PARCC Consortium Analysis Memo for DC

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May 14, 2019

Background

Since its beginning in 2014-2015, the PARCC consortium had changing state membership from one year to the next. From the beginning of SGP analyses in 2015-2016, both state level and consortium level growth norms have been calculated for all students with suitable data for growth analyses (Betebenner, 2009). An ever present and subtle consideration that has recently become an issue of greater concern is whether the changing membership in the consortium leads to non-comparable consortium-SGPs from year-to-year. Previously, the consortium consisted of so many members that the changing membership was not of great concern. In 2018-2019 the membership has decreased to a level so that the District of Columbia is concerned whether the consortium level SGPs will be comparable to those used previously.

Because SGPs are calculated annually, the results are by definition comparable to the state of the education system in the given year. Despite the changing nature of the population from year to year in a state, it is not uncommon to compare median SGP results for a district or school from one year to the next based upon the belief that the district or school would be in a similar position from year-to-year barring a large change in the population norm group. With a consortium like PARCC, the absence of one or more states could change the norm group to an extent that over median is shifted. This study was meant to investigate this potential phenomena so that the District of Columbia would be as prepared as possible for the arrival of their upcoming growth results.

Analyses

To address the issue of sensitivity to consortium membership for the District of Columbia, the Center for Assessment went back and re-ran the 2016-2017 and 2017-2018 SGPs using a consortium consisting of only DC and Maryland. As of present, it isn't clear exactly what PARCC members will be included in the calculation of consortium SGPs since some states are taking modified forms of the PARCC test and it isn't yet clear whether scores derived from those test are equivalent to states using un-modified forms. Both DC and Maryland are taking un-modified forms in 2018-2019 so they were used to investigate sensitivity to consortium membership using previous years' data as, at a minimum, DC and Maryland will form the PARCC consortium for SGPs for 2018-2019.

Table 1 provides median SGP by grade, content area, year, and consortium type for the end-of-grade ELA and Mathematics tests in grades 3 to 8 and 10 (in ELA). The results, in general, show minor changes based upon using either the entire (original) PARCC consortium or the reduced consortium consisting of just DC and Maryland. For example, for Grade 4, ELA, the median SGP

in 2017-2018 for DC using the entire consortium was 54. Using the reduced consortium the median SGP was 55. The largest difference observed for the end of grade tests was in grade 10 ELA.

Table 1: Median Student Growth Percentiles for Original and Reduced PARCC Consortium by Grade and Content Area.

		2016-2017 Medians			**2017-2018 Medians**		
Content Area	Grade	Original	Reduced	N	Original	Reduced	N
ELA	4	52	51	5,706	54	55	5,735
	5	57	60	5,045	53	54	5,563
	6	54	55	4,465	51	53	4,704
	7	55	55	4,065	59	57	4,389
	8	54	59	4,006	53	55	4,039
	10	56	48	3,000	40	28	3,243
Mathematics	4	52	51	5,731	51	50	5,776
	5	50	50	5,067	52	53	5,602
	6	40	41	4,477	44	46	4,742
	7	47	47	3,973	49	49	4,367
	8	45	48	3,348	51	52	3,329

The decrease from 2016-2017 to 2017-2018 for the entire consortium suggests that states leaving the consortium were demonstrating lower student growth making it so that DC students (relative to the population) demonstrated higher growth. Consistent with that is the decrease in median SGP using the entire (original) consortium versus the reduced consortium consisting of DC and Maryland.

Table 2 provides median SGP by grade, content area, year, and consortium type for end-of-course tests Algebra I, Geometry and Algebra II. In general, these end-of-course tests saw larger decreases in median SGP based upon reducing the consortium from its original size to just DC and Maryland. Decreases in median SGP (particularly large ones) are consistent with the norm-group becoming more rigorous. That is, what one would see if a state (or several states) of lower growing students were removed from the analyses.

Table 2: Median Student Growth Percentiles for Original and Reduced PARCC Consortium by EOC Content Area and Most Recent Prior.

		2016-2017 Medians			**2017-2018 Medians**		
Content Area	Prior	Original	Reduced	N	Original	Reduced	N
Algebra I	Math 7	31	26	471	30.5	26	592
	Math 6	50	41.5	116	65	63	61
Algebra II	Algebra I	42	39	8	26	32.5	74
	Geometry	58	42	259	57	47	241
Geometry	Math 8				47	49	2,101

Conclusions

Overall, we find that the differences in 2016-2017 and 2017-2018 median SGPs from the entire PARCC consortium and the reduced PARCC consortium to support using the smaller consortium for 2018-2019 purposes. There are two main reasons we believe support this:

1. For the End-of-Grade testing (4 to 8) in Mathematics and ELA, the differences observed in median SGP between the entire PARCC consortium and the reduced PARCC consortium are small (often less than 3) and are in line with differences observed from one-year-to the next in median SGPs.

2. For the End-of-Course testing (Algebra I, Geometry, Algebra II) the differences in median SGP between the entire (original) consortium and reduced consortium were often larger (sometimes in excess of 10). In almost all cases, the median SGPs for the reduced consortium were *smaller* than for the entire consortium. This indicates that the reduced consortium consisting of DC and Maryland is a higher growing group of students than when the consortium consisted on all states. Though the decreases aren't ideal, it's likely more defensible politically to use those values than if there were commensurate increases. DC would be doing "worse" but that would be due to the fact that the comparison group being used is more rigorous.

Based upon these results we see three possible options for the District of Columbia for this years' growth results.

1. Use DC based growth norms for SGP use. These state level SGPs are provided (and have been provided) back to DC (and all PARCC consortium members).

2. Use consortium based growth norms for SGP use. The consortium will consist of the maximum number of states it is determined have comparable PARCC results for SGP analyses. At present, we do not know how many states that will encompass. At a minimum it appears as though DC and Maryland would be in that group.

3. Regardless of who ends up in the consortium, create a consortium consisting of DC and Maryland and use SGPs derived from the mini-consortium.

References

Betebenner, D. W. (2009). Norm- and criterion-referenced student growth. *Educational Measurement: Issues and Practice*, *28*(4), 42–51.