



A Performance Analysis of South Carolina's Gifted and Talented

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1 Introduction and Overview

Almost one in five of South Carolina's public school students are served by gifted and talented (G&T) programs. This study examines the performance of these students along several dimensions:

- How does the performance of the gifted and talented compare to that of their peers who are not served by G&T programs?
- How does performance vary by socioeconomic factors such as ethnicity or poverty?
- How does performance vary by the Absolute Rating of the school or district?
- Is there a “clustering” effect in gifted and talented performance? Do schools and districts with larger numbers of G&T students show evidence of performance which differs from schools and districts with smaller numbers of gifted and talented?

We begin with an overview of the extent to which students are served by gifted and talented programs at the state, district and school level. Examining the percentages of gifted and talented students served by district and the numbers of G&T students served by school frames the larger issues and operational challenges of how best to identify and serve South Carolina's gifted and talented students.

We proceed with several analyses of gifted and talented performance based on the Spring 2005 PACT administration to students in grades 3–8:

- a statewide analysis by type of gifted and talented service (Only-Academic, Only-Artistic, Both or Not-Served),
- an “achievement gap” study: a statewide analysis by demographic and socioeconomic characteristics such as ethnicity, poverty and the interaction between these two factors,
- an analysis by overall school achievement using the 2005 Absolute Rating from the 2005 School Report Cards,
- an analysis by grade level for grades 3–8, and
- an analysis by cohort which tracks the data available for each graduating class from the Class of 2008 through the Class of 2011.

We use several different methodologies in our performance analyses ranging from descriptive statistics, such as charts and tables of means and percentages, to inferential statistics, such as t-tests for a difference of means. We detail the study methodology for each part of the analysis within each section.

We conclude with a discussion of policy implications, not only for gifted and talented programs and the students they serve, but also for all students in grades 3–8.

2 How the Gifted and Talented Are Identified and Served

In general, S.C. Code Ann. §59-5-60 (2004) details the general powers and statutory authority of the State Board of Education. Specifically, State Board of Education Regulation R 43-220¹ governs the provision of services to those students identified as gifted and talented. The academically gifted and talented and artistically gifted and talented are identified through separate mechanisms.

2.1 Procedures to Identify the Academically Gifted and Talented

To identify the academically gifted and talented, districts are required to screen all students by “reviewing census aptitude and achievement test scores”² Students are identified as gifted and talented if they meet or exceed the 98th national age percentile composite score on an individual or group aptitude test in grades 1–2 or if they meet or exceed the 96th national age percentile composite score on an individual or group aptitude test in grades 3–12. Students may also be identified as academically gifted and talented if they meet the criteria in two of three dimensions:

- Dimension A: Reasoning Ability (Aptitude). Student meets or exceeds the 93rd national age percentile in at least one or a composite of three areas: verbal/linguistic, quantitative/mathematical, nonverbal.
- Dimension B: High Achievement in Reading or Mathematics. Student meets or exceeds the 94th national percentile or attains Advanced status on a nationally normed assessment instrument³ or a South Carolina statewide assessment like the Palmetto Achievement Challenge Test (PACT).
- Dimension C: Intellectual/Academic Performance. Student in grades 3–6 meets or exceeds the performance standards from Project STAR’s performance-based verbal or non-verbal assessment task, or student in grades 7–12 meets or exceeds a grade point average (GPA) of 3.75 on a 4.0 scale.

2.2 Procedures to Identify the Artistically Gifted and Talented

Artistically gifted and talented students are identified by means of a four-step process including referral, recommendation, demonstration and placement. Students can be referred by teachers, administrators, parents or peers in addition to self-referrals. The recommendation consists of a checklist form completed by a teacher who has observed the student’s behavior during the school year. Demonstration is accomplished by means of an audition and interview or questionnaire with an evaluation/placement team. The evaluation/placement team is mandated to interpret and evaluate the students to produce a rank-ordered list. In the course of the process, the team may require additional assessments or may place the student on a trial basis for a time period of at

¹This regulation is available at:

http://www.myschools.com/offices/cso/Gifted_Talented/documents/GT_Regulation06-04.doc.

²R 43-220, p6.

³An example is the Measures of Academic Progress (MAP) test developed by the Northwest Evaluation Association (NWEA).

least one semester up to one year. Students not meeting adequate progress as determined by the evaluation/placement team may be removed from the program.

Furthermore, each district is required to establish a review team consisting of at least three persons including an arts teacher, and administrator and a community member with experience in the arts to ensure that the assessments are unbiased and accurate and that the evaluation/placement teams are properly trained.

2.3 Performance Issues Arising from Identifying the Gifted and Talented

In studying the performance of the gifted and talented several issues which affect the interpretation and analysis of the data reflect how the gifted and talented are identified.

First, academically gifted and talented students are identified in part by high achievement in reading and math on tests such as the national Measures of Academic Progress (MAP) or the Palmetto Achievement Challenge Test (PACT). Specifically, achieving an Advanced score in reading or mathematics on PACT will qualify a student along Dimension B. To the extent that this study measures gifted and talented performance using PACT scores, attentive readers may wish to compare performance patterns on PACT English/Language Arts and PACT Mathematics apart from performance patterns on PACT Science and PACT Social Studies.

Second, artistically gifted and talented students are identified for achievement, aptitude and performance in the visual and performing arts, not in academic/intellectual areas. In particular, it should be noted that these artistically gifted and talented students are provided with *artistic* programs which match their identified needs. They are not served with *academic* programs which are directed towards the academically gifted and talented. However, the performance analysis of this study considers only academic performance as measured by PACT performance, even for those students identified and served by artistically gifted and talented programs. This study does not include any measure of artistic performance which may be more appropriate to examining the performance patterns of the artistically gifted and talented.

3 Students Served by Gifted and Talented Programs in South Carolina

In evaluating the performance of students served by gifted and talented programs compared to their peers not served by such programs, we examined Palmetto Achievement Challenge Test (PACT) results in four subject areas (English/Language Arts, Mathematics, Science, and Social Studies) for 315,239 students in grades 3–8 who took the PACT during the Spring 2005 administration. Using flags in the 2005 PACT State Data File for service by type of gifted and talented program (Only-Academic, Only-Artistic or Both Academic and Artistic), we identified participation in gifted and talented programs in addition to using the demographic codes to identify student demographic characteristics.

In 2005, one in five (18.8 percent) of South Carolina's students in grades 3–8 were served by gifted and talented programs. As Table 2 shows, this totals just under 60,000 students statewide.

Table 1: Breakdown of All Students by Gifted and Talented Service

	Number	Percent
Gifted & Talented	59,180	18.8%
Not Served	256,059	81.2%
All Students (Grades 3–8)	315,239	100.0%

Gifted and talented programs offer two distinct types of services: academic G&T programs and artistic G&T programs. As Table 2 depicts, the vast majority of gifted and talented students (92.6 percent) are served only by academic G&T programs.

Table 2: Breakdown of Gifted and Talented Students by Gifted and Talented Service Type

	Number	Percent
Only-Academic	54,798	92.6%
Only-Artistic	2,468	4.2%
Both	1,914	3.2%
All Gifted & Talented Students	59,180	100.0%

3.1 Distribution of Gifted and Talented Students Among School Districts

While one in five of South Carolina's students participate in gifted and talented programs, they are not evenly distributed across the state's school districts. Students served by gifted and talented programs make up as few as 2.1 percent of all students in the Lee County school district (25 of 1219 students) to as many as 38.1 percent of all students in York 4 (1208 of 3172 students) as Figure 1 depicts.

District Percent Gifted by 2005 Absolute Rating

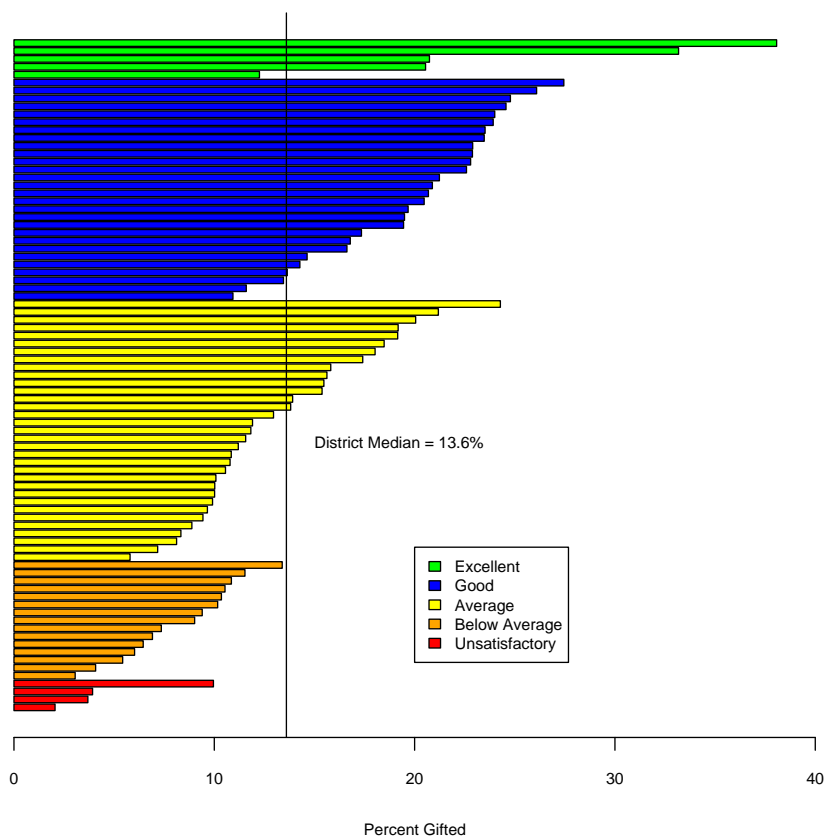


Figure 1: District Percent Gifted and Talented Service by 2005 Absolute Rating

Furthermore, there is a correlation between the District Report Card Absolute Rating and the percentage of all students participating in gifted and talented programs (called “Percent Gifted” in Figure 1). On average, districts rated Unsatisfactory in 2005 have the lowest percentage of students served by gifted and talented programs while districts rated Excellent have the highest percentage of students.

