

ReThinking the American Health System



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An examination of the System Dynamics model developed by ReThink Health to successfully align resources around high leverage strategies for alleviating the U.S. health crisis.

The American Health System is broken. Expenditures on health are increasing rapidly and have outstripped most other countries on a per capita basis. At the same time, health outcomes are not in line with spending. On most measures (including life expectancy at birth in Fig. 1), our nation's health is far worse than projected based upon expected results under equivalent spending levels in other developed countries.

In recent years, significant efforts and resources have been dedicated at the federal, state, and local level to try to remedy this poor performance. Some headway has been made, but to experience true change to our massive and complex health system, we will need to think bigger and differently about our approach to national health—to think more systemically.

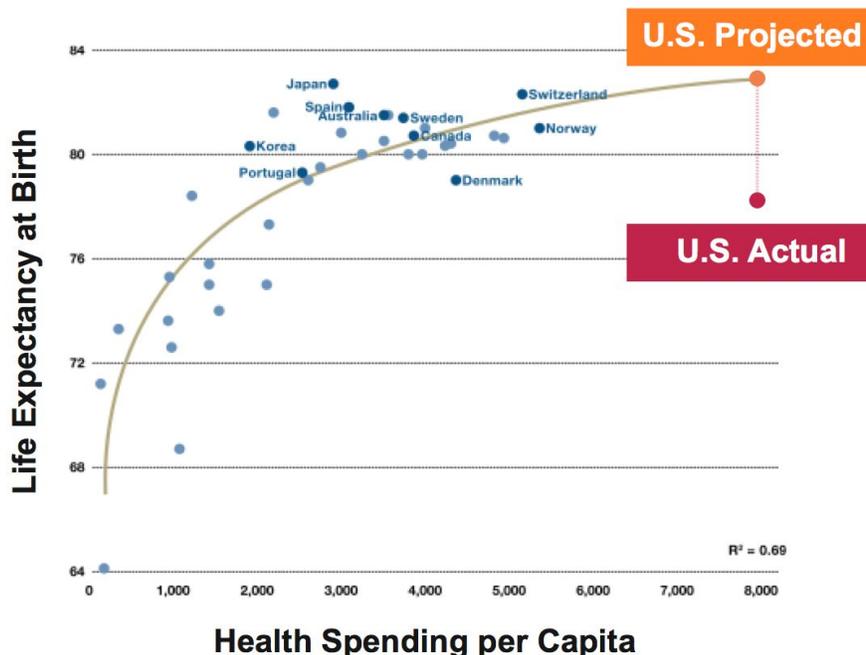


Figure 1. Life Expectancy versus Health Spending per Capita by Country. Source: Robert Wood Johnson Foundation, Data from OECD Health Data 2011; World Bank and national sources for non-OECD countries.

System Dynamics and Modeling Offer Insight for Effective Change

ReThink Health (RTH), a collaborative initiative of the Rippel Foundation, is encouraging this innovative thinking. RTH has invested several million dollars over the past four years¹ developing and disseminating the [ReThink Health Dynamics Model](#), a [System Dynamics](#) simulation tool that replicates the behavior of a regional health system. It was developed in the Vensim simulation software with online hosting and user interface design by Forio Simulation. The model was developed by RTH's award winning team of MIT-trained system modelers including Jack Homer, Gary Hirsch, and John Sterman with the oversight of Bobby Milstein and the help of a large number of collaborators. RTH has built a version of the model based on U.S. national data to represent an average American town. This [Anytown configuration](#) is freely available online and has been used thousands of leaders, as well as dozens of academic programs at major colleges and universities, including Dartmouth, MIT, Columbia, and SUNY Albany.

In addition to the Anytown Model, RTH has configured the model with data reflecting the particular characteristics of ten regions to date (including [Atlanta, GA](#); [Cincinnati, OH](#); and [Pueblo, CO](#)). In these communities, the model has been used in multi-stakeholder meetings to align thinking, develop sound strategies, shift resources, and catalyze action.

