



ADVANCING HEALTH AND WELLNESS VIA THE SMART HOME

The Value of Telehealth Partnerships
between Healthcare Providers, State +
Local Governments and Cable Companies

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
INTRODUCTION	4
PART I	
Healthcare's 'Amazon Moment'.....	5
Reinvented healthcare centered on services to patients in their homes.....	6
PART II	
Five Key Ingredients Necessary to Advance Home-Centric Health.....	7
Adequate Connectivity Available to a Critical Mass of Households.....	7
Compelling Telehealth Applications and Services.....	8
Business Case for In-Home Virtual Care.....	10
Regulatory Environment.....	11
Research Pilots Demonstrating Positive Outcomes.....	12
PART III	
State and Local Governments as Champions of Home-Centric Healthcare.....	13
Three steps state and local governments take to advance smart home-centered healthcare goals?.....	13
1. Utilize existing offices of Medicaid present in every state.....	13
2. Leverage existing efforts within state and local government that are advancing so-called smart community initiatives.....	14
3. Enact permanent rules and regulations that support Telehealth and encourage home-centric healthcare pilot projects.....	15
Potential impacts of state & local governments advocacy for at-home healthcare.....	16
1. The utilization of the smart home to deliver health and wellness will expand access to quality healthcare, especially to those who are in greatest need of quality care.....	16
2. Support from state and local governments for a continuation of healthcare in the home services can help transform the healthcare industry in manner that will result in healthier communities.....	17
PART IV	
Cable Companies are Key Partners in a Home-Centered Healthcare System.....	18
Five key contributions of cable companies to the delivery of healthcare services.....	18
1. Providing innovative connectivity solutions.....	18
2. Deploying and supporting connected devices.....	19
3. Ensuring privacy and advancing security.....	19
4. Effectively engaging senior citizens.....	19
5. Enabling collaboration among key stakeholders and the development of key data regarding telehealth services.....	20
CONCLUSION	20

EXECUTIVE SUMMARY

Under the banner of Smart Community or “Smart City” initiatives, hundreds of state and local governments across the globe are addressing vexing challenges and striving to make their communities more livable. Communities ranging in size from the largest to smallest have adopted smart community plans aiming to address challenges as varied as reducing traffic congestion, enhancing disaster preparedness and improving air quality. A common thread connecting all smart community projects is that they seek to leverage new technologies and innovative collaborations.

State and local governments – in collaboration with key stakeholders – are well positioned to advance health and wellness in their communities by pursuing a new smart community initiative focused on home-centric healthcare. The key ingredients required to deliver effective healthcare services to residents in their homes are largely in place. In this whitepaper we make the case that state and local governments have an opportunity to become important champions of home-centric healthcare. Combine their existing resources and experience paying-for and delivering healthcare services with compelling telehealth tools and applications, state and local government leaders can advance health and wellness for their residents and transform their communities.

The smart home is the platform through which home-centric healthcare services will be delivered. During the stay-at-home orders that were part of the response to the COVID-19 pandemic, tens of millions of Americans used their home broadband connections to work, learn, receive healthcare services and play. Looking to the post-COVID-19 future, healthcare services delivered to patients in their home must be easy-to-use, compliant with the requirements of the Health Insurance Portability and Accountability Act (HIPPA) and secure. Cable providers have decades of experience supporting the devices and networks that enable home-centric healthcare. stand ready to partner with state and local government to leverage the devices and networks that will advance health and wellness via the smart home.

Key Findings:

- Experts predict that, in the wake of the COVID-19 pandemic, a reinvented healthcare system will emerge and the delivery of health and wellness services to patients in their homes will be at the center of the new system.
- Five key ingredients required to start delivering health and wellness services via the smart home are, as of June 2021, largely in-place.
- As regulators, administrators of large healthcare programs and leaders of smart community efforts, state and local government leaders can play a critical role advancing efforts to deliver health and wellness directly to residents in their homes.
- Cable companies are uniquely well positioned to help stakeholders (including healthcare providers, payers and patients) leverage the devices and networks that enable the smart home to deliver health and wellness services.

INTRODUCTION

Since March 2020 when patients were first discouraged from visiting their healthcare providers for non-COVID-19 conditions, countless Americans have accessed telehealth applications in our homes for the first time. Very rapidly and in great numbers, Americans have connected with their caregivers virtually. By way of example, the number of Medicare recipients receiving telehealth services increased from 11,000 during the week ending March 7, 2020 to nearly 1.3 million during the week ending April 18, 2020, an increase of more than 10,000% over a 6-week period. Observers of the healthcare industry believe that 2020 was a transformational year for healthcare delivery in the United States. Healthcare delivery, according to these forecasts, will continue to be home-centric even after the immediate crisis of COVID-19 subsides.



Before COVID-19, it was reasonable to raise questions about the feasibility of delivering home-centric healthcare at scale in communities across the United States. Now, however, the lived experience of millions of Americans provides emphatic answers to those who might doubt the feasibility of home-centric healthcare. The smart home, powered by broadband networks that have been tested during the COVID-19 pandemic and have [continued to deliver](#) reliable connectivity, is a viable platform to advance health and wellness.

The transformation of healthcare delivery toward home-centric healthcare creates a great opportunity for state and local governments to advance critical health and wellness objectives in their communities. Virtual health applications and Remote Patient Monitoring (RPM) delivered to residents in their homes can save governments billions of dollars, deliver high quality healthcare and wellness programs to residents and improve the overall quality of life in communities. State and local governments, already the administrators of multi-billion-dollar healthcare programs (Medicaid), should take a leadership role in the development and implementation of initiatives designed to leverage the smart home.

This white paper explores whether a partnership between healthcare providers, state and local governments and technology companies can accelerate the reality of home-centered health and wellness services. The paper considers the resources and partner organizations that state and local government leaders can draw-upon, including the unique contributions of cable companies who serve as Internet Service Providers for tens of millions of American homes. Ultimately, the whitepaper concludes that the healthcare sector's "Amazon Moment" provides unique opportunities for state and local governments and cable providers to work together and advance health and wellness.

