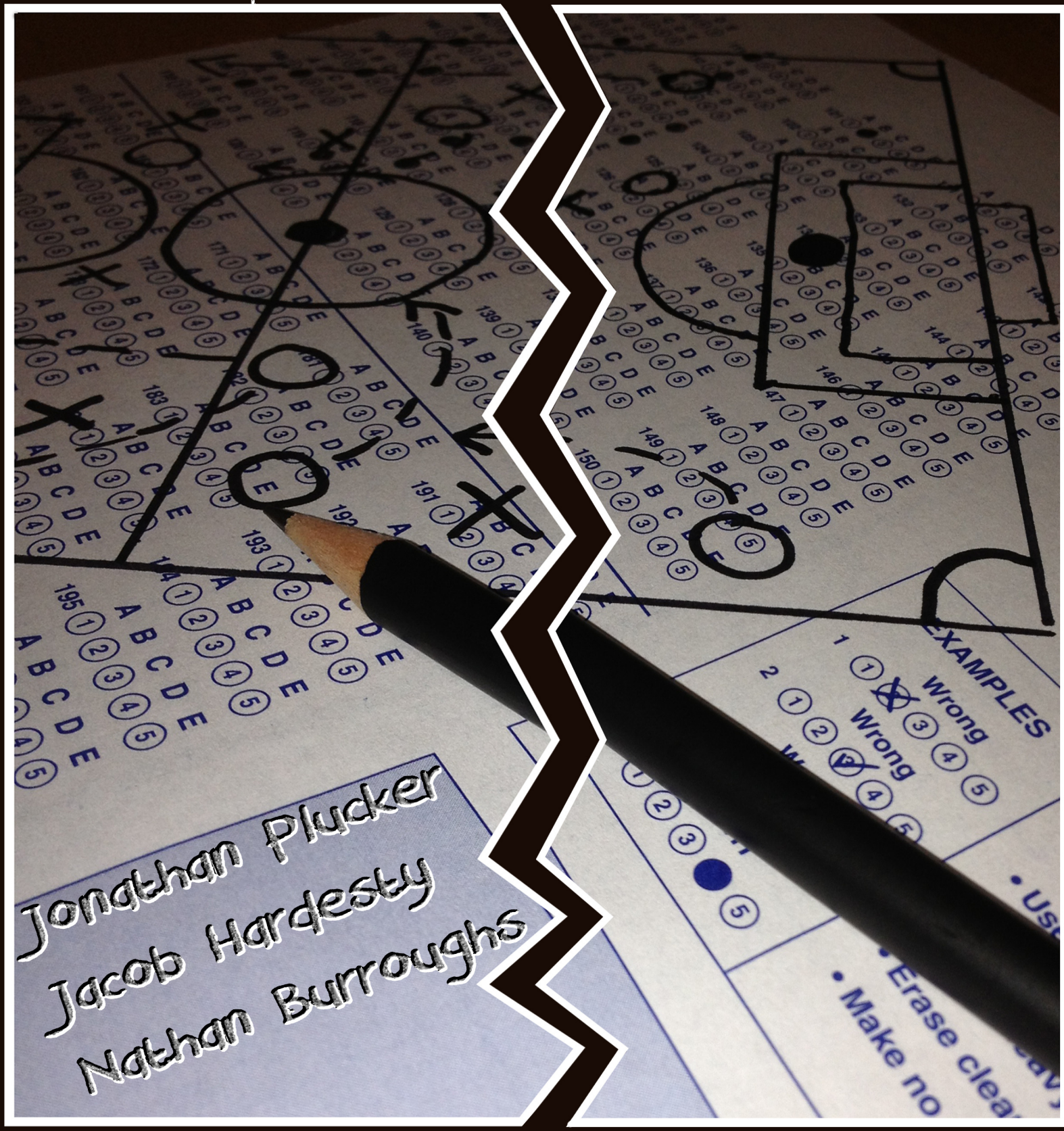
Talent on the Sidelines

Excellence Gaps and America's Persistent Talent Underclass



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EXCELLENCE GAPS AND AMERICA'S PERSISTENT TALENT UNDERCLASS

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SECTION I: INTRODUCTION

We initially defined and explored "excellence gaps" in a widely-distributed 2010 report, *Mind the (Other) Gap* (Plucker, Burroughs, & Song, 2010). Using data drawn from both National Assessment of Educational Progress (NAEP) and state assessments, Plucker et al. identified large gaps in academic achievement at the top end of the ability distribution. Low-income and minority students were much less likely to reach advanced levels of proficiency on state or national assessments, and the gaps between the top-performing disadvantaged students and White and more affluent peers were significant.

These gaps were expected, but the magnitude of the excellence gaps was very surprising. Indeed, despite the emphasis of state and federal policy in closing achievement gaps, inequities among high-ability students were closing with agonizing slowness, and in many cases even growing over the past generation.

In the wake of the 2010 report, numerous studies have appeared that address educational excellence, in both the U.S. and other countries. In addition, we have been frequently asked over the past three years to update the excellence gap report and accompanying web site. We have also received several suggestions for new data points to investigate and alternative perspectives on the data. The purpose of this report is to examine the latest research on these issues and reexamine the data on excellence gaps in the United States.

In addition to this report, individual profiles for each state are available on the excellence gap web site: http://cepa.uconn.edu/mindthegap. These profiles include analysis of high achievement and excellence gaps using both NAEP and state assessment data.

The report is organized into five brief sections. In the first, we review related studies that have been published since the 2010 report was disseminated. Second, we examine data on the relationship between minimum competency achievement

gaps – the primary focus of national and state education policy – and excellence gaps. The third section addresses the overall level of excellence in American schools, and the fourth section provides data on excellence gaps. Finally, the report concludes with recommendations for research, policy, and practice.

RELEVANT RESEARCH SINCE THE FIRST REPORT

Since the publication of the *Mind the Gap* report, (Plucker et al., 2010), a steady stream of research has elaborated on the challenge of excellence gaps. First, researchers, policymakers, and funders are giving greater attention to how educational policies affect high-ability students (e.g., Smarick, 2013). Hanushek, Peterson, & Woessman (2010) argue that from an international perspective the U.S. does not do very well in helping students reach the highest levels of achievement, nor do individual U.S. states (cf. Kilpatrick, 2011). As discussed by Plucker et al., earlier work suggested that advanced students might be shortchanged by the advent of accountability systems concerned with mean proficiency, but more recent studies have found mixed results. There is evidence that higher achievers suffer under the threat of school sanctions for failure to move students to competence (Lauen & Gaddis, 2012) and in systems that use status models to measure proficiency models rather than growth models (Ladd & Lauen, 2010). However, Dee and Jacob (2011) argue that students at all levels of achievement have benefited from NCLB, at least in math.

Second, a small but growing body of work examines subgroup inequalities among high achievers, rather than high-ability students as a whole. Echoing the results of Plucker et al. (2010), McMurrer and Kober (2011) found weaker growth among high achievers on state assessments, and an increasing excellence gap. Xiang, Dahlin, Cronin, Theaker, & Durant (2011) discovered considerable instability in the identity of higher achievers, with important subgroup differences. The share of Blacks and Hispanics at higher levels of achievement is fairly steady across grade levels, but students in low-income schools are less likely to remain at the

highest achievement levels than those in wealthier systems. Burroughs and Plucker (forthcoming) also find an important difference between SES and minority excellence gaps, with Black and Hispanic students enjoying limited progress in catching up with White students, but low-income students stagnating or falling further behind. Olszewski and Clarenbach (2012) have also underscored the importance of distinguishing between these racial and economic inequalities, which exhibit different trends and require distinct interventions.

Extending research on excellence gaps, Burroughs (2012) notes that inequalities among high-achievers in science are comparable to those in math and reading, with little evidence that they are shrinking. More optimistically, international studies find smaller excellence gaps in other countries for immigrant children and shrinking gaps for girls (Rutkowski, Rutkowski, & Plucker, 2012).

Growing public concern over inequities in college attainment speaks both to the existence of a postsecondary excellence gap and the long-term consequences of unequal learning opportunities. Students from low-income families are much less likely to attend college or complete their degree than children from wealthy families (Bailey & Dynarski, 2011; Engle, 2011). In fact, high-achieving low-income students are equally likely to attend college as low-scoring high-income students (Bailey & Dynarski, 2011) – a massive misallocation of talent. The underrepresentation of low-income and minority students at selective universities is particularly acute (Hill & Winston, 2011; Posselt, Jacquette, Bielby, & Bastedo, 2012). A series of studies indicates extensive "academic mismatch" – that even if they do attend colleges, highly able but less affluent students wind up going to lower quality postsecondary institutions than their talents would suggest (Carnevale & Strohl, 2010; Hoxby & Avery, 2012; Smith et al., 2013).

The failure of the U.S. educational system to properly nurture students from disadvantaged backgrounds may be an important contributor to the low proportion of U.S. students entering science, technology, engineering, and mathematics (STEM) fields. The U.S. is now 23rd in the share of its workers with a STEM

degree, and the share of native-born U.S. STEM PhD's has declined from about three quarters to just over half over the last several decades (U.S. Congress Joint Economic Committee, 2012). Burroughs (2012) suggests that part of this decline is due to the continued underrepresentation of minorities—a rising share of all U.S. students—in STEM fields. The continuing failure to cultivate high ability students from all backgrounds could have a serious impact on U.S. innovation and economic performance (Bailey & Dynarski, 2011; National Science Board, 2010).

