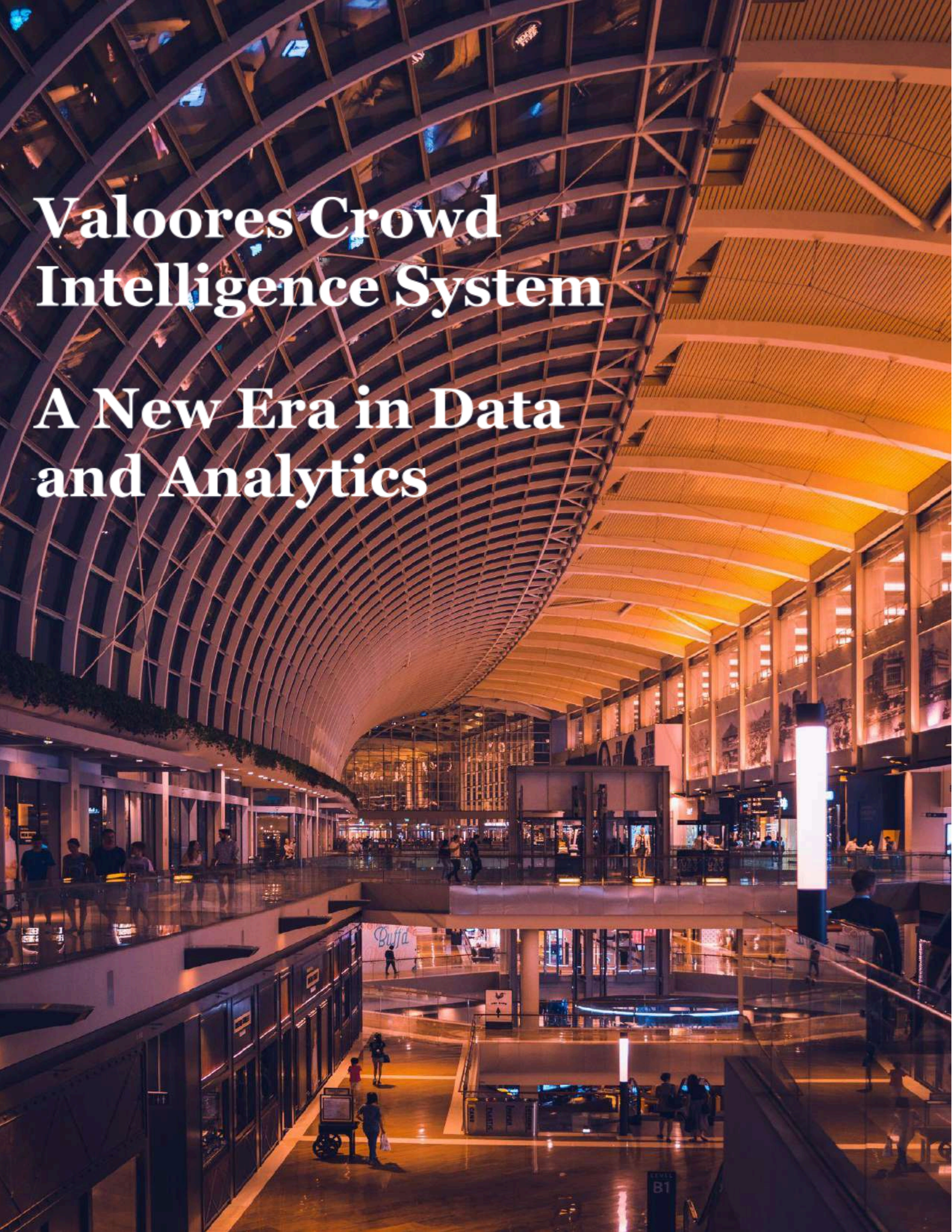

Valoores Crowd Intelligence System

A New Era in Data and Analytics

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Introduction

The wave of store closures across the retail sector continues. In 2017 alone, more than 7,000 stores went dark in the United States, 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. 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.

Some retailers face limitations in terms of data availability, such as minimal visibility into wholesale accounts, fragmented business units, and a lack of dedicated data scientists and analysts. Such retailers must establish their minimum data requirements and contemplate strategic options like partnering with external providers or acquiring analytics capabilities outright.

