PPIC PUBLIC POLICY INSTITUTE OF CALIFORNIA
30 YEARS

California School Districts and the Emergency Connectivity Fund

Technical Appendix

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Appendix A. Additional Tables and Figures

Efforts to connect students to the internet for remote learning took place while school districts were also mobilizing to reopen for in-person instruction. Even if full digital access had become universal, students vary in their aptitude to take advantage of that learning platform, and parents, teachers, and child development experts expressed concern about the social-emotional learning implications for school remaining completely online (Bruhn et al. 2023; Anderson 2022).

Figure A1 shows that districts with historically underserved student populations—for instance, English Learners, Black and Latino students, and low-income students—tended to open for instruction somewhat later than districts without high concentrations of those students. The most common month for a school district of any kind to reopen for in-person instruction was April 2021. Only a small portion of historically underserved districts had opened in fall of 2020: only 1 to 3 percent in August and 6 to 7 percent in October. Forty percent of high-EL districts opened completely during April 2021, along with 39 percent of districts with high concentrations of Black or Latino students, and 34 percent of districts with high numbers of low-income students.

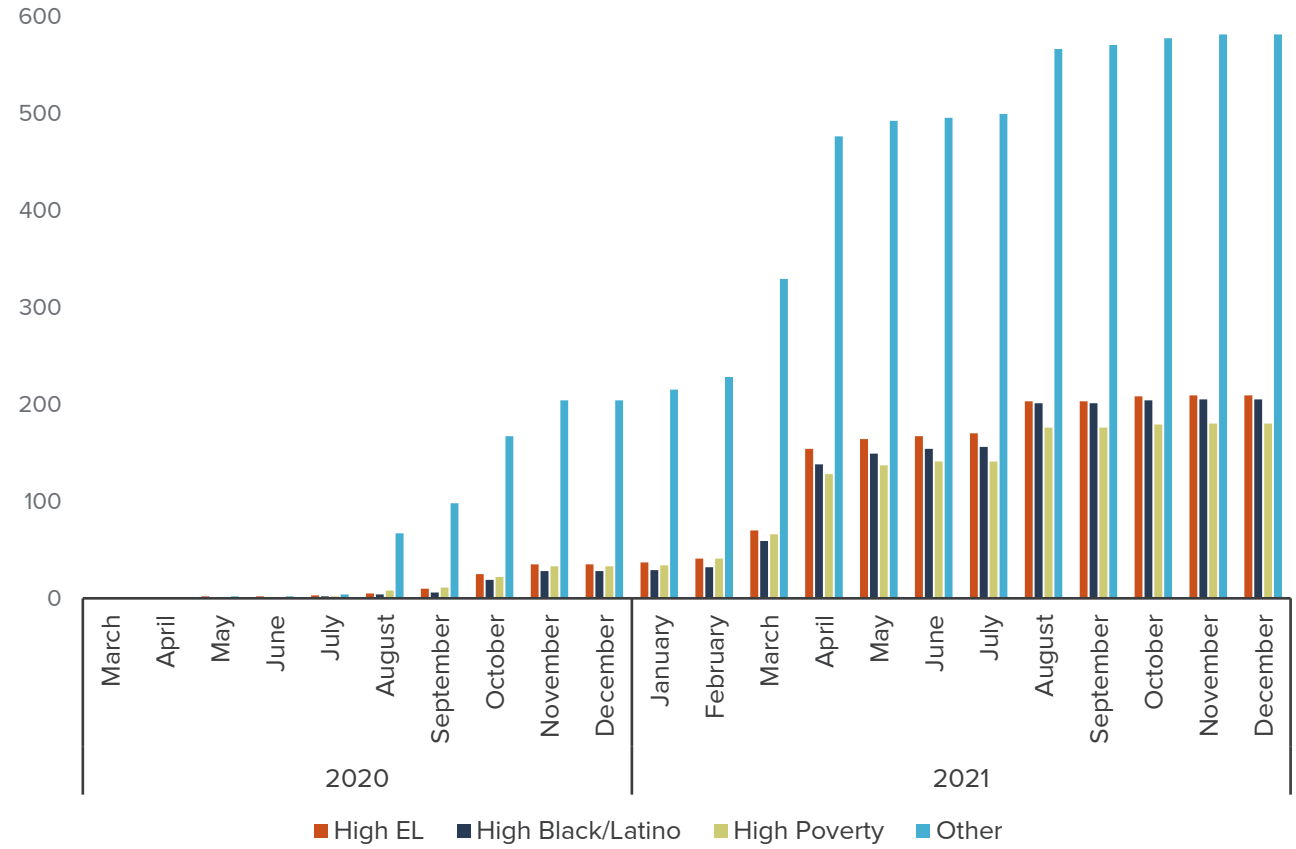
For districts without high concentrations of our target student populations, the reopening was somewhat more spread out: significant numbers of those districts opened in fall of 2020: 11 percent in August and another 12 percent in October. Twenty-five percent opened during April 2021. Thirty-five percent of those districts had opened for instruction to all students by the end of 2020, compared with between 14 and 18 percent for the underserved districts.

