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The "College Prep for All" Mandate –

An Examination of New Graduation Requirements in the Context Of San Diego: Part I

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The "College Prep for All" Mandate in San Diego

1. Introduction

Throughout his presidency, President Obama has repeatedly called for the nation's high schools to prepare all students for both college and career.[i] Indeed, with the earnings gap between college graduates and high school graduates at or near all-time highs, college-preparatory courses – and the opportunity to attend college – have taken on increased importance. But to attend college, high school students must first complete rigorous "college preparatory" courses. Achieve, Inc.[ii] recently reported that 23 states and the District of Columbia now require all students to complete a college- and career-ready curriculum. In nine states and the District of Columbia, these requirements are mandatory, with no opt-out provisions.

In California, the American Civil Liberties Union (ACLU) has campaigned to ensure that all students have access to college preparatory coursework. It has done so by auditing student access to "a-g" courses in high schools in San Diego and elsewhere. (In California, high school students must complete a set of college preparatory courses known as the a-g requirements, with grades of C or higher, in order to apply for admission to either of the state's public university systems – the University of California (UC) or the California State University system (CSU).[iii])

In a move designed to put more students on track to attend university after high school, several large California school districts – among them Los Angeles, Oakland, San Francisco, San Diego, and less recently, San Jose – have adopted graduation policies requiring all students to complete the a-g course of study in order to graduate from high school. In some cases, this policy shift emanated directly from the ACLU campaign to increase access to a-g classes for all California public school students.

This policy change holds important implications for equality of opportunity in California. On the one hand, the policy is designed to expose all secondary students to a college preparatory curriculum, in the hope that some students who were not contemplating attending college, and who are perhaps from disadvantaged backgrounds, may opt to do so. This could increase college access for historically underserved populations. But on the other hand, the policy change could inadvertently lessen equality of opportunity. Poorly prepared high school freshmen may become discouraged by the more rigorous curriculum. Their attendance may start to lag. Their grades may drop. Ultimately, they may be more likely to drop out, or to persist until grade 12 without earning a diploma.

This is the first of two reports that will assess the progress that high school students in San Diego Unified School District (SDUSD) are making toward meeting the demands of a new "college prep for all" graduation policy, which will apply to students in the class of 2016 and later. It follows

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students in the class of 2016 up through June 2013, when they were completing grade 9. A subsequent report will follow the same cohort up through grade 10 in spring 2014, and at the same time will study the grade 9 course completion rates of the class of 2017, as of June 2014.

The next section outlines the new graduation policy in SDUSD, followed by a section that summarizes results thus far.

2. Studying San Diego's New Graduation Policy

In SDUSD, a new graduation policy mandates that all students in the classes of 2016 and later must complete the a-g college preparatory course sequence (with letter grades of D or higher) in order to receive a high school diploma. The a-g requirements, shown in Table 1,[iv] are the courses that high school students must complete in California to be eligible to apply for admission to either of the state's public university systems. San Diego Unified, like most of the other districts that have adopted the a-g course sequence as a graduation requirement, has decided to allow students to graduate if they earn letter grades of D or higher in a-g coursework. Students who complete the a-g sequence having earned a D in one or more courses are not eligible to attend either state public university system. However, proponents of the policy argue that, because of the new policy, all students will have been given the opportunity to take all the necessary college-preparatory coursework.

Table 1: a-g Subject-Area Requirements

Subject	Course Requirement
a: History/Social Studies	4 semesters
b: English Language Arts	8 semesters
c: Mathematics	6 semesters
d: Laboratory Sciences	4 semesters
e: World Language	4 semesters
f: Visual and Performing Arts	2 semesters
g: College-Prep Elective	2 semesters

This study builds on *College Readiness as a Graduation Requirement: An Assessment of San Diego's Challenges*, a 2013 report authored by Julian Betts, Andrew Zau, and Karen Bachofer (SanDERA) and published by the Public Policy Institute of California (PPIC). The 2013 study examined the potential effect of the new policy by analyzing the transcripts of students in the Class of 2011 (who were not affected by the new graduation policy that takes effect with the class of 2016) to determine how they would have fared had the new a-g requirements been in place. In San Diego's Class of 2011, 61 percent of graduates would have met the a-g requirements (with a D or higher mark, per the new policy) and 42 percent would have completed the requirements with a C or higher (as required by the UC/CSU). Completion rates varied widely by ethnicity, English learner status, and special education status.

This report examines the impact of this new requirement on the class of 2016, by documenting students' progress toward graduation under the new policy. Because students graduating in 2015

and earlier are not subject to the new policy, they make a natural comparison group. Thus, we may test for an improvement in a-g course completion rates, as of grade 9, relative the completion rates of older cohorts of students.

In addition, we explore three potential side effects of the reform that could lessen, rather than improve, equality of opportunity. First, the study examines the impact of the new policy on Career and Technical Education (CTE) course offerings and course-taking patterns in the district. The second half of President Obama's professed goals for high schools is that they prepare students for careers. CTE coursework can help fulfill this goal. However, because relatively few CTE courses were designated as a-g coursework during the timeframe of this study, CTE course taking may have suffered as a result of the new policy. [v] A second possible side effect is that for many students the new coursework could prove too difficult, perhaps even to the point where they drop out before graduating from high school. The *San Diego Union Tribune* (Magee, 2014) voices concern that implementation of the new policy could negatively impact the district's graduation rate which, at 88 percent, is the second highest of California's large urban districts.[vi] Thus, as a harbinger of possible increases in the dropout rate, the study tests for a shift in absence rates for students in the class of 2016. A third and related possible side effect is that grades of students may suffer if they are now taking more demanding courses than they would have before the new graduation policy was implemented. Therefore, the study tests for a change in grade point average (GPA) for students in the class of 2016 relative to that of older students. We note that in a recent media report Moran (2014) expresses concern that grading standards may decline in SDUSD due to the new graduation policy. [vii]

It is crucial for SDUSD policymakers to understand as soon as possible how schools and students are responding to the new graduation requirement. Because the Class of 2016 is the first class that will be required to complete the a-g coursework as a condition of high school graduation, this initial study focuses on the patterns of course-taking, course completion, attendance, and grades of students in the class of 2016 when they were enrolled in grade 9 (the 2012-13 academic year). A second report will follow the progress of the original cohort of students in the class of 2016 through the end of its grade 10 year (2013-14); it will also study the progress of the second cohort of students (the class of 2017) through the end of its grade 9 year (2013-14).

