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# The Unaccounted Students of the Pandemic: A Cross-Sector Analysis of Hawai`i's Enrollment Decline

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ABSTRACT

Growing evidence illustrates the size and character of public-school enrollment declines during the COVID-19 pandemic. However, far less is known about where unenrolled students went. Using unique cross-sector enrollment and mobility data from the state of Hawai`i, this study provides evidence that demographic changes and movement to private schools, out of the state, or to homeschooling did not account for the full loss of public-school students. Many unenrolled students appear to have redshirted or dropped out of formal education during school year (SY) 2020-21. Further, regression analyses with island fixed effects indicate that two pre-pandemic factors predicted school-level enrollment declines: (1) the share of the Pacific Islander students; and (2) whether the school had a high pupil-teacher ratio.

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VERSION

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# The Unaccounted Students of the Pandemic: A Cross-Sector Analysis of Hawai`i's Enrollment Decline

The COVID-19 pandemic led to substantial disruptions of public schooling across the nation. Recent estimates suggest that more than one million students nationwide did not enroll in public schools during school year (SY) 2020-21, with every state in the U.S. registering a loss in students (Goldstein & Parlapiano, 2021; Pendharkar, 2021). In Hawai`i, schools began shutting their doors in March of 2020 and most schools did not reinstate in-person instruction until the final quarter of the 2020-21 school year (Kishimoto, 2021). Between SY 2019-20 and SY 2020-21, the state saw its public-school enrollment decline by 2.6 percentage points. Emerging research suggests that enrollment declines may be linked to the instructional format (i.e., virtual or in-person) of schooling (Dee et al., 2021) and that declines varied across different public school district types (e.g., charter, virtual, and vocational districts) (Dee & Murphy, forthcoming). Recent studies highlight the likely learning loss caused by the pandemic on achievement but also the ways that schools have been able to still support learners nationwide (Domingue et al., 2021; Kuhfeld et al., 2020). Little remains known, however, about the *cross-sector* patterns of school enrollment fluctuations following the onset of the pandemic.

This study examines student enrollment changes in Hawai`i *public* and *private* schools between SY 2019-20 and SY 2020-21 and makes at least two key contributions. First, I organize school-level enrollment and withdrawal data to examine the character of Hawai`i's enrollment changes. Merging enrollment data from the state's only public school district and its well-established network of private schools enables a unique cross-sector exploration of the school-level character of the decline in school enrollment. Second, I explore the pre-pandemic factors

that predicted enrollment declines by linking school-level enrollment data for all traditional public elementary schools to a wide range of pre-pandemic school-level covariates.

Declines were concentrated in traditional public schools (i.e., not charter schools nor private schools) and largely occurred for students in grades K-G4. Demographic changes and withdrawals of public-school students to homeschooling, private schooling, or moving out of state, however, do not fully explain the enrollment drop experienced by the state, suggesting that many K-G4 students redshirted or dropped out of formal schooling in SY 2020-21. The share of Pacific Islander students in SY 2019-20 and a high pupil-teacher ratio in SY 2019-20 were key school-level predictors of enrollment declines.

## Context

The student population of Hawai`i is incredibly diverse. During SY 2019-20, the following five race/ethnicity groups represented the largest student groups enrolled at traditional public elementary schools: (1) Native Hawaiian (24.8%); (2) White (22.2%); (3) Filipino (18.7%); (4) Asian (15%); and (5) Pacific Islander (12.2%). Other race/ethnicity groups with less than 3% of the student population each included students identifying as: (6) Black; (7) Hispanic; (8) Portuguese; (9) Multiple Races; and (10) American Indian/Alaska Native.

Additionally, it is important to note that while the COVID-19 pandemic led to large modifications in educational contexts throughout Hawai`i, the state's compulsory education law remained in effect. Accordingly, school-aged children were required to attend public school, private school, homeschool, or an acceptable alternative education setting (Hawai`i Administrative Rules: Compulsory Attendance Exceptions, 1991).

Any enrollment declines observed in public schools in Hawai`i between SY 2019-20 and SY 2020-21, therefore, can potentially be explained in four ways. First, school aged students

who were previously enrolled in public school may have moved out of state or transferred to private school or homeschooling options. I am able to assess this through withdrawal data from the Hawai`i State Department of Education (HIDOE). Second, children who were of kindergarten age during SY 2020-21 were academically redshirted and formal school entry was delayed (e.g., see Bassok & Reardon, 2013). I am able to consider this by comparing the gap in student enrollment with the number of students who withdrew from public schools in kindergarten. Third, children who were of age to attend older grades, but did not enroll in formal education during the pandemic can be considered as dropouts. This can be evaluated by looking at the difference between the enrollment decline and number of withdrawals for non-kindergarten grades. Fourth, the school aged population in the state of Hawai`i may have changed between SY 2019-20 and SY 2020-21. I can speak to this through recently released U.S. Census Bureau population estimates by age.

