




# Medicare and telehealth: The impact of COVID-19 pandemic

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## Abstract

**Study Rationale:** The swift progression of the COVID-19 pandemic appeared to facilitate the increase in telehealth utilization. However, it is clear neither how telehealth was offered by providers nor how it was used by patients during this time of unusual and rapid change within the health industry.

**Aim:** To investigate the telehealth utilization patterns of Medicare beneficiaries during the height of the COVID-19 pandemic.

**Methods and Materials:** A cross-sectional study design was used to examine the responses of 9686 Medicare beneficiaries to the Centers for Medicare and Medicaid Services (CMS) Medicare Current Beneficiary Survey, Fall 2020 COVID-19 Supplement. Multiple logistic regression analyses were conducted to examine the relationship between telehealth offering and beneficiaries' sociodemographic variables.

**Results:** Over half (58%) of primary care providers provided telehealth services, while only 26%–28% of specialists did. Less than 8% of Medicare beneficiaries reported that they were unable to obtain care because of COVID-19.

**Conclusions:** This research found that changes in Medicare policy, associated with CMS' declaration of telehealth waivers during the Public Health Emergency (PHE), likely increased the proliferation and utilization of telehealth services during the COVID-19 pandemic, providing important access to care for certain populations. With the impending conclusion of the PHE, policymakers must 1) ascertain which elements of the new telehealth landscape will be retained, 2) modernize the regulatory, accreditation and reimbursement framework to maintain pace with care model innovation and 3) address disparities in access to broadband connectivity with a particular focus on rural and underserved communities.

## KEYWORDS

COVID-19, Medicare, primary care, specialist, telehealth, telemedicine, video calling

## 1 | INTRODUCTION

According to the American Telemedicine Association, “Telehealth effectively connects individuals and their healthcare providers when an in-person interaction is not clinically necessary and facilitates physician-to-physician consultation.”<sup>1</sup> Frequently, telehealth has been

used to increase access to care in rural communities by enabling providers to expand their geographic reach. However, telehealth utilization experienced an unprecedented rise during the COVID-19 pandemic when patients and physicians were separated due to public health concerns as opposed to geographic constraints.<sup>2</sup> For example virtual visits at Mayo Clinic went from 4% (pre-pandemic) to 85%

(at the peak of the pandemic) and are currently sitting at approximately 10%-15% of our visits being virtual.<sup>3</sup> This is especially true for Medicare beneficiaries, who are a higher risk population for

COVID-19 mortality. Before the pandemic, almost every major industry has been transformed due to digital health. For example, the largest retailer is Amazon and traditional entertainment cable TV has

|  | Frequency | Percent | missing n (%) |
|--|-----------|---------|---------------|
| PCP offers telehealth appointments     |           |         | 470 (4.9)     |
| Yes                                    | 5644      | 58.3    |               |
| No                                     | 1393      | 14.4    |               |
| SP offered telehealth since 7/1/20     |           |         | 4190 (43.3)   |
| Yes                                    | 2720      | 28.1    |               |
| No                                     | 2776      | 28.7    |               |
| SP had a telehealth visit since 7/1/20 |           |         | 4097 (42.3)   |
| Yes                                    | 2515      | 26      |               |
| No                                     | 3074      | 31.7    |               |
| Use video or voice calls               |           |         | 47 (0.5)      |
| Yes                                    | 3711      | 38.3    |               |
| No                                     | 5928      | 61.2    |               |
| Unable to get care because of COVID-19 |           |         | 45 (0.5)      |
| Yes                                    | 735       | 7.6     |               |
| No                                     | 8906      | 91.9    |               |
| Age                                    |           |         | 0 (0)         |
| <65 years                              | 2170      | 22.4    |               |
| 65–74 years                            | 3142      | 32.4    |               |
| 75+                                    | 4374      | 45.2    |               |
| Gender                                 |           |         | 0 (0)         |
| Male                                   | 4372      | 45.1    |               |
| Female                                 | 5314      | 54.9    |               |
| Race                                   |           |         | 0 (0)         |
| White non-Hispanic                     | 7257      | 74.9    |               |
| Black non-Hispanic                     | 946       | 9.8     |               |
| Hispanic                               | 971       | 10      |               |
| Other                                  | 512       | 5.3     |               |
| Core-based statistical area            |           |         | 7 (0.1)       |
| Metro                                  | 7378      | 76.2    |               |
| Non-metro                              | 2301      | 23.8    |               |
| Region                                 |           |         | 5 (0.1)       |
| Northeast                              | 1746      | 18      |               |
| Midwest                                | 2269      | 23.4    |               |
| South                                  | 3714      | 38.3    |               |
| West                                   | 1952      | 20.2    |               |
| Income                                 |           |         | 433 (4.5)     |
| Less than \$25 000                     | 3585      | 37      |               |
| \$25 000 or more                       | 5668      | 58.5    |               |
| Other language is spoken at home       |           |         | 10 (0.1)      |
| Yes                                    | 1186      | 12.2    |               |
| No                                     | 8490      | 87.7    |               |
| Access to internet                     |           |         | 59 (0.6)      |
| Yes                                    | 7548      | 77.9    |               |
| No                                     | 2079      | 21.5    |               |