3.2 Distribution of Gifted and Talented Students Among Schools

At the school level, the disparities in the numbers of gifted and talented served are also apparent. Of the 863 schools with students taking the Spring 2005 PACT:

- Roughly 15 percent of schools have 10 or fewer students served by a gifted and talented program.
- Roughly 40 percent of schools have 30 or fewer students served by a gifted and talented program.

- Roughly 25 percent of schools have 90 or more students served by a gifted and talented program.

3.3 Implications of Gifted and Talented Service Disparities

Several issues arise from the disparity in the percentage and number of students served by gifted and talented programs across the state. Serving the often small concentrations of students identified as gifted and talented introduces challenges in resource allocation, choice of program model and choice of curriculum. Furthermore, they are all potential sources of variation in student performance that are difficult to quantify.

- **Resource Allocation Challenges.** Roughly 345 schools (40 percent of 863 schools) have 30 or fewer gifted and talented students. Because a school typically has three or more grade levels, this means that a large percentage of schools will not serve enough gifted and talented students to fill a classroom with students of a similar age or grade cohort.
- **No “One-Size-Fits-All” Program Model.** There are a variety of approved program models and extension models which may supplement, but not supplant approved program models.
- **No Single Statewide Curriculum.** Given the disparity in resources available by locale, no single statewide curriculum exists for gifted and talented programs. Teachers are encouraged to use research-based acceleration and enrichment methods to adapt existing curriculum to high-achieving learners.

4 Patterns in Statewide PACT Performance

4.1 Setup and Methodology

We begin our performance analysis at the state level. The Spring 2005 administration of the Palmetto Achievement Challenge Test (PACT) consisted of exams in four subject areas: English/Language Arts (ELA), Mathematics, Science, and Social Studies. Ultimately, a student earned one of four performance levels: Below Basic, Basic, Proficient or Advanced.

As Table 3 details, the State Department of Education (SDE) assigned numerical values ranging from 0–3 for these performance levels:

Table 3: Performance Levels and SDE-Assigned Numerical Values

Performance Level	Below Basic	Basic	Proficient	Advanced
Numerical Value	0	1	2	3

For a statewide analysis, we described the distribution of performance levels as percentages scoring at each level by type of gifted and talented service (Only-Academic, Only-Artistic, or Both Academic and Artistic). We also compared the shape of the distributions: at what performance level were the bulk of the students are scoring, and how did the distributions compare across service types?

Furthermore, we compared means by gifted and talented service type using the 0–3 scale values provided for each student in the State Data File. We tested for differences in means using t-statistics.

4.2 Statewide PACT English/Language Arts

Table 4 furnishes the PACT English/Language Arts performance levels and means. The means for all groups served by one or more gifted and talented programs are statistically significantly greater than the mean for the Not-Served group (0.92).

Table 4: 2005 PACT English/Language Arts Performance Level Distribution and Means by Type of Gifted and Talented Service

	Percentages Add Across Rows				Mean
	Below Basic	Basic	Proficient	Advanced	
Not-Served	32%	45%	21%	2%	0.92
Only-Academic	1%	23%	59%	16%	1.90
Only-Artistic	16%	46%	34%	4%	1.25
Both	1%	16%	60%	24%	2.07

The largest percentage of students in the Only-Academic and Both groups achieved a score of

Proficient (59 percent and 60 percent respectively). In contrast, a majority of students in the Not-Served and Only-Artistic groups earned a score of Basic (45 percent and 46 percent respectively).

Compared to the other PACT subject areas, PACT ELA shows an area of relative weakness for students served by academic gifted and talented programs. This is noteworthy considering that some students may have been identified for G&T eligibility by Advanced level achievement in reading at grade 3.

4.3 Statewide PACT Mathematics

The 2005 PACT Mathematics performance levels and means are given in Table 5.

Table 5: 2005 PACT Mathematics Performance Level Distribution and Means by Type of Gifted and Talented Service

	Percentages Add Across Rows				Mean
	Below Basic	Basic	Proficient	Advanced	
Not-Served	32%	48%	16%	4%	0.93
Only-Academic	1%	17%	36%	46%	2.27
Only-Artistic	16%	49%	25%	10%	1.29
Both	1%	13%	32%	54%	2.39

The means for students served by at least one of the gifted and talented (G&T) programs are statistically significantly greater than the mean for the Not-Served group. The mean for those students served by only an academic G&T program (2.27) is higher than the mean for students served by only an artistic G&T program (1.29). The mean for students served by both academic and artistic G&T programs is highest of all (2.39).

A majority of students in the Both group achieved a score of Advanced (54 percent) while 46 percent of the Only-Academic group scored Advanced. In contrast, the bulk of students in the Not-Served and Only-Artistic groups earned a score of Basic (48 percent and 49 percent respectively).

The mode of students served by an academic G&T program (alone or with an artistic G&T program) was two performance levels higher than the mode of students not served by any G&T programs.

Because one of the criteria for identifying the academically gifted and talented is achievement in PACT Math, this result is hardly surprising. However, a notable result is that more of the Only-Artistic scored at the Proficient and Advanced levels (35 percent together) than the Not-Served (20 percent combined). Again, these Only-Artistic students were not selected for their artistic G&T program in any way based on achievement in PACT Math and did not receive any additional G&T support in mathematics to help them achieve these scores.

4.4 Statewide PACT Science

Table 6 displays the 2005 PACT Science performance levels.

Table 6: 2005 PACT Science Performance Level Distribution and Means by Type of Gifted and Talented Service

	Percentages Add Across Rows				Mean
	Below Basic	Basic	Proficient	Advanced	
Not-Served	49%	36%	11%	5%	0.71
Only-Academic	4%	25%	29%	43%	2.10
Only-Artistic	30%	42%	18%	10%	1.09
Both	3%	20%	27%	51%	2.27

The means for all gifted and talented groups are statistically significantly greater than the mean for the Not-Served group (0.71). The means for those students served by academic G&T programs is higher than the mean for students served only by an artistic G&T program (1.09). The mean for students served by both academic and artistic G&T programs is highest of all (2.27).

The bulk of students in the Only-Academic and Both groups achieved a score of Advanced (43 percent and 51 percent respectively). In contrast, the modal score in the Only-Artistic group was Basic (42 percent). Furthermore, the most common score for students in the Not-Served group (49 percent) was Below Basic, the lowest possible performance level. Looking at the Below Basic and Advanced columns of Table 6, the bulk of students in academic G&T programs far outscored the bulk of their peers who were not served by academic G&T programs.

Compared to the other PACT subject areas, the PACT science scores highlight a weakness in the population not served by either of the gifted and talented programs.

4.5 Statewide PACT Social Studies

Table 7 provides the 2005 PACT Social Studies performance levels and means.

Table 7: 2005 PACT Social Studies Performance Level Distribution and Means by Type of Gifted and Talented Service

	Percentages Add Across Rows				Mean
	Below Basic	Basic	Proficient	Advanced	
Not-Served	39%	44%	12%	6%	0.84
Only-Academic	3%	29%	29%	38%	2.03
Only-Artistic	24%	49%	17%	10%	1.12
Both	2%	24%	28%	46%	2.17

The means for all gifted and talented groups are statistically significantly greater than the mean for the Not-Served group (0.84). The mean for those students served by only an academic G&T

programs is higher than the mean for students served by only an artistic G&T program (1.12). The mean for students served by both academic and artistic G&T programs is highest of all (2.17).

The bulk of students in the Only-Academic and Both groups achieved a score of Advanced (38 percent and 46 percent respectively). In contrast the bulk of students in the Not-Served and Only-Artistic groups earned a score of Basic. The mode of students served by academic G&T programs was two performance levels above the mode of students not served by academic G&T programs.

4.6 Conclusions from a Statewide PACT Performance Analysis

1. *Gifted and talented students outperform students not served by any G&T program.* Examining differences in means by t-test, students in all G&T groupings perform statistically significantly better than students not served by any G&T program in all four PACT subject areas. While the differences in means appear to be large enough to be educationally significant, these statistical results are no doubt greatly aided by the relatively large sample sizes.
2. *Gifted and talented students perform well in PACT Mathematics and PACT Science, but relatively poorly in PACT English/Language Arts.* Students served by academic G&T programs have the highest percentage of their scores at the Advanced performance level, typically two performance levels higher than the modal performance level of their peers not served by academic G&T programs for all subject areas except English/Language Arts. On average, they achieve their highest performance levels in Mathematics and Science.

For those students served by academic G&T programs, this record of achievement in mathematics is noteworthy but hardly surprising. After all, these students in part were identified because they had a record of achievement in reading and/or mathematics.

In contrast, that the bulk of PACT ELA percentages for the gifted and talented occurs at the Proficient level instead of the Advanced level may indicate a relative weakness in this subject area among the gifted and talented. An alternative explanation would be that more G&T students are identified for eligibility through high math scores, not high reading scores.

From examining the distribution of performance levels, the relatively high performance of academic gifted and talented students compared to their peers not served by academic G&T programs in PACT Science is due, not only to high G&T achievement, but also to low achievement among those not served.

3. *Students served by artistic gifted and talented programs performed better academically than their peers not served by any G&T program.* This is noteworthy because Only-Artistic G&T students are neither selected for artistic programs because of academic achievement and aptitude, nor are they served by programs in academic areas. However, on average their academic performance as measured by PACT is better than students Not-Served by any G&T program with relatively fewer Below Basic scores and relatively more Proficient scores. For example, in PACT Mathematics, the Only-Artistic and Not-Served have similar percentages scoring Basic (48 percent and 49 percent respectively), however, the percentages for Below Basic and Proficient are almost reversed as shown in Table 8.

