USC University of Southern California

USC Annenberg School for Communication and Journalism

CETF California Emerging Technology Fund

CETF-USC Statewide Broadband Adoption Survey

SUPPORTING SUSTAINABILITY AND EXPANDING LEARNING AND HEALTH SERVICES THROUGH BROADBAND INVESTMENTS

April 2021

Dr. Hernan Galperin
Associate Professor, USC Annenberg School for Communication and Journalism

Dr. François Bar
Professor, USC Annenberg School for Communication and Journalism

Dr. Dorian Traube
Associate Professor, USC Dworak Peck School of Social Work

Thai V. Le
Doctoral Candidate, USC Price School for Public Policy

THE COVID-19 PANDEMIC has dramatically changed transit patterns and disrupted the delivery of basic public goods such as education and health. At the same time, it has also brought to the forefront new opportunities afforded by broadband-enabled applications in remote work, telehealth and remote learning. As California emerges from the pandemic, it is important to understand the potential for connectivity investments to reduce carbon emissions by facilitating remote activities, which at the same time could promote equity by facilitating access to learning and healthcare services.

This policy brief examines this potential based on the findings from the 2021 Statewide Survey on Broadband Adoption. The survey was conducted by researchers at the University of Southern California (USC), led by Associate Professor Hernan Galperin, as part of a new research partnership between the California Emerging Technology fund (CETF) and USC. The findings suggest that California residents have embraced remote work, telehealth and remote learning in ways that offer significant potential to leverage broadband to support sustainability goals and at the same time improve access to health, education and other essential services.

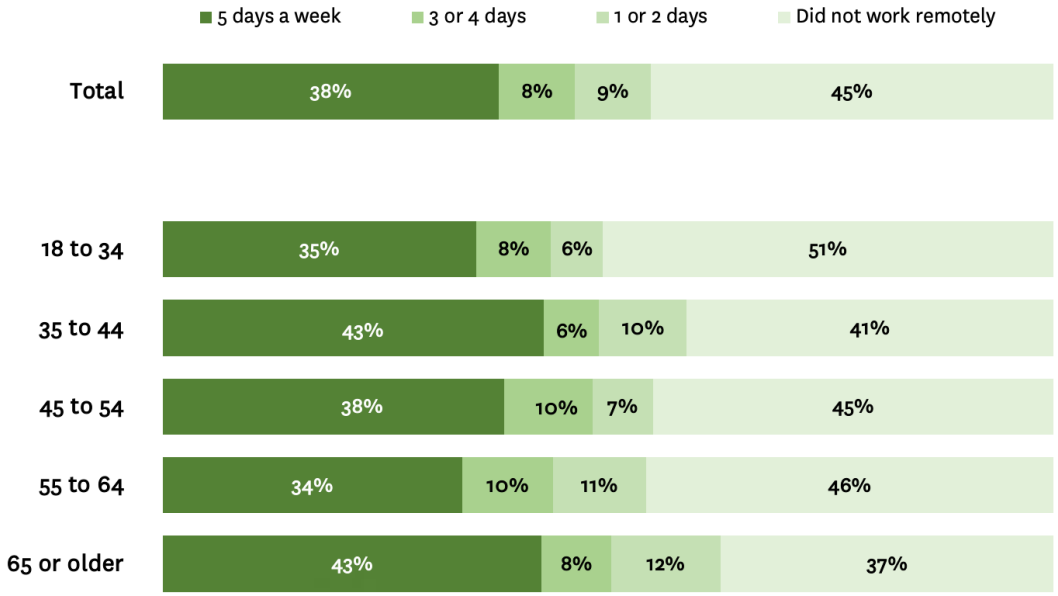
OVER HALF OF WORKERS IN HOUSEHOLDS WHERE BROADBAND IS AVAILABLE ARE CURRENTLY WORKING FROM HOME, AND THE VAST MAJORITY WOULD PREFER TO CONTINUE WORKING REMOTELY POST-PANDEMIC.

One of the most noticeable effects of the COVID-19 pandemic has been the dramatic rise in remote work arrangements. Nearly 55% of workers in households where broadband is available report working from home in the past month, either full time (38%) or part time (17%). Assuming a pattern of commute to work 5 days per week, this suggests that broadband-enabled work has reduced trips to worksites by about 46% during the pandemic.

While this pattern generally holds across age groups, telework is more common among older adults than among younger workers, which likely reflects different risk levels associated with COVID-19 (Figure 1, page 2). Overall, 57% of respondents in the workforce identified themselves as essential workers. As expected, the share of essential workers that reported working remotely (47%) is much lower than for non-essential workers (68%).

