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## Declines in Telemedicine Use Among Adults: United States, 2021 and 2022

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### Abstract

*Objective*—This report examines changes in telemedicine use among U.S. adults between 2021 and 2022 by selected sociodemographic and geographic characteristics.

*Methods*—Data from the 2021 and 2022 National Health Interview Survey were used to assess changes between these 2 years in the percentage of adults who used telemedicine in the previous 12 months, by sex, age, race and Hispanic origin, family income, education, region of residence, urbanization level, and health insurance coverage.

*Results*—Overall, the percentage of adults who used telemedicine in the past 12 months decreased from 37.0% in 2021 to 30.1% in 2022. This pattern was observed across several sociodemographic and geographic characteristics, such as sex, family income, education, region, and urbanization level. Women, adults with a college degree or higher, and adults living in more urban areas were all more likely to use telemedicine in 2022. In 2021 and 2022, uninsured adults ages 18–64 were less likely to use telemedicine compared with those who had private or public insurance, while adults age 65 and older who had Medicare only were less likely to use telemedicine compared with those with other types of insurance. However, for both age groups, telemedicine use decreased from 2021 to 2022 for all insurance types except public coverage for adults ages 18–64.

*Summary*—National Health Interview Survey data may be used to monitor national trends and understand patterns of telemedicine use by sociodemographic and geographic characteristics as the transition forward from the global COVID-19 pandemic continues.

**Keywords:** telehealth • COVID-19 pandemic • health care access • National Health Interview Survey (NHIS)

### Introduction

Telemedicine is the remote delivery of clinical health services to patients without an in-person office visit, using a telephone, tablet, or computer (1). Before the COVID-19 pandemic, telemedicine was viewed as an efficient, cost-effective way to help address healthcare provider shortages (2), provide healthcare access to rural and underserved communities (3,4), and meet critical healthcare needs during public health emergencies and natural disasters (5,6). Following the federal emergency declaration of the COVID-19 pandemic in March 2020 (7), changes to laws governing reimbursement for virtual health services (8,9) led to the rapid expansion of telemedicine use and redefined the delivery of healthcare services in the United States.

Analyses of telehealth provider data from early in the pandemic indicated that the number of telemedicine encounters increased sharply during March 2020 compared with January and February and with the same time period in 2019, as healthcare providers shifted to virtual services to limit transmission of the virus (10). In part due to emergency policy changes, Medicare beneficiary data from early in the pandemic



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also showed substantial increases in telemedicine visits, with nearly one-half of all Medicare primary visits (43%) provided by telemedicine (11) and a 63-fold increase in Medicare beneficiary telemedicine visits over 2019 data (12). However, data from an experimental online survey designed to track real-time national trends throughout the pandemic showed that telemedicine use among adults declined in 2021 and 2022 (13,14). Commercially available health marketing research data confirm that telemedicine use decreased significantly in 2022 from peak use in 2020 (15). Reasons for the overall decline in telemedicine use are multifaceted and include inadequate reimbursement for telemedicine visits, particularly telephone-only visits (14).

Despite declines in telemedicine use since the beginning of the COVID-19 pandemic, research suggests it continues to be an important means of healthcare access and will remain so as the transition forward from the pandemic continues (16). The Healthy People 2030 objectives identify increased use of telemedicine to improve access to care as a priority public health issue for which data are needed (17). Nationally representative data from established health surveys are often considered the gold standard and are a key source to monitor and understand telemedicine use in the adult population over time. This report provides national prevalence estimates of telemedicine use among adults age 18 and older by selected sociodemographic and geographic characteristics from the 2022 National Health Interview Survey (NHIS) and examines changes in the prevalence of telemedicine use among adults by comparing 2022 estimates with previously published 2021 NHIS estimates (18).

## Methods

### Data source

Data from the 2021 and 2022 NHIS were used for this analysis. NHIS is a nationally representative household survey of the U.S. civilian noninstitutionalized population. It is conducted continuously throughout the year by the National Center for Health

Statistics. Interviews are typically conducted in respondents' homes, but follow-ups to complete interviews may be conducted over the telephone. Due to the COVID-19 pandemic, in both 2021 and 2022, Sample Adult interviews were conducted partially by telephone (62.8% and 55.7%, respectively) (19,20). For more information about NHIS, visit <https://www.cdc.gov/nchs/nhis.htm>.

## Measures

### Telemedicine use

Telemedicine use was based on a yes response to the question, "During the past 12 months, have you had an appointment with a doctor, nurse, or other health professional by video or by phone?"

### Selected sociodemographic and geographic characteristics

Sociodemographic measures included age group (18–29, 30–44, 45–64, and 65 and older), sex, race and Hispanic origin, family income as a percentage of the federal poverty level (FPL), education, region, urbanization level, and health insurance coverage (for ages 18–64 and 65 and older).

*Education*—Categories of education are based on years of school completed or the highest degree obtained for adults age 25 and older. The high school diploma category includes those who obtained a GED.

*Family income*—Family income as a percentage of FPL was calculated using the U.S. Census Bureau's poverty thresholds for the previous calendar year, which consider family size and age (21). For this analysis, family income was grouped into four categories: less than 100% FPL, 100% to less than 200% FPL, 200% to less than 400% FPL, and 400% FPL or more. Family income was imputed when missing (22,23).