Variations in Impact of the Reform

The new graduation policy is likely to have a different impact on students in different parts of the achievement distribution. The highest achieving students would have no doubt completed the a-g requirements with or without the new policy. Students in the middle of the achievement distribution will likely have to master a more rigorous curriculum in order to graduate, and will have the incentive to do so. Students at the lower end of the achievement distribution, a

group that includes many English Learner (EL) students and students in special education, may find the new requirements too demanding, especially in mathematics. It is conceivable that their a-g course completion rates could stagnate or even fall if many become discouraged.

In cases where more recent cohorts have improved their a-g coursework completion rates, it is natural to ask whether this reflects improved performance in the early grades, or in grades 7, 8 and 9, which are the grades when students begin to take some a-g courses. To study this question, we estimate models of a-g completion that in some cases control for their grade 6 predicted probability of completing the a-g requirements. To match students across cohorts, we use predicted probabilities of completing the a-g requirements based on an updated version of the *a-g On Track Model* that a subset of the authors published through the Public Policy Institute of California in 2013.[viii]

3. Data

Our results are based on the academic records of students in the graduating classes of 2010 through 2016. Transcripts provide grades in individual courses at middle and high school levels. To ensure that the semester course counts and overall completion status recorded are correct, we require that students have a transcript record for every year in SDUSD from grade 7 onward. For students who did not complete the entirety of their grade 7 through 12 education in SDUSD – in some cases entering later than grade 7 or other times leaving SDUSD and later returning – transcript information from out-of-district years is also included when available for calculating a-g course completion.

Many charter school students are not included in the analysis because SDUSD does not generally receive transcript data for these students. For the analysis in this report, which primarily focuses on outcomes through the end of grade 9, about 80 percent of students meet the transcript requirement, and this is true both for the class of 2016 and past cohorts.

4. Results

4.1 Have Students in the Class of 2016 Completed a-g Courses at a Higher Rate Than Students in Older Cohorts?

Finding #1: A comparison of grade 9 transcripts for the classes of 2010 to 2016 shows that there has been a positive trend in both the number of a-g courses completed and the number of a-g subject areas in which course requirements were met in grade 9.

Finding #2: The class of 2016 exhibited a positive and significant increase in the number of a-g courses completed by grade 9 above and beyond the pre-existing trend. However, the class of 2016 did not show any deviation from trend in the number of a-g subject areas in which all courses were completed in grade 9.

Figure 1 shows the average number of a-g semester courses completed with grades of D or higher by

the end of grade 9 for the classes of 2010 through 2016. A clear positive trend is evident. But the key question concerns the class of 2016: did this first class subject to the new graduation requirements exhibit any increase in its a-g course completion rates by the end of grade 9? The data suggest that the class of 2016 broke from the longer-term trend. Further, this break from the trend was statistically significant. Students in the class of 2016 appear to have completed roughly 0.4-0.5 additional semester a-g courses over and above what we would have expected given the upward trend that had existed across the years we studied.

Figure 2 shows a somewhat more erratic, but positive, trend in the average number of a-g subject areas in which students completed course requirements with grades of D or higher by grade 9. We found that the class of 2016 did not show any difference in subject area completion relative to older cohorts, after taking into account the pre-existing positive trend.

Figure 1: The Average Number of a-g Semester Courses Completed with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation

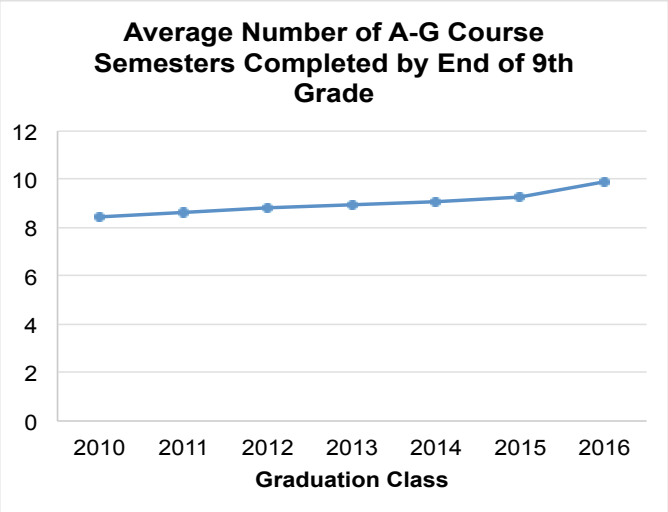
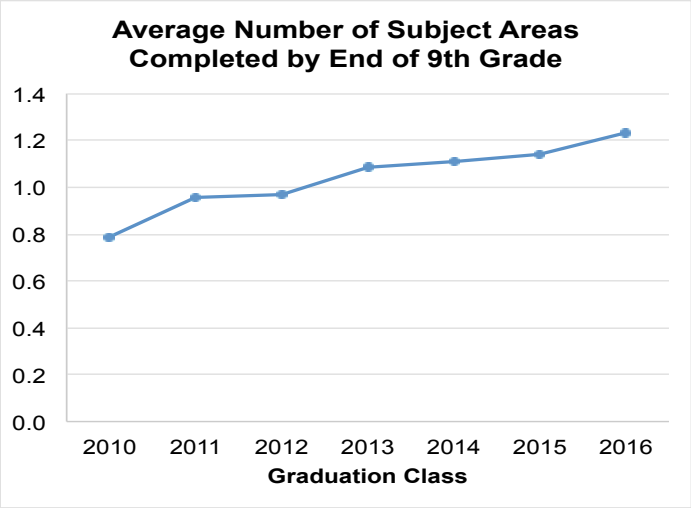


Figure 2: The Average Number of a-g Subject Areas Completed with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation



It is perhaps not surprising that we did not find an impact of the new graduation policy on the number of a-g subject areas in which work was completed. For many students, it is possible to finish only the World Languages requirement by grade 9, so there is not much scope for change. For example, it is unlikely that a grade 9 student will have already completed the 6 semester and 8 semester a-g course requirements in mathematics and English Language Arts. The same rationale does not hold

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true for the total number of a-g courses completed, which could change considerably as a result of the policy. And indeed, it is there that we detect a positive gain for the class of 2016.

