Emergency federal waivers and modifications by private insurers allowed reimbursement for audio-only telehealth visits during the COVID-19 pandemic.\textsuperscript{1,2} In November 2021, the Centers for Medicaid and Medicare Services (CMS) issued a final rule making reimbursement permanent for certain audio-only tele-mental health visits.\textsuperscript{2} However, CMS reimbursement for other audio-only telehealth visits will expire at the end of the COVID-19 public health emergency and reimbursement plans from other payers remain uncertain.\textsuperscript{2} Previous work has examined digital access among Medicare beneficiaries,\textsuperscript{3} yet there has been limited study of how eliminating audio-only telehealth would affect disparities in telehealth accessibility more broadly in the USA.

METHODS

This cross-sectional study used data from the Public Use Microdata Sample (PUMS) of the 2019 American Community Survey (ACS), a representative survey of US households conducted by the Census Bureau.\textsuperscript{4} Responses from households in the 50 states and District of Columbia were weighted accounting for the complex design of the ACS. Group quarters and households with missing or suppressed data about internet or telephone access were excluded. The proportions of individuals with household access to internet (from any source except dial-up), telephone, internet or telephone, and telephone without internet were determined for each demographic and socioeconomic group.

Logistic regression models were used to test the hypothesis that the proportion of individuals with telephone but not internet access varied between socioeconomic/demographic groups. The significance level was set at $\alpha = 0.05$. Variances were estimated using successive difference replication.\textsuperscript{4} Data was analyzed from September 15, 2021 to March 28, 2022 using R software, version 4.0.3 (R Foundation for Statistical Computing). The study was determined to be exempt from review by the Centre for Addiction and Mental Health Research Ethics Board. The report follows the Strengthening the Reporting of Observational Studies in Epidemiology guidelines.

RESULTS

After exclusions, the PUMS contained responses from 3,084,218 individuals, who represented 319,769,714 US residents when weighted. A total of 99.5% (95% CI: 99.4–99.5%) of US residents lived in households with telephone or internet access. A total of 7.4% (95% CI: 7.3–7.5%) of residents lived in households with access to telephone service but not the internet (Table 1).

Eliminating audio-only options would have significantly different impacts on in-home accessibility of telehealth across demographic and socioeconomic groups ($p < 0.001$ for all comparisons) (Table 1). Among racial/ethnic groups, Hispanic individuals would have the greatest reduction in potential to access in-home telehealth (19.4%, 95% CI: 18.9–19.9%) followed by non-Hispanic Black individuals (10.2%, 95% CI: 10.0–10.5%). Reductions in potential to access care would disproportionately affect individuals who are over age 80, who have household incomes under $25,000, who receive healthcare through the VA, the Indian Health Service, Medicare, or Medicaid, and who do not have health insurance (Table 1).

DISCUSSION

This study found that several groups of individuals would disproportionately lose the ability to access telehealth from their homes if audio-only care is eliminated, including approximately 1 in 5 Hispanic individuals, 1 in 10 non-Hispanic Black individuals, 1 in 5 individuals with household incomes under $25,000, and 3 in 10 individuals aged 80 and over. Approximately 1 in 200 US residents (1.6 million US residents) did not have access to either telephone or internet service in their homes in 2019.