The Model allows local leaders and stakeholders to immediately evaluate proposed strategies for improving their local health systems. The model incorporates evidence on the cost and effectiveness and timing of more than a dozen [initiatives](#) which range from upstream efforts to protect population health to downstream efforts to reduce healthcare costs, improve quality of care, and increase workforce capacity to meet the demand for care, as seen in Figure 2.

The model also accounts for program funding—often a harsh reality in any health reform endeavor. Users begin with an initial program budget and can explore scenarios with that as a practical constraint. They may also consider options to move beyond conventional program financing, for example, by negotiating agreements to reinvest a fraction of any healthcare cost savings in order to extend or even expand program funding over time.

¹ Additional resources had been invested in the tool prior to that by The Centers for Disease Control and Prevention in the form of the [Healthbound](#), a model for health policy testing at the national level.

Intervention Options for Simulation Scenarios

The table below shows where the direct effects of each intervention concentrate.

Risk		Healthier behaviors		Crime		Pathways to advantage (family; student)	
		Environmental hazards					
Care		Preventive/chronic care		Self care		Hospital infections	
		Mental illness care					
Capacity		PCP efficiency		Recruit PCPs (general; FQHC)		Hospital efficiency	
Cost		Pre-visit consult		Coordinate care		Malpractice	
		Medical home				Shared decisions	
				Generic drugs			Hospice
Trends		Uninsurance		Primary care slots		Inflation rate	
		Local economy					Hospital occupancy
Funding		Innovation fund		Reinvest savings		Contingent global payment	

Figure 2. Intervention Options for Simulation Scenarios. Reprinted with permission of ReThink Health.

Users also have the ability to alter a variety of wider trends, such as the extent of insurance expansion under the Affordable Care Act, as well as all assumptions about about intervention impacts, costs, and time delays.

After users input their proposed initiative combinations, the simulator will play out the likely results over 25 years—giving almost instantaneous feedback on the expected effects across more than 200 metrics of population health, healthcare costs, population health, quality of care, social equity, workforce productivity, program spending, and return-on-investment. These measures include things like Non-Urgent Visits to the Emergency Room, Prevalence of Chronic Illness, and Total Cost of Care that are of interest to a variety of stakeholders. Users can easily compare results by testing alternative scenarios to find a combination that best achieves their goals with acceptable tradeoffs, under specific financial constraints, and taking into account realistic conditions in the region.

Facilitating Change With Simulation Modeling

Organizational change, in general, is fraught with difficulty. And, in an arena as complex as the American health system, change can be extraordinarily expensive and slow, if it occurs at all. Reformers often waste resources on ineffective initiatives. Or they aim too low. Or they run out of money before seeing the full effects of their investments. According to the ReThink Health website, the model was “designed to help groups overcome those challenges, to better understand what is possible, and to develop targeted strategies to achieve lasting system-wide goals.”

Rethink Health projects that if regions throughout the nation were to collectively shift investment and focus resources to implement sound strategies identified in the model², the American Health System could save a cumulative³ \$7 trillion in health care costs over the next 25 years while simultaneously avoiding premature death for 8 million people, increasing workforce productivity by \$7 trillion, and reducing the inequality gap by more than 25%. An effort this ambitious will require the coordinated effort of many. Interactive simulation modeling is a key component of ReThink Health's overall efforts to foster broad-based stewardship, sound strategy, and sustainable financing for regional health reform.

There is a growing body of evidence showing that the ReThink Health Model and other tools can support these goals. Below is a summary of some noteworthy early effects.

Bringing Big Data Together in an Easy to Use Decision Making Tool

Local health data and research about the effectiveness of initiatives that will improve the health system is abundant. The massive quantity of data makes it difficult for decision makers to evaluate and focus on the small number of initiatives that will make the most difference. The tendency in the face of this is to try to do everything. And a little bit of everything is what is being done in most communities.

The ReThink Health Dynamics Model integrates dozens of separate data sources and diverse literatures into a single calculator (see Fig. 3), which allows people to estimate and compare the potential impact of proposed solutions in the face of realistic funding limitations. The model allows conversations and decisions to be based on the evidence. It allows communities to focus together on the most effective combinations of initiatives to achieve their goals in the face of budget realities.