HEALTHCARE'S 'AMAZON MOMENT'

During the COVID-19 pandemic the number of patients and providers utilizing health and wellness services has seen an astronomical increase. A [review of Medicare claims data](#) reveals that nearly 1.3 million Medicare recipients received telehealth services during the week ending April 18, 2020. During the week ending March 7 (the last full week before the Federal government's March 2020 Shelter in Place Order began), 11,000 Medicare recipients received telehealth services. In a period of 6-weeks, weekly utilization of telehealth services increased more than 10,000%.

As most of the country was under a Shelter in Place orders between March 7 and April 18, it is reasonable to conclude that a clear majority of patients received these services in their home. Experts predict that the delivery of healthcare services and the location where patients will receive healthcare services will change radically and permanently because of the COVID-19 pandemic. Dr. Stephen Klasko, CEO of the Philadelphia-based Jefferson Health is among those who believe that care delivery will never be the same in the wake of COVID-19. In the [April 1, 2020 issue of Becker's Hospital Review](#), Dr. Klasko writes:



This is healthcare's Amazon moment. If you are a provider and think you're going to go back to your business model solely being based on hospital revenue and not relevant to people who want care at home, I think you will be out of business. If you're an insurer and think you can just be the middle man between the hospital and the patient, you'll be irrelevant. If hospitals believe that innovation can be just this cute little thing that they do in the background but the real business is just getting heads in beds, they're nuts. I think we were always wondering what the big disruption would be that got us to join the consumer revolution, and I think this is it."

Dr. Klasko envisions changes to the underlying business models of hospitals and insurers. Changes driven by the continued and widespread adoption of health and wellness services by people who want care at home.

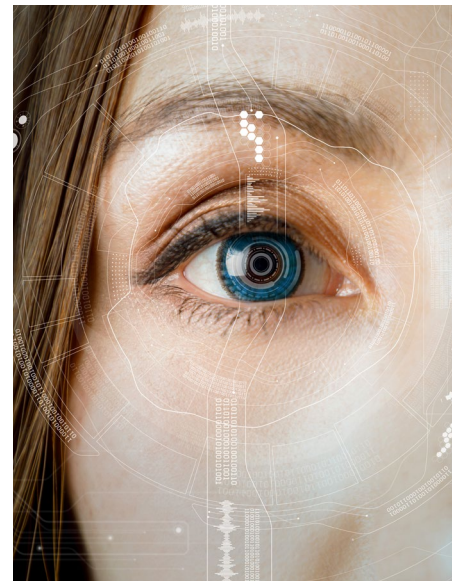
Mike Braham, Senior Vice President and General Manager of the connected health firm Trapollo, agrees with Dr. Klasko's contention that acceptance of telehealth – among providers and patients alike – will continue after the Pandemic. In a [May 18, 2020 interview](#), Mr. Braham states that "we'd always hoped telehealth would just be 'healthcare,' and using video was just a modality. And I think that's primarily what we'll see [as the Pandemic subsides]." Dr. Robert Graboyes, Senior Research Fellow at the Mercatus Center and author of *Fortress and Frontier in American Healthcare* [observes](#) that he has seen "more innovation in healthcare during the last 25-days than the previous 25-years."

Reinvented Healthcare Systems will be Centered on the Delivery of Service to Patients in Their Homes

Experts envision a reinvented healthcare system, one that is increasingly centered on delivering services to patients in their homes. There is already compelling evidence that telehealth will be a centerpiece of a new healthcare system that emerges in the wake of the COVID-19 pandemic. For example, a [May 19 Executive Order](#) directed the Centers for Medicare and Medicaid Services (CMS) Administrator to initiate a rulemaking that will evaluate the telehealth waivers to determine if they should be extended past the scope of the national emergency. While CMS Administrator, Seema Verma [indicated](#) that she expects that some of the provisions will be made permanent. For supporters of new regulations governing telehealth, it was encouraging news that, in a January 29, 2021 [letter to the Governors](#) of all 50 states, the Acting Secretary of Health and Human Services announced that the public health emergency declaration that allows states to waive certain Medicaid and Medicare requirements will be in place throughout 2021.

Of course, the impact of any new CMS regulations designed to encourage the use of telehealth services will have the greatest impact if providers and patients also favor the use of telehealth services. [Patient satisfaction surveys](#) collected and posted by the Alliance for Connected Care illustrate that telehealth receives high marks from patients. Healthcare providers also support telehealth and a decision by CMS to make permanent the relaxed regulations that have enabled the expansive growth of telehealth since March 2020.

While favorable telehealth rulemaking by CMS is a critical step, a reinvented healthcare system increasingly centered on delivering services to patients in their homes will require more than just CMS action. Because of the complexity of the healthcare ecosystem, delivering compelling and trusted health and wellness services via a patient's smart home will require collaboration. Home-centric healthcare solutions will be developed and implemented by a patchwork of organizations with an interest in using innovative technologies to advance healthy patients and communities. Let's turn to consider the key elements that need to be in place to support and enable the widespread use of the smart home to deliver health and wellness services.



A May 13, 2020 survey of 245 health providers indicated that 93% of surveyed providers want CMS to make permanent telehealth waivers that allow all providers to earn full payment for virtual patient care visits provided to Medicare beneficiaries.



FIVE KEY INGREDIENTS NECESSARY TO ADVANCE HOME-CENTRIC HEALTH

An effort to advance health and wellness via the smart home will require the following five critical elements: 1) adequate connectivity available to a critical mass of households, 2) compelling applications, 3) a clear business case for patients, healthcare providers and payers (including state and local governments), 4) a supportive regulatory environment and 5) data driven evidence that telehealth services deliver positive outcomes.

Adequate Connectivity Available to a Critical Mass of Households

A successful deployment of healthcare applications via a smart home platform depends on the ability to reach a critical mass of users. A serviceable market of potential end-users must possess effective in-home networks and high speed access to the Internet that enable seamless data collection and dissemination. Drawing on recent data, a strong case can be made that—for the first time—a critical mass of smart households is now present in the United States.