The average date by which all schools in a given district reopened for in-person instruction was April 2021. Approximately 47 percent of California school districts opened by that date. districts with high proportions of EL students, only 31 percent did. Districts with high percentages of Black or Latino students, or high percentages of low-income students also tended not to open by that date—only 25 percent and 33 percent did, respectively. Among other districts, 55 percent opened fully for in-person instruction by that date.

FIGURE A1

Districts with historically underserved populations tended to open later

Cumulative districts re-opened



SOURCE: Authors' calculations using California Department of Education district data, 2021-22; California Department of Public Health data, 2020-21.

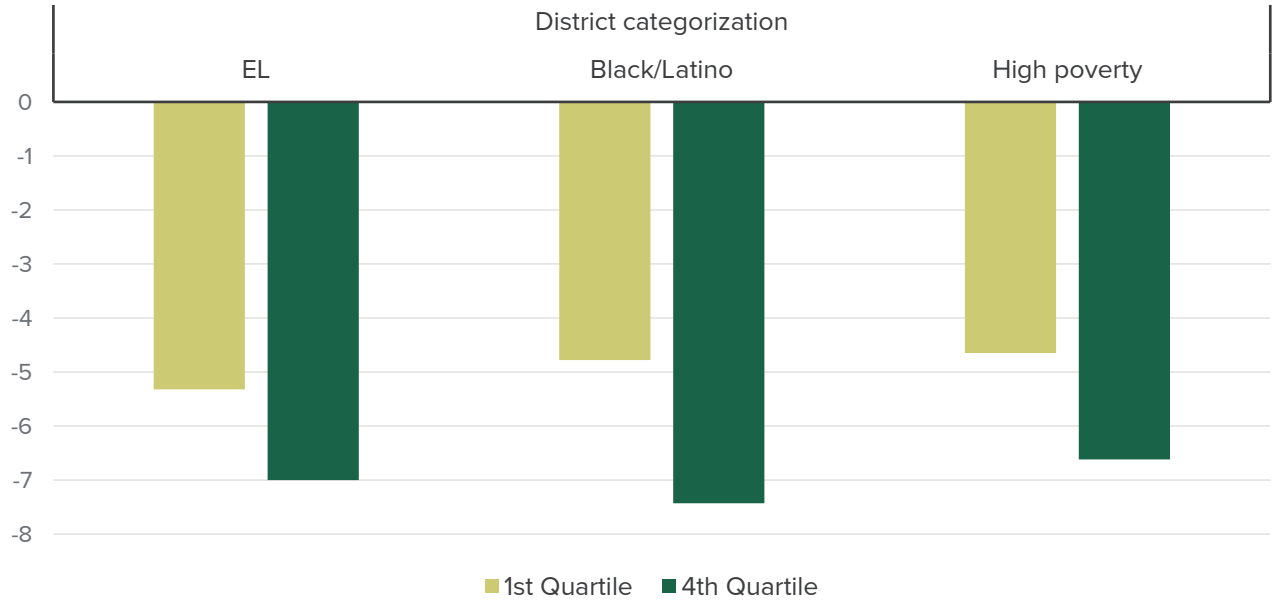
NOTES: Amounts shown are the cumulative number of each type of district that opened for in-person education for all grades at all of its schools by that month. The group marked "Other" comprises the districts that do not belong to any of the other high-need groups identified here.