Figure 1

Number of days a week employed adults worked remotely by age group



There are also differences in remote work patterns by income, education, and gender. Employed women are significantly more likely than men to report working from home full time (45% vs. 32%). This likely reflects differences in care responsibilities (for children or other adults) within families, which previous research indicates falls disproportionately on women, and which have been amplified by the closure of schools and childcare services across California. Among parents of children 18 or younger, the share of working women reporting full time telework rises to nearly 50%, while the share of working men remains unchanged at 32%.

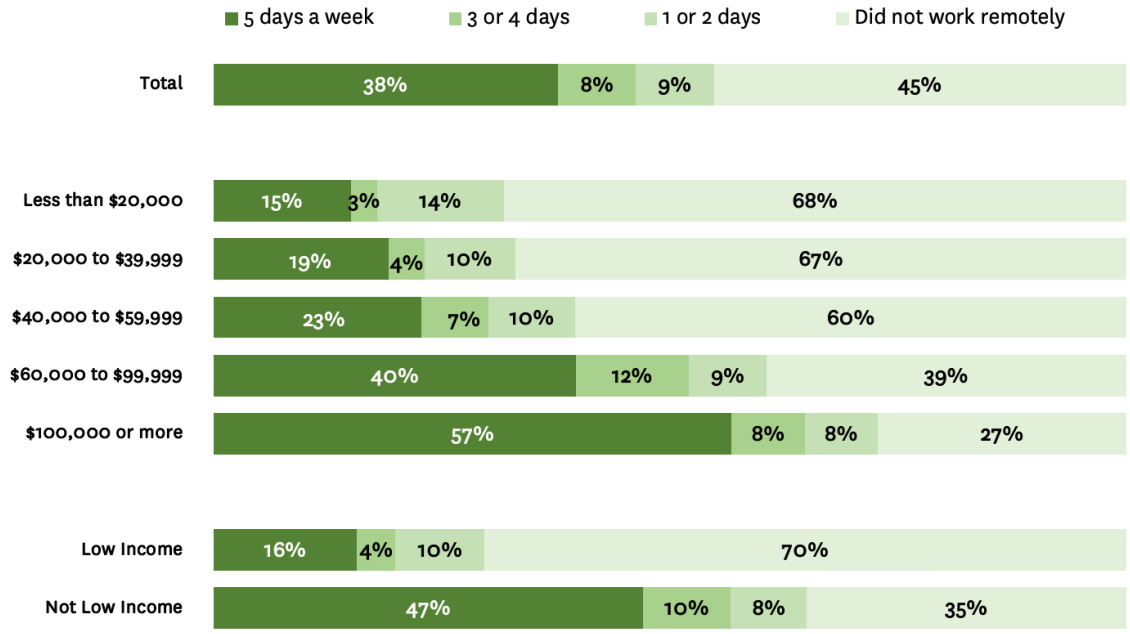
As expected, remote work arrangements become more common with higher educational attainment. Workers without a high school diploma are about 5 times less likely to report working remotely compared to those with a bachelor's degree. Similar disparities exist along income lines, with about 70% of low-income workers reporting never working from home, compared to 35% for more affluent workers (Figure 2, page 3).[1] Telework opportunities for the less affluent are limited by lack of home connectivity, with about a quarter of low-income households reporting no broadband access or being connected only through a smartphone.[2]

[1] Low income is defined as those with annual household incomes at or below 200% of the Federal Poverty Line based on the number of household members.

[2] See detailed findings in Internet Adoption and the Digital Divide in California, available at http://assets.uscannenberg.org/docs/CETF-USC_Statewide_Broadband_Adoption_Survey.pdf

Figure 2

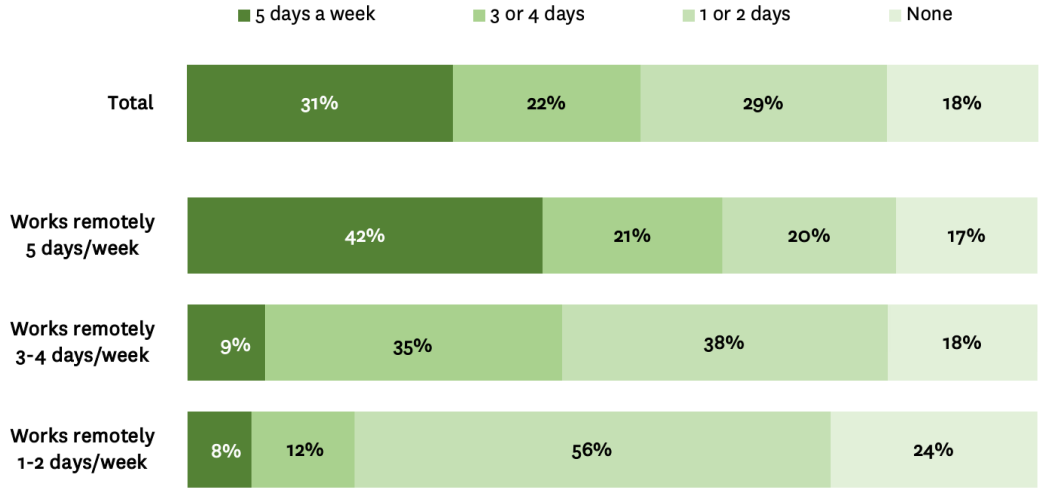
Number of days a week employed adults worked remotely by income



