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The Healthcare Dilemma: Anchor or Innovator?

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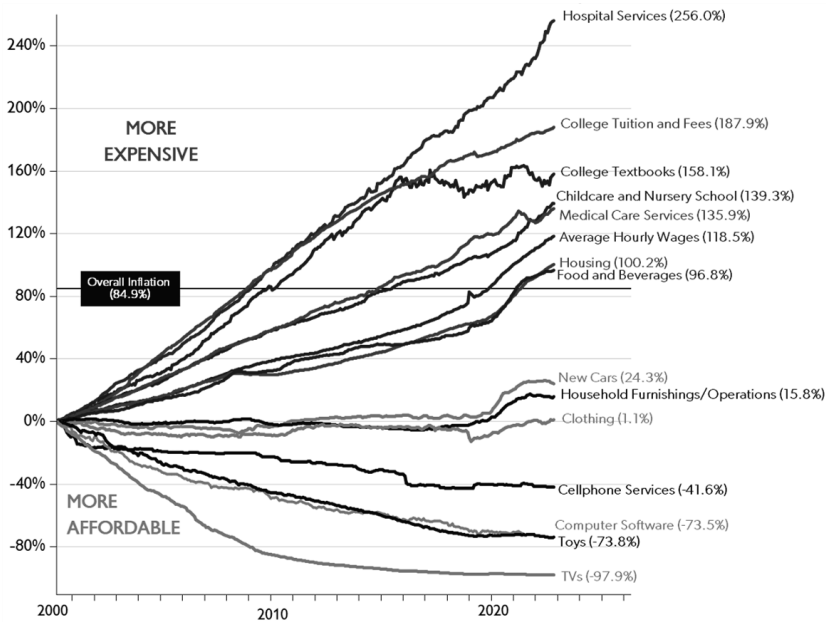
Venture capitalist Marc Andreessen calls it the “chart of the century.” Perhaps no single image better describes the U.S. economy than economist Mark J. Perry’s depiction of wildly divergent price increases across varied economic sectors. Its clarity and implications are stunning.

What does it show? Over the last 24 years, the prices of technology-based goods like televisions, software, and mobile phone services have *fallen* by between 40 percent and 97 percent. At the same time, many highly regulated and subsidized services showed dramatic price *increases*.

What was the worst inflationary offender? Hospital services, with a stunning price *rise* of 256 percent. Medical care services weren’t far behind, at 136 percent.

The enormity of the healthcare market contains multitudes: it is the economy’s largest sector and source of jobs. Its doctors, nurses, and technologists produce marvels of healing and life extension. It also is the most voracious consumer of government spending and, by some measures, America’s least productive industry. These very inefficiencies, however, point toward massive opportunities: healthcare may be the most exciting target for a techno-entrepreneurial transformation, led by AI, molecular medicine, and a revolution of personalized care and financing to counter today’s model of bureaucracy and bloat.

Figure 5-1. Price Changes: January 2000 to June 2024 of Selected U.S. Consumer Goods and Services, Wages



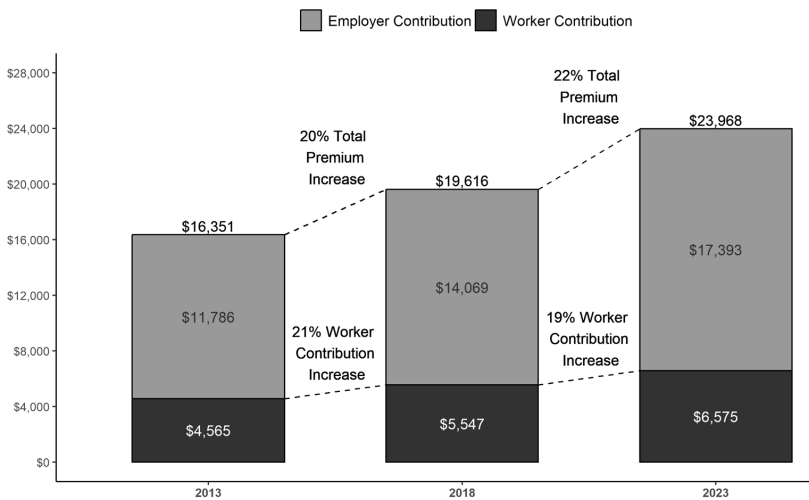
Source: Courtesy of Mark Perry (2024) using Bureau of Labor Statistics data. Used with permission.¹

The question for Indiana is whether it can supply the necessary workforce to meet demographic reality but also transform healthcare delivery and financing in a radically more individualized, entrepreneurial, and cost-efficient manner.

