



Strategic & Transformational Modeling

Modeling the Economic Impact of Healthcare Transformation

FTI Consulting's Center for Healthcare Economics and Policy applies cutting-edge economics and quantitative methods to assist clients in developing and implementing market-based solutions across a wide spectrum of healthcare activity. We use economic and financial modeling in developing evidence-based strategies to address go-to-market opportunities, fundamental changes in healthcare demand, and delivery within a system or community.

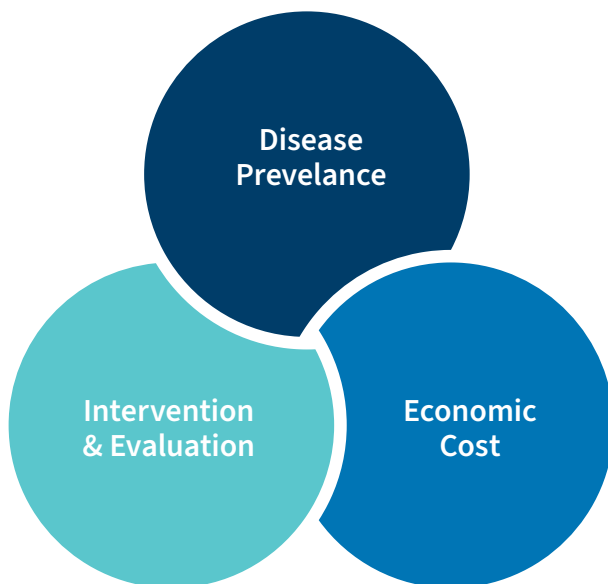
KEY SERVICE OFFERINGS

- Comprehensive Population Health Review, Demand Assessment, and Quantifying Impact of Chronic Conditions
- Dynamic Modeling of Transformations of Care Delivery and Impact on Healthcare Supply and Demand
- Predictive Modeling of Industry Trends and Policy Changes and Impact on Systemic Financial Risk and Community Access to Care

Comprehensive Population Health Review, Demand Assessment, and Quantifying Impact of Chronic Conditions

Center economists bring extensive experience working with all types of healthcare data, combining diverse data from multiple sources to understand holistically the health of a region. We use inpatient and outpatient claims data to understand utilization trends and prevailing health conditions and augment our analysis with area surveys of health behavior that affect use and costs, and demographic data to control for population-driven effects to compare against other regions. Along with descriptive analytics on a population's health, we prepare demand and health projections using models based on current trends. Our experience with state and hospital discharge data, Medicare and commercial claims data, and prescription claims data enables us to choose and implement the best **demand analyses for a system or region.**

Patients, employers, and communities face direct and indirect health care costs from chronic health conditions and disease in their region. Stakeholders require actionable data and analytics on both medical and productivity costs of chronic diseases in their communities to evaluate opportunities and set priorities for change. Cutting-edge modeling can both inform the extent of chronic health burdens and improve the effectiveness of interventions to reduce them.



Disease Prevalence: The Center leverages its extensive demographic and prevalence data to provide deep, comparative health status analytics across diseases and chronic conditions for local areas and for comparison against peer metropolitan areas.

Economic Costs: With commercial and government claims data and unique evidence-based proprietary models, we evaluate workforce healthcare utilization costs and quantify economic costs from lost workplace productivity, including impact on presenteeism and absenteeism.

Intervention & Evaluation: Our team of experienced professionals combine data science with customizable scenario modeling and informatics analysis to evaluate the effects of care delivery and payment model interventions or change.

We house a rich collection of health care and economic data that provide insight across a large number of metropolitan areas and use experience with extensive commercial and government claims data, CDC BRFSS SMART, and other health data for peer city comparisons and customizable modeling.

Relevant Examples

Medicaid Reform Initiatives: We assisted large health systems in their efforts on a key state Medicaid reform initiative by providing data, analysis, and subject matter expertise to support strategic planning and evidence for integrated care and access across multiple domains. Our work included substantial data and analytic contributions to a comprehensive community needs assessment across current and future patient populations and demographics, and locations relative to current provider locations, including inpatient, outpatient, primary care, and post-acute care delivery, coupled with detailed utilization, capacity, and heat maps for evaluation of gaps and needs for coordinated and improved care delivery across populations, particularly for Medicaid populations. We conducted a comprehensive evaluation of specific initiatives using detailed state data and metrics, facilitated workshops on specific initiatives, and assisted with submissions to demonstrate that the population served was especially suited to specific reform initiatives, including behavioral health, cardiopulmonary conditions, and care coordination across inpatient and other facilities (e.g., skilled nursing).