Table 8: PACT Mathematics Performance Levels Comparing Only-Artistic G&T and Those Not-Served

	Percentages Add Across Rows			
	Below Basic	Basic	Proficient	Advanced
Not-Served	32%	48%	16%	4%
Only-Artistic	16%	49%	25%	10%

5 Achievement Gaps

5.1 An Introduction to the Issues and Questions of Interest

Achievement gap studies examine differences in performance comparing students grouped by demographic and socioeconomic factors such as ethnicity and affluence. The Education Oversight Committee produces an annual report on achievement gaps which examines two factors both alone and in combination: ethnicity and poverty as measured by participation in free- or reduced-price school lunch programs.

In the nomenclature of these studies, the “comparison” group is the group of students with the higher average score while the “target” group is the group of students with the lower average score. For ethnic groupings,⁴ White students form the comparison group with African-American, Hispanic and Other comprising target groups. For poverty groupings, Pay-Lunch students are the comparison group and Free- or Reduced-Price Lunch students are the target group.

As policymakers we seek to eliminate the disparities in educational achievement—reduce the achievement gap—by raising the performance of target groups while at least maintaining the performance of comparison groups. It is useful to examine the issue of achievement gaps among our gifted and talented students. There are two questions of interest:

1. Do achievement gaps exist among those students served by gifted and talented (G&T) programs?
2. If achievement gaps exist among those served by G&T programs, how are they different from gaps among students not served by G&T programs?

5.2 Demographics of Ethnicity and Poverty

We examined the two demographics and socioeconomic factors employed in the EOC’s annual achievement gap studies: ethnicity and poverty.

Table 9 compares the distribution of ethnicities for all students in grades 3–8 with students served by a gifted and talented program in those grade. In South Carolina, the population of all students taking the Spring 2005 PACT⁵ was just over over one-half White (54.1 percent) and four-in-ten African-American. In contrast, four-in-five (79.2 percent) of South Carolina’s students served by gifted and talented programs were White.

Table 10 details the distribution of poverty status for all students in grades 3–8 versus those served by a gifted and talented program in those grades. For the same population of all students, roughly 55 percent qualified for free or reduced-price school lunches while only one-in-four (24.3 percent) of South Carolina’s students served by gifted and talented programs received a free or reduced-price school lunch.

⁴We use the same ethnicity categories as those used in the annual EOC achievement gap studies: White students consist of those coded as “W”, African-American students are those coded as “B”, Hispanics are those coded “H,” and Other consists of Asians “A”, Native-Americans “I”, Pacific Islanders “P” and all mixed-race categories.

⁵The vast majority of these students are all the students in grades 3–8.

Table 9: Distribution of Ethnicities in Grades 3–8: All Students vs. Gifted and Talented Students

	Percentage of	
	All Students	Gifted and Talented
White	54.1%	79.2%
African-American	40.1%	16.4%
Hispanic	3.5%	1.6%
Other	2.2%	2.8%
Total	100.0%	100.0%

Table 10: Distribution of Poverty Status in Grades 3–8: All Students vs. Gifted and Talented Students

	Percentage of	
	All Students	Gifted & Talented
Pay-Lunch	45.5%	75.7%
Free- or Reduced-Price Lunch	54.50%	24.30%
Total	100.0%	100.0%

The EOC’s achievement gap studies extend this analysis by examining how ethnicity and poverty interact by examining “two-way” groups such as “White F/R” for White students who qualify for free- or reduced-price school lunches or “Hispanic Pay” for Hispanic students who pay for their school lunch.

Table 11 details the distribution of two-way ethnicity-poverty factors. Among all students without regard for G&T service, “White Pay” is the most frequent category, comprising 36.1 percent of all students with “African-American F/R” second-most common at 32.5 percent of all students. “White F/R” comes in third at 18.1 percent of all students.

The distribution of two-way ethnicity-poverty factors among those students served by gifted and talented programs is very different: two-thirds of those served by G&T programs is “White Pay” with “White F/R” a distant second at 12.3 percent and “African-American F/R” in third-most frequency at 10.4 percent.

5.3 Setup and Methodology

We conducted our achievement gap analysis at the statewide level for all four 2005 PACT subject areas: English/Language Arts (ELA), Mathematics, Science, and Social Studies. Once again, we employed the SDE-assigned numerical values ranging from 0–3 for performance levels: Below Basic (assigned a numerical value of 0), Basic (1), Proficient (2) and Advanced (3).

We compared means by ethnicity, poverty status or two-way factor by gifted and talented service

Table 11: Distribution of Two-Way Ethnicity-Poverty Factors in Grades 3–8: All Students vs. Gifted and Talented Students

	Percentage of	
	All Students	Gifted & Talented
White Pay	36.1%	66.9%
White F/R	18.1%	12.3%
African-American Pay	7.5%	6.1%
African-American F/R	32.5%	10.4%
Hispanic Pay	0.8%	0.6%
Hispanic F/R	2.8%	1.0%
Other Pay	1.2%	2.1%
Other F/R	1.1%	0.7%
Total	100.0%	100.0%

versus those not served. After constructing means for the target and comparison groups, we conducted a t-test for the appropriate difference in means (comparison mean – target mean). A difference in means found to be statistically-significantly greater than zero provided evidence of an achievement gap.

5.4 Single Factor Performance by PACT Subject

5.4.1 PACT English/Language Arts

Several facts emerge from examining PACT English/Language Arts results for those students served by gifted and talented programs versus those students not served.

First, statistically-significant ethnicity achievement gaps exist among most G&T and Not-Served student populations. Due to the large sample sizes, all the gaps are statistically-significant, however, the achievement gap for Other Not-Served and Other G&T students is practically insignificant.

Table 12 presents the ethnicity achievement gap data.

Table 12: 2005 PACT English/Language Arts Means and Differences in Means (Achievement Gaps) by Ethnicity for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
White (Comparison)	1.102	–	1.932	–
African-American	0.735	0.367	1.614	0.318
Hispanic	0.782	0.320	1.772	0.160
Other	1.075	0.027	1.990	–0.057

Other Not-Served target group students have essentially the same mean as the White Not-Served comparison group students. (1.102 for White Not-Served versus 1.075 for Other Not-Served.) The students in these groups are scoring, on average, at the Basic performance level. For Other G&T students, the gap with White G&T students is -0.057 indicating that Other ethnicity students served by gifted and talented programs score higher than their White peers. The size of the gap between G&T Other students is of statistical, but not educational significance; the difference in means is only one-twentieth of a performance level on the SDE's 0–3 scale. G&T Other and G&T White students are both performing, on average, very close to Proficient levels in ELA. (1.990 for Other G&T and 1.932 for White G&T both near a Proficient numerical value of 2.000.)

Achievement gaps for African-American G&T and Hispanic G&T students exist relative to their White G&T peers, but the means (0.735 and 0.782 respectively) are close to the Basic numerical value of 1.000. The size of the African-American gaps are statistically smaller for the G&T group than the Not-Served group, but practically speaking, the achievement gap for African-American students is roughly one-third of a performance level. (The difference in means is $1.102 - 0.735 = 0.367$.)

Second, the mean performance levels within ethnicities and across gifted and talented service categories (comparing, for example, White Not-Served students with a mean of 1.102 to White G&T students with a mean of 1.932) show almost a full performance level advantage for G&T students over their Not-Served peers. This relationship holds for all ethnic groups.

Third, the target G&T group with the lowest mean (African-American G&T, 1.614) scored significantly higher on average than the comparison Not-Served group (White Not-Served, 1.102). Thus, while achievement gaps still exist among ethnicities served by gifted and talented programs, the G&T students outperform, on average, the best students not served.

In examining achievement gaps by poverty, a similar set of relationships exist: achievement gaps exist among both Not-Served and G&T populations; the size of the gaps is roughly one-third of a performance level; the Not-Served means straddle the Basic–Below Basic threshold numerical value of 1.00 while the G&T means are near the Proficient numerical value of 2.000 for the comparison Pay group. These results are detailed in Table 13.

Table 13: 2005 PACT English/Language Arts Means and Differences in Means (Achievement Gaps) by Poverty Status for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
Pay (Comparison)	1.163	–	1.955	–
Free- or Reduced-Price	0.772	0.392	1.642	0.313

Furthermore, the gap for the G&T population is once again statistically smaller than the gap for the Not-Served population, although perhaps this is not of educational significance because it is less than one-tenth of a performance level (0.079).

5.4.2 PACT Mathematics

For PACT Mathematics, the results are qualitatively similar to the PACT ELA results. Achievement gaps exist among both Not-Served and G&T populations. However, the gaps for African-American Not-Served are wider in Math than they were in ELA (0.425 for Math, 0.367 for ELA). Furthermore, Other G&T students lead their White G&T student peers by one-sixth of a performance level. This finding mirrors that of other studies such as the Project STAR Two Year Follow-Up Study. Table 14 gives the details.

Table 14: 2005 PACT Mathematics Means and Differences in Means (Achievement Gaps) by Ethnicity for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
White (Comparison)	1.135	–	2.306	–
African-American	0.710	0.425	1.872	0.433
Hispanic	0.823	0.312	2.131	0.175
Other	1.151	–0.016	2.463	–0.157

Once again, in the Not-Served population, the means range between Below Basic and Basic performance levels. (1.000 is the numerical value for Basic which separates these performance levels.)

A notable difference in the G&T population is that only the African-American group scores at the Basic performance level on average; all other ethnic G&T groups score at the Proficient performance level on average. Thus, the achievement gap for African-American gifted and talented students appears to be of educational significance. Furthermore, the gap is wider for the African-American G&T group compared to the African-American Not-Served group. This is particularly troubling given that for some of these students high math achievement provided a basis for their identification and eligibility to receive gifted and talented services.

For Hispanics, the gap is narrower for the G&T group, and for the Other ethnic group, the advantage over their White comparison group peers moves from a statistically-insignificant gap of –0.016 (which has a p-value of 0.198 for the Not-Served) to a statistically-significant one-sixth of a performance level advantage and a difference in the means of –0.157 for the gifted and talented.

Table 15 details the results for poverty status.