Appendix Table 1 shows the results of regression models for the two a-g outcomes discussed in Figures 1 and 2. (Readers can find the Appendix at http://sandera.ucsd.edu/) We modeled each outcome as a linear function of the expected year of graduation, to capture the overall trend, and an indicator for the class of 2016. We also tried a model that included as an explanatory variable the *predicted probability* (in grade 6) of completing the a-g requirements with grades of D or higher. [ix] In both cases the indicator for the class of 2016 was statistically significant for cumulative a-g courses completed, but insignificant for number of a-g subject areas completed. We infer that the class of 2016 completed more a-g courses by the end of grade 9 at least partly because of influences in grades 7 through 9.

The overall pattern is that the class of 2016 completed a higher number of a-g *courses* than we would have expected given the pattern for earlier cohorts. Meanwhile, the class of 2016 continued an upward trend in *subject areas* completed but did not show any break from trend.

An interesting side note is that the positive trend for the graduating classes of 2010 to 2015 overall in the number of a-g courses completed by the end of grade 9 can be completely explained by rising predicted probabilities, as of grade 6, of completing the a-g requirements (Appendix Table 1, column 2).

4.2 Are Students in the Class of 2016 On Track to Complete a-g Coursework by Grade 12?

Finding #3: As of the end of grade 9, students in the class of 2016 were 2.1 semester courses behind the a-g course completion rate of students in the classes of 2011-2013 who *successfully completed* the a-g course requirements with grades of D or higher. Math and World Language are the two areas in which students were the furthest behind.

To study whether students are "on track," we examined graduates in the classes of 2011 through 2013, well before the policy went into effect. We focused on students in those graduating classes who completed the a-g course requirements with grades of D or higher. Table 2 shows the average cumulative number of a-g courses completed by subject and grade level. For each subject area, we indicate in bold the number of courses completed at the grade level in which these successful students on average completed the given subject course requirement.

Table 2: Average Number of a-g Semester Courses Completed with Grades of D or Higher Among Students in the Classes of 2011-2013 Who Met the District's New a-g Requirement, by Grade Level

Grade Level	History/ Social Science	English Language Arts	Math	Lab Sciences	World Languages	Visual and Performing Arts	College Prep Elective	Total
7	0.0	0.0	0.2	0.0	0.5	0.0	0.0	0.7
8	0.0	0.0	2.0	0.0	1.2	0.0	0.0	3.2
9	0.5	2.0	3.9	1.3	2.7	0.9	0.7	12.0
10	2.2	4.1	5.8	3.3	**4.2**	1.5	0.9	22.0
11	**4.3**	6.1	**7.6**	**5.3**	5.3	**2.6**	1.4	32.6
12	5.2	**8.2**	9.0	6.4	5.7	4.2	**3.2**	42.0

Note: Numbers in bold indicate the grade level at which students on average met the given subject area requirement. Counts refer to semester courses.

Next, we compared the a-g course completion rate for this subset of *successful* students from earlier cohorts with the average number of a-g courses completed by *all* students in the class of 2016. The rightmost column in Table 3 shows that the average student in the class of 2016 had completed 9.9 semesters of a-g coursework by the end of grade 9. This is roughly 2 semester courses fewer than the average student in older cohorts who eventually went on to complete the a-g requirements with grades of D or higher.

Table 3: A Comparison of the Average Number of a-g Semester Courses Completed with Grades of D or Higher by the End of Grade 9 Among Students in the Classes of 2011-2013 Who Met the District's New a-g Requirement and Students in the Class of 2016

	History/ Social Science	English Language Arts	Math	Lab Sciences	World Languages	Visual and Performing Arts	College Prep Elective	Total
Successful Students in Classes of 2011-2013	0.5	2.0	3.9	1.3	2.7	0.9	0.7	12.0
Class of 2016	0.4	1.6	3.2	1.0	2.2	1.1	0.6	9.9
Difference	*0.1*	*0.4*	*0.8*	*0.3*	*0.5*	*-0.2*	*0.2*	*2.1*

Note: Counts refer to semester courses.

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Can students in the class of 2016 catch up? In part this depends on whether they are lagging behind by a small amount in each subject area, or whether the gap mostly reflects one or two subject areas. In the latter case, because course sequences are typically pre-determined, educators should be particularly worried. It is not possible to catch up in grade 12 by taking, for example, two math courses in the same year, because one is a prerequisite for the other. The table suggests that, on average, students in the class of 2016 are 0.8 of a semester course behind in mathematics, and 0.5 semester courses behind in World Languages. Neither of these gaps seems impossible to close, but if the gaps persist or widen by the end of grade 10, they should be cause for concern.

Table 2 also reveals that the average "successful" student in the older cohorts completed 42 a-g semester courses, when only 30 courses, if chosen in the appropriate subject areas, would have been sufficient. For this reason, differences reported so far may overstate how many courses students in the class of 2016 might be behind. That is, many students who are behind the average successful student in older cohorts may not complete 42 semester courses, but could still qualify for graduation by completing closer to 30 semester courses.

4.3 Are Students in the Class of 2016 Also Accelerating the Rate at Which They Meet the University of California/California State University a-g Requirements?

As noted earlier, the district's a-g requirement requires only that students complete the a-g course requirements with grades of D or higher, but to become eligible to apply for admission to the University of California or California State University, students must earn grades of C or higher in each of the a-g courses.

Has the class of 2016 accelerated its rate of a-g course completion with grades of C or higher, as it has for course completion with grades of D or higher? If not, it would suggest that the new policy is not likely to increase the share of San Diego students who will enroll in either of the state's public university systems.

Figures 3 and 4 repeat Figures 1 and 2, but now add lines showing changes in a-g progress across graduation cohorts using the requirements that each course must be completed with grades of C or higher. The patterns are strikingly similar. Figure 3 shows upward trends in the number of a-g courses completed, using the D or higher and C or higher letter grade requirement, that are almost identical. More to the point, both lines show a positive break from that trend for the class of 2016. Since the universities' "C or higher" standard is not directly affected by the district's new requirement of grades of D or higher, we cannot know for certain the cause of the accelerated improvement in completion of these courses. But it seems possible

that the new graduation requirement for the class of 2016 is also accelerating students' eligibility to apply for admission to California's public universities. However, the gain over the pre-existing trend, as shown in Figure 3, is small (although statistically significant).