Collaboratives to Improve Health & Economic Well-Being: Using extensive claims data, we provided actionable data on health, access, quality and cost, and [the impact of poor health on workforce and competitiveness in geographic regions. We quantified the economic impact of health conditions including medical and productivity costs](#), provide peer city comparisons, and assessed potential interventions for top disease conditions.^{1,2}



Stakeholders require tools that enable them to evaluate and predict risks and impact of health conditions on their community or workforce currently and in the future. The Center uses Budget Impact Models (“BIM”) as a proven set of tools for many applications. [The Hypertension Budget Impact Model](#)³ developed by Center economists allows users, including employers or regional collaboratives, to easily estimate the healthcare and productivity costs of hypertension on specific employee populations using employer- and industry-specific data. The analysis estimates impact on an entire workforce or subgroups across industry sectors or job functions, which is critical for large employers across various industries or geographies, with different costs and prevalence. The BIM provides data to support decision-making for multi-sector collaboratives that may seek to improve health and productivity outcomes in a broader community or specific populations in a regional context. The model can be further customized using

demographic characteristics, prevalence, and average wage and work hours. Default values based on published literature evidence are built into the BIM for use if organizational data is not available. The BIM provides key data and estimates additional costs of hypertension, including:

1. Estimated number of covered employees with hypertension;
2. Incremental annual medical, pharmacy and productivity costs per employee due to hypertension;
3. Drivers of additional medical costs for the covered workforce;
4. Incremental annual total (medical and productivity) cost due to hypertension and
5. Projected incremental annual total employer costs for each of the next 5 years if no intervention e.g., opportunity costs for employers.

Dynamic Modeling of Transformations of Care Delivery and Impact on Healthcare Supply and Demand

The Center's transformational modeling simulates future demand for healthcare services under current practices and the impact of demand interventions, new models of care, healthcare delivery alternatives, or risk- or outcomes-based reimbursement schemes at the service area, state, and national levels. Our models provide economically sound estimates for assessing change initiatives while explicitly accounting for changes in population, diversity, and economic growth to dynamically predict and evaluate likely outcomes of proposed changes, including financial impacts, before implementation.

While simple projection methods may be sufficient for some purposes, our team excels at using **complex microsimulation methods** to dynamically project how individual-level decisions produce changes in the population over time. Microsimulation uses the individual as the unit of analysis allowing them to evolve over time through aging and decisions such as starting and quitting smoking or having children. Each person has a set of unique socioeconomic and demographic characteristics mirroring the composition of the area population. Microsimulation models how the population naturally changes, how behaviors that influence health evolve, and how these changes impact disease incidence.

Our simulation modeling framework captures these linkages between population growth and diversity, disease incidence and prevalence, care delivery, provider resources, and utilization using a series of interconnected modules. The base **population modules** forecast population, demographics, and disease prevalence by condition (e.g., diabetes or cardiovascular disease). The **healthcare resource modules** translate disease incidence and prevalence into forecasts of healthcare utilization, workforce, and resource needs. The **forecasting modules** then use a comprehensive model of change to simulate the impact of hypothetical interventions. For example, to test an anti-smoking campaign, we model a reduction in the number of people who start smoking to estimate effects on lung cancer rates and resulting demand for healthcare services. By linking each of these components into a single model, we can more robustly evaluate the dynamic impact of changes undertaken by providers, health plans, and accountable care organizations.

01

Health Care Microsimulation & Demand Analysis Module

- Inpatient/Outpatient episode data
- Demographic & socioeconomic data
- Health status/behavior data

02

Population Risk Stratification Module

- Disease & condition incidences
- Patient volumes

03

Levels of Care & Utilization Module

- Attributed population risk strata by volumes, disease/conditions
- Patient locations

04

Care Setting Module

- Patient volumes by levels of care
- Patient utilization by levels of care

05

Financial P&L Module

- Forecasts of required patient care settings
- Forecasts of patient volumes
- Care setting P&Ls

06

Bundles & Capitated Payments Module

- Overall systems P&L projections

07

Scenario Analysis of Bundles and Capitated Payments



Discrete Choice Modeling (“DCM”) provides insight into the effects of potential or actual changes in healthcare delivery, such as when care shifts locations from inpatient to outpatient; service lines are added and others dropped by a health system; health systems combine operations and facilities; new facilities are evaluated or built; and hospitals close. DCM predicts where patients will choose to seek treatment when the set of available providers changes – e.g., their preferred hospital closes a service line or the opening of a new outpatient center. It uses data on the characteristics of the patient population, characteristics of existing facilities and the choices patients make today to predict how patients will act when their options change.

The availability of health care providers in an appropriate mix of specialties and training, including physicians, nurses, therapists and other staff, is an essential component of meeting population health needs. Understanding the trajectory of available staffing resources over time depends on complex dynamics related to training, retirement/exit, and migration across geographic areas. Our **workforce supply models** combine public, proprietary, and client-provided data sources to provide a clear picture of the current workforce and customizable assumptions that project availability based on historical, current, or alternative trends.