Gaining insight into the enrollment declines experienced by Hawai`i schools across educational sectors and understanding likely educational choices made following the onset of the pandemic are the key aims of this study. In particular, I explore the following research questions:

1) How did Hawai`i's public school enrollment change following the onset of the COVID-19 pandemic? Did these changes vary by island? By grade level?
2) For grades K-G4, how did enrollment patterns change across educational sectors (i.e., for traditional public schools, charter schools, and private schools)?
3) What does available data indicate about the educational options selected in place of public schooling during SY 2020-21?
4) For grades K-G4, what SY 2019-20 school-level characteristics predicted enrollment declines?

## Data & Methods

This study is principally based on school-year panel data from SY 2019-20 and SY 2020-21. Counts of student enrollment and withdrawal were obtained from three data sources. First, public school enrollment data come from HIDOE, who provides fall enrollment counts by school and grade level. In particular, the public-school sample includes traditional public schools (N=178) and charter schools (N=31) serving students in any grade K-G4. Second, public school withdrawal data comparing the first quarter of SY 2019-20 to the first quarter of SY 2020-21 come from HIDOE's Board of Education Return to Learn Metric #18. Withdrawal data provide the count of students by school and grade level who withdrew from public schools in order to attend private school, attend homeschool, or move out of the state. Third, private school enrollment data were obtained through student enrollment reports from Hawai`i Association of Independent Schools (HAIS). These reports include enrollment counts by private school and grade level. These data represent near full coverage (i.e., 91%) of licensed private schools operating in the state that served any grade between K-4 (N=85).

In addition, I rely on detailed pre-pandemic school-level demographic, staffing, special population, programmatic, and attendance data from SY 2019-20 for traditional public elementary schools. These data were publicly reported through the state's School Status and Improvement Reports and include average daily attendance, pupil-teacher ratio, and student counts by race/ethnicity and special programs. I augment these data with National Center on Educational Statistics income-to-poverty ratio data from SY 2018-19.

I also include school-level directory information from HIDOE, which provides school details such as island and grades served. Further, I incorporate information from HIDOE about schools that are classified as "military-impacted schools" (N=38).

Methodologically, this descriptive study relies on comparisons of percent changes in student enrollment by grade, school, and educational sector to shed light on how Hawai`i enrollment changed across sectors following the onset of the COVID-19 pandemic. Further, I jointly consider enrollment data, withdrawal data, and population estimates to estimate the share of unaccounted students. I also implement OLS regression specifications with island fixed effects to understand the school-level factors that predicted enrollment changes in grades K-G4 at traditional public schools. Additional methodological details are in the supplemental materials.

## Results

Panel (a) of Figure 1 illustrates the year-to-year statewide change in public school enrollment between SY 2015-2016 and SY 2020-2021. Annual fluctuations were within 0.36 percentage points through SY 2019-20. In SY 2020-21, however, student enrollment declined by 2.58 percentage points (more than seven times the size of the next largest year-to-year decline since SY 2015-16).

Panel (b) of Figure 1 depicts public school declines across islands. Both O'ahu and Maui experienced declines of more than 3 percentage points. Schools on Lana'i and Moloka'i were included in the enrollment total of Maui. Kaua'i, which included the school from Nii'hau, saw enrollment decline by more than 2 percentage points. The island of Hawai`i experienced a reduction in public school enrollment by just over 0.3 percentage points.

Panel (c) of Figure 1 presents a grade-by-grade analysis. The largest declines in public school enrollment occurred in the earliest grades (i.e., K-G4). Secondary grades (i.e., G7-G12) experienced modest annual changes. Grades 5 and 6 were excluded from this analysis because the SY 2014-15 kindergarten cohort size was affected by Hawai'i's Act 76 (e.g., see Hawai`i State Department of Education, 2021), impeding my ability to conduct a meaningful year-to-year

analysis. Since the earliest grades drove the enrollment decline, I examine grades K-G4 in all subsequent analyses.

Hawai'i's robust public and private school-level enrollment reporting allow for an examination of enrollment changes across all major educational sectors. In particular, panel (a) of Figure 2 depicts the change in student enrollment between K-G4 across traditional public schools, charter schools, and private schools. These categories are mutually exclusive and demonstrate the heterogeneity of Hawai`i's enrollment changes. Traditional public schools, which educate the vast majority of Hawai`i public school students in grades K-G4, declined by 6.93 percentage points, while charter schools and private schools experienced modest enrollment growth in these grades by 0.08 and 1.74 percentage points, respectively. The raw magnitudes of the enrollment change are noteworthy: traditional public schools saw a decline in enrollment by 4,303 in grades K-G4, charter schools saw an increase by 4 students, and private schools saw an increase by 155 students. These results poignantly indicate that the decline in student enrollment was experienced by traditional public schools, but that charter and private school enrollment *did not* grow by nearly enough to offset these changes.