*Health insurance coverage (ages 18–64)*—Health insurance coverage is based on reported status at the time of interview, based on a hierarchy of mutually exclusive categories. Private insurance includes plans obtained through an employer, purchased directly, or received through local or community programs. Public coverage includes

Medicaid or other state-sponsored health plans among adults without private insurance. In addition to adults without coverage, uninsured includes a very small percentage of adults who only had Indian Health Service coverage or a private plan that paid for one type of service such as dental or vision care. Total includes other types of health insurance coverage not shown separately.

*Health insurance coverage (age 65 and older)*—Based on a hierarchy of mutually exclusive categories. Adults age 65 and older with more than one type of health insurance were assigned to the first appropriate category in this hierarchy: private, Medicare and Medicaid, Medicare Advantage, Medicare only excluding Medicare Advantage, other coverage, or uninsured. When both private insurance and Medicare Advantage are reported, the person is categorized as having Medicare Advantage. Uninsured includes adults who had no coverage as well as those who had only Indian Health Service coverage or a private plan that paid for one type of service such as dental or vision care.

*Race and Hispanic origin*—Respondents were grouped into five categories: American Indian and Alaska Native non-Hispanic (subsequently, American Indian and Alaska Native), Asian non-Hispanic (subsequently, Asian), Black or African American non-Hispanic (subsequently, Black), White non-Hispanic (subsequently, White), or Hispanic or Latino. These categories were based on responses to two survey questions asking about race and Hispanic or Latino origin, where those characterized as Hispanic or Latino could be of any race or combination of races. Estimates for non-Hispanic adults of races other than American Indian and Alaska Native only, Asian only, Black only, or White only, and those of multiple races, are not shown but are included in total estimates. Analyses were limited to the race and Hispanic-origin groups for which data were reliable and sufficiently powered to make group comparisons.

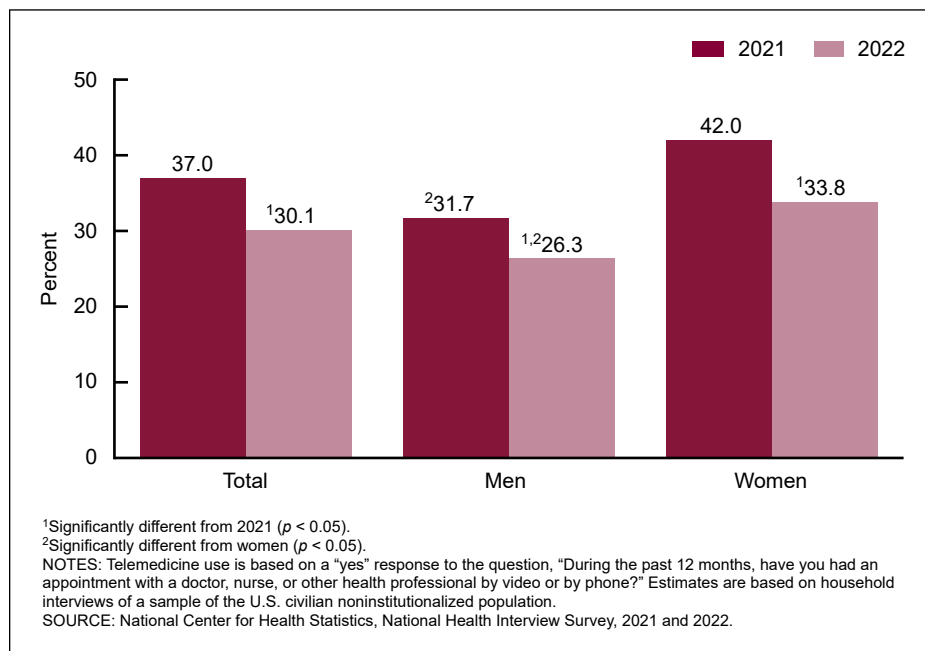
**Region**—Based on four regions used by the U.S. Census Bureau, which groups states and the District of Columbia as: 1) Northeast—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; 2) Midwest—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; 3) South—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and 4) West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

**Urbanization level**—Categorized using the six-level 2013 NCHS Urban–Rural Classification Scheme for Counties (24): 1) large central metropolitan areas, which are counties in metropolitan statistical areas of 1 million or more population; 2) large fringe metropolitan areas, which are counties in metropolitan statistical areas of 1 million or more population that did not qualify as large central metropolitan counties; 3) medium metropolitan areas, which are counties in metropolitan statistical areas of populations of 250,000 to 999,999; 4) small metropolitan areas, which are counties in metropolitan statistical areas of populations of less than 250,000; 5) micropolitan areas, which are counties in micropolitan statistical areas; and 6) noncore areas, which are nonmetropolitan counties that did not qualify as micropolitan counties.

## Statistical analyses

The percentage of U.S. adults who used telemedicine in the past 12 months during 2021 and 2022 is presented in the Table and in Figures 1–5. These estimates exclude unknown values from the denominators (less than 1% missing or unknown). Differences between percentages were assessed with two-sided pairwise tests at the 0.05 alpha level. Linear and quadratic trends within years (or for each year) by age, family income, education, and urbanization level were evaluated using orthogonal polynomials in logistic regression.