Figure 4 is similar to Figure 2 – there is no clear break at all in a-g subject areas completed for the class of 2016, using either letter grade requirement. Again, this is not particularly surprising. For most students, the only subject area that it is possible to complete by the end of grade 9 is World Languages, and even that is impossible if a student's middle school does not offer the required coursework.

Figure 3: A Comparison of Trends in the Average Number of a-g Semester Courses Completed with Grades of D or Higher and C or Higher

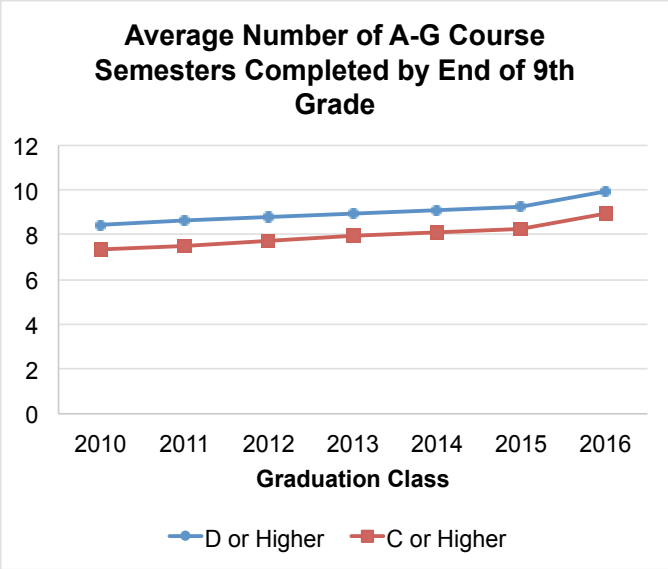
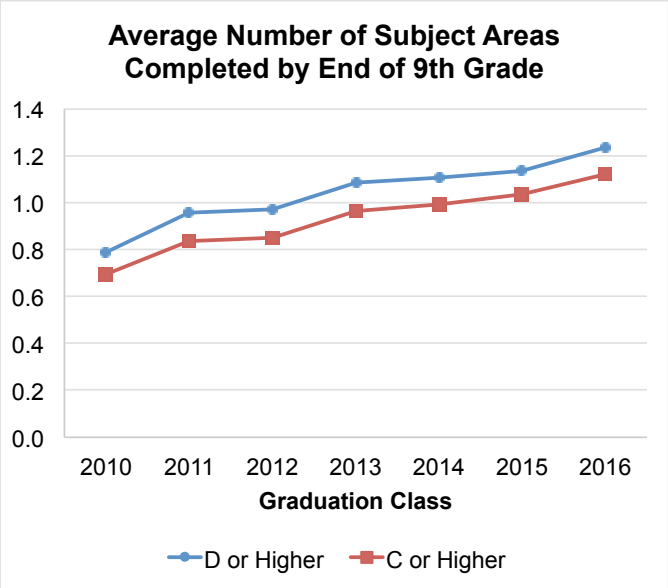


Figure 4: A Comparison of Trends in the Number of Subject Areas Completed by Grade 9, with Grades of D or Higher and C or Higher



Appendix Table 2 shows regression models similar to those in Appendix Table 1, the exception being that now we model a-g courses completed and subjects completed with grades of C or higher. The results are very similar to those using the "D or higher" requirement. Depending on the model, the class of 2016 shows an increase in the number of a-g courses completed above the pre-existing trend on the order of 0.3 to 0.5 semester courses. As for the earlier models that focused on the D or higher requirement, the break from trend for the class of 2016 cannot be explained by students' relatively

higher *predicted* probability of completing a-g with grades of C or higher, based on grade 6 data. Finally, there is no significant break from the trend for number of a-g subjects completed.

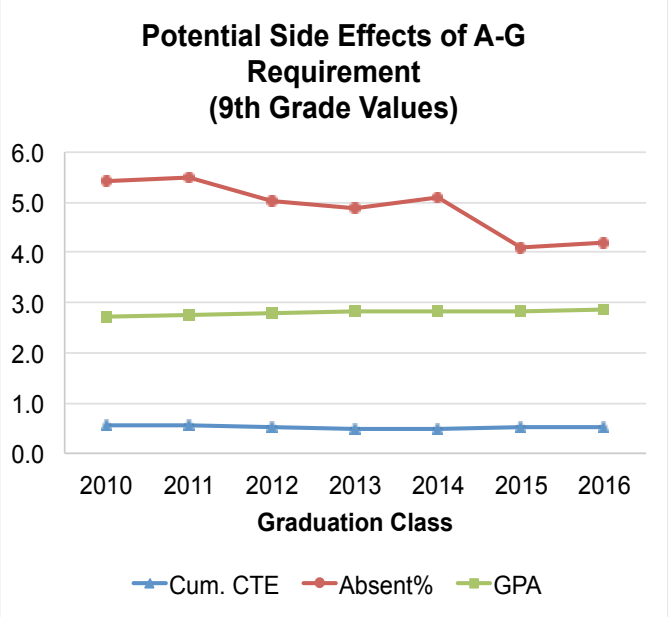
4.4 Have Students in the Class of 2016 Exhibited Negative Academic Side Effects from the New Policy?

Finding #4: The class of 2016, as of grade 9, exhibited no side effects from the new policy in the sense of lowered CTE course completion, higher absence rates, or lowered GPA.

Figure 5 shows trends for grade 9 students in the cumulative number of year-long CTE courses completed, the percentage of days students were absent, and GPA. There does not appear to be any reduction in cumulative CTE course taking or GPA, or increase in absence rates, in grade 9 for the class of 2016. (Regression models shown in Appendix Table 3 indicate no statistically significant differences.) We thus find no negative side effects of the new graduation policies on these three outcomes so far.