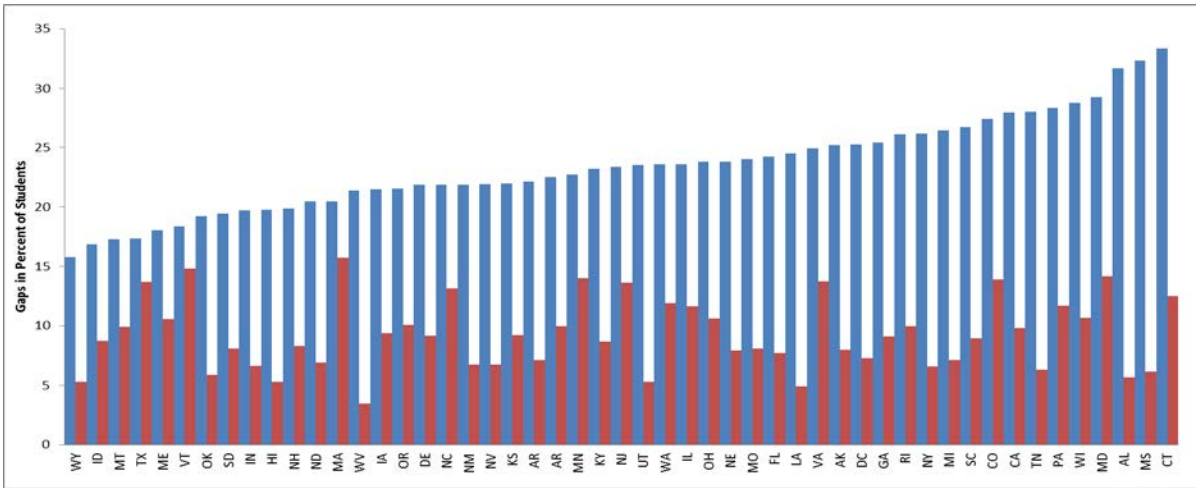
SECTION II: MINIMUM COMPETENCY GAPS VS. EXCELLENCE GAPS

When we began this research roughly six years ago, we expected that minimum competency gaps and excellence gaps would be significantly correlated. Given that much federal and state education policy over the past 25 years has been based on the belief that "a rising tide lifts all ships," this appeared to be a safe assumption. Indeed, progress on closing minimum competency gaps has been slow but steady (e.g., Rampey, Dion, & Donahue, 2009), which is not surprising given the laser-like focus on these gaps and enormous financial resources devoted to addressing them in federal policy over the past 10 years.

Unfortunately, evidence suggests that the moderate progress in reducing minimum competency gaps has not translated to smaller excellence gaps. For example, the correlation between the two gaps at the state level for free/reduced price lunch vs. full price students on the Grade 4 NAEP math test ($r < .1$) suggests little relationship at all between the two sets of data. We find the easiest way to illustrate the relationship between these two gaps (or lack thereof) to be the data presented in Figure 1, which clearly shows the lack of an obvious relationship.[1]

[1] We acknowledge that this correlation is subject to numerous caveats and qualifications, including that measuring excellence gaps in other ways (i.e., comparing 90th percentile scores among groups) shows different relationships between gaps at various achievement levels.

Figure 1. Minimum Competency Gaps (blue) Vs. Excellence Gaps (maroon) Based on Free-Reduced Price Lunch Status: 2011 NAEP Grade 4 Math



Shrinking the minimum competency gap, which is truly gigantic in many states and far too large in all states, is an ethical and moral priority. But these and other data provide evidence that excellence gaps are a unique problem that will not be solved without concerted effort.

SECTION III: EXCELLENCE IN AMERICAN EDUCATION

One common response to the 2010 report was that focusing on excellence gaps may obscure important policy information about the straight percentage of students scoring at advanced levels. This is a fair criticism, and as a case in point we present illustrative data in Table 1 and Figures 2-5 below.

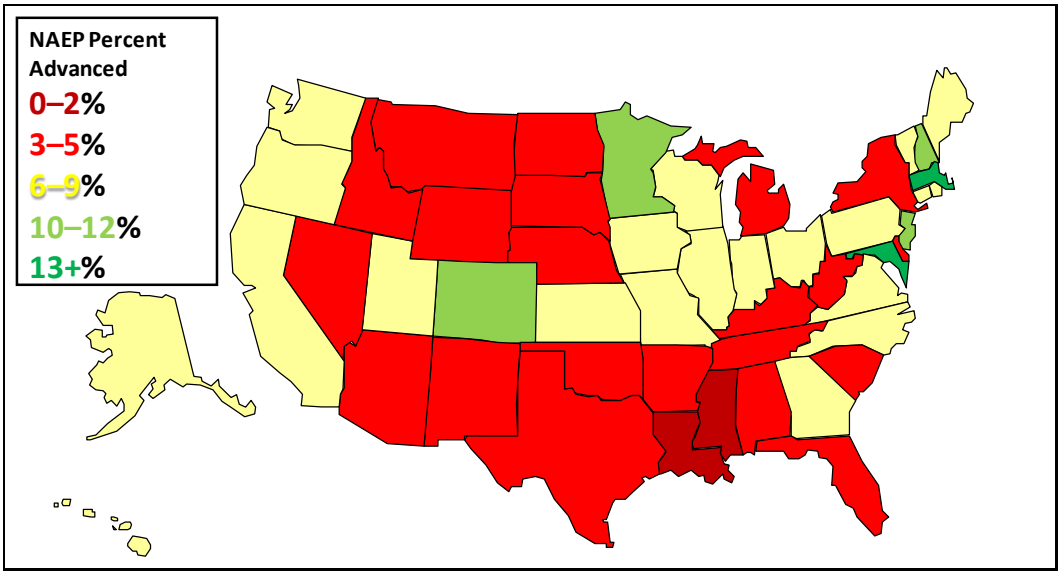
The data in Table 1 suggest that the percent of advanced scorers in math has increased significantly in Grades 4 and 8 since 1996, with most of the progress achieved over the past decade. But the progress is much more muted in Grade 12 math and in all grades for reading. In general, most of these excellence rates strike us as low, and Figures 2-5, which depict advanced scoring rates in for specific

tests by state, provide evidence that performance at the advanced level is highly variable – with the exception of Grade 8 reading, which is uniformly poor.[2]

Table 1. Percent Scoring Advanced on NAEP Math and Reading Assessments, 1996-2011

	Math			Reading		
	Grade 4	Grade 8	Grade 12	Grade 4	Grade 8	Grade 12
1996	2.2	3.7	2.0			
1998				7.1	2.6	5.6
2000	2.5	4.7	2.4	6.9		
2002				7.1	2.8	4.5
2003	3.9	5.4		7.7	3.2	
2005	5.0	6.0	2.2	7.5	3.0	4.6
2007	5.6	7.0		7.9	2.8	
2009	5.9	7.9	2.7	7.7	2.8	5.3
2011	6.7	8.3		8.0	3.4	

Figure 2. Percent of Students Scoring Advanced on 2011 NAEP Grade 4 Math



[2] We note that the percentage of students scoring advanced in each state maps fairly closely to the proportion of disadvantaged students in the state.