**TABLE 1** Descriptive analysis of Medicare patients and telehealth offerings

lost ground to digital content providers such as Netflix. However, coverage of telehealth services under traditional Medicare was limited, with policy and payment restrictions identifying where beneficiaries could receive these services and which providers could be paid to deliver them.<sup>4</sup> Overwhelmingly, pre-pandemic, telehealth reimbursement was limited to the management of chronic conditions.<sup>5</sup>

Soon after the declaration of a public health emergency due to COVID-19 in early 2020, the Centers for Medicare & Medicaid Services (CMS) expanded coverage of telehealth services, via temporary waivers, to make it easier for beneficiaries to get medical care while minimizing their exposure to the coronavirus in public settings such as healthcare facilities.<sup>6</sup> As a result, investment in telehealth capabilities has expanded significantly<sup>7</sup> making it difficult to contemplate reverting to the pre-COVID-19 paradigm once the pandemic subsides. Therefore, we must understand how telehealth was utilized during the pandemic to develop policy that better prepares the U.S. healthcare system to serve its' citizens for future healthcare crises.

To understand telehealth use, it is important to explore if providers offered telehealth services and if those services were utilized by Medicare beneficiaries. It is also important to understand the socioeconomic factors that affected the utilization of telehealth services. Answers to these questions will provide important policy implications related to extending telehealth coverage under traditional

Medicare well beyond the current COVID-19 public health emergency.

## 2 | METHODS

The analysis of beneficiaries' use of telehealth services is based on survey data of Medicare beneficiaries living in the community from the CMS Medicare Current Beneficiary Survey (MCBS) Fall 2020 COVID-19 Supplement. The responses of 9686 Medicare Beneficiaries were included in our final sample.

Five main dependent variables were included in our analysis. These variables were yes and no questions. The questions sought to determine if primary care providers offered telehealth appointments if specialists offered telehealth services and had telehealth visits since 7/1/20, if providers used video or voice calls, and if Medicare beneficiaries were unable to obtain care because of COVID-19.

Eight independent sociodemographic variables were identified. These variables were age (<65, 65-74 and 75+ years), gender (male and female), race (White non-Hispanic, Black non-Hispanic, Hispanic and Other), core-based statistical area (metro and non-metro areas), region (Northeast, Midwest, South and West), income (less than

