Data-Driven Strategies for Competitive Advantage
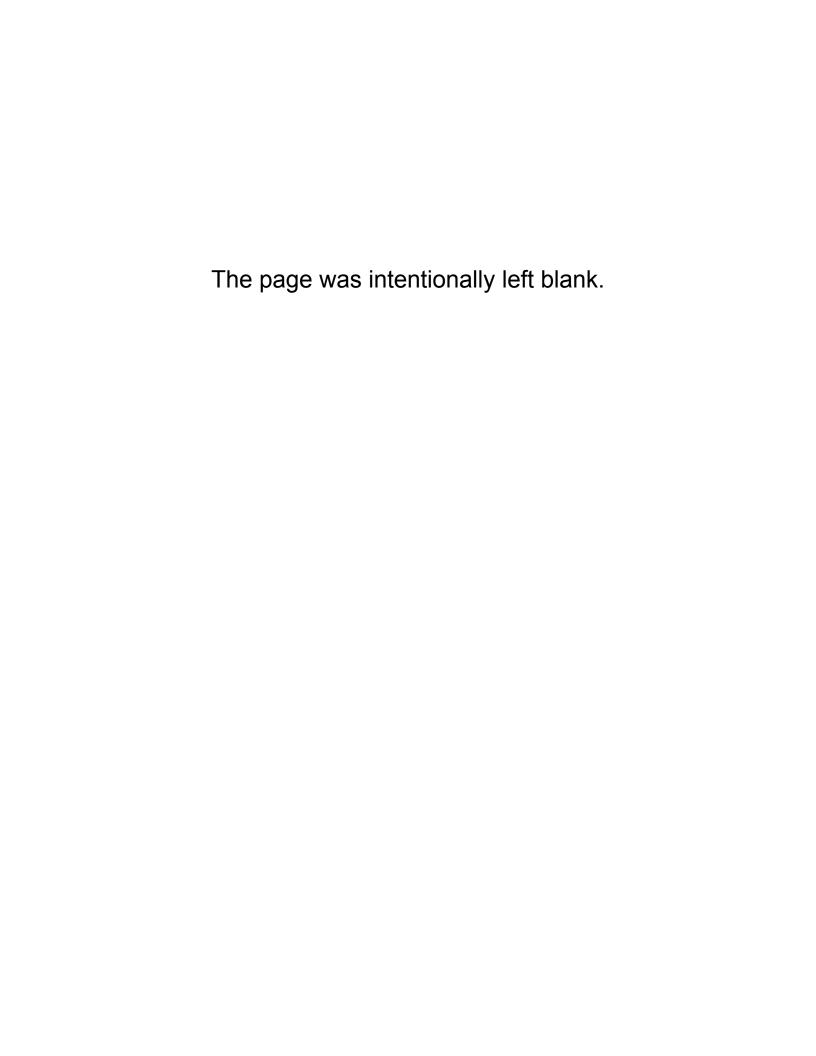
Optimizing Sell Price, Market Timing, and Agent Performance in Marketplaces and SaaS Platforms in the Residential Real Estate Sector

Author | Ayana Andrews-Joseph

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Data-Driven Strategies for Competitive Advantage

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Prepared by: Ayana Andrews-Joseph, MDA, MPH

Table of Contents

1. Executive Summary

This report outlines a data-driven strategy for **marketplaces and SaaS platforms in the residential real estate sector** to leverage **Sell Price** and **Days on Market (DOM)** as critical metrics for enhancing agent productivity, user satisfaction, and competitive differentiation. By establishing a baseline model using linear regression—and identifying future modeling opportunities such as logistic regression—this report surfaces actionable insights in pricing accuracy, demand cycles, and engagement behaviors, particularly among users with elevated access levels and mobile-first usage patterns.

Key insights include:

- Properties initially priced close to their eventual sell price tend to have shorter DOM.
- Engagement rises leading up to weekends, especially among family-oriented buyers.
- Users with enhanced access and mobile-first behaviors exhibit stronger platform engagement.

These findings are grounded in industry best practices and aligned with research from the **National Association of Realtors (NAR)** and the **Real Estate Standards Organization (RESO)**.

2. Business Application and Key Insights

Leveraging Sell Price and Days on Market (DOM)

Days on Market (DOM) and initial pricing accuracy are foundational metrics for interpreting both agent performance and buyer responsiveness. DOM reflects not only time-to-sale but also market alignment, pricing confidence, and timing strategy—particularly in environments where listing events are cyclical or fragmented.

