

# IMPROVING CUSTOMER RETENTION AND PROFITABILITY

FOR A REGIONAL PROVIDER OF WIRELESS SERVICES

By applying advanced techniques for modeling and visualizing customer records, Elder Research created a combined data and text mining solution to increase marketing efficiency and reduce churn. The model improved targeted messages which resulted in higher profitability for nTelos, a regional mobile phone carrier.

## INDUSTRY

- » Telecommunications

## BUSINESS NEED

- » Reduce the rate of customer churn at nTelos

## SOLUTION

- » Utilized both quantitative and qualitative text information to identify possible churners

## BENEFIT

- » Better targeted messages and customer interventions improved profitability

"Elder Research worked with us to understand our entire business process, which affected improvement across the entire company. Their models allowed us to prioritize our work with customers. We learned how to look at different combinations of characteristics and know how to act."

Belinda Rushing,  
Manager for Strategic  
Planning, nTelos

## THE CHALLENGE

Competition in the wireless telecommunications industry is intense. To maintain profitability, wireless carriers must control churn, or the loss of subscribers to other carriers.

Churn had caused nTelos's market share and profitability to decline dramatically. In an effort to reverse that trend, management had acquired a sophisticated analytical software package and supporting consulting services from a leading technology firm. However, after many months, the results had been unsatisfactory.

As a result, nTelos hired Elder Research to help identify the causes of its high churn and implement actions to reduce it.

## THE SOLUTION

Analyzing wireless carrier churn is a complex analytical challenge. Many variables are involved, some of which are difficult to measure accurately as the percentages of change are small. A broad spectrum of analytical techniques must be expertly applied to ensure accurate data and prescribe effective corrective actions.

Because of the complexity of the assignment, Elder Research implemented a multi-step approach.

### Corrected Analytical Software Deficiencies

Shortly after beginning, Elder Research addressed installation issues with the analytical software purchase so that it performed satisfactorily.

### Conducted Research to Understand the Problem and the Data

Elder Research worked with subject-matter experts from nTelos to understand the business benefit of potential outcomes, the costs of different types of errors in classification,

"Elder Research brought the expertise we lacked to solve our problem. Once they got a handle on our processes, they were able to look at some of the data differently, in ways that we had never considered. They gave us insight as to why certain populations leave us. This let us run more focused marketing campaigns with better results. In effect, they showed us a smaller pond with more fish in it."

Frank Fenneran  
Senior Research Analyst, nTelos

## Headquarters

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**ELDER RESEARCH**  
DATA SCIENCE & PREDICTIVE ANALYTICS

## Office Locations

Arlington, VA  
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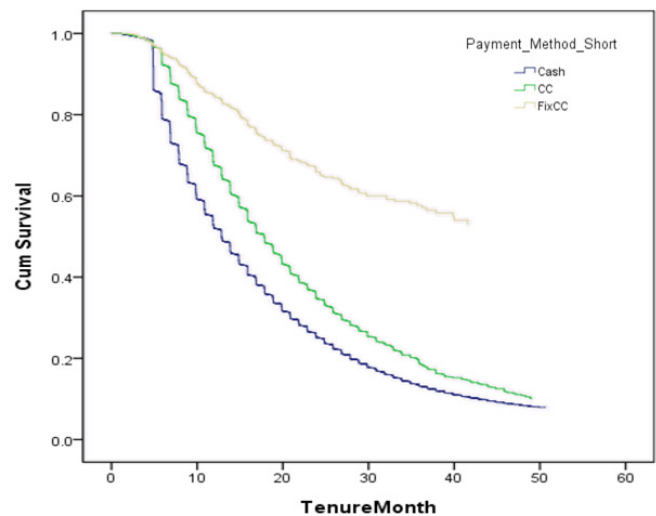
## Tracked Results with a “Test-and-Learn” Strategy

Once the predictive models were developed and deployed, a test-and-learn strategy was implemented using control groups to evaluate marketing strategies and monitor model performance.

This strategy unexpectedly revealed that customers who were due for contract renewal were more likely to churn if they received voicemail messages from call center operators. Upon inquiry, it was discovered that operators were essentially reminding customers that their contract was about to expire. Management changed the call center script so that new savings opportunities were mentioned instead, and churn decreased substantially.

## Conducted “Survival Analysis” to Identify Trends

Survival analysis looks beyond individual customers to identify larger-scale trends. Using this technology, Elder Research was able to show nTelos that customers who prepaid for services by an automatic debit arrangement were less likely to churn than customers who prepaid by credit card, and far less likely to churn than customers who paid with cash (as shown



Survival analysis based on payment method

in the Survival Analysis chart above). Based on this information, management modified its prepayment plans to encourage automatic debits, and churn decreased for this category.

## RESULTS

Measurements conducted using statistically significant control groups for multiple categories of customers showed that Elder Research’s services in software development, data refinement, analytical measurement, and problem solving decreased nTelos’s churn from 3.5 percent to 2.9 percent — the lowest level in years.

Based on data derived from the control group methodology used in the test-and-learn strategy, it is estimated that the implementation of Elder Research’s predictive model boosted that year’s annual profits for nTelos by more than \$1 million.

## CUSTOMER INFORMATION

nTelos Wireless is a leading provider of wireless communications services to consumers and businesses in seven mid-Atlantic states. Based in Virginia, the company has

approximately 400,000 subscribers and annual revenues in excess of \$400 million. In 2016, nTelos was acquired by Shentel, a Sprint affiliate based in the Shenandoah Valley.

## 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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