**TABLE 2** Multivariate logistic regression analysis telehealth offering

|  | SP offered telehealth since 7/1/20 |             | SP had a telehealth visit since 7/1/20 |             | PCP offers telehealth appointments |             | Use video or voice calls |              |
|--|------------------------------------|-------------|--|-------------|------------------------------------|-------------|--------------------------|--------------|
|  | OR                                 | 95% CI      | OR                                     | 95% CI      | OR                                 | 95% CI      | OR                       | 95% CI       |
| Age (reference: 75+)                               |                                    |             |  |             |                                    |             |                          |              |
| <65 years  | 1.07                               | [0.92,1.25] | 1.27*                                  | [1.09,1.49] | 1.23*                              | [1.04,1.45] | 1.89*                    | [1.66,2.15]  |
| 65-74 years  | 1.02                               | [0.9,1.16]  | 0.98                                   | [0.86,1.11] | 1.51*                              | [1.3,1.76]  | 1.69*                    | [1.52,1.88]  |
| Gender (reference: Female)                         |                                    |             |  |             |                                    |             |                          |              |
| Male   | 1.14*                              | [1.02,1.27] | 1.09                                   | [0.98,1.22] | 0.86*                              | [0.76,0.97] | 0.74*                    | [0.68,0.81]  |
| Race (reference: Other)                            |                                    |             |  |             |                                    |             |                          |              |
| White non-Hispanic                                 | 0.82                               | [0.63,1.05] | 0.89                                   | [0.69,1.14] | 1.09                               | [0.82,1.45] | 1.1                      | [0.89,1.36]  |
| Black non-Hispanic                                 | 0.98                               | [0.72,1.34] | 1.25                                   | [0.92,1.7]  | 0.7*                               | [0.51,0.98] | 1.1                      | [0.85,1.43]  |
| Hispanic   | 1.12                               | [0.82,1.54] | 1.11                                   | [0.82,1.52] | 1.2                                | [0.84,1.73] | 1.03                     | [0.78,1.36]  |
| Core-based statistical area (reference: Non-metro) |                                    |             |  |             |                                    |             |                          |              |
| Metro  | 1.05                               | [0.91,1.21] | 1.06                                   | [0.92,1.23] | 1.74*                              | [1.51,2.02] | 1.6*                     | [1.42,1.79]  |
| Region (reference: West)                           |                                    |             |  |             |                                    |             |                          |              |
| Northeast  | 0.74*                              | [0.63,0.88] | 0.64*                                  | [0.54,0.76] | 0.79*                              | [0.64,0.98] | 0.88                     | [0.76,1.02]  |
| Midwest  | 0.68*                              | [0.58,0.81] | 0.67*                                  | [0.56,0.79] | 0.77*                              | [0.63,0.95] | 0.74*                    | [0.64,0.85]  |
| South  | 0.9                                | [0.77,1.04] | 0.83*                                  | [0.72,0.97] | 0.66*                              | [0.55,0.79] | 0.7*                     | [0.61,0.79]  |
| Income (reference: \$25 000 or more)               |                                    |             |  |             |                                    |             |                          |              |
| Less than \$25 000                                 | 1.25*                              | [1.09,1.43] | 1.14                                   | [1,1.3]     | 0.77*                              | [0.66,0.89] | 0.51*                    | [0.45,0.57]  |
| Other language spoken at home (reference: No)      |                                    |             |  |             |                                    |             |                          |              |
| Yes  | 0.97                               | [0.77,1.22] | 1                                      | [0.8,1.26]  | 0.91                               | [0.7,1.2]   | 0.85                     | [0.7,1.04]   |
| Access to the internet (reference: No)             |                                    |             |  |             |                                    |             |                          |              |
| Yes  | 1.15                               | [0.98,1.35] | 1.21*                                  | [1.03,1.43] | 2.23*                              | [1.92,2.58] | 9.12*                    | [7.55,11.01] |

Abbreviations: CI: confidence interval; OR: odd ratio.

\$25 000 and \$25 000 or more), a language other than English spoken at home and access to the internet.

To investigate utilization patterns of telehealth offerings among Medicare beneficiaries during COVID-19, descriptive analyses were run first. Next, we conducted a total of five multiple logistic regression analyses to assess whether sociodemographic characteristics were significant predictors of telehealth utilization. All statistical analyses were conducted using Statistical Package for Social Science, version 26.0.<sup>8</sup>

### 3 | RESULTS

Table 1 demonstrates the frequency of Medicare beneficiaries' reports on the availability of telehealth services and their use of these services. In total, 58.3% of beneficiaries reported that their primary care physicians (PCP) offered telehealth appointments. Alternatively, only 28.1% reported that their specialists (SP) offered telehealth since 7/1/2020 and only 26% reported that they had a SP telehealth visit. Overall, 38.3% of beneficiaries reported that they used either video or voice calls with their physicians and only 7.6% reported that they were unable to get care because of COVID-19. Table 1 also shows the percentage of Medicare beneficiaries' socio-economic status.

Table 2 shows the logistic regression results of telehealth offering and utilization. Age had a consistent impact on Medicare beneficiaries' reports of telehealth availability and their use. Compared to people who were 75+, younger beneficiaries were more likely to report higher SP telehealth visits since 7/1/2020. In addition, younger beneficiaries were more likely to experience telehealth appointments with their PCP and to use video or voice calls with their physicians. However, younger beneficiaries were also more likely to report that they were unable to obtain care because of COVID-19.

Compared to women, men were more likely to report that their SP offered telehealth since 7/1/2020. However, men were less likely to report that their PCP offered telehealth appointments or used video or voice calls with their physicians. Surprisingly, the impact of race and the utilization of telehealth was not significant for most of these services. Only Black non-Hispanics were less likely to report that their PCP offered telehealth appointments than "other" races. Compared to residents who lived in non-metro areas, beneficiaries who lived in metro areas were more likely to report that their PCPs offered telehealth appointments and used video or voice calls; no other telehealth services were significant.