Panel (b) of Figure 2 provides detail about the grade level character of K-G4 enrollment changes by sector. Traditional public schools saw all five grades experience enrollment declines with the largest drops in kindergarten and first grade. Charter schools experienced declines in both kindergarten and third grade, small changes in first and fourth grade enrollment, and an increase in second grade enrollment. Private schools saw modest gains in kindergarten, first and second grades and minor changes in third and fourth grades. These heterogeneous results emphasize that traditional public schools experienced losses in *every* grade K-G4.

Table 1 provides results from descriptive fixed effect regressions (i.e., with island fixed effects) that identify the factors reported in SY 2019-20 that predicted enrollment declines. In column (1), I control for nine race/ethnicity categories and use the percent Asian as the reference group. The only marginally significant result is for the percent Pacific Islander at the school. This coefficient indicates that for every 10 percent increase in Pacific Islander enrollment in SY 2019-20, K-G4 overall enrollment in SY 2020-21 declined by 1.3 percentage points. In column (2), I add controls for school size, whether the school was militarily impacted, and whether the school had a low income-to-poverty ratio (i.e., in the lowest quartile). In this model, I again observe that the percent Pacific Islander at the school predicted the percentage change in K-G4 enrollment. I also observe marginally significant effects on school size, indicating that large schools (i.e., schools in the top quartile in 2019-20) lost larger percentages of students than small or medium sized elementary schools. In column (3), I retain the race/ethnicity controls and include indicators for the school having a low average daily attendance (i.e., in the bottom quartile of schools in 2019-20) and a high pupil-teacher ratio (i.e., in the top quartile of schools in 2019-20). I observe a statistically significant effect of slightly more negative magnitude for Pacific Islander students, a marginally significant negative effect for percent Black students, and a large and statistically significant negative estimate for having a high pupil-teacher ratio. Column (4) incorporates all controls and also indicates that the percent Pacific Islander was negatively related to percent change in K-G4 enrollment. Further, a high pupil-teacher ratio in SY 2019-20 was strongly connected to a loss in student enrollment.

Additionally, I report a preliminary assessment of the declining enrollment of K-G4 students in Hawai`i. In total, as reported in Appendix Table 1, I estimate that enrollment dropped by approximately 4,300 students for grades K-G4. About 1,200 of these students can be

explained through increased withdrawal numbers to homeschool, private school, or moving out of state. About another 500 students can be accounted for as part of ongoing demographic shift for the state's aged 5-9 population. This leaves approximately 2,600 unaccounted students between K-G4. Approximately 1,000 of these students were from kindergarten, suggesting that many of these students were academically redshirted. The remaining 1,600 students were primarily from grade 4, suggesting that they may have dropped out of formal schooling during SY 2020-21 while still residing within the state.

## Conclusion

There are several important limitations to this study. First, I use school-level data that does not allow for an exact understanding of individual student characteristics. Future work can consider exploring student-level data to more precisely understand these nuances. Second, consistent school-level pre-pandemic covariates were not available for charter and private schools. Future work could collect complete covariate data across all three sectors. Third, this study focused on evaluating statewide trends. Future qualitative or mixed research can help provide more detailed examinations of the broad patterns identified in this work.

Despite these limitations, I am able to rely on enrollment and withdrawal data to estimate that a large share of the enrollment decline experienced by Hawai`i can be attributed to redshirting with another proportion reflecting students dropping out of formal schooling during SY 2020-21 statewide. As the state shifts back to in-person instruction, enrollment rates may increase in early grades. Such a phenomenon will likely result in greater age-variation within grade levels as well as high variation in levels of student preparation upon entry. This has substantial staffing and fiscal implications for Hawai`i schools. Further, there may be important peer effects associated with these shifts.

Additionally, I observe that traditional public schools experienced sharp changes in school enrollment in grades K-G4 during SY 2020-21. These drops were predicted by the pre-pandemic share of Pacific Islander students and the pre-pandemic pupil-teacher ratio. The finding that Pacific Islander student populations predicted enrollment declines may be reflective of the disproportionate impact of the COVID-19 pandemic on Pacific Islander communities. For example, individuals from Pacific Islander communities in Hawai`i were substantially more likely to experience hospitalizations and severe effects of COVID-19 (e.g., see Hawai`i Advisory Committee to the U.S. Commission on Civil Rights, 2021; Hofschneider, 2020). In addition, the pupil-teacher ratio can serve as a rough proxy for the level of financial resources available to a school site. The finding that the SY 2019-20 pupil-teacher ratio predicted enrollment declines may reflect that schools with fewer resources had more difficulty adapting to the instructional changes necessitated by the pandemic.