The last few years have included a dramatic sea change in the number of households where ultra-high speed broadband service is available. Between 2016 and 2020, thousands of communities and millions of households have new-found access to broadband networks capable of gigabit per second speed service (“gigabit service”). This is largely a result of a large-scale investment in network upgrades undertaken by the cable providers across the country.

According to data collected by the cable industry’s trade association, NCTA, in December 2016, 4% of households served by cable companies had access to gigabit service. By December 2019, the [percentage of households served by cable companies that had access to gigabit network had increased to 80%](#), with some cable operators reporting that 99% of households in their service area have access to gigabit service.

Of course, the fact that more than 80% of households have access to advanced broadband networks is not sufficient. For reasons made abundantly clear during the COVID-19 pandemic, all households need access to robust connections to the Internet. Efforts to ensure that all American households have access to ultra-high speed continue. Cable operators and other Internet Service Providers (ISPs) continue to invest in network upgrades. Additionally, Advancements in fixed wireless broadband technologies and [recent decisions by the FCC](#) to make available spectrum well suited to rural deployments will enable new avenues to connect communities and households in underserved rural areas with robust broadband service.

With the passage of the Cares Act, the Federal government established [a new COVID-19 Telehealth Program to expand connectivity in support of telemedicine](#). In total, the FCC will make available nearly \$450 million to help healthcare providers offer telehealth and connected care services to patients at their homes or mobile locations.

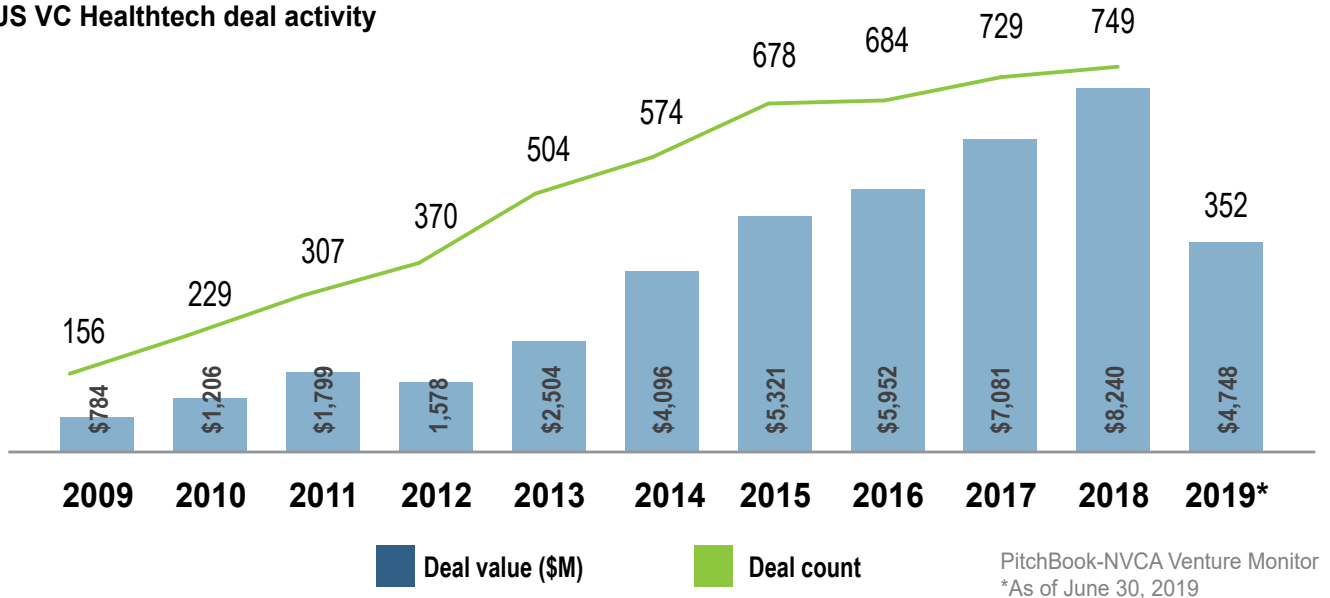
Consumers are taking advantage of ultra-high speed connectivity being offered by ISPs. In so doing, these consumers have created a potential market of tens of millions of households with access to a powerful platform through which remote services and innovative applications can be delivered.

Compelling Telehealth Applications and Services

Hundreds of companies have developed applications and services that enable healthcare providers and patients to interact remotely. According to the National Venture Capital Association (NVCA), [between 2009 and 2019 venture capital funds have invested more than \\$2B](#) in companies offering innovative products or services best described at “telehealth.” In an apparent response to potential growth in the market due to the COVID-19 pandemic, telehealth firms raised \$788M during the first quarter of 2020, amounting to three times the funds raised by telehealth firms in Q1 2019.

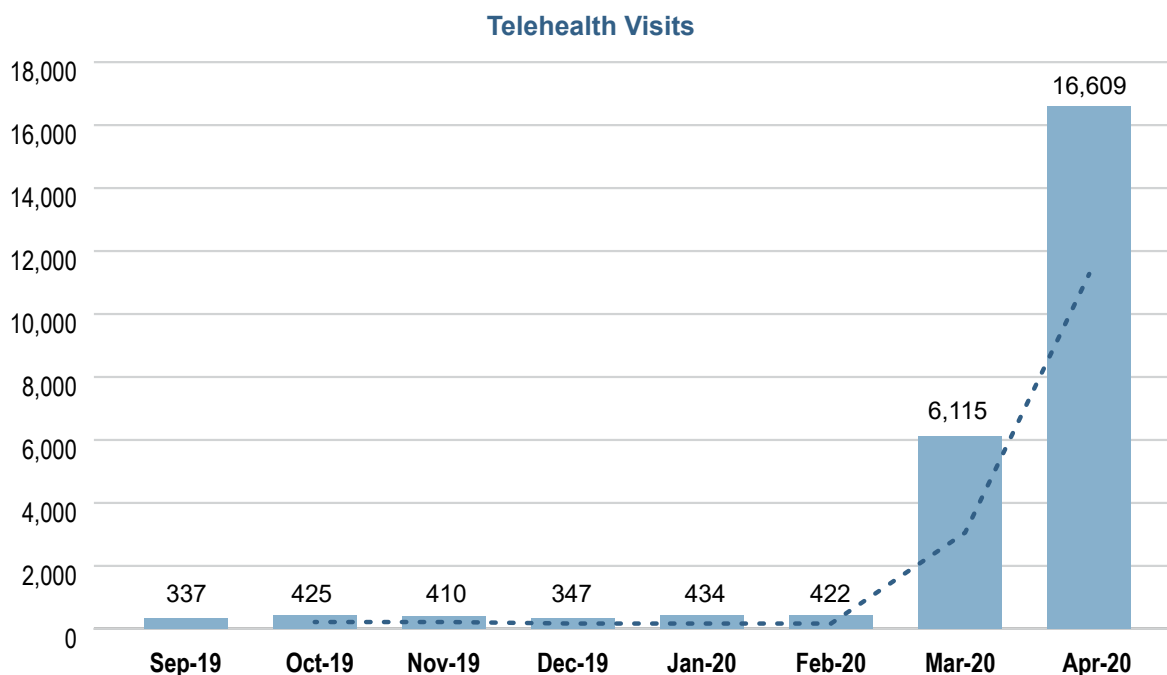
Healthtech investment trending toward new high