Table 15: 2005 PACT Mathematics Means and Differences in Means (Achievement Gaps) by Poverty Status for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
Pay (Comparison)	1.179	–	2.317	–
Free- or Reduced-Price	0.775	0.404	1.986	0.330

The poverty achievement gap results for math are qualitatively similar to the results for ELA: gaps exist for both the Gifted and Talented (0.330) and Not-Served (0.404) populations, and the gap for the G&T population is narrower than the gap for the Not-Served population. However, for the Free- or Reduced-Price G&T population, the mean (1.986) is very close to the Proficient numerical value of 2.000.

5.4.3 PACT Science

In examining the PACT Science scores by ethnicity in Table 16, several notable features are apparent.

Table 16: 2005 PACT Science Means and Differences in Means (Achievement Gaps) by Ethnicity for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
White (Comparison)	0.966	–	2.174	–
African-American	0.445	0.522	1.540	0.634
Hispanic	0.591	0.375	1.916	0.258
Other	0.900	0.066	2.257	–0.083

First, all means for the Not-Served population, including the White comparison group, are Below Basic. In particular, the mean for the African-American target group is 0.445, and the gap is 0.522. The Not-Served African-American mean for PACT Science is the lowest mean among all populations and PACT subject areas.

Second, for the gifted and talented population, the African-American and Hispanic means (1.540 and 1.916) are Basic (below the 2.000 numerical value separating Basic and Proficient) while the White and Other ethnicity means are Proficient (2.174 and 2.257).

Third, among African-Americans, the Gifted and Talented gap (0.634) is wider than the Not-Served gap (0.522). African-American gifted and talented students' mean performance level is relatively worse than their Not-Served counterparts.

Fourth, as with PACT subject areas, Other ethnicity means are statistically different from White means, but again, this difference is less than a tenth of a performance level and thus, may be of no educational significance. The gaps for African-American and Hispanic ethnicities are statistically significant, and by their size, arguably of educational significance.

As Table 17 indicates, the achievement gaps based on poverty status are half a performance level for both the Not-Served and Gifted and Talented populations. Furthermore, the Not-Served means (1.019 and 0.522) straddle the Below Basic–Basic threshold numerical value of 1.000 while the Gifted and Talented means (2.189 and 1.693) are on either side of the Basic-Proficient threshold of 2.000.

Table 17: 2005 PACT Science Means and Differences in Means (Achievement Gaps) by Poverty Status for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
Pay (Comparison)	1.019	–	2.189	–
Free- or Reduced-Price	0.522	0.497	1.693	0.495

5.4.4 PACT Social Studies

As Table 18 indicates, the PACT Social Studies performance level means follow a similar pattern to the means for other PACT subjects. Means for Not-Served ethnicities are Below Basic and Basic while means for Gifted and Talented ethnicities are Basic and Proficient. The achievement gaps for the African-American and Hispanic populations are significant (roughly a quarter to a half of a performance level). Once again, the achievement gap for Gifted and Talented African-Americans is larger than the gap for their Not-Served counterparts (0.547 vs. 0.454).

Table 18: 2005 PACT Social Studies Means and Differences in Means (Achievement Gaps) by Ethnicity for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
White (Comparison)	1.060	–	2.085	–
African-American	0.606	0.454	1.538	0.547
Hispanic	0.770	0.291	1.853	0.232
Other	1.070	–0.009	2.198	–0.113

Table 19 displays the poverty status means and achievement gaps. For the Gifted and Talented and Not-Served populations, the gaps are nearly half a performance level for PACT Social Studies (0.499 and 0.483). Once again, the Pay Lunch comparison group has a Basic performance level mean (1.140) for the Not-Served population and a Proficient performance level mean (2.116) for the Gifted and Talented population.

Table 19: 2005 PACT Social Studies Means and Differences in Means (Achievement Gaps) by Poverty Status for the Gifted and Talented versus those Not-Served.

	Not Served		Gifted & Talented	
	Mean	Gap (Difference)	Mean	Gap (Difference)
Pay (Comparison)	1.140	–	2.116	–
Free- or Reduced-Price	0.657	0.483	1.617	0.499

5.5 Two-Way PACT Performance

Figure 2 illustrates the mean performance levels of two-way student groups by gifted and talented service (G&T appears as red triangles, Not-Served appears as blue squares) and all four PACT subjects. From left to right, the four columns represent means for the four PACT subjects: ELA, Math, Science and Social Studies. The location of each group label with group mean is positioned on the chart relative to the other labels by mean. For example, the red triangle with red label “Black Pay = 1.998” in the second column marks a PACT Math mean performance level of 1.998 for the African-American Pay-Lunch group for the Gifted and Talented population.

When simultaneously considering the effect of ethnicity, poverty and service by gifted and talented programs, several patterns become evident.

First, for all four PACT subject areas, all of the Gifted and Talented groups have means above all of the Not-Served groups. In the figure, all of the Gifted and Talented red triangles fall above all of the Not-Served blue squares.

Second, the spread of group means is widest for PACT Science (the range is 1.951) and narrowest for PACT ELA (the range is 1.350). Table 20 lists the two-way group mean ranges.⁶ The highest and lowest mean group is consistent across all four PACT subject areas. The highest mean group is Gifted and Talented Other Pay Lunch, and the lowest mean group is Not-Served African-American Free- or Reduced-Price Lunch.

Table 20: Ethnicity-Poverty Status Two-Way Group Mean Ranges for All Four PACT Subject Areas

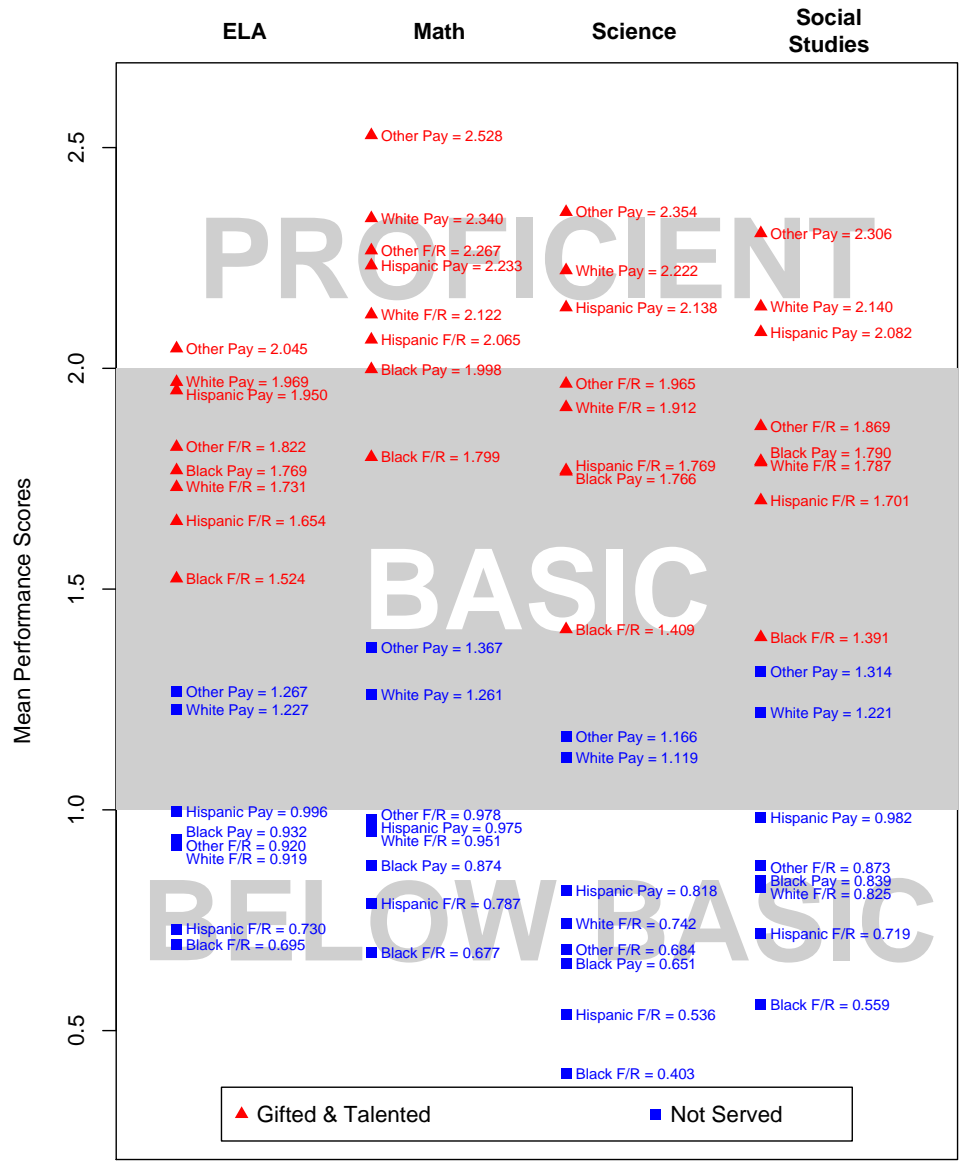
	PACT Subject Area			
	ELA	Math	Science	Social Studies
Highest Group Mean	2.045	2.528	2.354	2.306
Lowest Group Mean	0.695	0.677	0.403	0.559
Range (Highest – Lowest)	1.350	1.851	1.951	1.747

Third, the interaction of ethnicity and poverty magnifies some disparities. Other Pay and White Pay groups are consistently ranked first and second across all four PACT subjects areas and for both the Not-Served and Gifted & Talented populations. All of the Other Pay G&T group means are Proficient (above 2.000). African-American Free- or Reduced-Price Lunch groups consistently rank last for both Not-Served and Gifted & Talented populations for all four PACT subjects areas.

Fourth, for the Not-Served population in all four PACT subject areas, only the Other Pay and White Pay group means are at the Basic performance level (above 1.000), all other group means are Below Basic performance level (below 1.000).

