

Post-Pandemic Onset Public School Enrollment and Mobility: Evidence From Virginia

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Public school enrollment dramatically decreased during the pandemic, but the patterns of decline and student movement across schools are not yet well understood. Using statewide student-level data from Virginia, we find pre-K–12 enrollment dropped by 4% between fall 2019 and the first post-pandemic fall of 2020. The changes were the largest in pre-kindergarten and kindergarten and explained mostly by decreases in new enrollees, though exits also increased. K–12 enrollment declines were the largest among White and economically-advantaged students (but largest for Black and economically-disadvantaged pre-kindergartners). We also observe a decline in school transfers (both within and between districts), concentrated among Black and economically-disadvantaged students and students with disabilities. Findings have implications for equity, school funding, and student well-being.

Keywords: *equity, family/home education, planning, policy, descriptive analysis*

Motivation

The pandemic created unprecedented disruptions to school systems around the globe and the United States was no exception. One consequence was a dramatic plunge in public school student enrollment, described by some press outlets as a “pandemic exodus” (Goldstein & Parlapiano, 2021). Previous estimates suggest that K–12 enrollment fell 2% nationally in fall of 2020 (Dee et al., 2021) and between 3% and 4% when looking within the states of Michigan (Musaddiq et al., 2021), Massachusetts (Dee & Murphy, 2021), and Hawaii (Murphy & Oeda, 2022). Given variation in the COVID-19 response across schools and districts, it is also possible that the pandemic saw different levels of student movement across schools than in previous years. However, many basic facts about how enrollment changed with COVID are not yet well established and there is much to learn about whether and how patterns differed across and within states.

How did student enrollment shift after the pandemic began? Did changes vary by student grade level or demographic characteristics? Were shifts due to changes in the number of new enrollees or exits from the system? Were students transferring to new schools or districts at different rates than pre-pandemic? The answers to these questions have implications for how scholars interpret changes in student outcomes before versus after the onset of the pandemic given the possibility of systematic compositional shifts in the public-school population over this period. The answers also have important implications for levels and equity of school funding (Malkus & Christensen, 2022), which is in large part based on enrollment counts, as well as for student learning which is influenced by the quality of schools that students attend (e.g., Jennings et al., 2015) and the extent of transfers across schools over time (Goldhaber, Koedel et al., 2022).

We study these questions in Virginia, making a few key contributions to the small existing

literature on enrollment in the aftermath of the pandemic. First, given that offering remote-only instruction reduced enrollment nationally (Dee et al., 2021), Virginia is a uniquely interesting context because the state relied on high levels of remote instruction during the first “reopening” year relative to other states. Specifically, Goldhaber, Kane et al. (2022) place Virginia in the highest quartile among all states of 2020–21 weeks spent in remote learning. Halloran et al. (2021) report Virginia had the lowest mean percent of 2020–2021 spent in the fully in-person learning mode (9%) of the 12 states in their analysis (vs. a state-level mean of 48%).

We add a second statewide analysis of student-level data, the first was from Michigan, and a statewide analysis of enrollment patterns from a context without widespread collective bargaining. This is another important source of variation given teacher union strength was a key predictor of district reopening decisions nationwide (Hartney & Finger, 2021). Bassok and Shapiro (2021) reported on enrollment trends in Virginia, drawing important attention to how pre-kindergarten enrollment drops differed from early elementary grades, while we examine enrollment patterns for the full pre-kindergarten to Grade 12 student population. Finally, we add to the literature a statewide analysis of not just exit rates but also student mobility across schools after the start of the pandemic.

Data

We rely on statewide, student-level data provided by the Virginia Department of Education. These data cover 2009–2010 through 2020–2021, allowing us to examine the changes in the first post-pandemic onset year as well as the extent to which changes appeared to be the result of pre-pandemic trends. These data include enrollment and demographic information on over 2.8 million unique students from the pre-kindergarten to Grade 12 by year. Our analysis is highly descriptive. We provide enrollment counts and year-to-year percentage changes in those counts both overall and for specific grade levels and subgroups. We also capitalize on exit code data for students leaving the state’s public school system, although we urge caution in

interpreting results given a non-trivial increase in the rate of missing exit codes after the onset of the pandemic.