These findings are consistent with real-world experience from 41 California Federally Qualified Health Centers, which provide care to low-income individuals. Between March and August 2020, 48.5% of primary care visits were via telephone compared with 3.4% by video.\textsuperscript{5} The results of these studies...
| Race/ethnicity | All | Sex | Age | Household income |
|---------------|-----|-----|-----|------------------|
|               | Any type of telephone or internet access | Telephone access | Internet access | Access to telephone but not internet | p-value |
|               | 99.5% (99.4–99.9%) | 99.2% (99.2–99.2%) | 92.2% (92.1–92.3%) | 7.4% (7.3–7.5%) | NA |
| Male | 99.5% (99.5–99.9%) | 99.3% (99.2–99.3%) | 92% (91.9–92.1%) | 7.6% (7.5–7.7%) | < 0.001 |
| Female | 99.4% (99.4–99.4%) | 99.2% (99.1–99.2%) | 92.4% (92.3–92.5%) | 7.1% (7.0–7.2%) | < 0.001 |
| Hispanic | 97.9% (97.6–98.1%) | 97.6% (97.4–97.7%) | 78.6% (78.0–79.1%) | 19.4% (18.9–19.9%) | < 0.001 |
| Non-Hispanic | 99.3% (99.2–99.3%) | 99.2% (99.1–99.1%) | 89.1% (88.9–89.4%) | 10.2% (10.0–10.5%) | < 0.001 |
| Black | 99.5% (99.5–99.5%) | 99.3% (99.3–99.3%) | 93% (92.9–93.1%) | 6.6% (6.5–6.7%) | < 0.001 |
| Other non-Hispanic | 99.5% (99.4–99.5%) | 99.2% (99.1–99.2%) | 93.1% (92.9–93.3%) | 6.4% (6.2–6.6%) | < 0.001 |
| Health insurance | 98.5% (98.4–98.6%) | 98.2% (98.1–98.3%) | 87.1% (86.8–87.3%) | 11.5% (11.3–11.8%) | < 0.001 |
| No insurance | 99.9% (99.7–99.8%) | 99.6% (99.5–99.6%) | 96.1% (96.0–96.2%) | 3.7% (3.6–3.8%) | < 0.001 |
| Purchased directly from insurance company | 99.6% (99.6–99.6%) | 99.3% (99.3–99.4%) | 90.9% (90.7–91%) | 8.8% (8.7–8.9%) | < 0.001 |
| Medicare | 99.2% (99.1–99.2%) | 98.9% (98.9–98.9%) | 81.9% (81.7–82.0%) | 17.4% (17.2–17.5%) | < 0.001 |
| Medicaid | 99.1% (99.1–99.2%) | 98.8% (98.7–98.9%) | 87.3% (87.1–87.5%) | 12.0% (11.8–12.2%) | < 0.001 |
| TRICARE | 99.7% (99.6–99.7%) | 99.4% (99.3–99.5%) | 94.0% (93.8–94.2%) | 5.7% (5.5–5.9%) | < 0.001 |
| VA | 99.3% (99.2–99.4%) | 99.0% (98.9–99.1%) | 87.3% (87.0–87.7%) | 12.0% (11.7–12.3%) | < 0.001 |
| Indian Health Service | 98.0% (97.4–98.4%) | 97.6% (97.9–98.1%) | 80.1% (79.1–81%) | 18.0% (17.1–18.9%) | < 0.001 |
| Age | 0 – 9 | 99.5% (99.5–99.6%) | 99.3% (99.2–99.3%) | 94.3% (94.2–94.5%) | 5.2% (5.1–5.4%) | < 0.001 |
| 10 – 19 | 99.6% (99.6–99.6%) | 99.4% (99.3–99.4%) | 95.3% (95.1–95.4%) | 4.4% (4.2–4.5%) | < 0.001 |
| 20 – 29 | 99.5% (99.5–99.6%) | 99.3% (99.2–99.3%) | 95.2% (95.1–95.4%) | 4.4% (4.2–4.5%) | < 0.001 |
| 30 – 39 | 99.5% (99.5–99.6%) | 99.3% (99.3–99.3%) | 95.1% (94.9–95.2%) | 4.5% (4.4–4.7%) | < 0.001 |
| 40 – 49 | 99.5% (99.5–99.6%) | 99.3% (99.2–99.3%) | 94.8% (94.6–94.9%) | 4.8% (4.7–5%) | < 0.001 |
| 50 – 59 | 99.4% (99.4–99.5%) | 99.2% (99.1–99.2%) | 92.4% (92.3–92.6%) | 7.1% (6.9–7.2%) | < 0.001 |
| 60 – 69 | 99.4% (99.4–99.4%) | 99.1% (99.1–99.2%) | 89.5% (89.4–89.7%) | 9.9% (9.7–10.1%) | < 0.001 |
| 70 + | 99.3% (99.3–99.4%) | 99.1% (99.0–99.1%) | 83.7% (83.5–83.9%) | 15.7% (15.5–15.9%) | < 0.001 |
| Household income | 98.5% (98.4–98.6%) | 98.3% (98.2–98.4%) | 68.1% (67.7–68.5%) | 30.5% (30.3–30.9%) | < 0.001 |
| Under $25,000 | 98.2% (98.1–98.3%) | 97.7% (97.6–97.8%) | 76.3% (76.1–76.6%) | 22.0% (21.7–22.3%) | < 0.001 |
| $25,000–$49,999 | 99.3% (99.2–99.3%) | 99.0% (98.9–99.0%) | 87.2% (87.0–87.4%) | 12.2% (12.0–12.4%) | < 0.001 |
| $50,000–$74,999 | 99.6% (99.5–99.6%) | 99.4% (99.3–99.4%) | 93.2% (93.0–93.4%) | 6.5% (6.3–6.7%) | < 0.001 |
| $75,000–$99,999 | 99.7% (99.7–99.7%) | 99.5% (99.4–99.5%) | 95.7% (95.6–95.9%) | 4.0% (3.9–4.2%) | < 0.001 |
| $100,000 and over | 99.8% (99.8–99.8%) | 99.7% (99.6–99.7%) | 98.0% (97.9–98.0%) | 1.9% (1.8–2.0%) | < 0.001 |