Overall, this evidence extends an emerging literature examining pandemic enrollment declines by presenting cross-sector and school-level insight on the changes experienced in Hawai`i. The results presented in this study are also highly relevant to educational stakeholders and policymakers in Hawai`i as they respond to the ways the COVID-19 pandemic has impacted education statewide.

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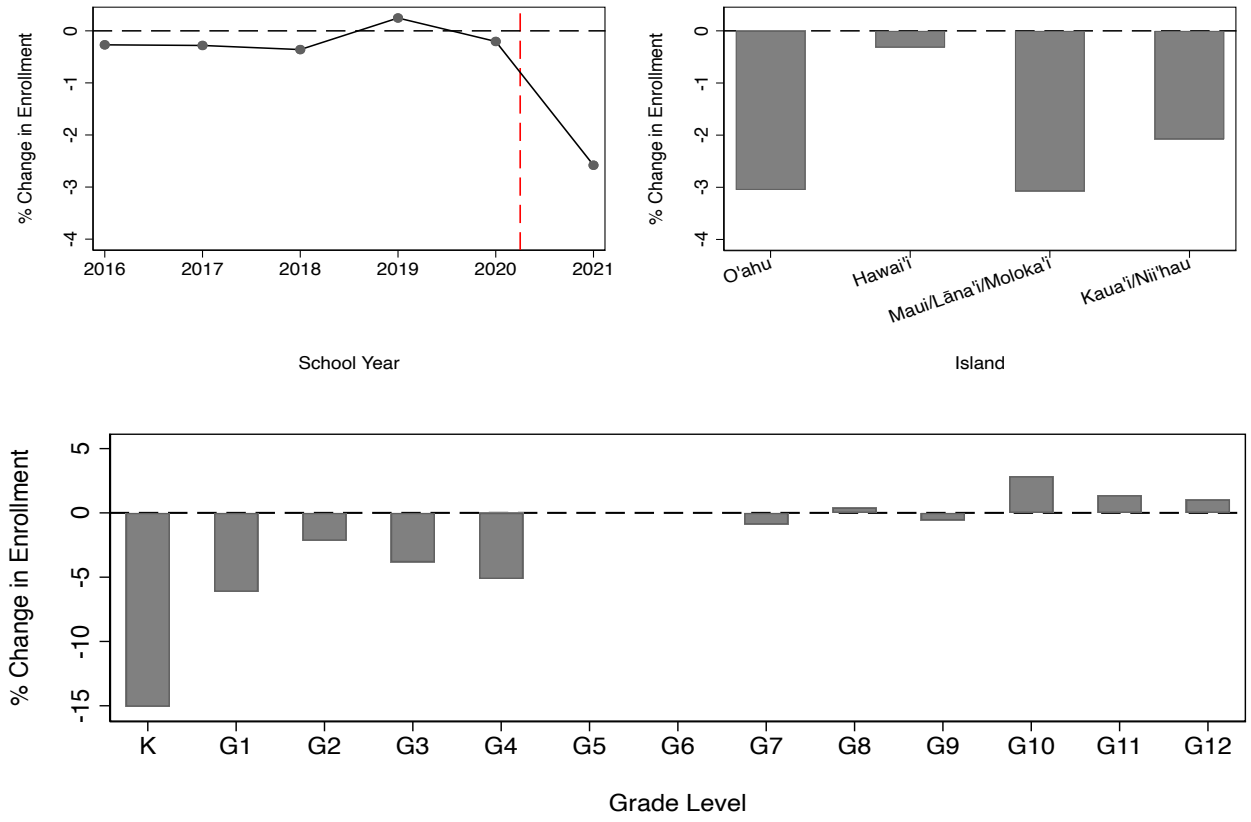
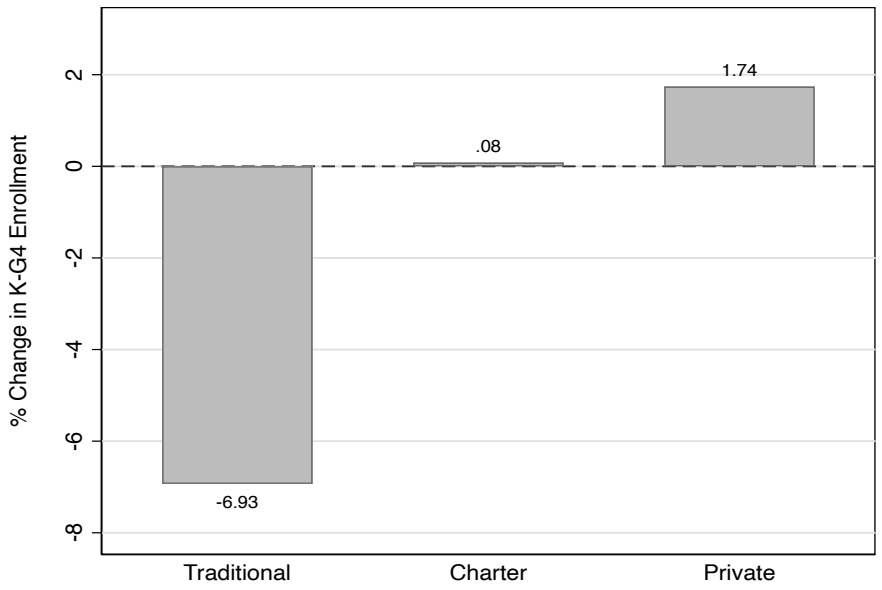
Figure 1. Public school enrollment change over time, by island, and by grade level