Figure 3. Percent of Students Scoring Advanced on 2011 NAEP Grade 8 Math

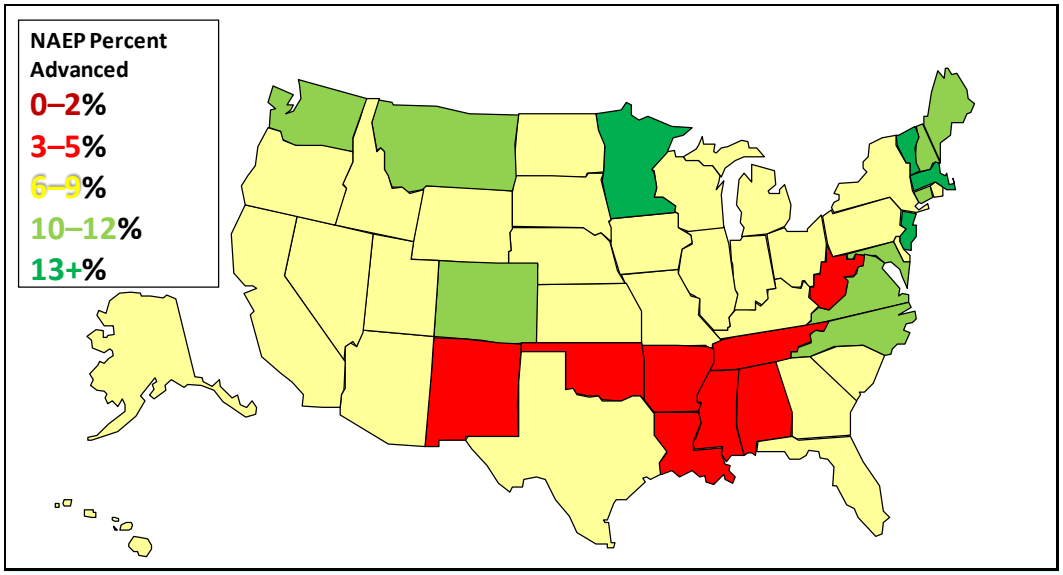


Figure 4. Percent of Students Scoring Advanced on 2011 NAEP Grade 4 Reading

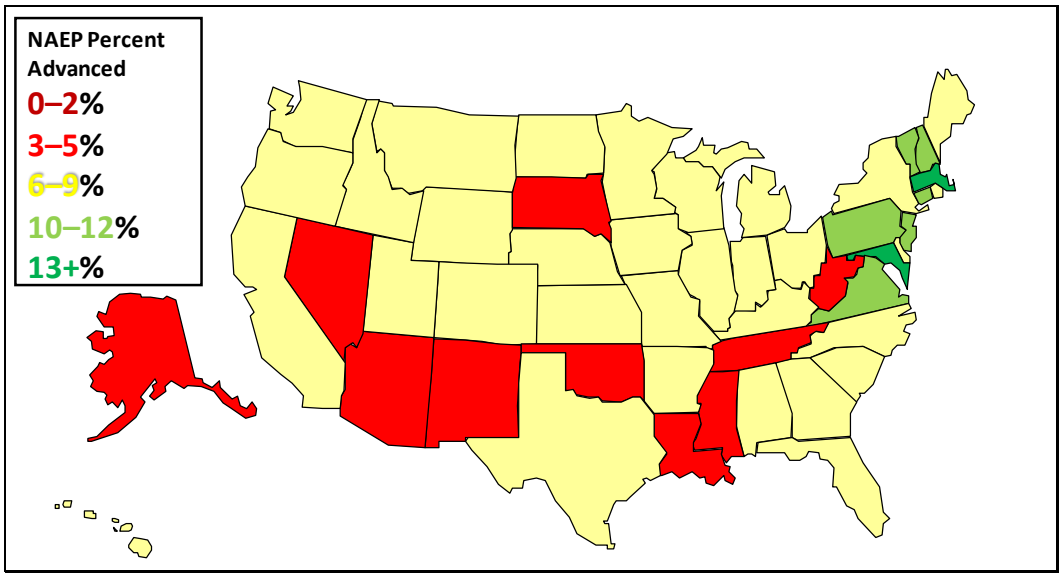
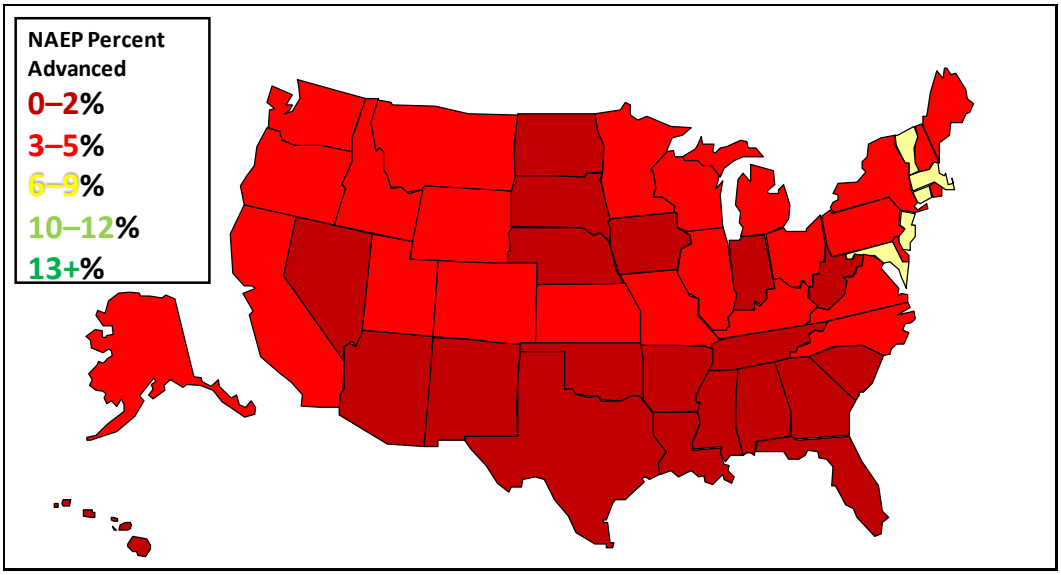


Figure 5. Percent of Students Scoring Advanced on 2011 NAEP Grade 8 Reading

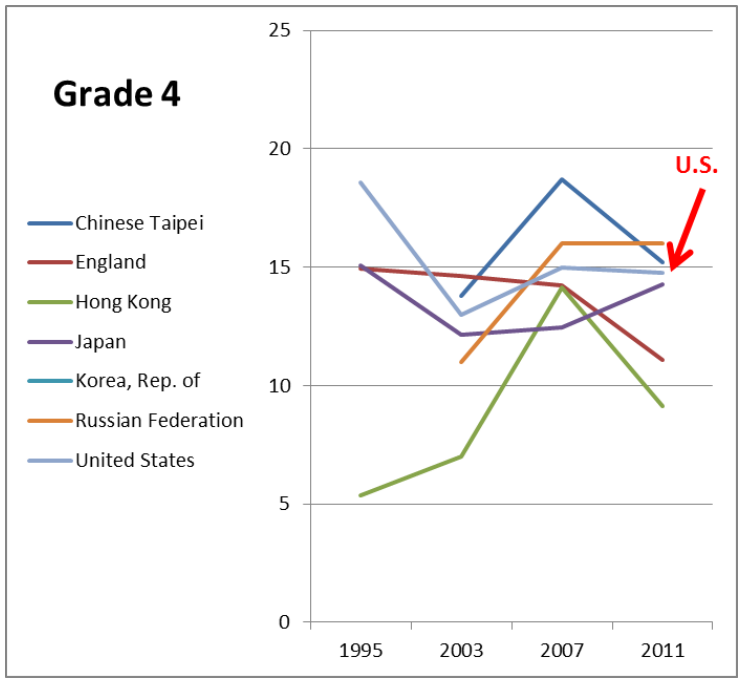


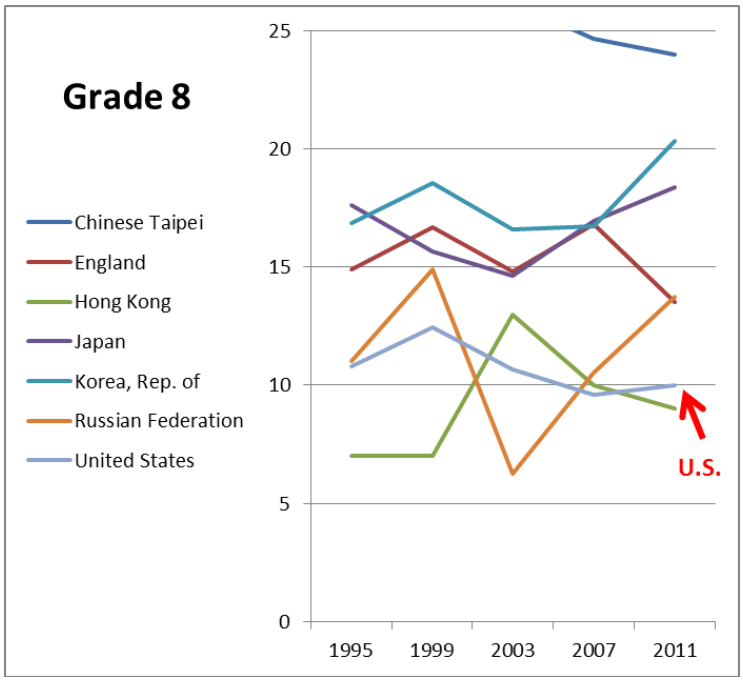
These data do not paint a pretty picture about American educational excellence, but they do beg the question, How much excellence is "enough?" Does eight percent advanced in Grade 8 math satisfy our economic requirements? Fortunately, we do have comparison data in the form of the international Trends in International Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Study (PIRLS) assessments, which are similar in structure to NAEP and allows for direct comparisons among countries. These results are presented in Figures 6-10.

In science (Figures 6 and 7), American Grade 4 students perform at the advanced level in similar proportions to students in Taiwan and Russia; approximately 15% of U.S. students scored at the advanced level in 2011. At Grade 8, the American results are much less impressive. In both grades, the trajectory is negative, although roughly within the standard error.[3]

[3] i.e., don't read into it.

Figures 6 and 7. Percent of Advanced Scores (625+) on TIMSS Science Assessments[4]

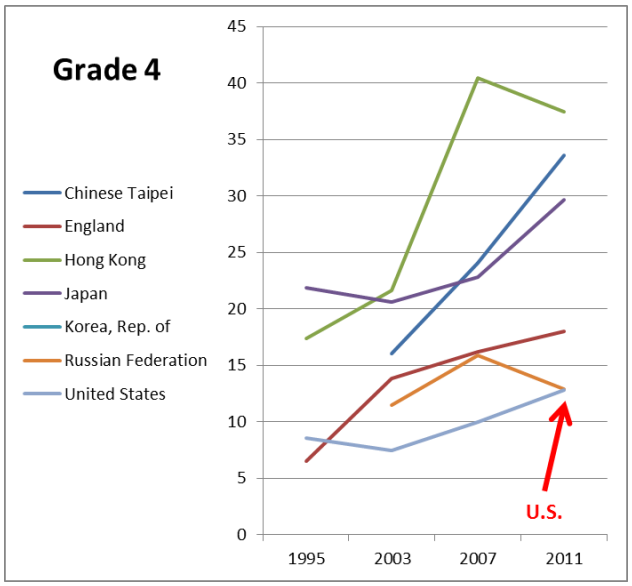


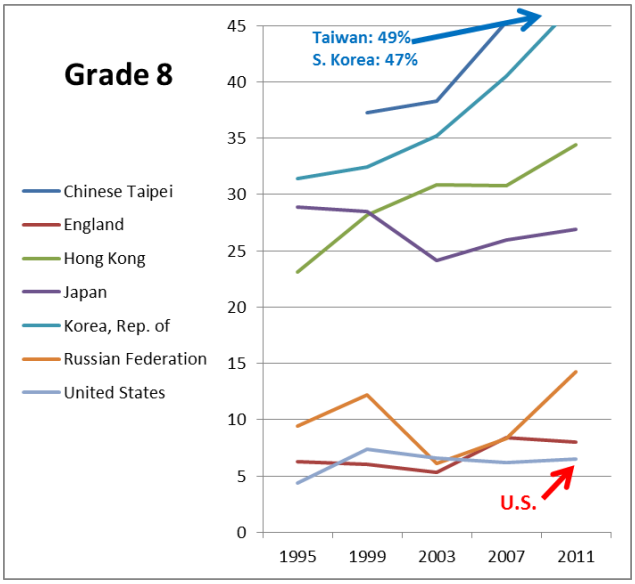


[4] Standard errors for these data range from 0.6 to 1.5 (Grade 4) and 0.5 to 2.3 (Grade 8).

