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The Case for Online Vision Tests

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SUMMARY

Healthcare faces three major issues: access, cost, and productivity. Telemedicine — the use of technology to help treat patients remotely – can help address all three. Broadband allows many underserved rural and minority communities that previously had limited access to medical services to remotely access high-quality medical care. Telemedicine reduces the need for expensive real estate and enables providers to better leverage their current medical personnel to provide improved care to more people.

But, despite its benefits, there is an ongoing struggle about how to regulate telemedicine: who can practice it, what services can be delivered via telemedicine, and how it should be reimbursed. As is the case with any innovation, policymakers are looking to find the right balance between encouraging new technologies and protecting the health of patients. These are real issues. In too many cases, however, state and local legislators have erred on the side of too many restrictions on telemedicine, driving up prices and "protecting" patients from cheaper, better care.

In particular, online vision tests have come under attack in some states. Online vision tests use your computer and smartphone to assess your near and distance vision. When used correctly, they complement rather than substitute for in-person eye exams. Their main benefit is that they make it easier and less costly to get prescriptions for glasses or contacts. That's especially helpful in states with large rural or poor urban communities. Indeed, more than 800 counties nationally have no optometrist offices or optical goods stores, according to figures from the Bureau of Labor Statistics. That's fully one-quarter of the counties in the country.

In this report, we provide background on the health and economic benefits of telemedicine, analyze recent legislation proposed regarding online vision tests, and illustrate the impact online vision tests have on poor and rural communities.

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INTRODUCTION: THE HEALTH BENEFITS OF TELEMEDICINE

Healthcare in the United States suffers from three problems. First, access is unequally distributed, especially in rural areas and poor urban communities. Second, prices are too high, and they are rising faster than incomes. Third, the healthcare sector has slow or negative productivity growth, depending on how it is measured.

These three issues are interrelated, but often involve some tradeoffs. For example, solving the access problem would be easier if healthcare was cheaper. On the other hand, going to a pure market approach for healthcare might drive down prices to the detriment of access. It's precisely these tradeoffs that make healthcare policy such a contentious subject.

However, telemedicine can address all three issues simultaneously. Telemedicine can range from live video chats with specialists sometimes also called "telehealth, to "store-and-forward" diagnostic procedures, to remote patient monitoring, to real-time support for emergency medical technicians.

The use of telemedicine is spreading. A 2016 survey by the American Telemedicine Association found that 22 percent of respondents had used video conferencing to meet with a health provider.[1] Of the 78 percent who had not used telehealth in the preceding year, a majority felt that telehealth would be

more convenient. Seventy-two percent indicated that telehealth appealed to them for time savings, and 59 percent noted the distance necessary to travel to meet with their doctor.

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The market for telemedicine services is only going to grow in the future. Pharmaion Consultants predicts that the U.S. telemedicine market will be worth $13 billion by 2021.[2] Another report found the total number of virtual consults to be growing at 10 percent annually, with 16.6 million in 2015, and projected growth to hit 26.9 million by 2020, including consultations with specialists.[3]

> More than 40 percent of rural patients had to travel 20-plus miles to receive specialty care in 2016, compared to 3 percent of metropolitan patients.

The accelerated rise of telemedicine offers increased access to healthcare, especially among rural and underserved populations. These two constituencies tend to be less healthy, primarily because of income and limited access to care. For example, access to healthcare services in rural areas is more limited than in urban areas. A 2017 report by NTCA – The Rural Broadband Association finds, "while approximately 46 million Americans, or 15% of the U.S. population, lives in rural areas, only 10% of the nation's physicians practice in rural areas."[4] While there are 263 specialists per 100,000 people in urban areas, there are only 30 per 100,000 people in rural areas.[5] And more than 40 percent of rural patients had to travel 20-plus miles to receive specialty care in 2016, compared to 3 percent of metropolitan patients.[6] Responding to this shortage, states have adopted rural healthcare practitioner tax credits to encourage doctors to practice in these areas.[7, 8]

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Gaps in access to healthcare continue to persist among minority and underserved communities as well. The Kaiser Family Foundation finds that, "Among nonelderly adults, Hispanics, Blacks, and American Indians and Alaska Natives are more likely than Whites to delay or forgo needed care due to costs and for other reasons."[9] And, among nonelderly adults, Hispanics and Blacks are less likely to have utilized health or dental care in the past year compared to Whites.