Remote work arrangements are poised to play a more significant role in the post-pandemic context. When asked about future expectations regarding telework, less than 1 in 5 of those currently working from home (full or part time) expect a full, in-person return to their workplace. Among those who currently telework full time (5 days a week), nearly 42% would prefer to remain fully remote, while among those who currently work remotely part time (between 1 and 4 days a week), nearly 70% would prefer to continue working partly from home (Figure 3).

Figure 3

Number of days a week employed adults would prefer to work remotely by current work status



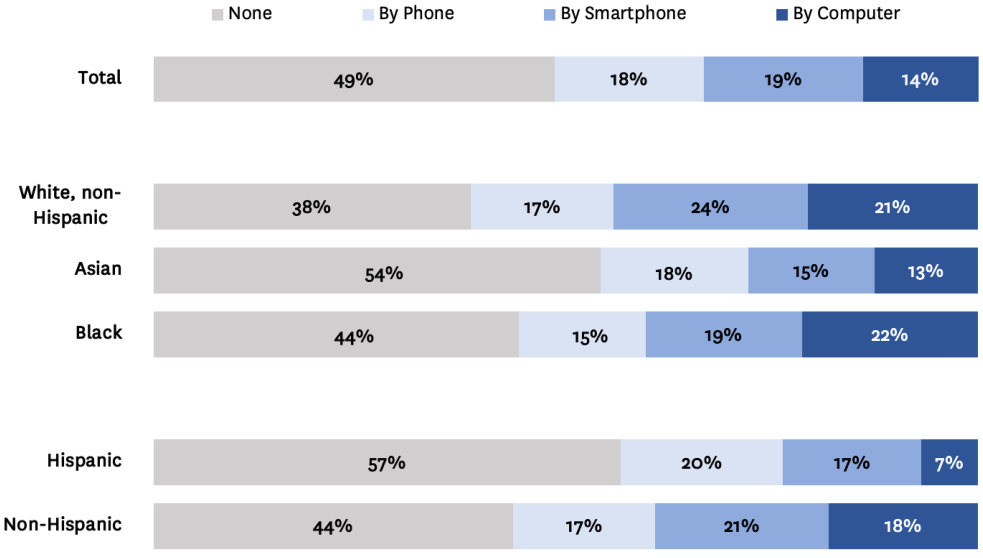
TELEHEALTH UTILIZATION EXPANDS ACROSS CALIFORNIA, BUT REMAINS SKEWED TOWARDS WHITE NON-HISPANICS

Telehealth access is a vital component of broadband access and equity. Nationally, telehealth use has steadily increased from 6.6 percent in 2013 to 21.6 percent in 2016.[3] During the COVID-19 pandemic, telehealth use expanded rapidly because of the need for social distancing and changes to reimbursement and the Health Insurance Portability and Accountability Act (HIPAA) of 1996—specifically, the Privacy, Security, and Breach Notification Rules—governing telehealth. Preliminary data from the Centers for Medicare and Medicaid suggest that services delivered via telehealth increased from February through April 2020 at a rate of 2,632% when compared to March-June 2019.[4] In many rural and underserved parts of California, transportation to the nearest medical providers is challenging, and local broadband connections will not support virtual care. Even in densely populated areas, telehealth access has the ability to reduce health disparities by increasing access to providers and specialists, reducing wait times, and increasing patient satisfaction. Measuring telehealth utilization is a vital metric in understanding the impact of broadband access.

The examination of telehealth access by key demographics reveals disparities in access in several domains. Close to half of the study sample reported not having utilized telehealth care or consultations. Further, telehealth access is disproportionately skewed towards White, non-Hispanic individuals. Over half of Asian and Hispanic respondents and 44% of Black respondents noted having no telehealth utilization (Figure 4).