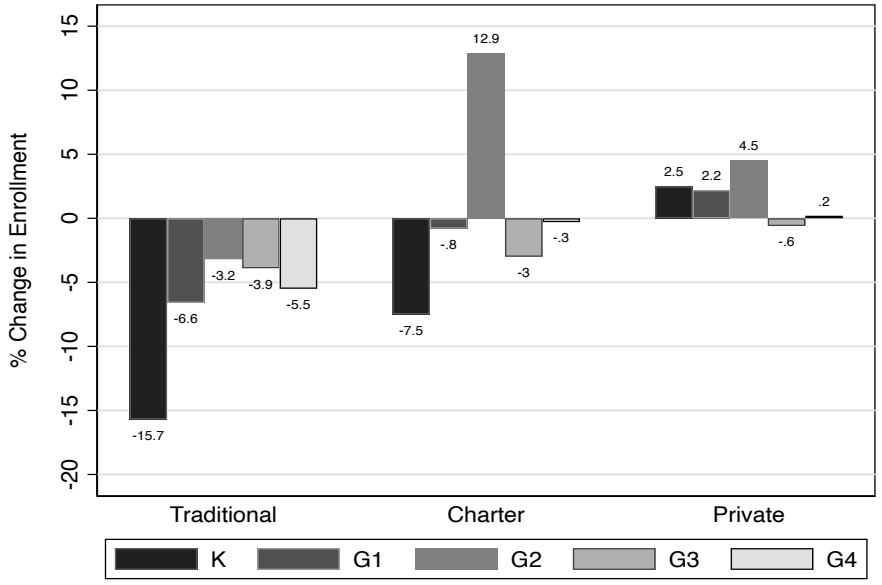

*Note:* Panel (a) shows overall enrollment counts for all Hawaii public schools between SY 2015-16 and SY 2020-21. The dashed vertical line shows the onset of the COVID-19 pandemic. Panel (b) shows public school enrollment percent changes by island between SY 2019-20 and SY 2020-21. All traditional public schools and charter schools are included in these computations (N=294). Panel (c) shows public school enrollment changes between SY 2019-20 and SY 2020-21 by regular education grade level. Cohort sizes of Grades 5 and 6 were substantively impacted by Act 76 enacted in 2014-15. As a result, grade level percent changes are not reported for these two grades. In all panels, the horizontal dashed line represents 0 percent change.

Figure 2. K-G4 student enrollment changes, by educational sector and by grade

panel (a)




panel (b)




*Note:* Panel (a) provides the overall percent change in K-G4 student enrollment across the three distinct educational sectors in Hawai'i: traditional public schools; charter schools; and private schools. Panel (b) provides the percent change in K, G1, G2, G3 and G4 separately by educational sectors. Exact percentage changes are listed above or below each bar. Enrollment data for traditional public schools and charter schools come from the Hawai'i State Department of Education's Statewide Reports for School Year (SY) 2019-20 and SY 2020-21. Enrollment data for private schools come from the Hawai'i Association of Independent Schools (HAIS) Private School Enrollment Reports for SY 2019-20 and SY 2020-21. The sample used for both graphs includes traditional public schools with enrolled students between K-G4 (N=178); charter schools with enrolled students between K-G4 (N=31); and private schools with enrolled students between K-G4 (N=85).

