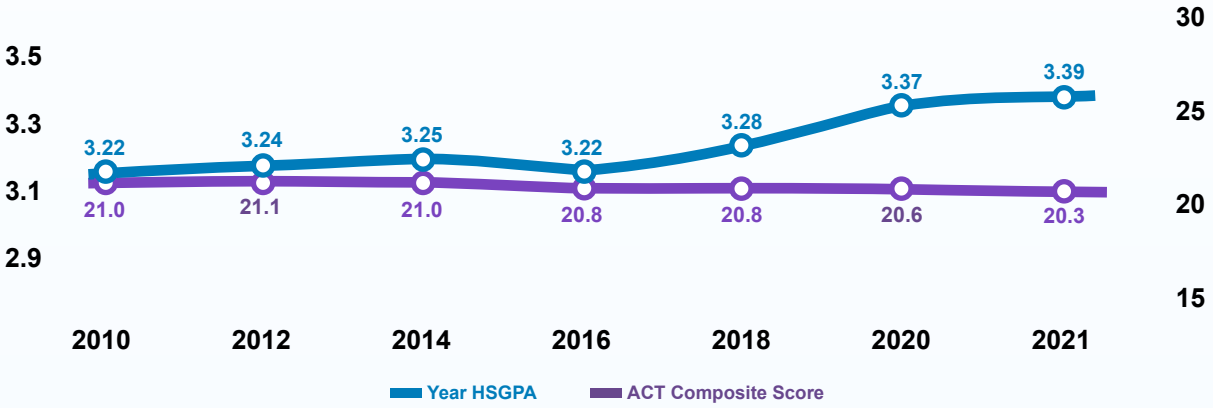
** Because of rounding, 0% may be less than half a percent.

*** These ACT means reflect the current study sample and may not match the ACT means provided in annual graduating class profile reports.

Unadjusted HSGPA

Overall grade inflation. This section presents results of the unadjusted HSGPA per year from 2010 to 2021. These analyses do not adjust for other explanatory factors such as race/ethnicity, education, or family income. These averages were then plotted to demonstrate the change in average HSGPA across years. As Figure 2 illustrates, the average HSGPA increased from 3.22 in 2010 to 3.39 in 2021, an increase of 0.17 grade points. For comparison purposes, the average ACT Composite score is also presented for each graduating class. From 2010 to 2021, the average ACT Composite score decreased by almost a point from 21.0 in 2010 to 20.3 in 2021. This suggests the presence of grade inflation because scores on a standardized measure of achievement did not increase while HSGPA did.

Figure 2. Unadjusted High School Grade Point Average and ACT Composite Score by Year



Note: This figure uses all students who tested during a given year.

Standardized differences were also calculated to indicate the magnitude of change from 2010 to subsequent years in standard deviation units. The formula used to calculate this standardized difference is

$$\frac{HSGPA_{Year\ X} - HSGPA_{Year\ 2010}}{Standard\ Deviation_{Year\ 2010}}$$

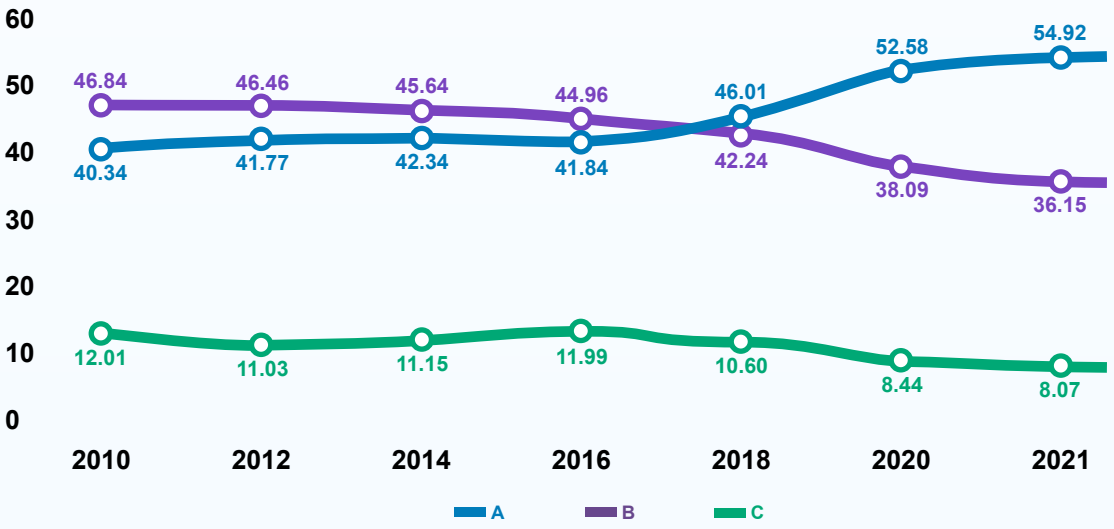
As shown in Table 2, there was relatively little change in the average HSGPA from 2010 to 2016. From 2018 forward, there were larger increases relative to 2010. Specifically, in 2018, the average HSGPA was 0.10 standard deviation units higher than the HSGPA in 2010; in 2021, the average HSGPA was 0.29 standard deviation units higher than the HSGPA in 2010.