For rural and minority Americans, telemedicine can provide faster medical services from a remote location in real time. Consumers can now access vital medical care from the comfort of their communities while saving time. No longer do they have to drive long distances to see a primary care doctor or a specialist; nor do they need to forego needed medical care altogether.

Studies consistently show a gain in health from telemedicine. For example, an October 2016 study looked at the use of telecolposcopy in examining abnormal Pap smear results in the rural South.[10] Over a 15-month time period, 940 patients were seen at eight sites across Arkansas using telecolposcopy. The study found

that, in addition to providing increased access to care, the program reduced travel time and costs associated with a face-to-face visit. The study concluded that telecolposcopy should be further explored and utilized in rural settings as a way to reduce patient costs and improve cervical cancer outcomes.

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A July 2017 study looked at the usability of a mobile-monitoring system in urban minority patients with heart failure.[11] The American College of Cardiology/American Heart Association "Guidelines for the Management of Heart Failure" recommend daily weight monitoring as the cornerstone for management of patients with heart failure. Participants in the group received a mobile phone for use during the three-month study period for daily monitoring. 36 of the 42 participants used the mobile phone system, with 62 percent of participants using the system over 50 percent of the time. Patients reported that they thought mobile intervention was easy, useful, and fast, and it helped them manage their weight.

A February 2017 study assessed the hypothesis that increased utilization of the Health-e-Access telemedicine model in Rochester, NY, would improve access among impoverished inner-city children to a level experienced by more affluent suburban children. With telemedicine, overall utilization for inner-city children increased to be comparable with that of suburban children.[12] Without telemedicine, however, inner-city use remained substantially less than that of suburban counterparts. That is, Health-e-Access Telemedicine redressed socioeconomic disparities in acute care access in the Rochester area, thus contributing to a more equitable community.

In addition, telemedicine can be done from the comfort of one's own home without having to incur travel expenses or take time off work. A 2011 study by Brian Whitacre, an associate professor in the "Department of Agricultural Economics" at Oklahoma State University, analyzed 24 rural hospitals in Arkansas, Kansas, Oklahoma, and Texas, and found estimated annual cost savings for travel expenses ranged from $2,303 to $109,080 per medical facility, with a mean of $32,671 and a median of $24,210.[13] The estimated annual cost savings for otherwise lost wages ranged from $4,188 to $68,269, with a mean of $19,761 and a median of $16,769.

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The Impact of Telemedicine on Cost and Productivity

Historically, healthcare has lagged in investment in information technology, despite recent efforts to boost electronic healthcare records. According to PPI's calculations, healthcare and social assistance industries spend only $2,900 on tech and telecom equipment and software per worker. By comparison, other non-tech industries such as finance and oil and gas extraction spend $21,600 and $20,500, respectively, on tech and telecom equipment and software per worker.

