Beyond numbers: Using Data Intelligence to identify investment opportunities in real estate

AI-driven Data Intelligence is transforming real estate by uncovering previously hidden trends. Data Intelligence enables informed decisions by combing vast datasets like those provided by multiple listing systems to reveal insights like trends in yield compression.

"Data is the new oil" was a constant refrain propounded by many experts a decade or so ago. You rarely hear the expression now, partially because the metaphor has become clichéd but also because, strictly speaking, data has no intrinsic value.

Simply expressed, more data does not necessarily equal better insights. You need the ability to refine and interrogate data to deliver actionable insights before value can be derived. Rapid improvements in artificial intelligence (AI) over the past decade mean that the underlying principles of the "data is the new oil" mantra are now being realized.

In the real estate industry, the potential of data intelligence to identify patterns and trends is causing the traditional strategic setup to adapt rapidly. But before the era of big data, making informed property investment decisions based on such factors as initial yield was hard to quantify. This was because a centralized system for collecting and sharing relevant data was missing, which made the task of judging viable investments challenging.

The real estate market consists of private individuals all paying diverse amounts in rents or prices for housing. This complicated the task of finding reliable comparables. Furthermore, residential real estate investments are characterized by relatively long holding periods, adding another layer of complexity to evaluation. Finally, the difficulty in comparing deals arises from the unique nature of each property and transaction, making it hard to draw direct parallels or predict future returns with confidence.

The value hidden in 10+ million listings

This changed with the creation of Multiple Listing Systems (MLSs). Real estate professionals use MLSs to manage the buying and selling of properties, and they have become critical tools for gaining insights into property valuations. These systems collect listed properties on a digital platform, which significantly expands a property's reach to potential buyers compared to traditional newspaper listings.

MLSs have evolved to offer a level of information that was previously unknowable. They now provide an organized and exhaustive view into the market, giving sellers and buyers the knowledge needed to make transactions with greater confidence.

By applying data intelligence to these unstructured datasets, we can now gain actionable insights. Previously, such patterns or trends would have remained hidden or, at best, acted upon based on a hunch. One example of these insights is identifying yield compression, which is the process how the yield (or return) on investments decreases over time. Initial yields are a popular indicator of financial performance partly because they are easy to calculate and interpret.

Yield compression describes a narrowing of the net initial yield (NIY) – the annual income from the property (such as rent) – divided by the property's current market value or purchase price. Yield compression is seen when property values increase while the income from those properties remains relatively stable or does not increase at the same rate, which reduces the yield.

According to our research, yield compression has defined markets for the past decade. Our analysis examines more than 10 million listings in 235 German cities and provides a detailed look into the performance of net initial yields (NIYs) across different segments, focusing on the comparison between newly built and existing apartments.

Between 2013 and 2022, NIYs contracted significantly, indicating a tightening market with increasing property values relative to rental income. Specifically, NIYs for existing apartments saw a decrease of 250 basis points (bps), compared to a drop of around 150 bps for newly built apartments. This highlights the stronger compression in yields for existing properties and points to greater variability in their performance.

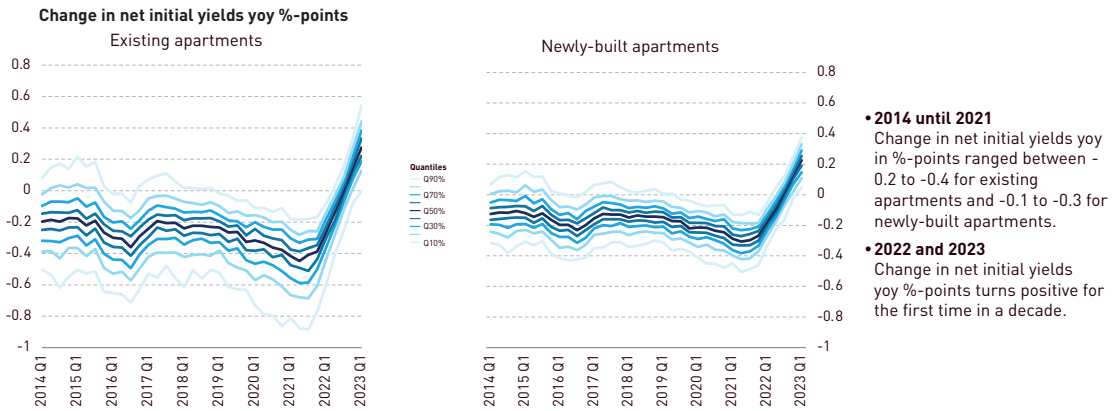
This could be due to several factors, including the age and condition of the property, location, and market demand, which influence existing properties more than newly built ones. All of this is essential background for investors. What is also notable is that the data indicates a slow rise in NIYs since the second quarter of 2022, signalling a potential easing of yield compression (see Figure 1). This may be a turning point in the dynamics that have dominated over the last decade and have implications for investment strategies and market performance.