Table 2. Unadjusted High School Grade Point Average and ACT Composite Standardized Difference Scores Between 2010 and Subsequent Years

Year	HSGPA	ACT Composite
2012	0.04	0.01
2014	0.04	-0.01
2016	0.01	-0.04
2018	0.10	-0.04
2020	0.24	-0.09
2021	0.29	-0.13

The increase in average HSGPA across time appears to be driven by an increase in ACT test takers with A averages and a decrease in the percentage of ACT test takers with B averages and, to a lesser extent, C averages (Figure 3). From 2010 to 2016, there was a higher percentage of ACT test takers earning B averages than those earning A averages. Between 2016 and 2018, the percentage of students earning A averages surpassed the percentage of students earning B averages, and the difference grew thereafter.

Figure 3. Percentage of ACT Test Takers With an Average of A, B, or C From 2010 to 2021

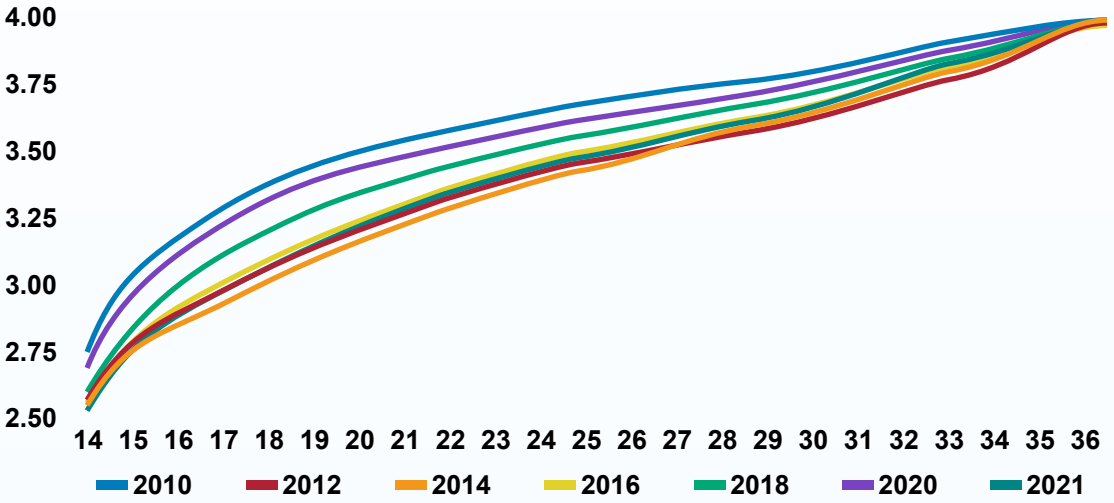


Grade inflation by ACT Composite score. In this analysis, the average HSGPA per year is calculated for every ACT Composite score. The average HSGPA is then plotted against ACT scores for each year in the analysis to demonstrate the change in HSGPA over time across the ACT Composite scale.

Figure 4 Illustrates the change in HSGPA over time across the ACT Composite scale. For lower ACT Composite scores, the change in HSGPA across years is greater than at the upper end of the ACT Composite scale. While this may seem to suggest that grade inflation is more of an

issue among students with moderate to lower ACT Composite scores, at the upper levels of the ACT Composite scale there is a HSGPA ceiling effect that may be masking the effect of grade inflation. With available methods of calculating HSGPA for this study, it is not possible to attain a HSGPA above 4.0. In grading schemes that allow for higher HSGPAs for students enrolled in AP or honors courses, grade inflation may be visible at the upper extreme of the ACT scale.

Figure 4. Plot of Average Unadjusted High School Grade Point Average Across the ACT Composite Scale Over the Years 2010 to 2021



To further investigate the magnitude of inflation across the ACT Composite scale, we calculated the 25th, 50th, and 75th percentile of the ACT Composite scale. Subsequently, the average HSGPA for every year was calculated for each percentile. This analysis allows a comparison of the change in HSGPA across years as well as across performance levels on the ACT test.

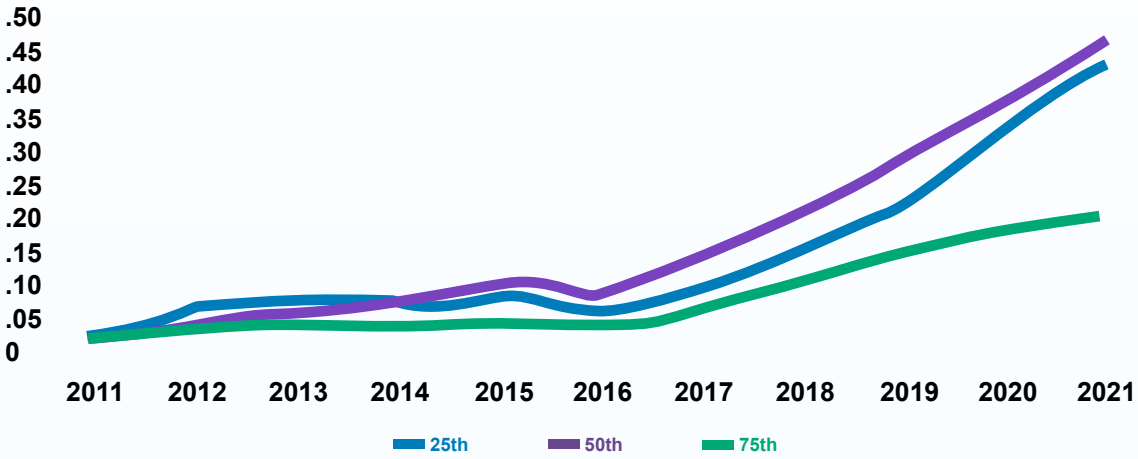
Table 3 shows how the average HSGPA increased from 2010 to 2021 at the 25th, 50th, and 75th percentile.[6] The magnitude of the inflation of HSGPA across years is difficult to visualize; for that reason we also provide standardized differences between the HSGPA at each percentile between 2010 and subsequent years in Figure 5.

