The Civil Rights Data Collection (CRDC) is a biennial survey of all public schools and school districts in the United States administered by the U.S. Department of Education Office for Civil Rights. The data collection on the 2015-16 school year targeted 17,370 districts and 96,440 schools with 99.8 percent of districts certifying their submitted data. The CRDC has collected information on Advanced Placement (AP) course-taking previously, but the 2015-16 survey included a census of dual enrollment (DE) program participation for the first time.

This memo presents a methodology developed by CCRC and NACEP to prepare the CRDC data to estimate state-by-state participation in DE and AP among high school students. First, I describe the identification of eligible high schools. Since a subset of eligible high schools enroll students in 8th grade and below, which CRDC define as ineligible for DE and AP, I describe a method for using linked Common Core Data (CCD) to adjust for the presence of students in 8th grade and below in schools’ total enrollments.

### Identifying Eligible High Schools

Table 1 summarizes the steps taken to restrict the full CRDC school-level dataset to eligible high schools using definitions identified by NACEP. While CRDC and CCD school-level data should align using a unique school identifier in both datasets, there were about a thousand schools that did not match on their unique identifier. Through other matching (e.g., school name, state, and district name combinations), I was able to match most of these schools but 337 schools still did not match to CCD and were excluded. The final sample includes 18,675 schools identified as eligible high schools.

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1. For more information: https://ocrdata.ed.gov/DataNotes
2. The CRDC instructions defined dual enrollment programs as “programs [that] provide opportunities for high school students to take college-level courses offered by colleges, and earn concurrent credit toward a high school diploma and a college degree while still in high school. These programs are for high school-enrolled students who are academically prepared to enroll in college and are interested in taking on additional coursework. For example, students who want to study subjects not offered at their high school may seek supplemental education at colleges nearby. Dual enrollment/dual credit programs do not include the Advanced Placement (AP) program or the International Baccalaureate Diploma Programme.” Survey respondents were instructed to report the number of students in grades 9-12 that enrolled in at least one dual enrollment/dual credit program, and to include ungraded high school age students in the count. See page 35 here: https://crdc.grads360.org/services/PDCService.svc/GetPDCDocumentFile?fileld=25614
3. This procedure is necessary as CRDC does not provide grade-level enrollments, which are available from CCD.
Table 1. Sample restriction procedure with resulting number of remaining high schools
(Recommendations from NACEP)

<table>
<thead>
<tr>
<th>Sample Restriction Step (CRDC/CCD variable used)</th>
<th>N remaining schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remove Schools without 11th or 12th Grade (CRDC)</td>
<td>N= 25,051</td>
</tr>
</tbody>
</table>
| 2. Remove Special Education, Alternative, and Juvenile Justice Schools (CRDC)  
  a. Includes removing schools with the words 'adult' 'behavioral' 'juvenile' 'correction' in the school name (CRDC) | N= 20,646 |
| 3. Remove Virtual Schools (CCD)  
  a. Includes removing schools with the words 'virtual', 'cyber', 'electronic', 'internet', 'online', 'distance' in the name | N= 20,269 |
| 4. Remove Elementary, Middle, and "N" Schools (CCD) | N= 20,113 |
| 5. Remove Special Education, Alternative/Other, and "Adult" Schools (CCD) | N= 19,012 |
| 6. Remove the Non-Matching NCES Schools (CCD) | N= 18,675 |

Adjusting School Enrollments to Estimate Number of Eligible Students

The CRDC asks survey respondents to report the number of 9th-12th grade (and HS age ungraded) students who participated in DE or AP programs. Thus students in 8th grade or below are ineligible for the purposes of estimating participation in DE and AP and should be excluded from the denominators of DE and AP participation rates. Of our eligible set of high schools, 27 percent offer 8th grade or lower (N= 5,134). For the purpose of this description I will refer to high schools that offer 8th grade or lower as secondary schools. Because grade-level enrollments are only available in CCD and not CRDC (in CRDC only school-level enrollments are reported), I merged CCD and CRDC data to estimate a DE/AP participation rate denominator for secondary schools that does not include students in 8th grade or lower.