Figure 4

Telehealth utilization by race/ethnicity



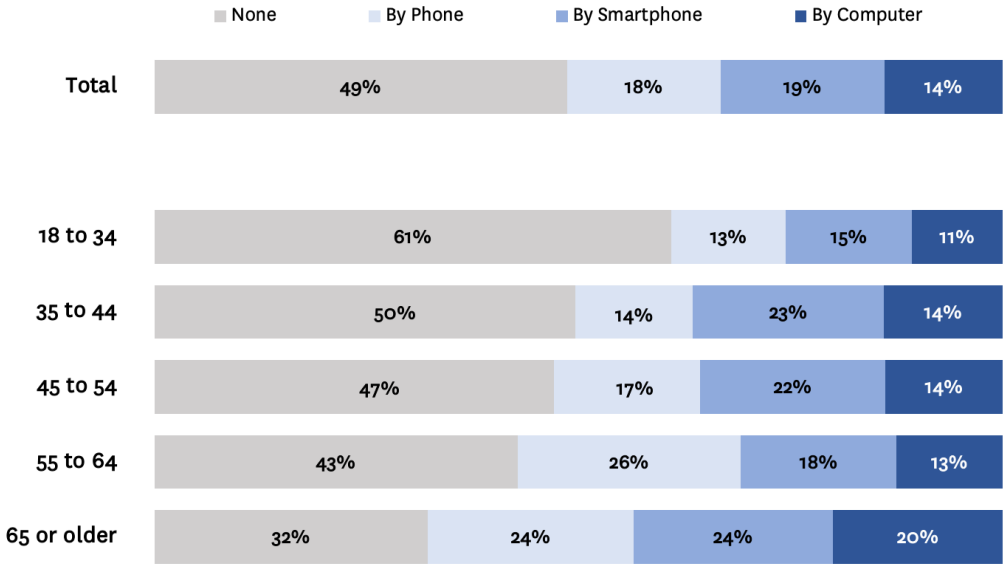
[3] Park J, Erikson C, Han X, Iyer P. Are state telehealth policies associated with the use of telehealth services among underserved populations? Health Aff (Millwood). 2018;37(12):2060–8.

[4] Delivering on the Promise of Telehealth to Improve Health Status in California. Available at https://www.cetfund.org/report/delivering-on-the-promise-of-telehealth-to-improve-health-status-in-california/

While this disparity appears to continue when telehealth access is assessed by age (Figure 5), this may also reflect differences in the distribution of health visits by age. The group that reported the largest share of telehealth utilization were individuals aged 65 and older (67%), which is notable given their lower levels of overall broadband access and utilization. Because older individuals may have more health care appointments, they may also have more opportunities to receive telehealth care.

Figure 5

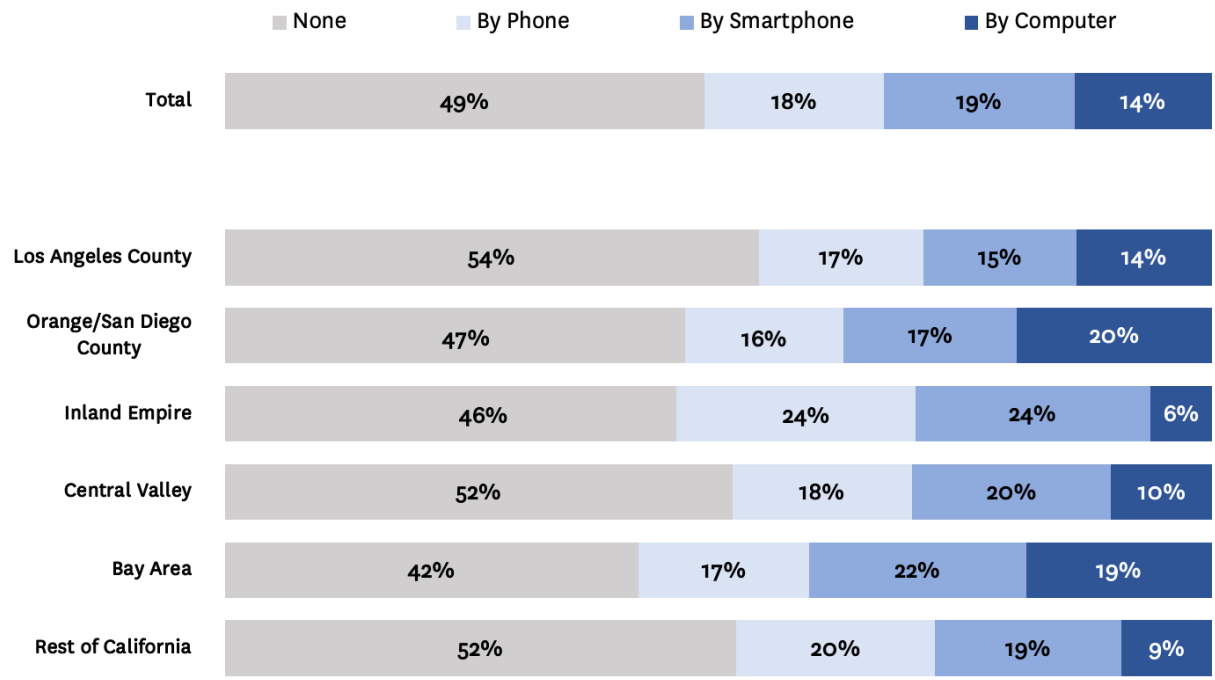
Telehealth utilization by age group



As shown in Figure 6 (page 6), Los Angeles County residents report the lowest telehealth adoption with 46% reporting contact through a phone, smartphone, or computer device. In comparison, Bay Area residents had the highest telehealth care with 58% reporting use of a phone, smartphone, or computer device when communicating with their healthcare provider. In areas where medical care is less accessible to residents including the Central Valley and Inland Empire, close to half of the respondents were able to access telehealth care. It should be noted that a large portion of the rest of California reported having no telehealth access (52%). Many of these residents live in California's rural areas that were primary targets for the initial federal telehealth expansion efforts because access to in-person healthcare was documented to be insufficient.