*Individuals living in group quarters and households with vacant or suppressed answers about telephone or internet access were excluded

*bInternet access includes broadband internet, cellular data, satellite internet, internet not obtained through paid subscription and other sources of household internet, but does not include dial-up

*cSeparate logistic regression models were generated for each demographic or socioeconomic characteristic (bolded). p-values reflect differences across groups in the proportion of individuals with household access to telephone service but not the internet

*dRace and ethnicity were determined based on responses to the American Community Survey. Individuals with multiple races were included in each identified group

*eInsurance groups are not mutually exclusive

*fMedicaid or other forms of “government-assistance plan for those with low incomes or a disability”

*gTRICARE or other military-provided health insurance
suggest that removing the option for audio-only telehealth may exacerbate existing disparities in access to healthcare.

This study had several limitations. The ACS does not contain information about individuals’ ability to use telehealth technologies or platforms and under-represents people experiencing homelessness because of its household-based sampling design. The 2019 ACS does not reflect impacts from the COVID-19 pandemic. Multiple non-technological barriers also impact patients’ ability to access telehealth services. Although some healthcare services can be provided via telephone, audio-only care is not a substitute for all video-based telehealth, and efforts to reduce disparities in internet access remain important for improving the equitability of telehealth access.

Robert A. Kleinman, MD 1,2
Marcos Sanches, MSc 1

1Centre for Addiction and Mental Health, Toronto, ON M6J 1H4, Canada
2Department of Psychiatry, University of Toronto, Toronto, ON, Canada

Corresponding Author: Robert A. Kleinman, MD; Centre for Addiction and Mental Health, Toronto, ON M6J 1H4, Canada (e-mail: robert.kleinman@camh.ca).

Funding This project received funding support from R25DA033211 (NIDA).

Declarations:

Conflict of interest: Dr. Kleinman has received funding for research, meeting attendance, and educational support through the Research in Addiction Medicine Scholars Program, R25DA033211 (NIDA) and travel awards from the American Psychiatric Association and American Academy of Addiction Psychiatry. The biostatistics office at the Centre for Addiction and Mental Health, which employs Mr. Sanches, received reimbursement for assistance with this project. Mr. Sanches did not receive any personal compensation.

REFERENCES

1. Patel SY, Mehrotra A, Huskamp HA, Uscher-Pines L, Ganguli I, Barnett ML. Variation In Telemedicine Use And Outpatient Care During The COVID-19 Pandemic In The United States. Health Aff (Millwood). 2021;40(2):349-358. https://doi.org/10.1377/hlthaff.2020.01786
2. Centers for Medicare & Medicaid Services. Medicare Program; CY 2022 Payment Policies Under the Physician Fee Schedule and Other Changes to Part B Payment Policies; Medicare Shared Savings Program Requirements; Provider Enrollment Regulation Updates; and Provider and Supplier Prepayment and Post-Payment Medical Review Requirements. Fed Regist. 2021;86(221):64996-66031.
3. Roberts ET, Mehrotra A. Assessment of Disparities in Digital Access Among Medicare Beneficiaries and Implications for Telemedicine. JAMA Intern Med. 2020;180(10):1386-1389. https://doi.org/10.1001/jamainternmed.2020.2666
4. U.S. Census Bureau. American Community Survey. The United States Census Bureau. Accessed December 13, 2021. https://www.census.gov/programs-surveys/acs
5. Uscher-Pines L, Sousa J, Jones M, et al. Telehealth Use Among Safety-Net Organizations in California During the COVID-19 Pandemic. JAMA 2021;325(11):1106-1107. https://doi.org/10.1001/jama.2021.0292
6. Almathami HKY, Win KT, Vlahu-Gjorgievska E. Barriers and Facilitators That Influence Telemedicine-Based, Real-Time, Online Consultation at Patients’ Homes: Systematic Literature Review. J Med Internet Res. 2020;22(2):e16407. https://doi.org/10.2196/16407

Publisher’s Note: Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.