² These tend to include a combination of downstream cost cutting (like care coordination) with substantial investment in the upstream (like healthy behaviors and programs to lift people out of poverty) funded through an innovative scheme to capture and reinvest savings back into efforts and supercharged by a shift from a fee-for-service payment model to a system in which doctors are paid per capita for ensuring the health of their patients.

³ From the start of the simulation in 2015 to the end in 2040.

Combining Evidence Into a Single Testable Framework

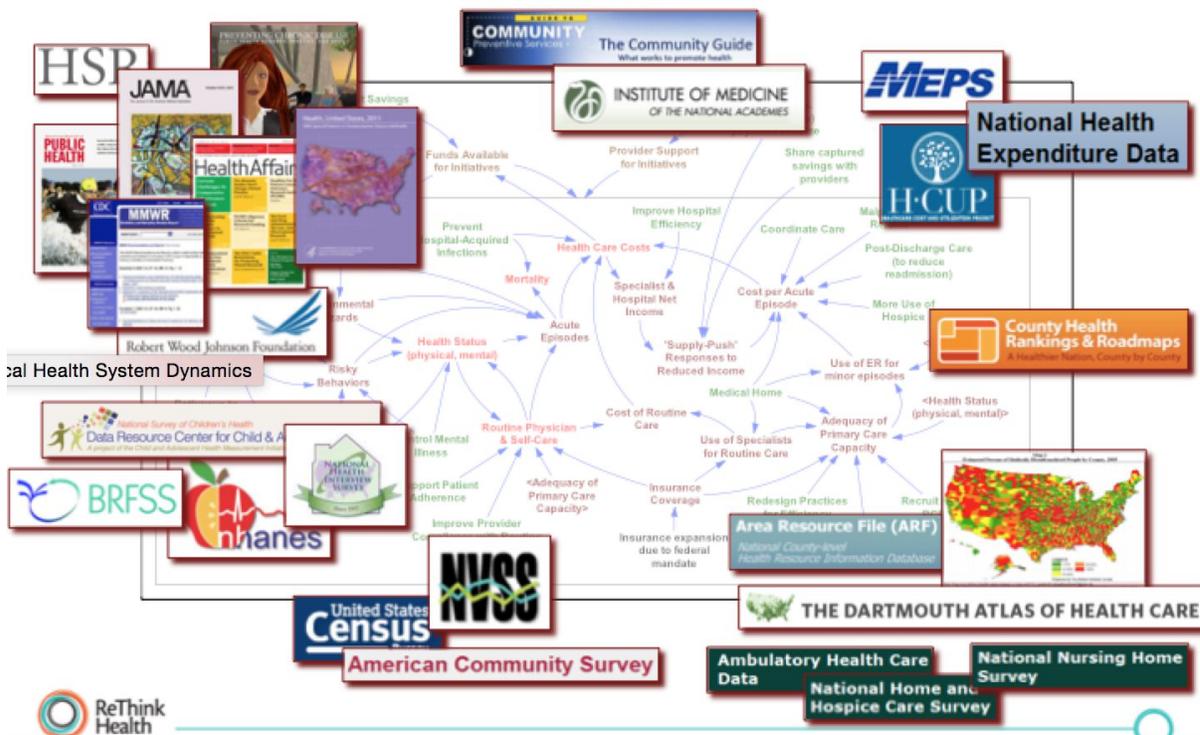


Figure 3. Combining Evidence (Reprinted with permission of ReThink Health)

Local Calibration puts Powerful Tools Within Reach

The Model is designed to represent particular features of the health system in a given location through a streamlined process of local data gathering and calibration. Therefore, even smaller cities can create a powerful analytical tool that reflects their own region as best as possible. For approximately \$50,000, the average cost to produce a new calibration, small communities like Pueblo, CO can access a sophisticated, multi-million dollar simulator that uses local data to engage local leaders in setting strategic priorities for their region. This is something that most communities would not be able to afford to do from scratch.

