

INTRODUCTION & OBJECTIVES

- Due to the onset of the COVID-19 pandemic, patients' ability to visit care settings in-person became severely restricted¹
- Quantification of the immediate and enduring impact on telehealth utilization at a population level is an unanswered question, as is the impact by demographic groups, specific conditions, and physician specialties
- This study aimed to identify medical conditions typically treated using telehealth and quantify trends in telehealth utilization prior to and through the COVID-19 pandemic

METHODS

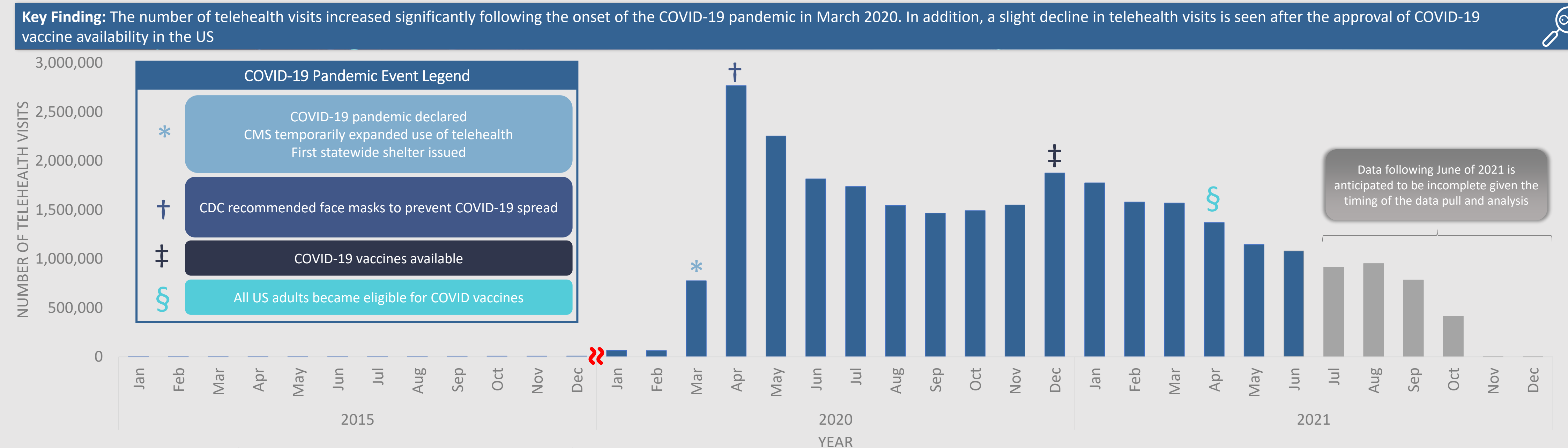
- A retrospective analysis was performed using a 10 million-record random sample of patients with telehealth visits from January 1, 2015-December 14, 2021
- For the purposes of this analysis, the post-pandemic time period was defined as March 2020 onward
- Telehealth codes and effective dates are described in detail in Table 1
- Telehealth visits were defined by either specific CPT or HCPCS telehealth procedure codes or general physician visit procedure codes with telehealth modifiers or place-of-service codes
- Telehealth visits were defined by either:
 - General physician visit procedure codes (Table 1, Section A) AND
 - Telehealth modifiers (Table 1, Section B), OR
 - Place-of-service codes (Table 1, Section C)
 - Specific telehealth procedure codes (Table 1, section D)
- To help contextualize and understand the trends in telehealth utilization, Figure 1 highlights major events throughout the COVID-19 pandemic
- This study analyzed patient-level US claims data in the Komodo Healthcare Map™, a dataset including longitudinal medical and prescription claims encompassing adjudicated claims of >320 million unique enrollees from the US commercial, Medicare, and Medicaid insured populations²
- Lag between data creation and availability exists despite the robustness of Komodo data, resulting in slightly incomplete capture of the last six months of 2021
 - A sub-analysis was conducted that evaluated telehealth utilization for the month of June (the most recent anticipated month of complete data in 2021) for each year of the analysis to enable year over year comparisons to account for this
- Descriptive statistics, including mean, median, ranges, etc. were analyzed using SQL
 - When analyzing health conditions, Clinical Classifications Software Refined (CCSR) condition groups were used. CCSR is developed by Healthcare Cost and Utilization Project (HCUP) and aggregates ICD-10- CM/PCS into clinically meaningful categories³