The magnitudes of learning loss for districts with the highest concentrations of Black or Latino students were nearly identical. Districts with the highest concentration of low-income students recorded an average drop of 6.6 percentage points in math and 4.6 p.p. in ELA. In every case except for ELA scores for high-EL districts, the degree of learning loss was more severe for districts with the highest concentration of high-need students (4th quartile) than for those with the lowest concentrations (1st quartile). Those differences were more pronounced for math scores than for ELA.

FIGURE A2

Learning loss in math was more pronounced for districts with high concentrations of high-need students

Percentage point change in math proficiency, 2019 to 2022



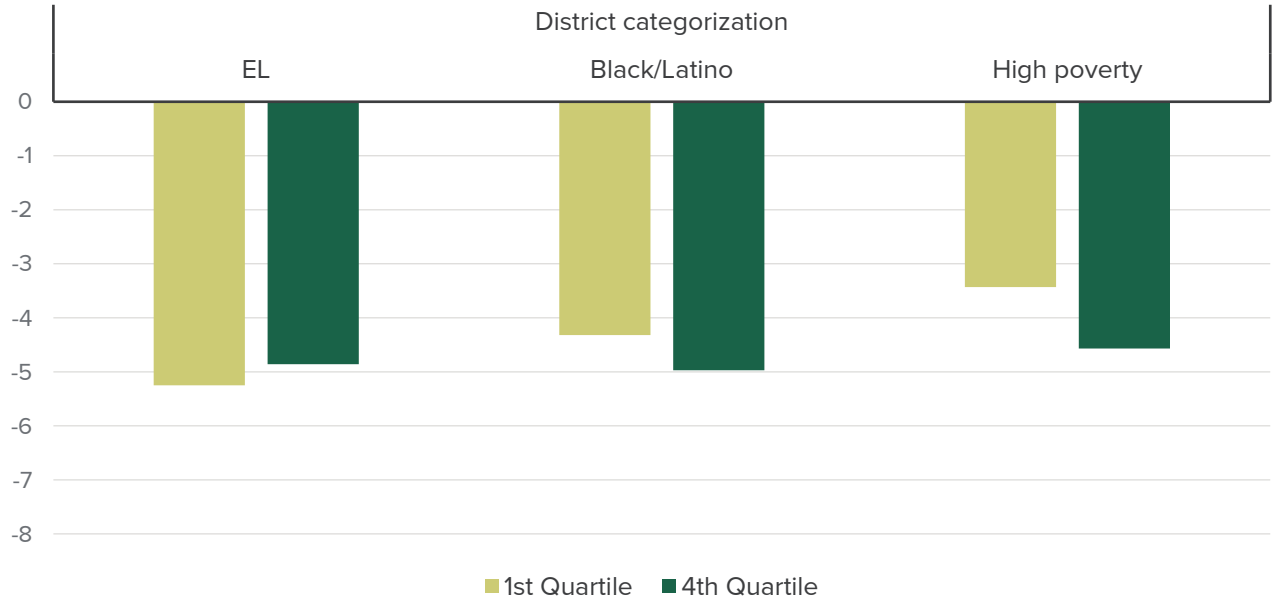
SOURCE: Authors' calculations using California Department of Education district data, 2021-22 and Smarter Balanced Assessment Consortium data, 2018-19 to 2022-23.

NOTES: Amounts shown are the percentage-point changes between 2019 and 2022 in the proportion of students showing proficiency in the math portion of the SBAC assessment.