Table 1. Regression Results for K-G4 Enrollment in Traditional Public Elementary Schools

| | Dependent Variable: | | | |
|---|---|---|---|---|
| | % Change in K-G4 Enrollment | | | |
| Independent Variable | (1) | (2) | (3) | (4) |
| % Filipino | 0.01 | 0.02 | 0.01 | 0.02 |
| | (0.05) | (0.05) | (0.04) | (0.05) |
| % Native Hawaiian | 0.03 | 0.02 | -0.01 | -0.01 |
| | (0.04) | (0.04) | (0.04) | (0.04) |
| % Pacific Islander | -0.13* | -0.15* | -0.16** | -0.17** |
| | (0.07) | (0.08) | (0.08) | (0.08) |
| % AI/AN | -0.77 | -0.73 | -0.88 | -0.84 |
| | (1.12) | (1.14) | (1.16) | (1.17) |
| % Black | -0.34 | -0.36 | -0.39* | -0.39 |
| | (0.22) | (0.26) | (0.21) | (0.25) |
| % Portuguese | -0.06 | -0.12 | -0.16 | -0.19 |
| | (0.18) | (0.19) | (0.18) | (0.19) |
| % Multiple | -0.25 | -0.14 | -0.11 | -0.06 |
| | (0.42) | (0.43) | (0.41) | (0.43) |
| % White | -0.04 | -0.05 | -0.04 | -0.05 |
| | (0.07) | (0.07) | (0.06) | (0.07) |
| % Hispanic | 0.06 | 0.05 | 0.03 | 0.03 |
| | (0.27) | (0.27) | (0.26) | (0.26) |
| Small Elementary (<337) | - | 3.12* | - | 2.08 |
| | | (1.87) | | (1.93) |
| Medium Elementary (≥337 & <618) | - | 1.69 | - | 1.12 |
| | | (1.24) | | (1.29) |
| Military-Impacted | - | 0.99 | - | 0.62 |
| | | (1.89) | | (1.85) |
| Low Income-to-Poverty Ratio (<293) | - | 0.78 | - | 0.23 |
| | | (1.83) | | (1.75) |
| Low Average Daily Attendance (≤93.3%) | - | - | 1.58 | 1.50 |
| | | | (1.61) | (1.54) |
| High Pupil-Teacher Ratio (≥17.4) | - | - | -3.45*** | -3.06** |
| | | | (1.24) | (1.26) |
| Observations | 178 | 178 | 178 | 178 |
| R-squared | 0.2030 | 0.2185 | 0.2391 | 0.2454 |

*Note:* Robust standard errors are in parentheses. Each column represents a separate regression. All models include island fixed effects (coefficients suppressed). The full traditional public school sample included 178 schools serving students in grades K-G4 in both 2019-20 and 2020-21 school years. Charter schools and private schools are excluded from this analysis. The "Pacific Islander" category includes students who identify as Micronesian, Tongan, Guamanian/Chamorro, Samoan or other Pacific Islander groups.

*** p < 0.01 ** p < 0.05 * p < 0.1

## Supplemental Materials

*Analytical Sample*

The analytical sample includes 294 elementary schools in the state of Hawai`i that served students in grades K-G4. This includes all traditional public elementary schools (N=178) and all charter schools serving grades K-G4 in the state (N=31). The remainder were private schools (N=85), which represent more than 90 percent of the licensed private school providers operating in Hawai`i. There are 8 private schools (i.e., Ark of Safety Christian Academy; Corvid Academy; Emmanuel Lutheran School; Ke Kula'o Pi'ilani; Kosasa Academy; Allen Montessory Laboratory School; Mo'o School; and Olelo Christian Academy) that did not report complete student enrollment data to HAIS in SY 2019-20 or SY 2020-21. Missing data prohibited the calculation of year-to-year percent change in student enrollment. As a result, these 8 private schools were omitted from the analysis. It is also worth noting that the private school enrollment counts were recorded at a different time (i.e., February 2021) than public school counts (i.e., September 2020).

Pre-K enrollment data were also excluded from this analysis due to inconsistent reporting across entities. Additionally, enrollment counts for students in SPED within HIDOE are reported in aggregate between grades K-G6. An assessment of the change in this category indicated that the percentage change in this group from SY 2019-20 to SY 2020-21 was 0.16 percentage points (a decline of 14 students). Since my analysis focuses on K-G4 and the change for this group overall was modest, I exclude the SPED K-G6 count from the analysis for public schools. Private schools do not differentiate between SPED and regular education counts, therefore, the grade level measures reported for private schools do include SPED students.

In the pre-pandemic school year (i.e., SY 2019-20), there were 75,723 K-G4 students enrolled in the schools in my analytical sample. In SY 2020-21, there were 71,579 K-G4 students enrolled. Appendix Table 2 provides the precise enrollment counts by sector in SY 2019-20 and SY 2020-21.

*Variable Construction*

The year-to-year percent change measure is the primary outcome variable of interest for this study. I construct this variable in the following way:

$$\%\ Change\ in\ Enrollment = 100 * \left(\frac{Enrollment_{2021} - Enrollment_{1920}}{Enrollment_{1920}}\right)$$

, where $Enrollment_{2021}$ is the student enrollment count in SY 2020-21 and $Enrollment_{1920}$ is the student enrollment count in SY 2019-20. Appendix Figure 1 provides the histogram of this outcome measure, showing that the distribution generally conforms to a normal distribution and that well over half of the reported percentage changes in these grades were below zero.

