

# DAY ONE PROJECT

Delivering Healthcare Services  
to the American Home

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January 2021

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*Increasing the share of health services provided directly to patient homes is a significant—and as yet mostly unrealized—opportunity to improve healthcare in the United States.*

## Summary

The coronavirus pandemic has forced a sudden acceleration of a prior trend toward the virtual provision of healthcare, also known as telemedicine.<sup>1</sup> This acceleration was necessary in the short term so that provision of non-urgent health services could continue despite lockdowns and self-isolation. Federal and state policymakers have supported the shift toward telemedicine through temporary adjustments to health benefits, reimbursements, and licensure restrictions.

Yet if policymakers direct their attention too narrowly on expanding telemedicine they risk missing a larger—and as yet mostly unrealized—opportunity to improve healthcare in the United States: increasing the overall share of health services provided directly to the home. At-home healthcare includes not only telemedicine, but also medical house calls (home-based primary care) as well as models in which individuals within communities offer simple support services to one another (i.e., the “village” model of senior care, which could be extended to include peer-to-peer health service delivery). The advent of “exponential” technologies such as artificial intelligence (AI), blockchain, and the Internet of Things (IoT) is unlocking new possibilities for at-home healthcare across each of these models.

The next administration should act to reduce four types of barriers currently preventing at-home healthcare from reaching its full potential:

- (1) **Labor-market barriers** (e.g., unnecessarily restrictive scope-of-practice rules and requirements for licensing and certification)
- (2) **Technical barriers** (e.g., excessively slow and burdensome processes for regulatory approval, weak or absent standards for interoperability)
- (3) **Financial/regulatory barriers** (e.g., methodologies for determining eligibility for reimbursements that favor incumbents over innovators)
- (4) **Data sharing / interoperability barriers** (e.g., overly restrictive constraints related to data privacy and portability)

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<sup>1</sup> Telehealth visits in a given week as a share of total outpatient visits increased from 0.1% prior to the pandemic to nearly 14% in mid-April of 2020. From mid-June to October of 2020, that share remained steady at about 6%—below the peak, but far above pre-pandemic levels. [Source: Mehrotra, A.; et al. (2020). [The Impact of the COVID-19 Pandemic on Outpatient Care: Visits Return to Prepandemic Levels, but Not for All Providers and Patients](#). The Commonwealth Fund, October 15.]

## Challenge and Opportunity

In the past several decades, the advantages of conventional hospital- and outpatient-based healthcare over home-based care have started to erode. Specifically:

- **Costs have increased.** Steady increases in cost of healthcare labor relative to other goods and services in the economy have overwhelmed efficiency gains due to economies of scale in hospital-based and outpatient-based care.<sup>2-4</sup> An array of other factors have also exerted upward pressure on costs, including (i) costs of regulatory compliance and associated barriers to entry resulting in an oligopolistic market structure, (ii) exposure to legal risk, and (iii) excessive reliance on disposable tools and materials.
- **More infections are being acquired in the hospital.** The concentration of illness in hospitals in particular has created a category of systemic vulnerability in the healthcare system in the form of infections acquired in the hospital, with incidence rates exceeding 4 out of every 100 admissions.<sup>5,6</sup>
- **Iatrogenic injury and death have become widespread.** The very professionalism of hospital-based models of healthcare have generated systems of such organizational complexity that incidents of injury or death in the course of medical treatment have become commonplace.<sup>7-9</sup>

At the same time, rapid technological advances, demographic trends, and long-term trends in the burden of disease are combining to favor at-home healthcare over clinic- and hospital- and outpatient-based health service delivery for certain types of treatment. Technologies and organizational innovations that enable healthcare provision both in the home and at a distance have improved radically in terms of performance and cost. The aging of the U.S. population has created steady growth in demand for semiprofessional forms of home-based healthcare assistance. Furthermore, approximately 75% of the U.S. population has at least one chronic disease. The prevalence of chronic illness has created a parallel increase in demand for routine treatments and diagnostic support services, many of which can be provided at home by individuals with relatively basic training.

