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### Title

Access, Broadband, and COVID-19: The ABCs of California's Digital Divide

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# Access, Broadband, and COVID-19: The ABCs of California's Digital Divide

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What data and resource gaps currently exist for California schools with respect to access to internet and technology?

How can state coordination be effective in closing the 'digital divide' among rural and low-income K-12 students in California, particularly in light of the COVID-19 pandemic?

## Introduction

As California public schools prepare to return to mostly in-person instruction for the 2021-2022 school year, many students, parents, teachers, and administrators would like to forget the challenges of the past year and a half of remote learning [1]. During the COVID-19 pandemic, access to reliable internet and a computer or tablet became an indispensable part of the daily education routine for many K-12 students in California [2]. Now, with schools and school districts focused on implementing COVID-19 safety measures and coordinating re-opening regimes, securing reliable access to technology and high-speed internet has been relegated to a lower priority. But while the worst of fully-online education may be behind us, the pandemic has unearthed gaps in broadband internet connectivity throughout California and the nation. The past year has fundamentally reshaped the landscape of education, developing a greater reliance on technology-enabled learning and the increased access and flexibility that comes with it [3].

Although not necessarily a new occurrence, the pandemic has greatly exacerbated the growing 'digital divide' among California students, especially those from low-income and rural backgrounds [4]. A 2020 report by Common Sense Media estimates that more than 1.5 million California students (approximately 25% of all students) lack high-speed internet connections [5]. Providing students with the necessary technology to succeed in an increasingly digital school environment will be key to student success both during and after the pandemic. California must act quickly and decisively to close the digital divide by facilitating the buildout of additional broadband infrastructure, solving 'last mile' connectivity issues, and providing families with low-cost access to internet and technology resources.

But in order to effectively target funding and state action to counties, school districts, and residents with the greatest internet access deficiencies, state leaders must first build a complete picture of California's internet landscape. The decentralized nature of funding, reporting, and data collection makes such an effort difficult without statewide coordination and leadership. This paper examines current state efforts to close the digital divide and identifies gaps in the data.

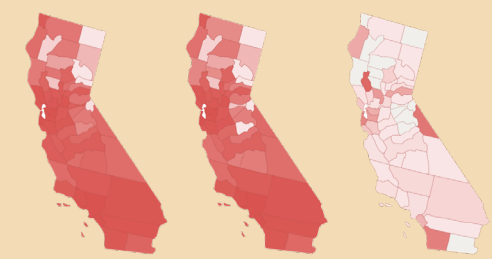
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## Key Findings

- 1 California lacks direction and leadership on broadband access, particularly for schools and students. The Governor's reorganization of broadband oversight is a good start, but more cross-department partnerships are needed in the future.
- 2 The lack of school district-level data on broadband access limits the ability of education leaders to target solutions towards the students who are in the most need of low-cost or no-cost internet access.
- 3 California must set statewide internet connectivity standards that meet the rapidly-changing technology demands of the 21st century. The 6 mbps down and 1 mbps up defined by CPUC as sufficient connectivity is no longer adequate to support most households' internet needs.

**FIGURE 1**  
Broadband Coverage by County

25+ mbps    50+ mbps    1+ Gbps



SOURCE: BroadbandNow Internet Coverage Map [6]

**"California must act quickly and decisively to close the digital divide by facilitating the buildout of additional broadband infrastructure"**

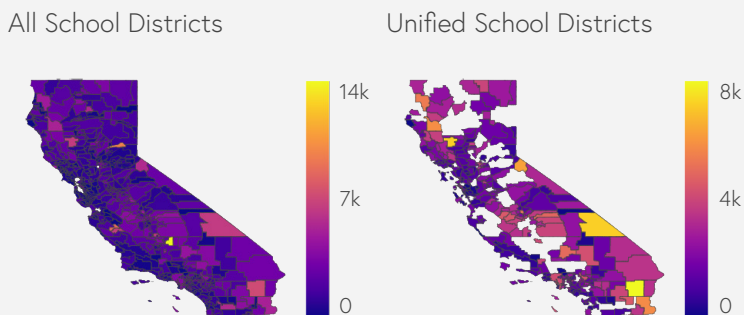
## Data

Figure 1 from BroadbandNow's Internet Coverage Map shows broadband availability by county at three speeds: 25 mbps (the FCC standard for 'highspeed internet'), 50 mbps, and 1 Gbps [6]. While most counties have near 100% access to 25+ mbps speeds, the increased use of teleconferencing and video streaming during the pandemic is indicative that this standard definition of 'highspeed' may no longer be sufficient to meet ever-changing technology needs [5]. As the demand for higher speeds grows, more counties lack widespread access to fast broadband. In particular, counties in the Sierra Nevada Region, the Central Valley, and the Inland Empire are the most in need of expanded broadband infrastructure [7]. Connectivity needs correspond closely with the remote/rural location and geography of these regions.