Table 3. Average High School Grade Point Average Across Years and Across ACT Composite Percentiles

Year	25th	50th	75th
2010	2.78	3.16	3.53
2011	2.80	3.16	3.54
2012	2.82	3.18	3.55
2013	2.81	3.18	3.56
2014	2.82	3.20	3.56
2015	2.84	3.21	3.56
2016	2.84	3.21	3.56
2017	2.87	3.25	3.58
2018	2.92	3.30	3.61
2019	2.96	3.34	3.64
2020	3.02	3.38	3.66
2021	3.08	3.44	3.69

Figure 5 shows that the greatest inflation occurred at the 25th and 50th percentile with less inflation at higher levels of the ACT Composite score. While this may seem to suggest that grade inflation may be a greater concern for students at the lower end and in the middle part of the achievement scale than it is for those at the higher end of the achievement scale, we must consider the ceiling effect for HSPGA at the higher end of the ACT Composite scale.

Figure 5. Standardized Difference Between Unadjusted High School Grade Point Average in 2010 and Subsequent Years' Overall HSGPA

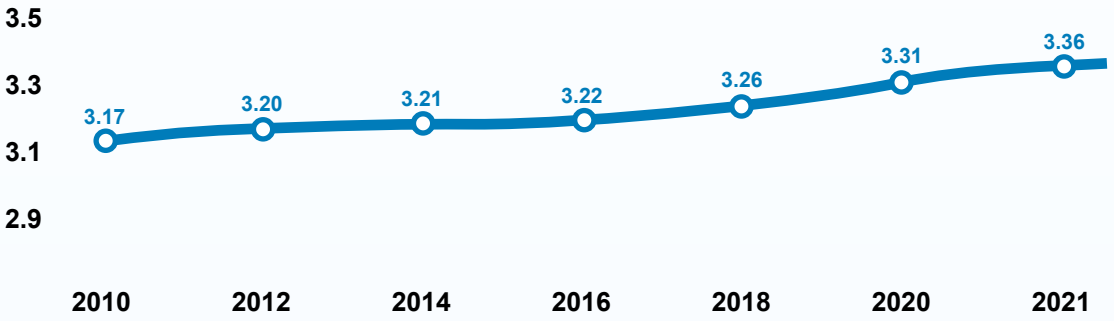


Adjusted HSGPA

Overall grade inflation. HSGPA was adjusted with hierarchical linear modeling (HLM) by controlling for key variables that have been shown to relate to HSGPA. By conducting the analysis in this manner, we were able to account for the influence of student and school characteristics when estimating HSGPA across time based on the HLM model estimated (see Appendix for estimates of HLM parameters).

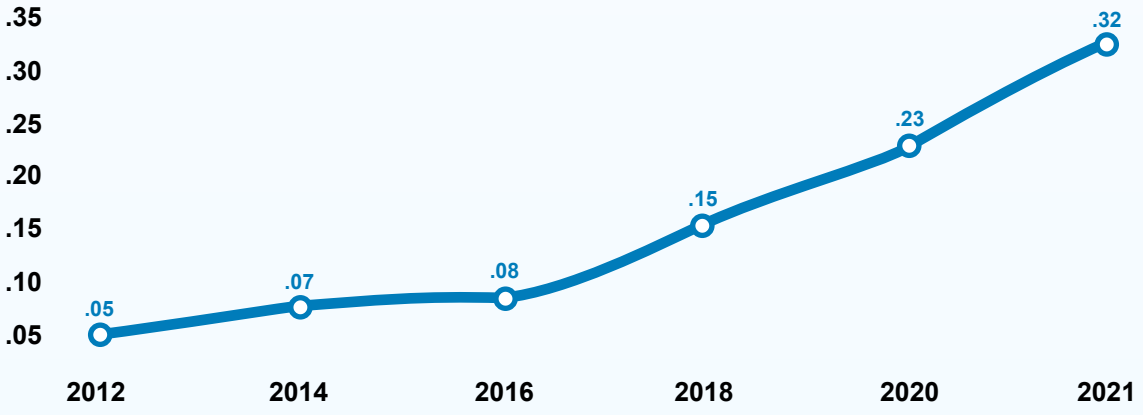
Figure 6 demonstrates that there is a consistent increase in cumulative HSGPA after accounting for student and school characteristics. In 2010, the average cumulative HSGPA was 3.17, and that value grew to 3.36 in 2021.