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<sup>2</sup> Cutler, D.M.; McClellan, M. (2001). Is Technological Change in Medicine Worth It? *Health Affairs*, 20(5): 11–29.

<sup>3</sup> Henry Kaiser Family Foundation. (2012). [Healthcare Costs, a Primer: Key Information on Healthcare Costs and Their Impact](#). Working paper. Washington, DC: Henry Kaiser Family Foundation.

<sup>4</sup>; Cutler, D.; Wikler, E.; Basch, P. (2012). Reducing Administrative Costs and Improving the Health Care System. *New England Journal of Medicine*, 367: 1875–78.

<sup>5</sup> Scott II, R.D. (2009). [The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention](#). Working paper. Centers for Disease Control and Prevention, National Center for Preparedness, Detection, Division of Healthcare Quality Promotion.

<sup>6</sup> Klevens, R.; et al. (2007). Estimating Health Care-Associated Infections and Deaths in U.S. Hospitals, 2002. *Public Health Reports*, 122(2): 160–66.

<sup>7</sup> Medical error has been estimated as the third-leading cause of death in the United States, accounting for 250,000 deaths per year. [Source: Makary, M.A.; Daniel, M. (2016). Medical Error: The Third-Leading Cause of Death in the US. *The BMJ*, 353: i2139.]

<sup>8</sup> Starfield, B. (2000). Is US Health Really the Best in the World? *Journal of the American Medical Association*, 284: 483–85.

<sup>9</sup> Gawande, A. (2009). *The Checklist Manifesto: How to Get Things Right*, New York: Metropolitan Books.

Four service avenues are key to enabling home healthcare. These are:

- (1) Medical house calls and home-based primary care
- (2) Healthcare “villages” and peer-to-peer healthcare
- (3) Telemedicine and mobile health (mHealth)
- (4) “Exponential” technologies for healthcare

## Medical house calls and home-based primary care

The once nearly obsolete practice of providing medical services in the home has recently experienced a resurgence, paralleling the growth of “minute clinics” and other options that offer consumers greater convenience and lower costs in healthcare.<sup>10</sup> This resurgence has been largely independent of the advent of new technologies for providing healthcare at a distance. Rather, the resurgence of home-based primary care<sup>11</sup> has been driven by the increasing costs of hospital and outpatient care, combined with accumulating evidence of the superiority of home-based care to hospital-based care along multiple dimensions (perhaps most notably inpatient satisfaction).<sup>12</sup> Home-based primary-care programs include a physician who works with an interdisciplinary team that conducts visits to the home, where they perform diagnostics, urge compliance with treatment protocols, and otherwise assess and encourage patient progress.

In October 2019, the U.S. Centers for Medicare and Medicaid Services (CMS) released the results from the fifth year of its national Independence at Home demonstration. Through this demonstration, CMS provided incentive payments to home-based primary-care providers who succeeded in reducing Medicare expenditures for beneficiaries with multiple chronic illnesses, conditional upon meeting designated quality measures. Fifth-year results showed that Independence at Home providers reduced healthcare expenditures by approximately 8.4%, resulting in savings to Medicare of \$33.5 million. During the full five years of the Independence at Home demonstration, participating practices saved Medicare approximately \$85 million.<sup>13</sup>

Though at-home primary-care services are increasingly available, they remain far from ubiquitous. A significant national study found that while at least 2 million Medicare beneficiaries are homebound (representing approximately 5.6% of the elderly, community-dwelling Medicare population), only 11% of that population receive primary-care services at home.<sup>14</sup> A second study found that provision of at-home primary care is significantly skewed. Of the 5,000 providers of home-based primary-care services to Medicare fee-for-service beneficiaries, fewer than 500

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<sup>10</sup> RAND Corporation. (2016). [The Evolving Role of Retail Clinics](#). RAND Research Brief RB-9491-2.

<sup>11</sup> Home-based primary care involves matching every patient with a primary-care team that typically includes a physician, a nurse practitioner, a registered nurse (RN) case manager, and a social worker. Patients receive both routine and preventive health services in the home.