**Figure 1. Percentage of adults age 18 and older who used telemedicine in the past 12 months, by sex: United States, 2021 and 2022**



Differences between percentages for all groups for 2021 compared with 2022 and within years for sex, race and Hispanic origin, region, and health insurance were evaluated using two-sided significance tests at the 0.05 level.

All estimates were weighted and calculated using SAS-callable SUDAAN software (25) to account for the complex sample design of NHIS. All estimates meet National Center for Health Statistics data presentation standards for proportions (26). Previously published estimates of telemedicine use for adults from the 2021 NHIS (18) are presented for comparison with 2022 data.

## Results

In 2022, 30.1% of adults used telemedicine in the past 12 months, a significant decrease from 37.0% in 2021 (Table, Figure 1). Telemedicine use declined for both men and women in 2022 compared with 2021, from 31.7% to 26.3% for men and from 42.0% to 33.8% for women. Women were more likely to use telemedicine than men in 2021 and 2022.

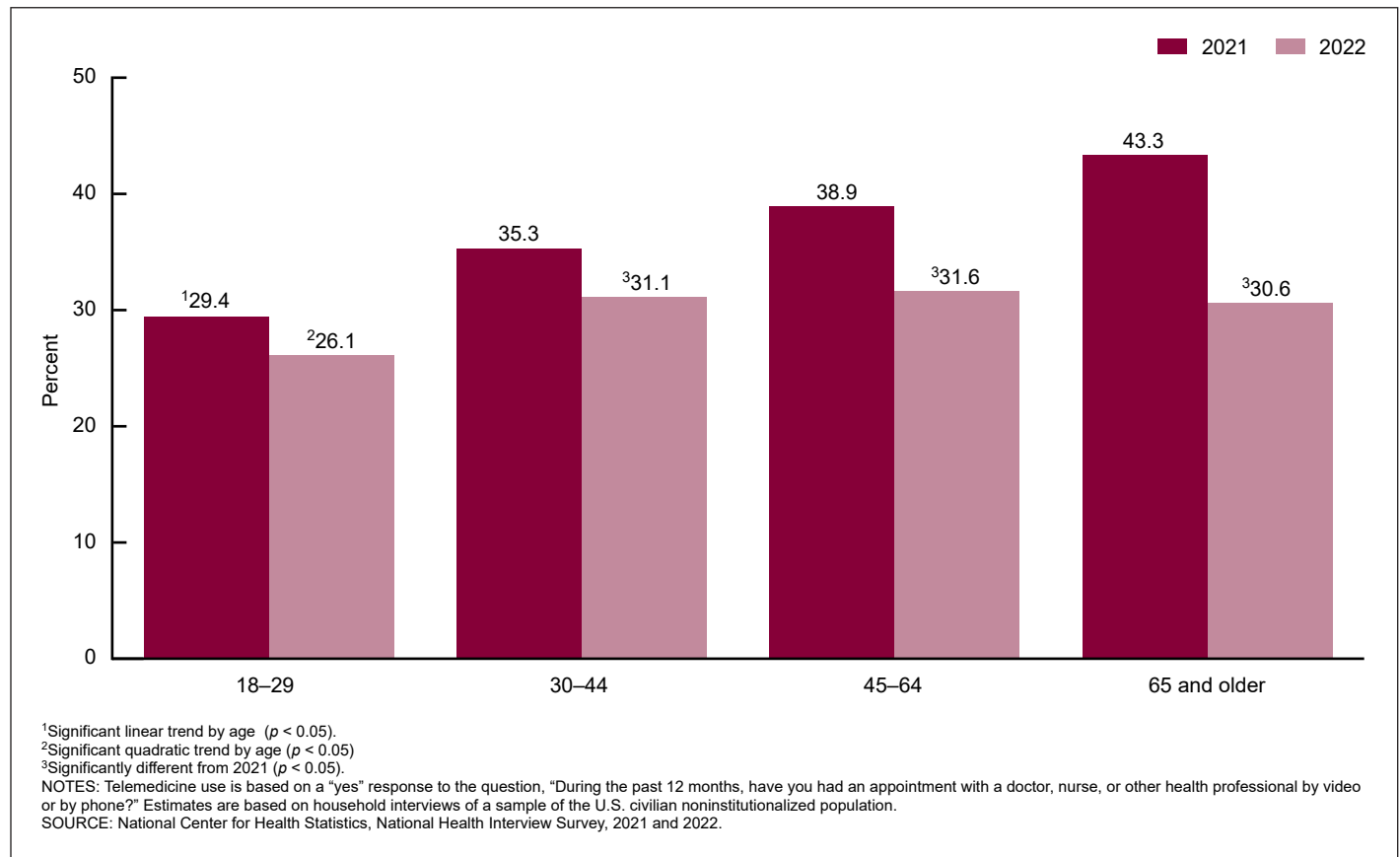
Comparisons of the 2021 and 2022 data within each age category show that while the decrease in 2022 was not significant for adults ages 18–29, adults ages 30–44, 45–64, and 65 and older were all significantly less likely

to use telemedicine in 2022 compared with 2021 (Table, Figure 2). In 2021, telemedicine use increased significantly with age, from 29.4% among adults ages 18–29 to 43.3% among adults age 65 and older. This pattern differed in 2022, with telemedicine use higher among adults age 30 and older compared with those younger than 30.