US VC Healthtech deal activity



The Consumer Technology Association (CTA) and American Telemedicine Association (ATA) have developed a [directory](#) to help healthcare professionals and patients identify digital health technologies that connect patients and clinicians with health care solutions. Launched in April 2020, the directory includes 170+ service providers, application developers and medical device makers. Companies listed in the directory offer applications and services that enable/support telemedicine, diabetes care, remote patient monitoring (RPM) and telemental health.

It is important to take note of the diverse array of market segments in which telehealth firms operate. So-called telemedicine firms, including [Teladoc, operate in countries across the globe and connect patients and their healthcare providers offering patient engagement and real-time, two-way video virtual visits](#) and increasing access to care. In 2019, Teladoc reported 37 million paid memberships and another 19 million fee-based visits. RPM firms, including Mcare, offer technological platforms that support monitoring and provide access to resources that enable elderly to live independently and help those with chronic disease to manage their condition. Other companies, including Trapollo, partner directly with hospitals, healthcare providers and insurers to provide coordinated care using several technological tools including digital engagement tools, telehealth capabilities and monitoring functions. Taken as a whole, the telehealth sector offers a new vision of connected health wherein technology-enabled engagements augment in-person clinical visits.



Reflecting on Trapollo's 10-year history, its Co-Founder John Aldridge articulated how a vision of connect health will transform the lives of patients, providers and communities for the better.

During the time of COVID-19, behavior change among patients in favor of using at-home technologies as part of their healthcare delivery (a change that John Aldridge suggests will be attributable to demographic changes) has occurred seemingly overnight. Teladoc [reported an increase of 50% in visit volume](#) during the first weeks of the pandemic in March 2020. Whereas, Trapollo reports that the number of patients with access to the Trapollo-enabled programs had [grown by 3,000% during the first weeks following the emergence of COVID-19](#). New patient behavior is particularly apparent in at Boston Children's Hospital where the Chief Innovation Officer [reports](#) that the hospital is doing more virtual visits in a given day than it did the entire year in 2019.



As the demographics in the U.S. change and more people are willing to use technology as part of their healthcare delivery, we see the adoption of technology enabled connected healthcare rapidly increasing. We see the home and office environments as the next venues for healthcare delivery. Our solutions and services will support preventative care, healthcare as part of one's daily routine and aging in place."

Accompanying the dramatic increase in the number of patients and providers using telehealth services since the emergence of COVID-19 is polling data suggesting an increase in patient satisfaction. A [quarterly survey of patients and providers called the PX Pulse](#) shows that while visits to primary care providers is down, patients surveyed report a 13% increase in satisfaction with overall healthcare quality compared with the (pre-COVID-19) January 2020 survey. The Alliance for Connected Care is posting updated patient satisfaction polling data as it becomes available in a [repository on the organization's website](#).

Business Case for In-Home Virtual Care

Even before the emergence of the COVID-19 pandemic, hospital systems and healthcare payers, including Health Maintenance Organizations (HMOs), large employers, insurance companies, were enthusiastic adopters of the applications and services offered by telehealth companies. For example, in 2017, 52% of Kaiser Permanent's 100 million annual encounters in 2017 were virtual visits. In that same year, the Cleveland Clinic hosted 25,000 virtual doctor visits, up 160% compared to the year before. A 2019 study by the Healthcare consulting firm Mercer found that 88% of employers offer connected health services through their employee health plans. A study released by the American Medical Association (AMA) found that telehealth use grew by 53% from 2016-2017.

For hospital systems and payers, virtual healthcare applications can help them provide effective and cost-effective healthcare while at the same providing compelling solutions to vexing problems (e.g., physicians and nurse shortages in rural areas). A particularly acute challenge that is how best to care for 117 million Americans managing one or more chronic diseases. Experts believe virtual care solutions can help address this challenge. According to the Centers for Disease Control and Prevention, 90% of the nation's \$3.3 trillion annual healthcare expenditure is spent on individuals with chronic and mental health conditions. Hospitals and HMOs that seek reimbursement from the Center for Medicare and Medicaid Services (CMS) have incentives to minimize patient readmittances and, therefore, have interest in utilizing solutions that help monitor, support and encourage patients when they return to their homes after receiving treatment in a healthcare facility.



Regulatory Environment

Before the regulatory waivers that accompanied the emergence of the COVID-19 pandemic, organizations including the [American Hospital Association had raised concerns](#) that federal and state regulations have constrained the utilization of telehealth. Medicare, for instance, would only pay for telehealth services only in qualified rural areas. Additionally, CMS required that the telehealth be conducted in qualifying facilities—a requirement that had ruled out telehealth engagements with Medicare patients in their homes.

The following legal and regulatory issues have had a significant impact on the adoption and utilization of telehealth services and, by extension, on prospect of advancing health and wellness via the smart home.



Coverage and payment issues.

CMS, State Medicaid programs and private insurers have their own rules that govern whether and the extent to which they will reimburse and reimburse healthcare providers for telehealth services.



Health professional licensure.