<sup>12</sup> Rauch, J. (2013). [Opportunity Knocks at Home: How Home-Based Primary Care Offers a Win-Win for U.S. Health Care](#). Washington, DC: Brookings Institution.

<sup>13</sup> Centers for Medicare and Medicaid Services (2019). [Independence at Home Demonstration Performance Year 5 Results: Fact Sheet](#). Press release, October 25.

<sup>14</sup> Ornstein, K.A.; et al. (2015). Epidemiology of the Homebound Population in the United States. *JAMA Internal Medicine*, 175: 1180–86.

accounted for nearly half of total at-home visits.<sup>15</sup> That study also found significant disparities in geographical access to home-based primary care services.

## Healthcare “villages” and peer-to-peer healthcare

At the moment, the most powerful impetus for substantive change in the healthcare system is coming not from within the Medicare and Medicaid systems but from senior citizens of moderate to high income who are increasingly dissatisfied with the menu of existing market offerings in senior care. Around the country, such citizens have organized neighborhood-centered “villages” to offer simple support services to one another that allow them to age in place. The support services that village members provide to one another generally have yet to include health care, but the rapid growth of such villages signals a large demonstrated demand for institutional innovations that bypass the existing healthcare infrastructure.<sup>16–18</sup> A recent survey of 1,753 members of such villages found a majority reporting an improved sense of social connection and ability to remain in their homes. However, fewer village members reported that their membership in a village had improved their “physical health” (8%) or their “ability to get the medical care [they] need” (16.8%). This indicates that health villages’ role as a platform for peer-to-peer health service delivery remains underdeveloped in comparison with other services these villages offer.<sup>19</sup>

## Telemedicine and mobile health (mHealth)

Services delivered via information and communications technologies constitute a third dimension of distributed health-service delivery. The landline telephone created some initial and still-relevant opportunities for providing healthcare at a distance.<sup>20</sup> The advent of the internet and personal computing expanded the field of remote medicine: in particular, these technologies expanded possibilities for remote monitoring and enabling diagnostics, and even treatment from a distance. Mobile phones and tablet computers have opened up further possibilities for remote health-service delivery.

Telemedicine is the most widely used of the technology-enabled elements of distributed health-service delivery.<sup>21</sup> Though impeded by federal and state regulations, such as restrictive licensure requirements and prohibitions against prescribing medication without an in-person consultation,

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<sup>15</sup> Yao, N.; et al. (2016). Geographic Concentration of Home-Based Medical Care Providers. *Health Affairs* 35(8): 1404–9.

<sup>16</sup> Thompson, T. (2017). [The Age-in-Place ‘Village’ Movement](#). AARP, May 9.

<sup>17</sup> Bahrapour, T. (2014). [Through a Growing Number of Senior Villages in the D.C. Area, Aging in Place Becomes Easier](#). *Washington Post*, February 6.

<sup>18</sup> The emergence of village networks provides one example of how communities may organize themselves to manage a “health commons”. For more on this, see McGinnis, M. (2013). [Caring for the Health Commons: What It Is and Who’s Responsible for It](#). Unpublished manuscript.

<sup>19</sup> Graham, C.L.; Scharlach, A.E.; Stark, B. (2017). Impact of the Village Model: Results of a National Survey. *Journal of Gerontological Social Work*, 60:5: 335–354.

<sup>20</sup> Eakin, E.; et al. (2007). “Telephone interventions for physical activity and dietary behavior change: a systematic review.” *American Journal of Preventive Medicine*, 32(5): 419–34.