Regrettably, retailers frequently fall into the trap of making misguided choices when it comes to store closures, inadvertently exacerbating their business challenges. Additionally, they often overlook valuable opportunities to expand their market presence and unlock growth. The primary cause behind these missteps lies in the utilization of antiquated metrics. Many retailers persist in relying on a combination of trend analysis and "four-wall economics" to evaluate store performance. Essentially, they primarily consider the sales and profits generated within the confines of each store, without accounting for its impact on other channels. Consequently, this assessment influences other critical decisions such as payroll, labor coverage, and even inventory selection. However, contemporary consumers engage in cross-channel shopping behavior. They might physically visit stores to examine products and subsequently make online purchases, or they may research items online before buying them in-store. In this evolving landscape, traditional four-wall metrics prove, at best, incomplete indicators of a store's true potential.

The Evolving Role of Physical Stores in Retail and the Power of Advanced Geospatial Analytics

The traditional concept of a physical store has transformed significantly, going beyond a mere transactional space for purchasing products. Nowadays, stores serve multiple roles, such as being experiential showrooms, convenient fulfillment centers for online orders, places for social interactions, or sources of inspiration. A store's performance cannot be solely judged by its sales and profits within its four walls, as it can contribute significantly to a retailer's overall success in various ways.

Retailers have long been leveraging different datasets, including point-of-sale information, demographics, and market trends, to understand customers and enhance their services.

However, with the emergence of new data types and sources, retailers now have the opportunity to gain a much deeper understanding of consumers and markets. The availability of opt-in e-receipt programs and anonymized mobile-phone location data has provided retailers with unprecedented access to consumer behavior data. Aggregated data from these sources not only reveals the quantity but also the quality of customer traffic. This valuable information enables retailers to gain detailed insights into how people move and interact within a market, as well as their behavior across offline and online channels. What's more, the increased analytical capabilities powered by machine learning models further enhance retailers' ability to extract granular, actionable insights from big data assets, particularly at the micro market level.

Advanced geospatial analytics has emerged as a secret weapon for retailers, enabling them to obtain a more accurate assessment of each store's total economic value and make informed decisions about their presence. By harnessing the power of geospatial analytics, retailers can uncover hidden opportunities, optimize their market presence, and drive strategic decision-making in the dynamic retail landscape.

How Does VCIS Use Predictive Geospatial Analytics?

Based on experience, retailers have the potential to identify growth opportunities in their go-to-market strategy, quantify performance gaps and achieve early successes through the implementation of advanced geospatial analytics within a certain timeframe. This is especially true when driven by an empowered, cross-functional team. Successful pilot initiatives in a couple of markets can swiftly generate support for a global rollout. By harnessing the capabilities of geospatial analytics, retailers can effectively capture the omnichannel customer, which may soon become the predominant customer type.

The integration of advanced geospatial techniques and machine learning, coupled with cutting-edge consumer behavior data, is revolutionizing retailers' decision-making processes. These powerful tools enable retailers to make more informed choices regarding the expansion or contraction of their store networks.
Furthermore, they assist in creating store-level action plans to enhance performance. Additionally, retailers are utilizing these valuable insights to mobilize their sales force and prioritize their investments, driving overall business growth.

What Consumer Mobility Data Offers?

Customer mobility data provides us with an aggregated and anonymized view of people's daily movements, including their residential areas and the location of their devices during the night. Numerous providers offer a wide range of human mobility data; VCIS's Patterns data offers valuable insights, particularly regarding the origin of visitors to a store. For each point-of-interest within our system, we can identify the corresponding census block group where visitors reside and obtain the visitor count from that particular block group. Unlike other mobility providers that often provide raw latitude/longitude ping data, VCIS performs the essential tasks of aggregation and data cleansing on our behalf.

This data proves immediately valuable when utilized alongside appropriate geospatial tools.
Each row within the dataset represents a store or brand location, accompanied by visitor information. By plotting these visitor block groups on a map, the results are astounding. Instead of relying on simplified drive times or buffer shapes, we gain a much more accurate depiction of a store's trade area. We can visually observe the specific regions from which people are visiting. This allows us to acquire insights into the characteristics and variances among customers at each location.