For decades, healthcare has been the fastest growing job sector, a trend that is likely to continue.² The Bureau of Labor Statistics projects employment in healthcare, heavily influenced by an aging population, will rise an additional 13 percent from 2021 to 2031.³ In fact, medical associations urgently warn of shortages of doctors, nurses, and technicians. Indiana must prepare for this surge by training and recruiting large numbers of talented health professionals. The state should also aggressively build upon its already successful biomedical sectors to serve a rapidly expanding global health market (see Chapter 6).

Yet an ever-growing health sector also has a dark side. Healthcare's rapid employment growth is for the rest of the economy a giant burden. Like all benefits, health insurance is a component of total compensation. In 2023, the average premium for family coverage rose to nearly \$24,000, a 46.6 percent increase since 2013.⁴ Every dollar businesses spend on inefficient health services is a dollar they cannot spend on paying productive workers and investing in innovation. Governmental budgets are increasingly swamped. The expansion of healthcare thus often comes at the expense of reduced opportunities in the rest of the economy.

Figure 5-2. Average annual and employer premium contributions for family coverage, 2013, 2018 and 2023



Source: 2023 Employer Health Benefits Survey, KFF (2023).⁵

Expensive healthcare is a special challenge for entrepreneurs, who operate on the edge and must scrutinize every hiring decision and investment. For workers, meanwhile, employer-based health insurance often ties them to specific jobs, while insurance options for individuals and owners of small businesses are even more cumbersome and costly.

The U.S. dedicates ever more resources to healthcare but often without correspondingly good results. We spend vastly more than other nations – nearly twice as much (\$13,000 per capita) as the average

developed peer country (\$6,600).⁶ Yet average American lifespans now trail those same peer nations by a gap of nearly five years.⁷

Yes, behavioral choices and social pathologies skew America's health metrics downward. And for many individuals, American healthcare cannot be topped. Advanced medicine, in the form of cancer cures and miracle surgeries, often delivers outstanding personal results. Richer nations rationally tend to spend more of their economic output on healthcare. However, the U.S. spends far too much on outcomes that are mediocre at best. Why is the U.S. system so much more costly?

On the demand side of the equation, the tax-advantaged treatment of health insurance and the structure and size of Medicare and Medicaid encourages most of our health dollars to be spent through the insurance channel, rather than directly.⁸ This "third-party payer" problem boosts prices and ensures overconsumption of many health services, although it probably leads to under-consumption of services not favored by private or government insurers.

The supply side of the equation is similarly distorted by rules and payment methods that discourage innovation. Medicare and Medicaid also mold the structure for most of the provider world because they are such a large part of most providers businesses. A few large payers – Medicare, Medicaid, and large private insurers – tend to lead to a small number of large providers that can best navigate the payment and regulatory complexity of the administrative apparatus. Unfortunately, the Affordable Care Act (ACA) makes most of these demand and supply side problems worse. The ACA, for example, dramatically accelerated consolidation of hospitals and medical practices into massive health systems.

U.S. healthcare therefore enjoys neither the efficiencies of a truly private market, nor the (often brutal) cost-containment mechanisms of a wholly public system. The result is dramatic over-spending, especially compared to health outcomes.⁹

Many of these effects are especially acute in Indiana. Indiana historically spends a larger portion of its economic output on healthcare than the national average. For example, in 2019 before the pandemic, Indiana spent 18 percent of its output on health versus 16.2 percent for the nation.¹⁰ Several studies confirm Indiana healthcare is

expensive, especially compared to its relatively low overall cost of living and compared to its Midwestern neighbors.¹¹

If trends hold, Indiana will by the early 2030s spend more than one out of every five dollars – or more than 20 percent of its economic output – on healthcare.