Because the district's graduation policy includes a requirement that students' overall cumulative GPAs must be at least 2.0 (a C average), we also tested whether the class of 2016 showed a deviation from past trends in the probability of having a GPA in grade 9 of at least 2.0. (Results are available from the authors on request.) The models suggested no long-term trend in this GPA probability, and the class of 2016 did not deviate from past cohorts. This further confirms that there has not been a negative side effect on grades from the new policy.

Figure 5: Grade 9 Trends in the Cumulative Number of Year-Long CTE Courses Completed, the Percentage of Days Absent, and GPA, by Expected Graduation Class



4.5 Variations by Student Subgroup

It is important to track student progress by subgroup, because any large gaps that emerge among groups can help the district identify students who will require additional supports to meet the new graduation requirements. We present two sets of information. First, we plot trends in a-g course completion and a-g subject areas completed for student subgroups across

cohorts to get a sense of trends over time. These figures are analogous to Figures 1 and 2 respectively. Second, we replicate the analysis of gaps between courses completed by successful students in older cohorts and courses completed by the class of 2016, as in Table 3, except that this time we do the analyses separately for each student subgroup. Our results show that it is critically important to study pathways toward successful a-g completion separately by subgroup. On average, students in some subgroups who ultimately completed the a-g course sequence completed somewhat fewer than the average of 42 semester courses shown in Table 2.

4.5.1 Trends in a-g Course and Subject Area Completion by Subgroup

Finding #5: Large and persistent gaps among student groups are apparent in a-g course and subject area completion by grade 9. Each student group we examined showed either no trend over time or a trend of increasing a-g course and subject area completion. Evidence of unequal trends across groups – that is widening inequality – was observed for some of the groupings. In particular, the gap between EL and non-EL students and between students in special education and students not in special education have widened across the classes of 2010 through 2016.

The above summary statement includes discussion of two intergroup gaps that widened in a way that is both highly visually obvious when we graph trends and that is statistically significant. But there are many other more nuanced findings, which we detail below.

Figure 6 shows trends in the number of semesters of a-g coursework completed with grades of D or higher for four groups of students: students who are English Learners (ELs), non-ELs, and students who are in special education and those who are not (grade 9 status for both EL and special education). Non-EL students and students not in special education both show positive trends in a-g course completion across cohorts. These trends are far less apparent for ELs and those in special education, especially the former. For the class of 2016, as of grade 9, a gap of about 5.5 semester courses exists between EL and non-EL students and about 4.5 semester courses between students in special education and those who are not.[x]

Figure 7 shows the analogous trends in the number of a-g subject areas completed with grades of D or higher. Positive trends are apparent for all four groups, but again with widening inequality.[xi] For the class of 2016, as of grade 9, there is a gap of about half a subject area completed between EL and non-EL students and between students in special education and those who are not.

Interested readers can find regression models estimated for these subgroups in Appendix Table 4.

Figure 6: A Comparison by Language and Special Education Status of Average Number of a-g Semester Courses with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation

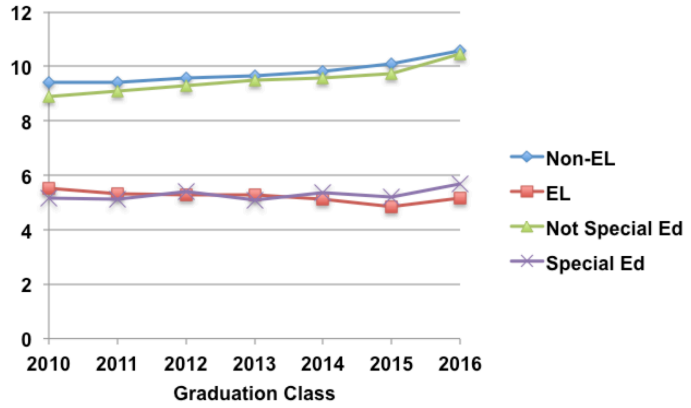
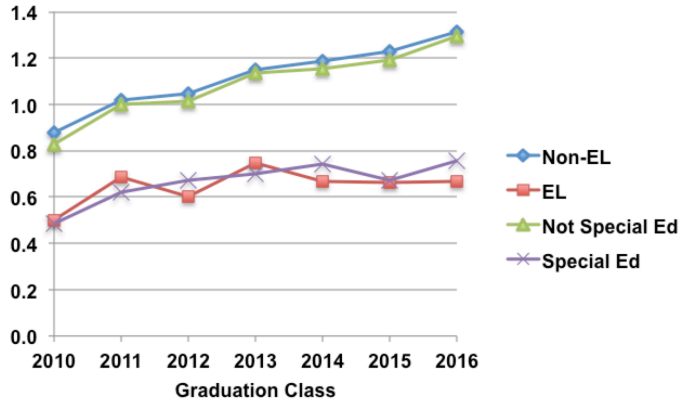


Figure 7: A Comparison by Language and Special Education Status of Average Number of a-g Subject Areas Completed with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation



Figures 8 and 9 show corresponding trends when we divide students by race/ethnicity, while Figures 10 and 11 show trends when students are grouped by parental education level. A persistent gap of roughly 3.5 semester courses is apparent between white students and either African-American or Hispanic students, as shown in Figure 8. All four racial/ethnic groups in this figure do exhibit increases across cohorts in a-g course completion by grade 9, although the trend for Hispanic students is not statistically significant at the 5% level or lower (Appendix Table 5, Column 1). Figure 9 shows that the number of a-g subject areas completed with grades of D or higher by the end of grade 9 has risen over time all four racial/ethnic subgroups. For that outcome, all four groups show significant positive trends. The black-white and Hispanic-white gaps represent roughly 0.4 to 0.6 subjects completed, and the gap is slightly higher for the class of 2016 relative to the class of 2010. For example, the black-white gap was 0.47 for the class of 2010 and 0.55 for the class of 2016. [xii]

Figure 8: A Comparison by Race/Ethnicity of Average Number of a-g Semester Courses with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation

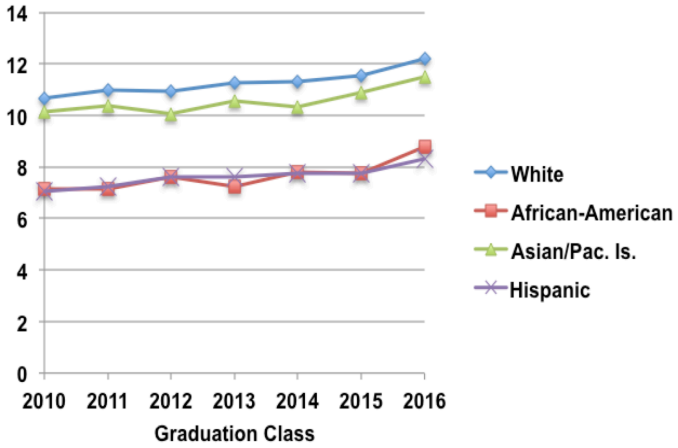
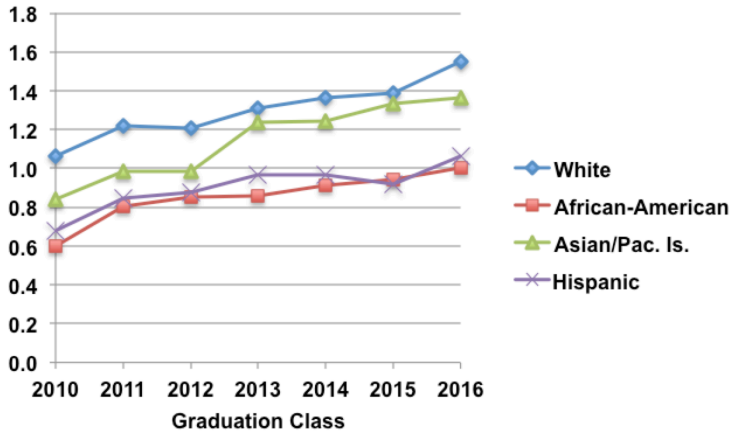


Figure 9: A Comparison by Race/Ethnicity of Average Number of a-g Subject Areas Completed with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation



Turning to gaps related to parental education, Figure 10 shows persistent gaps in a-g courses completed that are correlated with parental education. For example, for students in the class of 2016, the average number of a-g semester courses completed by the end of grade 9 was 12.9 for students whose parents had attended graduate school, compared to 7.6 for students whose parents lacked a high school diploma. Only one group, students with parents who graduated from college, shows a significant trend over time (Appendix Table 6 model (1)). Only two groups, those with parents with some college or with graduate school experience, showed a significant break from trend for the class of 2016.

Figure 11 shows the corresponding trends for the number of a-g subject areas completed with grades of D or higher by parental education. Again, persistent gaps in subject area completion emerge for every cohort we study, although all groups show a significant increase in this measure over time. For the class of 2016, the number of subject areas completed with grades of D or higher was 1.7 for students whose parents had attended graduate school, compared to 0.9 for students whose parents had not graduated from high school. No group experienced a significant break from trend for the class of 2016.

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Figure 10: A Comparison by Parental Education of Average Number of a-g Semester Courses with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation

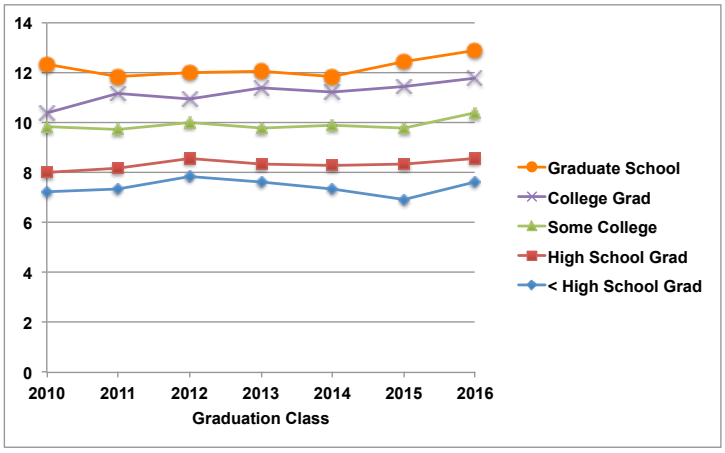
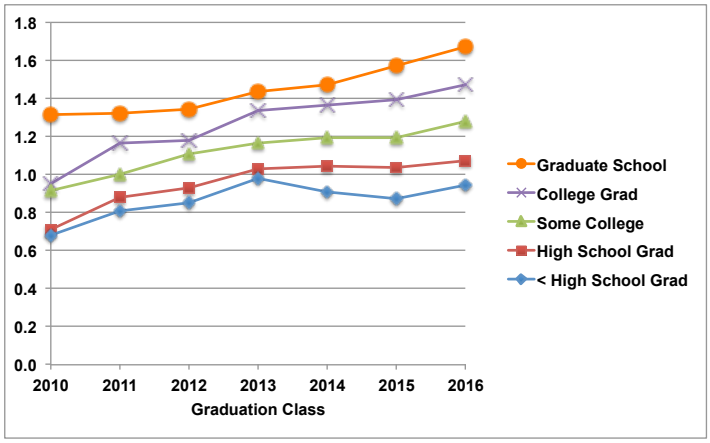


Figure 11: A Comparison by Parental Education of Average Number of a-g Subject Areas Completed with Grades of D or Higher by the End of Grade 9, by Year of Expected Graduation



4.5.2 The Gap by Student Group between the Class of 2016 and Successful a-g Completers from Older Cohorts

In addition to studying a-g courses and subject areas completed by subgroup, we also examined the *gap* in coursework completed by grade 9 between 1) all students in the class of 2016 and 2) successful a-g completers in the classes of 2011-2013. This analysis repeats the analysis in Table 3 but by individual subgroup. Instead of comparing, for example, courses completed between EL students in the class of 2016 and *all* successful students in the classes of 2011-2013, we instead compare EL students to successful EL students in the classes of 2011-2013. Appendix Table 7 makes comparisons among language and special education groups; Appendix Table 8 makes comparisons among racial/ethnic groups; Appendix Table 9 makes comparisons among groups based on levels of parental education.

Three important findings emerge.

Finding #6: Compared to the 12.0 a-g semester courses completed on average by *all* successful students in the classes of 2011-2013 by the end of grade 9, some subgroups in the class of 2016 lag quite far behind. The subgroups in the class of 2016 with the lowest number of a-g courses completed are EL students (5.1 courses), students in special education (5.7 courses), students whose parents have not graduated from high school (7.6 courses), Hispanic students (8.3 courses), and African-American students (8.8 courses).

