

Maturing Analytics for Success: Health Care Business Case Development



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Healthcare providers and organizations looking to design and market services to supplement and enhance various aspects of health care delivery (from outreach and engagement, to add on features generating improvements in care and outcomes) are constantly challenged with creating the necessary proof points to forecast and validate impact.

The advent of value-based care delivery has opened new opportunities, where it is possible to demonstrate tangible improvements in both health cost and outcomes. **However, this requires a more advanced approach to leveraging data and analytics to identify and quantify actionable cause and effect relationships.**

Strategic application of predictive modeling is crucial to yield a convincing forecast of likely results far in advance of that which can be demonstrated via retrospective claims-based analysis.

As described in our previous article [Health Services Innovation – a Data Driven Approach](#), the best approach for development of a successful new product or service entails following a prescribed “blueprint” for measuring potential impact and how the new offering overall and its individual features are expected to produce the desired results. This evaluation is based upon the data inputs and metrics developed during creation of the **business case** (e.g., characteristics of target population, identification of specific success levers) and leverages operational performance data in addition to direct customer feedback to compare what was expected versus what the actual results are once a new product or service is launched.

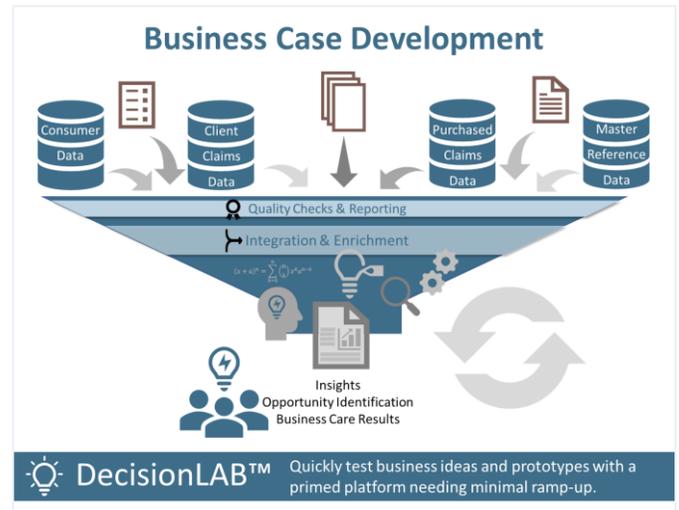
Analytics Maturity Roadmap



Data-driven business case development usually begins with claims or electronic medical record (EMR) data and can be enriched with additional (acquired) source data. Examples include consumer data purchased via a third-party vendor, customer surveys, broader population specific databases for benchmarking results and outcomes, and licensed grouping software.

Thus, in addition to a prescribed development blueprint emphasizing analytics and measurement, having a **primed and flexible platform** for storing and managing business case data greatly enhances effectiveness, both for business case development and ongoing performance assessment.

It is this mix of “art and science” combined with health care experience and expertise that results in discovery of what is truly impactful and actionable to achieve desired outcome(s).



What does it take to be successful?

Today’s health care environment, for reasons stated here, in addition to other advances in data science and technology applicable to business analytics more broadly, has established an ever-increasing role for advanced data and analytics to serve as the basis for:

- ✓ Quantifying and qualifying opportunities,
- ✓ Creating scenarios (use cases based on data),
- ✓ Testing hypotheses,
- ✓ Identifying performance metrics to provide focus for the development effort, including forecasting and measuring success.

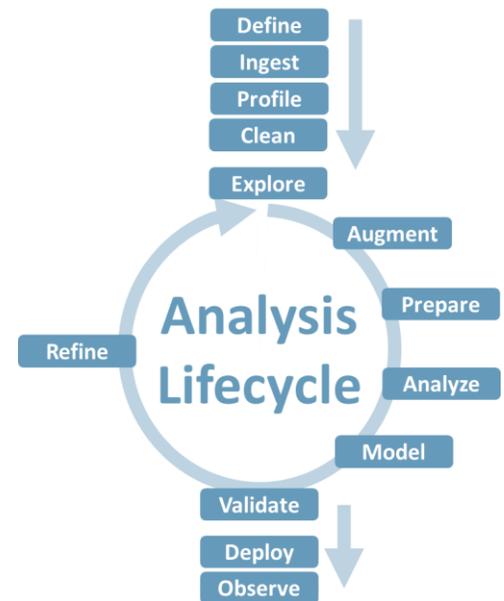
In the remainder of this article, we will describe (1) elements of business case development, highlighting the role of **advanced health care analytics** and (2) the value of leveraging a **primed platform** where the necessary data can be assembled and organized to maximize speed and effectiveness.

