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THE GROWING INVESTMENT OPPORTUNITIES IN DIGITAL HEALTHCARE INNOVATION

WHITE PAPER
INVESTING IN DIGITAL HEALTH

The healthcare system in the US is unlike any other in the world. At its most fundamental level, it is really not a system at all. It actually came about over a number of years, almost by happenstance, connected directly to the American love affair with capitalism. Interestingly, our status as a leading provider of medical, pharmaceutical, and healthcare technology in the world is in no small part due to capitalism. If there is money to be made---we are all in. Beyond the economic benefits, are pharmaceuticals, devices and technology that help people live longer, healthier, more product lives. Digital technologies, specifically, are set to transform the industry in ways we've not yet considered. There are hundreds, if not thousands, of investment opportunities in this space. Choosing the right ones can be challenging. The place to begin is to look at the biggest issues facing healthcare today and then find the minds and the solutions that will best address those challenges most directly.

Following are four distinct areas of opportunities.

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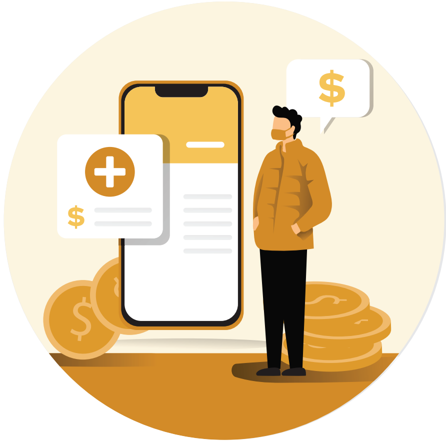
Rising Cost of Healthcare

Innovation in healthcare has taken many forms over the past century, from hand washing as standard procedure to medical advancements such as vaccines (COVID-19), MRIs, and implanted and wearable devices. These are all patient-facing innovations, making the delivery of healthcare more effective. But as those innovations were advancing, the cost of providing that care has skyrocketed, much of it due to administrative inefficiencies. A study published by the Annals of Internal Medicine reports that in 2017, 34.2% of all healthcare expenditures were administrative costs, or $812 billion.[1]



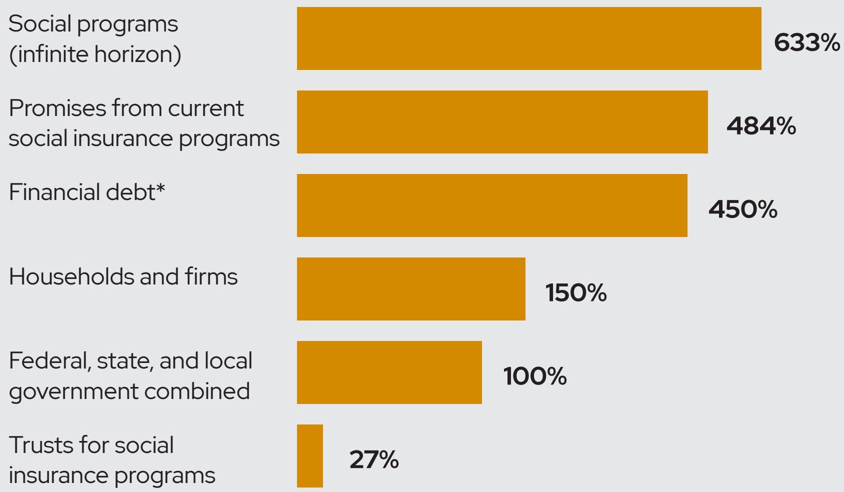
US Debt and Unfunded Entitlements Compound the Problem

- At the end of 2019 our national debt (the accumulation of our country's historical annual deficits) was **~100% of GDP, or $22.5T.**
- A recent CNBC article suggested, shockingly, that U.S. debt levels could rise to **2,000% of GDP!**
- This suggests that national debt could be as high as **$400T+.**

- Unfunded liabilities associated with so-called "entitlement programs" are estimated to be **$150-200T.**
- The current value of ALL HOUSEHOLD ASSETS in our country is estimated to be only **$80T!**

Debt as a percentage of GDP

According to AB Bernstein analysis



*Carries "conceptual issues and risks," namely that debt held by financial firms often represents potential in a worst-case scenario.