Every state and territory has laws that govern the practice of medicine. Existing licensure laws present barriers to providing telehealth services across state lines.



Online Prescribing.

If the telehealth services are to be effective, convenient and efficient, providers must be permitted to prescribe medications to their telehealth patients. Concerned about fraud and abuse of controlled substances, states have a variety of laws governing online prescribing. The patchwork of laws creates challenges for Telehealth providers operating in different states.



Privacy and Security.

Because interactions with telehealth patients involve communications technologies, these interactions have increased risks of violating HIPAA's privacy and security regulations. Providers must examine carefully privacy policies and practices and may need to adopt technological tools designed to authenticate patients and providers and secure protected health information.

In response to the fact that many medical offices were closed during the shelter-in-place response to COVID-19, CMS, State Medicaid program and private insurers have relaxed restrictions and issued waivers that make telehealth services — including services delivered to patients in their homes — more accessible. Under the relaxed rules, healthcare providers and patients have embraced the telehealth services. A 2020 [telehealth whitepaper](#) issued jointly by the Progressive Policy Institute and Americans for Prosperity highlights the bipartisan support for making permanent the rules that govern telehealth during the COVID emergency. While dramatic increases in the number of patients and providers using telehealth will subside as the COVID-19 pandemic recedes, increased levels of telehealth adoption will provide policymakers and payers with valuable data that should guide business models and regulations moving forward.

Research Pilots Demonstrating Positive Outcomes

Compelling research projects and studies support a conclusion that telehealth technologies deployed in home can lower costs and improve health outcomes across a wide array of conditions and treatment protocols.

- Penn Medicine [reports a fourfold reduction in rehospitalizations](#) for knee and hip replacement patients who used telehealth tools at home rather than participate in a traditional in-person rehab program
- A [University of Alabama-Birmingham pilot program](#) has demonstrated the effectiveness of replacing office visits for dialysis patients with comprehensive telehealth exams.
- A [Mississippi pilot program to provide remote monitoring for diabetes patients saved nearly \\$350,000](#) in healthcare costs in just the first six months
- A study conducted by the [Veteran Health Administration found that a program using telehealth for home heart monitoring resulted in a 51% reduction in hospital readmissions for heart failure](#).
- A study of the [University of Virginia's Care Coordination Remote Patient Monitoring concluded that hospital readmissions have been reduced by more than 40%](#).
- A [2017 national study of virtual care program designed to address chronic pain](#) found that participants experienced significant reductions in depression, anxiety and stress symptom severity.
- A [2017 study of Los Angeles Counties deployment of the eConsult telehealth](#) application concluded that the application was a promising and sustainable intervention that improves access to specialist care for underserved patients.
- A [2014 study of North Carolina's Statewide Telepsychiatry Program concluded that the use of telehealth resulted in patients spending significant less time in local hospital emergency departments](#) and lowered the likelihood that patients returned to the hospital emergency department for treatment.

More data is needed to better quantify the positive impacts of telehealth applications and services. Federal agencies, universities, hospital systems and state and local government should look for ways to advance peer reviewed studies of virtual care solutions to advance healthcare outcomes in their communities should consider sponsoring research pilots. Additionally, application developers, technology companies, ISPs should develop showcase deployments that illustrate that compelling applications can be securely and reliably delivered to patients in their homes.

PART III

THE ROLE FOR STATE AND LOCAL GOVERNMENTS AS CHAMPIONS OF HOME-CENTRIC HEALTHCARE

To be most impactful, an effort to advance health and wellness via the smart home will require engagement from state and local governments. State and local government leaders should be enthusiastic champions of efforts to leverage the smart home as a platform with the potential to transform healthcare delivery in their communities. Indeed, a central argument of this whitepaper is that leveraging the smart home to deliver telehealth services to residents will benefit the patients using the services and the tax payers paying for the services while also enhancing the livability of communities.

Because of the enormous potential impact of home-centered healthcare, state and local government leaders should act to build-upon and amplify the rapid acceleration in the utilization of healthcare-to-the-home services during the COVID-19 pandemic.

Two contentions support a recommendation that state and local government leaders should be champions of home-centric healthcare. The first contention is that state and local governments possess the existing authority and necessary bureaucratic infrastructure to utilize new technology tools to deliver health and wellness services. The second contention is that state and local action in favor of home-centric healthcare will have a meaningfully positive impact on residents and the communities they represent. This section considers both contentions.

Three Steps State and Local Governments Can Take to Advance Smart Home-Centered Healthcare Goals

- 1 Utilize existing Offices of Medicaid present in every state.** State and local governments already have responsibility for large-scale health and wellness programs. The agencies that administer the programs, the residents that benefit from them and the taxpayers who pay for them all stand to benefit from initiatives to deliver health services directly to residents in their homes. A call for state governments to engage on the health and wellness of residents is not a call for state government to expand its role or its responsibilities. To the contrary, state governments already administer Medicaid programs that help fund healthcare for low-income residents. Every state has an [office for their Medicaid programs](#). While states have primary responsibility for administering Medicaid, local government agencies, such as child welfare and mental health agencies, are also called upon to deliver various aspects of a given state's Medicaid program.