In math (Figures 8 and 9), American students score at the highest level in significantly lower percentages than students in the comparison countries.[5] The American trend is positive at Grade 4 (but less positive than in most comparison countries) and essentially flat in Grade 8.

Figures 8 and 9. Percent of Advanced Scores (625+) on TIMSS Math Assessments [6]

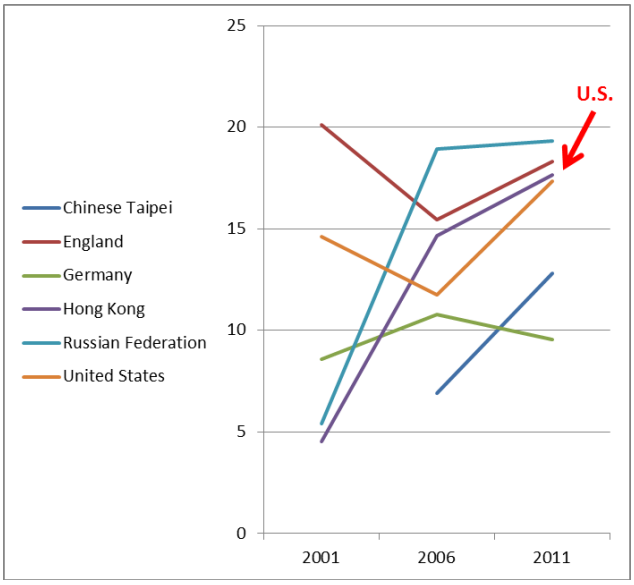




[5] We selected comparison countries based on a number of criteria. In the end, the comparison countries represent a reasonable distribution of participating developed countries. Countries with spotty participation over the years, such as Finland and Germany, were removed to make the figures easier to read.
[6] Standard errors for these data range from 0.5 to 1.8 (Grade 4) and 0.6 to 2.0 (Grade 8).

In reading (Figure 10), American Grade 4 students perform quite well compared to other countries, with a positive trend from 2001 to 2011. PIRLS does not assess Grade 8 students, but based on the NAEP data in Table 1 and the TIMSS results (which generally show better performance by American students in Grade 4 vs. Grade 8), we would expect international comparisons at Grade 8 to be less favorable for American students.

Figure 10. Percent of Advanced Scores (625+) on PIRLS Grade 4 Reading Assessment[7]



We note that one reasonable counterargument to these data, voiced most directly and effectively by Salzman and Lowell (2008), is that these international comparisons regarding high-performing students are overblown, in large part because, even at low percentages, the size of the U.S. population means that we have more high scorers than smaller countries with higher percentages of advanced performers. True, but in the comparisons above, Russia and Japan are not small countries, and the percentage of advanced students probably does matter in advanced economies, especially those with well-documented surpluses of high-tech jobs that remain unfilled during an era of high general unemployment.

[7] Standard errors for these data range from 0.7 to 1.5.

But even assuming that the number of American advanced performers is sufficient to meet the nation's needs, the demographics of these advanced scorers is critically important to examine: If all, or even most, demographic groups are well-represented among our current group of advanced students, then issues of both equity and excellence will be satisfied. If the diversity of the U.S. K-12 student population is not proportionally represented in our high-achieving students, one could argue that neither equity nor excellence has been achieved, with serious implications for the country's future. In 2010, we found considerable excellence gaps. What does the situation look like in 2013?

SECTION IV: THE CURRENT STATUS OF EXCELLENCE GAPS

We followed similar procedures to the 2010 report,[8] examining excellence gaps at Grades 4 and 8 on the NAEP math and reading assessments, with a focus on racial, socio-economic, ELL status, and gender excellence gaps.[9]

DATA SOURCES

This paper includes national and state data drawn from the National Assessment of Educational Progress (NAEP). Established in 1969, the NAEP assesses American students' performance in Grades 4, 8, and 12 in a wide range of subject areas in all 50 states.[10] Test results are available through the National Center for Education Statistics (NCES), the primary federal entity for collecting and analyzing data related to education. The NAEP program reports student performance in four basic categories: below basic, basic, proficient, and

[8] In the previous report, we provided data using (1) the percentage of students achieving advanced scores and (2) the 90th percentile score for each subgroup on the various tests. In general, excellence gaps using the percent advanced method are growing, and gaps using the 90th percentile method are (very) slowly shrinking. After considerable internal debate, we chose to report only the percentage (i.e., attainment) results in this report, primarily because those data appear to be more relevant to policymakers.

[9] For this report, we found that advanced Native American percent advanced and 90th percentile scores were very similar to those of Hispanic students. Given the small Native American populations in most states and to simplify the figures, we did not include those data in this report.

[10] NAEP includes both public and private students in the national results, but only public students for state-level results.

advanced. Table 2 excerpts the criteria established by the NAEP governing board for the advanced level using descriptions drawn directly from the NAEP website.[11]

We restrict our analyses to data at Grades 4 and 8, both for brevity and due to concerns about motivation effects among Grade 12.

TABLE 2. NAEP STANDARDS FOR BASIC, PROFICIENT, AND ADVANCED STATUS

Subtest	Basic	Proficient	Advanced
Math Grade 4 (2011)	Students should show some evidence of understanding the mathematical concepts and procedures in the five NAEP content areas.	Students should consistently apply integrated procedural knowledge and conceptual understanding to problem solving in the 5 NAEP content areas.	Students should apply integrated procedural knowledge and conceptual understanding to complex and non-routine, real-world problem solving in the five NAEP content areas.
Math Grade 8 (2011)	Students should exhibit evidence of conceptual and procedural understanding in the five NAEP content areas. This level of performance signifies an understanding of arithmetic operations … on whole numbers, decimals, fractions, and percentages.	Students should apply mathematical concepts and procedures consistently to complex problems in the five NAEP content areas.	Students should be able to reach beyond the recognition, identification, and application of mathematical rules in order to generalize and synthesize concepts and principles in the five NAEP content areas.
Reading Grade 4 (2011)	Students should be able to locate relevant information, make simple inferences, use their understanding of the text to identify details that support a given interpretation, [and] interpret the meaning of a word as it is used in the text.	Students should be able to integrate and interpret texts and apply their understanding of the text to draw conclusions and make evaluations.	Students should be able to make complex inferences and construct, support their inferential understanding of the text, [and] apply their understanding of a text to make and support a judgment.
Reading Grade 8 (2011)	Students should be able to locate information; identify statements of main idea, theme, or author's purpose; and make simple inferences from texts. They should be able to interpret the meaning of a word as it is used in the text. Students performing at this level should also be able to state judgments and give some support about content and presentation of content.	Students should be able to provide relevant information & summarize main ideas and themes. They should be able to make and support inferences about a text, connect parts of a text, and analyze text features. Students … should be able to fully substantiate judgments about content and presentation of content.	Students should be able to make connections within and across texts and to explain causal relations [and] evaluate and justify the strength of supporting evidence and the quality of an author's presentation. Students … should be able to manage the processing demands of analysis and evaluation by stating, explaining, and justifying.

[11] For mathematics, see http://nces.ed.gov/nationsreportcard/mathematics/achieveall.asp. For reading, see http://nces.ed.gov/nationsreportcard/reading/achieveall.asp.

NAEP results suggest that the excellence gaps among different racial groups, high- and low-socio-economic status, different levels of English language proficiency, and gender groups have widened in the era of NCLB. The percentage of White, more affluent, and English-language speakers scoring at the advanced level has increased substantially in math while the performance of other groups has remained relatively stable. There has been little change in the percentage of students performing at the advanced level in reading, with particularly low performance across nearly all subgroups in Grade 8. Excellence gaps in math are generally greater in Grade 8 than in Grade 4, while the reverse holds true in reading due primarily to such a small percentage of students scoring at the advanced level in Grade 8.[12]

State data included in this report come from the various standardized state assessments. State data generally mirror NAEP data on excellence gaps in gender, ethnicity and socio-economic status. However, those assessments vary in multiple ways by state, including terminology of high achievement and socio-economic status, cut scores for above average achievement, and scoring mechanisms. One trend is common across states: State assessments have more (often far more) students scoring at advanced levels than NAEP assessments. Profiles of each state and its excellence gap data are available at http://cepa.uconn.edu/mindthegap.

RACIAL EXCELLENCE GAPS[13]

Figures 11-14 present excellence gap data comparing the percent of students scoring advanced on the NAEP Grade 4 and 8 math and reading exams. In the figures, we set the maximum range at 15% advanced for two reasons. First, 15%

[12] All gaps are statistically significant, except for ELL Reading Grade 8 (due to a limited 2003 sample). Gap trends in Math are statistically significant for ethnic, income, and English language-based gaps.
[13] This report follows NAEP precedents in describing student ethnicity. Numbers measuring change may be slightly different in the text than in the figures due to rounding.

appears to be a reasonable goal for all subgroups of students.[14] Second, a couple of the figures become difficult to interpret if a larger range is used. For example, the difference between the performance of Asian Americans and Black students is so large in Grade 8 Math that it obscures the very limited improvements among Black students over the past generation. We also feel that the White-Black and White-Hispanic gaps (i.e., gaps among the three largest racial groups of students) are the most critical policy issues when addressing educational excellence.