The impact of telehealth was similar across regions. Compared to the west region, beneficiaries who lived in all the other areas were less likely to report on almost all the telehealth services, except for their inability to get care because of COVID-19. Only beneficiaries who lived in the south were less likely to report that they were unable to get care because of COVID-19 compared to the West. Compared to the higher-income beneficiaries, low-income beneficiaries were more likely to report that their SP offered telehealth since 7/1/20 but less likely to report that their PCP offered telehealth appointments and used video or voice calls.

**TABLE 3** Multivariate logistic regression analysis care during COVID

|  | Unable to get care because of COVID-19 |             |
|--|--|-------------|
|  | OR                                     | 95% CI      |
| Age (reference: 75+)                               |  |             |
| <65 years  | 1.75*                                  | [1.43,2.15] |
| 65–74 years  | 1.22*                                  | [1.01,1.46] |
| Gender (reference: Female)                         |  |             |
| Male   | 0.92                                   | [0.79,1.07] |
| Race (reference: Other)                            |  |             |
| White non-Hispanic                                 | 1.19                                   | [0.82,1.73] |
| Black non-Hispanic                                 | 1.03                                   | [0.65,1.63] |
| Hispanic   | 1.36                                   | [0.87,2.15] |
| Core-based statistical area (reference: Non-metro) |  |             |
| Metro  | 1.09                                   | [0.9,1.32]  |
| Region (reference: West)                           |  |             |
| Northeast  | 0.96                                   | [0.75,1.21] |
| Midwest  | 0.91                                   | [0.72,1.14] |
| South  | 0.73*                                  | [0.59,0.91] |
| Income (reference: \$25 000 or more)               |  |             |
| Less than \$25 000                                 | 0.88                                   | [0.73,1.05] |
| Other language is spoken at home (reference: No)   |  |             |
| Yes  | 1.01                                   | [0.73,1.39] |
| Access to the internet (reference: No)             |  |             |
| Yes  | 1.53*                                  | [1.21,1.93] |

Note: \*Significant  $p$ -value < 0.05.

Abbreviations: CI: confidence interval; OR: odds ratio.

Having internet access had a consistent impact on telehealth services, except for those reporting their inability to get care because of COVID-19. Medicare beneficiaries with internet access were more likely to report that their SP had telehealth visits since 7/1/20, their PCP offered telehealth appointments, and that they used video or voice calls. However, they were also more likely to report an inability to get care because of COVID-19, as shown in Table 3.

### 4 | DISCUSSION

With the rapid onset of the COVID-19 crisis, CMS and many private insurance carriers, provided temporary payment parity for telemedicine encounters, and most states eased licensing requirements for telemedicine.<sup>9,10</sup> Using data collected in the CMS Medicare Current Beneficiary Survey (MCBS) Fall 2020 COVID-19 Supplement, we quantified the reported utilization of these services by specific socio-economic factors. We attempted to identify potential barriers to the implementation of telehealth services in a post-COVID environment.

Several studies identified barriers to access and utilization of telemedicine. These include barriers of access to technology such as



internet access, a lack of trained staff, limited budgets, a lack of reimbursement, age of the patient, level of patient education, racial and ethnic disparities, and type of community and geographic location.<sup>11,12</sup> In our analysis, we were able to confirm many of these barriers with more specific insights and recommendations.

Internet access was the primary facilitator of telehealth access. Medicare beneficiaries reported increased use of telehealth appointments with internet access. However, they also reported an inability to receive care due to COVID, most likely because many facilities were only offering urgent care.<sup>13,14</sup>

Females utilized telehealth services more than males, which is consistent with the normal patterns of healthcare utilization.<sup>9</sup> However, males showed an increased awareness of specialists' appointments than primary care virtual appointments. This difference may be due to decreased utilization of primary services by males and their propensity only to seek medical assistance when specific medical issues are identified.<sup>9,14</sup>

Previous studies indicated that younger patients were found to be more frequent telehealth users with the highest usage in the 20–44 age groups, especially for urgent care.<sup>15</sup> Our survey confirmed that patients under 75 generally were greater utilizers of telehealth services. The younger group also reported that they were unable to obtain care due to COVID-19, which is consistent with the analysis above of those with internet access. Younger patients generally have higher levels of internet access, utilize telehealth more frequently, and use telehealth for more urgent issues.