In 2022, telemedicine use decreased significantly for Black, White, and Hispanic adults compared with 2021 (Table, Figure 3). The observed differences for American Indian and Alaska Native and Asian adults were not significant. In 2021, both White (39.2%) and American Indian and Alaska Native (40.6%) adults were more likely to use telemedicine than Asian (33.0%), Black (33.1%), and Hispanic (32.8%) adults. However, in 2022, White adults were significantly more likely to use telemedicine than Hispanic adults (31.5% compared with 26.7%), but their usage was similar to American Indian and Alaska Native (30.1%) and Asian (29.5%) adults. The observed difference between White and Black adults was not significant.

Adults were significantly less likely to use telemedicine in 2022 than 2021 at each level of family income (Table). In 2021, the highest level of telemedicine use was among adults with family

**Figure 2. Percentage of adults age 18 and older who used telemedicine in the past 12 months, by age: United States, 2021 and 2022**



incomes at 400% FPL or more (40.7%) and lowest among adults with incomes 100% to less than 200% FPL (32.1%). A similar pattern was observed in 2022.

In 2022, adults were less likely to use telemedicine than adults in 2021 at each level of education (Table, Figure 4). Telemedicine use increased with increasing education in both 2021 (28.7% in those with less than a high school diploma or GED to 43.2% among those with a college degree or higher) and 2022 (21.9% to 36.4%).

Telemedicine use decreased between 2021 and 2022 in all regions (Table). In both years, the prevalence of telemedicine use was higher among adults living in the Northeast (40.0% in 2021 compared with 34.6% in 2022) and the West (42.4% compared with 36.3%), than among those living in the Midwest and the South (33.3% and 34.3%, respectively, in 2021 compared with 26.7% and 26.1% in 2022).

Telemedicine use was lower in 2022 compared with 2021 at every level of urbanization (Table, Figure 5).

Telemedicine use decreased with increasing rurality in both years, with the highest levels of telemedicine use among those living in the most urban areas (34.2% among adults living in large central metropolitan areas in 2022) and the lowest levels among those living in noncore (most rural) areas (19.6% in 2022).

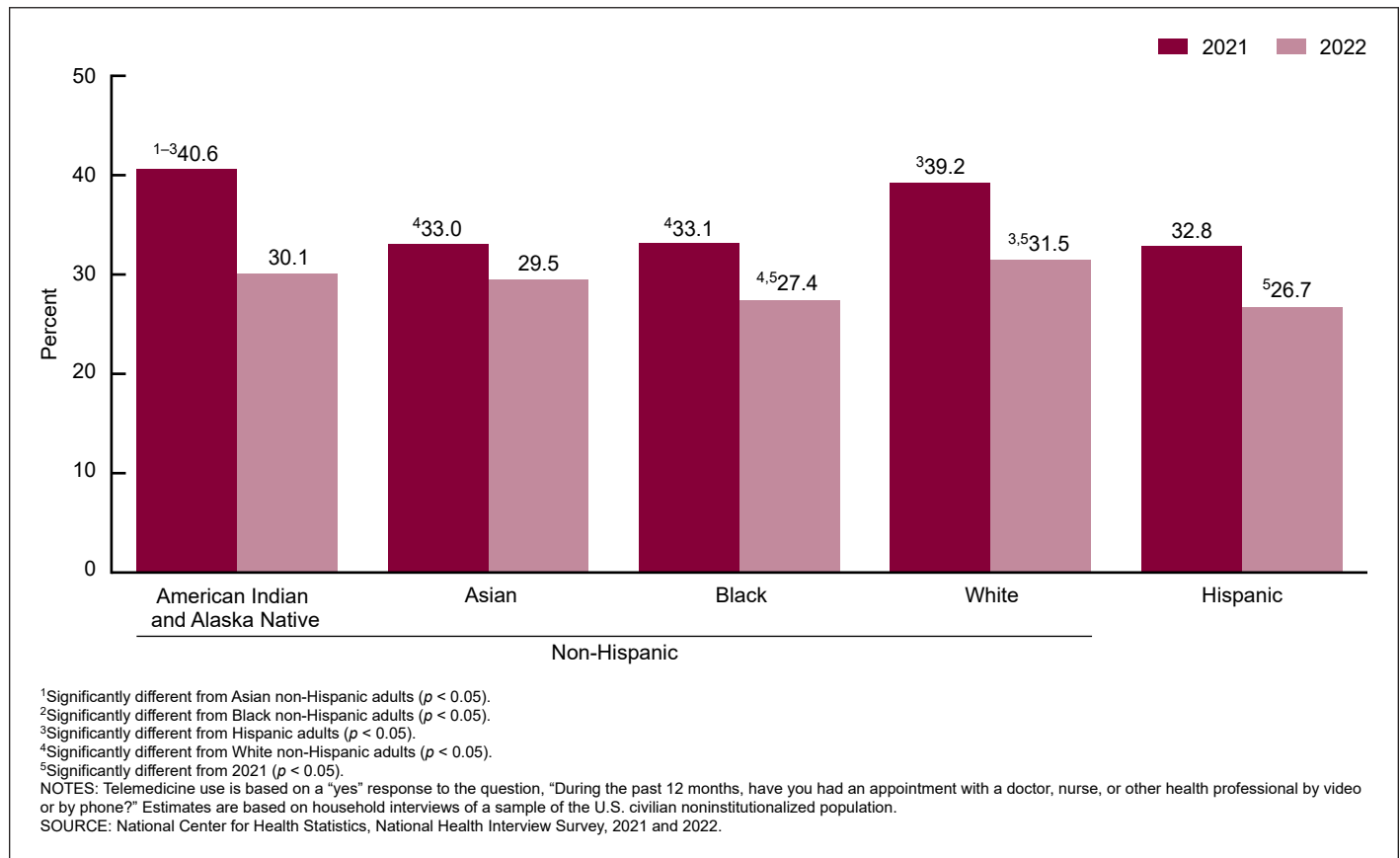
Among adults ages 18–64, telemedicine use decreased significantly between 2021 and 2022 for those with private insurance and those without insurance (Table). The observed decrease for those with public insurance was not significant. In both years, adults with private or public health insurance coverage were more likely to use telemedicine than those who were uninsured (37.5%, 39.3%, and 14.0%, respectively, in 2021 compared with 31.8%, 34.7%, and 11.1% in 2022).

