Health Analytics & Informatics

Lately Health Analytics and Informatics have become powerful tools for public, researchers, and managers of Government Agencies as well as Commercial Business. Our edge over the competition is that, all our systems have advanced analytical capabilities developed by Analysts holding advanced degrees in Statistics, OR, as well as IT professionals. In fact, Business Intelligence Services (BIS) has developed Health Analytics and Informatics since 2008 to a major client from the Pharmaceutical Industry.

As we gathered from conferences, Health Analytics & Informatics that we developed are far superior to those from other pharmaceutical companies, in that they lacked real-time Analytical capabilities and provided limited insights for Clinicians, Analysts, Managers, and Field Reps. Unlike our Health Analytics & Informatics, those by most vendors

- Are not developed on BI platforms that allow Advanced Analytics to be performed by the system analytical engine using latest Statistical Techniques coded in R or SAS
- Perform only canned Analyses of limited use
- Do not provide Insights about Patient Population, Public Health, Safety and Efficacy of Treatments, and input for Action and Decision Making
- Do not guide the Analytics portal users/researchers into what they are looking for in an organized manner
- Lack powerful Visualizations and drilldown capabilities
- Do not provide automatically created Excel Pivot tools for follow-up analyses by the user/researcher

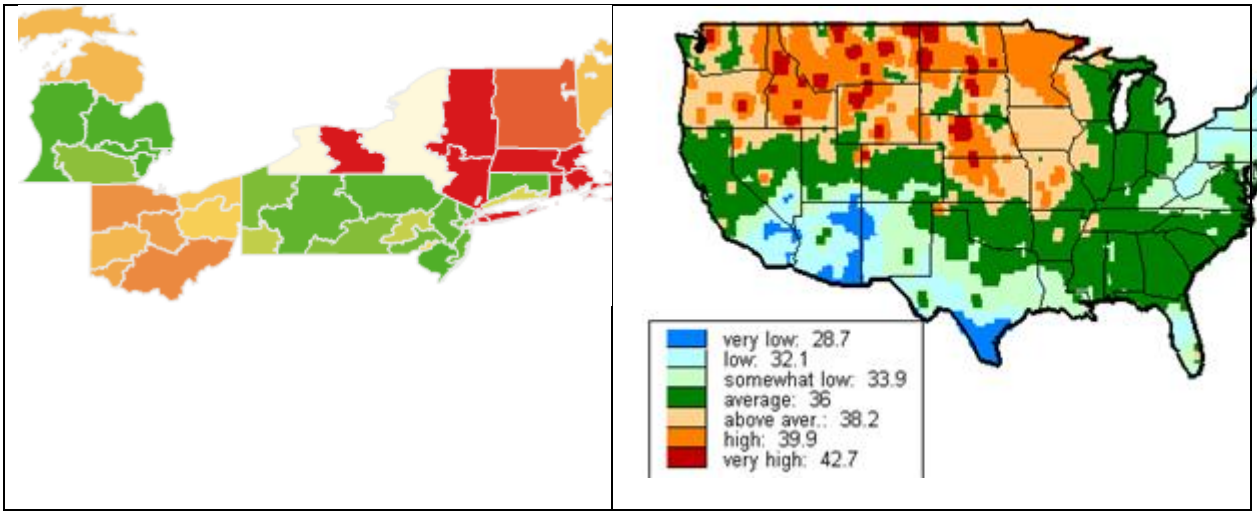
Whereas, the Health Analytics and Informatics developed by BIS have all of the above desired features. We develop Health Analytics & Informatics on Business Intelligence Server platforms such as Tibco SpotFire, Microsoft Power BI Server, and Tableau BI Server that allow developers to code any advanced data analytical technique using R statistical programming language. Of course, the users (e.g. researchers and HHS managers) do not need to know R/SAS programming or knowledge of analytical techniques, because analyses are performed in the background in real-time with user specified scenarios and parameters. Since they know of the problems and underlying issues best, they can carry out advanced analyses on-line using Health IT Analytics/Informatics portals we develop. Also, in some HHS entities there seem to be an issue of multiple sites with complementary information. While we can integrate all such information in a centralized server, we will direct users to individual tools in an organized manner.

Insightful Visualizations and Tabular Output

BIS Analytics provide powerful visualizations, appropriate for individual application. Shown below are a few outputs from a Health Analytic we developed for a major pharmaceutical company. The left map shown below is the average response metric by territories covered by Field Reps who deliver Medicine Samples to doctors in each territory/district. The right visualization is a heat map of a response metric across US mainland.