Figure 6. Adjusted High School Grade Point Average from 2010 to 2021



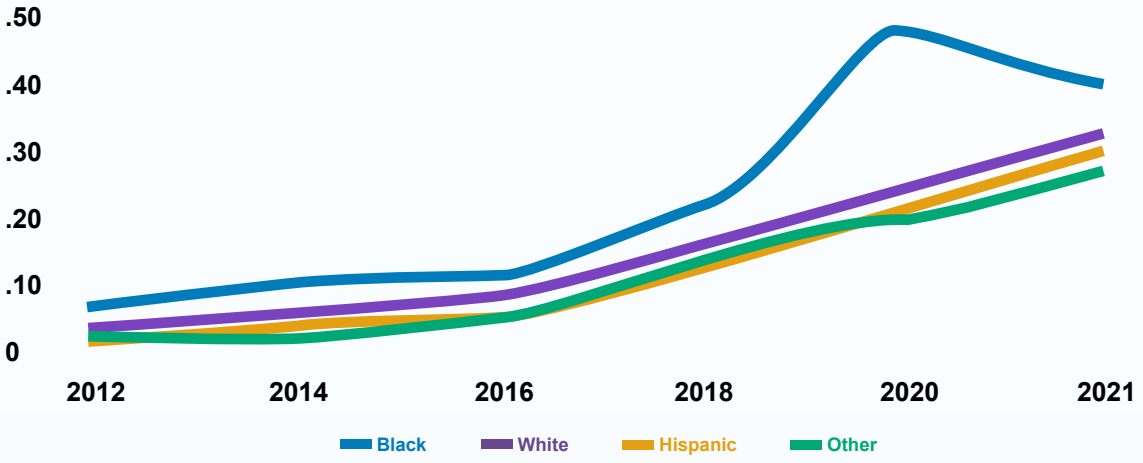
To help quantify the magnitude of inflation over years, the standardized difference was calculated between the adjusted cumulative HSGPA in 2010 and subsequent years (Figure 7). Compared to 2010, there was a small increase in HSGPA between 2012 and 2016. In 2018, 2020, and 2021, however, there was greater inflation. Compared to 2010, the adjusted HSGPA in 2021 had increased 0.32 standard deviation units.

Figure 7. Standardized Difference Between Adjusted High School Grade Point Average in 2010 and Subsequent Years



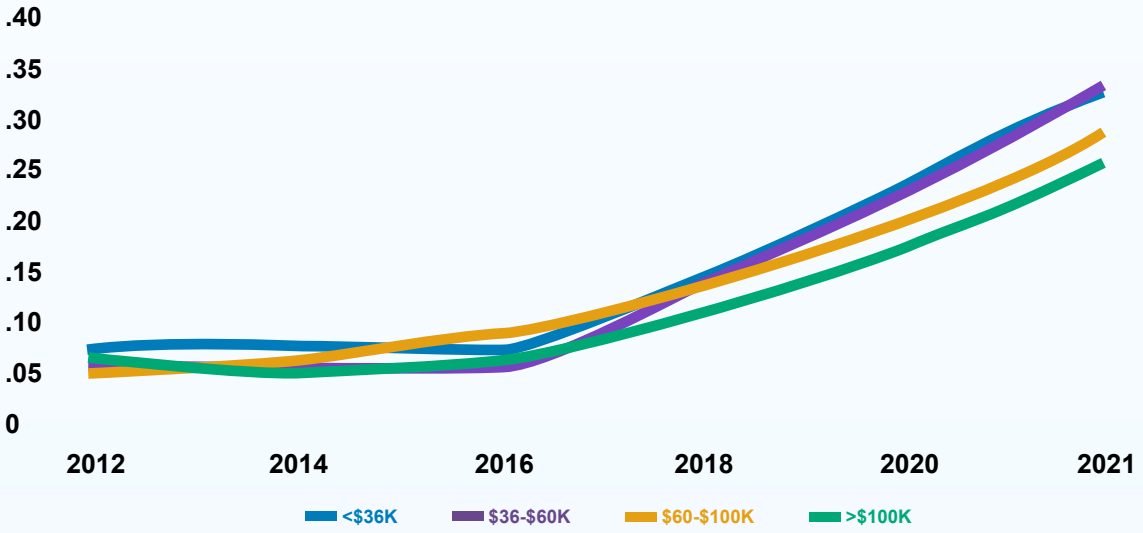
To further investigate the differences in HSGPA across years, we explored group differences by race/ethnicity, family income, and gender. Comparing ACT test takers' race/ethnicity, we found that inflation appears to be greater for Black students than for students who are Hispanic, White, or from other racial/ethnic groups (Figure 8). Specifically, by 2021, HSGPA for Black students was 0.41 standard deviations higher than it was in 2010. In comparison, during that same year, HSGPA was 0.31 standard deviation units higher for White students.