- In Grade 4 mathematics (Figure 11), from 1996 to 2011, the percentage of White students scoring at the advanced level increased by 6.1 percentage points from 2.9% to 9.0%, while the percentages of Black and Hispanic students increased by only 1.0% and 1.7%, respectively.
- Similarly, in Grade 8 mathematics (Figure 12), from 1996 to 2011, the percentage of White students scoring at the advanced level increased by 5.9 percentage points, while the percentage of Black and Hispanic students increased by 1.4 and 1.9 percentage points, respectively. The percentage of Asian-American students scoring advanced at both grade levels increased massively over the 15-year period.
- Since the percentage of Asian-American and White students scoring at the advanced level increased much faster than those of Black and Hispanic students, the excellence gaps widened in mathematics in both grades.
- In Grade 4 reading (Figure 13), from 1998 to 2011, the percentage of White students scoring at the advanced level increased by 1.5 percentage points to 10.9%, while the percentages of Black and Hispanic students scoring advanced in 2011 increased by 1.1% and .8%, respectively. Asian-American students scoring advanced sharply from 1998-2009, after which the rate of change mirrored that for White students. Grade 8 reading

[14] One international testing expert told us that "at least 20-25% of American students should be scoring advanced on these tests." That may be true, but that goal is too daunting given the current performance of those students, hence our suggestion that 15% be the reasonable goal.

results (Figure 14) are universally poor from 1998 to 2011, although small increases were observed between the last two testing cycles for most groups.

- Since the percentage of White students scoring at the advanced level increased slightly while those of Black and Hispanic students were essentially stagnant, the excellence gaps among those racial groups changed little, to 8.6% for Black students in Grade 4 and 4.0% in Grade 8, and to 8.2% for Hispanic students in Grade 4 and 3.7% in Grade 8. Gaps between Asian-American students and other groups increased at both grade levels.

Figure 11

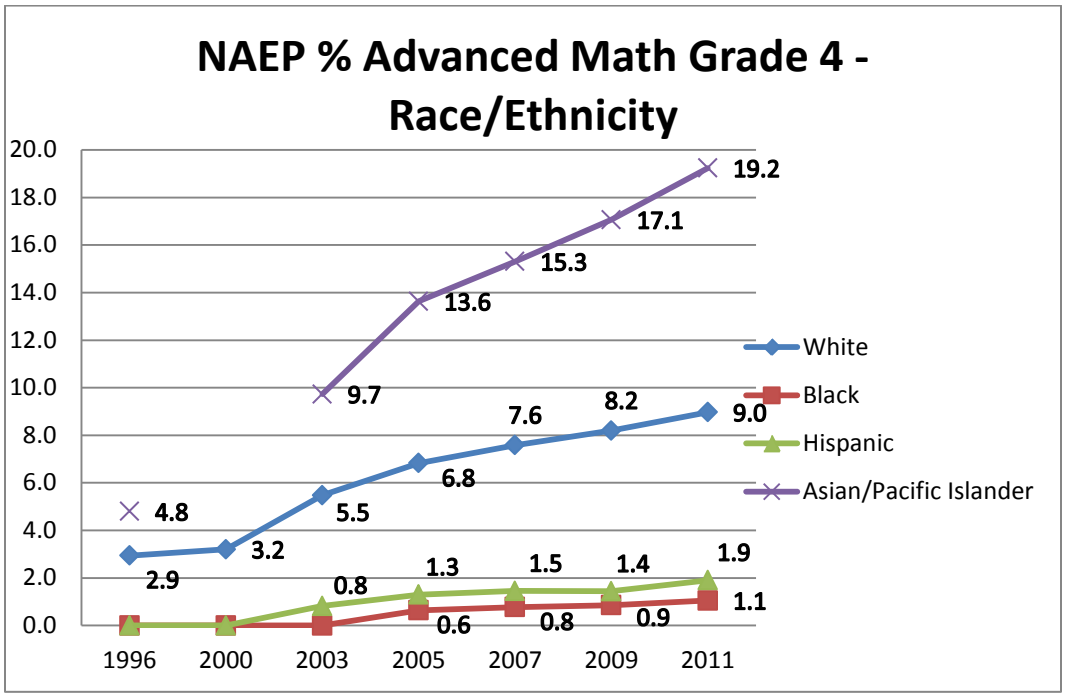


Figure 12

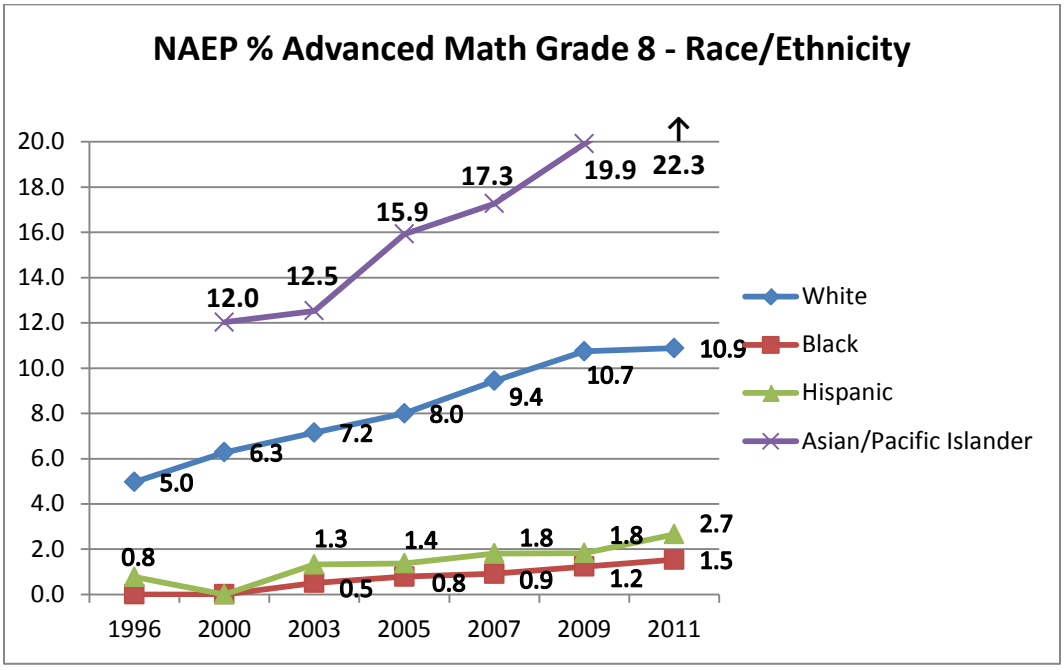


Figure 13

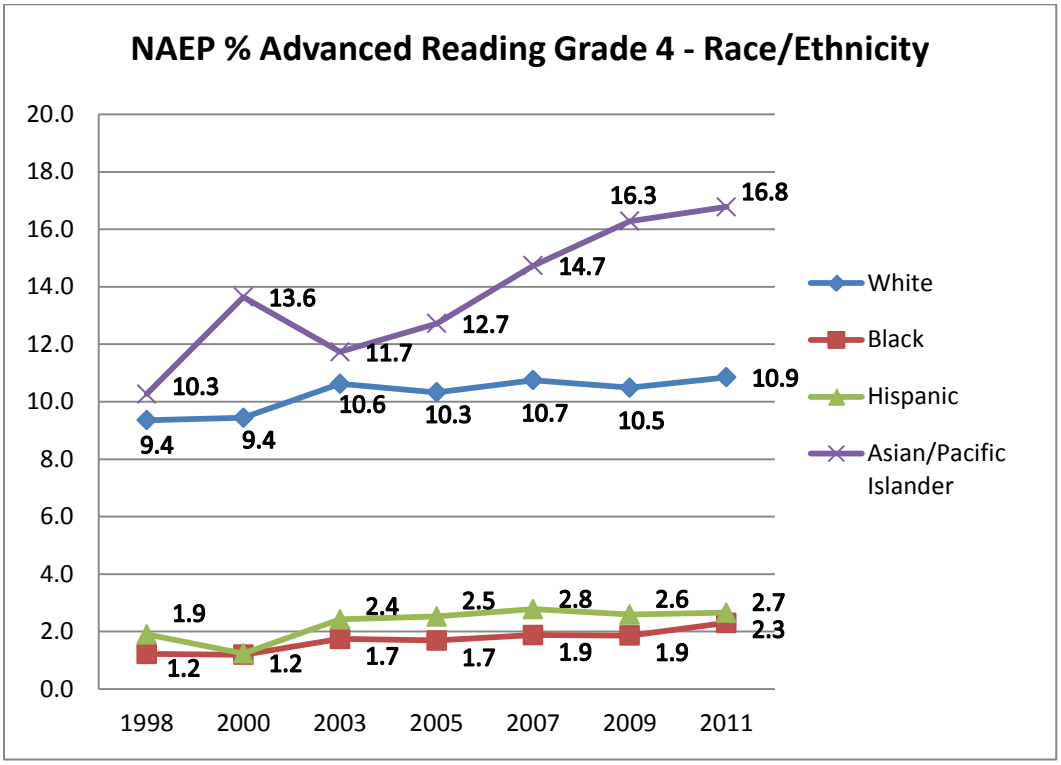
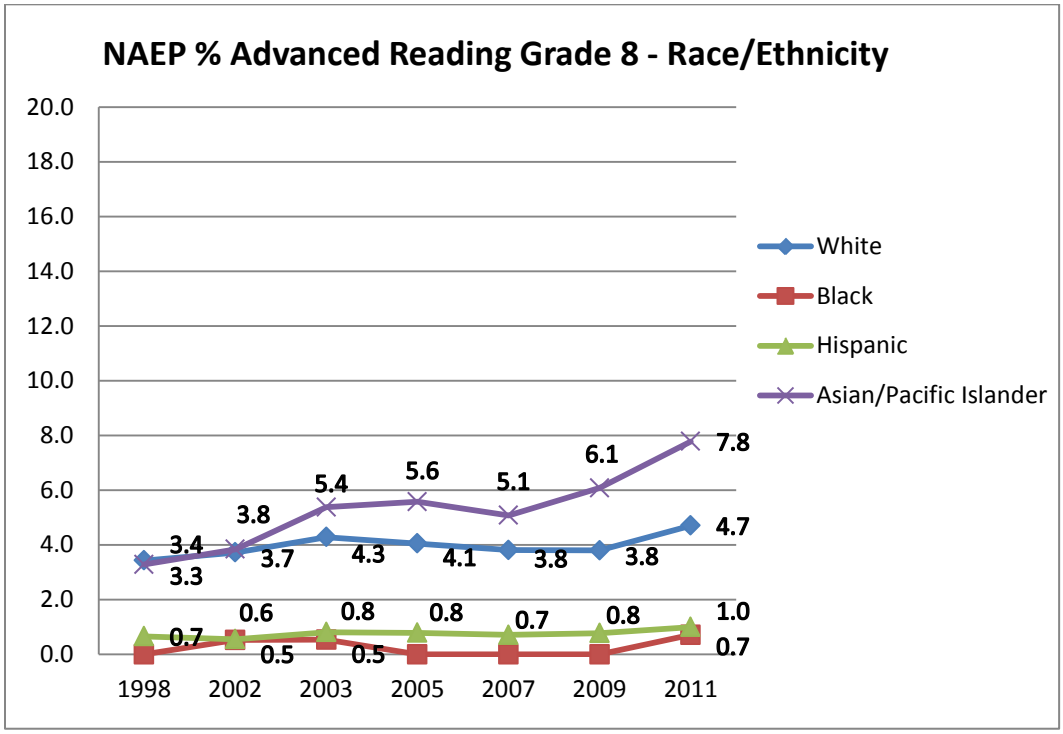


