

TELEHEALTH ADOPTION IN KENTUCKY PRIOR TO THE COVID-19 PANDEMIC

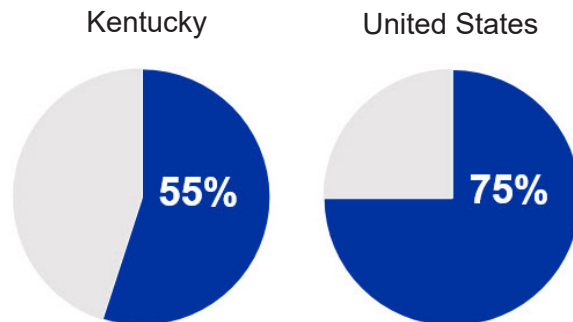
By Dr. Claudia A. Rhoades

Telehealth is a term that covers a wide range of technologies used to deliver health care at a distance. The U.S. Department of Health and Human Services (DHHS) defines Telehealth as “the use of electronic information and telecommunication technologies to support and promote long distance clinical health care, patient and professional health-related education, public health and health administration.” In spite of evidence that Telehealth could help hospitals improve health care access and delivery, by 2019 Telehealth adoption was growing at a modest rate due to patient- and provider-related barriers.

In 2020, a public health emergency was declared in the U.S. due to COVID-19. Because of the COVID-19 emergency declaration and the social distancing mandates that ensued, almost all in-person outpatient visits and elective procedures were canceled. From the beginning of the outbreak, Telehealth was sought as a way to maintain access to health care while keeping both patient and providers safe from exposure to COVID-19. On March 24, 2020, the Centers for Medicare and Medicaid Services (CMS) declared that the use of Telehealth was vital to combat COVID-19. However, not all hospitals had adopted Telehealth prior to the advent of the COVID-19 pandemic, and therefore, not all hospitals were equally prepared to respond in a timely manner. Was Kentucky prepared to respond to the COVID-19 health emergency, in terms of Telehealth adoption?

The figures below illustrate the difference in Telehealth adoption rates between Kentucky and the U.S. in 2019, before the COVID-19 pandemic. As we can see in Figure 1, only

Figure 1. **Telehealth adoption** in Kentucky was lower than the United States average in 2019.



Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

55% of the hospitals in Kentucky had adopted Telehealth by 2019, compared to 75% of U.S. hospitals.

When we look at rural and urban hospitals separately, we find that Telehealth adoption was higher in rural hospitals than in urban hospitals, both in Kentucky and in the U.S. For rural hospitals, the gap in Telehealth adoption between Kentucky and the U.S. was smaller, with 65% of rural hospitals in Kentucky adopting Telehealth by 2019, compared to 75% of rural hospitals in the U.S. (Figure 2). The gap in Telehealth adoption between Kentucky and the U.S. was considerably larger for urban hospitals, with 40% of urban hospitals in Kentucky adopting Telehealth by 2019, compared to 74% of urban hospitals in the U.S. (Figure 3).

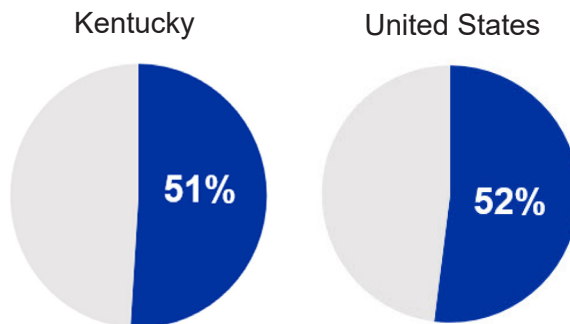
One particularly relevant component of Telehealth is Remote Patient Monitoring (RPM), defined as the use of technology to gather physiologic data from patients in one location (e.g. their home) and transmit that data to a health provider in another location

(e.g. hospital or doctor's office) for analysis. As we can see in Figure 4, RPM adoption rates were similar for hospitals in Kentucky and the U.S., with 51% of hospitals in Kentucky adopting RPM by 2019, compared to 52% of hospitals in the U.S.

