

# Measuring the Future of Healthcare



# “You can’t manage what you can’t measure.” - PETER DRUCKER

The need for healthcare transformation has been widely recognized for some time and was a driving force behind the 2010 Affordable Care Act (“ACA”). The overarching goal of the act was to rein in healthcare costs that were spiraling out of control.

According to a RAND Corporation report, in 1960, U.S. **healthcare spending as a percentage of gross domestic product was slightly over 5 percent**. By 2002, that number had nearly tripled, rising to almost 15 percent. Today, according to the Centers for Medicare & Medicaid Services (“CMS”), **the share of the economy devoted to health spending has reached 17.4 percent**, and the Congressional Budget Office recently stated that **“spending on federal healthcare programs is growing rapidly.”** (A report by the Center for Sustainable Health Spending estimated that **U.S. healthcare spending grew by 5 percent in 2014**, four years after the enactment of the ACA.)

The fastest growing elements of this frighteningly large and burdensome national healthcare bill — which is approaching a fifth of the overall economy — are prescription drug costs, which rose 13 percent year-over-year from 2013 to 2014, and high-deductible insurance plans that shift risk to patients by increasing what they pay out of pocket. This forces people to factor their personal finances into their healthcare decisions, a process that may lead individuals to ignore treatable conditions until they become chronic or far more serious and, consequently, highly expensive to treat. This creates a vicious cycle that could lead to further additions to both individual and societal healthcare costs.

Another driver of the rising cost of healthcare is the rapid aging of the population. The U.S. Census Bureau

predicts that by 2050, the number of people in the United States age 65 and older will **nearly double the 43.1 million in 2012**. Not only is the baby boomer generation growing older, it is living longer, thanks to medical advances (among other factors). And annual per capita healthcare costs tend to be higher for older adults due to the age-related chronic conditions that afflict them such as diabetes, cardiovascular disease, chronic obstructive pulmonary disease and others. In a 2014 Commonwealth Fund report, **87 percent of older adults in the United States reported having at least one chronic illness, and 68 percent reported having two or more**. These chronic conditions are expensive to manage and can lead to multiple (and costly) hospitalizations.

The United States is not alone in confronting these escalating expenses. Similarly, rising costs in the UK have led to an **estimated National Health Service (“NHS”) funding deficit of nearly £2.5 billion in 2015**, and, according to some reports, **that number could reach £30 billion by 2021**. Again, an aging population is a significant contributor to these spiraling costs. According to the NHS, **there are more than 2 million unplanned hospital admissions per year for people over age 65, accounting for nearly 70 percent of expensive hospital emergency bed days**.

Of course, money is not the only problem. Indeed, if additional spending produced improved outcomes, one might argue it’s money well spent. That, however, is not the case. A 2009 Dartmouth Institute report found that the **“safety and reliability of care in [U.S.] hospitals, surgical centers, nursing homes and physician offices are far from assured”** and that higher spending does not and has not produced “better outcomes for patients.”

Combined with rising costs, this lack of confidence in the current quality of healthcare — despite medical advances, better accessibility, and new drugs and technologies — has created a burning platform for change.

In the United States and the UK, improving the quality of care while controlling costs has focused to date on optimizing access to and delivery of health services through process improvements by independent practitioner groups, hospitals and integrated healthcare systems. For instance, the formation of accountable care organizations is designed to change the reimbursement equation from quantity of care (that is, the number of actions taken) to quality of care (improved outcomes) at reduced cost.

Although this is a laudable goal and, in many instances, has succeeded in improving quality while lowering costs, the overall effort still is hampered by the inability to assess and forecast the needs of patient populations to calibrate investments and decrease costs going forward. Renowned management expert Peter Drucker famously asserted, “You can’t manage what you can’t measure.” It has been difficult, if not impossible, to measure the needs of patient populations and thereby manage the care they require now, as well as in the future (given the inelasticity of healthcare infrastructure investments — an expensive MRI machine, for example, cannot be repurposed for another use).

Furthermore, patient needs are not merely a matter of physiology but also are affected by people’s mental health and social environments, lifestyle behaviors and choices, and available community resources. Factoring all these elements into the healthcare equation is daunting but necessary to arrive at a sustainable solution. To create greater value for the dollars spent in delivering

healthcare, it is essential to manage the demand for health services. To do that and to invest correctly, wisely and appropriately in infrastructure and services, providers and insurers need to consider three aspects:

-  The needs of the patient populations for which providers/insurers now care and how those demands likely will change over the next five to 10 years.
-  The fact that the healthcare environment is dynamic, as populations (of both patients and providers) move, age and change behaviors.
-  That healthcare needs are multidimensional, influenced by physiology, mental status, behavior, and socioeconomic and environmental factors.

Fortunately, while accounting for these elements is certainly not simple, advanced modeling can be used to produce detailed demand projections with relative confidence, facilitating the complex decision making required to improve quality and reduce healthcare costs.

## The Science of Demand Assessment with Microsimulation

A large health center was exploring the possibility of investing in an expensive new therapy. As the cost would be significant, the center needed to know if demand for the therapy would be sufficient within its patient population to justify the investment. FTI Consulting was engaged to determine the extent of present and future demand the center could expect if it was to offer this innovative service.