<sup>21</sup> CMS defines telemedicine as follows: “Telehealth (or Telemonitoring) is the use of telecommunications and information technology to provide access to health assessment, diagnosis, intervention, consultation, supervision and information across distance.” [Source: Centers for Medicare & Medicaid Services. (n.d.). [Telemedicine](#).]

telemedicine use grew significantly in the five years prior to the pandemic.<sup>22</sup> In particular, non-hospital-based provider-to-patient telemedicine grew by 1,393% from 2014 to 2018.<sup>23</sup> Aided by a considerable easing of regulatory restrictions at both federal and state levels, the pandemic dramatically accelerated the use of provider-to-patient telemedicine. As noted in footnote 1 above, telehealth visits in a given week as a share of total outpatient visits increased from 0.1% prior to the pandemic to nearly 14% in mid-April of 2020. From mid-June to October of 2020, that share remained steady at about 6%—below the peak, but far above pre-pandemic levels.<sup>24</sup>

Mobile health applications represent another area of rapid growth. This category includes a range of healthcare services that can be delivered over mobile phones—and, to varying degrees, over computers and landlines. Venture-capital (VC) investments in digital healthcare totaled \$8.1 billion in 2018, nearly eight times the total in 2011, and have continued to grow rapidly since. VC investment in digital healthcare has outpaced VC investment in traditional healthcare sectors, such as biotech, medical devices, and medical software.<sup>25</sup>

### “Exponential” technologies for healthcare

A final major trend with significant implications for distributed health-service delivery is the advent of an interrelated set of technologies that includes artificial intelligence (AI), blockchain, and the Internet of Things (IoT). These are often referred to collectively as “exponential” technologies.

AI based on machine-learning algorithms is already having a significant impact in medical fields where large digital datasets are available for pattern matching, notably radiology. More ambitious applications involve the use of AI in combination with medical “big data” to provide real-time support for clinical decision-making.<sup>26</sup> Beyond the availability and improvement of the underlying machine learning algorithms, the development of AI-based clinical decision-support tools is based on three data-focused preconditions: (1) data gathering, (2) data aggregation, and (3) data analytics.

The potential for disruptive innovation in data gathering refers to the fact that human society, and the digital devices embedded within it, is generating data at an exponentially increasing rate. Information generated by personal computers is but a tiny fraction of this total. The overwhelming majority is generated by “smart” devices and appliances as varied as automobile engines, thermostats, weather balloons, and mobile phones—and now also health-related

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<sup>22</sup> Policies were beginning to evolve in a direction favorable to telemedicine prior to the pandemic. For example, seniors in Original Medicare were long only eligible to receive certain telemedicine services if they lived in a rural area. Beginning in 2019, however, Medicare recipients across the country became eligible to be served by virtual check-ins with their doctors by phone or video chat. In April 2019, CMS finalized plans that allowed Medicare Advantage plans to include additional telemedicine benefits.

<sup>23</sup> Fair Health. (2019). [A Multilayered Analysis of Telehealth: How This Emerging Venue of Care Is Affecting the Healthcare Landscape](#).

<sup>24</sup> Mehrotra, A.; et al. (2020). The Impact of the COVID-19 Pandemic on Outpatient Care: Visits Return to Prepandemic Levels, but Not for All Providers and Patients. The Commonwealth Fund, October 15.

<sup>25</sup> Day, S.; Zweig, M.. (2018). [2018 Year End Funding Report: Is Digital Health in a Bubble?](#) Rockhealth.

<sup>26</sup> Baig, M.M.; et al. (2019). Clinical Decision Support Systems in Hospital Care Using Ubiquitous Devices: Current Issues and Challenges. *Health Informatics Journal*, 25: 1091–104.

monitors and sensors of many varieties. Ubiquitous connected devices in this latter category are examples of IoT technologies for healthcare.

The potential for disruptive innovation in data aggregation refers to the fact that both commercial and government interests are increasingly seeing the value in the pools of data and thus are seeking to build and structure extremely large databases that can be “mined” for patterns.<sup>27</sup> In the coming decade, the aggregation of healthcare data may be facilitated by blockchain technologies (also known as distributed ledger technologies) that have the potential to resolve issues related to the privacy, security, portability, and accuracy of medical data.<sup>28</sup>

The potential for disruptive innovation in data analytics is that the search for patterns in digital data via machine learning algorithms can be accomplished today at speeds that are orders of magnitude beyond the best attainable even a few years ago.<sup>29</sup>

Of the four categories of innovations driving distributed health service delivery, the advent of exponential technologies is one that is as relevant to the transformation of care provided in hospitals and outpatient clinics as it is to care provided in the home. However, the inexorable shift toward not only electronic records but also use of the varied data sources described above will further reduce the advantage in data and diagnostic support that has long been held by doctors working in hospitals and outpatient settings.