Among adults age 65 and older, telemedicine use decreased for all insurance types between 2021 and 2022. In 2022, those with private insurance (29.7%), Medicare and Medicaid (36.0%), and Medicare Advantage

(30.8%) were more likely to use telemedicine than those with Medicare only (25.4%). Additionally, older adults with private insurance were less likely to use telemedicine than older adults with Medicare and Medicaid.

## Discussion

This report examines changes in telemedicine use between 2021 and 2022 and provides estimates of telemedicine use in the past 12 months among adults age 18 and older from the 2022 NHIS. In 2022, the prevalence of adults who used telemedicine was 30.1%, significantly lower than the 37.0% of adults who used telemedicine in 2021. Telemedicine use declined between 2021 and 2022 for nearly every characteristic and subgroup examined in this report. However, some characteristic-specific patterns differed between the 2 years. For example, differences in age-specific patterns in telemedicine use were observed between 2021 and 2022, while differences by race and Hispanic origin that were significant

**Figure 3. Percentage of adults age 18 and older who used telemedicine in the past 12 months, by race and ethnicity: United States, 2021 and 2022**

in 2021 were largely not significant in 2022. Overall patterns in telemedicine use by family income, education, region, and urbanization level were similar for 2021 and 2022. Similarly, overall differences in telemedicine use by type of health insurance coverage for adults ages 18–64 and 65 and older were comparable between 2021 and 2022.

The decline in the overall prevalence of telemedicine between 2021 and 2022 is consistent with data that showed decreases in telemedicine use later in the pandemic compared with earlier (13–15). Similarly, differences observed in telemedicine use between men and women in NHIS are also consistent with literature that shows women are more likely to use telemedicine (27). The findings by age are also consistent with research that found telemedicine use was lower among adults ages 18–24 (13,14).

Although racial and ethnic differences in telemedicine use were different in 2022 compared with 2021, in both years, Hispanic adults were less likely to use telemedicine when

