

# Big Data in Real Estate: Identifying Trends and New Consumer Behaviors

By Gina Lavery, Senior Vice President and Principal at Econsult Solutions, Inc., CREW Greater Philadelphia

Big data is one of those terms that goes hand in hand with discussions on the future of cities, the economy, and real estate. But what is it, really? Historically, the term has meant datasets that are very large and challenging to analyze through conventional methods; however, today big data generally refers to data that can be used for predictive models and trend analysis.

In real estate, big data is useful for a variety of applications including identifying retail and commuter trends, pricing rental rates and sale prices, and anticipating operating costs in buildings. A 2018 article on big data by McKinsey highlighted that “resident surveys, mobile phone signal patterns, and Yelp reviews of local restaurants can help identify ‘hyperlocal’ patterns—granular trends at the city block level rather than at the city level. Macroeconomic and demographic indicators, such as an area’s crime rate or median age, also inform long-term market forecasts.”<sup>1</sup>

Sources of big data come in four major categories:

- Sensors on connected devices and the Internet of Things (IoT), including data from buildings, cars, equipment, etc.
- Social media and cellular data
- Public data including property records and census data
- Transactional data such as rental rates, sales, and utilities

What does big data mean for commercial real estate? Here are a few use cases to understand the value of this new analytical tool for the industry.

## Predicting property values and rents

Advanced statistical analysis allows massive datasets on property characteristics such as uses, amenities, size, asking rental rates, and operating expenses to be blended with data on geographic and demographic dynamics to provide predictions on rental and sale prices for any real estate asset. You may be familiar with predictive pricing in real estate if you own residential property. Zillow’s head of artificial intelligence (AI), Andre Lopatenko, points to the massive volume of real estate data allowing companies like his to develop predictive models: “Using oceans of data from public sources and home-owners, Zillow currently runs millions of statistical models daily so users can find out the expected price of a house several months hence.”<sup>2</sup>

The same principles of statistical analysis are increasingly being used to estimate asking rents and property values for commercial assets as well as the value and potential of vacant land; however, these analyses are much more complex given the variety of additional factors. Other dynamics such as zoning, environmental issues, recent improvements, existing tenants, rent rolls and deferred maintenance also play a role in predicting commercial values. Big data may help tackle some of that, though the contextual knowledge of real estate professionals will remain a valuable component of valuing assets.

## Mobile data and geofencing

Anonymized mobile data is another huge cache of information, the value of which is just being understood and better leveraged in real estate. This data allows the industry to understand high-level trends like travel patterns (time of day, mode, route). Even more valuable, geofencing—the technique of defining a boundary to analyze mobile data—can be married with demographic and other available datasets to assess the characteristics of residents, workers and visitors in a specified area. The retail and hospitality industries have been at the forefront of using this technology not only to evaluate their customers’ spending patterns and shopping habits, but also to develop targeted marketing to current and prospective visitors.

## Big data looking ahead

The COVID-19 pandemic has shown that the demand for and value of big data has grown. Collectors of large retail datasets like Yelp and Open Table are democratizing access to their business and reservations data, providing a real-time look at the economic impacts of operating restrictions and closures. Transit agencies and state and local governments are examining residential and commuter patterns to plan for future ridership trends, anticipated service needs, and projecting new fiscal targets for their budgets. In the real estate sector, the early and quick adapters will be at an advantage. With consumer, business, and supply chain behaviors severely impacted for the foreseeable future, those that leverage big data and the insights into trends will be in the best position for adapting to new working conditions.

(1) <https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/getting-ahead-of-the-market-how-big-data-is-transforming-real-estate>

(2) [https://econsultsolutions.com/wp-content/uploads/2020/09/ESITL\\_Driving-ROI-through-AI\\_FINAL\\_September-2020.pdf](https://econsultsolutions.com/wp-content/uploads/2020/09/ESITL_Driving-ROI-through-AI_FINAL_September-2020.pdf)