Business Analytics Framework: Capabilities

Starting with a simple **business analytics framework**, we describe here what it takes to build a successful business case for a new or improved product or service in the broader health care space. We then move on to highlight how having a **primed platform** for both business case development and subsequent performance assessment further enables a winning combination, helping organizations develop and launch innovative offerings to market.

The business analytics framework we use with our clients focuses on maturing analytics via an iterative process that starts with a set of descriptive statistics to establish a baseline understanding of status quo, and then moves on through diagnostic and predictive analytics. There is a lot of fine tuning that takes place before being able to formulate more prescriptive analytics that can zero in on “what” we would like to happen (desired outcome), and “how” it can happen.

We have found that some of our clients do not have the background, specific to health care and health care data, to be able to effectively interpret and reformulate data to derive new insights that are not readily apparent via examination of retrospective data.



An analyst not well versed in health care can see what the data is showing but may not have a full appreciation for what is actionable, and the level of effort needed to get there.

A more experienced health care analyst, backed up with a lot of industry experience, will be able to apply their knowledge and provide fresh insights into both what the data is revealing and actionable ways to achieve desired outcome(s). This level of expertise is critical when the goal is to discover some truly innovative approach (new way to solve an existing problem). Innovation at its core is all about trying to break through the barriers of what has impeded progress in the past and derive new thinking to overcome it.

This extends to taking the necessary steps up front to assemble and organize the data, establishing the flexibility to “slice and dice” in ways that support being able to derive new categories and combinations of variables, inclusive of clinical considerations and insights.

It is not just about the data and analytics, it is weaving together product, health care analytics, and clinical expertise. This enriches the statistical modeling to develop a more reliable “prediction” of potential future outcomes.

Let’s continue here with describing the discrete steps that comprise an effective business analytics framework.


 A big part of our practice and what we bring to the table for clients is the **experience and expertise**, leveraging advanced analytics, thinking outside the box to discover what is possible ...and how to get there.

Business Need Defined

The first step in the business analytics process involved understanding the opportunity or problem to be solved. Relevant data needed to test opportunity may typically be derived from basic operational and performance reporting.

At this stage, without further investigation, all that can be discerned is the existence of some emerging trend or other evidence for areas of improvement. At this point, awareness of improvements is known but further detail is lacking on the following:

- ? **what** intervention might produce desired result,
- ? **who** specifically to intervene with as an at-risk population,
- ? **how** to make the observations actionable.

Nonetheless, establishing a starting point for further investigation as clearly as possible (given limitations inherent in the level of analysis available) is an important initial step and helps the development team begin to think through what other data and information might be needed to dig deeper.



Example: In a recent project for a client looking to create a new palliative care service, a preliminary review of performance data revealed a lot of variation in the characteristics of patients who might traditionally fall into an industry standard definition of eligibility for palliative care (by virtue of having a serious end stage illness).

Client was looking to re-define palliative care to be more about supportive care earlier on – not just in the last six months of life. Although client had some insights or hypotheses around where there may be areas of opportunity to improve outcomes for individuals by intervening earlier on, the information available via operations and performance reporting was not sufficient to identify useful “triggers” for when to best intervene.

Let’s look further to see how this plays out.

Assemble and Explore the Data

The next step once a business need is defined, calls for assembling the data needed to get to the next level of analysis. Once the necessary data is acquired, subsequent work involves cleaning the data, making computations for missing data, removing outliers, and transforming combinations of variables to form new measures and categories for analysis. This step can be very time consuming and entail a lot of trial and error to organize the raw data in ways that are more insightful and can provide the basis for ongoing analysis, hypothesis generation and testing. It is easy to see how experience and health care specific knowledge is critical at this step in the process. Otherwise, there can be a lot of time wasted and a tendency to get lost in the data.