To estimate an adjusted participation rate denominator for secondary schools, I used a two-step procedure:

1. If secondary schools had a CCD school enrollment that matched the CRDC school enrollment within +/- 5 percent (of the CRDC enrollment), then I replaced the participation rate denominator with the CCD enrollment for grades 9-12, 13, and ungraded. This was carried on specifically for all students and subgroups of students by race and gender. The rate of matching within +/- 5 percent ranged from 82 percent (all students) to 17 percent (Pacific Islander) depending on the subgroup (as shown in Table A1). Imputed estimates ranged from 55-61 percent of the total school enrollment, depending on the subgroup (see Table A1).

2. If secondary schools did not have a CCD school enrollment that matched the CRDC school enrollment within +/- 5 percent (of the CRDC enrollment), then I used CCD to create a ratio capturing the proportion of the school enrollment in grade 9 or above. I then used this ratio to weight the CRDC enrollment to estimate the number of students in grade 9 or above. This second step was applied to between 18 and 82 percent of the secondary schools, depending on the subgroup-specific match rate from step 1. Similar to results from step 1, imputed estimates ranged from 53-62 percent of the total school enrollment, depending on the subgroup (see Table A1).
Table A1 reports results by student subgroup from this two-step procedure to adjust the participation rate denominator for secondary schools. As a result of this procedure, six percent of students in the full sample of eligible high schools were excluded (ranging from 5 to 12 percent by subgroup). Removing ineligible students from the participation rate denominators using this procedure increased the DE and AP participation rates by 0.5 and 1.2 percentage points, respectively (this ranged by student subgroup between 0 and 2 percentage points, see Table A1). Tables A2 and A3 show, for each state and subgroup of students, the percentage of students excluded using this procedure and how the adjusted denominators affected DE/AP participation rates.

While the match rate—which determined if enrollments were adjusted using step 1 or 2—varied substantially by student group (likely due to variation in subgroup size), it is encouraging that the effective weights applied to total enrollments were consistent across subgroup and procedure (step 1 vs. step 2). Overall, there were more American Indian students who were excluded from the sample (12 percent) compared to White (7 percent), Black (7 percent), or Asian (4 percent) students, for example. It could be that American Indian students were more likely to enroll in secondary schools than other subpopulations, which would also explain why they were more likely to be excluded when adjusting for secondary school enrollments. Looking at Table A3 it appears that certain states (e.g., Alaska, Alabama, Louisiana) may be driving this broader effect. In these states, American Indian student participation rates increased to a greater extent than other subgroups and states, perhaps due to relatively more students enrolled in 8th grade and below being removed from the denominator (see Table A2). These results suggest that without a denominator adjustment, participation in DE and AP would be particularly underestimated for certain subgroups of students and/or in certain states that are overrepresented in secondary school enrollment (relatively to tradition 9-12 high school enrollment).

Summary

The 2015-16 CRDC provides new insight into the number of students participating in DE and AP, but a limitation of this dataset is that it only provides enrollments at the school level (instead of the grade level). For high schools that also offer 8th grade and below (27 percent of our sample), using the total school enrollment as the denominator for the participation rate would include many students that DE and AP are not intended to target. To deal with this, CCRC and NACEP developed an approach to adjusting the participation rate denominators using grade-level enrollments from CCD in order to better estimate the AP/DE participation rates among high schools offering 8th grade and below. Results from this adjustment show that participation rates do not change much overall, but participation rates are adjusted upward to a greater extent in particular states (where there are more high schools offering 8th grade and below). These results suggest that, without this adjustment, participation rates in certain states would be underestimated. Therefore, I recommend applying this methodology in deriving state-level DE and AP participation rates.

Comments and questions on this memo can be directed to John Fink at John.Fink@tc.columbia.edu.
Table A1. National detail on enrollment adjustment for high schools that offered grades below 9th grade

Table A2. Percentage point change to DE/AP participation rate when adjusting for high schools that offer below 9th grade

Table A3. Percentage of CRDC enrollments removed from AP/DE participation rate denominator when adjusting for high schools that offer below 9th grade

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4 Available by request to John Fink (John.Fink@tc.columbia.edu)