When we look at rural vs. urban hospitals, we find that, contrary to Telehealth adoption rates, RPM adoption was higher in rural hospitals in Kentucky than in rural hospitals in the U.S., with 61% of rural hospitals in Kentucky and 50% of rural hospitals in the U.S. adopting RPM by 2019 (Figure 5). RPM adoption in urban hospitals, on the other hand, was lower for urban hospitals in Kentucky than for urban hospitals in the U.S., with 38% of urban hospitals in Kentucky and

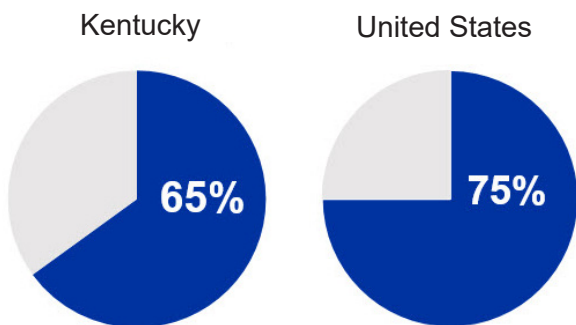
52% of urban hospitals in the U.S. adopting RPM by 2019 (Figure 6).

Figure 4. Remote Patient Monitoring adoption in Kentucky was similar to the United States in 2019.



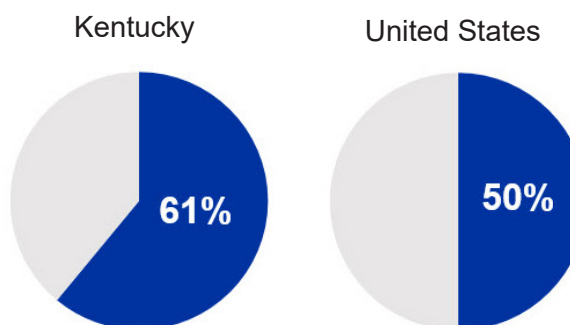
Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

Figure 2. Telehealth adoption in rural Kentucky was lower than the rural United States in 2019.



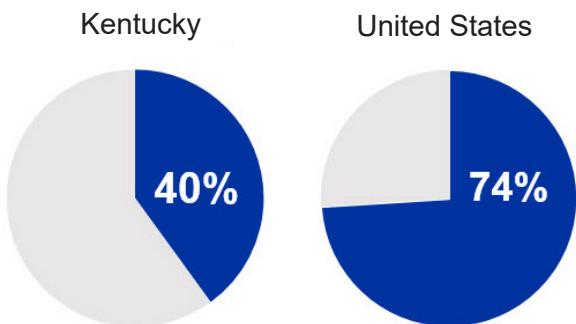
Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

Figure 5. Remote Patient Monitoring adoption in rural Kentucky was higher than the rural United States in 2019.



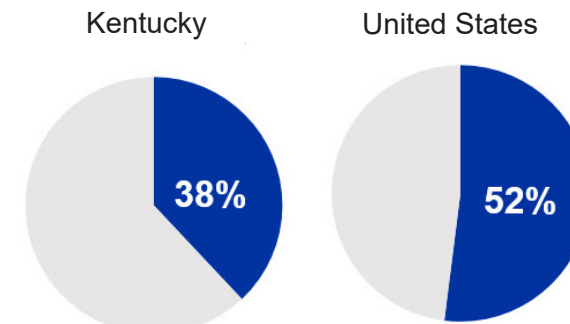
Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

Figure 3. Telehealth adoption in urban Kentucky was lower than the urban United States in 2019.