Such insights would have been impossible without the technologies and methodologies, including data engineering, machine learning approaches, and much more, that combine to create AI. Furthermore, AI and MLS data means we can quickly see that the recent market correction primarily impacts property prices. At the same time, rentals' compound average growth rate (CAGR) has tended to remain stable. This trend is evident when analysing the rolling annualized CAGR for asking rents and prices of both existing and newly built apartments from Q1 2013 to Q1 2023.

What is happening in Germany?

Our analysis shows that the yield premium in Germany, represented by the gap between the yields of real estate investments and ten-year German government bonds, has seen a notable decrease since the beginning of 2022 (Figure 2.). This is marked by a sharp increase in the yields of ten-year German government bonds since early 2022. This rise in yields typically indicates a shift in the risk-free rate, affecting the entire investment landscape, including real estate.

Figure 1: Noticeable turning point in the net initial yields development curve in 2022.



Source: PATRIZIA, VALUE-Marktdaten, Refinitiv

Concurrently, there was a decrease between the net initial yields of real estate for both existing and newly built apartments and the ten-year German government bond yields. This 'GBond-Yield Gap' narrowing is at its lowest level since 2013. This indicates that the premium investors demand for investing in real estate over the relatively risk-free government bonds has decreased.

Furthermore, the data highlights that the GBond-Yield Gap remains significantly higher for existing apartments compared to new builds. This suggests that investors perceive a higher risk and, consequently, demand a higher yield premium for existing apartments over newly built ones, which are perhaps seen as less risky due to newer construction, fewer maintenance issue, and more desirable locations or amenities.

The shrinking yield premium in the German real estate market also reflect broader economic and financial trends. Rising government bond yields can increase borrowing costs and impact investor expectations,

leading to adjustments in the real estate market.

Investors are now finding there is a closer yield alignment between traditionally 'safe' government bonds and riskier real estate investments, indicating a shift in the risk-reward profile of real estate assets relative to fixed-income securities. This could influence investment strategies, potentially leading to a re-evaluation of real estate's attractiveness compared to other asset classes.

Further cluster insights with AI

Interrogating MLS data can reveal many other trends and insights, such as the spatial distribution of NIYs. As discussed, the yield premium demanded for existing apartments is evident in the German real estate landscape. Examining the data another way, we see seven distinct market clusters emerge. These clusters provide insights into the investment landscapes across German cities, showcasing how yield dynamics differ (see Figure 3.).

The first cluster consists of top-tier cities such as Berlin, Hamburg, and Munich and is characterised by the lowest NIYs for both existing (Ø2.92%) and newly built (Ø2.25%) apartments, with an average spread of 0.72%. These cities are known for their robust economic bases, international appeal, and significant demand for residential and commercial real estate, contributing to lower yields.

Cluster 2 cities like Heidelberg, Nuremberg, and Mainz present slightly higher NIYs for existing (Ø3.24%) and newly built (Ø2.60%) properties, with an average spread of 0.65%. Cluster 3 cities like Dresden, Baden-Baden, and Bremen show further increased NIYs for existing (Ø3.52%) and newly built (Ø2.95%) properties, with an average spread of 0.61%.

Generally, lower yields (as seen in the top-tier cities) indicate higher property values, which are often linked with strong market demand. Conversely, higher yields suggest more affordable entry points but potentially higher risk or lower growth prospects. This is useful information for investors. Those wanting stability and lower risk, albeit with lower returns, should investigate top-tier cities. Alternatively, higher-yield cities offer growth opportunities, appealing to those willing to accept potentially higher risks for better returns.

Unlocking new dimensions in real estate investment

This highlights the analytic capabilities AI has brought to bear on the real estate industry, but the technology can do far more. In addition to investigating MLSs' data, AI can identify phenomena across multiple databases.

For example, according to analysed data from the Agentur für Arbeit (German Federal Employment Agency), and Oxford Economics, there's a correlation between the spread in NIYs of existing and newly built apartments and economic indicators within markets. This suggests that markets with high NIY spreads are more likely to experience poor labour market conditions and slower GDP growth rates.