TABLE 1: TECH AND TELECOM SPENDING PER WORKER BY SECTOR

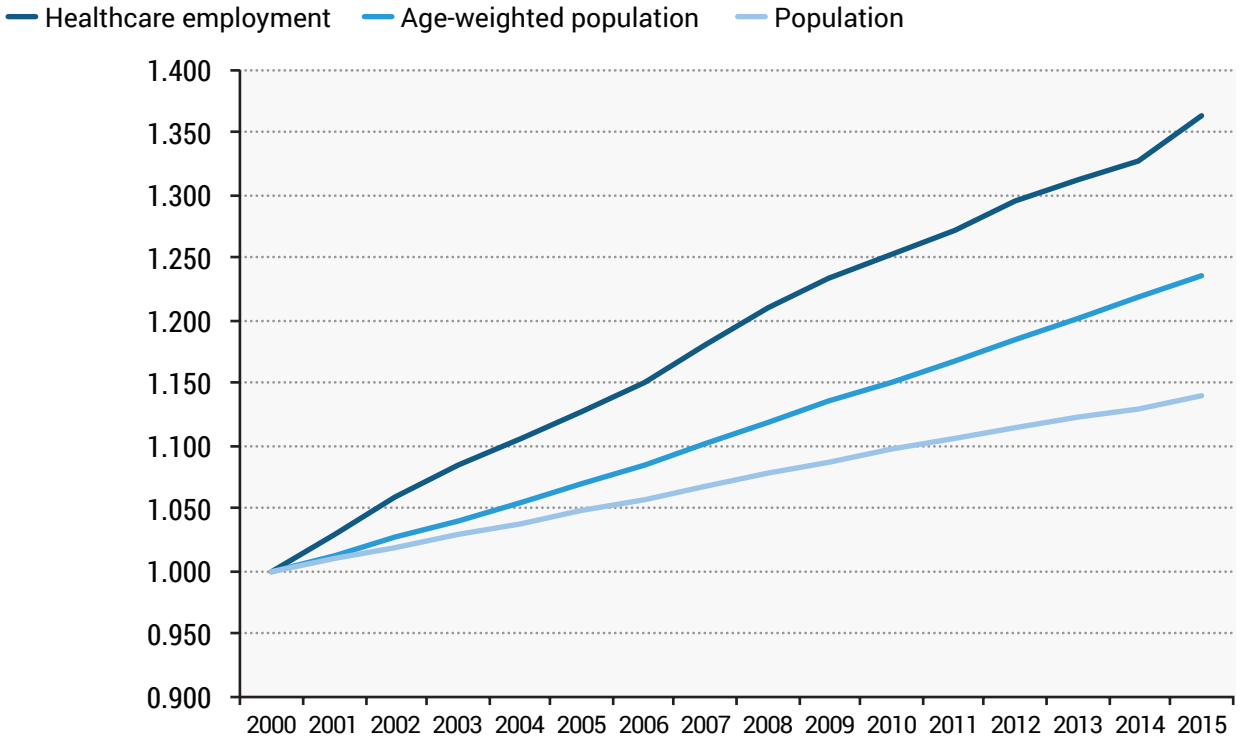
SELECTED INDUSTRIES	TECH AND TELECOM SPENDING PER WORKER (THOUSANDS OF $)*
TELECOM AND BROADCASTING	189.4
TECH	49.0
FINANCE AND INSURANCE	21.6
OIL AND GAS EXTRACTION	20.5
PROFESSIONAL SERVICES**	12.8
MANUFACTURING COMPUTER AND ELECTRONICS	6.3
WHOLESALE/RETAIL/TRANSPORTATION	5.1
HEALTHCARE AND SOCIAL ASSISTANCE	2.9
ARTS, ENTERTAINMENT, RECREATION, ACCOMMODATIONS, FOOD SERVICES AND OTHER SERVICES	1.9
CONSTRUCTION	1.9
AGRICULTURE	1.6

*Spending includes investment in computers, peripherals and communications equipment; investment in software; and on tech and telecom services, including cloud services. Workers measured as fulltime equivalents.
**Includes portion of tech.
Data: PPI calculations based on BEA data.

The lack of spending on information technology in healthcare helps drive both rising prices and weak productivity growth. Indeed, the healthcare system has consistently added expensive workers rather than investing in technology. From 2000 to 2015, healthcare employment rose by 36 percent – a far bigger jump than the 14 percent increase in the population over the same stretch.[14]

Part of this difference comes from the aging of the population, since older Americans require more care. But, even so, the number of healthcare workers is growing more rapidly than the 22 percent increase in the age-weighted population.[15] So the number of people in the population per health care worker – a measure of productivity – has been falling.[16]

FIGURE 1: Healthcare employment growth far outstrips population growth



Healthcare employment includes private and government hospitals, physician offices and ambulatory care facilities, and residential facilities.
Age-weighted population adjusts for healthcare costs at different ages.
Data: BEA, BLS.

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Telemedicine has the potential to both cut costs and increase productivity. Without telemedicine, it would be necessary to set up expensive offices to provide an equivalent level of care. Telemedicine enables both initial screenings and specialist consultations to be done much more cheaply, while potentially using fewer workers.