Once the data has been transformed and “cleaned”, various cuts of the data can be executed and summarized using appropriate visualization and descriptive statistics (such as mean, standard deviation, range, median). At this point, the objective is to look for general patterns which may lead to actionable insights and pinpoint (further define) characteristics of target (at risk) population(s).



Example: For the same project involving a new palliative care service opportunity, the data was distributed along several different dimensions (e.g., demographics, disease prevalence and duration, comorbidities, and associated utilization and cost measures). Additional information included in the dataset (e.g., SDOH and other personal characteristics) allowed for further “cuts” of the data to reveal patient characteristics which might represent “inflection” points where introduction of palliative care can be most beneficial (who to intervene with, and when).

Once again, an experienced health care analyst will have a broader knowledge of what additional data (sources) are available, and how they may be included in the analysis to yield additional insights. Interjecting clinical review and expertise at this point also allows for a more discriminate review of utilization patterns (changes in frequency of office visits, other clinical indicators of declining functional status) and their relevance as potential “triggers”.

Analyze the Data

At this step, using statistical analysis methods such as correlation analysis and hypothesis testing, the goal is to identify all factors that appear relevant within the context of influencing the desired outcome (dependent variable). Simple regression analysis may be performed to see whether reliable predictions (of likely outcomes) can be made.



Often, at this stage, the data is further partitioned (sliced and diced) to derive “new” actionable insights. The ability and flexibility to pivot the analysis in this way is in large part dependent on the work done in the prior step (organizing and creating new variables). It may also involve having to go back to the prior step to create new variables and ways to organize the data, including sourcing additional information to include in the analysis.

This is where expert judgement is especially needed to separate the forest from the trees. Just because some correlations of data produce notable degrees of variability; does not mean they are actionable or likely to produce desired outcome. The goal was to identify both financial (cost and utilization) and clinical perspectives to discover the best course of action.



Example: The original analysis for the new palliative care service project used a total dollar threshold in combination with presence of end stage serious illness as the first level of definition for populations of interest for the new service. However, it was determined that simply relying on this single metric did not effectively capture individuals whose overall risk characteristics yielded a more discriminate set of profiles to test further for predictive value. The objective was to identify an at-risk population likely to arrive at that inflection point where new service will be most beneficial.

Our analytics team enabled a more focused lens into what was seen in the data and then relating that to what might actually be happening in practice – particularly since initial cuts of the data yielded a relatively homogeneous population.

Review with our clinical expert yielded recommendations for further defining the population of interest to identify the “best fit” inflection point. This included recommendations to extend the years of retrospective claim data to better assess what patients looked like prior to hitting high-cost trigger(s), and elimination of certain conditions (evidence of potential opioid abuse, chronic pain) from the analysis.

Predict What is Likely to Happen

This is where data analytics supports proactive decision making. At this step, the associations and correlations are identified and considered to be potentially actionable, can be modeled using predictive techniques, such as logistic regression. This can further support development of algorithms aimed at uncovering more refined insights and patterns that highlight relevant relationships and “hidden evidence” revealing the most influential and possibly actionable variables. Being able to discern which of these variables and relationships are truly “actionable” requires the attention of an analyst well versed in both health care data and the association of how care is delivered with the natural progression of illness.



Analysis can then proceed to compare predictive values with actual values, in order to compute and estimate predictive accuracy. Usually, several predictive models are run, and the best performing model is selected based on model accuracy and outcomes. This is yet another step in the process that is likely to be iterative – to refine prediction and focus on the “what, when, who, and how” that yields the best outcome with the greatest predictive value, which again, is a combination of art and science – where experience with health care data matters.



Given the iterations of trial and error, as well as the expert interpretation of the data, it is far more efficient and effective if the data has been organized and set up to allow for a high-level of flexibility from the start. It becomes cumbersome and difficult to evaluate the data if the analysis is fragmented across multiple sources, such as a series of spreadsheets.