Telehealth use in rural areas, particularly the Southern regions of the country, as well as among lower-income patients has previously been limited.<sup>16,17</sup> Lack of resources, internet access, and availability of medical services all contribute to the variance in telehealth use.<sup>10,18–20</sup> Within the current analysis, race, surprisingly, was not a significant factor except for Blacks reporting lower awareness of PCP appointments.

## 5 | LIMITATIONS

This study is not without limitations. First, this study relies upon self-reported data from a national survey. As such, we cannot verify the accuracy of the results, nor do the results indicate the experience of all Medicare Beneficiaries. For example, the proportion of minority patients in this survey is relatively low (25%), which may have excluded many minorities who did not even respond to the survey.<sup>21,22</sup> The study is also not generalizable to non-Medicare populations. While we can infer that similar issues occurred in the broader population and with patients on commercial insurance or uninsured, we do not have data to identify those issues. Additionally, as this survey was conducted during the Fall of 2020, we cannot identify telehealth use trends at different time points during the COVID-19 pandemic. Furthermore, we could not identify the reason for accessing care or primary diagnosis from the telehealth visit. Further, we could not determine how specific pandemic responses such as masking policies, restrictions on elective surgeries, or the degree to which State and local policies influenced patient perspectives

regarding telehealth availability and use. Despite these limitations, the current study provides an important look at the use of telehealth during COVID-19 and by Medicare patients of varying characteristics.

## 6 | POLICY IMPLICATIONS

Despite its limitations, this study provides important insight into the use of telehealth and access to health care services for Medicare beneficiaries. As greater knowledge concerning the benefits and consequences of telehealth use is gained, there will be a need for strategies for improving telehealth benefits or utilization among Medicare patients. As COVID-19 began to proliferate, policymakers appeared to be reactive to the uncertainties of this emerging pandemic. As a result, CMS temporarily implemented payment policies for telehealth services on an emergency basis. Policymakers should consider changing these telehealth policies from temporary to permanent since our research indicates that telehealth encouraged access to care in an uncertain, pandemic environment.

Our study also indicates that Medicare beneficiaries were provided with an important and emerging access point to the health care system as in-person visits were being discouraged or were unavailable due to the risks of the COVID-19 virus. As a result, policymakers should consider developing policies that further encourage the growth of telehealth services, for example, specialty care, to better prepare patients for future and unexpected barriers to in-person health care. As a result, policymakers should further assess potential benefits and, based on those assessments, seek to develop policies that best develop telehealth services to respond to future and unexpected barriers to in-person care.

Finally, our study indicated that beneficiaries who lived in metro areas were more likely to report that they used telehealth services compared to those in non-metro areas. While more research is needed, this may indicate that infrastructure policies should be considered that encourage the further investment and expansion of affordable and accessible internet services to areas that have either limited, unreliable, or no internet access. These may be more likely located in non-urban and rural areas. Investing in technology infrastructure could have a positive and significant impact on improving the access to healthcare in non-metro areas. There are differences in the populations that used telehealth services, and future research should aim to understand barriers and benefits to telehealth use better. Subsequently, policymakers should take the current results and knowledge concerning the benefits of telehealth use to establish an appropriate policy to remove barriers and increase usage for populations benefitting from telehealth services.

## 7 | CONCLUSION

In summary, this survey confirms several barriers to telehealth use and adoption. These include technology and the availability of internet usage, sex, older age, rural locale, lower-income, and regional differences.

If telehealth continues to be utilized in the post-COVID-19 era, several areas will need to be actively addressed to ensuring equal access and utilization of telehealth in the future.

### CONFLICT OF INTEREST

The authors declare no conflict of interest.

### AUTHOR CONTRIBUTIONS

Hanadi Hamadi, conceptualized and wrote the initial draft of the manuscript. Mei Zhao conceptualized, analysed and wrote a portion of the initial draft of the manuscript. D. Rob Haley, Ajani Dunn, Shyam Paryani and Aaron Spaulding each provided intellectual input in the development and refinement of the manuscript. All authors made substantive comments and edits to produce the final version. All authors read and approved the final manuscript.

### DATA AVAILABILITY STATEMENT

The MCBS Public Use File is publicly available and can be directly downloaded at <https://www.cms.gov/research-statistics-data-and-systems/downloadable-public-use-files/mcbs-public-use-file>

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