Booz Allen Hamilton is collaborating with the National Institutes of Health (NIH) on a public health study of unprecedented size and complexity—the National Children’s Study (NCS). The NCS aims to improve the well-being of children by examining various environmental factors on childhood development, disease and overall health. NIH must ensure its investment produces the best possible results while remaining on schedule and on budget over the study’s 25-year duration.

Together with Booz Allen, NIH employed predictive modeling techniques to develop a novel approach for data-driven, evidence-based study planning, monitoring, and execution that is expected to become a standard for managing cohort studies and trials in the 21st century.

Scrutiny, Cost Pressures and Big Data Challenges

The NCS is one of NIH’s highest-profile initiatives. It intends to enroll up to 250,000 pregnant women from across the United States and study their children from before birth to age 21. From its participants, the study expects to collect massive amounts of data—including biologic and environmental samples, survey instruments, as well as direct observation and measurement—which will serve as a resource for researchers that will ultimately inform health and safety guidance, intervention and prevention strategies, and health policy for generations to come.

With so much riding on the study’s success, NIH decided to launch a small-scale pre-study—the Vanguard Study—to serve as a planning tool for the Main Study. The Vanguard Study provides the operational data required to evaluate feasibility, acceptability, and cost of various recruitment strategies in order to support a data-driven evidence-based planning process for the Main Study. NIH was under tremendous scrutiny and pressure to generate measurable, meaningful research results while staying within its allotted budget. The agency also had to find ways to extract actionable insight from enormously complex and ever-growing data sets.

Harnessing Insight Through Predictive Modeling

Booz Allen Hamilton, a leading strategy and technology consulting firm, helped ensure the NCS successfully employed the proposed data-driven, evidence-based planning process. To achieve that goal, Booz Allen’s advanced analytics experts designed and implemented innovative predictive models that simulated key parts of the NCS recruitment protocols and were validated using data collected from the Vanguard Study.
NIH can use the predictive models to effectively monitor the execution of the NCS and make projections about ongoing activities based on current status and observed history and trends. These projections, combined with “what-if” analyses of alternate future scenarios, allow for early detection of issues such that appropriate corrective actions can be applied in a timely manner for study activities that require modification. These capabilities enable a nimble approach to managing the execution of an enterprise as large and long-term as the NCS.

Booz Allen’s work has already had a significant impact on the NCS. The employment of a rigorous modeling approach during the planning phase raised questions that otherwise might not have been examined. For example, what data is required to effectively monitor study operations, and how can this data be collected in sufficient quantity and quality to inform meaningful analyses? What sampling unit sizes for study locations are optimal to achieve recruitment targets as quickly as possible, and at the lowest cost? One of the most important questions that Booz Allen’s predictive models helped inform was the number of participants required to ensure that the NCS will have enough data to answer desired research questions with adequate statistical power.

**Helping NIH Be Ready for What’s Next**

The novel data-driven, evidence-based approach to the planning, execution, and monitoring of the study is viewed not only as means to help ensure success of the NCS, but also as a way to plan and conduct studies in the 21st century more broadly. Moreover, Booz Allen designed the analytic platform to be easily customizable for other studies and trials.

Based on the NCS planning successes to date, NIH has now asked Booz Allen to determine if the data-driven approach can be extended from operational to scientific planning of studies. With the amount of available data growing exponentially, data-driven approaches to decision making will become increasingly important for NIH and for biomedical research at large, complementing traditional hypothesis- or expert-driven decision making. Our advanced analytics experts are ready to help NIH accomplish this transformation to a data-driven decision-making paradigm.

**Ready to Help You**

Our work with NIH on the NCS is just one example of how Booz Allen’s leading strategy and technology consultants can help government, commercial and non-profit organizations use advanced analytics techniques to support decision making and achieve vital mission goals. To learn more about the know-how behind this project’s success and how it can help your team be ready for what’s next, visit www.boozallen.com.

**About Booz Allen**

Booz Allen Hamilton is a leading provider of management and technology consulting services to the US government in defense, intelligence, and civil markets, and to major corporations, institutions, and not-for-profit organizations. Booz Allen is headquartered in McLean, Virginia, employs more than 25,000 people, and had revenue of $5.59 billion for the 12 months ended March 31, 2011. (NYSE: BAH)