Online Vision Tests

An online vision test is an example of telemedicine use. An online vision test uses a computer and a smartphone to measure a user's near vision, distance vision, color vision, and astigmatism.

An ophthalmologist licensed in the customer's state then reviews the test results and prior prescription. They then write and sign the customer's new prescription within 24 hours where clinically appropriate. Customers can then use their new prescription to buy contact lenses or glasses anywhere.

The potential usefulness of such tests almost goes without saying. It used to be that many people had manual or people-oriented jobs that did not require visual acuity. But, in today's work world, good near vision helps when reading computer screens and other work-related devices whether you are a nurse, a construction worker, or a food server (even though many IT devices have accessibility aids). Distance vision is necessary for driving.

As a result, there is potentially large demand for online vision tests. One provider, Opternative, was founded in 2013 and is a startup offering at-home testing for contact lenses and glasses prescriptions. As of 2016, the startup had 19 employees and had raised $9.5 million in funding.[17] Similarly, Simple Contacts was founded in 2015. As of 2017, the company had 11 to 50 employees and had raised $10 million in funding.[18]

Online vision tests address the three big problems of healthcare: access, cost, and productivity. For one, in terms of access, online vision tests provide increased access to healthcare for underserved rural and urban areas. Optometrist offices and stores selling optical goods – which often give vision tests as part of their services – tend to be less prevalent in smaller areas. For example, according to figures from the BLS, more than 800 counties – about one-fourth of the total in the United States – reported no optometrist offices or optical goods stores as of 2016. Moreover, these "optical deserts" average one-third the size of the typical county.

> Online vision tests address the three big problems of healthcare: access, cost, and productivity.

Low-income and racial and ethnic minority populations tend to be at greater risk for undiagnosed and uncorrected eye and vision disorders and diseases than the general population.[19] These disparities are compounded by several factors, including lack of access to optometrists and costs of treatments, including glasses.

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Online vision tests are often cheaper for consumers, helping to lower costs and increase access for rural and minority Americans. A contact lens test at an optometrist's office can cost, on average, between $120 and $220 without insurance in major metropolitan areas.[20, 21] In rural and inner-city areas where optometrists are in shorter supply, one could reasonably expect the average price to be higher. By comparison, Opternative's test and doctor review costs $60 for both the exam and glasses/contact lens prescription.[22] Underserved rural and urban communities stand to gain increased

access to eye exams, as online exams can now be accessed anywhere at a lower cost.

Legislation

Unfortunately, some states have recently proposed or passed legislation that would either ban online vision tests or make them significantly more expensive or less useful. For example, in 2016, House Bill 775 became law in Georgia. The legislation bars an ophthalmologist or optometrist from writing a prescription for contact lenses or glasses unless an in-person eye exam has been performed.[23] Also in 2016, the South Carolina Legislature overturned Governor Nikki Haley's veto to pass legislation requiring prescriptions for glasses or contacts to be based on an in-person exam.[24] And Indiana passed a law prohibiting the prescription of contacts, glasses or low-vision devices through telemedicine.[25]

In 2017, a bill was introduced in the New Mexico Legislature that would have made it illegal to write a prescription for contact lenses or glasses unless an in-person eye exam was performed beforehand.[26] A similar bill in the Nevada Legislature would have required an ophthalmologist in the state to not make an assessment of a patient's ocular health based solely on the use of an automated testing device.[27]

Viewed in terms of the large movement toward telemedicine, these laws make little sense. They do not contribute toward increased access, lower costs, or higher productivity. Indeed, they would tend to reduce the employment opportunities open to the residents of the state, by raising the difficulty of getting corrected vision through glasses or contact lenses.

CONCLUSION

Telemedicine has benefited underserved Americans and the economy by increasing access, providing more care, and opening up local economic opportunity. Rural and minority communities are now able to remotely access primary care doctors and healthcare specialists rather than commuting long distances or foregoing healthcare altogether.

These advantages are especially true for online vision tests. States should encourage the availability of online vision tests as a way of improving access to care for underserved populations. This is too good an opportunity to miss.

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