FIGURE A3

Learning loss in ELA was more pronounced for districts with high concentrations of high-need students

Percentage point change in ELA proficiency, 2019 to 2022



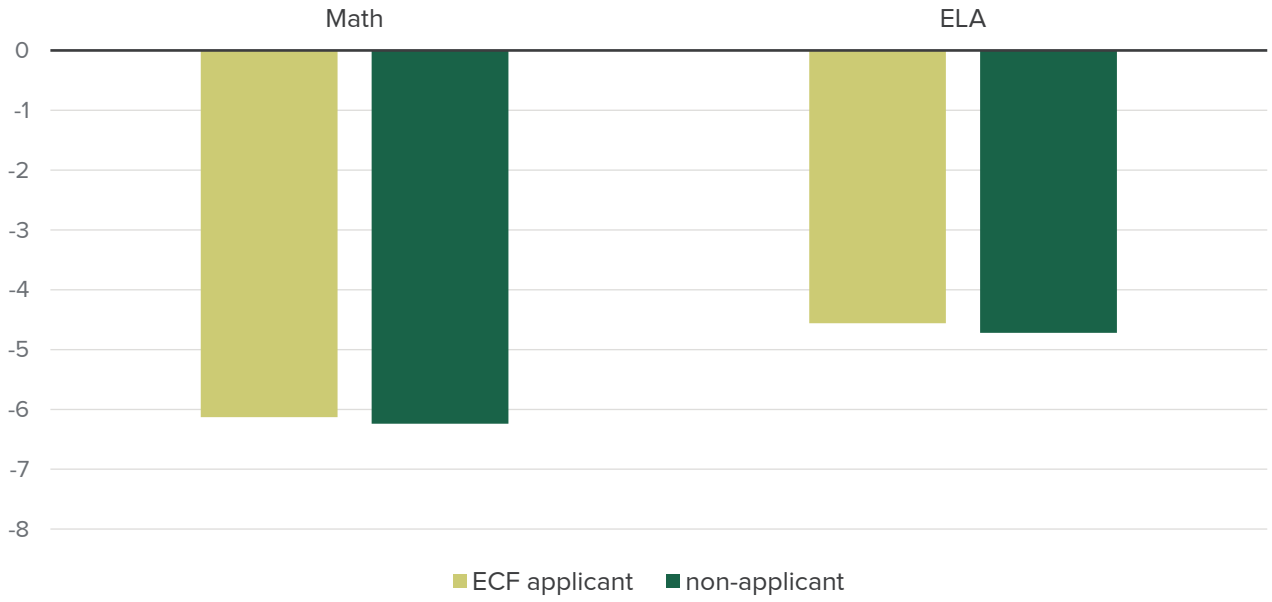
SOURCE: Authors' calculations using California Department of Education district data, 2021-22; and Smarter Balanced Assessment Consortium data, 2018-19 to 2022-23.

NOTES: Amounts shown are the percentage-point changes between 2019 and 2022 in the proportion of students showing proficiency in the ELA portion of the SBAC assessment.

FIGURE A4

Learning loss by Emergency Connectivity Fund application status

Percentage point change in test proficiency, 2019 to 2022



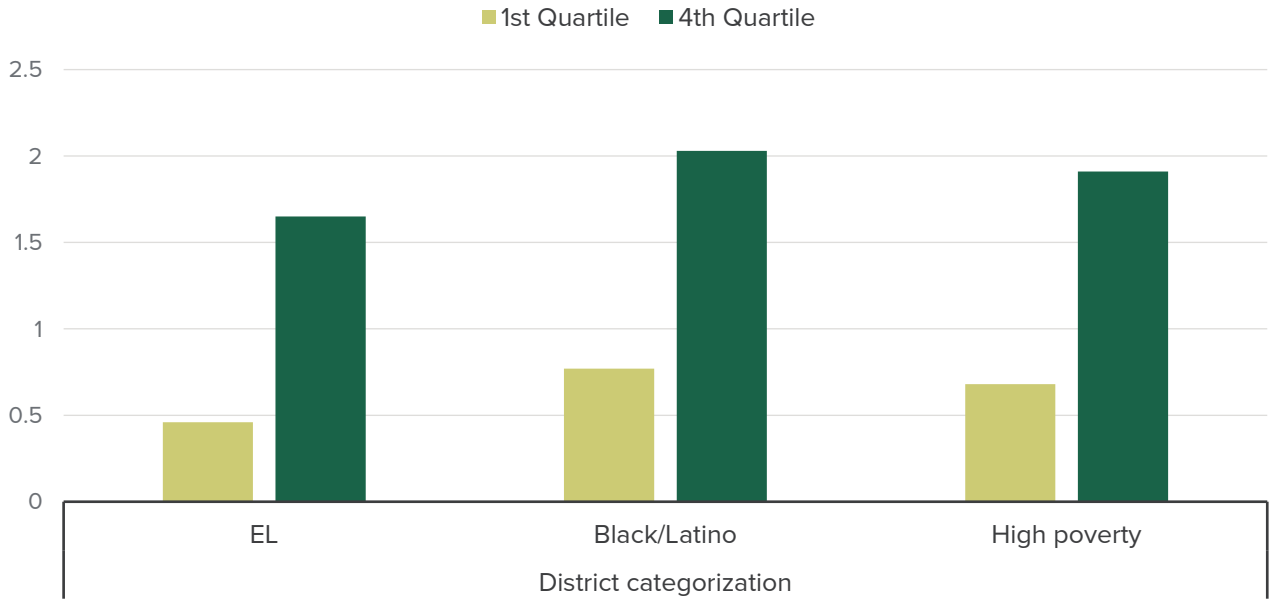
SOURCE: Authors' calculations using California Department of Education district data, 2021-22; and Smarter Balanced Assessment Consortium data, 2018-19 to 2022-23.