Figure 14



SOCIO-ECONOMIC STATUS

Figures 15-20 represent trends in socio-economic excellence gaps. Although the shortcomings of using free/reduced-price lunch status are well-known, other potential indicators were not readily available during the preparation of this report. In addition, lunch status was used in the previous report and was reused for consistency's sake.

- In Grade 4 mathematics (Figure 15), from 1996 to 2011, the percentage of students scoring at the advanced level who are not eligible for the National School Lunch Program increased by 8.3 percentage points to 11.4%, while the percentage of students who are eligible for free or reduced-priced lunch (FARM) increased by only 1.5 percentage points to 1.8%.
- Similarly, in Grade 8 mathematics (Figure 16), from 1996 to 2011, the percentage of students scoring at the advanced level who are not eligible for the National School Lunch Program increased by 8.5 percentage

points, while the percentage of students who are eligible for free or reduced-priced lunch increased by 1.5 percentage points.

- The excellence achievement gaps have widened in mathematics from 1996 to 2011 by 6.8 percentage points in Grade 4 (to 9.6%) and 7.0 in Grade 8 (to 10.3%).
- In Grade 4 reading (Figure 17), from 1998 to 2011, the percentage of students scoring at the advanced level who are not eligible for the National School Lunch Program increased by 2.6 percentage points, from 10.5% to 13.1%, while the percentage of students who are eligible for free or reduced-priced lunch scoring at the advanced level increased by .9 percentage points, to 2.4 percent. In Grade 8 reading (Figure 18), from 1998 to 2011, the percentage of FARM students increased by .9 points to .9% and for non-FARM students by 1.8% to 5.1%.
- Excellence achievement gaps have widened somewhat (1.7%) in Grade 4 reading to 10.7% for students scoring at the advanced level who are not eligible for the program compared to those students who are eligible for free or reduced-priced lunch. However, in Grade 8 reading, the excellence gaps have not changed as much over the years of analysis, increasing by .9 points to 4.2%.