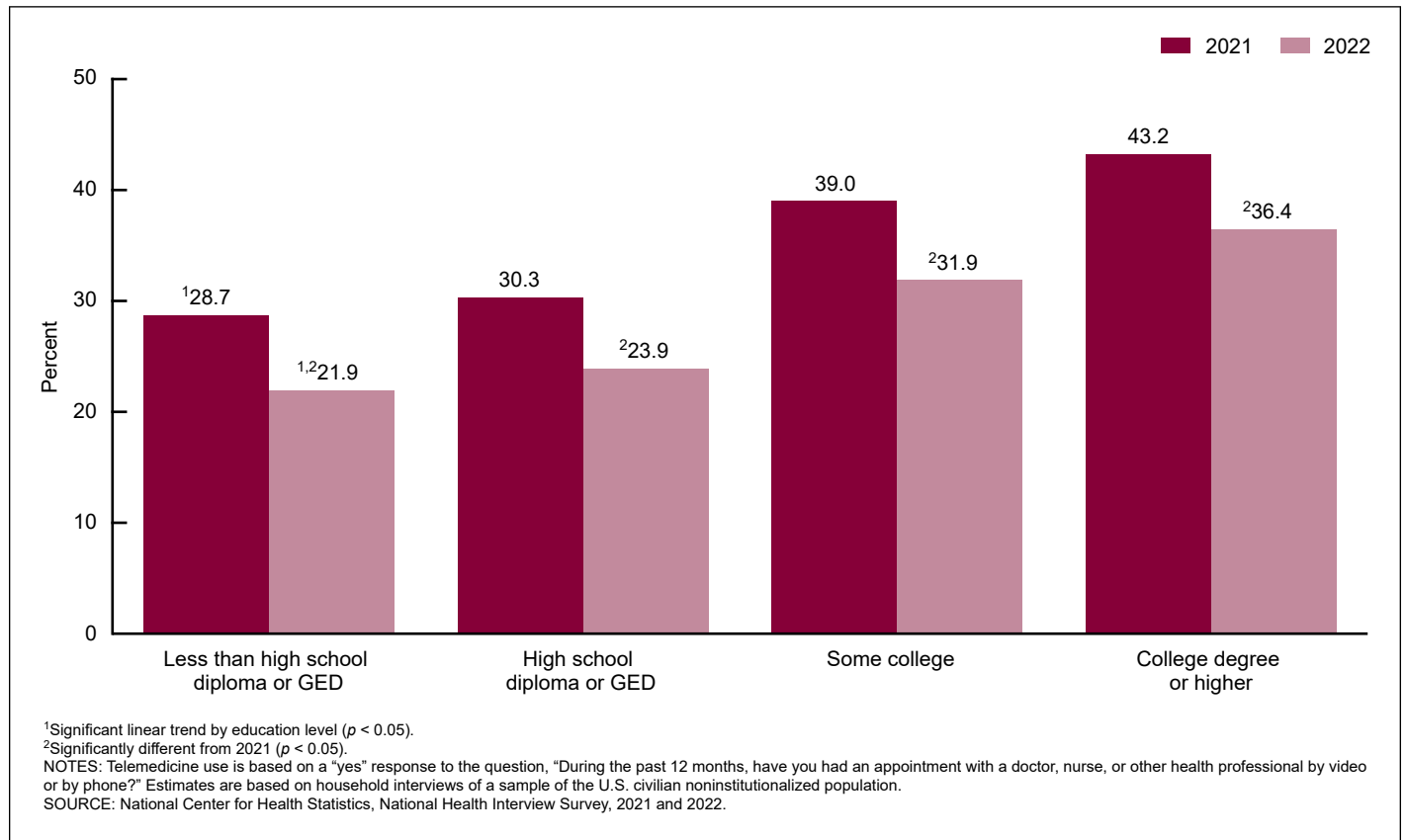
compared with White adults. This finding is consistent with research that shows lower use of telemedicine by Hispanic adults when compared with adults in other racial and ethnic groups (27–29). The result that adults with lower family incomes (that is, those with family incomes less than 200% FPL) were less likely to use telemedicine than adults with incomes 400% FPL or higher aligns with research that found less telemedicine use among adults with lower household incomes (27).

The finding that adults living in the Northeast, West, and more urbanized areas were more likely to use telemedicine than adults living in the Midwest, South, and less urbanized areas for both years is consistent with previous research that showed a higher prevalence of telemedicine use in the Northeast, West, and more urbanized areas (30) and large urban–rural disparities in telemedicine use following the onset of the COVID-19 pandemic (12). NHIS estimates of telemedicine use by health insurance coverage for adults ages

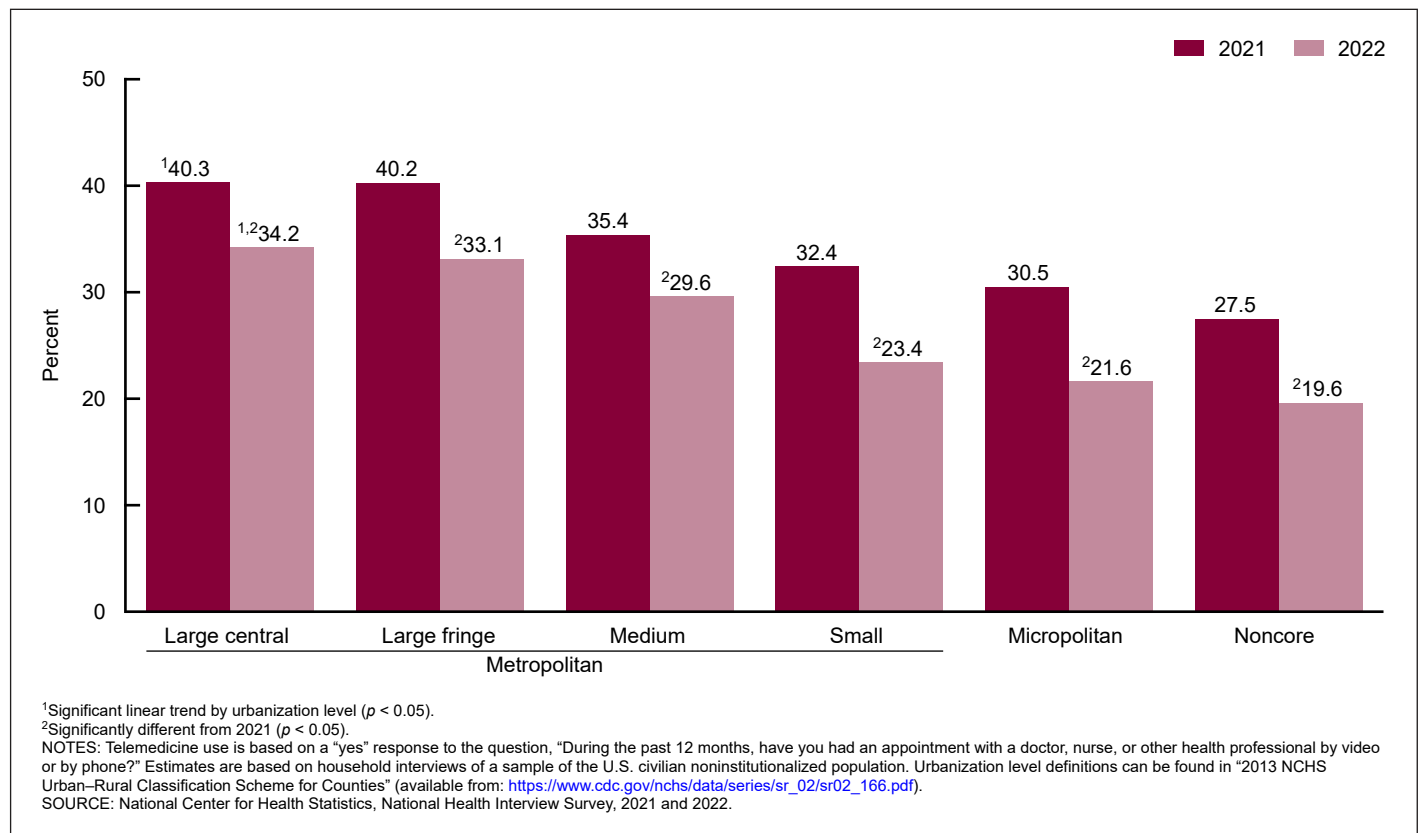
18–64 and 65 and older are not directly comparable with other estimates, in part because of how NHIS measures health insurance coverage compared with other data sources. However, the results for uninsured adults ages 18–64 are consistent with other research that showed uninsured adults were less likely to use telemedicine than adults with other types of health insurance coverage (13,14).