Table 1 | Telehealth CPT/HCPCS Procedure Codes and Procedure Code Modifiers^{4,5}

Procedure Codes/Modifiers	Description	Year of Introduction
Section A: General Physician Visit Procedure Codes		
99201-99215	Office or other outpatient visit for the evaluation and management of a new or established patient	Prior to 2015; 99201 was eliminated in 2021
Section B: Telehealth Procedure Code Modifiers		
-GT	Synchronous service via interactive audio and video telecommunications systems	Prior to 2015; Eliminated in 2018 and replaced by the POS telehealth code in Section C
-95	Synchronous telemedicine service rendered via a real-time interactive audio and video telecommunications system	2017
Section C: Telehealth Place of Service (POS) Code		
POS code 02	The location where health services and health-related services are provided or received, through telecommunication technology	2017
Section D: Telehealth-specific Procedure Codes		
98966-98968	Telephone assessment and management service provided by a qualified non-physician health care professional to an established patient	
99441-99443	Telephone evaluation and management service by a physician or other qualified health care professional provided to an established patient not originating from a related E/M service provided within the previous 7 days nor leading to within the next 24 hours or soonest available appointment	Prior to 2015
Q3014; Q3014GT	Services incurred at the site where the patient is located during the telehealth service	
T1014	Telehealth transmission, per minute	
Q3014; Q3014GT	Services incurred at the site where the patient is located during the telehealth service	
T1014	Telehealth transmission, per minute	

Footnote: All codes are still in use unless otherwise noted. Telehealth codes related to inpatient care were not included for this analysis.

Figure 1 | Number of Telehealth Visits Over Time (2015-2021)^{6,7}



Footnote: There is an axis break to improve the readability of years 2020 and 2021 prior to and through the COVID-19 pandemic. Monthly utilization from 2015-2019 did not exceed 60,000 visits.

RESULTS

- The analysis included 9,853,828 patients with a mean (SD) age of 46.6 (±21.6) years and 58.6% were female
- The majority of the patients in the cohort had a commercial plan (70%) and resided in the southern region (36%)
- Over the 7-year period, 30,266,939 telehealth visits were completed with a 5-fold year-over-year increase on average
- Figure 1 shows the monthly number of telehealth visits from 2015-2017
 - In a separate sub-cohort analysis of a single month (June) of each year, the number of telehealth visits increased by 166% from 2015-2016 and by 41%-54% for each year between 2016-2019
 - Between June 2019 and June 2020, there was a substantial 4,425% increase followed by a slight decrease of 40% from 2020-2021