Figure 8. Standardized Differences in Adjusted Grades Between 2010 and Subsequent Years by Race/Ethnicity



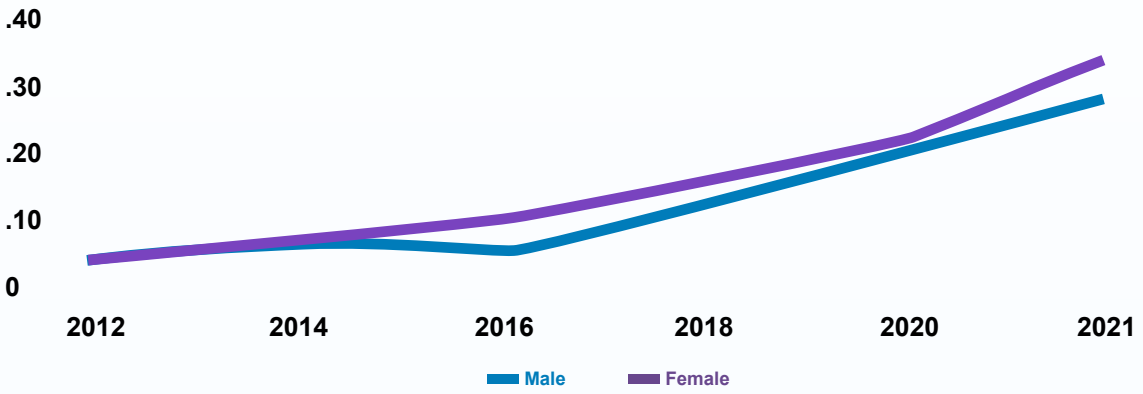
Grade inflation also varied by family income. In 2020 and 2021, inflation appeared to be less pronounced for students from higher income families (Figure 9). Specifically, in 2021 for students from families with an income of less than $36,000, $36,000-$60,000, $60,000-$100,000, and greater than $100,000, the change in standard deviation units was 0.35, 0.35, 0.33, and 0.26, respectively.

Figure 9. Standardized Differences in Adjusted Grades Between 2010 and Subsequent Years by Income



We examined whether there was differential grade inflation by gender. Figure 10 illustrates grade inflation for male and female students. The difference between males and females was minor prior to 2021 (except for 2016). That said, the standardized difference for females was consistently higher than males since 2016.

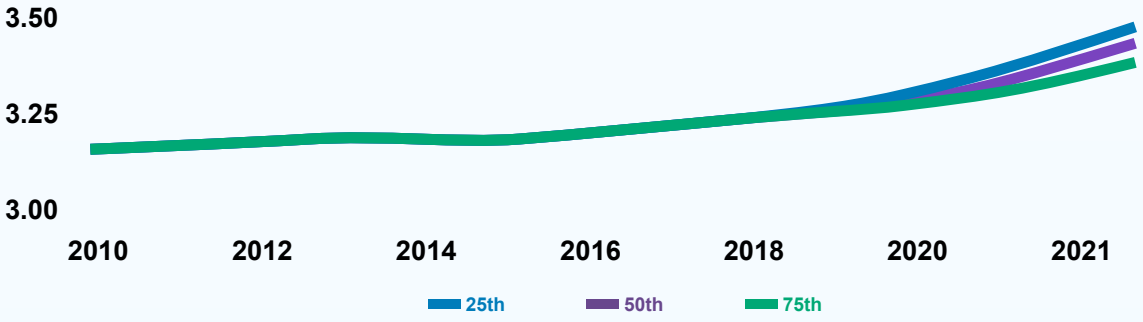
Figure 10. Standardized Differences in Adjusted Grades Between 2010 and Subsequent Years by Gender



In addition to student-level factors, we also examined school characteristics. We discuss two of those factors and the results here: the percentage of students of color at a school and the percentage of students eligible for FRL at a school.

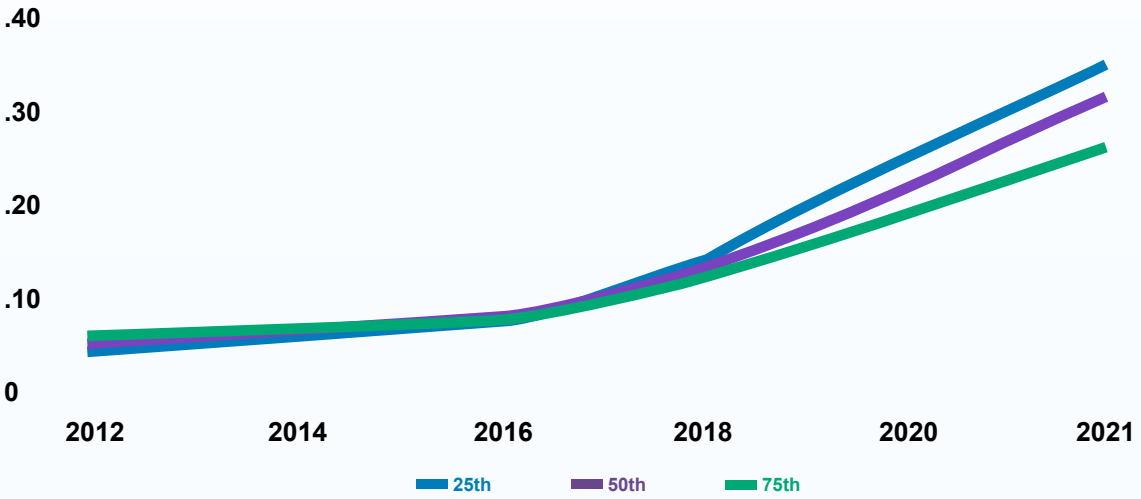
Figure 11 shows that adjusted HSGPA increased for both schools with low and high underrepresented populations (represented by the 25th, 50th, and 75th percentiles of the percentage underrepresented distribution). This figure illustrates that average adjusted HSGPA increased from 2010 to 2021. In our sample, the average adjusted HSGPA in 2010 for the 25th, 50th, and 75th percentile of percentage of students of color was 3.17. That adjusted HSGPA increased to 3.38, 3.37, and 3.31 for the 25th, 50th, and 75th percentile of students of color in schools in 2021, respectively.