Results

Statewide Post-Pandemic Onset Enrollment

Our first key finding is that statewide student enrollment dropped quite dramatically in the fall of 2020. In Figure 1, we plot the absolute number of students in pre-kindergarten through Grade 12 in the Virginia public school system as of the fall of a given year. Between fall 2019 and fall 2020, enrollment dropped by 53,830 students (from 1.319 million to 1.265 million). This equated to a 4% change in total statewide, more than five times the size of the largest year-to-year change in the previous decade (see Figure 1, Panel B). This post-pandemic onset drop is a marked departure from the pre-pandemic enrollment trend which saw enrollment increase by 0.44% annually on average.

Enrollment Changes by Grade Level

Enrollment declines were not uniform across grade levels. In Figure 2, we show the percent change in enrollment between fall 2019 and fall 2020 by grade in gray (relative to average annual changes pre-COVID in black). Declines were much larger in the earliest grades, specifically in pre-kindergarten, which saw a 26% decline that was more than six times the average decrease across all students, and in kindergarten where the 13% decline was more than three times the average. Given pre-kindergarten is not compulsory in Virginia, and to allow for comparability with K–12 estimates from other states, we also explore enrollment changes after excluding pre-kindergarteners. When we do, we find statewide enrollment dropped by three percent (compared with a 4% decline when including them). Grades 1 through 6 all saw similarly-sized declines between 4% and 5%. All declines represented a departure from the typical annual pre-COVID changes shown in black. In contrast, Grades 7 through 12 saw smaller changes (or no change at all). The exception was Grade 9—typically a school transition grade—where the 4% decrease was similar in size to the average decline in Grades 1 through 6. As described in the

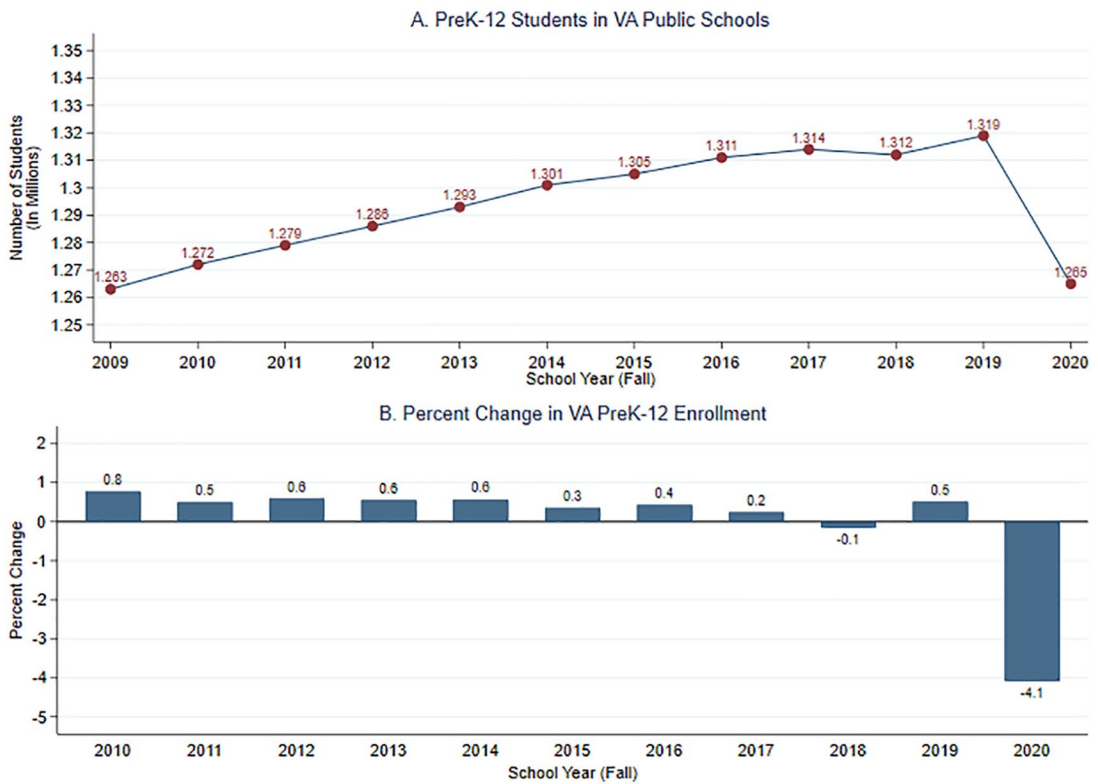


FIGURE 1. Trends in total statewide student enrollment and annual fall-to-fall percent change in total statewide student enrollment, 2009 to 2020.

Supplementary Figure A1 in the online version of the journal, the pandemic enrollment decline does not appear due primarily to birthrate changes.