Figure 2 | Individuals Utilizing Telehealth Visits by Age Group

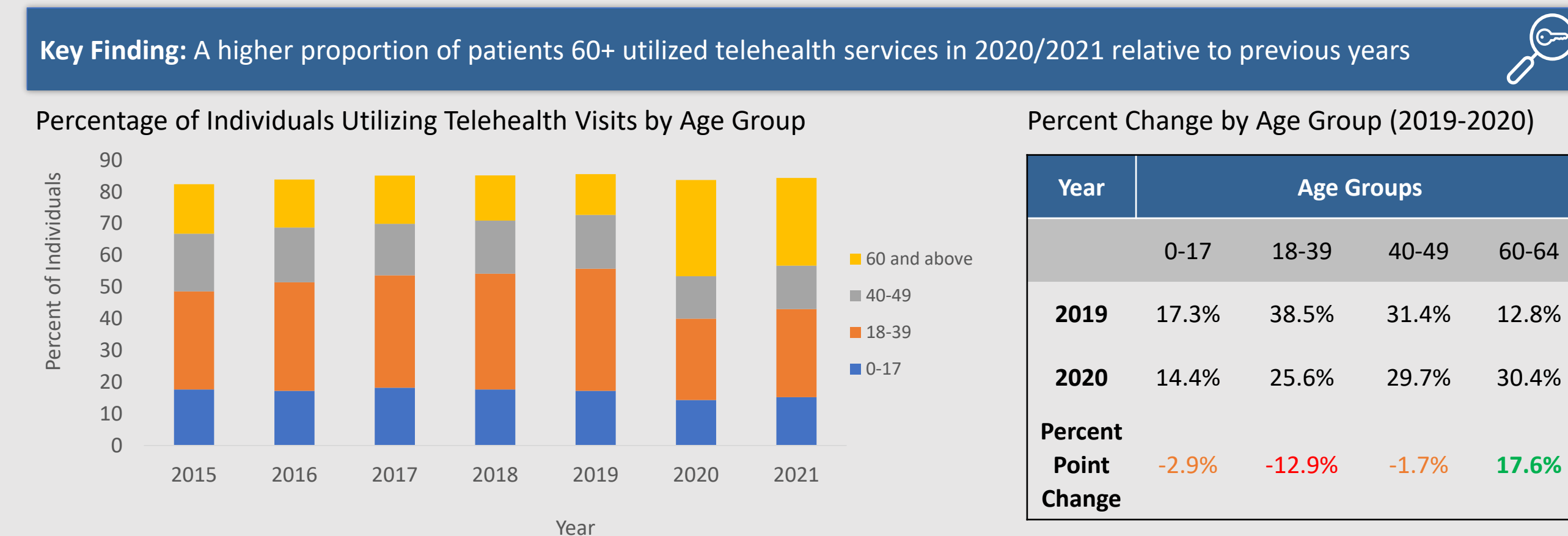