Figure 6

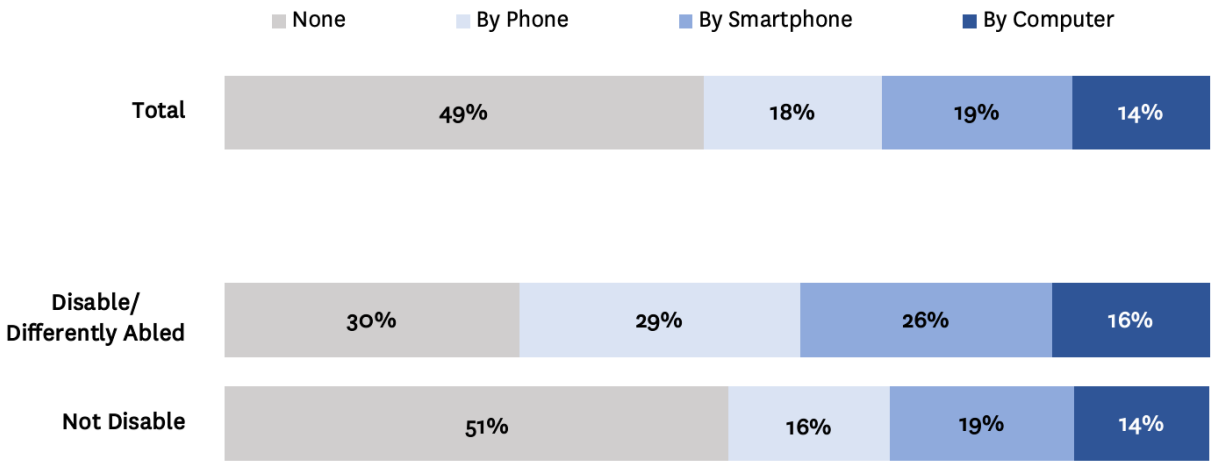
Telehealth utilization by region



One area where telehealth access appears to be meeting an important need is in the area of disability access. Seventy percent of disabled or differently abled respondents were able to utilize care and consultation via telehealth (Figure 7). This is important as these individuals may have difficult transportation needs, higher health needs, or specialty health needs.

Figure 7

Telehealth utilization by disability status



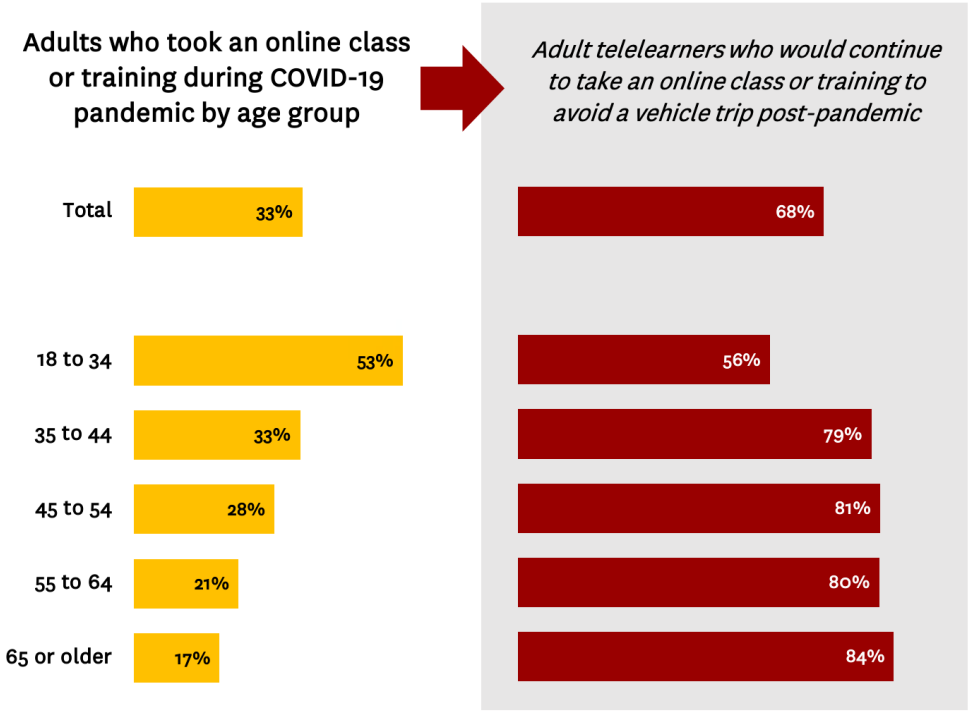
Finally, the survey reveals that the majority of respondents who did access telehealth services did so via their phones or smartphone, which can provide a less than optimal user experience. This finding calls for renewing efforts to transition telehealth services to alternatives based on devices with larger screens and expanded capabilities, as well as more robust residential broadband connections.