The Centers for Medicare and Medicaid Services (CMS) projects U.S. health spending to rise to 19.7 percent of GDP in 2032 from 17.3 percent in 2022.¹² If trends hold, therefore, Indiana will by the early 2030s spend more than one out of every five dollars – or more than 20 percent of its economic output – on healthcare. Fortunately, a technology boom, which could help transform the healthcare sector from anchor to innovator, is right around the corner.

THE TELEMEDICINE EXAMPLE

This health-tech revolution is coming, but the speed of its diffusion across the healthcare landscape will depend on public policy innovation. Consider the example of telemedicine.¹³ For nearly three decades as broadband networks were being rolled out, some had discussed the obvious possibility of conducting more healthcare over the internet. As early as 2015, Dr. Peter Fitzgerald, a cardiologist and engineer at Stanford's Center for Cardiovascular Technology, estimated that one-third of cardiac clinic visits were unnecessary. And yet telemedicine never took off. Providers and insurers couldn't figure out how to bill for non-office services, or to comply with privacy rules, and they assumed they needed special technology instead of using smartphones.

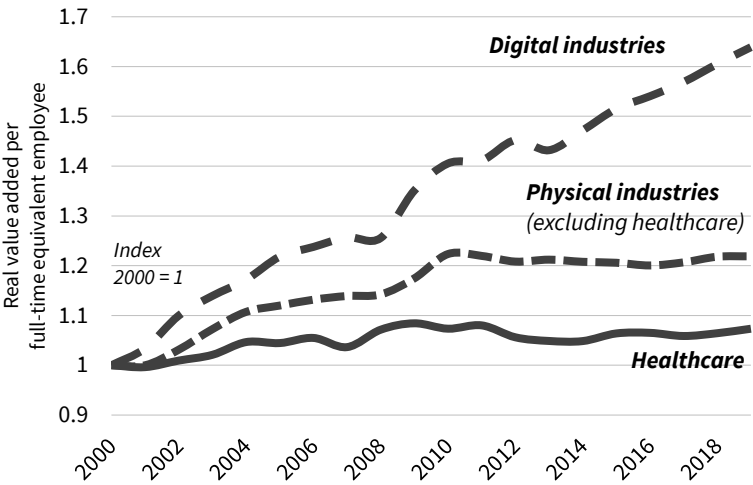
Then the COVID-19 pandemic hit, and everything changed overnight. With hundreds of millions of people locked in their homes, doctor visits finally went virtual. Many patients and doctors found that in many circumstances, virtual visits were a superior solution. Doctor visits are just the tip of the digital health iceberg. In the near future,

telehealth might not only save everyone billions of hours of time each year, but also transform health care into an information industry. The chief obstacle to telehealth was our complicated web of health regulations and financing mechanisms, which often disincentivize or even block convenience, efficiency, and innovation. The pandemic finally opened the door to an explosion of innovation. In 2020 alone, telehealth startups raised \$10.5 billion in 600 venture capital deals. The question is whether we will allow providers, patients, and payers to adopt the next waves of technology, such as AI, with greater speed and ease, and without top-down control by health systems, insurers, or regulators in the states and Washington, D.C.

FROM ANCHOR TO INNOVATOR

Such rules have blocked innovation and boosted costs for decades. In the 20 years leading up to the COVID pandemic, healthcare productivity growth was nearly stagnant. By contrast, productivity in American physical industries grew nearly three times as fast (though still slowly), and productivity in the digital industries grew nearly *nine times faster* than healthcare.¹⁴ The chart below is the flip side of Mark Perry’s “chart of the century.”

Figure 5-3. Healthcare productivity's giant challenge and opportunity



Source: Entropy Economics (2019) using Bureau of Economic Analysis data.