Using publicly reported data from HIDOE's school-level SSIR for SY 2019-20, I construct a range of pre-pandemic covariates to include in the main OLS specifications. First, I construct variables representing the share of the student population composed by particular racial and ethnic groups in the pre-pandemic period (i.e., the fall enrollment count for SY 2019-20). In particular, I construct these variables for the following ten race and ethnicity groupings: Filipino,

Asian, Native Hawaiian, Pacific Islander, American Indian/Alaska Native, Black, Portuguese, White, Hispanic, and Multiple. For each of these groups, I divide the total number of students in that group by the total enrollment at the school site. The Asian category includes students who identified as Chinese, Japanese, Indo-Chinese, Korean, Other Asian, or Two or More Asian groups. The Pacific Islander category includes students who identified as Samoan, Micronesian, Tongan, Guamanian/Chamarro, Other Pacific Islander or Two or More Pacific Islander groups. The White category includes students who identified as White or Two or More White groups. In all OLS specifications, the Asian category as defined above serves as the reference group. The share of the remaining nine race/ethnicity groups are included as independent variables.

I also construct variables related to school characteristics. First, I created school size variables (i.e., flagging small, medium, and large elementary schools). Small elementary schools enrolled a student population in the lowest quartile of traditional public schools. Medium elementary schools enrolled a student population in the middle two quartiles of traditional public schools. Large elementary schools enrolled a student population in the highest quartile of traditional public schools. Second, using data from HIDOE, I flag 38 elementary schools statewide who were "militarily-impacted" and located in communities with a large military presence. Third, I constructed an indicator for schools that were in the lowest quartile by income-to-poverty ratio (i.e., having an income-to-poverty ratio of less than 293). Fourth, I constructed a flag for schools that were in the lowest quartile of traditional public elementary schools for average daily attendance (i.e., having less than 93.3% average daily attendance). Fifth, I constructed an indicator for schools with a pupil-teacher ratio falling in the top quartile of traditional public elementary schools (i.e., greater than or equal to 17.4).

In addition to these school-level covariates, I leverage school directory data to create island specific groupings. In particular, I create indicators for whether the school is geographically located on O'ahu, Maui, Hawai`i, Kauai, Lana`i, Moloka`i or Nii`hau.

*OLS Regressions with Island Fixed Effects*

My analytical strategy includes the use of descriptive OLS regressions with island fixed effects on the sample of traditional public schools serving grades K-G4 in Hawai`i. This OLS specification takes the following form:

$$\%\ Change_s = \lambda_i + \boldsymbol{\delta X_s} + \epsilon_s$$

, where $\%\ Change_s$ represents the percentage change in overall student enrollment in grades K-G4 at school $s$. $\lambda_i$ represent island fixed effects that absorb time-invariant island specific trends. $\boldsymbol{X_s}$ represents the vector of pre-pandemic predictors included in the model. The most comprehensive model is reported in column (4) of Table 1 and includes race/ethnicity composition controls, school size controls, and school characteristic controls. In all models, I account for the possible heteroskedasticity of the error term, $\epsilon_s$, by reporting robust standard errors.

Appendix Table 1. Public School K-G4 Enrollment Differences, Withdrawal Differences, Population Changes

| | K | G1 | G2 | G3 | G4 | Overall K-G4 |
|---|---|---|---|---|---|---|
| *Fall Enrollment Count* | | | | | | |
| Public School Enrollment SY 2019-20 | 13,074 | 13,672 | 13,341 | 13,279 | 13,447 | 66,813 |
| Public School Enrollment SY 2020-21 | 11,103 | 12,833 | 13,052 | 12,770 | 12,756 | 62,514 |
| Enrollment Diff. | -1,971 | -839 | -289 | -509 | -691 | -4,299 |
| *Fall Withdrawal Count* | | | | | | |
| Public School Withdrawals SY 2019-20 | 286 | 334 | 321 | 281 | 267 | 1,489 |
| Public School Withdrawals SY 2020-21 | 543 | 605 | 564 | 479 | 469 | 2,660 |
| Withdrawal Diff. | 257 | 271 | 243 | 198 | 202 | 1,171 |
| *Population Estimates* | (Age 5) | (Age 6) | (Age 7) | (Age 8) | (Age 9) | (Age 5-9) |
| Hawai`i estimated population 7/1/2019 | 17,921 | 18,069 | 17,745 | 17,828 | 16,455 | 88,018 |
| Hawai`i estimated population 7/1/2020 | 17,231 | 17,609 | 17,799 | 17,402 | 17,514 | 87,555 |
| Population Diff. | -690 | -460 | 54 | -426 | 1,059 | -463 |
| Unaccounted (Enrollment Diff. + Withdrawal Diff. - Population Diff.) | -1,024 | -108 | -100 | 115 | -1,548 | -2,665 |