NOTES: Amounts shown are the percentage-point changes between 2019 and 2022 in the proportion of students showing proficiency in the math and ELA portions of the SBAC assessment.

FIGURE A5

Districts with high concentrations of underserved student populations had bigger gains in math proficiency

Percentage point change in math proficiency, 2022 to 2023



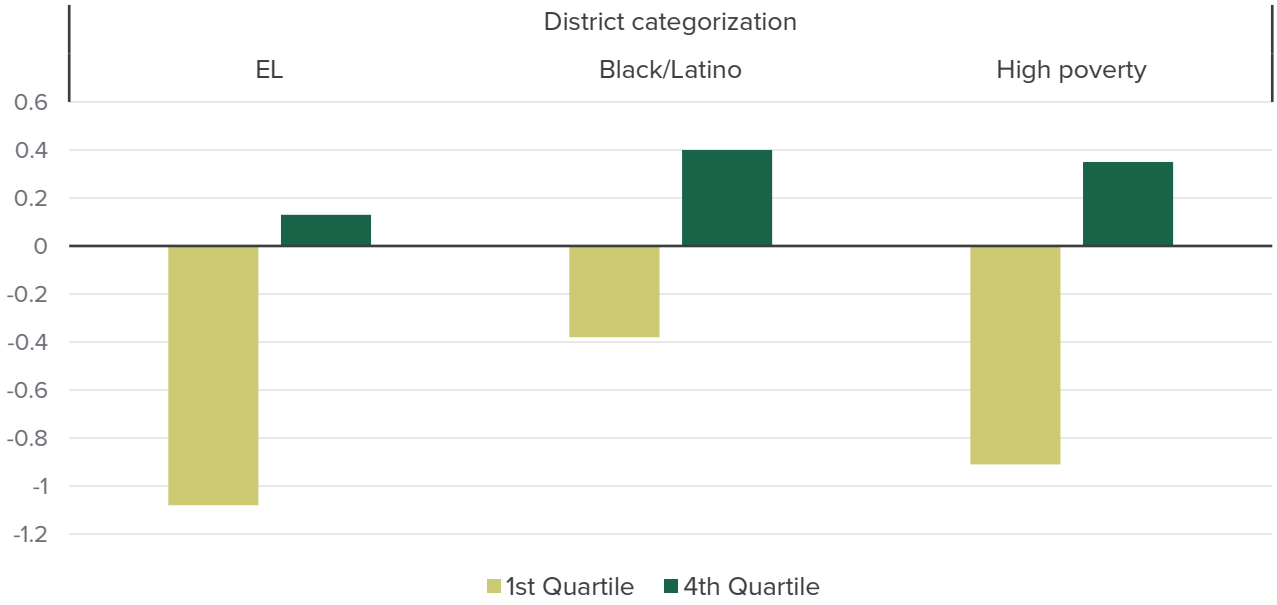
SOURCE: Authors' calculations using Smarter Balanced Assessment Consortium data, 2018-19 to 2022-23; and California Department of Education district data, 2021-22.