Enrollment Changes by Subgroup

Changes also varied based on other student characteristics. In Figure 2, we show the percent changes in enrollment from fall 2019 to fall 2020 in gray, both overall and separately for a series of demographic characteristics and qualifications for services. Most notably, although we observe enrollment declines among all racial and ethnic groups examined, the declines were largest among White students (a 6% drop). Declines were smaller among economically-disadvantaged students (2%) than those not classified as disadvantaged (6%). Enrollment did not appear to decrease more among students classified as having a disability or as an English Learner than students not identified for these services. For all

subgroups examined, enrollment declines from fall 2019 to fall 2020 represented a departure from the average annual enrollment changes within that subgroup during the pre-COVID period, shown in black in Figure 2.

New Enrollees Versus Exiters

Changes in enrollment are the sum of two types of decisions that families make each fall. First, families that had not enrolled their child in the public schools the prior year decided whether to newly enroll. Second, families that had already enrolled their child in the public schools in the prior year decided whether to re-enroll. Here we refer to “new enrollees” as students who we observe in the fall of a given year but who were not present for the fall of the previous year. (Note that if an individual student re-enrolls after an exit, that student will count as a “new enrollee” in two different years.) “Re-enrollees” are those who were present in the fall of the previous year

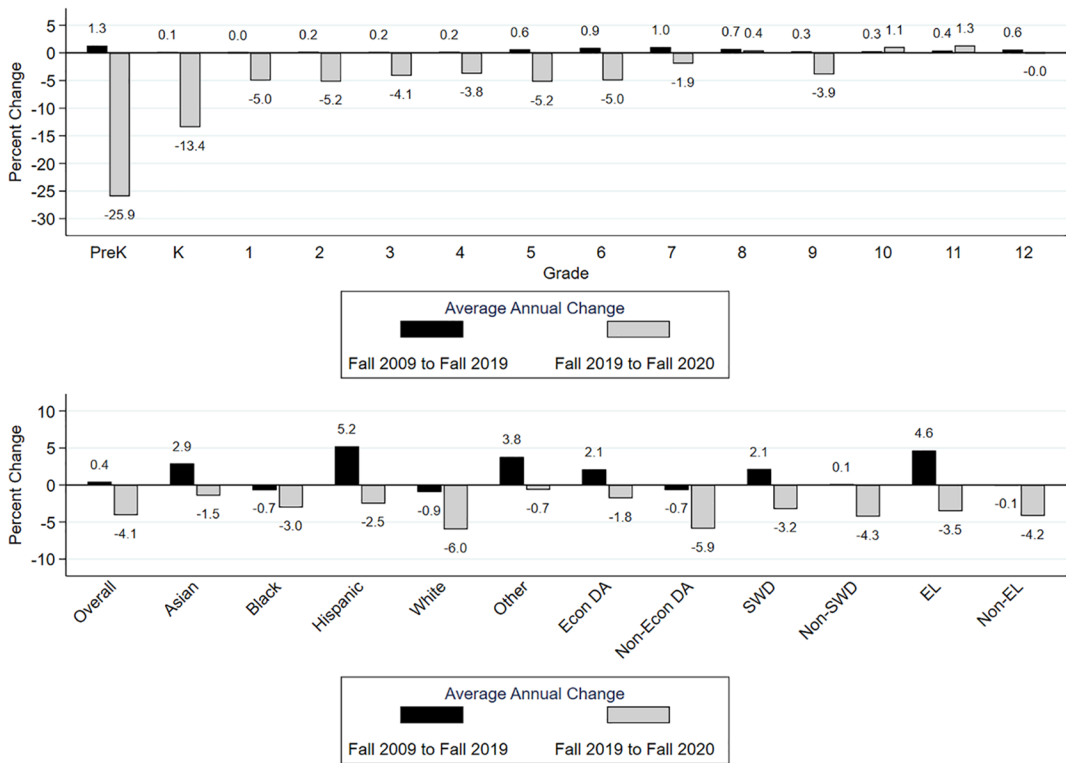


FIGURE 2. *Percent change in enrollment, by student grade and subgroup, 2009 to 2019 and 2019 to 2020.*
Note. Econ DA = economically disadvantaged; SWD = students with disabilities; EL = English Learners.

and who were also present in the fall of the given year. We find that while rates of both new enrollments and re-enrollments decreased from the fall 2019 to fall 2020, the bulk of the enrollment declines can be explained by a decrease in the number of students newly enrolling in the Virginia public system more so than a decrease in students who decided not to re-enroll. Specifically, the decline in the number of new enrollees represents 84% of the overall 53,829 student enrollment decline between 2019 and 2020. We plot underlying numbers in Supplementary Figure A2 in the online version of the journal.