Source: AB Bernstein

Healthcare spending at this current rate is unsustainable. The answer up until now has come in the form of legislation. But programs such as MACRA (Medicare Access and CHIP Reauthorization Act) are still a work in progress. Instead of more legislation, the industry should look at more innovation, especially in the area of revenue cycle. It is estimated that one-half of the $496 billion spent each year on insurance and medical billing is waste.[2] Opportunities abound through the use of artificial intelligence (AI), machine learning, and block chain technology to transform the entire process, reducing administrative costs, and optimizing efficiencies.[3]

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Demographics

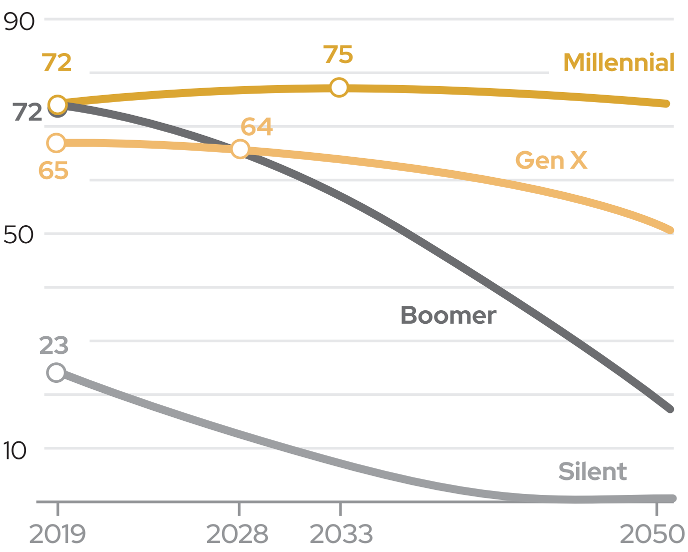
According to PEW Research there are approximately 71 million Baby Boomers in the US today, with the average age of 73. Most have very little retirement savings and rely solely on Medicare and supplemental plans to pay for their healthcare. The problem is that older individuals are likely to have multiple chronic conditions and those conditions are often more complex—and more expensive to treat. Falls, strokes, heart disease, and diabetes result in more hospitalizations and visits to the emergency room, which are also expensive. The bottom line is that as our population ages, these costs will continue to escalate. Without intervention, Medicare alone could bankrupt our federal government.

The opportunities to mitigate this risk are many. First, innovations such as wearables and telehealth for remote patient monitoring can help improve an older person's ability to maintain better health at home. Digital devices such as smart watches, pulse oximeters, blood glucose monitors, and fall detectors allow clinicians to continuously monitor and intervene to prevent negative events or deteriorating conditions. One recent innovation is an insole that measures temperature and pressure to monitor and prevent diabetic foot ulcers and infections. This may sound like a simple invention, but the impact is significant as 85% of lower limb amputations are preceded by a foot ulcer.[4]

Another investment opportunity comes from our population of Millennials. There are 75 million individuals in the US ages 23 to 44, with an average age of 35 according to PEW. This generation has grown up around technology and embrace it as an essential part of their work and personal lives. They don't mind sharing their personal information and do so regularly across multiple social media platforms. This generation is also used to working in a gig economy so they're less likely to have employer-based healthcare. Because of these factors, it is plausible that Millennials may be the generation to finally push "Medicare for all" or some semblance of nationally provided healthcare across the finish line.

Projected population by generation

In millions



Note: Millennials refer to the population ages 23 to 38 as of 2019.

Source: Pew Research Center Tabulations of U.S. Census Bureau population estimates released April 2020 and population projections released December 2017.

PEW RESEARCH CENTER

As our population becomes more tech-savvy and less concerned about sharing information, they will become less accepting of the antiquated healthcare practices of previous generations. Why would they want to fill out numerous paper forms every time they visit their doctor's office when they could enter the information online before the appointment? Why would they send a check in the mail for a healthcare bill when they could pay over their phone with Apple Pay? Why do they have to recall their entire medical history each time they see a new provider when that information could be available through a digital health record?

Both Baby Boomers and Millennials are not shy about sharing their opinions and ideas, even though those opinions and ideas may vastly differ. This is good news for innovators and investors who are looking to get into the healthcare space.

The Rise of Tech Giants

The five titans of tech—Amazon, Facebook, Microsoft, Google, Apple—have vast network power to facilitate entry into any new market they choose. These companies invented digital technology platforms like the cloud, mobile, AI, block chain, and social media, so they are, obviously, experts at leveraging them in innovative ways. They understand the inefficiencies plaguing the healthcare industry and are actively pursuing opportunities to leverage their technology to transform that market—and reap the reward.

> ***Healthcare represents 20% of the US economy, or $4 trillion, making it an attractive new market for titans of the tech world.***

Besides their ownership in digital technology platforms used around the world, these tech giants are adept at something the healthcare industry has been slow to embrace consumerism. They've learned that keeping customers happy is tightly aligned with a healthy bottom line. This gives them a great advantage when it comes to improving the traditionally contentious payer-provider-patient relationship.

