

PRICE ELASTICITIES FOR PACKAGED GOODS

MEASURING THE EFFECT OF COMPETITOR PRICES

CASE STUDY

Elder Research worked with a global food and beverage manufacturer to develop a model that describes how price changes affect sales. Focusing on changes to the manufacturer's prices and competitor prices, these detailed estimates allow the client's pricing team to make more data-informed decisions.

THE CHALLENGE

This packaged food and beverage client wanted to better understand the impact of pricing decisions at scale to improve efficiency. Each of their products is uniquely sensitive to price changes, requiring analysis at various levels of granularity. This complexity is compounded by the number of distinct markets and configurations in which these products are sold (e.g., retailers, sales channels, geographical considerations, product groups). When it came to the effects of competitor prices, the client only had access to aggregate elasticity estimates, which often mask large disparities across markets.

Understanding how a competitor's price change impacts the demand for their products is crucial for making strategic pricing decisions. But identifying which competitors' prices have the most significant effect is a daunting task given the interrelations of products within the same category and continuous fluctuations in competitor pricing strategies. This complexity makes predicting market reactions to price adjustments challenging, and the client's analytical models and tools did not allow them to manage these dynamics at a granular level.



INDUSTRY

Food and Beverage Manufacturing

BUSINESS NEED

The client's pricing group had access to only high-level, aggregate estimates of their products' sensitivity to competitor price changes.

They were unable to answer key questions about relationships with competitive products and unable to differentiate across markets.

SOLUTION

Elder Research developed a pricing model to estimate price elasticity holistically, considering both internal and external effects.

The model produces detailed estimates across multiple levels of retail and product specificity, considering impacts at each level.

BENEFIT

This work resulted in a fundamentally sound process that demonstrates the value of modeling price sensitivities holistically. It also shows the benefit of estimating competitor pricing effects at the most granular levels of interest to identify key price elasticities and drive smarter pricing decisions.

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THE SOLUTION

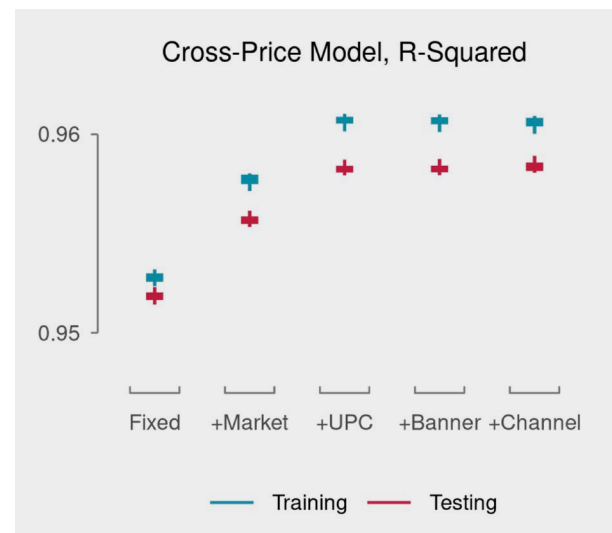
Elder Research delivered a model that infers own-price and cross-price elasticities across multiple levels of product and retail specificity, ranging from overall average sensitivity to fine-grained impacts. This effort began with a thorough exploration of the client's existing pricing data and elasticity models.

After testing the client's current models, Elder Research data scientists developed an iterative series of cross-elasticity models. The Elder Research team worked closely with stakeholders within the client's pricing team as well as their data science staff to ensure the modeling effort was aligned with overall objectives.

To solve this problem, Elder Research developed a hierarchical regression model capable of jointly estimating the client's own- and cross-price elasticities both on and off promotion. The model produces estimates across the various levels of product and retail differentiation while also adjusting for other key effects outside of this hierarchy.

At each step the Elder Research team measured and communicated the impact of new components via a testing strategy that quantified both:

- 1 the stability of the price sensitivity estimates and
- 2 the overall model performance in the prediction task.



RESULTS

Elder Research delivered a unified modeling framework that can be incorporated into existing workflows, allowing the client to estimate detailed price elasticities at any level of retail specificity or product granularity.

This allows for the identification of the most important estimated cross-price elasticities. The framework also provides a view of the elasticities between products and across markets and details how elasticities change over time. Additionally, it accounts for own-price and competitive effects simultaneously.

By providing an updated framework, Elder Research demonstrated the ability to make strategic pricing decisions with more confidence, while having a view to results in a quicker and simpler manner.

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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