We keep pouring more resources into the system but do not reap more care or better results in aggregate. Under the Affordable Care Act, for example, the U.S. spends \$214 billion per year insuring Americans through Medicaid and the exchanges. But as healthcare economist John Goodman notes, “the number of people without health insurance fell from 15.5 percent of the population in 2010 to 7.9 percent by 2022. Yet...health care utilization across all of society did not increase at all.”¹⁵ Goodman concludes, “One reason the United States spends more on health care than other countries is that we are obsessive about health insurance instead of health care.”¹⁶

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– **John Goodman**, healthcare economist

We focus more on financing the existing expensive system rather than promoting an explosion of new, tech-based, low-cost products and services supplied by entrepreneurial enterprises.

Yes, major reforms of insurance are necessary to allow a wider array of individually tailored financial products aligned with consumer choice and frugality. An era of AI dynamism (and potential employment disruption) demands even more options, providing far greater flexibility, portability, and continuity in health insurance.¹⁷ As important, however, we need to accommodate and encourage the onrush of new service providers and technologies that could remake the entire sector. Because of its size, excesses, and slow productivity growth, any acceleration in healthcare’s efficiency and pace of innovation could not only deliver better care at lower cost, but also could meaningfully boost the overall economy.

A FOUR-FACETED REVOLUTION

In the past, we have envisioned a four-faceted information revolution in health.¹⁸ It could be a broad transformation of the sprawling industry, consisting of:

1. Smartphones and personal technology

Supercomputers in billions of individuals' pockets (and on their wrists and in their brains and intestines) all connected via broadband networks, will enable cheap, anywhere, all-the-time diagnostic tools and communication and data collection capabilities. Smartphones will be used not only for direct communication with physicians and nurses, substantially reducing office visits. They also will be used as tools to diagnose ear infections, monitor heart rhythms, remind us to take medication, and detect emergent maladies by sensing chemicals in our breath and changes in our retinas. They will connect to a host of sensors and drug dispensers that will meander through our bodies.

2. AI, big data, and social data

With the collection, coordination, sharing, and analysis of unimaginably large troves of specific data about patients, treatments, physicians, environments, and facilities, researchers and patients themselves will dig deeper and make more connections than ever before.

Some of the algorithms at the heart of today's deep learning technologies were developed 30 years ago. But we did not have enough computing power or sufficiently large data sets to make them useful. Now, with millions of times the computing power and data sets trillions of times bigger, that is changing. The accumulation of data and speed of discovery will produce a virtuous circle that will make today look like a dark age of medicine.

One surprising development is that individuals with no medical background are using the internet, which has democratized medical knowledge and expertise, to make significant breakthroughs in their own health and others in their networks.

The Paragon Health Institute has surveyed the numerous ways AI might improve healthcare – from more efficient administration, to

physician tools, to self-diagnostics, to deep biological research.¹⁹ Their conclusion is similar to ours: “AI is a multi-dimensional reality already transforming American health care and, thankfully, it has the potential to effect significant medical savings at a time when they are desperately needed.”

3. *The code of life*

The truly radical new understanding of biological information networks, including genomics and proteomics, will yield personalized molecular medicine. Cracking this “code of life” is the most fundamental application of information technology at the heart of the health information revolution – and it is happening. In 2001, the cost to sequence a whole human genome was \$100 million. Today, the cost is around \$500.²⁰ “The vital core of medicine,” writes Peter Huber in *The Cure in the Code*, “is now on the same plummeting-cost trajectory as chips and software.”

Computational bioscience will combine our knowledge of this biocode with exploding empirical data to clear the way for scientists to design new therapies in the cloud. AlphaFold 3 is the latest AI system that can predict how proteins will interact with small molecules and even ions.²¹ This could dramatically reduce the cost of pharmaceutical development and greatly expand the number of therapies that can be created and tested by moving medical research away from a hit-and-hope world of trial-and-error guesswork.

Immuno-oncology is just one promising field in which scientists are already designing personalized anti-cancer drugs using knowledge of specific cellular mechanisms and bio-information networks to, in effect, reprogram the body’s own defense systems. But it is still early days. Understanding the code of life will also enable us, within the next few years, to begin manufacturing artificial human organs on a large scale.

