

# Boston Children's Hospital study dives deeper into customer insights to better understand complex care patient needs

## THE CHALLENGE

Boston Children's Hospital, a pediatric hospital ranked among the top three in the U.S. by U.S. News and World Report, engaged Applied Marketing Science (AMS) in an AI study to understand the patient journey for pediatric specialty and complex care.

The patients of Boston Children's come to the facility for treatment of pediatric specialty care. Boston Children's has a wealth of internal data regarding the patient experience, but these data are stored in different pockets of the organization.

Boston Children's was interested in mining these rich data sources to better identify key needs of patients and their families, and gather their perceptions of Boston Children's as compared to peer hospitals.

## WHAT WE DID

AMS and Boston Children's utilized machine learning in the form of the Automated Content Evaluator (ACE™), an algorithm developed by researchers at the MIT Sloan School of Management in collaboration with AMS researchers. The machine, which is trained to process massive amounts of readily available user-generated content to identify consumer needs, saves time, money, and effort, all while uncovering hidden gems of insights.

For this study, researchers began with 66,208 sentences of patient and caregiver feedback. They trained the algorithm on 2,000 randomly sampled sentences and the trained algorithm returned 2,000 sentences that were representative of all sentences in the data set.

*This case study continues on the second page.*

## CASE STUDY



### CLIENT

Boston Children's Hospital

### INDUSTRY

Medical Products and Pharmaceuticals

### SERVICES

Journey Mapping | Machine Learning/ AI

### CLIENT INSIGHT

*Traditional studies had provided Boston Children's with information regarding patient experience – but machine learning took their insights to the next level.*

## THE OUTCOME

From the 2,000 sentences returned by the algorithm, human analysis yielded a final list of 133 customer needs that spanned 11 categories including patient-provider communication, procedures and in-hospital experience, and quality of care. The research successfully mapped customer needs to different stages of the pediatric patient journey.

The study demonstrated that machine learning is a complementary approach to traditional market research methods. Traditional studies had provided Boston Children's with information regarding the factors that go into provider selection, the path to diagnosis, and services that the hospital provides – but machine learning took their insights to the next level.

Machine learning captures rich detail not typical of traditional research, especially for topics difficult to explore with traditional methods. For example, Boston Children's was able to glean diagnostic odyssey details of sentiments and attitudes, information regarding hospital experiences and needs by child age, an understanding of facility experiences and patient comfort level with care plan information shared, as well as competitor insights straight from patient family experiences. Machine learning enabled the Boston Children's team to collect closer to real-time insights written by their customers at pivotal moments in their experience and posted online in forums or on social media. In traditional studies, where the customer may have been interviewed, they might have forgotten their thoughts and feelings. The collection of insights ensured Boston Children's had an accurate snapshot of this feedback.

## CLIENT INSIGHT

This study provided a proof of concept and learnings for the hospital on how to put AI-supported analysis to work in gaining meaningful insights about patient family experiences with pediatric specialty care in the market in general and specifically at Boston Children's. Collaborating across data owners and curators from different hospital departments, this AI-supported study captured a fuller, more detailed view of the pediatric patient journey, especially for complex care patients, than previously generated by more traditional market research methods alone. Knitting together traditionally gathered market research and patient experience from multiple projects, augmented with unstructured consumer-created discussions scraped using social listening tools, enabled a robust analysis of both needs and emotional sentiment along each of the mapped stages of the pediatric patient journey.

The map of sentiment analysis along the more detailed patient journey map identifies specific areas where more family support may be needed and what the specific patient-family needs are by journey stage. As patient family support and services evolve, the hospital now has another avenue, following the learnings from this study, to monitor and analyze changes to consumer sentiment as well as to benchmark sentiment for Boston Children's against peer institutions.