

# DETERMINING INFLUENTIAL FACTORS

## ON CONFERENCE ATTENDANCE AND SATISFACTION

Elder Research text mined survey data and provided exploratory and predictive analysis to identify insights and trends that affected conference attendance. This helped guide the client's conference content programming and global conference planning.

### INDUSTRY

- » Nonprofit Service Organization

### BUSINESS NEED

- » Understand key factors influencing conference attendance and satisfaction to guide conference planning strategy and improve key performance metrics

### SOLUTION

- » Exploratory data analysis required extensive data processing and cleaning
- » Performed text mining, statistical analysis, and modeling to determine influential factors predicting attendance and satisfaction
- » Developed custom R code to analyze and visualize the data

### BENEFIT

- » Delivered actionable insights to increase conference attendance and satisfaction

## THE CHALLENGE

Elder Research was engaged to provide exploratory and predictive analysis of tracking, logistical, and evaluative data sources related to past conferences open to client staff and volunteers. The goal was to use text and data mining of survey data to identify insights and trends that affected conference attendance to guide future content programming and conference planning strategy. The client also wanted recommendations on what additional studies or surveys to conduct to fill information gaps.

## THE SOLUTION

Elder Research leveraged vast cross-industry experience with conference planning and marketing analytics to deliver actionable insights to promote increased conference attendance and attendee satisfaction. The project involved conducting rigorous experimental research and analysis where all aspects of the model and business questions were carefully detailed and evaluated throughout the project. This process allowed Elder Research to reduce the time to deployment, refine operational requirements, and identify production issues by developing a baseline model for testing and evaluation within the first few weeks of the project.

The initial phase of the project was an exploratory data analysis, including data preparation and understanding. The client provided data on annual leadership and performance surveys, conference evaluations, session details, and conference attendance. Prior to analysis, a significant amount of processing and data cleaning was required, including converting the format of survey results for ingestion by the statistical software, mapping the survey results to survey questions, joining attendee information with survey information, and writing custom R code to analyze and plot the data. The analysis revealed areas where data sparsity limited the results and provided insight for improving the conference surveys and session registration process.

The next phase focused on statistical analysis and modeling to determine factors predictive of attendance and satisfaction. Using the survey results of each attendee, keywords were identified in session titles and descriptions that were correlated with satisfaction. The results revealed substantial differences in the sessions preferred by volunteers compared with staff members. For example, staff preferred

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sessions focused on implementations of strategies while volunteers preferred more general sessions. Session topics of interest to volunteers included strategic planning, networking, and education, containing words such as “build”, “improve”, “increase”, and “successful.”

To assess conference attendance, the team closely examined the conference location, number of events, competing conferences within the same year, attendance patterns, interest in U.S.-based versus worldwide events, impact of engagement by the local client organizations, and the total number of distinct local organizations that sent people to conferences. The analysis showed that distance from the conference location and a robust and engaged client presence in close proximity to the conference location were significant factors influencing attendance.

As shown in Figure 1, differently sized organizations behaved differently in terms of the number of attendees and how attendance changed over time.

During the model training phase, out-of-sample validation was employed to reduce overfitting. The performance of the algorithm was measured to determine its ability to accurately predict conference attendance or satisfaction in a holdout sample of

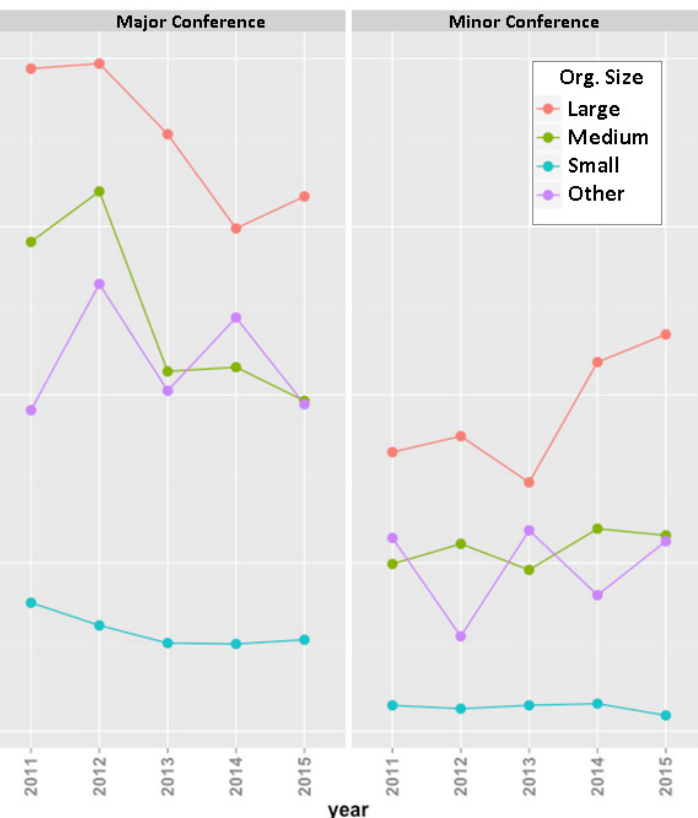


Figure 1. Analysis revealed trends in conference attendance from client organizations based on the size of the metro area and conference type.

data. This ensured the stability of the scoring algorithm once deployed by the client.

## RESULTS

The analysis revealed valuable insights regarding the key factors influencing conference attendance and satisfaction. The specific wording of survey responses, session topics, and differing content preferences between volunteers and staff were most predictive of overall satisfaction. Meanwhile, attendees’ willingness to travel to minor versus major conferences, travel distance, and the

conference’s proximity to larger metro areas were the most predictive of conference attendance. These insights demonstrated the need to increase targeted marketing and registration discounts to medium-sized local clients and to create outreach initiatives and a framework geared specifically toward volunteers to encourage conference attendance.

## ABOUT ELDER RESEARCH

Elder Research is a recognized leader in the science, practice, and technology of advanced analytics. We have helped government agencies and Fortune Global 500® companies solve real-world problems across diverse industries. Our areas of expertise include data science, text mining, data visualization, scientific software engineering,

and technical teaching. With experience in diverse projects and algorithms, advanced validation techniques, and innovative model combination methods (ensembles), Elder Research can maximize project success to ensure a continued return on analytics investment.

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