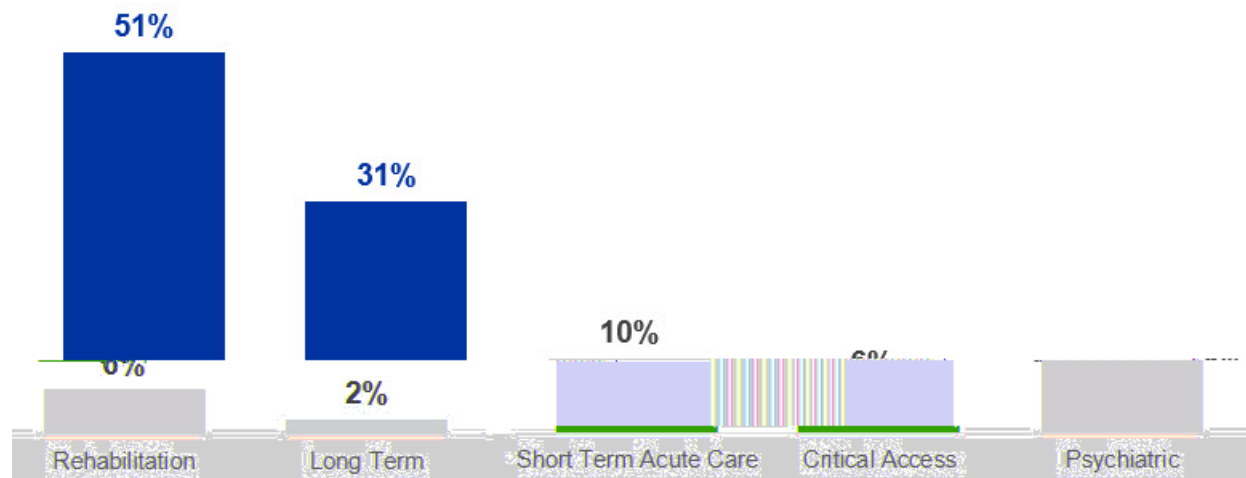
Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

Figure 6. Remote Patient Monitoring adoption in urban Kentucky was lower than the urban United States in 2019.



Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

Figure 7. Percent of hospitals by type in Kentucky in 2019. This analysis focuses on **Critical Access** and **Short Term Acute Care Hospitals**.

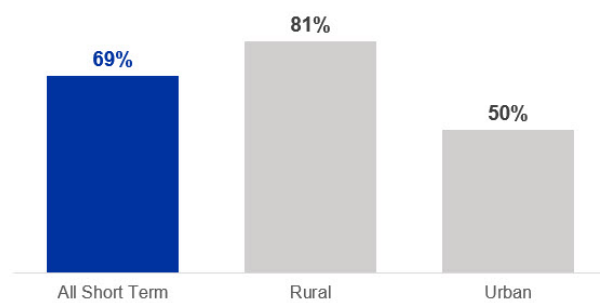


Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

It is important to see whether Telehealth and RPM adoption rates before the COVID-19 pandemic were different for different types of hospitals. For this part of analysis, we look at short-term acute hospitals and Critical Access Hospitals (CAHs). A Critical Access Hospital is a limited-service facility that must provide emergency services and operate a limited number of inpatient beds in which hospital stays can average no more than 96 hours. Most hospitals in the AHA dataset for Kentucky were short-term acute care hospitals (51%), followed by critical access hospitals (31%), and psychiatric hospitals (10%) as illustrated in Figure 7 above.

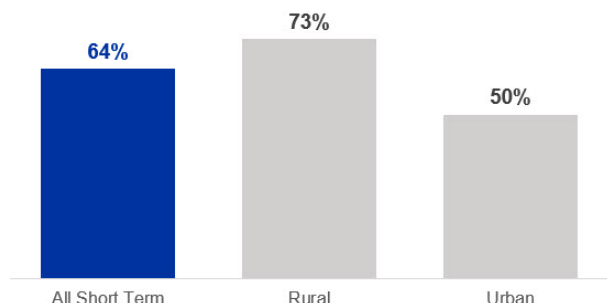
Figures 8 through 11 focus on Short-Term Acute Care and Critical Access Hospitals (CAHs) and the difference between rural and urban adoption rates for Telehealth and RPM. Figure 8 illustrates that the Telehealth adoption rate for Short-Term Acute Care Hospitals in Kentucky was higher (69%) than the aggregate Telehealth adoption rate in the state of Kentucky (55%) (Figure 1). The same is true when looking at adoption rates for Telehealth by rural and urban Short-Term Acute Care Hospitals. For example, Telehealth was adopted by 81% of rural short-term acute care hospitals. This is considerably higher than the aggregate proportion of rural hospitals adopting

Figure 8. Percent of **Short Term Acute Care Hospitals** in Kentucky that had adopted **Telehealth** in 2019.



Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

Figure 9. Percent of **Short Term Acute Care Hospitals** in Kentucky that had adopted **RPM** in 2019.



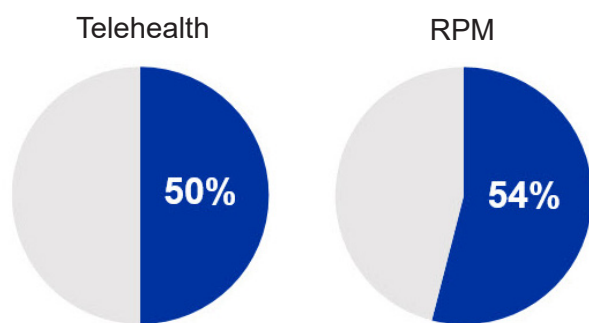
Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

Telehealth in Kentucky (65%). Similarly, 50% of short-term acute care hospitals in urban areas adopted Telehealth by 2019 (Figure 8) as compared to 40% of all urban hospitals in Kentucky (Figure 3).

As we can see in Figure 9, the Remote Patient Monitoring adoption rate was also considerably higher for Short-Term Acute Care Hospitals (64%) compared to the aggregate adoption rate of all hospitals in Kentucky (51%) (Figure 4). The same trend is depicted when we look at rural and urban hospitals separately, with 73% of rural and 50% of urban Short-Term Acute Care Hospitals adopting Telehealth by 2019, compared to 61% and 38% of rural and urban hospitals in Kentucky (Figures 5 and 6, respectively).

Telehealth adoption by 2019 was lower for Critical Access Hospitals (50%) (Figure 10) than for Short-Term Acute Care Hospitals in Kentucky (69%) (Figure 8). As we can also see in Figure 10, Remote Patient Monitoring adoption was also lower for Critical Access Hospitals (54%) than for Short-Term Acute Care Hospitals in Kentucky (64%) (Figure 9). The same is true for rural Critical Access Hospitals, with a 55% adoption rate, compared to the 73% adoption rate of rural Short-Term Acute Care Hospitals.

Figure 10. Percent of Critical Access Hospitals in Kentucky that had adopted Telehealth and/or RPM in 2019.



Source: American Hospital Association (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement

SUMMARY AND CONCLUSIONS

The COVID-19 pandemic caused a serious public health crisis. Telehealth was considered a potential tool to mitigate such a crisis, as it could be used to provide people with remote access to healthcare without increasing the risk of transmitting the infection.¹ Nonetheless, not all hospitals had adopted Telehealth prior to the COVID-19 pandemic, and therefore, not all hospitals were equally equipped to face the pandemic. In this article, we examined how prepared hospitals in Kentucky were before the COVID-19 pandemic (2019) in terms of Telehealth adoption. Overall, Telehealth adoption was significantly lower in Kentucky than in the rest of the country by 2019. When rural and urban hospitals in Kentucky were examined separately, we found that rural hospitals had higher Telehealth adoption than urban areas. In terms of Remote Patient Monitoring, a very important component of Telehealth, we found that adoption was similar in Kentucky and in the rest of the country. Remote Patient Monitoring adoption was also higher in rural than in urban areas in Kentucky.

When we examined the differences in Telehealth and Remote Patient Monitoring adoption rates before the COVID-19 pandemic for Short-Term Acute Care Hospitals and Critical Access Hospitals in Kentucky, we found that Short-Term Acute Care Hospitals had higher Telehealth and Remote Patient Monitoring adoption rates than Critical Access Hospitals.