Optimize to Find the Best Solution

At this step, predictive model coefficients will be applied to create “what if” scenarios, using established business targets to determine the best solution (keeping in mind given constraints and limitations). Here again is where the “art” versus “science” of the analytic process comes in. Determination of the optimal solution or model will be based on lowest predictive error, degree of alignment with business target(s), and intuitive recognition of the model coefficients that are most closely aligned with “proof” of concept.



Example: In the palliative care project, modifying the analysis to include additional years of claim data, coupled with identification of specific clusters of health conditions, patient characteristics, and use of services allowed for ability to “predict” early identification of patients who are about to hit senescence. This allowed our client to reliably develop protocols to transition target at risk patients into the correct program prior to inflection, that made sense both from a financial and clinical point of view.

Assemble Proof Points

New insights derived from the selected model are updated in the database to provide the basis for establishment of data-driven demonstration of likely outcome, as the basis for proactively demonstrating potential impact and value add. These are the proof points that will ultimately make their way into marketing and sales materials (externally) and in gaining business case approvals (internally).

It is easy to see through the examples provided here how a deliberate effort to mature analytics is required when the goal is to both identify opportunities, predict and demonstrate value. Further, why having an analytic team well versed in health care, working side by side with clinical expertise, facilitates discovery of potential solutions that are innovative, actionable, and measurable.

Our multi-disciplinary team at [WELL Solutions Group](#), comprised of health care industry experts (including individuals with experience in business planning, organizational design, product development, clinical review and epidemiology) is well positioned to help organizations drive analytically based innovation, strategy and operational excellence focused on improving the delivery of health care (lower cost, better quality outcomes).

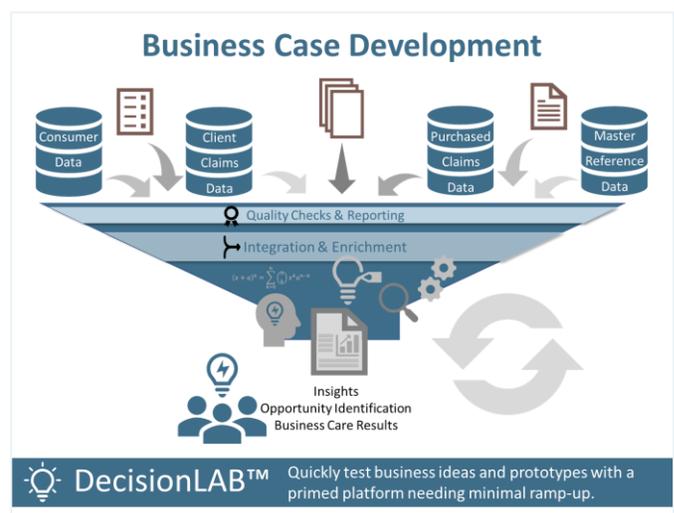


Let's now move on to highlight how a primed and adaptable business development platform becomes a core competency in support of advanced business analytics.

Culminating Value of a Primed Business Case Platform

Business case environments can be a large investment for companies. Most often, these environments are transient, yet require most of the data management overhead of full production environments, all while protecting client data with the controls and guard rails of other data. Then these environments lie dormant for periods of time until the next business case activity is initiated.

Our primed platform is built to efficiently ramp up and utilize pre-existing structures and tasks permitting clients to accelerate through many of the more mundane and time-consuming steps in the analytic process, getting to the efforts unique to the current business case.



The primed platform encompasses enough pre-existing structure to support common and repeatable processes to focus the current business case effort on discovering and identifying opportunity levers, such as cost and utilization, accomplishing the objectives of the business case sooner.



Other benefits of the primed platform include:

- Reduced ramp-up time
- Built-in security considerations for protected and sensitive data
- Availability of necessary reference data for proper categorizations and reporting
- Built on a scalable platform for larger business cases
- Expert data management and analytics support
- Reduction in costs for dormant environments to increase overall ROI
- Efficient conversion to production environment for measuring success of an implemented business case

Visit [our web site](#) or [contact us](#) to explore how our secure platform and expertise can assist you with a primed business case environment to get started unlocking its return on investment for your business.