Visualizing Big Picture Results

According to Christine-Nevin Woods, former Director of the Pueblo City-County Health Department, “ReThink Health modeling opened our eyes. It offered perspectives on big impact changes that might not pay off right away.”

In many cases, individuals and organizations who work in silos are limited in their perspective by small budgets and adjust their priorities accordingly. They often avoid the more expensive and more effective initiatives, as a result. By bringing together broad stakeholder groups,

ReThink Health allows people to consider the power of collective action. And this lets them begin to explore what could be accomplished with more targeted funding and shared priorities.

While many groups are initially satisfied with the results of their first run in the model, they soon realize that there is far more potential for improvements in both health and economic outcomes. Once regional leaders are awakened to the possibilities, they frequently expand their aspirations and to think bigger and more strategically about their role as stewards of a common health system. The Atlanta Regional Collaborative for Health Improvement (“ARCHI”) and other ReThinkers, for example, are currently working on an ambitious plan to shift priorities in their regions to those identified as effective in the ReThink Health Dynamics Model. ARCHI’s efforts are described in more detail in a [blog by Susan Dentzer](#) and in the [ARCHI Playbook](#) that defines their strategic focus.

Saving lives, lowering costs

With smarter investments, by 2040 it is possible to :

-  **Avoid premature deaths for 13 million people**
-  **Lower health care costs by \$11 trillion**
-  **Boost workforce productivity by \$12 trillion**
-  **Narrow inequality gaps by more than 16 percent**

Figure 4. The Possibilities for Health Reform. Source: Model results from the ReThink Health USA Model reprinted with Permission of ReThink Health.

Driving Rapid Strategy Alignment

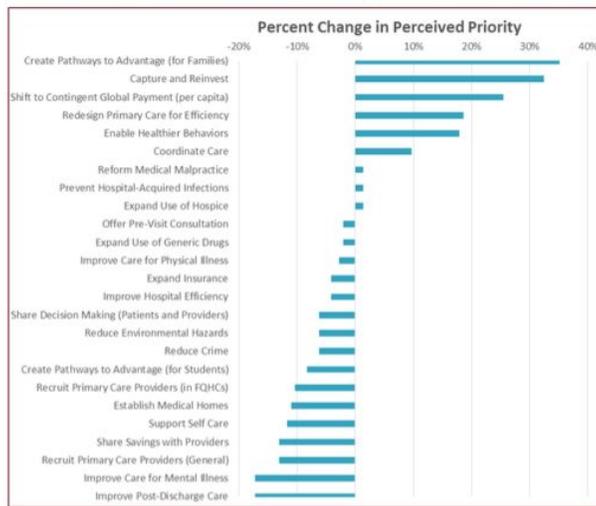
Changing the health system will require a coordinated effort and effective alignment of resources for true collective impact. Achieving alignment is made more difficult when different stakeholders see only part of the picture. With the aid of the model, discussions in multi-stakeholder meetings are based on data, as well as a shared view of a common health system. The ability to immediately test proposals can help people to improve their understanding and change their minds. This often reveals greater consensus and supports more efficient efforts to agree on a practical course of action.

This consensus-building power has been demonstrated over and over again in brief facilitated multi-stakeholder experiences with the Model. According to Eileen Dennis, member of the Pueblo County Board of Health, “Working with the Model built consensus around common issues that will enable us to have collective impact. We have now built a new organization and

implementation plan around the model experience and attracted significant local and foundation support.” This support included \$706,000 in backbone funding to support their strategic efforts to implement the strategies identified in the model.

And in Atlanta, a group of 70 stakeholders representing diverse viewpoints (including hospital administrators, public health officials, philanthropies, healthcare professionals, insurers, business, and clergy) met for 5 hours and achieved consensus that has endured for the past several years. This included individual shifts in focus on a smaller, shared number of initiatives (Fig. 5), as well as, overwhelming agreement around one scenario generated during the session (Fig. 6).

Shifting Priorities in Pre/Post Assessments Which are the five most critical strategies for the Atlanta region?