Our models of service demand and provider supply can be used in concert to conduct a **gap analysis** that identifies mismatches between supply and demand that may lead to reduced access to care. The Center’s suite of tools evaluates service offerings across a system or geography, reviewing physical and staff capacity and local demand and providing guidance on how capacity may be realigned or changed to maximal effect.

Together, these advanced modeling capacities answer essential questions such as:

- How will demographic and socioeconomic changes affect demand for healthcare services and health conditions in an area or for a system?
- What are the effects of investing in specific healthcare interventions or therapies?
- What are the impacts of moving from fee-for-service to value/risk-based contracting on the clinical and financial viability of providers?
- What payment schemes will incentivize providers to engage in solutions?
- What is the expected patient population at a new proposed site?
- What services are optimal candidates for capacity realignment across system? How would patients respond to addition or transfer of services?
- If a particular facility is closed, would the system retain its patients or would they travel elsewhere?

Relevant Examples

Microsimulation to Select Health-Improving Interventions:

The Princess Alexandra Hospital (UK) engaged FTI Consulting to help them determine how demand for healthcare services related to COPD and asthma would increase over the next fifteen years. Using local population, demographic, health, and utilization data, we created a microsimulation model to project the population, its demographic profile, smoking behaviors, and prevalence of COPD and asthma through 2030. We incorporated nine interventions with potential to reduce prevalence. Using extensive literature, we identified effects of those interventions and added them to the model enabling us to advise PAH on which interventions would have the greatest impact on their population.

Workforce and Gap Modeling: For the [Financial Oversight and Management Board for Puerto Rico](#)⁴, our team developed island and region-level projections of disease prevalence for 11 major chronic conditions and estimated the resulting demand for services across settings for 21 provider specialties. The model relies on extensive local and US data on population demographic and health characteristics and healthcare utilization to project demand through 2050. The workforce supply component of the model projected the expected number of providers across each of the specialties over time, using historical growth rates and alternative scenarios. We used the demand and supply components together to identify gaps in Puerto Rico’s current healthcare workforce, project how those gaps worsen or improve over time as the population evolves, and identify strategic workforce and health improvement initiatives to address the expected gaps.

Dynamic Analyses of Impact of New Investment: Our team has been engaged by multiple health systems to conduct dynamic analyses of the impact of proposed new capital investments on the demand and supply for healthcare services within a geographic area. For example, our team modeled the projected demand, shift in utilization, price and market share impact of a [proposed cancer treatment facility](#)⁵ of the Dana Farber Cancer Institute. The analysis relied on extensive healthcare claims data, demographic data, health data, healthcare facility capacity data, and population projections to model current and future states for cancer-related services, including specialized services such as imaging and radiation.



Predictive Modeling of Industry Trends and Policy Changes on Systemic Financial Risk and Community Access to Care (Comprehensive Hospital Risk and Impact Model)

The dynamic nature of healthcare and significant industry pressures highlight the need for forward looking assessments of financial risk and impacts on access to care. Our team developed and maintains a model of hospital financial risk that incorporates historical revenue growth, operating margin, payer mix, and other financial and operational indicators into a comprehensive forward-looking assessment of financial position across all hospitals in the U.S. The model's risk scores measure current financial distress and constraints on access to capital for long-term sustainability, and predict the likelihood of future closure and reductions in major service lines within geographic areas. The model relies on validated financial data from Medicare Cost Reports for over 4,000 general acute care hospitals across the United States and leverages metrics used by bond rating agencies to capture key factors determining ongoing access to capital and future financial distress. By creating a comprehensive database including additional survey and public data, our model captures the service lines offered (e.g., labor and delivery, emergency room care) by hospitals at risk and clusters risk scores at the community level to identify areas at risk of disruptions in access to critical health care services.

The model's framework addresses key questions related to risk and impact:

- How will federal and/or state payment cuts affect individual hospital financial positions and key subgroups of hospitals (e.g., rural, critical access hospitals, academic medical centers)?
- How would the predicted changes in major service lines or closures affect access to care in communities and geographic areas (e.g., impacts of lack of maternity care)?
- What potential partnerships could improve financial stability and preserve access to necessary care in the community?



1 FTI Consulting, Inc., Guerin-Calvert, Margaret E., "[Nashville Region Health Competitiveness Initiative: 2017 Report](#)" (2017).

2 FTI Consulting, Inc., Center for Healthcare Economics and Policy., "[The Economic Impact of Poor Health on Our WNY Community](#)" (2022).

3 Than, K-S., and Guerin-Calvert, M. E., "[Hypertension Control: A Vital Business Investment](#)" (2023).

4 Montañez, J. M., Mayol del Valle, A., Manning, S. H., and Restrepo, J., "[Puerto Rico Healthcare Workforce Study](#)" (Mar. 2025).

5 Perry, B. J., "[Independent Cost Analysis for Dana-Farber Cancer Institute Determination of Need Application #DFCI-23040915-HE](#)" (Jan. 2025).

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