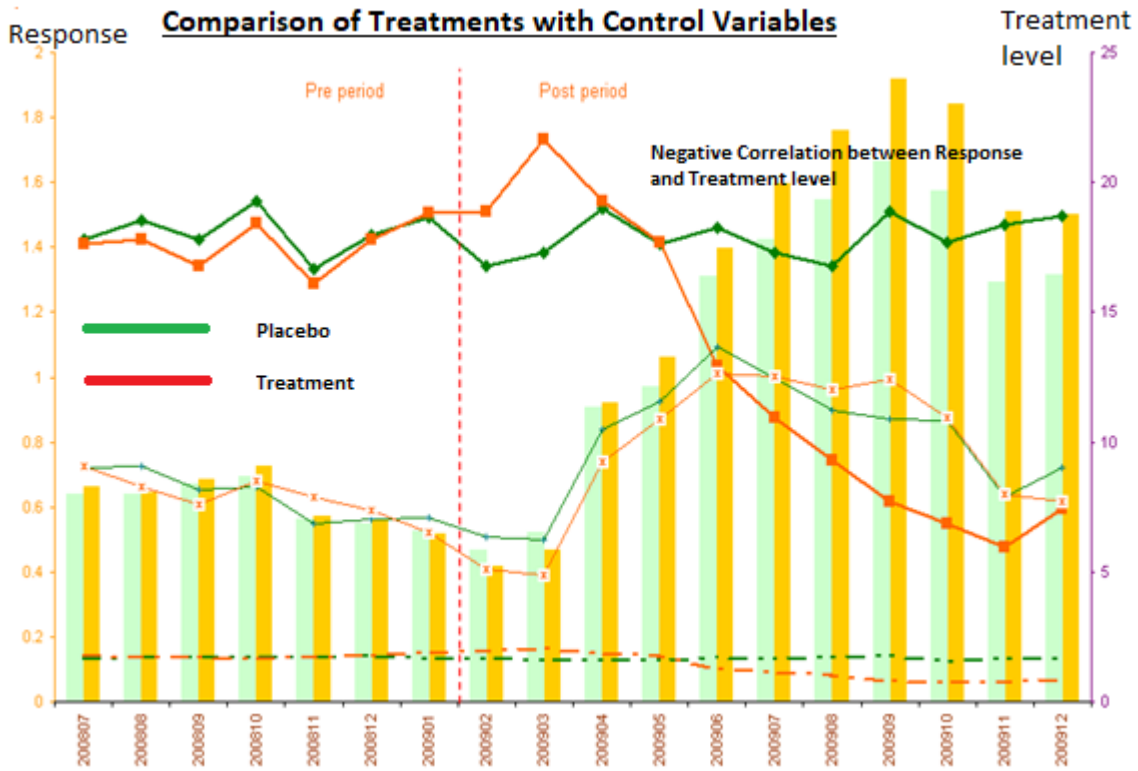
(**Note:** Graphic Titles and Certain Metric information are removed in Charts below, due to proprietary reasons)