A THIRD OF ADULTS IN CALIFORNIA WITH INTERNET AT HOME HAVE TAKEN AN ONLINE CLASS OR TRAINING DURING THE COVID-19 PANDEMIC, AND TWO THIRDS OF THEM INDICATE THEY WOULD CONTINUE REMOTE LEARNING POST-PANDEMIC.

The COVID-19 pandemic has mainstreamed remote learning not just for children but also among adults, thus increasing reliance on broadband and computing devices for learning. Nearly a third of adults have taken an online class or training during the pandemic, and nearly two thirds would continue remote learning post-pandemic if given the opportunity. Though younger adults were more likely to engage in remote learning (54%), they are the least interested in continuing to learn online post-pandemic (56%) (Figure 8). In contrast, 84% of adults 65 years or older indicate that they expect to continue taking classes or training remotely. While this possibly reflects differences in the types of remote learning activities across age groups, the findings suggest both an opportunity and a need to improve digital readiness among older adults to ensure greater access to online learning opportunities.

Figure 8

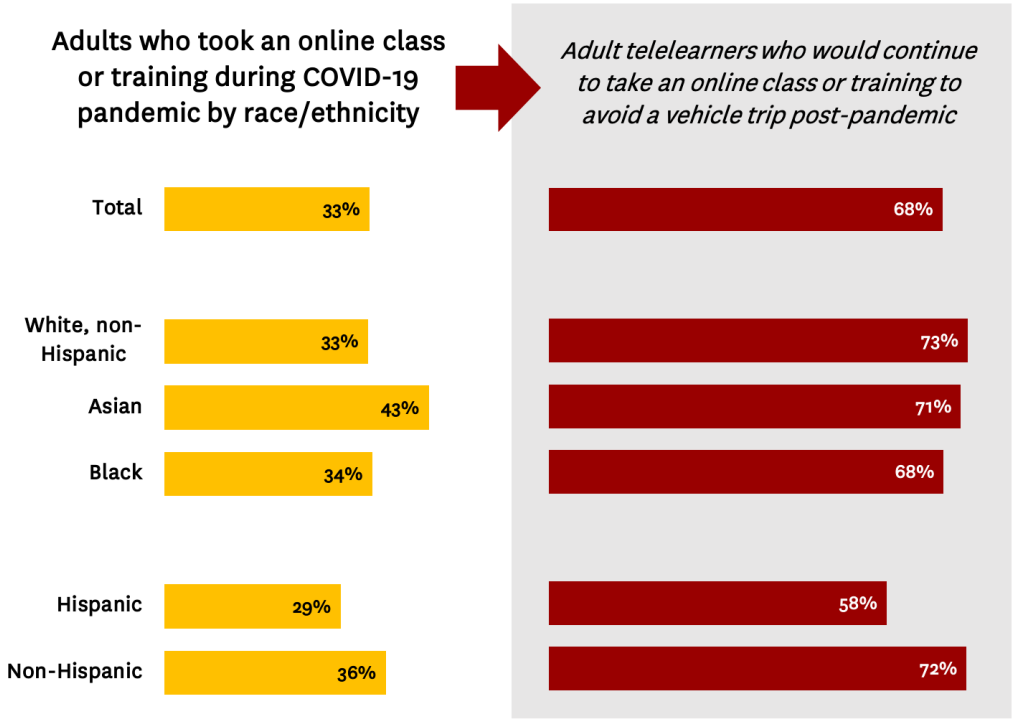
Adults who took an online class or training during COVID-19 pandemic by age group



There are also racial/ethnic disparities in remote learning (Figure 9). More than 40% of Asian adults were learning remotely during this time, compared to less than 30% of Hispanic adults. Among telelearners, Hispanic adults are the least likely to continue remote learning post-pandemic. Access to online learning opportunities is a growing concern as it may reflect underlying differences in broadband access at home for different racial/ethnic groups. As institutions consider a move to online and hybrid models of learning post-pandemic, greater investment in communities with lower broadband and computer adoption would be needed to improve access to education.