Figure 15

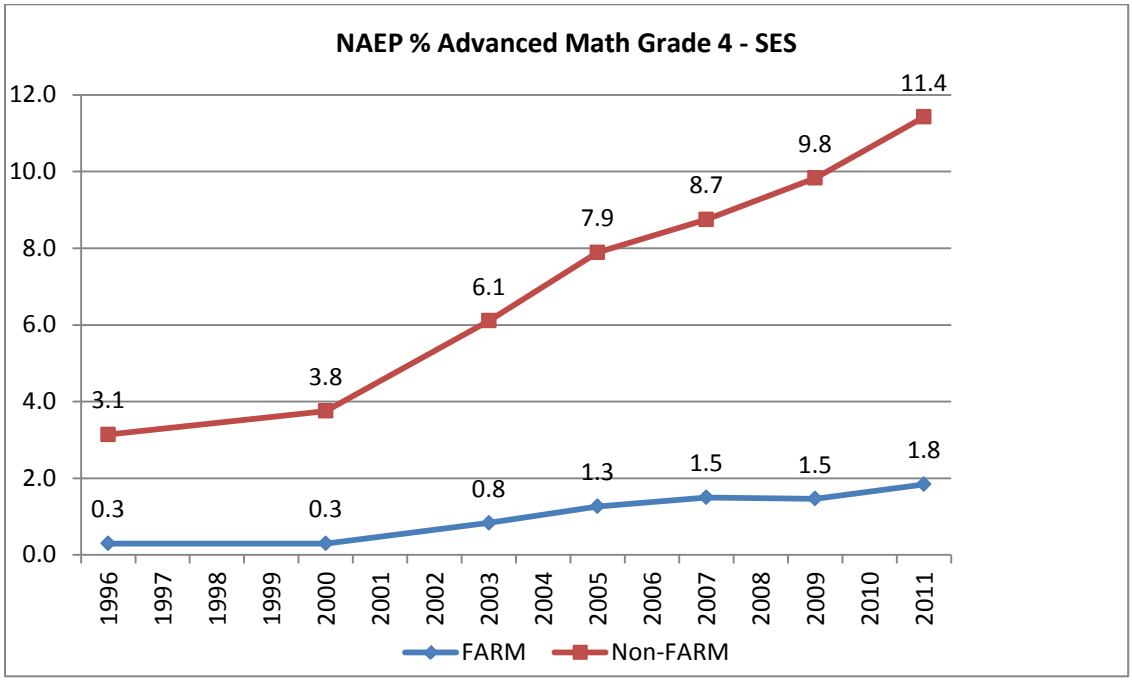


Figure 16

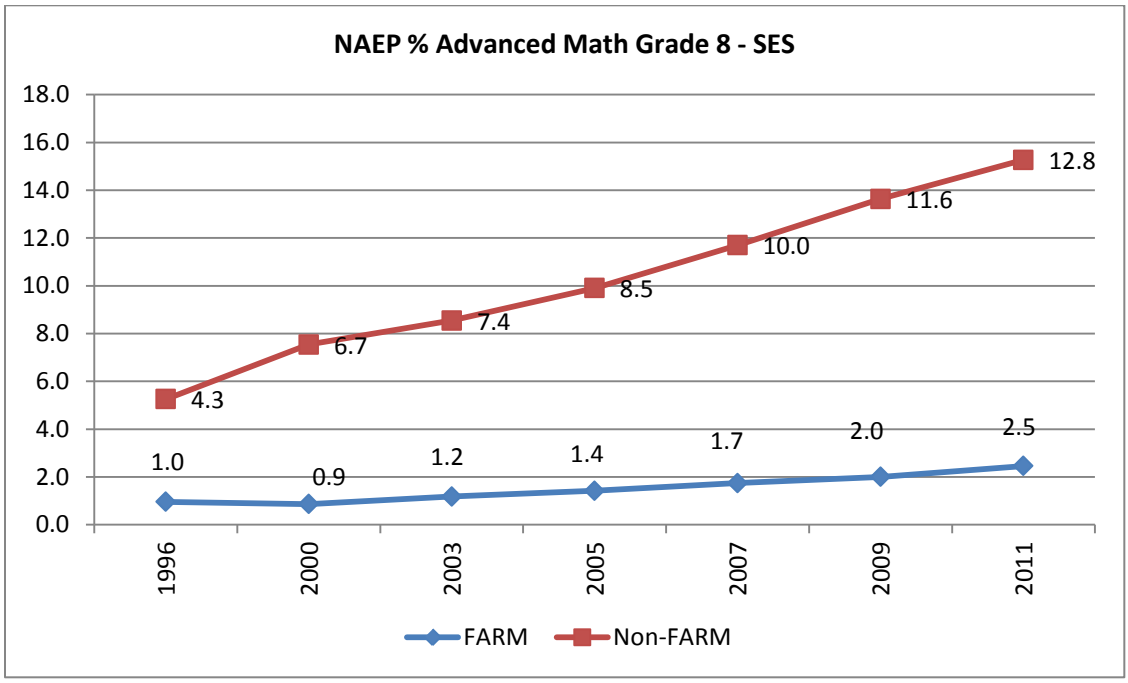


Figure 17

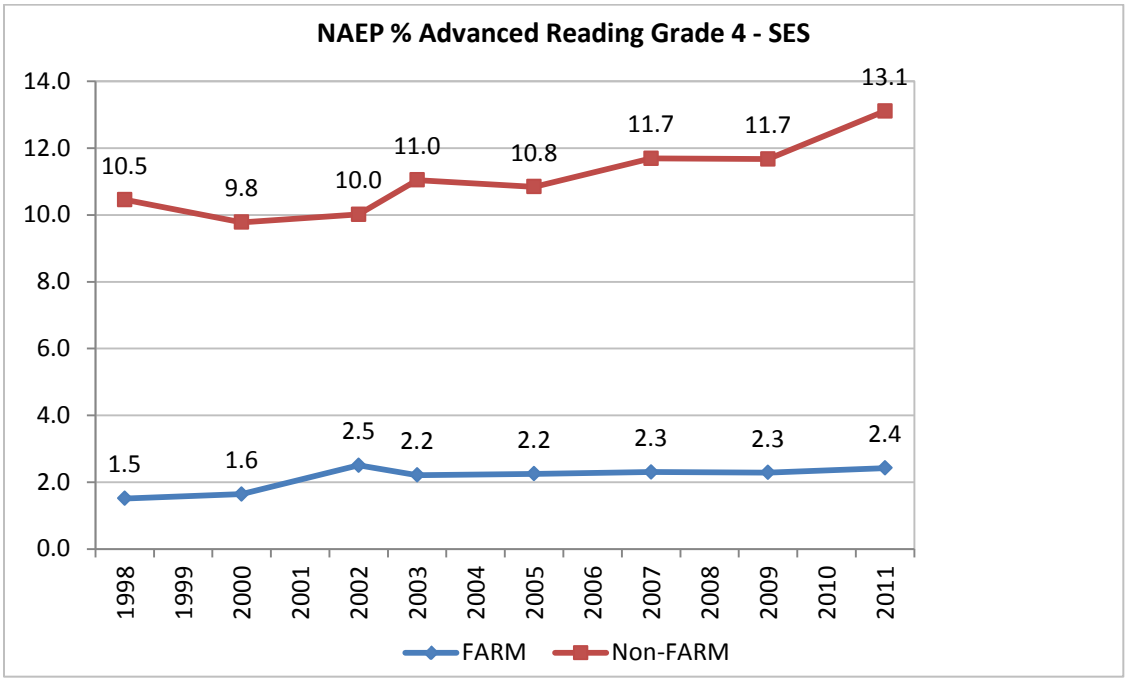
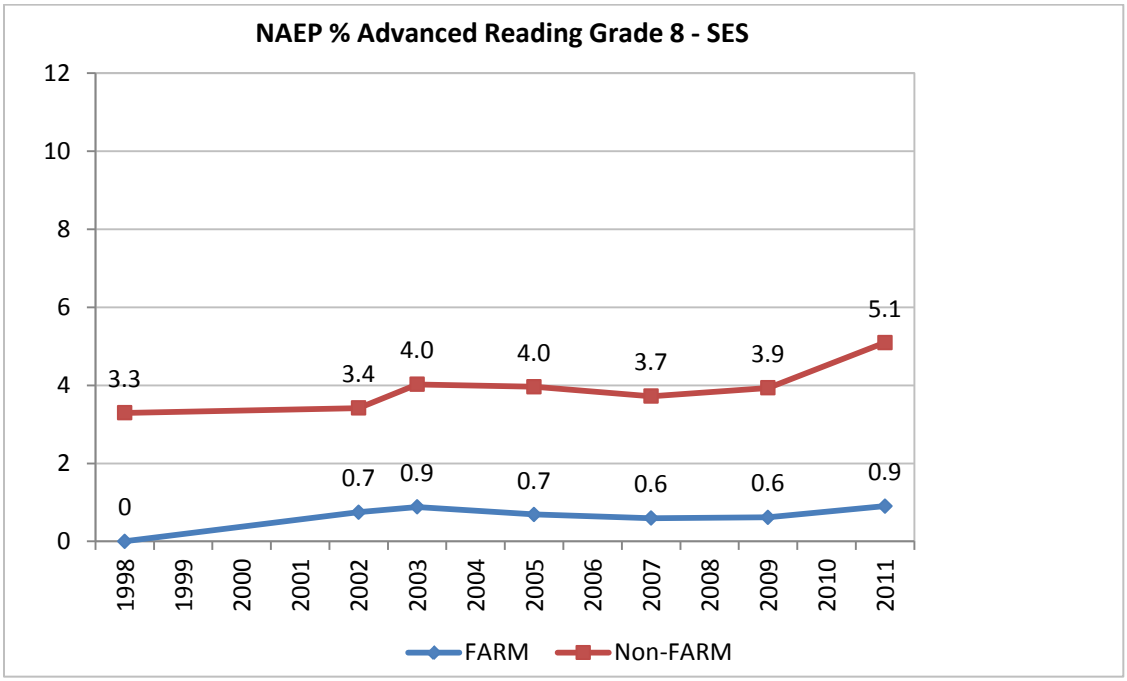


Figure 18



Gender and ELL Status

For purposes of brevity, detailed statistics on excellence gaps by gender and ELL status are not included in this report but are available at http://cepa.uconn.edu/mindthegap. In brief, gender gaps have remained constant since the 2010 report, and trends in ELL gaps mirror race gaps, growing considerably over time.

Section V: Implications and Recommendations

Based on the results of our studies and a growing body of research, there is considerable evidence that America has a permanent talent underclass. Year after year, with billions and billions of dollars spent on interventions and policy initiatives that focus largely on minimum competency, the vast majority of our bright minority children, ELL students, and students of limited financial means underperform academically. The trends we noted in 2010 were depressing, but there were limited signs of hope. The data we explored for the current study should crush anyone's optimism about the country's success in developing academic talent: The rich are getting richer, so to speak (but not in all cases), and the poor continue to show evidence of incremental, insufficient progress.

Summary of Major Findings

The percentage of American students who perform at advanced levels on TIMSS and PIRLS does not compare favorably to those in other developed countries

The differences are less pronounced for younger students, but by Grade 8 the differences are considerable. In math, the gaps between American students and students in higher performing countries are especially stark.

EXCELLENCE GAPS REMAIN LARGE AND, IN MANY CASES, CONTINUE TO GROW

Within the U.S., we found little evidence of shrinking gaps. In most cases, gaps have stabilized or grown. Levels of advanced achievement and the size of excellence gaps vary considerably across states.

STATE ASSESSMENTS CONTINUE TO OVERIDENTIFY EXCELLENCE; REGARDLESS, EXCELLENCE GAPS ARE FOUND ON ALMOST EVERY STATE ASSESSMENT

As we noted in the 2010 report, *every* state scores a higher portion of its students above average on state assessments than on the NAEP tests. We were optimistic that the upcoming Common Core assessments would partially address this issue, but problems with those assessment programs are leading to a scenario in which states may adopt a variety of assessments, which raises questions about whether the problem of insufficient interstate comparability will be addressed successfully by the new assessment schemes.

RECOMMENDATIONS

It seems ominous that the United States appears to have a permanent underclass regarding academic talent, given the need for advanced intellectual skills in our information-based society. This phenomenon is especially troubling given that the percentage of poor and minority students is increasing.

1. START PAYING ATTENTION

When any new education policies are created, policymakers should ask themselves two questions: How will the proposed policy impact our highest achieving students? How will the proposed policy help more students achieve at the highest levels? As simple as this sounds, these questions are rarely asked. Yet there is plenty of evidence that this can be turned around, given that over the past two generations policymakers have routinely asked similar questions about special education students, poor students, etc.

Furthermore, when test results are released, attention should be called to the results of advanced students, including the size of excellence gaps. The data are readily available but almost never reported, and journalists tend to ignore them when the data do appear in press releases. By definition, that which is not visible is invisible.

2. INCLUDE THE PERFORMANCE OF ADVANCED STUDENTS IN STATE ACCOUNTABILITY SYSTEMS

Very few states include indicators of advanced achievement in their K-12 education accountability systems. This omission sends the implicit message that advanced achievement is neither important nor a goal, and as a result, the vast majority of other education policies, systems, and interventions align with the indicators that focus attention elsewhere. In addition, the use of value-added models in these accountability systems may not benefit advanced students to the

degree that many advocates expect. This approach, which focuses on student improvement rather than student performance at a single point in time, sounds helpful in theory. But in order to benefit advanced students, value-added systems need to use tests that have high ceilings.

3. Acknowledge the Major Role Poverty Plays in Widening Excellence Gaps

The dominant educational assumption in policy circles for the past 15 years has been that poverty is largely unsolvable, hence the need to "stop using poverty as an excuse." That's not surprising – students' demographic characteristics are often used as an excuse to establish low expectations for them – but pretending we can close achievement and opportunity gaps in the absence of poverty reduction is a puzzling response to the issue. According to the 2011 and 2012 editions of the *NCES Condition of Education*, half their student population in 17 states are eligible for free or reduced price lunch. A stunning 35 states have over 40% of their students eligible for these programs. In addition, 13 states have majority-minority student populations, with another 10 nearing majority-minority school populations. Pundits talk about how America is becoming more diverse, but the United States is a very diverse country already, and one with childhood poverty rates similar to those in some developing countries. Other wealthy countries have much more aggressive childhood poverty reduction policies, and they have significantly lower childhood poverty rates as a result.[15]

4. Address the "Low-hanging Policy Fruit" Immediately

Each state should quickly examine its policies that may help or hinder the promotion of high achievement in its K-12 schools. For example, in the previous report, we noted that students in one state who enrolled in college before graduating from high school were denied access to the state's otherwise generous

[15] See UNICEF Innocenti Research Centre (2012), 'Measuring Child Poverty: New league tables of child poverty in the world's rich countries,' *Innocenti Report Card 10*, UNICEF Innocenti Research Centre, Florence.

financial aid programs. After the release of the report, we heard from a number of educators and policymakers who indicated that this phenomenon is endemic across states, due in part to technicalities in federal financial aid rules. No matter how unintended these side effects may be, there is little question that they are anti-excellence policies. How ironic that the nation that put people on the moon with 1960s technology cannot find a way, over 40 years later, to design college financial aid systems that don't punish early college entrants.