Examples of Insightful Graphical Output based on Advanced Analyses

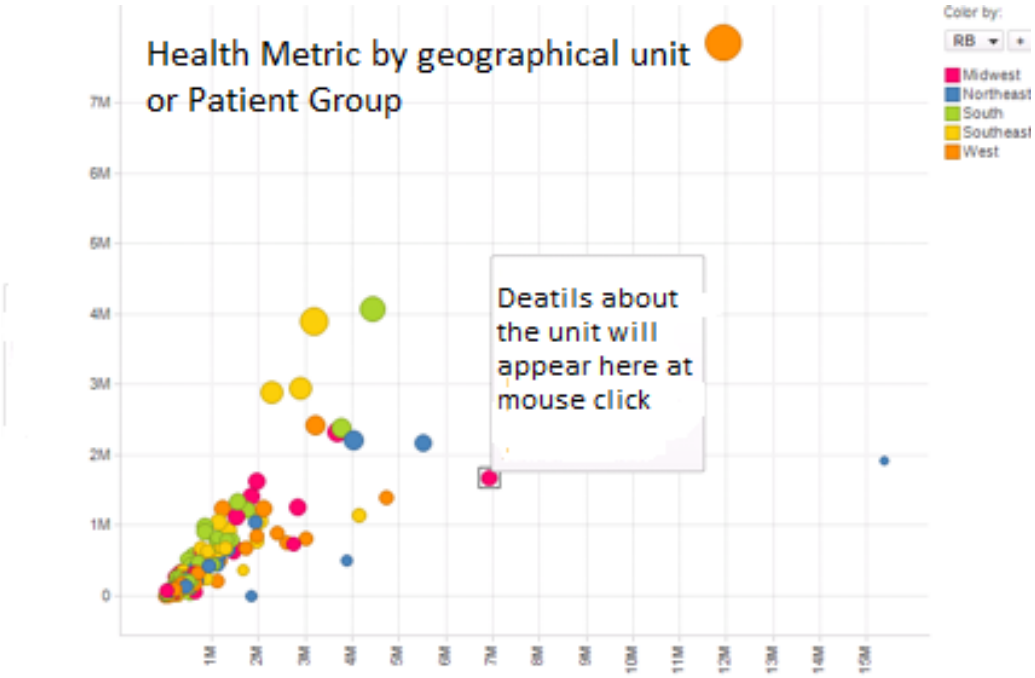


Real-Time Analytics:

Visualizations provided by competitor tools are basically display of raw data, or simple means, and trends, whereas we perform advanced analyses, including Confidence Intervals, ANOVA Tests such as F-tests, t-tests, and non-parametric tests. When requested our analytics perform test-cantonal type analyses and display estimated average response along with the states of control variables used in Regression Models as illustrated in the figure below.



As another example, shown below is a bubble chart, which can easily identify States, Counties, or Cities where a certain health Safety or Efficacy related metric by population of that geographical units. The points falling close to the diagonal are considered average condition, whereas the geographical units falling far below or above are considered performing poorly depending on whether the metric is a negative or positive one.



Shown below is an automatically created and formatted Excel Pivot table, a user can obtain from the Analytics portal so that he/she can carry out customized analyses on desktop.

An Example of Automatically Formatted and Customized Excel Pivot Output

Brick	(All)
Territory	(All)
PosStarterInd	(All)
District	(All)
Segment	(All)

		Data								
vol.quintile	City	Curr Starters	Opt Starters	Curr Sales Lift	Opt Sales Lift	Monthly Profit Lift	Anualized Profit Lift	Curr Sale	Curr Cost	Opt Cost
1	AMEI	5	5	114	157	45	536	473	16	14
	AMP	0	0	18	35	17	205	200	1	1
	ANAI	1	3	67	93	22	261	431	4	8
	ANDI	5	5	132	155	22	259	548	14	16
	APU	3	4	115	175	55	666	350	8	13
	ARA	24	17	201	313	134	1,603	842	72	51
	ARA	42	24	294	346	103	1,239	1,092	125	73
	ARA	0	1	23	46	22	259	115	1	3
	ARAI	3	1	-1	7	12	140	13	9	4
	ARAI	26	14	263	268	39	465	537	76	43
	ARAI	10	9	169	189	24	286	378	31	27
	ARAI	0	0	6	12	5	65	300	0	1
	ASSI	3	6	77	131	46	551	262	9	17

Award Winning Analytics: BIS insightful Analytics have won a number of awards internally within client companies, usually awarded by client company presidents, and from external professional societies. Such award-winning Data and Analytics portals that BIS developed with integrated data for commercial clients are of world class standard. In fact, there are only a few vendors out there with prior experience and know-how to do so, because they involve Real-time Statistical Analyses using R statistical programming language on demand. Data & Analytics portals and Dashboards developed by BIS had so high impact that we have very high “Past Performance Evaluations” conducted by D&B Open Ratings.

This type of output along with automatically created Excel Pivot tables have allowed managers of our client companies to obtain what is happening over-time and across the geography. The graphical output helped them get much insight into what is happening at a high level first and then drilldown deeper to detect root causes of the impact. Our innovative analytics on Medicine Sample Allocations, and Speaker Program optimization have lifted Pharmaceutical client profits by hundreds of millions of dollars, a claim hardly any competing vendor can make

Quality of BIS Analytics

Many Analytic portals developed by our competing vendors were found to have serious performance problems. This is mainly due to poor design issues. Moreover, the information is provided in an unorganized manner that users have difficulty finding what they are looking for. At one of our client companies, there were two or more Analytics portals providing some common information. One developed by a competing vendor at a very high cost had enormous

performance problems, that it used to crash even during training sessions due to its poor design and inefficient handling of big data.

Whereas, our systems were one of top quality products with exceptional performance and highly positive user compliments. The system required minimum maintenance and outages occurred only due to network issues rather than system issues. It had own data backup systems to tapped into even when some data is lost due to faults in other components in the network, including databases.