Although these subgroups clearly lag far behind the 12.0 courses completed on average by successful a-g completers in older cohorts, there is, in some cases, a silver lining. Recall from earlier that the average successful student in the older cohorts completed 42 semesters of a-g coursework, far beyond the minimum requirement of 30. For some subgroups, *students who were ultimately successful* in completing required a-g coursework had completed slightly fewer than 42 semester courses by grade 12. In addition, we find in some cases that successful members of these subgroups had completed substantially fewer than 12 a-g courses by the end of grade 9.

On a related note, while successful students from these subgroups had fallen behind other eventually successful students (on average) through grade 9, we find that they did not fall *further* behind from grade 10 onward. For instance, among students who successfully completed the a-g requirement with grades of D or higher in the classes of 2011-2013, EL and non-EL students had on average completed 9.0 and 12.2 a-g semester courses, respectively, through the end of grade 9: for a gap of 3.2 semester courses. By the end of grade 12, however, these counts were 39.3 and 42.2 semester courses respectively, for a gap of only 2.9 semester courses.

Finding #7: The gaps in courses completed by grade 9 described in Finding #6 may somewhat overstate the problems facing groups such as EL students and students in special education, because in older cohorts successful students in these groups had completed only 9.0 and 10.3 a-g courses, respectively, by the end of grade 9. These numbers are substantially below the 12.0 courses completed by the average successful a-g completers in the district as a whole.

Appendix Tables 7-9 show the courses completed by the end of grade 9 by students in each subgroup who were ultimately successful in completing the a-g course sequence with grades of D or higher, in the classes of 2011-2013. The two subgroups whose successful members had completed the fewest a-g courses by grade 9 were students in special education (10.3 courses) and EL students (9.0 courses).

For the classes of 2011-2013, successful students in special education had completed 10.3 a-g semester courses on average through the end of grade 9, while successful students not in special education had completed 12.1 semester courses on average, a gap of 1.8 semester courses. By the end of grade 12, these counts were 40.3 and 42.1 semester courses

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respectively, again for a gap of 1.8 semester courses. Similar patterns also hold true by race/ethnicity and parental education subgroups, in some cases even indicating that students in groups that had fallen behind were actually able to narrow the gap from grade 10 onward.[xiii] This gives hope to students in the EL, special education, and other subgroups because, in the past, members of these groups who ultimately succeeded were able to do so in spite of having completed fewer courses by the end of grade 9.

Another point worth noting is that, among all subgroups considered (broken down by race/ethnicity, parental education, EL and special education status), no individual subgroup finished with fewer than 39.3 a-g semester courses on average among successful students in the classes of 2011-2013; while the a-g requirement technically requires only 30 semester courses. Thus, echoing a point made earlier, for any individual subgroup it is actually possible for students in the class of 2016 to complete the new a-g requirement without measuring fully up to the pace of (average) successful students from past cohorts.

Finally, it is important to know what subject areas are causing the greatest issues for students in various groups. Appendix Table 7 shows courses completed by subject areas by the end of grade 9 for successful students in older cohorts and students in the class of 2016. These results lead to the conclusions outlined in Finding #8.

Finding #8: For EL students in the class of 2016, the main subject areas contributing to the overall gap in a-g course completion were math (1.6 semester courses) and English Language Arts (0.9 semester courses). For students in special education, the three subject areas contributing most to the a-g completion gap were math (1.8 semester courses), and English Language Arts and World Languages (0.8 semester courses each). The gap of almost a full year in math for both of these subgroups is both notable and of concern, given that math is a cumulative subject.

4. Conclusions

On the whole, students in SDUSD have made quite steady improvements in a-g course and subject area completion by grade 9. Much of this improvement occurred before the new graduation policy was set in place.

What about the class of 2016, which will be the first to face the new graduation policy? Have students in this group completed more a-g courses than we might have expected given ongoing trends? The class of 2016 does seem to be slightly accelerating its a-g course completion rate beyond the pre-existing trend. But, on average, students in this class are lagging behind the a-g course completion rates we observe for successful a-g completers among earlier cohorts whom we followed all the way to graduation. While we must bear in mind that past a-g completers have typically taken far more than the required 30 a-g semester courses, it appears that the classes of 2016 and later will likely need to accelerate their a-g course completion rate beyond the positive trend that we have detected in the data over time, in order to complete the a-g sequence. SDUSD has already taken steps to expand summer school offerings, and this could provide one support for students as they attempt to complete all of the a-g coursework.

Some student subgroups lag considerably behind others in the class of 2016. Meaningful gaps exist, related to language status, special education status, race/ethnicity and parental education.

Most notably, compared to the average of 12 semester a-g courses completed by all successful a-g completers in the classes of 2011-2013 by the end of grade 9, ELs and students in special education in the class of 2016 had completed only 5.1 and 5.7 semester courses by the end of grade 9, well below the 12 courses observed on average for successful a-g completers. Gaps of this size emerging as early as grade 9 raise serious concerns that these groups of students will require substantial assistance if they are to graduate on time in 2016. However, the prospects for EL students and students in special education may not be as dire as one might guess. We have noticed that in the classes of 2011-2013, students in the EL and special education groups who ultimately completed the a-g requirements had, on average, completed only about 10 and 9 a-g courses by the end of grade 9, compared to 12 courses for the average student in these classes who ultimately completed the requirements. Successful students in these two groups essentially followed a parallel path of courses completed relative to non-EL and non-special-education students who completed the a-g requirements after grade 9. Still, the number of courses that students lag behind a-g completers in their own subgroup is a cause for concern.

Our report also finds that while the class of 2016 is completing more a-g courses than we would have predicted based on pre-existing trends, part of the improvement in this cohort can be explained by rising student achievement we observed for this cohort when they were in grade 6. Readers should not interpret this finding as meaning that any

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supports offered in middle and high school to the class of 2016 did not matter. Rather, it implies that improving the quality of elementary education can alter students' trajectories all the way through high school, and perhaps beyond. Higher achievement at the elementary level could play an important role in achieving the intent of the new graduation policy.