Some important limitations to the data presented in this report should be noted. NHIS does not collect information on the reason for the telemedicine visit, the number of visits, or the perceived quality of care received during the visit. Additionally, NHIS does not collect data on use of or access to smartphones, tablets, or other technologies that are necessary to access telemedicine services, nor does NHIS collect data about whether audio or video was used during the telemedicine visit. Information on broadband internet access, which is essential for accessing many telemedicine services, was not collected in 2021 or

**Figure 4. Percentage of adults age 18 and older who used telemedicine in the past 12 months, by education: United States, 2021 and 2022**



**Figure 5. Percentage of adults age 18 and older who used telemedicine in the past 12 months, by urbanization level: United States, 2021 and 2022**



2022. This information is important for understanding how telemedicine is obtained and used. Additionally, NHIS data are cross-sectional and cannot be used to examine causal relationships between any sociodemographic, geographic, or health characteristics and telemedicine use.

Despite these limitations, this report provides nationally representative estimates for telemedicine use as well as examination of the data by a number of sociodemographic and geographic characteristics. As the transition forward from the COVID-19 pandemic continues, NHIS data may be used to monitor trends in telemedicine use, as this information is now collected annually as part of the core NHIS questionnaire. Additionally, future examination of relationships between telemedicine use and detailed health data in NHIS, such as health conditions and healthcare access measures, may be useful in understanding who uses telemedicine, how use changes over time, and how it may be integrated into other healthcare services to improve overall access to care.

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**Table. Percentage of adults age 18 and older who used telemedicine in the past 12 months, by selected sociodemographic characteristics: United States, 2021 and 2022**