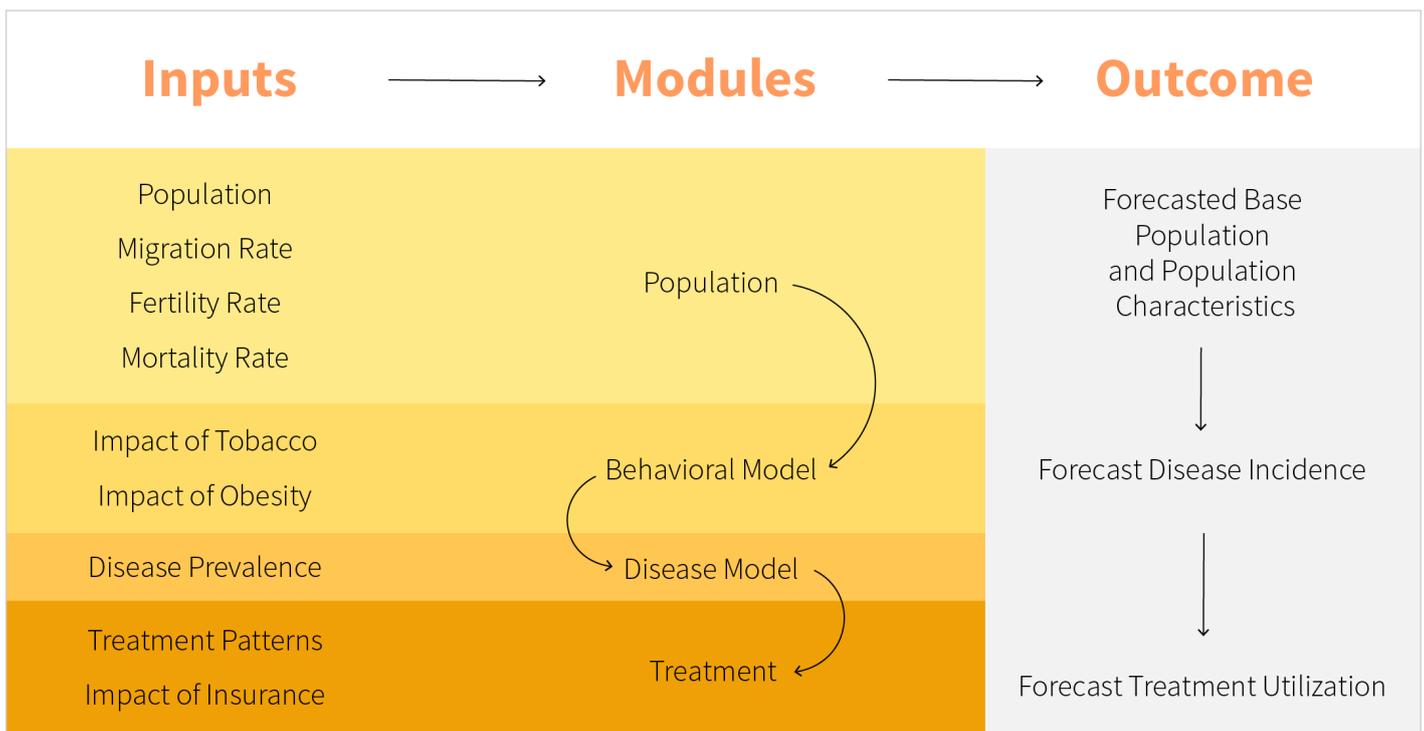
FTI Consulting began by accessing public information sources and proprietary databases to gather relevant facts. Proprietary data employed in the analysis included commercial claims data such as medical, pharmacy and dental claims files plus provider information. FTI Consulting also incorporated Medicare data from CMS, demographic and economic data from the health center's home and adjacent states, and data on behavioral health such as smoking and obesity rates.

Using these data, FTI Consulting employed microsimulation — a

sophisticated modeling tool — to predict future demand for the proposed therapy within the population the center would serve. This information allowed the center's decision makers to calculate more accurately the medical and economic viability and utility of its proposed investment. Armed with the ability to predict therapeutic volume levels, the health center was able to make an informed, data-driven decision that could enhance its ability to care for its total patient population over the long term.

By relying on more sophisticated analysis that captures the multidimensional determinants of healthcare needs rather than guesswork, gut feeling or even an extrapolation from current trends, the center now can make more informed decisions in managing its resources and the care it delivers.

If the health center had attempted to extrapolate from current trends and data sets without the detail provided by microsimulation, it would have risked under- or overestimating future demand. Current trends present aggregate effects, but these aggregate effects may mask important differences in the underlying population. For example, if a traditional predictive model assesses a whole



population, calculating demand for, say, a diabetes intervention, it might multiply present cases by some estimated projected population increase or it might segment the existing population by, say, age or gender. However, demand for healthcare services is influenced by many factors for which such a model would not account; e.g., ethnicity, socioeconomic status or behaviors. One element may over- or underpredict the efficacy of a potential demand management intervention if only one factor was modeled such as ethnicity or age. Forecasting healthcare needs at the individual level (as can be done with microsimulation) preserves the inherent variations that prevail and allows for more accurate predictions. For example, whereas modeling in the aggregate might predict that disease rates are stable, microsimulation would model discernible and critical differences related to population subgroups. Therefore, if one group experiences a decline while another sees an increase, this isn't lost in the prediction. Modeling individual units preserves the demographic profile of the population, which is ever changing due to dissimilarities in birth, mortality and migration rates.