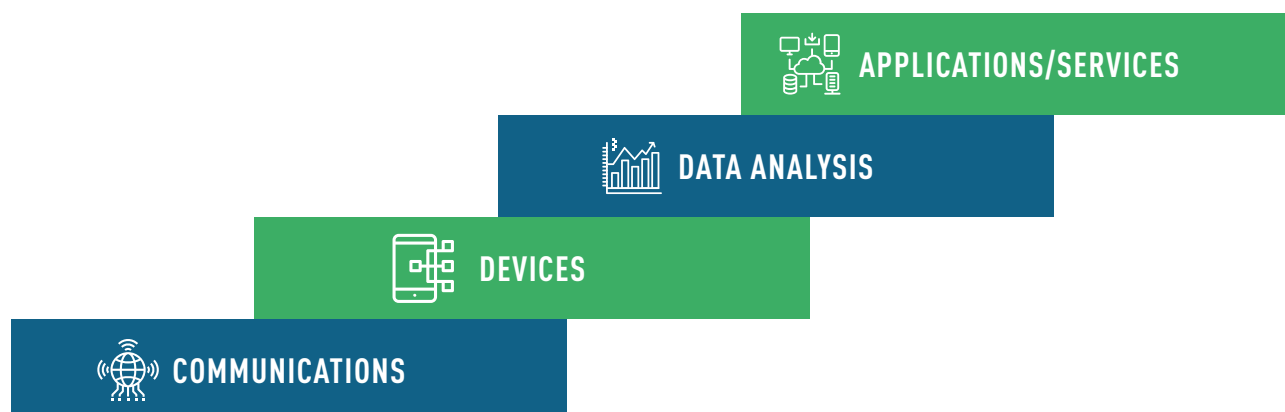
State governments are, in effect and in practice, healthcare payers akin to insurance companies, [Independent delivery networks](#) (IDNs) and Health Maintenance Organizations (HMOs). As of 2017, state governments spent an average of 30% of their annual budgets on Medicaid expenses. Texas, for instance, spends more than \$40B a year on its Medicaid program. Via their Medicaid offices, state governments implement regulations, guidelines and initiatives that seek to maximize healthcare outcomes and control healthcare costs.

Leading private sector healthcare payers, IDNs and HMOs have been leveraging telehealth and other technological tools to expand access to care and control costs. For example, in 2017, [52% of Kaiser Permanente's 100 million patient encounters](#) were virtual visits. Increasingly, private sector payers have adopted the utilization of these technological tools as a best practice. Before the COVID-19 pandemic, there existed a business case that state Medicaid offices should also seek to utilize telehealth and other technological tools. After all, taxpayers and patients alike should support cost effective approaches that extend access to healthcare and maximize healthcare outcomes. During the pandemic, use of these tools is no longer a discretionary business decision but is mission critical to Medicaid programs in all states.

2 Leverage existing efforts within state and local government that are advancing so-called smart community initiatives. In addition to Medicaid offices, many state and local governments have established efforts in-place to drive the innovative use of technology to improve the lives of residents. Hundreds of state, county and local governments across the country have created smart community steering groups and have developed and issued smart community plans. Smart community planners seek to leverage assets in their community that—once connected—can provide additional value to residents.

In a [2018 Smart Communities whitepaper](#), I made the case that the most effective smart community projects incorporate a common technical architecture. At the foundation of an effective smart community project is connectivity. Available network connectivity enables connected devices (i.e., sensors, cameras) deployed in a building, an intersection or across a community. The connected devices send the data they collect to a computer that analyzes the data and, consistent with privacy and security rules, shares the data with applications and services that use the data to advance a specific objective or use case (e.g., air quality monitoring or gunshot detection).

A Common Technology Stack for Smart Community Projects:



Utilizing this basic technical architecture, communities have, for example, employed communication networks and connected devices to make stoplights, streetlamp posts, parking meters and other tangible property the nodes of networks that collect, manage and analyze data. Application developers use the available data to develop tools that help a community minimize traffic congestion, identify health risks, enhance public safety or advance other *smart community* goals.

An effort to utilize the smart home to advance health and wellness applications should follow the same playbook as effective smart community projects.

Delivering telehealth services to patients in their homes depends on the ability to connect patients and their caregivers via the reliable and secure broadband networks. Networks offering gigabit speed connects to the Internet are available to tens of millions of households and businesses (including, of course, healthcare

businesses). Hundreds of telehealth application and service providers will use cameras, microphones and an expanding array of FDA-approved medical devices designed for in-home use to provide a 'new modality' for delivering patient care. Unlike some smart community deployments where it is incumbent upon state and local government and their project partners to deploy new technology infrastructure, the fundamental technological assets necessary to support telehealth applications are present and available in most communities.

3 Enact permanent rules and regulations that support Telehealth and encourage pilot projects designed to demonstrate the value of home-centric healthcare. For many communities, an important first step will be to make permanent the regulations and rules that will allow continuation of the telehealth services that have become de rigueur during the shelter in place orders in response to the COVID-19 pandemic. Other communities will look to develop pilot programs to assess the viability and the impact of providing telehealth to residents in their homes.

Developing effective pilots may require that state and local government leaders set-aside funding and almost certainly will involve convening and soliciting input from various community stakeholders and project partners. In communities that have been working to advance smart community initiatives, there exist change agents operating inside and outside of government who are practiced in stakeholder engagement and effective project planning.

Where available, state and local government should invite smart community champions in their community to help develop pilot programs to assess and validate the value of providing telehealth services to residents in their homes.

Particularly in the wake of the COVID-19 pandemic, there is no reason that smart community leaders should not seek to leverage innovative approaches to advance healthcare and wellness.

To implement efforts designed to advance healthcare goals via the smart home state and local government leaders should

leverage their offices of Medicaid present and the smart community planning resources present in many communities. They should draw-on existing playbooks for smart community projects and design effective pilot deployments that reflect input from a diverse set of stakeholders and project partners. Healthcare has not, to date, been the focus of smart community efforts. Healthcare should become a primary focus of smart state, smart county and smart city initiatives.

Potential impacts of state & local governments advocacy for at-home healthcare

The utilization of the smart home to deliver health and wellness will expand access to quality healthcare, especially to those who are in greatest need of quality care. Delivering healthcare and wellness services to residents in their homes constitutes an enormous opportunity to increase access to care for patients in rural communities, seniors and others managing chronic diseases.

Traveling to a doctor's office or a clinic can be a significant barrier to care. Telehealth services, including remote patient monitoring made available in a patient's home, will help establish a patient's home—as opposed to a doctor's office or hospital—as the primary location where a patient receives healthcare. Studies have demonstrated the health and wellness benefits of approaches to home-centric healthcare. An [18-month study of UPMC's use of remote patient monitoring technologies \(RPM\)](#) with patients who have high risk for congestive heart failure or are suffering from an advanced illness found that patients participating in the RPM program were 71% less likely to need a stay in an observatory unit than those not in the RPM program.