However, the state's connectivity problem is not exclusive to remote geographies. Even in locations with reliable infrastructure, broadband adoption—the actual usage rate—can lag significantly behind the availability of internet services, as seen in Figure 2 [8]. Limited 'last mile' broadband infrastructure (e.g. fiber optic cables, cell towers) and the cost of internet services and devices both present barriers to users, particularly low-income households [5]. In California, internet adoption gaps exist in multiple parts of the Central Valley, Northern California and the Inland Empire counties of San Bernardino and Imperial. The difference between internet access and internet use is not a new phenomenon. In 2019, Microsoft's Chief Data Analytics Officer highlighted how the FCC may be underestimating the digital divide by more than 130 million people, over a third of the nation's total population [9]. Broadband adoption and use should therefore be closely monitored by the state to ensure that expanded infrastructure is actually being used by Californians.

The California Public Utilities Commission (CPUC) and the California Department of Education (CDE) should also explore avenues for tracking internet connectivity for public school students, both in the classroom and at home. Additional granularity on the district level can help to pinpoint gaps in internet access beyond the county scale.

**FIGURE 3**  
ESSER III Funding Per Pupil (\$)



SOURCE: CDE ESSER III Funding Schedule

**FIGURE 2**  
Broadband Adoption Map



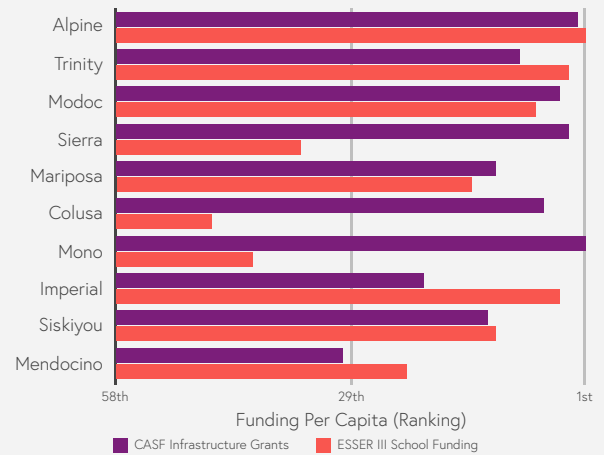
SOURCE: California Public Utilities Commission Broadband Map

## Legislation

The state's primary leader on broadband infrastructure is the California Public Utilities Commission (CPUC), which administers the California Advanced Services Fund (CASF). The CASF is a grant program to encourage development of high-quality internet services to the state's nearly 40 million residents. Revenues for the fund are collected via surcharge on telecommunications carriers, and are organized into four accounts for Broadband Adoption, Broadband Infrastructure, Public Housing, and Rural and Urban Regional Broadband Consortia [10]. Internet service providers can also compete for funding from the FCC through the Rural Digital Opportunity Fund [11]. Proposed changes to the CASF, in the form of SB-4 and AB-14, would focus additional CASF resources specifically towards schools and pupils in order to build out access to online learning resources [12]. Additionally, AB-14 would bring the state a step closer to a 'public option' for broadband by allowing local governments to apply for CASF grants [13]. At present, however, the CASF is oriented primarily towards general infrastructure and internet service providers, who hold an advantage over local governments and smaller nonprofit organizations in the bidding process.

On the federal level, California schools recently received funding from the Elementary and Secondary School Emergency Relief (ESSER III) program, a part of the 2021 American Rescue Plan Act. Part of the funding may be used to purchase (or reimburse) technology (e.g. computers, hotspots) for students and teachers to continue remote learning during the pandemic. Funds were allocated to schools based on population and need [14]. The distribution of ESSER III funds for all California school districts is shown in Figure 3. While there is some correlation between funding amounts and lack of broadband access and adoption (Figures 1 and 2), particularly in parts of north-western and southeastern California, the trend does not hold statewide. To further explore the discrepancy between ESSER III funding and internet connectivity need, rankings for level of ESSER III and CASF grant funding (relative to other counties) are plotted for the ten least-connected counties in Figure 4. The results show little connection between the two funding sources outside of the three least-connected counties, suggesting ESSER III funds are not strongly targeted to counties with the greatest connectivity needs. Recognizing that internet access is not the only factor influencing ESSER III allocation, the state (and Congress) should consider how to more precisely target technology funding to the counties and school districts with the largest digital divides.

