Who's shopping where?
The power of geospatial analytics in omnichannel retail

Using advanced geospatial analytics, retailers can now quantify the true economic value of each of their stores across channels—and they're uncovering surprising insights.

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The wave of store closures across the US retail sector continues. In 2017 alone, more than 7,000 stores went dark, unable to withstand consumers' rapid migration to e-commerce, the explosive growth of direct-to-consumer brands, and the glut of retail square footage in the heavily overstored US market. Retail space per capita in the United States is 15 to 20 times that of other major developed markets. Customer traffic at malls has been steadily decreasing. Margins are declining in almost every retail category. Given these trends, it's becoming harder to justify keeping expensive brick-and-mortar stores open if they don't meet sales expectations. Already, in the first few months of 2018, retailers have announced plans to shutter an additional 3,800-plus US stores.

Unfortunately, retailers often make the wrong decisions about which stores to close, thus inadvertently hurting their business further. They also overlook valuable opportunities to expand their market presence and unlock growth. The main reason is that they're using outdated metrics: many retailers continue to use a combination of trend analysis and "four-wall economics" to assess store performance—that is, they're still primarily taking into account the sales and profits that the store generates within its four walls, without considering its impact on other channels. This assessment then affects other decisions, including the store's payroll, labor coverage, and sometimes inventory selection. However, consumers today shop across channels: they might visit stores to look at products and then eventually buy them online, or they might research a product online and then buy it in a store. In this environment, the traditional four-wall metrics are, at best, incomplete indicators of a store's potential.

The most sophisticated retailers are now closely examining the interplay between offline and online customer decision journeys. They're taking an omnichannel view of store performance—allowing each store to "get credit" for all the sales in which it played a role, whether those sales happened offline or online. In doing so, retailers are getting a more accurate picture of each store's total economic value and making better decisions about their omnichannel presence. Their secret weapon? Advanced geospatial analytics.

Outside the four walls

Physical stores aren't going away. We estimate that in-store sales will still make up 75 to 85 percent of retail sales by 2025. That said, the physical store is no longer just a place to buy products. A store now plays several possible roles: it might serve as an experiential showroom for products, a fulfillment center for online orders (or a convenient place for returning or exchanging online purchases), a hangout where groups of friends can try things on and take selfies that they then post on social media, or a destination for those seeking ideas and inspiration. It's entirely possible for a store to have weak sales and profits within its four walls while being a strong contributor to the retailer's overall performance.
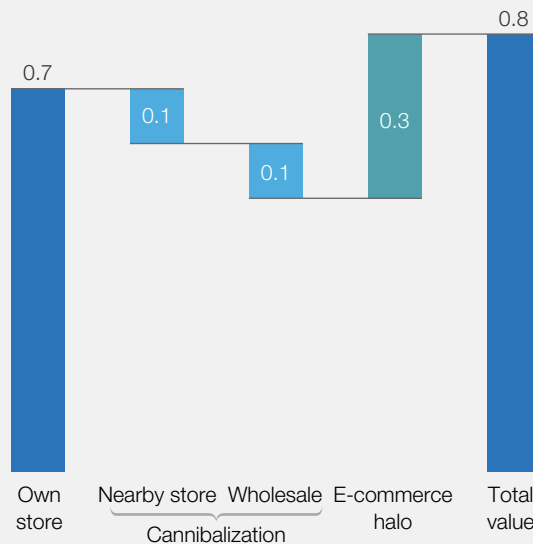
Advances in data and analytics can help a retailer quantify both a store's halo effect (positive) and its cannibalization effect (negative)—in other words, how a store's existence influences the performance of the retailer's other sales channels (Exhibit 1). Retailers have long recognized that a store can have a halo effect, but it has traditionally been thought of in marketing terms—that is, a store can raise awareness of the retailer's brand, just like a billboard or a TV commercial. Viewed as such, the halo effect has been difficult to measure. However, in an omnichannel world, a store can do more than just raise awareness; it can drive sales through other channels, and vice versa. McKinsey research suggests that a store's e-commerce halo can account for 20 to 40 percent of its total economic value.

This information allows retailers to get a detailed picture of how people move and interact within a market, as well as how they behave across both offline and online channels.

And it's not just that there's more data. Companies now also have access to **increased analytical horsepower** in machine-learning models. These models can mine big data assets and help generate granular, actionable insights at the micromarket level.

At the most sophisticated retailers, geospatial data and analytics are often owned by a strategic advanced-analytics group. The group, which can be centralized or reside within a specific function, drives the use of advanced analytics across silos. It delivers cross-cutting insights that bring together the priorities of various functions, including marketing, sales, finance, and real estate.