Studies have also demonstrated that telehealth applications reduce costs for healthcare providers, patients and payers (including, as we know, state governments) at the same time they are delivering improved health outcomes. Geisinger Health Plan, a health plan that covers 2.4 million members, [evaluated the impact of its use of RPM technology to improve chronic disease management](#) for its members. The program provides participants with Bluetooth scales, radar vests which detect heart failure symptoms and interactive voice response technology designed to help providers track an individual's health status. Geisinger's evaluation determined that the program lowered hospital admissions for patients at risk for heart failure and saved \$3.30 for every dollar spent to implement the RPM initiative.

[In a 2018 report on telehealth](#), the American Health Insurance Plans (AHIP) concludes that telehealth, by expanding the care that is available to patients in their homes, can help patients avoid unnecessary and costly emergent or acute care, with an estimated savings of more than \$6 billion annually. A recent study by the consulting company McKinsey & Co found that [20% of emergency room visits](#) could be addressed effectively via virtual care. Because enrollees in State Medicaid programs include millions of seniors and patients managing chronic disease, the enrollees, the State Medicaid programs and the communities stand to benefit from initiatives designed to deliver health and wellness applications via the smart home. Transitioning to a home-centric healthcare model is no longer just a good idea, it is an imperative. The status quo is not sustainable.

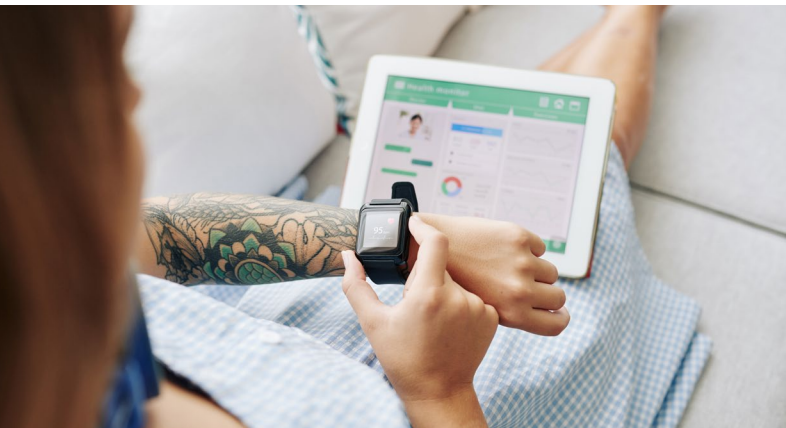
“

The patients who stand to benefit the most from telehealth are patients over the age of 65 years old; people who manage one or more chronic conditions; people who take a lot of medications; and patients who need a very frequent kind of healthcare.”

—[Dr. Roy Schoenberg, CEO, American Well](#)



Support from state and local governments for healthcare services in the home can help transform the healthcare industry in manner that will result in healthier communities. Demographic changes, an acute shortage of critical caregivers and the emergence of the COVID-19 pandemic mean that healthcare providers must explore new approaches to delivering high quality healthcare. Future projections illustrate that the population of United States will include a higher percentage of seniors and it will include a higher percentage of people managing one or more chronic diseases. According to [AARP data](#), the number of people 65 and older will increase from 55 million in 2020 and to 70 million by 2030. By 2050, 20 percent of all Americans will be 65 years old or older.



The aging of the U.S. population compounds the challenge and expense of providing quality healthcare, as both the prevalence and severity of chronic diseases increase with age. The Partnership to Fight Chronic Disease estimates that by 2030, [83 million people](#) in the U.S. will have three or more chronic health conditions, up from 31 million in 2015. [A study released in 2019](#) concluded that the growth in chronic disease accounted for more than 60 percent of the growth in Medicaid spending per beneficiary between 2010-2015.

While the populations of residents who will need regular access to healthcare increases, the country is expected to experience an acute shortage of healthcare workers. The healthcare industry is [projected to have 7.8 million job openings](#) by 2026. A shortage of healthcare workers is a concern for the 50 million American living in rural areas where many residents must drive long distances to their primary care or a specialist.

To respond to these dynamics, the healthcare industry will be required to reinvent the way health and wellness are delivered to patients. In a [December 11, 2020 interview with Harvard Business Review](#), the CEO of Intermountain Healthcare speaks to his organization's conclusion that support for telehealth drives much needed reinvention. He writes:

“

Telehealth supports value-based care, in which hospitals and other care providers are paid based on the health outcomes of their patients, not on the amount of care they provide. The result is a greater emphasis on preventive care — which reduces unsustainable health care costs.”

In partnership with the healthcare industry, internet service providers, non-profit groups advocating for healthy communities, state and local government leaders are in the position to help drive the reinvention. In doing so, state and local governments stand to advance smart and health community objectives that will, of course, contribute meaningfully to the livability of our communities.

CABLE COMPANIES ARE KEY PARTNERS TO A HEALTHCARE SYSTEM THAT IS INCREASINGLY CENTERED ON THE DELIVERY OF SERVICES TO PATIENTS IN THEIR HOMES

In a [2020 whitepaper](#), I outlined the resources, expertise and capabilities that cable companies possess that have them well positioned as partners to Smart Community projects related to transportation, public safety and emergency preparedness and other community objectives. For many of the same reasons, cable companies stand to be important partners to efforts to advance a reinvented healthcare system centered on providing effective healthcare to patients in their home.

Partnerships between healthcare providers, technology firms and Internet Service Providers (ISPs) will be critically important. Healthcare services delivered to patients in their home must be easy-to-use, compliant with the requirements of the Health Insurance Portability and Accountability Act (HIPPA) and secure. Home-based healthcare services will be enabled by a growing array of FDA-certified connected devices. These devices must be deployed and supported. Cable companies are uniquely well positioned to help state and local governments, healthcare providers, telehealth application developers and patients address several of these challenges

Five key contributions of cable companies to the delivery of health and wellness services to patients in their homes

1 Providing innovative connectivity solutions. Connectivity is going to be an increasingly central component of healthcare services. Kaiser Permanente, a nonprofit health plan with 12 million members, 39 hospitals and \$84 billion in revenue, is [reportedly exploring](#) connectivity solutions that will enable patient monitoring and support what Kaiser's leadership sees as an "impending wave of additional devices."