Figure 9

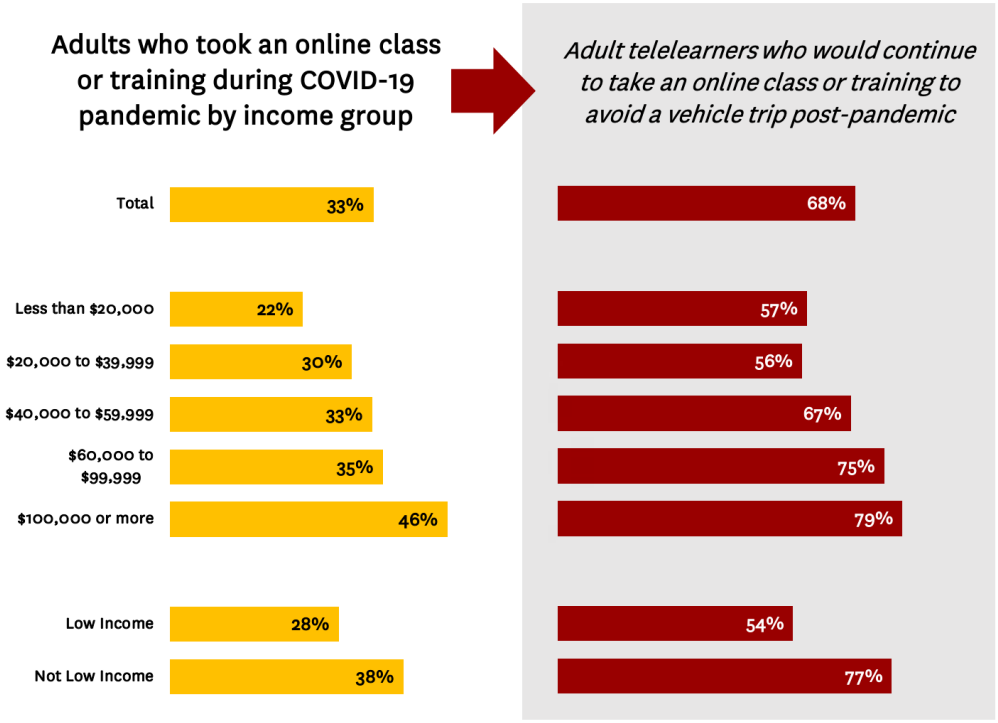
Adults who took an online class or training during COVID-19 pandemic by race/ethnicity



Similarly, adults from lower-income households were less likely to have engaged in online learning, and report to be less likely to continue to do so post-pandemic (Figure 10, page 9). Less than a quarter of adults with household incomes below $20,000 have taken an online class or training during the pandemic, compared to nearly half of adults with annual incomes above $100,000. In addition, more affluent households are more likely to continue remote learning post-pandemic, which partly reflect differences in the availability of remote learning infrastructure (computer device and broadband access) at home.

Figure 10

Adults who took an online class or training during COVID-19 pandemic by income group



CALIFORNIANS EXPECT A LARGE REDUCTION IN MILES TRAVELED TO WORK, EDUCATION AND HEALTHCARE SITES POST-PANDEMIC.

The expansion of broadband-enabled activities during the COVID-19 pandemic holds significant potential for reducing transit congestion and vehicle miles traveled in California. The survey assessed this potential by asking respondents to estimate the extent to which they expect to reduce vehicle trips to work, healthcare and learning sites post-pandemic relative to pre-pandemic levels (Figure 11, page 10). Overall, online learning holds the most potential for trip reductions, with 45% of respondents expecting to reduce their trips to learning sites by at least 75% (high reduction), and nearly a quarter expecting to reduce by at least 50% (medium).

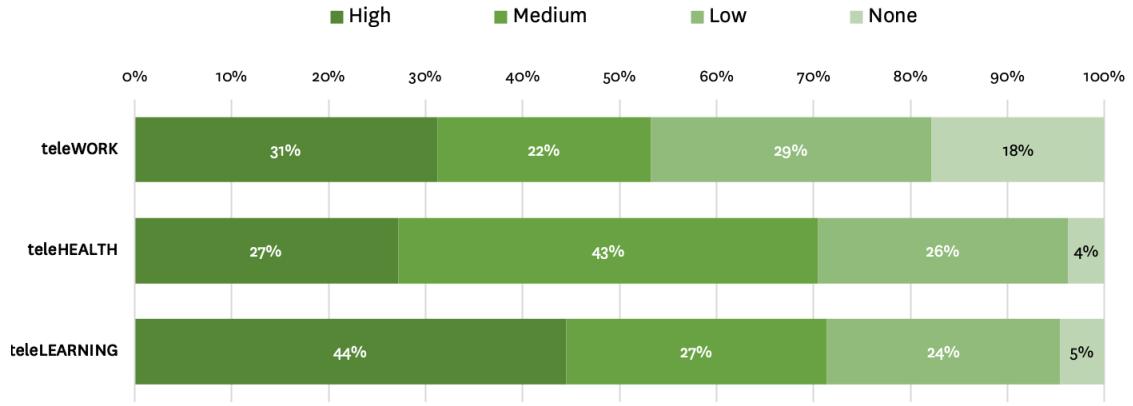
The estimates are slightly lower for remote work, but they still suggest a very large drop in vehicle trips to worksites relative to pre-pandemic levels. Nearly a third of respondents expect to reduce more than 10 trips to work per week (high reduction), while nearly a quarter expects a reduction of between 6 and 10 commuting trips per week (medium reduction). The largest drop in commuting trips is expected among workers 55 and older, as well as those with higher income.