Fifth, there are a handful of notable highs and lows. The Other Pay Lunch Gifted & Talented group mean for PACT Math is 2.528: halfway between the Proficient and Advanced performance levels. However, for the Not-Served population, the Hispanic Free- or Reduced-Price group mean in PACT Science (0.536) and the African-American Free- or Reduced-Price group means in both

⁶As a measure of the spread of a distribution, the range is the difference between the maximum and the minimum values. In this case, the range of group means is the highest group mean minus the lowest group mean.



PACT Subjects

Figure 2: “Two-Way” Ethnicity-Poverty Status Group Means by Gifted and Talented Service for All Four PACT Subject Areas

PACT Science and PACT Social Studies (0.403 and 0.559) are Below Basic, substantially lower than the numerical value of 1.000 for Basic.

5.6 Conclusions from an Achievement Gap Analysis

1. *The results for gifted and talented students largely mirror the results found in the EOC's annual achievement gap reports.* There are statistically-significant achievement gaps for students served by gifted and talented programs. These gaps also exist for students not served by such programs. Judging by the size of the difference in group means, this gap is arguably of educational significance.
2. *The size of the achievement gaps differs for Gifted & Talented groups compared to Not-Served groups.* The achievement gaps are narrower among the Gifted & Talented populations for White, Hispanic and Other ethnicity students compared to the corresponding Not-Served populations. However, for African-American student groups, the Gifted & Talented achievement gaps are wider in Mathematics, Science and Social Studies than the Not-Served achievement gaps. This indicates that the population of African-American gifted and talented students is relatively not well-served.
3. *Other ethnicity Gifted & Talented group mean is higher than the comparison White G&T group mean in all four PACT subject areas.* In particular, the Other G&T students group mean is roughly one-sixth of a performance level higher than the White G&T group mean in PACT Math.
4. *For students not served by gifted and talented programs, all of the two-way ethnicity-poverty status group means are Below Basic (below 1.000).*
5. *The achievement gaps based on poverty are wider in the PACT Science and Social Studies subjects compared to the PACT ELA and Math subjects.*

Table 21: Poverty Status Achievement Gaps

PACT Subject Area	Achievement Gap (Pay – Free- or Reduced-Price)	
	Not-Served	Gifted & Talented
English/Language Arts	0.392	0.313
Mathematics	0.404	0.330
Science	0.497	0.495
Social Studies	0.483	0.499

6. *For the two-way ethnicity-poverty status target groups in the population of students not served by gifted and talented programs,⁷ the group means are Below Basic (less than 1.000) for all four PACT subject areas. This population of students in the Not-Served target groups comprises 178,023 students, or 56.9 percent of all students in South Carolina in grades 3–8.*

⁷All groups except Other Pay Lunch and White Pay Lunch.

7. *For the two-way ethnicity-poverty status target groups in the Gifted & Talented population, all the group means are well above the Basic performance level of 1.000 in all four PACT subject areas. Among the four PACT subject areas, G&T two-way group means are highest in PACT Mathematics for every group. All G&T two-way group means for PACT English/Language Arts are above 1.500.*

6 School Achievement

6.1 Introduction and Methodology

We examined the performance of gifted and talented students grouped by the achievement level of their school as measured by the Absolute Ratings on school report cards. We matched student-level data from the 2005 PACT State Data File with school-level data from the 2005 School Report Card performance data.

Several schools had grades from multiple school organizational levels: some elementary schools had grade configurations which include middle school grades (6–8), some middle schools included elementary grade levels (3–5), and some high schools were configured with middle school grades (6–8). Schools with two or more grade levels at an organizational level must have a report card for each of those levels, so some schools had more than one report card.⁸ In each case, the appropriate absolute ratings were matched for this analysis.

For each of the four PACT subject areas, we constructed figures for the percentage of students by gifted and talented service scoring at Basic or Above and Proficient or Advanced by the 2005 School Report Card Absolute Rating. For comparison, we included the percentage of students scoring at both performance levels for all students.

6.2 Distribution of Students by School Performance

The distribution of students across the school performance levels varies by gifted and talented service. In Figure 3, the percentage of Gifted & Talented students in each school performance level is marked by a blue dashed line. Students Not-Served are marked with a red dotted line, and All Students are marked with a solid black line for comparison. The height of each curve at a school performance level indicates the percentage of the students of that group that attend schools of that performance level. So, the “area” under each curve totals to 100 percent. Table 22 presents the data we used to construct this chart.

Table 22: Distribution of Students Across 2005 Absolute Ratings by Gifted and Talented Service

	2005 Absolute Rating					All Schools
	Excellent	Good	Average	Bel Av	Unsat	
G&T	15.8%	36.5%	31.5%	14.1%	2.2%	100.0%
Not-Served	6.8%	26.3%	36.6%	24.5%	5.8%	100.0%
All Students	8.5%	28.2%	35.7%	22.5%	5.1%	100.0%

⁸For example, a school with grades 4–8 would have both an elementary school and a middle school report card: the elementary school report card would cover grades 4–5 while the middle school report cards would cover grades 6–7. In contrast, schools with only one grade level from another organizational level would only have one report card. So, a school with grades 3–6 would only have an elementary school report card, and a school with grades 5–8 would only have a middle school report card.

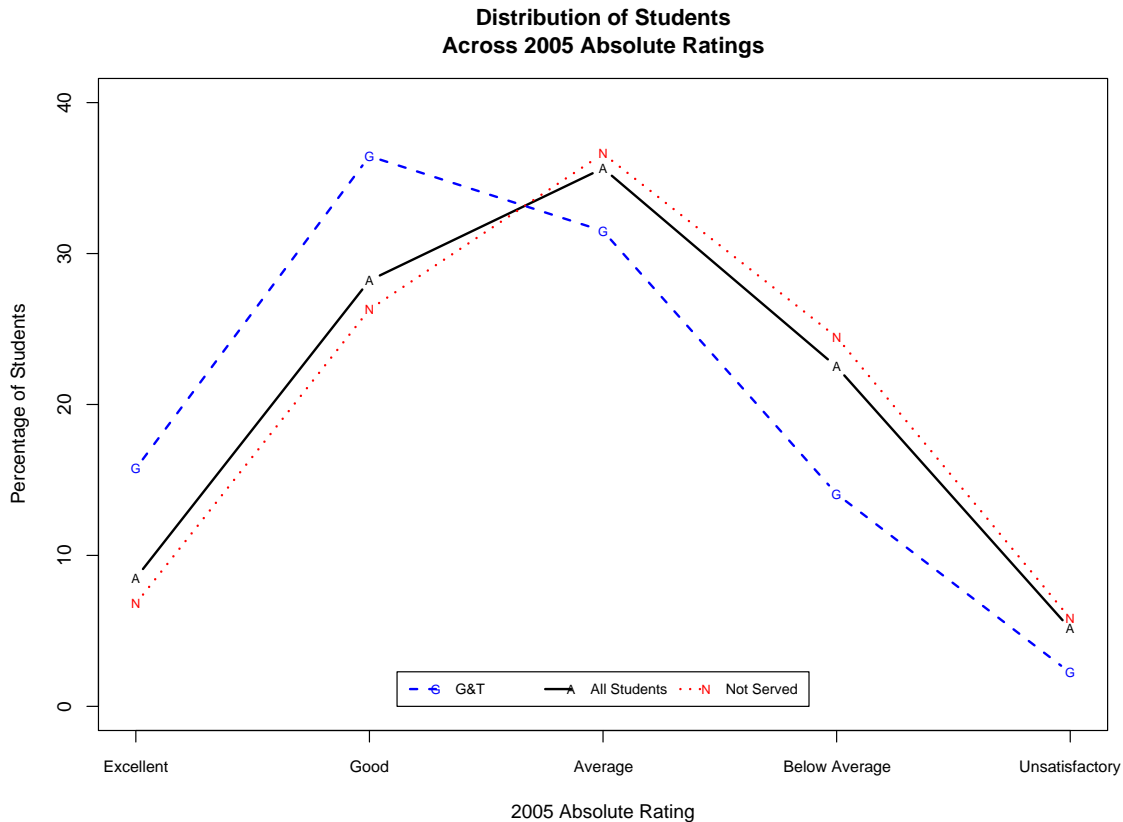


Figure 3: Distribution of Students Across 2005 Absolute Ratings by Gifted and Talented Service

Two facts are apparent from Figure 3:

First, Gifted & Talented students are more heavily concentrated in higher performing schools. (The bulk of the blue dashed line is to the left of the red dotted lines.) The largest percentage of Gifted & Talented students are in Good schools while the largest percentage of students Not-Served and the largest percentage of all students are in Average schools. (The peak of the blue dashed line is Good while the peaks of the red dotted and solid black lines are Average.)

Second, the percentage of students Not-Served across school performance levels is very similar to the distribution of all students across school performance levels. (The red dotted and solid black lines almost coincide.)

Before proceeding to our analysis, Table 23 presents the mixture of Gifted & Talented students and students Not-Served by school performance level.

Almost one-third of all students in Excellent schools are served by gifted and talented programs while less than one-tenth of students in Unsatisfactory schools are served by G&T programs.

Table 23: Mixture of Students by Gifted & Talented Service Across School Absolute Ratings

	2005 Absolute Rating				
	Excellent	Good	Average	Below Average	Unsatisfactory
Gifted & Talented	35.1%	24.5%	16.7%	11.8%	8.2%
Not-Served	64.9%	75.5%	83.3%	88.2%	91.8%
	100.0%	100.0%	100.0%	100.0%	100.0%

6.3 Basic or Above

Figure 4 collects the charts for the percentage of students scoring Basic or Above for all four PACT subject areas. The patterns seen in the four charts are very similar.

First, the gap between Gifted & Talented students and students Not-Served widens moving from Excellent schools at the leftmost side of each chart to Unsatisfactory schools at the rightmost side of each chart. This is primarily due to a relatively more rapid decline in students Not-Served (The red dotted line has a steeper slope than the blue dashed line.)