Any student who did not re-enroll is considered to have exited the Virginia public school system, and districts typically record a reason for each student's exit. Exiting could represent a variety of outcomes, including graduation, a move to a private school or homeschool, a move out of state, dropping out of school entirely, or an

even more tragic outcome such as a student death. We find that the majority of students who did not re-enroll in the fall of 2020 did not return because they graduated from high school (53%). Another 19% of exiting students left to enroll in schools in another state while 9% left to be homeschooled and 8% enrolled in a private school. The distribution of reasons families gave for why they did not re-enroll in fall 2020 was meaningfully different than the reasons from fall 2019. The increase in exit during the pandemic was largely driven by increases in the rate that families reported enrolling children in homeschool and private school. There was a 197% increase in the number of students exiting to be homeschooled and a 92% increase in the number exiting for private schools. In results not included here, we confirm these changes were a break from pre-pandemic trends. The changes in exits to homeschool and private school were much larger than changes in rates of graduation,

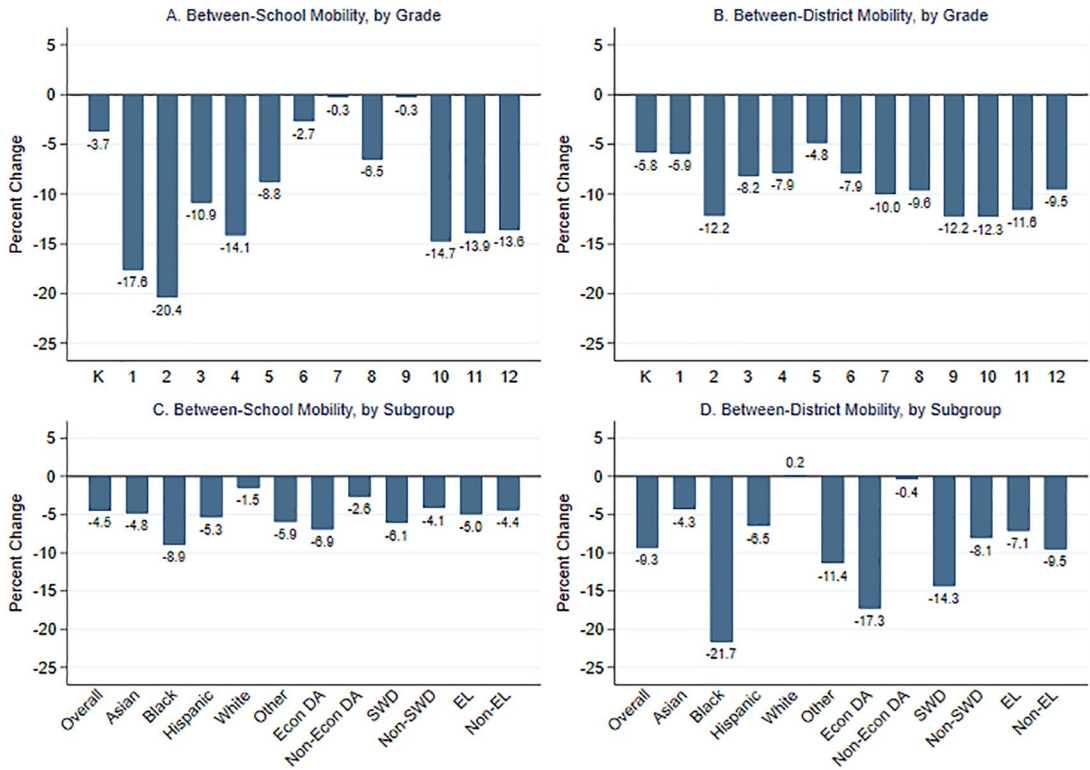


FIGURE 3. Percent change in share of re-enrollees switching schools and districts from fall 2019 to fall 2020 by student grade and subgroup.

Note. Econ DA = economically disadvantaged; SWD = students with disabilities; EL = English Learners.

dropout, leaving the state, or any other type of exit—all of which declined modestly between fall of 2019 and fall 2020. However, the exact magnitudes of these changes may be somewhat inaccurate given we also observe a large increase in the number of exiting students for whom no reason for exit is known (6% missing in the post-COVID year). We provide findings visually in Supplementary Figure A3 in the online version of the journal.