Figure 11. Adjusted High School Grade Point Average by School Percentile of students of color (at the 25th, 50th, and 75th Percentile of students of color)



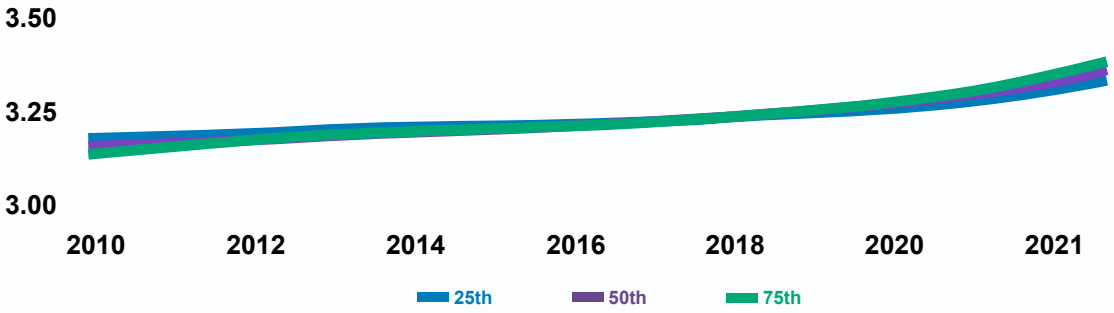
To examine the change in adjusted HSGPA from 2010 to 2021, we compared the standardized difference across years (Figure 12). Schools at the 25th, 50th, and 75th percentiles of the percentage of underrepresented student distribution all exhibited sharp increases in grades starting in 2018. However, subsequent increases in 2020 and 2021 tended to be greater in schools with relatively low percentages of students of color. There is an apparent paradox in our findings in that there was less grade inflation in schools with a high percentage of students of color, yet grade inflation was greatest for Black students. It is possible that the school variable of students of color, which includes more than just Black students, is masking the effects of Black student grade inflation at a school. It is also possible that this result is emerging because we are using multilevel modeling that accounts for common school effects.

Figure 12. Standardized Differences Between 2010 and Subsequent Years by School Percentile of students of color (at the 25th, 50th, and 75th Percentile of Percentage of students of color)



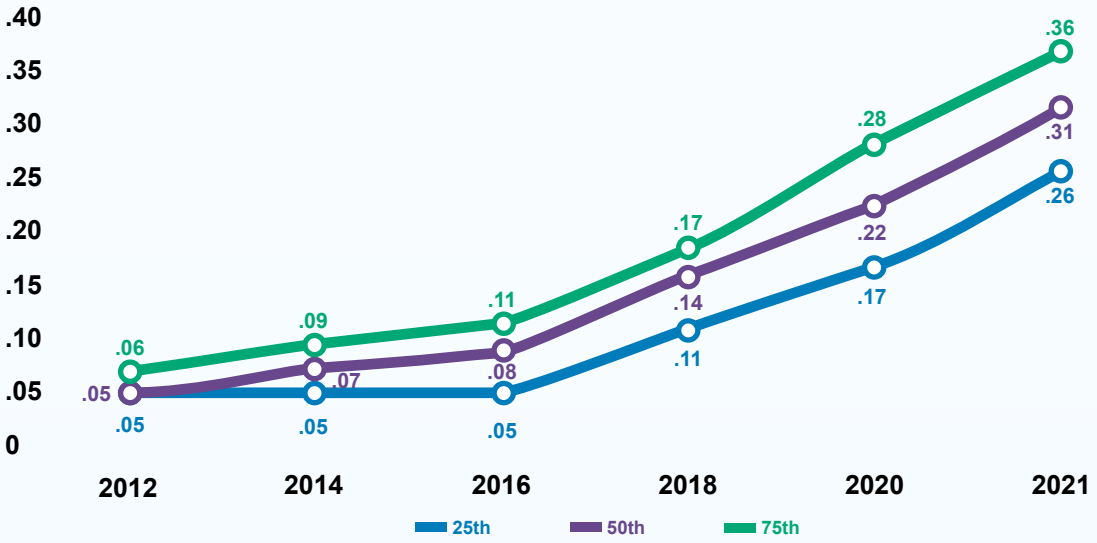
We also compared schools at the 25th, 50th, and 75th percentiles of the distribution of percentage of students eligible for FRL services. Figure 13 indicates that, in 2010, students who were in schools with fewer students receiving FRL services had higher GPAs, followed by schools at the 50th percentile of students receiving FRL services, and then at the 75th percentile of students receiving these services. Grade inflation occurs between 2010 and 2014, levels out for all three groups between 2014 and 2018, and then increases again after 2018. The rate of inflation for these latter years resulted in schools at the 25th percentile of students eligible for FRL services having an average adjusted GPA by 2020 that is lower than for schools with more students with FRL services.

Figure 13. Adjusted High School Grade Point Average by School Percentile of Students Eligible for Free or Reduced-Price Lunch (at the 25th, 50th, and 75th Percentile of Percentage of Students Eligible for FRL)



To further investigate the degree of grade inflation at schools, we calculated standardized differences in HSGPA from 2010 (Figure 14). Our data indicate that schools at the 75th percentile have greater grade inflation than schools at the 25th percentile.