N = 29 respondents at ARCHI Workshop (November 14, 2012)

Figure 5. Shifting priorities resulting from Strategy Lab in Atlanta, GA. Reprinted with permission of ReThink Health.

According to Karen Minyard, Executive Director of the Georgia Health Policy Center, “ReThink Health modeling helped people discover surprisingly strong areas of consensus. It helped us through a step where we might otherwise have gotten stuck.”

According to Jane Bramscomb, Senior Research Associate at the Georgia Health Policy Center, “The exercise got leaders with very different backgrounds and interests thinking collaboratively about the system. They shared their ideas about what’s needed for progress in Atlanta and

were able almost instantly to see the long-term implications of their assumptions. When one particular combination of actions rose well above the others on nearly every metric, it gave the whole group a strong sense of hope for the future and agreement about how to move forward together.”

Which scenario offers the strongest foundation?

1. Far-Reaching
2. Atlanta Transformation
3. Better Health Atlanta
4. Promote Health Today

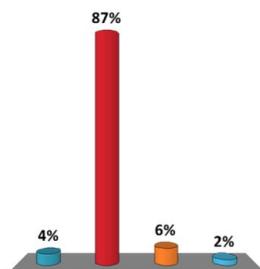


Figure 6. Polling result from Strategy Lab held in Atlanta, GA. Reprinted with permission of ReThink Health.

Shifting Investment Priorities

The use of the model in diverse settings with local decision makers has resulted in substantial shifting of funding priorities. Several communities, including Atlanta, GA, Pueblo, CO, Cincinnati, OH, and Greater Monadnock, NH are in the throes of implementation and it is expected that additional shifts will take place as local strategy implementation matures. A few documented examples of commitments to shift based on the Model analytics are outlined below:

- In Atlanta, the United Way shifted the priorities for an RFP for \$3.6 million in spending and local hospitals committed to redirect community benefit dollars towards initiatives identified in a modeling session.
- At the Dartmouth-Hitchcock Medical Center, the board shifted approximately \$11 million from conventional investments in stocks and bonds to local population health innovation fund as the result of Model analysis that suggested a higher return on investment over time.

Attracting Ongoing Funding Support for ReThink Health

The Model also serves as a powerful tool for ReThink Health to garner support for its broader work. The Model is a tangible product that excites the interest of funders. It also provides clear evidence for a theory of change that is specific about the potential for system improvement and expected return on investment. All of this serves to strengthen the value proposition for strategies that might yield greater leverage. Below are a few examples of funding that was received by ReThink Health in large part due to the existence of the model:

- The Rippel Foundation, has dedicated the vast majority of their annual funding, in excess of \$4 million per year, to support the ReThink Health Initiative.
- The Robert Wood Johnson Foundation has invested approximately \$6.2 million with ReThink Health to focus attention on primary leverage points that surface repeatedly in modeling sessions across the country, including efforts to better balance health and health care, foster broad-based stewardship, assure sustainable financing, and practice inclusive business planning for health.
- Users in academic institutions and other organizations are paying user fees and facilitation costs for tools that help them better incorporate the Model in their curricula. This allows ReThink Health to support ongoing development of the model and its supporting documentation.

According to Laura Landy, President and CEO of the Rippel Foundation, “Regional stewardship groups are attracted to the ReThink Health Model because it helps to show them that a healthier future is within reach. By working with the Model and with each other, teams are motivated to develop a strategy that catalyzes regional health reform.”

System Dynamics Models Act as Mechanism for Change

System Dynamics simulation tools, like the ReThink Health Dynamics Model, can be powerful catalysts for change. Experiential, computer-based learning that brings the power of evidence to strategic decision making. Both grassroots organizations and senior executives can engage with the model, and with each other, to identify more effective strategies, and align resources to drive implementation.

As Anne Weiss of the Robert Wood Johnson Foundation stated, “The Model creates an experiential, evidence-based approach to raising big issues, entering into challenging conversations, and providing new insights. It has the power to cross and move cultures, creating the opportunity for really productive dialogue and action.”

More Information:

www.ReThinkHealth.org