Many other examples of low-hanging policy fruit exist, especially regarding how students move through the educational system: How do policymakers and educators encourage use of the various forms of academic acceleration?[16] Research on acceleration is extensive and highly convincing, yet it remains inexplicably underused. More specifically, to what extent do state policies allow for flexible cut-off dates for kindergarten entrance? Any policies and practices that allow students to move through the K-12 system at an accelerated pace appear likely to promote excellence and reduce K-12 education costs. We suspect that students in groups at the bottom end of excellence gaps have even less access to potential interventions than do more privileged students, further exacerbating gaps.

As noted earlier, the lack of attention to excellence and related gaps is also puzzling, leading us to wonder how state accountability or teacher evaluation systems provide incentives for moving students from the basic to advanced range (in most states, there appear to be few or no incentives). And are creativity and other 21st century skills embedded in state and local education policies, or is their importance merely given lip service? These are not difficult questions to answer, but they usually are not asked.

[16] See *A Nation Deceived* by Colangelo, Assouline, and Gross (2004).

5. Accelerate Research on Advanced Learning and Talent Development

One reasonable criticism of the 2010 study was our reliance on standardized test data at the national and state levels. We agree that a broader range of indicators—for example, 21st century skills or measures of creative productivity—would be helpful for understanding the nature and impact of excellence gaps. However, reliable data on such indicators, in our experience, do not currently exist. Access to these data could dramatically transform policy debates about excellence and excellence gaps.

For example, it would be helpful to be able to link excellence gaps in K-12 education with a range of important personal and economic outcomes, ranging from subjective well-being to personal income to patents and other creative accomplishments. Current changes to patent law allow the U.S. Patent and Trademark Office to collect data that will help us understand the size of racial gaps in patent applications and awards, but it may be some time before those data are available for policy researchers.

In addition, the almost complete lack of funding for research on educational excellence—across nearly all states and every federal agency—does not lead to optimism that researchers will be able to answer key questions in coming years, such as how to structure interventions to reduce excellence gaps.[17]

6. Identify the Federal Role in Addressing Low Levels of Excellence and Excellence Gaps

Federal support for excellence in K-12 education is largely nonexistent. The one federal research and intervention program in this area was eliminated mid-cycle,[18]

[17] However, as noted in the previous report, some evidence (e.g., Harris & Harrington, 2006) suggests that we have little convincing evidence that accountability-based interventions have significant impacts on any gaps.

[18] The Javits Act was eliminated during negotiations to address federal budget concerns. The irony of eliminating the federal government's sole (and tiny) program devoted to eliminating excellence gaps in the name of the country's future fiscal health was lost on most policymakers.

and federal education law, specifically the Elementary and Secondary Education Act (ESEA) of 1965, does not address advanced achievement or excellence gaps. Indeed, the absence of even token language in federal policy reinforces the focus on minimum competency. We remain optimistic that the long-delayed reauthorization of ESEA will include at least a minor emphasis on the goal of excellence in American schools.

The lack of federal funding in this area appears to be easier to address: Require, at the least, any evaluations of federally-supported interventions to report data regarding the impact on advanced students and moving more students from the basic to advanced levels. If the intervention isn't designed to address these issues, there is still value in determining if there are negative, unintended consequences for academic excellence. Better yet, but admittedly a harder sell, a small percentage of K-12 education funding could be set aside in relevant agencies to support interventions and research that specifically address excellence gaps and related issues.

CONCLUSIONS

Warren Buffett published an essay earlier this year in which he called attention to the glass ceiling that many bright women continue to encounter, effectively cutting the talent pool in half:

> No manager operates his or her plants at 80% efficiency when steps could be taken that would increase output. And no CEO wants male employees to be underutilized when improved training or working conditions would boost productivity. … If obvious benefits flow from helping the male component of the workforce achieve its potential, why in the world wouldn't you want to include its counterpart? ... We've seen what can be accomplished when we use 50% of our human capacity. If you visualize what 100% can do, you'll join me as an unbridled optimist about America's future.[19]

We agree with Mr. Buffett's sentiment, but his math is way off. Based on the results of our two studies in this area, the available data suggest that the U.S. is relying on much less than half of its talent—in many states, we'd put the percentage at considerably less than a quarter. In essence, Mr. Buffett focused on the glass ceiling, forgetting that large percentages of our bright students don't even get into the room.

In reviewing the trend data for this report, we find it difficult to escape the conclusion that America has developed a permanent talent underclass. In an age of increasing global competitiveness, it is somewhat harrowing to imagine a future in which the largest, fastest-growing segments of our K-12 student population have almost no students performing at advanced levels academically. In many states, including many of our largest, this is already the reality.

[19] http://money.cnn.com/2013/05/02/leadership/warren-buffett-women.pr.fortune/index.html

The principal result of the Excellence Gap is the under-representation of low-income and minority students among those students performing at highest levels. This under-representation can be better understood by looking at the very small proportion of low-income students who reached the Advanced level on the 2011 NAEP. In Grade 8, 8% of all eighth graders reached the Advanced level in mathematics. Extrapolated to the entire country, this amounts to approximately 290,000 of the 3.6 million U.S. eighth graders. Of the 44% of all students eligible for free and reduced meals (about 1.6 million), less than 40,000 would score at the Advanced level on the NAEP, roughly 160,000 fewer than if low-income students did as well as more affluent students. In other words, schools are producing on the order of 160,000 fewer high-performing eighth grade students *every year*.

The irony of the United States having an excellence problem is not lost on us, but it appears to be lost on the general public and our policymakers. In California, roughly 1% of Hispanic Grade 4 and Grade 8 students score advanced on the NAEP reading and math tests. In North Carolina, in Grade 4 math the percentage of Black students scoring advanced rounds to zero. In Texas, an impressive 17% of Grade 4 students not eligible for free/reduced priced lunch scored advanced in math … but only 3% of eligible students scored advanced. If comparable results existed at the minimum competency level, there would be a furious, sustained uproar.

Why are such results at the advanced level acceptable?

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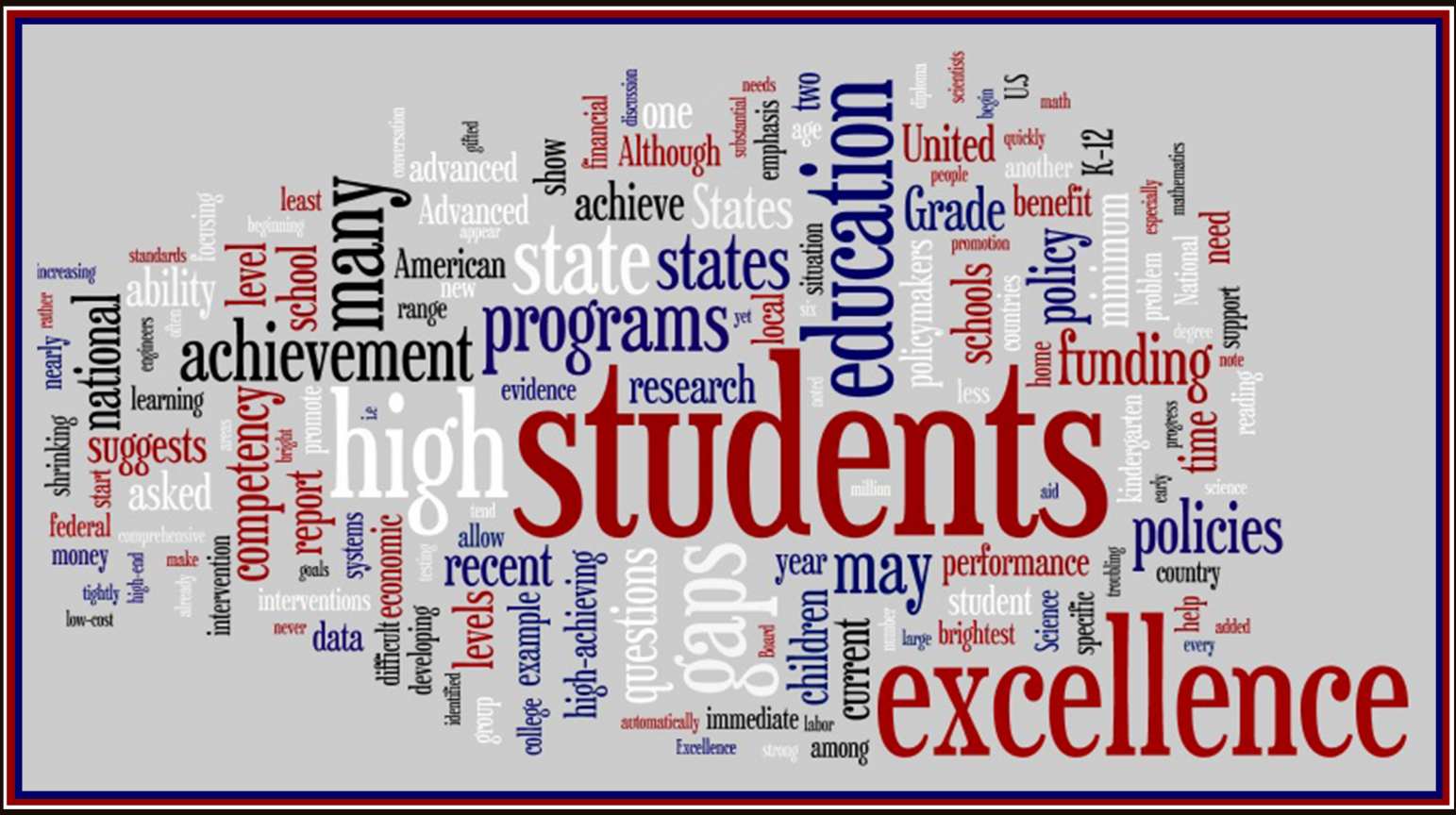

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