We close with a review of some policy issues that do not seem to be fully resolved yet in SDUSD or, for that matter, in other districts such as Los Angeles Unified and Oakland Unified that have adopted a similar a-g graduation requirement. Two provisions in the California Education Code mandate that school districts provide alternative routes to a high school diploma. One stipulation requires districts to adopt "alternative means" for students to meet graduation requirements (Ed Code 51225.3). A second stipulation requires districts to allow students who have successfully completed grade 10 to choose either a traditional college preparatory or a career preparatory program (Ed Code 52336.1). It remains to be seen exactly how San Diego and other districts will maintain their vision of a single a-g college-preparatory track toward graduation while allowing students with special needs or with a strong interest in Career and Technical Education some flexibility.

About SanDERA at UCSD

The San Diego Education Research Alliance at UCSD (SanDERA) is an independent research entity based at the University of California, San Diego (UCSD). Established in May 2010 by the San Diego Unified School District (SDUSD) and the UCSD Department of Economics, SanDERA formalizes and focuses the longstanding relationship between the district and the university.

More information about SanDERA, and a complete listing of publications can be found at sandera.ucsd.edu.

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Endnotes

[i] See for example White House Office of the Press Secretary, (2010a,b) and (2014).

[ii] http://www.achieve.org/state-college-and-career-ready-high-school-graduation-requirements-comparison-table

[iii] The UC requires that students successfully complete (with a C or higher mark) 15 year long, approved college preparatory courses (that is, 30 semester-long courses) in seven subject areas in order to be eligible to apply for admission. The specific requirements are: Subject A: Social Studies (4 semesters), Subject B: English Language Arts (8 semesters), Subject C: Mathematics (6 semesters), Subject D: Sciences (4 semesters), Subject E: World Language (4 semesters), Subject F: Visual and Performing Arts (2 semesters), Subject G: College-Preparatory Electives (2 semesters).

[iv] Note: Students can meet some of these requirements by taking certain college courses or scoring at certain levels on Advanced Placement (AP), International Baccalaureate (IB), or SAT subject area examinations. More information is available from the University of California Office of the President (http://admission.universityofcalifornia.edu/counselors/freshman/minimum-requirements/subject-requirement/index.html).

[v] Betts, Zau, McAdams and Dotter (2014) report based on an analysis of data from 1998-1999 through 2008-2009 that in SDUSD only 7% of CTE courses met a-g requirements. (See Betts, Julian, Andrew Zau, John McAdams and Dallas Dotter, (2014), *Career and Technical Education in San Diego: A Statistical Analysis of Course Availability, Students' Course-Taking Patterns, and Relationships with High School and Postsecondary Outcomes*, San Diego Education Research Alliance at UCSD, sandera.ucsd.edu.) However, the district has worked to increase the number of CTE courses it offers which qualify as a-g. By 2014-2015, the district estimates that 29.9% of CTE courses qualified as a-g. We are grateful to Tatiana Popescu and Peter Bell of SDUSD for providing this calculation.

[vi] See Magee, Maureen (2014), "New Graduation Standards are Daunting," *San Diego Union-Tribune*, October 27, 2014, downloaded December 12 from http://www.utsandiego.com/news/2014/oct/27/san-diego-unified-standards-graduation/.

[vii] See Koran, Mario, (2014), "Beware the Graduation Requirement End-Arounds," *Voice of San Diego*, December 5, downloaded December 11, 2014 from http://voiceofsandiego.org/2014/12/05/beware-the-graduation-requirement-end-arounds/.

[viii] See (2013) Betts, Zau, and Bachofer. *College Readiness as a Graduation Requirement: An Assessment of San Diego's Challenges*, San Francisco: Public Policy Institute of California. The On Track model consists of several Excel spreadsheets that any district can use to forecast individual students' probabilities of completing the a-g requirement.

[ix] Our reasoning here is that both the estimated trend and the estimated break from trend for the class of 2016 could reflect either a) improved academic achievement as of the end of grade 6 or b) improved academic achievement and/or enrollment in more rigorous courses in the remaining grades of middle school and in grade 9. By adding a model that controls for students' predicted probability of completing a-g

coursework, as of grade 6, we can control for any improvement prior to grade 7.

[x] For these graphs we do not emphasize in the main text tests for whether the class of 2016 exhibits a significant difference from trend. Our analysis indicated that the smaller subgroup (e.g. EL students or students in special education) lacked the sample size needed for a precise test of this. For example, there is a significant break from trend for non-EL and non-special-education students in the class of 2016, no significant break for either of the two smaller groups (EL or special education students), but in addition, no significant *difference* in the breaks from trend for EL versus non-EL and likewise for students in special education and students who were not. Essentially, the standard errors for the smaller group are too large to rule out any differences, and also lead to inconclusive evidence on whether there was a significant break for subgroups in the class of 2016. Notes under this and the following tables summarize results of tests for equal trends and equal breaks from trend for the class of 2016 between groups. Appendix Table 4 shows the full results.

[xi] As shown in Appendix Table 4, we can reject the hypothesis of parallel trends between the EL/non-EL and special education/non-special education groups. This applies both to Figures 6 and 7. But the difference in trends can be explained by students' predicted probabilities of completing the a-g requirements, as shown by models (2) and (6) for the case of courses completed, and models (4) and (8) for the number of subject areas completed, where a test for equal trends within pairs of groups retains this hypothesis once we control for predicted completion rates. The implication is that widening gaps in achievement were apparent by grade 6.

[xii] Appendix Table 5 shows regression models of courses and subjects completed with grades of D or better. For number of courses completed, there is no significant difference across racial/ethnic groups in trends in courses completed, but there is for trends in subject areas completed. As for the crucial issue of whether the class of 2016 shows a break from trend, for the number of subject areas completed, positive breaks from trend emerge for all groups but Hispanics. Overall, though, no significant difference in the break from trend emerged across groups. For the number of subject areas completed, models (3) and (4) show that the hypotheses of equal breaks from trend for the class of 2016 is rejected at about the 1% level of significance in model (3). However, only one of the four groups shows a significant break from trend. The group is Asians/Pacific Islanders, for whom a negative break from trend is (weakly) significant.

[xiii] Due to the large number of subgroups, the full trajectories by grade and subgroup are not displayed in this text, but are available by request.

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