In addition, 3D bioprinting of human tissue and organs are envisioned for use in clinical trials of new drugs, instead of human trials, which could improve patient safety, reduce costs, and accelerate time to market. Likewise, 3D printing already is improving customization and reducing the time and cost of making artificial limbs.

4. The app-ification of healthcare

For the new health information technologies to truly flourish, the economic model of healthcare must change. Instead of a centralized, opaque, top-down system of big hospitals, big insurance, and big government, we need an entrepreneurial model of numerous firms and technologies (health-care “apps”) delivering better care at lower prices to patient-consumers. Healthcare should be more like the smartphone ecosystem – a platform that empowers millions of diverse apps, products, and services created by other people and firms, targeting the needs of individual consumers.

This new model will include Uber-like “doctor on demand” platforms. It will include a multitude of personalized, affordable insurance products. It will promote real and knowable prices. It will encourage far more participation by technologists and entrepreneurs to deliver new therapies and health services to consumers who are far more interested in value. It will mean a far greater focus by healthcare providers on innovation, efficiency, and cost reductions. It will reduce unnecessary tests and office visits. But at the same time, this new model will entail more preemptive diagnostics, preventive care, and health maintenance, rather than post-symptom acute care. (For example, some believe that with better early detection tools, we could cure 80 percent of cancers with today’s therapies.) The potential is enormous, but a successful reorganization of healthcare delivery will be limited mostly by the extent of improvements in tax and regulatory policy.

Such a transformation will require a reorientation of today’s workforce. The rise of physician assistants and nurse practitioners over the last two decades portends an even greater expansion and transition from the old model. We will need more diverse specialists as well as health generalists, or coaches, who can help us navigate new technologies and tools in a more personalized manner.

RECOMMENDATIONS

How can Indiana lead the way? Much of health policy is set at the federal level – from Medicare to many private insurance rules, to the Food and Drug Administration. But Indiana should engage as many levers as possible to push in the right direction.

- Train and recruit a diverse set of healthcare professionals, who can embrace and adapt to a more innovative and efficient health landscape.
- Promote competition, transparency, and the rapid entry of entrepreneurial suppliers of new, more cost-effective medical, financial, and administrative services.²² Boosting the supply of healthcare – both in the number of providers and their entrepreneurial nature – can through increased competition help reduce Indiana’s nationally high hospital fees.
- Aggressively promote flexible, personalized, portable insurance products.²³ For example, allow all citizens to purchase Farm Bureau plans (or other similar “association plans”) or plans approved in any other state.
- Promote economic and cultural incentives for personal behaviors known to be the foundation of good health.
- Push federal lawmakers and regulators to ease, waive, or reverse rules – through law or regulation – that promote over-consolidation of large health providers, limit insurance choices for consumers, and limit Indiana’s flexibility administering Medicaid.
- Reaffirm the principle of informed consent and once again elevate the sanctity of the individual over the health system. Potent new tools of molecular medicine and AI will present ethical challenges. In recent years, large health systems and bureaucracies mandated indiscriminate, blanket protocols, which often turned out to be wrong, causing widespread health damage. Individual patients and their physicians must be in control.

BETTER HEALTH AT LOWER COST

Multiple advances in personal technology, molecular medicine, and AI should deliver far better health outcomes in coming years. But for these products and services to diffuse quickly through the market, and reduce health costs, federal and state governments must better align

incentives for patients, providers, and payers. Only then will workers and employers truly harvest the gains of both better health and far lower costs. Lower healthcare costs will not only increase take-home pay for individual workers but also support a more dynamic job market and entrepreneurial ecosystem. ■

ABOUT ENTROPY ECONOMICS

Bret Swanson is president of Entropy Economics LLC, a technology research firm serving investors and technology companies. He is also a senior fellow at the National Center for Energy Analytics and a visiting fellow at the Krach Institute for Tech Diplomacy at Purdue. From 2009 to 2024, he was a trustee and chairman of the Indiana Public Retirement System (INPRS). Find his Infonomena newsletter and podcast at infonomena.substack.com.

CHAPTER NOTES

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subsidized, third-party dominated, and so intertwined with the byzantine health system that it cannot truly be called private.

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