**FIGURE 4**  
Funding Per Capita for Top 10  
Least-Connected Counties



SOURCE: CPUC 2020 CASF Report [15]; CDE ESSER III Funding Schedule [14]

government (in particular, the American Rescue Plan Act), the broadband package represents a significant updating of California’s broadband deployment plan, and offers additional funding avenues beyond the CPUC and CASF. Additionally, the Governor announced the creation of a ‘broadband czar’ within the California Department of Technology, as well as a nine-member broadband advisory committee combining efforts from across state government [16]. The broadband czar and advisory committee will likely take over the leadership role on broadband issues from the CPUC and the California Broadband Council, a similar committee created in 2010 to coordinate broadband infrastructure development but which lacked power to act on key issues. It remains to be seen whether this historic investment and reorganization of broadband leadership can produce a significant impact on closing the state’s digital divide within an internet landscape dominated by large internet service providers [17].

**"It remains to be seen whether this historic investment and reorganization of broadband leadership can produce a significant impact on closing the state's digital divide within an internet landscape dominated by large internet service providers"**

**FIGURE 5**  
CASF Eligibility Map



SOURCE: California Public Utilities Commission Broadband Map

In summer 2021, Governor Newsom announced a proposed \$7 billion investment in the state’s broadband infrastructure as part of the May revise for the state’s FY 22 budget. The plan, which balanced \$3.25 billion in ‘middle mile’ proposals with \$2.75 billion in ‘last mile’ proposals, was signed into law as a budget trailer bill (SB 156) in July [16]. Even though most of the funding for the proposal comes from the federal

## Conclusion

The prospects for closing the state's digital divide, providing high-speed internet access to the remaining 16% (6.3 million) of Californians, are looking up—for now. The state just committed to a historic \$6 billion investment in broadband infrastructure and access, and is set to provide additional funds in the coming years. Many of California's public schools are returning to in-person learning and vaccinations offer a permanent way out of the COVID-19 pandemic.

**"The prospects for closing the state's digital divide, providing high-speed internet access to the remaining 16% (6.3 million) of Californians, are looking up—for now"**

But recent developments merit cautious optimism. The 2021 broadband funding package requires careful oversight, and an effective third-party to implement more than \$3 billion in middle mile infrastructure. While less than a fifth of Californians lack access to broadband, the last few million residents may prove the hardest to connect. And for all of the state's 39 million residents, evolving use practices and internet speed demands will necessitate regular upgrades and advancements in California's internet networks.

State government still lacks strong coordination across relevant departments on internet access and affordability issues. The California Broadband Council, the 'broadband czar', and the proposed broadband advisory committee all provide some leadership but lack, in most instances, the ability to act decisively to impact broadband access and adoption across the state. To further strengthen their efforts and build on their historic investment, the Legislature and Governor could consider taking a cue from Washington State in creating a state broadband office, with a dedicated staff and budget to oversee rollout of middle mile and last mile infrastructure, and to subsidize devices for low-income Californians [5]. Reorganization of broadband leadership notwithstanding, state agencies must develop stronger partnerships and opportunities for collaboration, especially between the Department of Technology, Department of Education, and Public Utilities Commission. The state government should look to foster additional partnerships with school districts and local educational agencies (LEAs) to identify students' connectivity needs and act as 'anchor institutions' through which to provide internet access to students and families.

Writing this report presented challenges with respect to finding granular data on broadband access and adoption on the census tract and school district levels. The size and geographic diversity of some of the state's larger counties makes district-level data necessary to develop a robust view of the levels of internet access for all California students. As part of an ongoing effort to close the digital divide, the state should look to conduct an inventory of connectivity on the district level, combining insights from LEAs, the Department of Education, and federal data sources.

Finally, state and nationwide coordination is needed to update and standardize the definition of 'high speed' broadband. The CPUC uses both 6 mbps and 25 mbps download speeds as benchmarks for sufficient connectivity, the FCC considers 25 mbps to be threshold for high speed internet, and the state's recent broadband investment aims to achieve 100 mbps in the coming years. California should take cues from the speed and bandwidth needs of distance learning during the pandemic and strive for a 100 mbps benchmark across all use cases.

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