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Consumerism

The US healthcare system was designed around the needs of payers and providers, but not patients. But as consumers have taken on a larger portion of their healthcare costs, they are beginning to demand greater transparency in things like pricing and quality rankings. They also want digital options that mimic their experience in other parts of their lives, like paying their bills from their mobile device or using revolving payment plans like they do for retail purchases.

Consumers Want a Retail-Like Healthcare Experience

Many consumers view digital solutions as the most effective way to meet healthcare needs

% of respondents who view digital solutions as the most effective way to perform healthcare activities

Consumer journeys

Sign up and join → Select a provider → Receive care → Take control of my health → Manage my finances → Renew my coverage

Example of a step within each journey

Shop for health plan	Search for doctor	Check health information	Monitor health metrics	Pay insurance bills	Purchase health plan
81	84	82	82	85	79

McKinsey&Company *Source: 2016 McKinsey Consumer Health Insights Survey*

Retail clinics, ambulatory care centers, and concierge medicine are growing in popularity, putting greater pressure on traditional healthcare providers to improve quality, convenience, and the consumer experience.

Consumer expectations will continue to grow, and payers and providers will be looking for solutions to meet those expectations. Digital technology provides a great opportunity to fill that gap. One great example is the implementation of telehealth curing the COVID-19 pandemic. Patients still needed and wanted care but didn't want to risk going to their doctor's office where they or their loved ones might catch the virus. They wanted to be seen at home, safe and protected. Before the pandemic, most providers did not offer telehealth because it was not financially viable; payers reimbursed telehealth visits at just a fraction of an in-office visit or not at all. Fortunately, in an effort to support social distancing guidelines, the CMS (Centers for Medicare and Medicaid) increased reimbursement for telehealth to the same rate as for in-person visits. Whether this will last once the pandemic has gone is yet to be known. But one thing is certain: Patients like having a telehealth option. Of those surveyed, 84% said they would opt for a provider who offers telehealth over one who does not.[5]

While digital solutions like telehealth help improve the patient experience, they also help improve a provider's bottom line by allowing them to see more patients without adding overhead or additional staff, which helps alleviate the burden of a heavy patient load.

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Opportunities in Digital Healthcare

Exponential Technologies

- Telemedicine
- Ambient Computing
- Virtual & Augmented Reality
- Digital Medicine
- Data Democratization
- Blockchain
- Cognitive Computing
- Gig Economy
- Gamification
- Robotics
- Additive Manufacturing
- Genomics & Proteomics
- Synthetic Biology & Nanotechnology
- Quantum Computing

Enabling Technologies

- Cloud
- Data Storage & Integration
- Security & Privacy

Taking the First Step

Digital health is a complex ecosystem of enterprise health technology solutions, data and analytics platforms, AI, medical payments, digital therapeutics, remote medical devices, telehealth, along with more than 350,000 mobile healthcare apps. The opportunities afforded in digital health are mind-boggling. But making the decision to invest in the healthcare market is not for the faint of heart. For one thing, healthcare is an industry that does not follow typical rules of business. The buyer-seller relationship is muddied by the payers' role in the equation. Each payer, whether government, private or commercial, has its own rules, regulations, and requirements. It happens all the time that a very savvy investor who might have great insight into an opportunity misses the mark because they did not have an accurate or full understanding of the system. Silicon Valley investors with great ideas on how to fix healthcare have lost billions in capital because they lacked some fundamental understanding, or they had incorrect assumptions, about the nuances of healthcare.

The best way to succeed is to look for an investment "Sherpa" with a thesis you believe in and people you can trust who have broad expertise in healthcare. The right partner can cut through the noise to identify early-stage digital health companies that can "move the dial" on improving access to care, increasing care delivery efficiency, and lowering costs for all stakeholders and the system overall.

Many investors rely on gut instinct. That's not a bad thing. But in healthcare, it's simply not enough. There are a million great ideas but the knowledge of how to adapt them to healthcare is something that the big tech giants have learned the hard way. A rigorous process for both selection and ongoing interaction represent the difference between a good idea and a successful exit.

SOURCES:

[1] https://pubmed.ncbi.nlm.nih.gov/31905376/
[2] https://cdn.americanprogress.org/content/uploads/2019/04/03105330/Admin-Costs-brief.pdf
[3] https://healthitanalytics.com/features/how-ai-blockchain-combine-to-fuel-healthcare-big-data-analytics
[4] International Working Group on the Diabetic Foot. Diabetes and the foot.
[5] https://www.healthcareitnews.com/news/telemedicine-during-covid-19-benefits-limitations-burdens-adaptation