The combination of advanced geospatial techniques and machine learning, applied to cutting-edge data on consumer behavior, is unleashing powerful new insights for retailers. In particular, it's helping retailers make better decisions about expanding or contracting their store networks. It's also helping them develop store-level action plans to improve performance. In addition, some retailers are using these insights to mobilize their sales force and prioritize their investments.
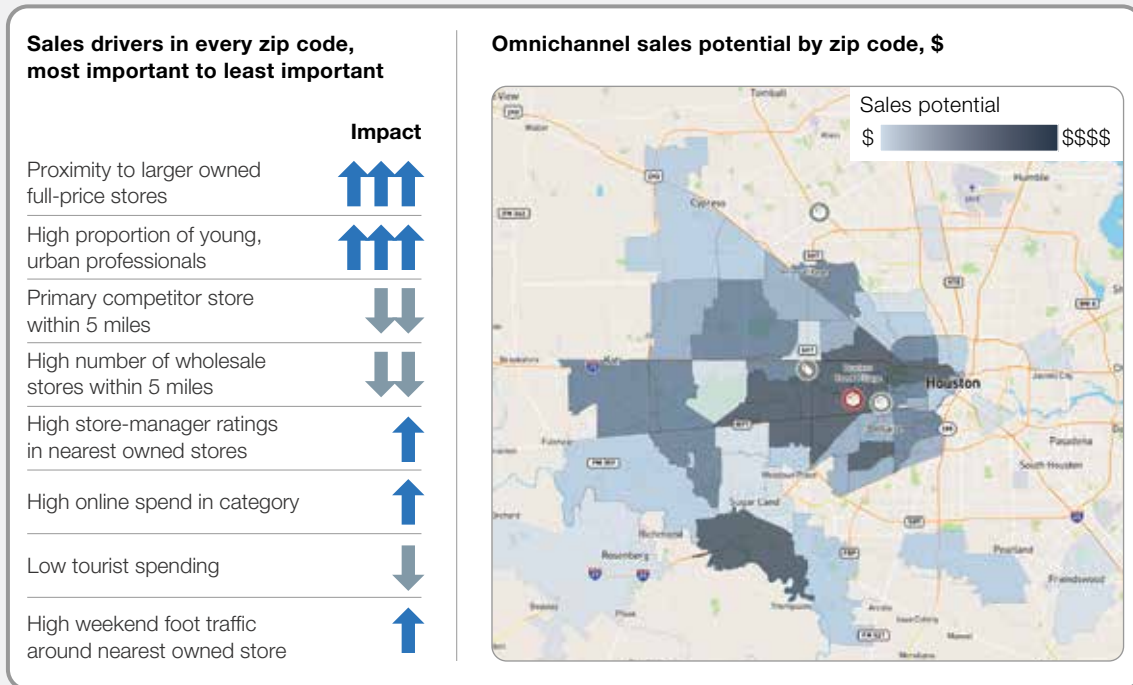
Geospatial analytics in action: A case example

Consider the case of a global specialty retailer that sells its products through its own brick-and-mortar stores, an online store, and wholesale accounts. The retailer's sales were declining in the face of strong competition. For insights into how to reverse its sales trend across the network, the company turned to geospatial machine learning.

A team of data scientists built an analytical model customized for the brand, leveraging both internal

A new era in data and analytics

For decades, retailers have been mining a variety of data sets—point-of-sale information, demographics, market trends, and so on—to learn about customers and serve them better. Today, thanks to the availability of new types and sources of data, it's possible for retailers to gain a much deeper understanding of consumers and markets. Retailers have access to more **consumer-behavior data** than they've ever had before, in the form of opt-in e-receipt programs and anonymized mobile-phone location data.

The aggregated data can shed light on not just the quantity but also the quality of customer traffic.

Exhibit 2

Using geospatial machine learning, a retailer identified the factors that most affect a zip code's sales potential.

Illustrative example

Sales drivers in every zip code, most important to least important

	Impact
Proximity to larger owned full-price stores	↑↑↑
High proportion of young, urban professionals	↑↑↑
Primary competitor store within 5 miles	↓↓
High number of wholesale stores within 5 miles	↓↓
High store-manager ratings in nearest owned stores	↑
High online spend in category	↑
Low tourist spending	↓
High weekend foot traffic around nearest owned store	↑

Omnichannel sales potential by zip code, $

Sales potential
$ ▭ $$$$

and external data. Testing hundreds of variables, the team used geospatial machine learning to identify the factors that have the greatest positive or negative effect on a zip code's total sales (Exhibit 2).

Based on these drivers, the team was able to predict the retailer's potential sales in each zip code and each store, and to compare potential sales with actual sales. Then, using geospatial simulation, it estimated each store's impact on wholesale and online sales.