## Bending the Cost Curve

A great deal of analytical work has gone into developing a pathway to long-term reductions in healthcare costs—an objective frequently referred to as bending the cost curve.<sup>30,31</sup>

The economic mechanism responsible for a persistent increase in the relative cost of healthcare over the past decades is known as the Baumol effect or the Baumol cost disease.<sup>32</sup> The principle is simple but somewhat counterintuitive: the increase in the (relative) cost of healthcare is actually a function of the decrease in (relative) costs elsewhere in the economy. Specifically, increases in the relative cost of labor-intensive services (such as healthcare and education) are a natural and inevitable consequence of the increased efficiency (and decreased labor intensity) of production in other industries.

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<sup>27</sup> The most successful technology companies of the past decade—Google, Facebook, and Twitter foremost among them—realize economic value not primarily from the sale of cloud-based services to their customers but, rather, from the use of the data gathered *about* their customers.

<sup>28</sup> Gordon, W.J.; Catalini, C. (2018). Blockchain Technology for Healthcare: Facilitating the Transition to Patient-Driven Interoperability. *Computational and Structural Biotechnology Journal*, 16: 224–30.

<sup>29</sup> Until recently, analyzing very large datasets was possible only by using the world’s most powerful computers, at great cost. Today, costs of storage and computational resources are decreasing at a dramatic rate. However, computers can ultimately only offer answers that are as good as the information humans provide on the context and social parameters of the questions. Effective data analytics has embedded within it a deeply human element.

<sup>30</sup> Orszag, P. (2011). How Health Care Can Save or Sink America: The Case for Reform and Fiscal Sustainability. *Foreign Affairs*, July/August.

<sup>31</sup> Gawande (2012). “Big Med.” *The New Yorker*, August 13 & 20.

<sup>32</sup> Baumol, W.J. (1967). Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis. *American Economic Review*, 57: 415–26.

The policy takeaway is simple: the only way to “bend the cost curve” in healthcare is to reduce the total cost of labor inputs. This can be accomplished in one of two ways: (1) using less labor in the context of existing service models, or (2) changing the service model in order to substitute low-cost labor and technology in place of high-cost labor.

Evidence from the healthcare industry and examples from other industries suggest that the most effective way to reduce the cost of hospital-based healthcare is the latter option: to provide consumers with lower-cost, equally effective options that shift service provision away from high-cost settings and into the home.<sup>33-35</sup> If the change of setting allows for low-cost labor and technology to be used in place of high-cost labor, then the Baumol cost disease may be curable.

## Plan of Action

The next administration should act to reduce four types of barriers currently preventing at-home healthcare from reaching its full potential:

1. **Labor-market barriers** (e.g., unnecessarily restrictive scope-of-practice rules and requirements for licensing and certification)
2. **Technical barriers** (e.g., excessively slow and burdensome processes for regulatory approval, weak or absent standards for interoperability)
3. **Financial/regulatory barriers** (e.g., methodologies for determining eligibility for reimbursements that favor incumbents over innovators)
4. **Data sharing / interoperability barriers** (e.g., overly restrictive constraints related to data privacy and portability)

### Labor-market barriers

To address workforce shortages in the health sciences, it is important to remove medically unwarranted restrictions on nurse practitioners and physician assistants in providing the broad range of activities that—with proper physician oversight and technological support—they are

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<sup>33</sup> For analogies from other industries, see the following: Christensen, C. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston: Harvard Business School Press; Christensen, C.M.; Grossman, J.H.; Hwang, J. (2008). *The Innovator's Prescription: A Disruptive Solution for Health Care*. New York: McGraw-Hill.