Second, as we would expect, the percentage of Gifted & Talented students scoring Basic or Above remains relatively constant in the range above 90 percent for PACT ELA and PACT Math, although there is a more noticeable decline in scoring rates for Below Average and Unsatisfactory schools. (The blue dotted line is relatively flat.) This pattern is likely due to the identification in part of some gifted and talented students based on achievement in reading and math. Also, there is a larger percentage of Gifted & Talented students in higher performing schools. There is a larger decline for PACT Science and PACT Social Studies.

Third, the percentage of All Students closely mirrors that of students Not-Served. This parallelism is due in no small measure to the smaller percentages of gifted students in Below Average and Unsatisfactory school districts as seen in Figure 1.

6.4 Proficient or Advanced

Figure 5 collects the charts for the percentage of students scoring Proficient or Advanced for all four PACT subject areas. The patterns seen in the charts for all four PACT subject areas are very similar.

First, all four PACT subject areas show notable declines moving from Excellent schools at the leftmost side of each chart to Unsatisfactory schools at the rightmost side of each chart. The rate of decline is very similar both G&T service groups indicating that both populations may confront the same issues in achieving at this level. (The blue dashed and red dotted lines are roughly parallel.) The rate of decline for the Not-Served population lessens for Unsatisfactory and Below Average schools, however, this may be merely indicative of a “floor effect.”

Second, the slope of decline for All Students is steeper than that of the Not-Served population. This is due to larger percentage of Gifted and Talented students in the mixture of students at Excellent schools compared to Unsatisfactory schools. As shown in Table 23, Gifted and Talented

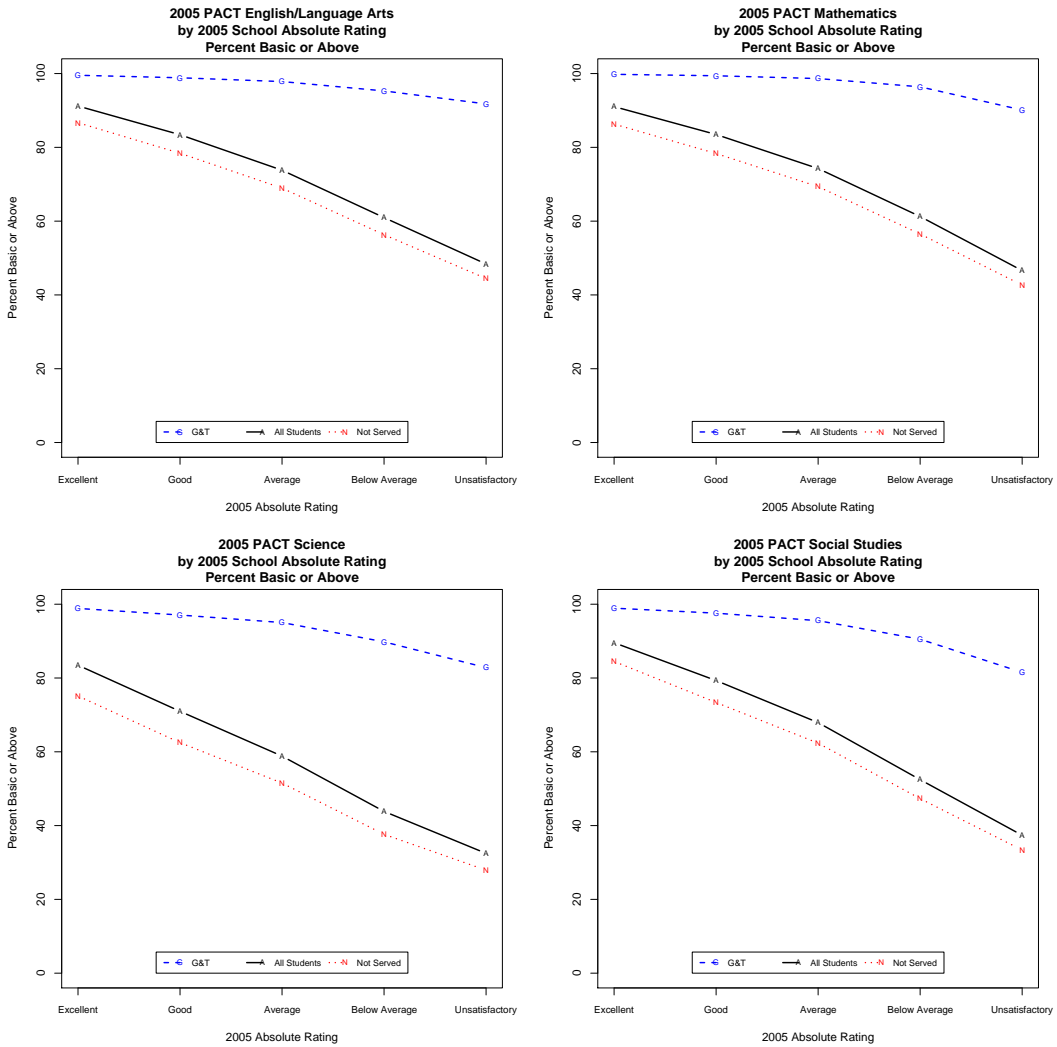


Figure 4: Percentage of Students Scoring Basic or Above by Gifted & Talented Service, and for All Students, by Absolute Rating

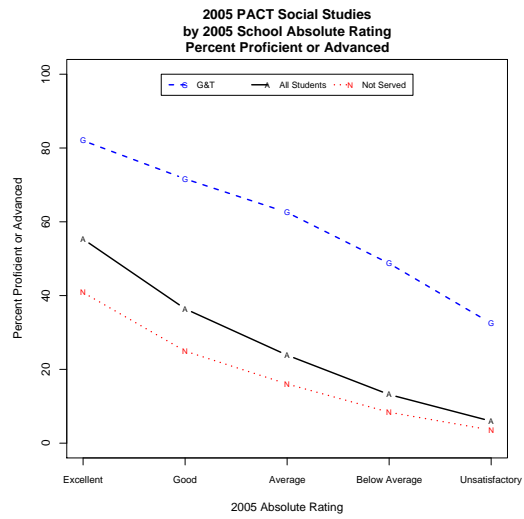
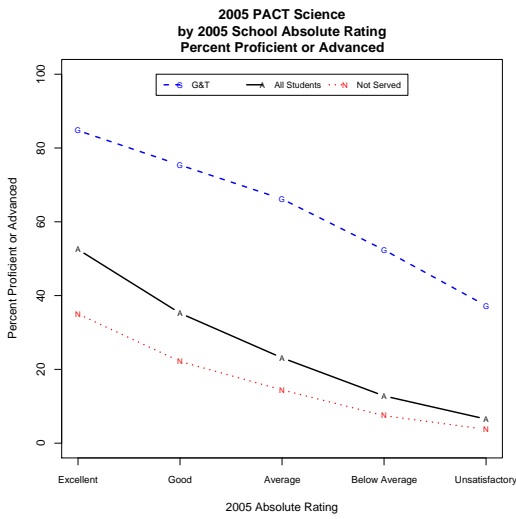
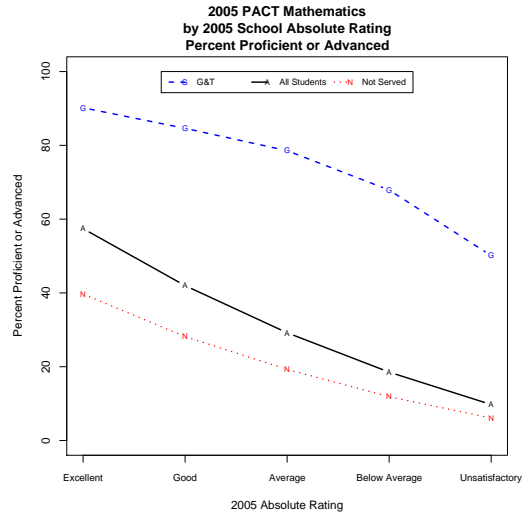
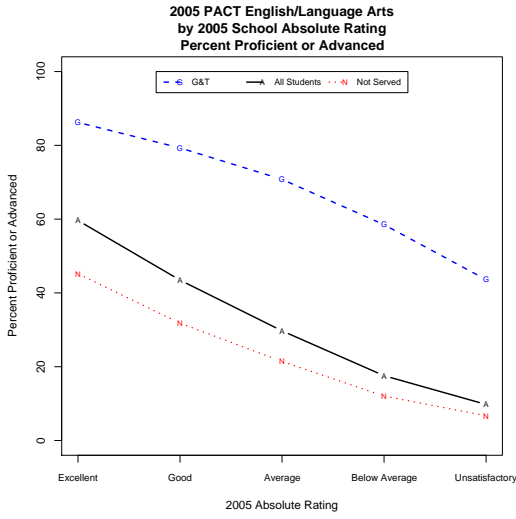


Figure 5: Percentage of Students Scoring Proficient or Advanced by Gifted and Talented Service, and for All Students, by Absolute Rating

students comprise, on average, over one-third of the student body at Excellent schools, but under one-tenth of the study body in Unsatisfactory schools. (The solid black line is closer to the blue dashed line at the left.)

Third, Gifted & Talented students in Excellent schools are twice as likely as those students Not-Served in Excellent schools to score at the Proficient or Advanced level. However, due to the smaller percentages of Gifted & Talented students mixed in Unsatisfactory schools and roughly parallel rates of decline, Gifted & Talented students in Unsatisfactory schools are roughly ten-times as likely to score at the Proficient or Advanced level than students Not-Served in Unsatisfactory schools.

Fourth, Gifted & Talented students in Unsatisfactory schools perform at about the level of students Not-Served in Excellent schools. While they maintain a substantial advantage over their peers who are Not-Served in Unsatisfactory schools, the Gifted & Talented students in Unsatisfactory school are scoring at lower rates at the Proficient or Advanced level and are not being sufficiently well-served.

6.5 Conclusions from a School Achievement Analysis

As we should expect, gifted and talented students score at high rates at the Basic or Above level in all four PACT subject areas across school performance levels. However, examining what percentages score at the Proficient or Advanced level reveals weaknesses in lower-achieving schools that affect students not served by gifted and talented programs as well as students served by such programs.