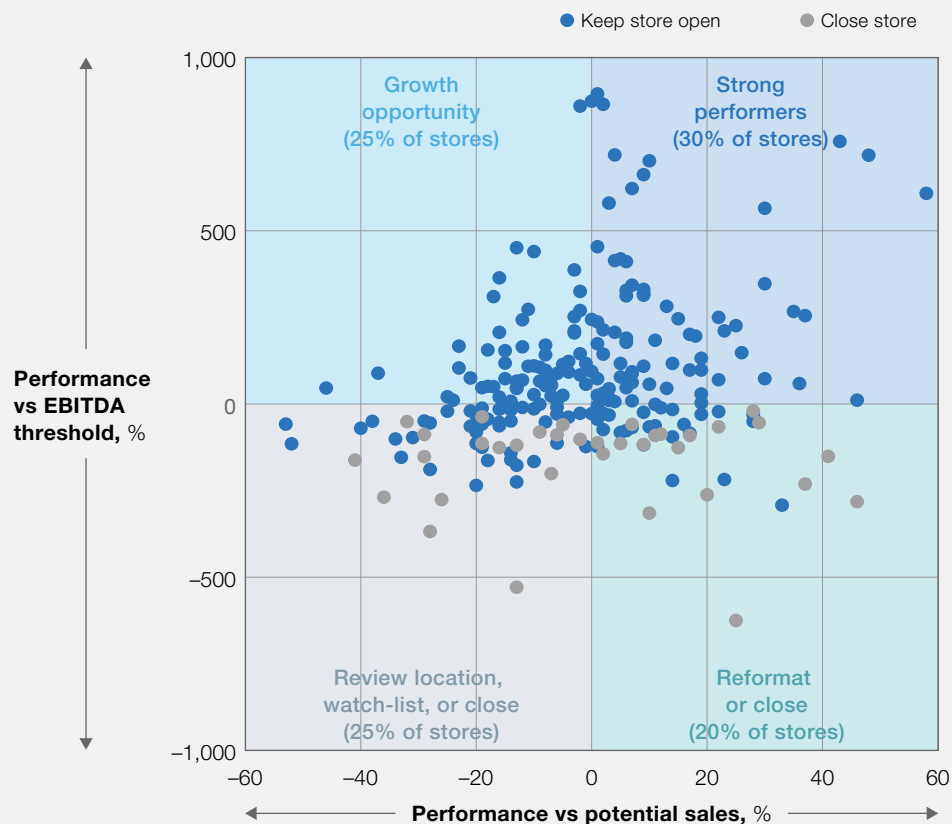The team was also able to isolate the unique factors that contribute to a strong e-commerce halo. It found that, in general, a store has a strong e-commerce halo if it is a larger store located in an area with a high proportion of young and urban professionals. Other, more surprising factors that contribute to a strong e-commerce halo: being far from other same-brand stores, being in a high-traffic retail environment such as a high-quality mall or a power shopping center, and having low tourist spend (which means most of the store's customers live or work nearby).

The retailer used these insights to identify which stores weren't living up to their sales and profit potential (Exhibit 3) and which micromarkets contained untapped growth opportunities. Further analysis revealed that the retailer could optimize the

Exhibit 3

A retailer can categorize stores into four groups based on sales potential and profitability.

Illustrative example

Profitability vs potential sales

● Keep store open   ● Close store

Growth opportunity (25% of stores)

Strong performers (30% of stores)

Performance vs EBITDA threshold, %

Review location, watch-list, or close (25% of stores)

Reformat or close (20% of stores)

Performance vs potential sales, %

omnichannel value of its store network and achieve a 20 percent gain in EBITDA by closing, relocating, or reformatting stores (for instance, turning a full-priced store into a digital showroom).

The retailer then created market-level "battle plans" for its store network: which stores to reformat or close, where to increase its presence either via new stores or deeper wholesale penetration, and what the sequence and scope of its investments would be.

Getting started

In kicking off a geospatial analytics effort, every retailer will have a different starting point. We recommend that companies first conduct an internal inventory of data availability and advanced-analytics capabilities.

Some retailers have limited data (for example, low visibility into wholesale accounts), siloed business units, and only a handful of data scientists and analysts, if any. These retailers should build their minimum data requirements and consider partnering with external providers or acquiring analytics capabilities outright.

On the other end of the spectrum, some retailers already have extensive external data partnerships, consistent and reliable data-sharing processes with their wholesale accounts, and senior management focused on omnichannel success. Such retailers can opt to build a strong data-science team with experience in geospatial analytics. That team would be tasked not just with performing the analyses, but also with generating useful insights that can be easily integrated into real-time business processes and decision making.

Regardless of their "build, buy, or partner" decision, retailers must constantly strive to break down business silos. If the heads of the retail, e-commerce, wholesale, marketing, real-estate, and finance functions all operate independently of each other and have few or no cross-cutting goals or initiatives, the company as a whole won't be able to make the best omnichannel decisions.

In our experience, retailers can quantify performance gaps, uncover growth opportunities in their go-to-market strategy, and reap early wins from advanced geospatial analytics within 6 to 12 months—particularly when an empowered, cross-functional team is leading the charge. Successful pilots in one or two markets can quickly build buy-in for global rollout. By harnessing the power of geospatial analytics, retailers can capture the omnichannel customer—which, in the near future, could very well be the only kind of customer there is. ■

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