Between-School and Between-District Mobility

Given variation in the pandemic response across schools and districts (Sachs et al., 2022), we also examine changes in the share of re-enrollees that transferred between schools. Because school transfers could occur between or within districts, we also show the share who transferred between districts (representing a subset of the between-school transfers). We find a

decline in the share of re-enrollees who transferred both between districts and between schools after the pandemic began. The overall change between fall 2019 and fall 2020 represents a 5% decline in between-school mobility and a 9% decline in between-district mobility among re-enrollees. The magnitude of this change was not unprecedented in the pre-COVID period though these changes do not appear to be the continuation of a pre-pandemic trend of declining mobility. We note that between-school mobility as we have measured it includes expected structural moves, such as a move from a middle school to a high school (which is in part why we are most interested in change over time). We provide underlying numbers in Supplementary Figure A4 in the online version of the journal.

In Figure 3, we show the percent change in between-district and between-school mobility from fall 2019 to fall 2020 among re-enrollees by grade level and demographic subgroup. The

declines in between-school mobility were substantially smaller among students in Grades 6 to 9 and among kindergarteners than the other grades. The between-district changes in mobility rates were similar across grade levels, although somewhat smaller for kindergarten through Grade 6 (excepting Grade 2). Interestingly, the declines in both between-school and between-district mobility were more pronounced among Black students than any other racial or ethnic group we examined. As of fall 2020, Black students stayed in their 2019 schools at higher rates than non-Black students. In addition, economically-disadvantaged students and students with disabilities saw larger declines in mobility than non-disadvantaged students and students without a disability.

Discussion

The first full school year after the pandemic began came with historically unprecedented changes to student enrollment in Virginia's public school system. Pre-kindergarten to grade 12 enrollment dropped by 4% (3% excluding pre-kindergarten). This decline was higher than the national 2% average (Dee et al., 2021) and comparable to estimates from other single-state analyses. Consistent with earlier studies, enrollment drops were most pronounced among pre-kindergarteners and kindergarteners (e.g., Cascio, 2021; Tuchman & Heyward, 2021). As a result, declines were primarily the result of a decrease in new enrollees more than a decrease in re-enrollment, although there was an uptick in exits as well. The increase in exits was driven largely by increases in homeschooling and private schooling, although the rate of missing data on reason for exit also went up after the onset of the pandemic.

Our results reinforce that the pandemic was not experienced evenly across demographic groups. Among Virginia's full pre-kindergarten to Grade 12 population, enrollment drops were larger among White students than other racial or ethnic groups and among students not classified as economically disadvantaged. These subgroup findings are consistent with patterns from Michigan (Musaddiq et al., 2021) but only partially consistent with the district-level analysis from Massachusetts where drops were larger in

districts serving higher concentrations of economically-disadvantaged students (Dee & Murphy, 2021). Importantly, other scholars have revealed that the racial and socio-economic patterns of enrollment changes differed for students in the youngest grades. In Virginia, Bassok and Shapiro (2021) find pre-kindergarten enrollment drops were largest among children who were economically disadvantaged, Black, or Hispanic, while for grades K–5, there were no differences by economic status and declines were most pronounced among White students. In Michigan, Musaddiq et al. (2021) find kindergarten enrollment declines were highest among low-income and Black families while drops in older grades were concentrated among higher-income and White families. These authors argue, "Black and lower income households appear more responsive along the margin of initial enrollment in school systems while White and higher income families appear relatively more responsive to alternative options once already enrolled in the public school system." This hypothesis is consistent with our finding that the post-pandemic drop in Virginia's between-school transfers was most pronounced among Black and economically-disadvantaged students. To summarize, in Virginia, enrollment - declines were greatest among economically-advantaged White students—except in pre-kindergarten where the opposite pattern emerged—and declines in mobility were greatest among Black, economically-disadvantaged, and special education students.

Although we document important enrollment patterns, we are not yet able to provide clear explanations for them. Future research should tackle the extent to which these changes are the result of the pandemic, districts' policy response to the pandemic, economic conditions, other factors, or some combination. Our analysis leaves additional important questions unanswered such as whether enrollment rebounded in fall 2021 and beyond. For example, did the children who did not enter public pre-kindergarten or kindergarten in fall 2020 simply delay their entry or make a more permanent exit from the public system? Continuing to track these patterns will have important implications given the connection between student enrollment and school funding as well as student well-being and development.

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