

## TECHNICAL APPENDIX

### Who has Access to Charter Schools?

The Hamilton Project  
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#### **Figure 1. Percentage of Public School Students Enrolled in Charter Schools by State in 2013-14**

*Source: National Center for Education Statistics Common Core of Data (2013)*

Data on charter school location and enrollment are drawn from the school-level Common Core of Data files, published by the Department of Education's National Center for Education Statistics (NCES). NCES collects data in the fall of each school year, including the classification of all schools as a charter or not. For states that had not passed a charter law by the time of data collection, all schools are coded as "not applicable" in the underlying data. Of 101,091 schools (excluding territories), 172 schools with missing school type classification and were in states that had charter laws on the books.<sup>1</sup> These schools were dropped from the study.

The most recently available enrollment data are from the 2013-2014 school year. To calculate the number of students enrolled in a charter school, the binary indicator for charter school was multiplied by the number of students enrolled at the school. Schools that failed a NCES data quality check on their enrollment numbers, were missing enrollment numbers, or had been closed are dropped from the analysis. The percentage of students in each state who are enrolled in charter schools is aggregated from the school level to the state level. The aggregated total number of students enrolled at charter schools is divided by the aggregated total number of students reported across all public schools in the state. State percentages for enrollment (rather than access) are not dependent on zip code, so virtual schools are included in this portion of the analysis. Virtual schools are excluded from the local access and enrollment conditional on local access analyses.

#### **Figure 2. Access to Charter Schools, 2000-2015**

*Source: National Center for Education Statistics Common Core of Data (1999, 2004, 2009, 2013); US Census (2010)*

Geographic access is defined as residing in the same zip code tabulation area (ZCTA) as a charter school. ZCTAs are generalized areal representations of United States Postal Service (USPS) ZIP Code service areas ([Census 2016](#)). ZCTAs are utilized in this analysis because the Census collects population data for these areas and not for zip codes. Zip codes can cross state lines and are difficult to map because they are not always polygons.<sup>2</sup> A zip-to-ZCTA relationship file published by the Uniform Data System allows matching between ZCTA and the zip codes reported in the Common Core of Data ([UDS 2014](#)).

A review of the correspondence between Common Core zip codes and the Census ZCTA population data reveals errors in some Common Core zip codes. These errors were corrected

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<sup>1</sup> This excludes 2,417 schools in the state of Washington that were missing charter data. This does not impact the analysis because the state's charter law passed in November 2012 and the first charter school had not opened as of the fall of 2013.

<sup>2</sup> For a detailed explanation of zipcode versus ZCTA configurations, see: [http://cber.cba.ua.edu/asdc/zip\\_zcta.html](http://cber.cba.ua.edu/asdc/zip_zcta.html)

through a Google search of the school name and location. The location address was used to identify in what ZCTA a school was located.

State enrollment policies were used to further refine the geographic access model. While most states require charter schools to open enrollment to any student in the state, other states require charter schools to limit admission to students residing in their home school district. In these seven states, students could reside in a ZCTA with a charter school but not have enrollment access because the charter school was not attached to the students' home district.

In order to calculate geographic access contingent upon enrollment access, we utilized 2013-14 enrollment data to calculate the fraction of students in a ZCTA by school district. We then assigned these ratios to districts with charter schools in 2014-15 as an estimate of the portion of students living in the ZCTA that would have enrollment access to a charter school. There were 710 charter schools that opened in 2014-2015, and so do not have enrollment data for the 2013-2014 school year. For these ZCTAs we assigned ZCTAs as all students having access if the state had an open enrollment policy or the new charter school that opened was its own district. If the new charter school was in a closed enrollment state, the previously year's access apportionment was rolled over. This fraction is multiplied by the number of children aged 5 to 17 in the ZCTA to calculate charter school access.

In order to focus on geographic access, virtual schools (both charter and non-charter) are excluded. We isolated virtual schools through a two-step process. First, we utilized the "VIRTUALSTAT" variable, which is only currently available in the 2013-14 Common Core of Data file, to identify the school IDs for virtual schools; this removed 464 schools from the analysis in the 2014-15 school year (of which 231 schools are virtual charter schools), but only 8 schools in the 1999-2000 school year. Second, we searched each school name for the most common and identifiable words associated with the school names that the Common Core of Data designated as virtual schools: virtual (135 additional schools in 2014-15), online (40), distance (5), cyber (12), and digital (16). We dropped any schools with these terms in the school name for each school year.

Student population data are collected from the 2010 Census, utilizing the age breakdown to calculate the number of residents that are between the ages of five and seventeen in each ZCTA. Because the Census construction of ZCTAs changed from 2000 to 2010 and there is no zip-to-ZCTA crosswalk file available for 2000, 2010 Census data are used retroactively for 2000 and 2005 access maps ([Census 2016](#)). In using only the 2010 Census data, population is held constant.

**Figure 3. Percentage of Students with a Local Charter School, by State in 2014-15**

*Source: National Center for Education Statistics Common Core of Data (2013); US Census (2010); American Community Survey (2014)*

See Figure 2.

**Figure 4. Percentage of Students with Access to a Local Public Charter School that Enroll, by State in 2013-14**

*Source: Common Core of Data (2013); US Census (2010)*

This figure utilizes the methodology previously discussed to define access at the state level. Rather than dividing the number of students enrolled in charter schools by the total number of public school students in each state, this figure utilizes "uptake," which is the number of students

enrolled in charter schools divided by the number of students with local access to charter schools in each state.

**Additional technical documentation for web-based interactive**

For the student population comparison by race for the 2014-15 school year, American Community Survey (ACS) estimates for 2014 are broken down by school grade rather than age, so population numbers for grades Kindergarten through 12 are utilized. States are excluded from the maps by race if less than 2% of the student population is of that race.