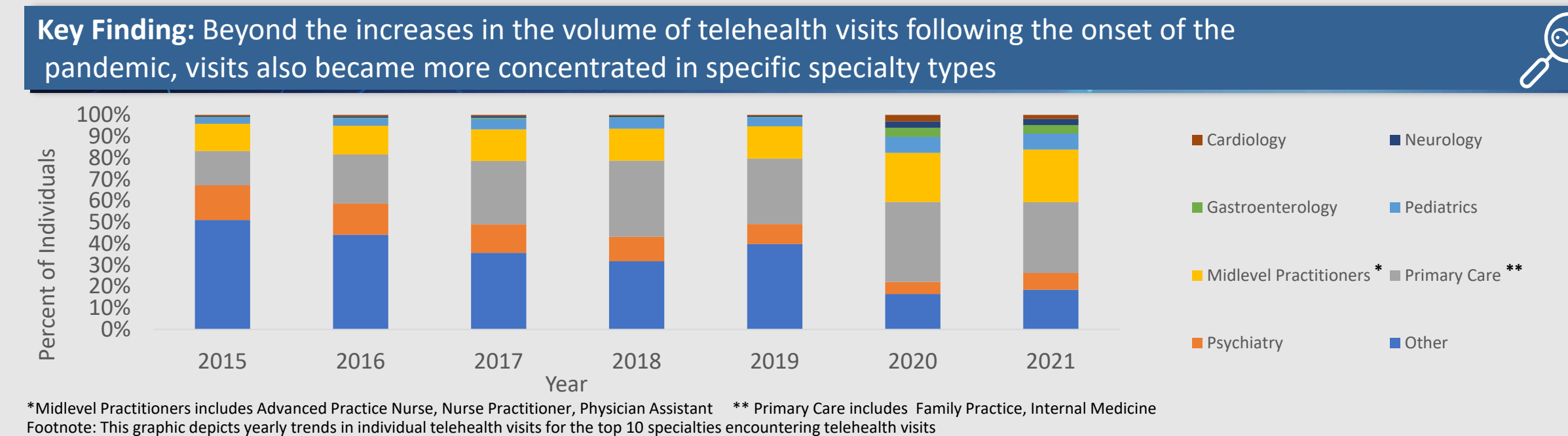
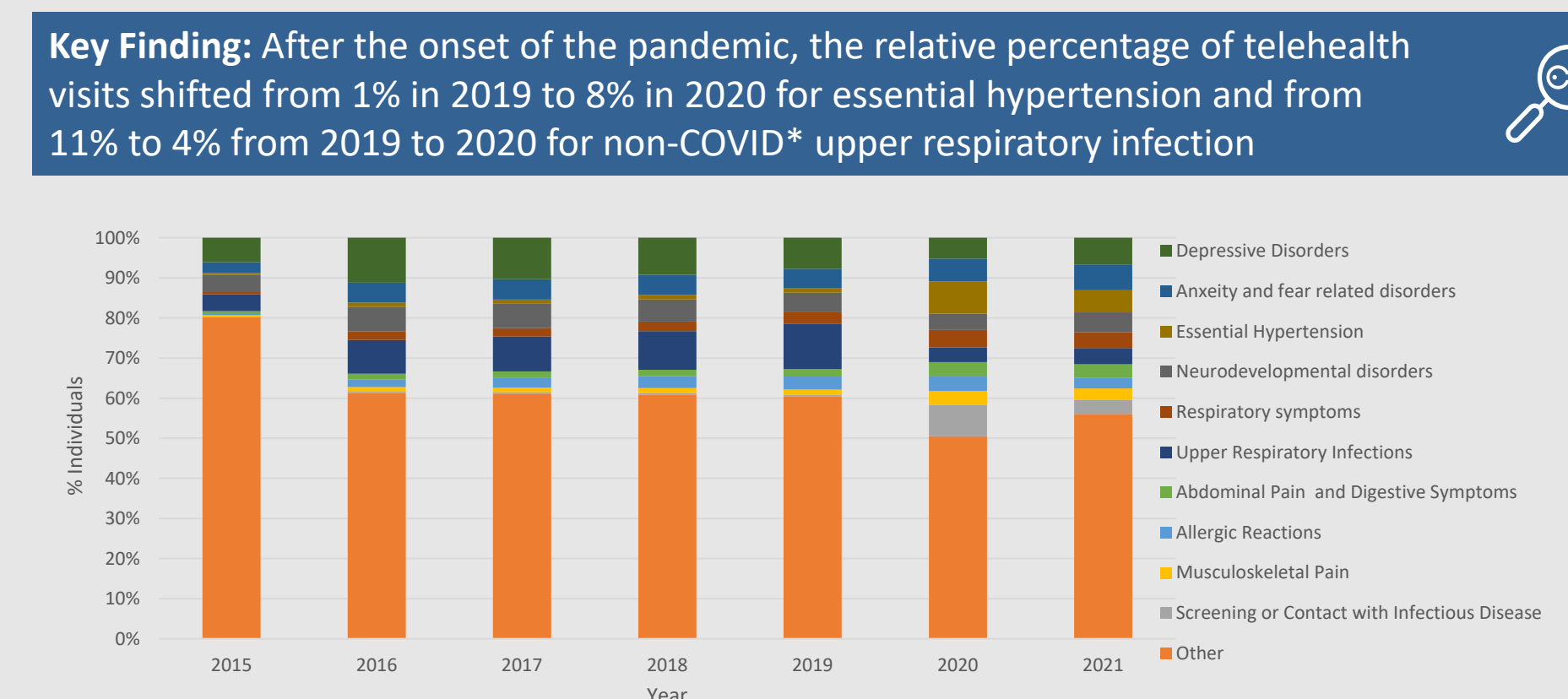