Characteristic	Percent (95% confidence intervals)	
	2021	2022
Total	37.0 (36.3–37.7)	<sup>1</sup> 30.1 (29.4–30.8)
Sex		
Men	<sup>2</sup> 31.7 (30.8–32.7)	<sup>1,2</sup> 26.3 (25.3–27.2)
Women	42.0 (41.0–42.9)	<sup>1</sup> 33.8 (32.8–34.8)
Age (years)		
18–29	<sup>3</sup> 29.4 (27.7–31.1)	<sup>4</sup> 26.1 (24.4–27.8)
30–44	35.3 (34.1–36.6)	<sup>1</sup> 31.1 (29.8–32.4)
45–64	38.9 (37.7–40.1)	<sup>1</sup> 31.6 (30.4–32.7)
65 and older	43.3 (42.0–44.6)	<sup>1</sup> 30.6 (29.4–31.8)
Hispanic origin and race		
Non-Hispanic:		
American Indian and Alaska Native	<sup>5–7</sup> 40.6 (33.4–48.1)	30.1 (23.8–37.4)
Asian	<sup>8</sup> 33.0 (31.2–34.4)	29.5 (26.9–32.2)
Black	<sup>7,8</sup> 33.1 (31.1–35.1)	<sup>1,8</sup> 27.4 (25.5–29.4)
White	<sup>7</sup> 39.2 (38.3–40.0)	<sup>1,7</sup> 31.5 (30.7–32.4)
Hispanic	32.8 (31.2–34.4)	<sup>1</sup> 26.7 (25.1–28.5)
Family income as a percentage of the federal poverty level (FPL)		
Less than 100% FPL	<sup>9</sup> 33.1 (31.0–35.4)	<sup>1,9</sup> 27.6 (25.5–29.8)
100% to less than 200% FPL	32.1 (30.5–33.8)	<sup>1</sup> 26.2 (24.6–27.8)
200% to less than 400% FPL	35.8 (34.5–37.1)	<sup>1</sup> 28.0 (26.7–29.2)
400% FPL or more	40.7 (39.7–41.8)	<sup>1</sup> 33.7 (32.7–34.8)
Education		
Less than high school diploma or GED	<sup>10</sup> 28.7 (26.5–31.0)	<sup>1,10</sup> 21.9 (19.8–24.0)
High school diploma or GED	30.3 (29.1–31.6)	<sup>1</sup> 23.9 (22.7–25.2)
Some college	39.0 (37.7–40.3)	<sup>1</sup> 31.9 (30.7–33.2)
College degree or higher	43.2 (42.1–44.3)	<sup>1</sup> 36.4 (35.3–37.5)
Region		
Northeast	<sup>11–13</sup> 40.0 (38.4–41.6)	<sup>1,11,12</sup> 34.6 (33.0–36.2)
Midwest	<sup>13</sup> 33.3 (31.8–35.5)	<sup>1</sup> 26.7 (25.2–28.1)
South	<sup>13</sup> 34.3 (33.2–35.5)	<sup>1</sup> 26.1 (25.0–27.2)
West	42.4 (41.0–43.8)	<sup>1</sup> 36.3 (34.5–38.1)
Urbanization level		
Large central metropolitan	<sup>14</sup> 40.3 (39.1–41.6)	<sup>1,14</sup> 34.2 (32.9–35.4)
Large fringe metropolitan	40.2 (38.7–41.6)	<sup>1</sup> 33.1 (31.8–34.5)
Medium metropolitan	35.4 (33.9–36.9)	<sup>1</sup> 29.6 (28.0–31.2)
Small metropolitan	32.4 (29.8–35.1)	<sup>1</sup> 23.4 (20.7–26.3)
Micropolitan	30.5 (27.8–33.3)	<sup>1</sup> 21.6 (18.6–24.8)
Noncore	27.5 (23.8–31.3)	<sup>1</sup> 19.6 (16.9–22.6)
Health insurance coverage		
18–64:		
Total <sup>15</sup>	35.4 (34.5–36.2)	<sup>1</sup> 30.0 (29.2–30.8)
Private	<sup>16</sup> 37.5 (36.8–38.4)	<sup>1,16,17</sup> 31.8 (30.8–32.7)
Public	<sup>16</sup> 39.3 (37.1–41.6)	<sup>16</sup> 34.7 (32.6–36.9)
Uninsured	14.0 (12.3–15.8)	<sup>1</sup> 11.1 (9.6–12.7)
65 and older:		
Total	43.3 (42.0–44.6)	<sup>1</sup> 30.6 (29.4–31.8)
Private	<sup>18</sup> 42.4 (40.5–44.4)	<sup>1,18,19</sup> 29.7 (27.9–31.6)
Medicare and Medicaid	<sup>18</sup> 46.6 (41.4–51.8)	<sup>1,18</sup> 36.0 (31.0–41.1)
Medicare Advantage	<sup>18</sup> 44.5 (42.4–46.6)	<sup>1,18</sup> 30.8 (28.9–32.7)
Medicare only	37.1 (33.7–40.6)	<sup>1</sup> 25.4 (22.4–28.5)

See footnotes at end of table.

**Table. Percentage of adults age 18 and older who used telemedicine in the past 12 months, by selected sociodemographic characteristics: United States, 2021 and 2022—Con.**

<sup>1</sup>Significantly different from 2021 ( $p < 0.05$ ).

<sup>2</sup>Significantly different from women ( $p < 0.05$ ).

<sup>3</sup>Significant linear trend by age ( $p < 0.05$ ).

<sup>4</sup>Significant quadratic trend by age ( $p < 0.05$ ).

<sup>5</sup>Significantly different from Asian non-Hispanic adults ( $p < 0.05$ ).

<sup>6</sup>Significantly different from Black non-Hispanic adults ( $p < 0.05$ ).

<sup>7</sup>Significantly different from Hispanic adults ( $p < 0.05$ ).

<sup>8</sup>Significantly different from White non-Hispanic adults ( $p < 0.05$ ).

<sup>9</sup>Significant quadratic trend by family income as a percentage of FPL ( $p < 0.05$ ).

<sup>10</sup>Significant linear trend by education level ( $p < 0.05$ ).

<sup>11</sup>Significantly different from Midwest ( $p < 0.05$ ).

<sup>12</sup>Significantly different from South ( $p < 0.05$ ).

<sup>13</sup>Significantly different from West ( $p < 0.05$ ).

<sup>14</sup>Significant linear trend by urbanization level ( $p < 0.05$ ).

<sup>15</sup>Includes adults with unknown health insurance coverage.

<sup>16</sup>Significantly different from uninsured ( $p < 0.05$ ).

<sup>17</sup>Significantly different from public insurance ( $p < 0.05$ ).

<sup>18</sup>Significantly different from Medicare only ( $p < 0.05$ ).

<sup>19</sup>Significantly different from Medicare and Medicaid ( $p < 0.05$ ).

NOTES: Data are based on household interviews of a sample of the U.S. civilian noninstitutionalized population. Urbanization level definitions can be found in "2013 NCHS Urban–Rural Classification Scheme for Counties" (available from: [https://www.cdc.gov/nchs/data/series/sr\\_02/sr02\\_166.pdf](https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf)).

SOURCE: National Center for Health Statistics, National Health Interview Survey, 2021 and 2022.

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