Overall, assuming a pattern of commute to work 5 days per week, the findings suggest that remote work arrangements could offset about 55% of commute trips relative to pre-pandemic levels. Given that trips to work represent the largest volume of miles traveled, these results

suggest a significant potential for telework to alleviate transit congestion and reduce carbon emissions in California. To realize this potential, however, equitable investments in broadband infrastructure and adoption programs will be needed to ensure that remote work opportunities are available to all. While health and education-related travel constitute a smaller share of overall trip miles than work-related travel, our findings suggest that telehealth and telelearning hold similar potential for trip reduction (55% and 49% respectively).

Figure 11

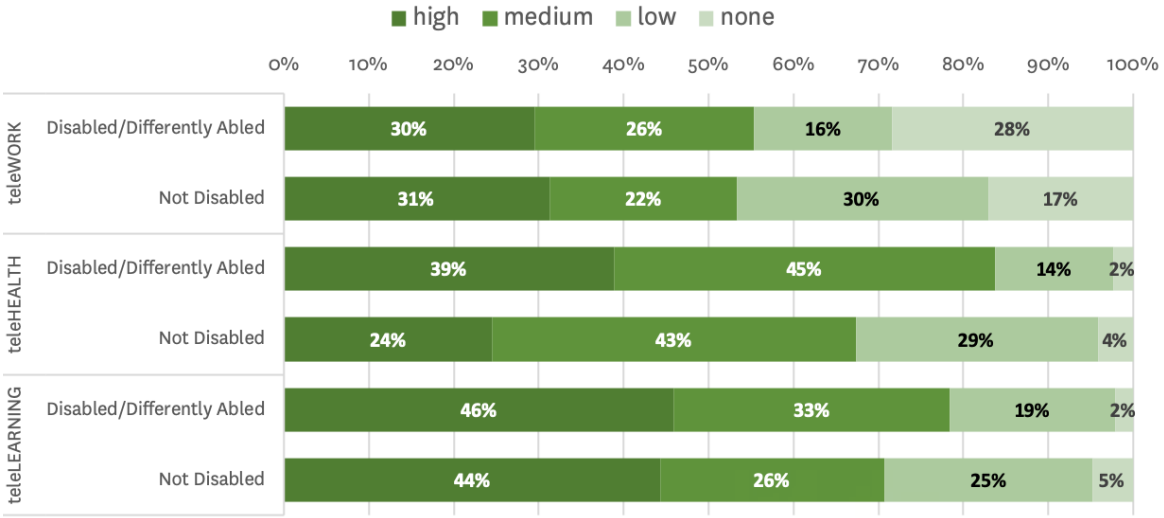
Expected reduction in vehicle trips by activity



Finally, the findings also reveal the potential for broadband to improve healthcare access and increase learning opportunities among those with disabilities or differently abled. A vast majority of this group (84%) expects that telehealth will allow a reduction in trips to healthcare sites by at least half, thus greatly facilitating access to healthcare services (Figure 12). Similarly, 79% of respondents in this group expect to reduce trips to educational sites by at least half, thereby expanding learning opportunities.

Figure 12

Expected reduction in vehicle trips by activity and disability status



ABOUT THE STUDY

- Sample size: 1,650 California residents (age 18 and older)
- Sampling method: random-digit dialing (RDD) of cellphones and landlines
- Languages: English, Spanish, Mandarin, Vietnamese
- Margin of error: ~2% for 95% confidence level
- Weighting: results were adjusted for age, gender, race/ethnicity, education and region based on totals from the American Community Survey (ACS)
- Fieldwork dates: February 10-March 22, 2021
- Funding: California Emerging Technology Fund

ABOUT THE TEAM

This report was prepared by Associate Professor Hernan Galperin (USC Annenberg), Professor François Bar (USC Annenberg), Associate Professor Dorian Traube (USC Dworak Peck School of Social Work), and doctoral candidate Thai Le (USC Price School of Public Policy).

FURTHER INQUIRIES

Hernan Galperin
Associate Professor
USC Annenberg School for Communication
University of Southern California
email: hgalperi@usc.edu
twitter: @hernangalperin
web: annenberg.usc.edu/faculty/hernan-galperin


USC University of
Southern California


USC Annenberg
School for Communication
and Journalism


CETF
CALIFORNIA EMERGING TECHNOLOGY FUND