Figure 3 | Telehealth Visits by Specialty by Year



*Midlevel Practitioners includes Advanced Practice Nurse, Nurse Practitioner, Physician Assistant ** Primary Care includes Family Practice, Internal Medicine
Footnote: This graphic depicts yearly trends in individual telehealth visits for the top 10 specialties encountering telehealth visits

Figure 4 | Percentage of Individuals Utilizing Telehealth Visits by Health Conditions



Footnote: This graphic depicts yearly trends in individual telehealth visits for the top 10 Clinical Classifications Software Refined (CCSR) condition groups (2015 – 2021). CCSR is developed by Healthcare Cost and Utilization Project (HCUP) and aggregates ICD-10- CM/PCS into clinically meaningful categories.
* There was a delay in the use of COVID-specific codes which prevent usability of COVID cases

DISCUSSION & CONCLUSIONS

Our results show an **immense increase in telehealth utilization** in the past few years **aligning with the onset of the COVID-19 pandemic**

- There were substantial and sustained increases in the 7-year analysis, concentrated specifically in these past 2 years. There were also some localized dips in the data, corresponding to key milestones in the pandemic such as the availability of vaccines
- Even after the consideration for the slight decrease in 2021, likely driven by limitation of having incomplete data as noted in Figure 1, telehealth utilization remained far above pre-pandemic utilization

Analysis of demographic features of this cohort reveal that

- Telehealth visit utilization increased substantially among patients aged 60 years and older** after the onset of the COVID-19 pandemic. This may be indicative of this older population requiring more care, perceiving that their medical needs are urgent, and having a higher risk of morbidity or mortality if exposed to COVID-19 from receiving care in-person
- In contrast, **patients between the ages of 18 and 39 showed a moderate decrease in telehealth utilization** after the onset of the COVID-19 pandemic, which could be a reflection of this younger, healthier cohort forgoing or postponing healthcare services
- Payer and regional distributions are representative of the distribution within the dataset indicating even uptake and distribution across these characteristics
 - Payer and regional distributions remained consistent during and post-pandemic as well
 - Limitation: This was a random sample and not representative of the entire US population

Among specialties, **family practice and internal medicine had the highest utilization of telehealth visits** across all year (2015-2021), followed by psychiatry. This is consistent with the most commonly treated health conditions with telehealth (i.e., essential hypertension and screening or contact with infectious disease, which is often managed by family medicine, followed by anxiety and fear-related disorders and depressive disorders (often managed by psychiatry))

Our research indicates that **depressive disorder and anxiety and fear-related disorders were the most common conditions for telehealth visits in 2021**, which could indicate an increased need for mental health services during the pandemic and/or is reflective of the ability for mental health conditions to be evaluated or treated via telehealth

This research evaluated frequency and descriptive statistics associated with telehealth uptake, however, is limited in its ability to describe the outcomes of providing “virtual” healthcare services. **Additional research could assess the extent to which telehealth visits are as effective as in-person care**

These data indicate that telehealth use has seen a dramatic increase; this could become an enduring avenue for providing healthcare in the US. However, this will need to be evaluated further going forward to determine the extent to which these patterns will prevail, particularly for primary care and mental health services

REFERENCES

- Garfan S, Alamoody AH, Zaidan BB, Al-Zobbi M, Hamid RA, Alwan JK, Ahmaro IYY, Khalid ET, Jumaah FM, Albahri OS, Zaidan AA, Albahri AS, Al-Qaysi ZT, Ahmed MA, Shuwandi ML, Salih MM, Zughoul O, Mohammed KI, Momani F. Telehealth utilization during the Covid-19 pandemic: A systematic review. *Comput Biol Med.* 2021 Nov;138:104878. doi: 10.1016/j.cbiomed.2021.104878. Epub 2021 Sep 20. PMID: 34592585; PMCID: PMC8450049.
- Komodo Healthcare Map™
- Clinical Classifications Software Refined (CCSR). Healthcare Cost and Utilization Project (HCUP). Agency for Healthcare Research and Quality (AHRQ). Available from: https://www.hcup-us.ahrq.gov/toolssoftware/ccsr/ccs_refined.jsp
- Gross GN. Coding Telemedicine Visits for Proper Reimbursement. *Curr Allergy Asthma Rep.* 2020 Oct 2;20(11):73. doi: 10.1007/s11882-020-00970-0. PMID: 33006664; PMCID: PMC7529586.
- Abbas-Feinberg F. Telemedicine Coding and Reimbursement - Current and Future Trends. *Sleep Med Clin.* 2020 Sep;15(3):417-429. doi: 10.1016/j.jsmc.2020.06.002. Epub 2020 Jul 3. PMID: 32762974; PMCID: PMC7341968.
- A Timeline of COVID-19 Developments in 2020. *AJMC.* 2021. Available from: <https://www.ajmc.com/view/a-timeline-of-covid19-developments-in-2020>
- A Timeline of COVID-19 Developments in 2021. *AJMC.* 2021. Available from: <https://www.ajmc.com/view/a-timeline-of-covid-19-vaccine-developments-in-2021>

DATA STATEMENT

© 2022 Komodo Health, Inc. All rights reserved. Reproduction, distribution, transmission or publication is prohibited. Reprinted with permission.