Figure 14. Standardized Differences Between 2010 and Subsequent Years by School Percent of Students Eligible for Free or Reduced-Price Lunch (at the 25th, 50th, and 75th Percentile of Percentage of Students Eligible for FRL)



Discussion

We saw evidence of grade inflation before and after accounting for student and school characteristics. This analysis suggested grade inflation was more of an issue at moderate and lower ACT Composite scores than it was for higher ACT Composite scores; however, this finding was most likely due to the HSGPA ceiling effect. That is, students could not achieve a HSGPA above 4.0. This inflation has resulted in the number of students receiving B grades having decreased over time, while the number of students receiving A grades increased.

Based on HLM results (which controls for other predictors in the model), Black students experienced a greater degree of grade inflation than White students. In addition, students from low and moderate family incomes also had higher rates of grade inflation compared to students from high family incomes. It is important to note that these results were observed when both student and school attributes were controlled for, an analysis not yet presented in the grade-inflation literature.

We found that schools with fewer students of color experienced grade inflation at a higher rate across time than schools with more students of color. This is consistent with previous research (e.g., Gershenson, 2018; Hurwitz & Lee, 2018). However, what does not align to previous research is our finding that schools with a higher proportion of students who receive FRL services had higher grade inflation than schools with lower proportions of students receiving these services. It is unclear why this might be. First, consider that our study used a different methodological approach compared to previous studies. Controlling for both student-level as well as school characteristics could have resulted in findings different from previous research that looked only at school-level effects. A second consideration is that most of the grade inflation research at the school level has looked at HSGPA in relation to SAT. It is possible that our population of ACT-tested students varies in important characteristics related to grade inflation as compared to SAT-tested students.

In many of our analyses, grade inflation became apparent in 2020 and 2021, where grade inflation increased substantially during those years. Attributing these changes directly to the COVID-19 pandemic is difficult. The 2020 and 2021 cohorts could be different from previous cohorts because of the pandemic. This merits further analysis; for example, understanding the unique nature of the students who tested during the pandemic, particularly in the early days when limited ACT testing resumed after the pandemic shut down schools, will help elucidate not only who was testing at that time but why they were testing. It seems logical that the type of students who would test in the middle of a pandemic—in our case those who tested in June and July of 2020—could be different from typical tested students, as well as potentially different from students who tested in 2021 when the pandemic was better controlled. Data on these potential differences were unavailable and, therefore, were not used in our analyses.

Likewise, we are also unsure of how HSGPA might have been altered based on district, school, and teacher policies in grading during the pandemic and how these policies might have been implemented differentially at the school and individual levels. Given the variety of ways in which HSGPAs were assigned or used during the pandemic, a traditional understanding of HSGPA may not fit grades assigned during this time. The traditional signals that HSGPA provides may have been distorted during the pandemic. For example, it may be more appropriate to use grades as broad pass/fail signals or as holistic indicators of students' preparation as opposed to precise measures of academic achievement.

This study supports the body of literature that has documented grade inflation for HSGPA across decades. While the findings are neither surprising nor controversial, they do indicate a persistent, systemic problem. One of the problematic situations that results in grade inflation is the variety of grading standards at high schools across the United States. HSGPA is a highly unstandardized measure of achievement because it incorporates not only content mastery or performance on an assessment but also many other factors including effort, participation, and educators' personal impressions. In the college admissions context, this means that the 4.0 from one school may not indicate the same level of content mastery as a 4.0 from another school. This reduces the utility of HSGPA in evaluating college applicants. This is not to say HSGPA is not without merit. In fact, because it includes these additional, often noncognitive and behavioral factors, it can provide predictive ability beyond that of content mastery alone.

The well-documented concerns about grade inflation across time and the nonachievement components in HSGPA result in an unstandardized and potentially problematic way to compare students across the country. A standardized comparison provides many benefits in contexts such as college admissions and scholarship applications. The standardized nature of the assignment of ACT scores ensures that a 36 for a student at a school with high grade inflation still means the same thing as a 36 for a student at a school with low grade inflation. This standardized metric provides a way to fairly and quickly evaluate students' mastery of core content and potential for success in college. HSGPA and a standardized metric provide different information and therefore provide complementary information. For that reason, it is recommended that a holistic admissions evaluation, including both HSGPA and a non-subjective metric, be used in conjunction when making decisions about college admissions as well as scholarship applications. This "whole learner" approach, which emphasizes the use of multiple indicators of a student's knowledge and skills, to admissions is consistent with the recommendation by the Standards (AERA et al., 2014).