In practice, DOM is not a fixed or uniform value. Properties are often reactivated, reassigned, or relisted—each action potentially resetting timestamps and disrupting a continuous view of the property lifecycle. For accurate analysis, DOM must be strategically defined according to the business or analytic objective. Common approaches include:

- ***Original*** *Listing DOM* — Total time from the property's first listing appearance to final sale, across all listing events
- ***Cycle-Based*** DOM — Time within a single listing cycle, restarting with each relist, price refresh, or agent reassignment
- ***Contract-Linked*** DOM — Time from the most recent listing event to the start of an accepted offer or contract

Accurate initial pricing—especially when paired with the appropriate DOM definition—can signal strategic foresight on the agent's part, alignment with buyer demand, and reduced time-to-sale. Together, these metrics serve as powerful levers for evaluating listing success, informing dynamic pricing strategies, and guiding platform-level optimizations that support stronger outcomes across both B2B and B2C user groups.

Patterns in Demand and Agent Engagement

Cyclical-weekly engagement patterns show consistent spikes on Thursdays and Fridays across both agent and consumer activity. The recurring upticks align with established industry behavior and suggest timing strategies, where agents often prepare listings and communication in advance of weekend buyer interest. This pattern is commonly referred to as "Follow-Up Thursdays"—aligning with industry practices and supporting the strategic timing of updates and promotions. The behavior is especially relevant for family buyers who tend to be more active on weekends.

Seasonal engagement trends also emerge, particularly after major holidays and during summer months—when families typically have more time and flexibility for real estate decisions. These insights point to clear opportunities for timing-based campaigns, listing refresh cycles, and feature placement aligned with natural demand rhythms.

User Segmentation and In-App Engagement

Analysis indicates that users with enhanced access levels and mobile-first agents exhibit higher overall platform activity. These user segments interact more frequently with listings, features, and tools—suggesting that product strategies focused on mobile workflows and tiered access benefits may yield stronger adoption, retention, and return on investment (ROI).

Consumer-facing users, particularly those using access tools such as mobile apps, show heightened interaction during key time windows—especially evenings and weekends. In contrast, agent activity tends to increase earlier in the day, potentially to align updates with peak browsing hours. This pattern emerged

consistently in the analysis and supports the interpretation that both groups engage based on role-specific rhythms and lifestyle-driven usage.

These behavioral trends highlight the value of continued segmentation strategies that distinguish between B2B and B2C usage, and support prioritization of in-app-first (e.g., mobile-first) experiences.

3. Project Summary

Objective

To build a foundational analytic framework that captures pricing accuracy, agent performance, and buyer demand trends using internal listing and engagement data.

Data Context and Background

The dataset includes variables tied to property listings, timestamps, price changes, user access level or tier (where applicable), and user/device-level engagement. The analysis incorporates domain-specific business rules and aligns with external research standards from NAR and RESO.

Methodology and Approach

- **Linear Regression** was used to explore initial variable relationships.

- **Multiple Linear Regression** models were planned to incorporate DOM, engagement metrics, and listing timing.

- **Key features** were engineered to normalize attributes across agent types, regions, and timeframes.

  Future modeling opportunities include Logistic Regression (for categorical outcomes such as user segmentation or membership behavior analysis).

4. Detailed Findings

Pricing Accuracy and Demand Cycles

Properties priced closer to their final sale price generally sold faster. This pattern suggests that better initial pricing can reduce time on the market and improve platform credibility. Demand cycles also show distinct weekly peaks in user interaction, particularly leading into weekends. These patterns support timing strategies for listing updates and campaign launches that align with buyer behavior.

Elevated Engagement and Cross-User Activity Patterns

Users with elevated engagement levels or enhanced access features (where applicable) exhibit stronger activity across logins, listing interactions, and use of platform tools. These patterns are particularly visible in "Follow-Up Thursdays," where both listing updates (often agent-driven) and property views (typically consumer-driven) spike ahead of weekend browsing and showing activity.

This reflects a distinct crossover between B2B (business-to-business, e.g., agents and brokers) and B2C (business-to-consumer, e.g., homebuyers and renters) engagement behaviors. Recognizing these shared

activity windows presents a unique opportunity to coordinate product features, messaging, and support tools to optimize both sides of the platform ecosystem.

Seasonal and Behavioral Trends

Seasonal engagement trends emerge, particularly after major holidays and during summer months—when families typically have more flexibility and availability for property searches. These insights point to timing opportunities for targeted campaigns, listing refreshes, and feature placement aligned with natural demand rhythms.

5. Recommendations

Platform and Product Enhancements

- **Integrate Pricing Accuracy Insights**
  Feed findings from pricing analysis into agent dashboards to support more accurate list-price decisions aligned with real-time market demand.

- **Invest in Real-Time Listing Infrastructure**
  Prioritize backend systems that support frequent, accurate updates to meet expectations for current, competitive listings—per RESO and NAR standards.

- **Create Tools for Mobile-First Workflows**
  Build or refine platform features specifically for mobile-first agents, such as rapid listing updates, SMS-enabled lead responses, and on-the-go dashboard access.

Marketing and Experience Strategy

- **Segment Users by Engagement Profile and Access Tier**
  Tailor platform experiences by segment—high-engagement vs. casual users, mobile-heavy vs. desktop-preferred—to boost retention and drive smarter feature adoption.