It's valuable to remember, as financial advisors and brokers always state, the past is not a good predictor of future results.

Microsimulation models, however, can account for changes in populations, individual behaviors, and, of particular relevancy in healthcare, the health status within a given population and geography of patients as they age. This information provides estimates of patient needs at the service area, state and national levels. These models also can assess the effects of specific healthcare interventions and reform initiatives, thereby producing projections for forecasting, scenario analysis, and variations in healthcare utilization across systems, populations and geographies. This affords providers the metrics needed to improve quality while controlling (and lowering) costs. It allows for measurement and, therefore, real management.

This capability is of paramount importance to healthcare organizations today, especially in light of the Department of Health & Human Services' 2015 announcement that its goal will be **to tie half of Medicare provider payments to quality and value-based service models by 2018**. Any system, large or small, that cannot improve outcomes while bending the cost curve eventually will be placed at existential risk.

Answering these questions can move healthcare from its traditional reactive role — providing care on demand,

when and where it's needed — to a more proactive stance. This means that population health is managed over time, allowing constrained resources to be deployed most effectively to improve outcomes and increase value for investment. Implementing this kind of process will drive costs down over the long term.

In addition, microsimulation can supply useful input in determining patient population risk stratification. Identifying at-risk patient populations to develop targeted care strategies can mitigate the impact of the chronic diseases that play such an outsized role in the cost of providing care. Better demand projections through the use of microsimulation can facilitate this important task. If appropriate resources can be devoted to meet the needs of heterogeneous populations, it becomes feasible to manage available resources and to plan for future needs — and to do so in an informed, quality- and cost-conscious manner. This would entail, for example, distinguishing intense users of health services (such as people with cancer, heart disease, organ transplant and so on) and people likely to have a high need for future services (the elderly, people with chronic conditions, smokers, the obese) while determining the proportion of those less likely to be high consumers of healthcare resources (young adults and people in preventative care programs, to name a few).

## Ten Healthcare Management Questions That Microsimulation Can Be Used to Answer

On the local, regional and even broader geographic levels, microsimulation can be used as a tool to address questions that providers and communities need to answer in order to plan their strategies for designing and delivering care effectively and cost-efficiently to the populations served. For example:

1. How will population changes (in both patient and provider groups) affect supply and demand over the next 10 years?
2. Which population health management efforts will have the greatest effect in reducing healthcare inequalities in my area?
3. What effect will investing in particular healthcare interventions or therapies have on the needs of patients with specific chronic conditions?
4. Will my area have the health, mental and social care resources to meet future needs?
5. How will current and future reforms affect demand, utilization, and the mix and supply of providers in my area?
6. How will improving out-of-hospital access to care affect in-hospital resource usage?
7. How does healthcare utilization vary within my region, and will that variation change over the next five to 10 years?
8. What impact will greater provider integration in the standard care delivery model have on resource utilization?
9. How does the healthcare workforce in my region need to change in order to meet the needs of the changing populations?
10. How will the prevalence of certain health issues and chronic conditions change over the next five to 10 years?

## The Healthcare Management Imperative

There is no setting in which resources are infinite. In part, acting as if they are is what has led to the spiraling cost of healthcare that has placed patients and providers — as well as the overall economy — at risk. The essence of the challenge confronting global healthcare systems, hospitals and providers is to allocate limited (and often constrained) resources in the most effective and efficient ways possible in order to improve patient outcomes while ending the unsustainable rise in costs.

Managing healthcare in this way cannot be done in an ad hoc manner nor by the simple extension of a trend line to forecast demand, as the former is not efficient and the latter is insufficiently accurate. Given the inescapable aging of the population, what healthcare most needs today is reliable, actionable data that can be transformed into information to allow communities to devote resources to managing the health of at-risk patients so they do not

become intense users of healthcare services. With the proper approach that goal is becoming ever more realistic and achievable.

Microsimulation is not a panacea for the healthcare conundrum, but this type of process can be a powerful tool in addressing the looming problems surrounding the high cost of healthcare. ■

### About the Center for Healthcare Economics and Policy

The Center for Healthcare Economics and Policy applies cutting-edge economics and quantitative methods to assist clients in developing and implementing market-based solutions across the spectrum of healthcare activity. We are at the leading edge of “Triple Aim” economics.

#### The Triple Aim:

1. Improving the patient experience of care (including quality and satisfaction)
2. Improving the health of populations
3. Reducing the per capita cost of healthcare

#### Susan H. Manning, Ph.D.

Senior Managing Director  
Center for Healthcare Economics & Policy  
FTI Consulting  
[Susan.Manning@fticonsulting.com](mailto:Susan.Manning@fticonsulting.com)

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