How Retailers Use Geospatial Data and Location Analytics

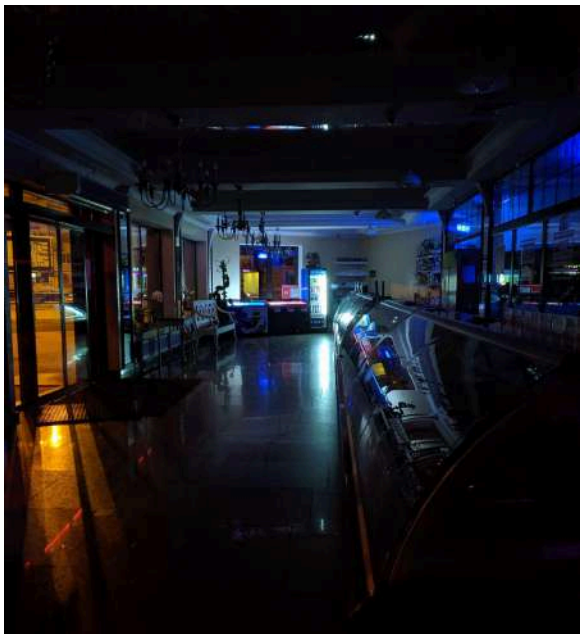
1. **Site Analysis and Planning**

The ongoing digital transformation in the retail industry necessitates a proactive approach towards brick-and-mortar expansion. Making informed decisions regarding expansion requires leveraging mobility data, understanding consumer preferences, and identifying locations with high growth potential for cultivating loyal customer bases. Geospatial solutions play a vital role in unlocking new markets, enhancing conversion rates, and boosting foot traffic by enriching analyses with geodemographic, socio-economic, and consumer expenditure data. By utilizing mapping solutions, retailers can visualize data that may be overlooked when relying solely on traditional charts and graphs. Today's business intelligence software solutions often incorporate these mapping capabilities, further enhancing the effectiveness of data analysis and strategic decision-making.

2. **Last Mile Delivery**

The profitability of supply chains relies heavily on the efficient delivery of goods through optimal resource allocation. Geospatial technology offers the necessary tools not only to track shipments but also to design cost-effective routes while minimizing

vehicle maintenance and reducing the carbon footprint. Furthermore, it plays a crucial role in identifying the ideal operational locations, as an increasing number of logistics companies are strategically moving network operations and distribution hubs closer to consumers.



3. Market Segmentation

In today's highly competitive market, knowing your customers is paramount, especially when capturing their attention amidst the overwhelming influence of social media. Geospatial technology provides invaluable insights to address vital marketing questions: Where can we find our most valuable customers? Which locations yield the best results? How can we analyze the purchasing preferences of our loyal customer base? By integrating diverse data sources, creating predictive sales models, and anticipating the impact of new competitors, businesses can gain a comprehensive understanding of their market segments and tailor their marketing strategies accordingly.

4. Service Area Qualification

For quick-service restaurants, profitability hinges on efficiently serving the local clientele with the right menu options in a convenient and timely manner. "Know your customer" entails understanding their discretionary income, geodemographic composition, and travel distance preferences. Moreover, with the increasing adoption of delivery services by QSRs, it becomes crucial to assess the ability to serve customers promptly. Geospatial technology facilitates consumer targeting and offers e-commerce options such as address validation and type-ahead functionality, enabling QSRs to understand serviceability and reduce cart abandonment rates effectively.

5. Customer Insights

Having a holistic view of each customer is crucial in today's highly mobile market. Retailers need to bridge the gap between physical and digital channels to provide an "endless aisle" experience, allowing customers to order online, in-store, or access out-of-stock options. Geospatial solutions empower retailers

to analyze transaction locations, enabling the marketing and sales teams to identify optimal points of sale (POS) for customer success. By integrating physical and digital touchpoints seamlessly, retailers can enhance merchandising and pricing strategies, ensuring the right products reach the right consumers at the right time and place.

6. **Tax Jurisdiction Assignment**

The complexity of tax boundaries, compounded by the addition of special purpose tax districts in small geographies, poses challenges for businesses in determining accurate tax collections and payments. Geospatial technology and data become essential tools in this process by accessing tax district boundary files. These files help businesses understand the locations of their assets and the corresponding tax districts, ensuring proper taxation based on regular revenue reporting.