In particular, when considering performance at the Proficient or Advanced level, Gifted & Talented students in Unsatisfactory schools score at rates that only match, not exceed, the pass rates of students Not-Served in Excellent schools. Students in poorer performing schools continue to be underserved; those identified as gifted and talented at these schools are no exception.

7 Grade-Level Analysis

7.1 Setup and Methodology

We examined the performance of gifted and talented students grouped by grade level. The student-level data from the 2005 PACT State Data File contained a code for the Education Finance Act (EFA) grade of each PACT examinee in grades 3–8.

For each of the four PACT subject areas, we constructed figures for the percentage of students by gifted and talented service scoring at Basic or Above and Proficient or Advanced by grade level.

7.2 Distribution of Students by Grade Level

Table 24 lists the numbers of students by gifted and talented service.

Table 24: Numbers of Students Tested Across Grade Levels by Gifted and Talented Service

	Grade Level					
	3	4	5	6	7	8
Gifted & Talented	4927	8963	11201	11713	11707	10704
Not-Served	44225	41314	39980	41920	43266	43641
All Students	49152	50277	51181	53633	54973	54345

The numbers of students served by gifted and talented programs grows dramatically between the third and fifth grades, from under 5,000 students in the third grade to over 11,000 students in the fifth grade. We surmise that this is due to two factors at work in the gifted and talented identification process. First, students scoring at the Advanced level on PACT ELA and Math in the third and fourth grades may become eligible for service by gifted and talented programs. Second, many school districts also administer the MAP test in the third and fourth grades. According to SBE Regulation R 43-220, students scoring at or above the 94th national percentile may also be eligible for gifted and talented services.

7.3 Basic or Above

Figure 6 collects the charts for the percentage of students scoring Basic or Above for all four PACT subject areas. The patterns seen in the charts for all four PACT subject areas include both points of similarity and dissimilarity. While this study primarily concerns itself with the performance of gifted and talented students, by definition, it is also a study of those not served by such programs, and several of the stylized facts from this analysis will concern those students.

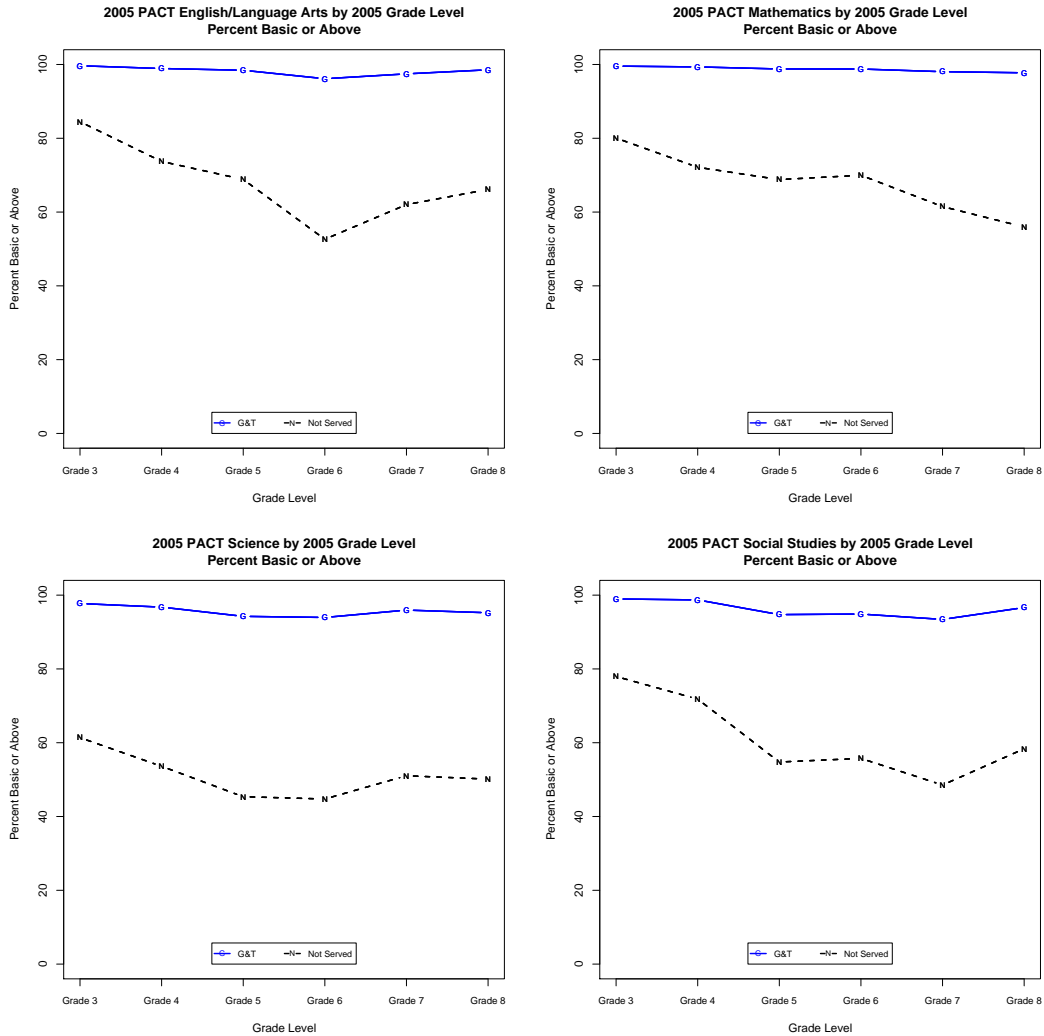


Figure 6: Percentage of Students Scoring Basic or Above by Gifted & Talented Service, and for All Students, by Grade Level

First, as expected, gifted and talented students show high rates of scoring Basic or Above for all four PACT subject areas and across all grades 3–8.

Second, the gifted and talented show the highest rates of achievement in PACT Math, scoring at rates well above 90 percent at the Basic or Above level.

Third, the grade level patterns of those Not-Served reveal several points of weakness: PACT ELA Basic or Above pass rates dip to near 50 percent for sixth graders; PACT Math Basic or Above pass rates steadily decline from roughly 80 percent in third grade to under 60 percent in eighth grade; PACT Science Basic or Above pass rates for the Not-Served show the widest gap with those served by G&T programs; and PACT Social Studies Basic or Above pass rates show large gaps, particularly for the fifth grade and above.

7.4 Proficient or Advanced

Figure 7 collects the charts for the percentage of students scoring Proficient or Advanced for all four PACT subject areas. The patterns seen in the charts for all four PACT subject areas are very similar.

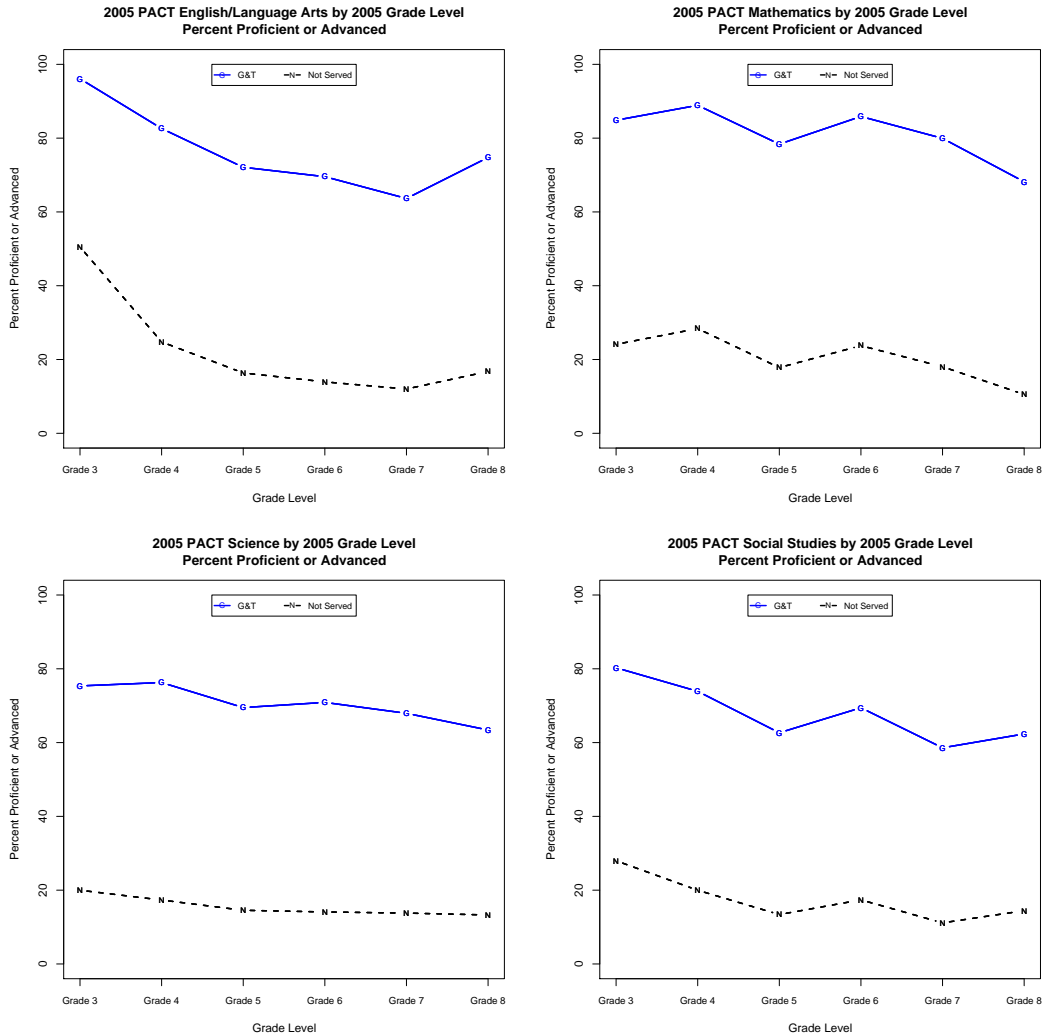


Figure 7: Percentage of Students Scoring Proficient or Advanced by Gifted & Talented Service, and for All Students, by Grade Level

The dominant feature among all four PACT subject area charts is that the pass rates at the Proficient or Advanced level trend together. Although gifted and talented service is a factor in the magnitude of the pass rates, relative changes seem to affect both the Gifted & Talented and the Not-Served equally. (The lines move together.)