<sup>34</sup> For specifics, see the following: Mader, S.L.; et al. (2008). Program at Home: A Veterans Affairs Healthcare Program to Deliver Hospital Care in the Home. *Journal of the American Geriatric Society*, 56: 2317–22; Shepperd, S.; et al. (2009). Avoiding Hospital Admission through Provision of Hospital Care at Home: A Systematic Review and Meta-analysis of Individual Patient Data. *Canadian Medical Association Journal*, 180(2): 175–82; Cryer, L.; et al. (2012). Costs for 'Hospital at Home' Patients Were 19 Percent Lower, with Equal or Better Outcomes Compared to Similar Inpatients. *Health Affairs*, 31: 1237–43; Ernst and Young. (2012). *mHealth: Mobile Technology Poised to Enable a New Era in Health Care*. New York: Ernst and Young; Ernst and Young. (2012). *Progressions Global Life Sciences Report 2012: The Third Place— Health Care Everywhere*. New York: Ernst and Young; Topol, E. (2012). *The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care*. New York: Basic Books; Rauch, J. (2013). [Opportunity Knocks at Home: How Home-Based Primary Care Offers a Win-Win for U.S. Health Care](#). Washington, DC: Brookings Institution.

<sup>35</sup> Terry (2013) offers a counterargument that describes the failure of health information to bring about significant change within the healthcare industry to date. See: Terry, N.P. (2013). Information Technology's Failure to Disrupt Health Care. *Nevada Law Journal*, 13: 722–56.



capable of providing. Yet even that is not likely to be an adequate solution, as the number of homebound adults who might benefit from home-based medical care remains large in comparison with the likely growth in the number of licensed nurse practitioners and physician assistants.<sup>36</sup>

In the longer term, realizing the full benefits of distributed health-service delivery will require the creation of a new category of certified, digitally empowered health workers who act simultaneously as health coaches, social support case workers, and frontline diagnosticians. The creation of such a job category could attract new, tech-savvy talent to the health-service field and provide a pathway for formalizing and extending the skills of home health workers, personal care aides, and family caregivers, who are already the front line of caring for patients in the home. In this way, the national objective of bending the cost curve in healthcare will intersect with that of increasing opportunity in the workforce—particularly among young people, who have a comparative advantage in the use of technology, and among a growing number of workers over 60, who have a comparative advantage in the care of generational peers (or near peers).

To accomplish these goals, the next administration should consider:

- Enacting federal policy to support states in:
  - Reforming licensing restrictions to allow nurse practitioners and other nonphysicians to do more in terms of chronic and wellness care.
  - Accelerating adoption of the Interstate Medical Licensure Compact.<sup>37</sup>

States similarly should adopt laws that allow greater portability of licensure for telemedicine service providers.

- The U.S. Department of Health and Human Services should engage in an active dialogue with health boards and associations about adjusting accreditation and certification procedures to include a new category of professionals who specialize in mobile healthcare delivery—including healthcare to the home.
- CMS should maximize its administrative flexibility in permitting patient choice of the location of healthcare service delivery. Eligibility for telemedicine and home-centered primary care services should be expanded where possible, toward the aim of helping patients remain healthy in their own homes.

### Technical barriers

The Food and Drug Administration (FDA) should establish an interim approval stage for new mobile healthcare devices that are determined to be subject to regulation (for example, devices capable of health data measurement and medical diagnostics). During this phase, the devices in question will be released only to physicians who have been trained to handle them and who will monitor the results of their use.

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<sup>36</sup> Yao, N.; et al. (2016). Geographic Concentration of Home-Based Medical Care Providers.

<sup>37</sup> The Interstate Medical Licensure Compact (IMLC) is a pathway to expedite licensing for physicians seeking to practice medicine in multiple IMLC states. The IMLC creates a streamlined process for obtaining multiple state licenses. See <https://www.imlcc.org>.