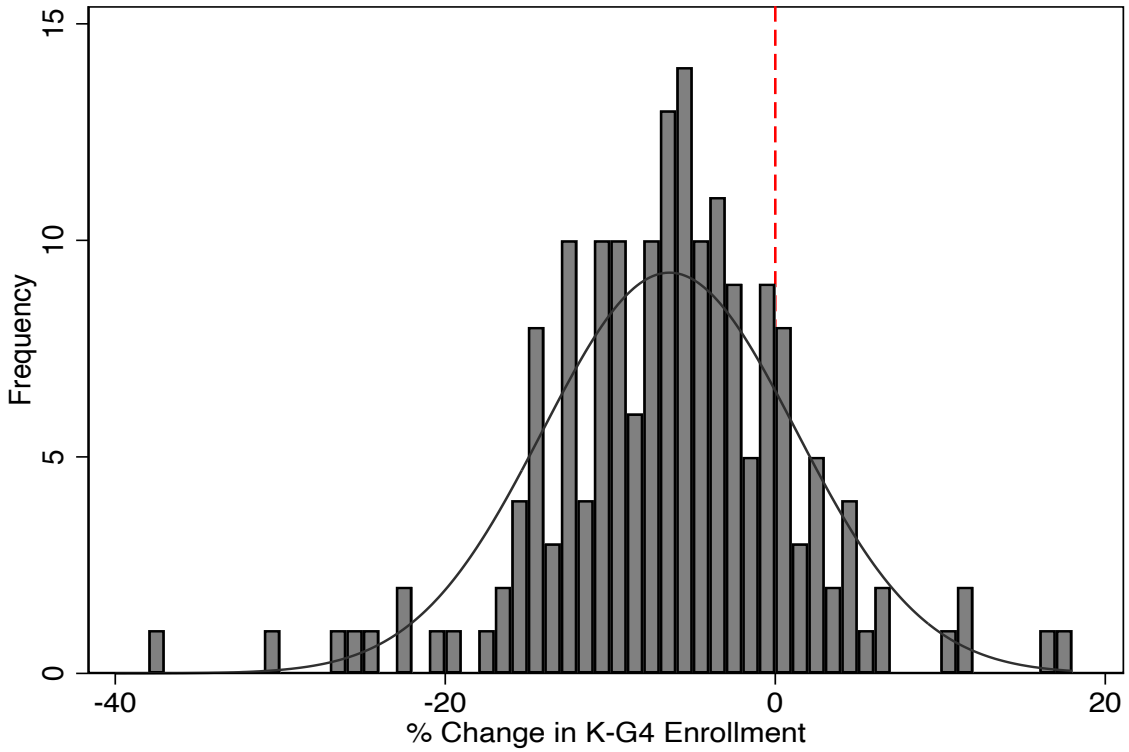
*Note:* Enrollment count data come from Hawai'i State Department of Education, Statewide Reports for School Year (SY) 2019-20 and SY 2020-21. Withdrawal count data come from Hawai`i State Department of Education Return To Learn data dashboard, Metric #18. Population data by age are from the U.S. Census Bureau's Annual Estimates of the Civilian Population by Single Year of Age and Sex for Hawaii: April 1, 2010 to July 1, 2020. The analytical sample includes Hawai'i public elementary schools (N=209).

Appendix Table 2. K-G4 Student Enrollment Counts, Differences, and Percent Changes by Educational Sector, SY 2019-20 to SY 2020-21

| Educational Sector | Total K-G4 Enrollment | | Difference in | % Change in | Number of |
|---|---|---|---|---|---|
| | SY 2019-20 | SY 2020-21 | Total Enrollment | Total Enrollment | Schools |
| Traditional Public Schools | 62,101 | 57,798 | -4,303 | -6.93% | 178 |
| Charter Schools | 4,712 | 4,716 | 4 | 0.08% | 31 |
| Private Schools | 8,910 | 9,065 | 155 | 1.74% | 85 |

*Note:* Student enrollment data were obtained from HIDOE and HAIS school enrollment reports for SY 2019-20 and SY 2020-21. The value reported in the difference column is obtained by subtracting the SY 2019-20 enrollment count from the SY 2020-21 enrollment count. The percent change is obtained by taking the computed difference divided by the total enrollment in SY 2019-20. Sector categories are mutually exclusive and schools only appeared in one category. The analytical sample includes both public and private schools serving students in grades K-G4 throughout Hawai`i (N=294).

Appendix Figure 1. Histogram of Percent Change in K-G4 Enrollment for Hawai`i Traditional Public Schools




*Note:* The dashed vertical line represents zero percent change in K-G4 enrollment. The sample includes all traditional public elementary schools enrolling students in any grade K-G4 operating in Hawai`i during SY 2019-20 and SY 2020-21 (N=178).