- **Develop Targeted Campaigns for Enhanced User Tiers**
  Highlight unique platform benefits for users with elevated access levels (commonly offered in premium tiers), especially features that support mobile engagement and time-sensitive workflows.

- **Align Messaging with Behavioral Timing**
  Use observed cycles—like the Thursday-Friday ramp-up—to time marketing touchpoints, listing refreshes, or promotional pushes ahead of peak buyer activity.

Behavioral Analytics and Modeling

- **Monitor Cyclic Patterns for Continuous Optimization**
  Keep tracking behavioral markers like "Follow-Up Thursdays" to tune platform algorithms, campaign timing, and product releases around agent and consumer rhythms.

- **Expand Modeling with Segmentation Variables**
  Future iterations should explore logistic modeling using agent tiers, mobile usage %, and listing churn rates to predict performance and engagement likelihood.

- **Run A/B Tests on Timing and Placement**
  Validate platform assumptions about user activity patterns by testing listing visibility or campaign triggers across different weekdays and hours.

6. Technical Analysis

Baseline Model Development

- **Linear Regression** was used to explore relationships between individual predictors—such as original list price, property size, and Days on Market (DOM)—and final sale price.
- **Multiple Linear Regression** incorporated additional variables including DOM, user engagement metrics, and listing timelines to account for interaction effects and improve model precision.
- Future modeling opportunities include **Logistic Regression**, which may help evaluate categorical outcomes such as the likelihood of conversion, user segment classification, or listing success tiers.

Evaluation Metrics

- **R-squared / Adjusted R-squared** – Measures the proportion of variance explained by the model, with the adjusted version accounting for the number of predictors.
- **MAE (Mean Absolute Error) / RMSE (Root Mean Squared Error)** – Evaluate prediction error; RMSE penalizes larger errors more heavily, while MAE provides a straightforward average of prediction deviations.
- **Residual Analysis** – Used to validate model assumptions (e.g., linearity, homoscedasticity) and detect potential outliers or bias in prediction results.

7. Considerations and Limitations

- **User Access Tier Imbalance**
  The dataset is skewed toward users with enhanced account access, which may bias engagement-related insights and underrepresent patterns among users with more limited or basic access levels.

- **Update Frequency**
  Listings with high modification rates (e.g., multiple price or status changes) may require normalization or grouping strategies to avoid overcounting related events.

- **Real-Time Data Needs**
  Delayed or missing timestamps, particularly around listing status updates, impact the precision of time-based engagement analysis and model responsiveness.

- **Seasonal Trends**
  Preliminary patterns suggest seasonal effects (e.g., post-holiday activity or summer family searches), but these require extended timeframes and more advanced time series modeling to confirm reliably.

8. Broader Industry Applications

Although this framework was developed within the real estate context, it is highly transferable to other industries managing large-scale, time-sensitive, user-interactive systems.

Industries That Could Benefit

1. **E-commerce** – Optimizing pricing and promotion timing
2. **Travel/Hospitality** – Booking windows, lead times, and yield management
3. **Automotive** – Time-on-lot and buyer responsiveness
4. **Healthcare/Health Tech** – Appointment and patient follow-through
5. **Job Platforms** – Application-to-hire timing, candidate engagement

This analysis supports data teams and product managers in leveraging behavioral signals and pricing strategies for more adaptive, predictive systems.

Platform List Reference
For categorized platform examples and use cases, see the Appendix – *Platform Examples and Use Cases* section.

9. Appendix

Key Terms and Definitions

- **Original Price** – First published price
- **Sell Price** – Final transaction amount for a property
- **Price/SqFt** – Normalized pricing metric based on property size
- **DOM (Days on Market)** – Number of days a property is listed before sale.

Note: DOM may reset based on relisting, agent changes, or contract events. Define DOM based on the analytic goal. *See Section 2 for breakdowns of:* **Original Listing, Cycle-Based, and Contract-Linked DOM**.

Calculations and Derived Metrics

- **Price Ratio** = `Sold Price / List Price`
- **MAE (Mean Absolute Error)** = average prediction error
- **RMSE (Root Mean Squared Error)** = square root of the average squared errors, giving more weight to large deviations
- **R-squared / Adjusted R-squared** = proportion of variance explained by the model (adjusted accounts for the number of predictors)

Platform Examples and Use Cases

Consumer-Facing (B2C)

- Zillow
- Realtor.com
- Redfin
- Trulia

Agent-Focused or SaaS

- BoomTown
- kvCORE
- Compass
- RealScout

Investor-Focused or Asset Analytics

- Avenue One
- Roofstock
- Opendoor
- Sundae

Infrastructure / Data Providers

- CoreLogic
- RESO-compliant MLSs
- RealPage
- Black Knight

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Prepared by:
A. Andrews-Joseph
Data Analyst, J&E Consultants © 2025