Cable broadband providers currently provide speeds of 1 gigabit to over 80% of homes in both urban and rural areas. These speeds support the current generation of connected telehealth devices to exchange data and information back to healthcare providers. Cable providers are also investing in technologies that will deliver what the industry calls, "10G." 10G networks will have the capacity to deliver 10 gigabit per second speeds and will support hundreds of connected devices, including telehealth devices, running in the homes of millions of Americans.

Cable providers are building 10G networks in anticipation of smart homes that include connected devices that can do everything from take a resident's temperature and blood pressure to monitor a resident's everyday health for changes or symptoms that might indicate more serious issues. Of course, this vision for the future is not the stuff of Science Fiction. Powerful home healthcare devices are on the market today, indeed, some have been deployed in the country's first [10G smart home in Ames, Iowa](#).

2 Deploying and supporting connected devices. The challenges related deploying connected healthcare devices doesn't end once a healthcare provider decides how to pay for the deployment of the devices. Once the connected devices are deployed, they require support and maintenance. Supporting medical devices deployed in a patient's home poses a particularly acute challenge. According to Krista Drobac, Executive Director of the Alliance for Connected Care, Alliance members anticipate a rapid expansion in the number of FDA-approved medical devices deployed in patients' homes. Devices, for example, including a connected scale for patients managing congestive heart failure (CHF). Sudden weight gain in a patient with CHF can indicate a worsening condition and the need for hospitalization. Deploying and supporting connected devices is a core competency for cable companies, as they have been supporting and maintaining tens of millions of connected devices in their customers' homes for decades.

Connected scales have been shown to have positive impact on health outcomes are increasingly becoming part of the standard care for CHF treatment.

3 Ensuring privacy and advancing security. Under a March 30, 2020 [Notice](#), healthcare providers may use popular applications that allow for video chats to provide telehealth without risk that the Department of Health and Human Services (HHS) might seek to impose a penalty for noncompliance with the HIPAA Rules. The availability of popular applications has undoubtedly helped facilitate an expansion in the number of healthcare providers and patients using telehealth during the COVID-19 national emergency. When the national health emergency subsides, [experts anticipate that HHS will once again enforce HIPPA compliance](#). Healthcare providers investing in telehealth services will need to work with partners to implement solutions that are HIPPA compliant, incorporate sufficient cybersecurity to protect connected devices and are user-friendly and accessible to patients. Cable providers, under the auspices of CableLabs (the cable industry's shared advanced research entity), have been [working with stakeholders including NIST and the Open Connectivity Foundation](#) to drive increased security for all so-called Internet of Things devices while ensuring the devices remain user-friendly.

4 Effectively engaging senior citizens For telehealth services to have maximum impact on health outcomes, senior citizens must be willing and able to utilize the services. According to Roy Schoenberg, CEO of telehealth company AmWell, a senior-friendly telehealth product able to prevent just a single hospital day for each of the [Medicare Advantage's 20 million beneficiaries would yield \\$31 billion in system-wide savings](#). The American Hospital Association has posted an [article speculating whether "whoever controls the remote"](#) may become the leader in telehealth marketplace. Companies including AmWell, Cisco and Quil (a joint venture between Comcast and Independence Blue Cross) are exploring how to use the television and the TV remote (both familiar technologies to most senior citizens) to entice more and more seniors to communicate with caregivers and access health and wellness services. Because cable companies have millions of existing customers, they are uniquely well-positioned to partner on initiatives designed to help connect seniors with their caregivers via their TVs.

5 Enabling collaboration among key stakeholders and the development of key data regarding telehealth services. As federal agencies and state medical boards that administer the permissibility of telehealth in each state reexamine their rules and regulations governing telehealth services, they will be examining the cost of providing telehealth services at parity with in-clinic visits. According to research from the American Hospital Association, Medicaid law gives states significant flexibility to cover and reimburse providers for telehealth services, including:

- ✓ whether to cover telehealth services;
- ✓ what types of telehealth services to cover;
- ✓ where in the state telehealth services may be covered;
- ✓ how services are provided and covered;
- ✓ what types of practitioners and providers may be reimbursed for telehealth services; and
- ✓ how much to reimburse for telehealth.

Because cable companies possess broadband networks connecting tens of millions of homes to the Internet and maintain existing relationships with thousands of healthcare providers, cable companies are well positioned to work with diverse stakeholders on projects that help demonstrate the efficacy and evaluate the cost-efficiency of telehealth services.

CONCLUSION

The vision for a reinvented healthcare system can be summarized rather simply. 90% of our country's more than 3 trillion annual healthcare expenditure is [spent on individuals managing chronic conditions](#). Efforts to deliver quality health and wellness services to patients in their home will help ensure that patients connect with their caregivers regularly and allow patients to avoid acute care environments and unnecessarily long recuperative stays in hospitals. Leveraging connected devices, on-line check-ups and remote monitoring designed to alert a patient's caregivers when they are needed, patients managing chronic conditions will be able to live more independently and, if need be, recuperate after treatments more comfortably in their homes.

Experts believe changes to the healthcare system in response to the COVID-19 have rapidly accelerated the timeline for realizing a reinvented healthcare system with the home at its center. Significant challenges need to be resolved, however, if this vision is to be realized. Collaboration among a broad array of diverse stakeholders is needed to create policies that protect patients and their families.

State and local governments, healthcare providers and payers must have a better understanding of the value of a smart home as an opportunity to improve healthcare outcomes and not increase overall costs. Technology companies must continue to invest in, test and deploy scalable, secure and relatively easy-to-use platforms and solutions.

Drawing on the cable industry's infrastructure, its expertise and its existing relationships with healthcare providers, patients, telehealth application and service providers, payers and state and local governments, cable companies stand to be a valuable partner in efforts to make home-centered healthcare a reality.

ABOUT THE AUTHOR



Bill Maguire is the founder of Connected Communities LLC and an advisor and consultant to local governments, non-profit organizations and technology companies. Prior to his consulting work, Bill served as Chief of Staff for the Broadband Technology Opportunities Program (BTOP) at the National Telecommunications and Information Administration (NTIA). Bill is a graduate of Reed College and of Union Theological Seminary in New York.