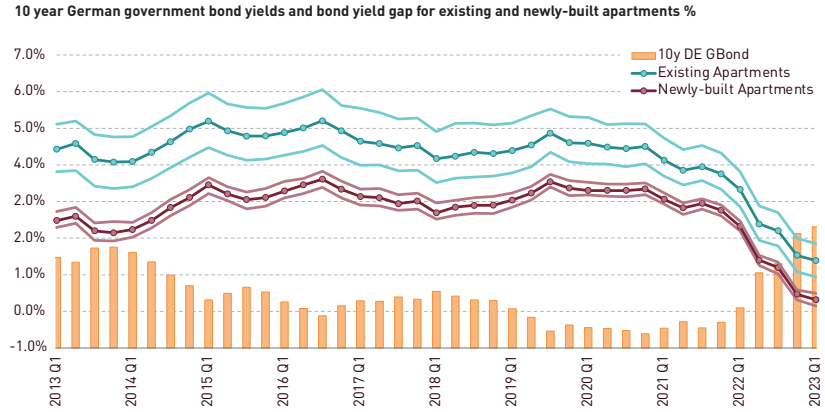
A higher NIY spread indicates a significant difference in the return on investment between existing and newly built apartments, which could reflect market volatility, higher investment risk or a less mature real estate market. This can correlate with weaker economic performance and slower job market growth.

However, markets with low NIY spreads between existing and newly built apartments have a more positive economic outlook where substantial growth in the number of households and their income levels might be expected. A lower spread suggests a more stable and mature market environment, where both types of properties – existing and newly-built – are seen as equally viable investments. This stability often accompanies stronger labour markets and economic growth, making these areas attractive for both living and investing.

Investors could find markets with low NIY spreads more attractive due to their stable returns and lower risk profile, alongside positive economic indicators. These markets can offer safer long-term investment opportunities.

Understanding yield premiums and spatial trends is crucial for investors to optimize their portfolios. PATRIZIA has been investing in AI-driven Data Intelligence for several years and is shaping the way we understand markets. By analysing factors like yield premiums, investors can make more informed decisions to maximize returns while managing risk effectively. All these insights are now available because of AI-driven Data Intelligence, and, in the long term, it may make data far more valuable than oil.

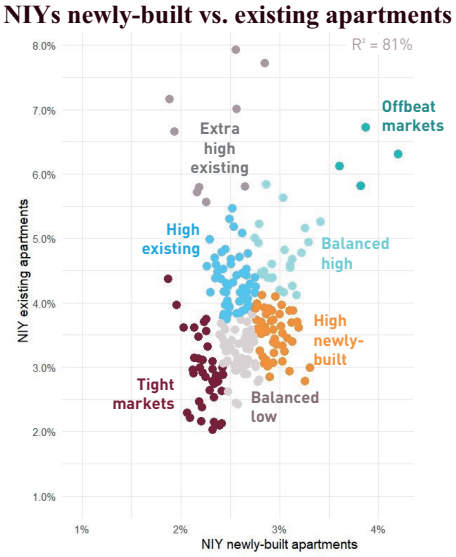
Figure 2. The yield premium in Germany has decreased substantially since 2022.



- Sharply rising 10y German GBond-Yields since the beginning of 2022
- Decreasing deviation of Net Initial and 10y German Gbond-Yields: GBond-Yield Gap for newly-built and existing apartments has fallen to lowest level since 2013
- The GBond-Yield Gap is significantly higher for existing apartments than newly-built apartments

Source: PATRIZIA, VALUE-Marktdaten, Refinitiv

Figure 3. Market clusters according to net initial yields in Q1 2023.



Cluster NIYs %

Cluster	Ø Existing	Ø Newly-built	Ø Spread	Top 3 city examples
	2.92	2.25	0.72	Berlin, Hamburg, Munich
	3.24	2.60	0.65	Heidelberg, Nuremberg, Mainz
	3.52	2.95	0.61	Dresden, Baden Baden, Bremen
	4.33	2.53	1.79	Chemnitz, Dortmund, Erfurt
	6.59	2.34	4.25	Gera, Herne, Bremerhaven
	4.71	3.01	1.70	Oberhausen, Salzgitter, Mühlheim
	6.24	3.88	2.36	Greifswald, Cuxhaven, Meißen

- With decreasing NIYs from northwest to southeast, seven clusters emerge.
- TOP7[1] Cities are tight markets.
- In B- and C-Cities NIYs are often slightly higher.

Source: PATRIZIA, VALUE-Marktdaten, Refinitiv

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Marcelo heads the Data Intelligence department, which is part of the Investment Strategy and Research team at PATRIZIA. He is responsible for the global portfolio of machine learning solutions and dashboards that support strategic investment decisions. Marcelo holds a Ph.D. (Dr.) and a Habilitation (PD) with his major fields being statistics, econometrics, machine learning and real estate. His papers have been published in international journals and he was awarded the RICS best paper award, the German real estate research award, the Emerald best reviewer award and the AREF research award, amongst others. Marcelo teaches Real Estate Econometrics at IRE|BS in Regensburg and TUM.

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Anett joined PATRIZIA in September 2020 as a data scientist. She is responsible for building and estimating statistical models to find hidden patters and signals in data. She employs sophisticated machine learning algorithms to be used in predictive and prescriptive research questions. Anett studied statistics at the University of Munich and received her doctorate at the University of Augsburg for her thesis on the measurement of investors' preferences regarding sustainable and responsible investments.

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