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The federal government should also work with states to harmonize definitions and regulations (e.g., regarding licensure and privacy) as they pertain to telemedicine service provision, taking inspiration where possible from the practices of pioneering states that have most successfully achieved cost reductions and service improvements through telemedicine.

Finally, policymakers at all levels of government should renew their commitment to reducing regulatory barriers to the deployment of ubiquitous, high-reliability broadband service on which mobile healthcare provision depends.

## Financial/regulatory barriers

Congress can take a number of actions to reduce financial and regulatory barriers to distributed health-service entry, including: making permanent the telemedicine provisions in the CONNECT for Health Act and the connected health coverage included in the CARES Act,<sup>38</sup> making the Independence at Home Demonstration a permanent program,<sup>39</sup> and funding the National Academy of Medicine and the National Academy of Engineering to undertake a study of research methodologies appropriate to assessing the efficacy of integrated service mobile delivery based on digital platforms and the expansion of home healthcare.<sup>40</sup>

In addition, Medicare and other government programs should be expanded to include reimbursement for diagnostic and preventative procedures provided in the home. Eligibility for home monitoring technology and in-home health services should be expanded where possible, toward the aim of helping patients remain healthy in their own homes.

## Data sharing/interoperability barriers

Federal agencies and relevant state authorities should avoid actions that would impede development of properly anonymized data generated and aggregated outside the medical system, while strictly sanctioning discriminatory and predatory uses of such data. Recognizing the difficulty of reaching convergence on data-sharing standards among medical service incumbents, governments at all levels should seek, whenever possible, to reinforce *de facto* standards for data sharing that emerge among communities of nonmedical health-service providers and data users.

Similarly, relevant federal agencies should work to ensure that privacy rules for health service delivery are not substantially more restrictive or onerous than those that apply in other industries where privacy is a first-order concern (e.g., financial services and education), while strictly sanctioning discriminatory and predatory uses of such data. This may require Congress to update the Health Insurance Portability and Accountability Act (HIPAA).

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<sup>38</sup> The Center for Connected Health Policy publishes current updates on the status of federal and state regulations pertaining to telehealth provision. See: <https://www.cchpca.org>.

<sup>39</sup> See: <https://innovation.cms.gov/innovation-models/independence-at-home>.

<sup>40</sup> The cost of such a study would likely be in the range of \$1-3 million, depending on scope.

## Conclusion

Increasing the share of health services provided directly to the home represents the greatest opportunity to improve healthcare in the United States while lowering costs and creating net new jobs. Though some currently dominant healthcare institutions have managed to achieve significant improvements in efficiency with existing service models, the disruptive innovations with the greatest potential to advance health service delivery in the next 3 to 30 years are not likely to originate from established incumbents but by new entrants meeting previously unmet consumer needs. Well-considered policy actions can help ensure that service-model innovators are not disadvantaged by regulatory structures and administrative practices designed for a previous era.



## About the Author

Philip Auerswald is the founding board chair and president of the National Center for Entrepreneurship and Innovation and an associate professor of public policy at George Mason University. Auerswald has published over fifty books, peer-reviewed articles, book chapters and professional reports on entrepreneurship, innovation, and public policy. He is most recently the author of *The Code Economy: A Forty-Thousand-Year History* (Oxford University Press, 2017) and *The Coming Prosperity: How Entrepreneurs Are Transforming the Global Economy* (Oxford University Press, 2012). He has blogged and written op-eds for *The New York Times*, *Harvard Business Review*, *Forbes*, *The International Herald Tribune*, and *The San Francisco Chronicle*, among other outlets. Prior to joining the faculty at George Mason University, Professor Auerswald was a lecturer and assistant director of the Science, Technology, and Public Policy Program at the Kennedy School of Government, Harvard University. The author acknowledges support for this work from the Mercatus Center, George Mason University.



## About the Day One Project

The Day One Project is dedicated to democratizing the policymaking process by working with new and expert voices across the science and technology community, helping to develop actionable policies that can improve the lives of all Americans. For more about the Day One Project, visit [dayoneproject.org](http://dayoneproject.org)