NOTE: Learning loss: changes in 2022 test scores from 2019 scores; learning recovery: changes in 2023 test scores from 2022 scores.

FIGURE A6

High-need districts saw modest learning recovery in ELA

Percentage point change in ELA proficiency, 2022 to 2023



SOURCE: Authors' calculations using Smarter Balanced Assessment Consortium data, 2018-19 to 2022-23; and California Department of Education district data, 2021-22.

NOTE: Learning loss: changes in 2022 test scores from 2019 scores; learning recovery: changes in 2023 test scores from 2022 scores.

TABLE A1

School districts submitted the majority of California applications to the ECF

Applicant type	Applications	Approved funding (amt.)	Approved funding (%)
School district	2,206	$895,365,760	92%
School	922	$34,697,404	4%
Library or Library System	144	$38,003,836	4%
Consortium	85	$5,002,630	1%
Total	**3,357**	**$973,069,630**	**100%**

SOURCE: Authors' calculations using ECF data, 2021–22.

NOTE: We include all the unique California applicants, not just the ones we were able to match with CDE data. Percentages do not add to 100% because of rounding.

Appendix B. Data Notes and Limitations

ECF application data

The ECF makes application records available to the public. We matched these data to California Department of Education (CDE) data, which has student demographic information. There are some limitations to these data—namely, the accuracy of the match, and the unobservability of the students' connectivity needs in districts that did not apply.[1] See text box for details.

ECF and CDE data: what do they offer?

The Emergency Connectivity Fund application form requested from districts, among other things, several pieces of information regarding their students' existing needs for connectivity and devices, an assessment of the districts' efforts so far to meet them, and how the ECF funding would further those efforts. In addition, it asked the amount of funding requested and what particular services or equipment the district planned to purchase with ECF funds.

The California Department of Education provides data on the demographic and socio-economic composition of each district's student enrollment. This allows us to focus on our populations of interest: namely, English Learners (ELs), Black and Latino students, and low-income students. We are also able to identify districts by size (high- or low-enrollment) and location (rural, town, suburban, or urban).

The two datasets lacked a common identification code, so we employed a fuzzy-match merge by name of district and county (since many districts in disparate parts of the state share a name). This included first standardizing the format of district names between data sources, then matching using the reclink command in STATA, and finally re-examining marginal cases individually to check for false positive matches and errant misses, correctly re-assigning districts where possible. This provided the two main datasets we use in this analysis:

1. District-level: ECF application data identified 574 unique California school districts. Of those, we were able to match 465 (81%) to the CDE data. This is the dataset we use to describe applicant districts by demographic composition, location, etc. in the first portion of the report.
2. Application-level: Districts could submit more than one application to the ECF, and many did. California districts filed 2,206 applications, of which we were able to match 1,810 (82%) with full district information. We used this dataset to examine reported student needs, funding request levels, and intended purchases in the latter portion of the report.
3. For other analyses in this report, we matched school reopening data from the California Department of Public Health (CDPH) and district connectivity capacity data from K12 High Speed Network (K12HSN), but were also unable to make a complete 1-to-1 match using the standard County-District-School (CDS) code because of differing uses and presentations of the code. Adopting a standard formatting of this code across State agencies as part of a commitment to improved data transparency would greatly aid the process of informing public policy research.

[1] We omit information on the non-matching districts. While we can observe the demographic characteristics of all districts using the CDE data, we cannot know what districts perceived their student needs for devices or connectivity to be—this information comes only from the ECF applications. The results on unmet student needs can only discuss those of applicant districts.

We can observe individual schools' applications, but we focus here on districts for three reasons. First, to preserve a consistent basis for comparison: we compare entire district applications with each other, rather than include, say, summing the applications of any number of constituent schools within a district for comparison. Second, the fuzzy match merge on school names proved much less reliable than the merge using district names. Third, applications from school districts account for the vast majority of the approved funding for the state (92%).

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