In particular, fifth grade seems to be a challenging year: all four PACT subject areas experience Proficient or Advanced pass rate declines in the fifth grade. The experience of recovery in successive grades is mixed with no clear pattern after the sixth grade.

7.5 Cohorts

The grade level data also present an opportunity for a rough analysis of cohorts beginning with Gifted & Talented students who were in fourth grade as of the Spring 2001 PACT administration (the Class of 2008) and those students in the third grade in 2001 (the Class of 2009). We also have data over the years for the Class of 2010 and the Class of 2011. Strictly speaking, this is not a longitudinal study, as the pool of students changes slightly over time. Figure 8 presents the cohort data for the percentage of gifted and talented students scoring Proficient or Advanced on PACT ELA and PACT Math.

First, the rates of gifted and talented students scoring Proficient or Advanced on PACT ELA show more variation over time than the rates for PACT Math. The range for PACT ELA rates is roughly 30 percent—roughly double that of the range for PACT Math rates.

Second, PACT Math Proficient or Advanced scoring rates show a decline in the middle grades.

Third, we end our observations with a puzzle: why do all cohorts show a decline in fifth grade PACT English/Language Arts?

7.6 Conclusions from a Grade Level Analysis

This analysis revealed a sharp increase in the numbers of gifted and talented students served between grades three and five, more than doubling from under 5,000 student in grade three to over 11,000 students in grade five. This pattern of growth itself may present school districts with challenges in serving the gifted and talented.

As we would expect, a grade level analysis of PACT performance shows that a high percentage of gifted and talented students score at the Basic or Above level, especially in PACT Mathematics. This is partially due to the use of Advanced scores in PACT Math and PACT ELA in selecting students for gifted and talented service. However, the rate of gifted and talented students scoring Basic or Above are high in all four PACT subject areas and for all grades 3–8.

Students not served by gifted and talented programs score 20 percent to 40 percent lower than their G&T counterparts at the Basic or Above level. The results at the Proficient or Advanced level are poor for students not served: rates below 20 percent are not uncommon for all grades.

Challenges are shared between those served by gifted and talented programs and those not served at the Proficient or Advanced level. Although the gifted and talented maintain an advantage in scoring Proficient or Advanced in absolute terms, common factors appear to be affecting relative movements in both populations.

A cohort analysis of Gifted and Talented students indicates two points of commonality: PACT ELA Proficient or Advanced scoring rates suffer a decline in the fifth grade, and PACT Math scoring rates steadily decline in the grades 6–8, the middle school grades.

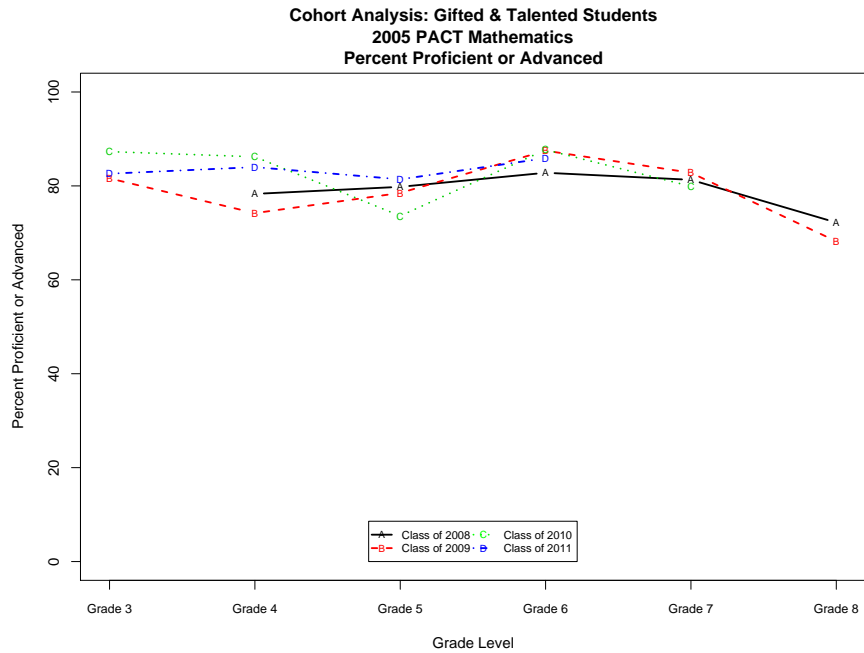
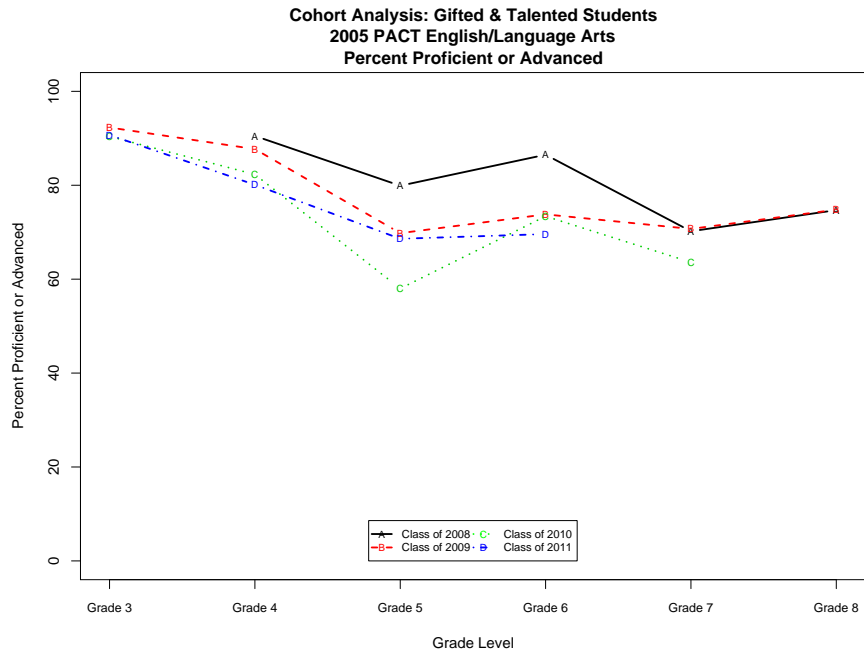


Figure 8: Grade Level Performance at Proficient or Advanced by Cohort for PACT ELA and PACT Math

8 Overall Conclusions and Policy Implications

As we would expect from these select students, the gifted and talented score at a high rate at the Basic or Above level for all four PACT subject areas regardless of school performance level or grade level. Factors affecting performance at the Proficient or Advanced level are common to both the gifted and talented as well as those not served at all grade levels and for all cohorts of students.

While gifted and talented students display high mean performance levels in PACT Mathematics and PACT Science, those students who are members of historically-underachieving demographic and socioeconomic groups struggle to achieve at the same level as members of comparison groups. Significant achievement gaps exist for all target ethnic and poverty-status groups, even for gifted and talented students.

Over time, underperforming schools have established a barrier for their students to overcome. Promoting high student achievement in underperforming schools continues to be a challenge for the gifted and talented as well as those students not served by such programs. A gifted and talented student in an Unsatisfactory school is ten times more likely to score at the Proficient or Advanced level than a student who is not served in an Unsatisfactory school. However, while G&T students in Unsatisfactory schools pass at higher rates at the Proficient or Advanced level for all four PACT subject areas relative to their counterparts who are not served at those same schools, they only match—they do not exceed—the Proficient or Advanced pass rates for students who are not served in Excellent schools. Even those few students provided with gifted and talented services at underperforming schools are not being adequately served.

The high administrative and teacher turnover at underperforming schools also places limits on local capacity to serve the gifted and talented. Although roughly one in five of South Carolina's students in grades 3–8 are served by gifted and talented programs, they are far from evenly distributed across the state's districts and schools. On average, higher performing school districts serve a much larger percentage of gifted and talented students than lower-performing school districts. Some school districts have gifted and talented coordinators whose sole responsibility is the G&T program while others employ district office personnel with multiple administrative and program responsibilities. In some districts, teachers must also serve as gifted and talented program coordinators.

These “size of service” disparities are magnified at the school level. Forty percent of schools serve 30 or fewer gifted and talented students across multiple grades while 25 percent of schools serve 90 or more gifted and talented students. In 15 percent, or roughly 130 schools, there are ten or fewer gifted and talented students being served in the entire school which spans several grades. Even if gifted and talented programs had low fixed costs, the demands of this service structure would impose material, teaching and administrative resource allocation challenges. Without a critical mass of students, even choosing the appropriate program model becomes more difficult as options which would work in schools and districts with larger numbers of gifted and talented students become infeasible in a smaller-size setting.

Finally, while this study was directed at examining gifted and talented student performance, it is by definition, also a study of those students not served. High performance in PACT Science remains a challenge for not served students, especially those students who are members of historically-underachieving groups, but also in general for not served students at all grade levels.

A Data Sources

For this study, we have employed several data sources produced by the South Carolina State Department of Education (SDE):

A.1 SC PACT State Data File

To measure student performance, we have used the 2005 South Carolina Palmetto Achievement Challenge Test (PACT) State Data File. This is student-level data with one record per student. Each record carries score, performance level and report card weight information for each of the four PACT subject areas—English/Language Arts (ELA), Mathematics, Science and Social Studies—as well as demographic information on ethnicity, school lunch subsidy status and location by BEDS school code. Because student names and identification numbers are included, this file is not publically available for confidentiality reasons.

A.2 2005 Report Cards

We obtained data from the 2005 school and district report cards. These data are all publically available on the SDE website, <http://www.myschools.com>. The EOC received the data in the same format that was sent to the printer contracted by the SDE to produce the printed report cards distributed to students in November 2005.