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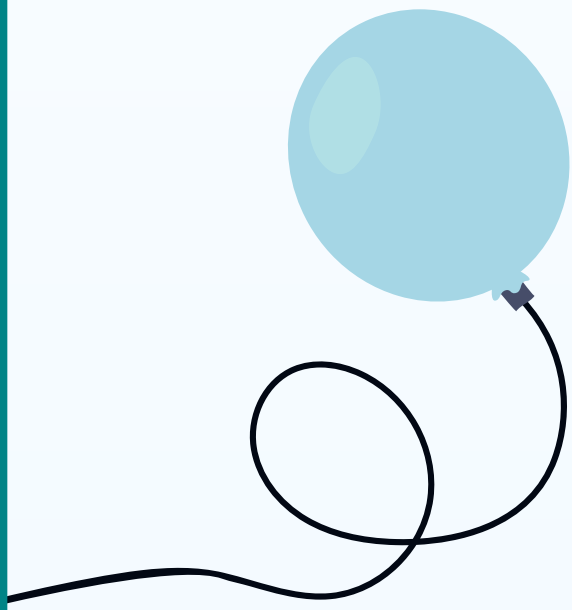

Appendix

Table A1. HLM Model Results

Characteristic		Coefficient	Sig
Intercept		2.824	<.0001
Year	2012	0.031	<.0001
	2014	0.038	<.0001
	2016	0.041	<.0001
	2018	0.080	<.0001
	2020	0.144	<.0001
	2021	0.191	<.0001
Test type	National	0.219	<.0001
ACT Composite		0.042	<.0001
Race/ethnicity	Black	–0.148	<.0001
	Hispanic	–0.049	<.0001
	Other	–0.004	0.0165
Family income	<36K	–0.063	<.0001
	60K-100K	0.044	<.0001
	>100K	0.072	<.0001
Gender	Female	0.161	<.0001
Taken advanced coursework in English	Yes	0.094	<.0001
Taken advanced coursework in mathematics	Yes	0.149	<.0001
Taken advanced coursework in social studies	Yes	0.038	<.0001
Taken advanced coursework in natural science	Yes	0.060	<.0001

Characteristic		Coefficient	Sig
Percent FRL		–0.001	<.0001
Percent students of color		0.000	0.5999
Percent female		0.000	0.0212
Percent taking advanced courses		–0.002	<.0001
Percent tested		0.002	<.0001
Year*Gender	2012*Female	0.001	0.627
	2014*Female	0.004	0.0152
	2016*Female	0.015	<.0001
	2018*Female	0.013	<.0001
	2020*Female	0.005	0.0059
	2021*Female	0.024	<.0001
Year*Race/ethnicity	2012*Black	0.015	<.0001
	2012*Hispanic	–0.011	0.0002
	2012*Other	–0.004	0.1076
	2014*Black	0.030	<.0001
	2014*Hispanic	–0.009	0.0021
	2014*Other	–0.013	<.0001
	2016*Black	0.029	<.0001
	2016*Hispanic	–0.017	<.0001
	2016*Other	–0.014	<.0001
	2018*Black	0.056	<.0001
	2018*Hispanic	–0.015	<.0001
	2018*Other	–0.012	<.0001
	2020*Black	0.053	<.0001
	2020*Hispanic	–0.010	0.0005
	2020*Other	–0.023	<.0001

Characteristic		Coefficient	Sig
Year*Race/ethnicity	2021*Black	0.064	<.0001
	2021*Hispanic	–0.011	0.0008
	2021*Other	–0.020	<.0001
Year*Family income	2012*<36K	0.007	0.062
	2012*60K–100K	–0.002	0.6372
	2012*>100K	0.002	0.5642
	2014*<36K	0.009	0.0071
	2014*60K–100K	0.002	0.4535
	2014*>100K	–0.004	0.3621
	2016*<36K	0.002	0.4849
	2016*60K–100K	0.005	0.2579
	2016*>100K	0.003	0.4006
	2018*<36K	0.003	0.2343
	2018*60K–100K	0.002	0.5191
	2018*>100K	–0.013	0.0017
	2020*<36K	0.002	0.5514
	2020*60K–100K	–0.012	0.0001
	2020*>100K	–0.036	<.0001
	2021*<36K	–0.001	0.7661
	2021*60K–100K	–0.011	0.0468
	2021*>100K	–0.053	0.0002
Year*Percent FRL	2012	0.000	0.0916
	2014	0.001	<.0001
	2016	0.001	<.0001
	2018	0.001	<.0001
	2020	0.002	<.0001
	2021	0.002	<.0001

Characteristic		Coefficient	Sig
Year*Percent students of color	2012	0.000	0.0654
	2014	0.000	0.405
	2016	0.000	0.243
	2018	0.000	<.0001
	2020	–0.001	<.0001
	2021	–0.001	<.0001

Note. The reference categories in the model were 2010, State & District, White, Male, family income of 36K to 60K, and not taking advanced coursework in English, mathematics, social studies, or natural science. Across imputations, approximately 8% of the variance was explained at the school level, and approximately 92% of the variance was explained at the student level. FRL = Free or Reduced-Price Lunch.

Notes

1. Students of color included Native American, Hispanic, Black, and Pacific Islander students.

2. The April 2020 National test date was canceled because of the COVID-19 pandemic.

3. Descriptive analyses were conducted across all 11 years (2010-2021), and trends were the same regardless of whether the omitted years were included.

4. The calculation of HSGPA required that each student had provided grades in at least three courses.

5. An alternative methodology would have been to model school characteristics at level two. Because we were looking at trend information over ten years, we felt it was more important to preserve the year-to-year change in school characteristics. For reference purposes, we also estimated a model with school characteristics averaged across the ten years. The results of that model did not differ from the model used in this paper.

6. Similar patterns of GPA growth were seen for English, mathematics, science, and social studies.

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