The COVID-19 pandemic demonstrated the relevance and the potential of Telehealth. This brief analysis aimed to measure where Kentucky was standing in terms of Telehealth adoption prior to the COVID-19 health emergency. While we found that Kentucky was behind in Telehealth adoption as compared to the rest of the country, we also found that Short-Term Acute Care hospitals in Kentucky were somewhat ahead. The COVID-19 pandemic contributed to Telehealth use rates never seen before

in the U.S. A future study could look at hospital adoption rates for Telehealth and Remote Patient Monitoring since the COVID-19 pandemic, particularly for Critical Access Hospitals, who were lagging in 2019.

REFERENCES

1. Ali NA, Khoja A. *Telehealth: An important player during the COVID-19 pandemic*. The Ochsner Journal. 2020; 20(2):113.
2. Centers for Medicare and Medicaid Services (CMS). *Telehealth for providers: what you need to know*. 2020. Accessed July 10, 2021. <https://www.cms.gov/files/document/telehealth-toolkit-providers.pdf>.
3. Chang JE., Lai AY, Gupta A, et al. *Rapid transition to telehealth and the digital divide: implications for primary care access and equity in a post-COVID Era*. Milbank Q. 2021; 99(2): 340-368.
4. Gajarawala SN, Pelkowski JN. *Telehealth benefits and barriers*. Journal of Nursing Practice. 2021 Feb 1; 17(2):218-21.
5. Lin CC, Dievler A, Robbins C, et al. *Telehealth in health centers: key adoption factors, barriers, and opportunities*. Health Affairs 2018 Dec 1;37(12):1967-74.
6. Malliaras P, Merolli M, Williams CM, et al. *'It's not hands-on therapy, so it's very limited': telehealth use and views among allied health clinicians during the coronavirus pandemic*. Musculoskeletal Sci Practice. 2021; 52:102340.
7. Standing C, Standing S, McDermott ML, et al. *The paradoxes of telehealth: a review of the literature 2000–2015*. Systems Research and Behavior Science. 2018; 35(1):90-101.
8. Talebian SC. *Introduction to telehealth coding: clinical issues and solutions/documentation guidance*. Urologic Nursing Journal. 2020; 195-200.
9. United States Department of Health and Human Services (HHS). *What is telehealth?* 2021. Accessed June 30, 2022. <https://www.hhs.gov/hipaa/for-professionals/faq/3015/what-is-telehealth/index.html>
10. Vegesna A, Tran M, Angelaccio M, et al. *Remote patient monitoring via non-invasive digital technologies: a systematic review*. TELEMED E-HEALTH. 2017; 23(1):3-17.

TECHNICAL NOTES

Telehealth is defined by the U.S. Department of Health and Human Services as the “use of electronic information and telecommunication technologies to support and promote long distance clinical health care, patient and professional health-related education, public health and health administration”. Prior to COVID-19 the adoption of telehealth across United States varied between states and from one hospital to another. To better understand how Kentucky compares with U.S., we used data from the American Hospital Association’s (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement for year 2019. For this analysis:

1. We consider telehealth adoption if a hospital's Electronic Health Record (EHR) systems have software allowing for telehealth functionality. This information is provided by the American Hospital Association’s (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement (2019).
2. We are only accounting for hospitals that answered the American Hospital Association’s (AHA) Annual Survey of Hospitals Information Technology (IT) Supplement in 2019. The AHA Survey is national in scope. However, not all hospitals provide feedback. Thus, the AHA data is limited as it does not include all hospitals in Kentucky.
3. We classified hospitals into rural or urban based on the Rural-Urban Continuum Code (RUCC) for the county, as follows: hospitals located in a county with a RUCC code of 1-3 are considered urban and, hospitals located in a county with a Rural-Urban Continuum Code (RUCC) greater than or equal to four are rural. The RUCC code is generated by the U.S. Department of Agriculture and is a “classification scheme that distinguishes metropolitan counties by the population size of their metro area, and nonmetropolitan counties by degree of urbanization and adjacency to a metro area.”