LTV Market Score Modeling:

ZIP Code Level Lending Risk Framework for Metro Los Angeles

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1 Abstract

This project presents a structured model to evaluate the strength of the market and the risk of lending at the ZIP code level in downtown Los Angeles. I generate a Market Score from housing market indicators and socioeconomic data and use a LTV adjustment framework to guide lending risk policies. Data sources include Redfin market data and U.S. Census median income estimates. The results highlight the importance of liquidity and activity over income in defining market health.

2 Introduction

In private real estate lending, Loan-to-Value (LTV) limits help manage portfolio risk. While individual property appraisal is standard, geographic indicators—especially ZIP-level market conditions—offer scalable risk insight. This project builds a scoring model using real estate metrics and demographic data to quantify the strength of the ZIP market and guide the LTV limits.

3 Data and Scoring Method

3.1 Sources

The analysis draws on housing market data spanning from 2017 through 2024, and incorporates median income estimates from the U.S. Census 2023 ACS 5-Year dataset, which reflects income conditions during 2022–2023.

- **Redfin ZIP Code Market Tracker (2017–2024)**: median sale price, days on market, homes sold, and price ratios.
- **ACS 2023 Table B06011 (U.S. Census)**: ZIP-level median household income (inflation-adjusted).

3.2 Market Score Construction

The Market Score (0–100) includes:

- 35% Sale-to-List Price Ratio
- 35% Homes Sold Volume
- 15% Median Days on Market (inverted)
- 15% Median Household Income

The Market Score was constructed using a weighted combination of real estate activity indicators and socioeconomic data, designed to capture both the liquidity and stability of the housing markets at the ZIP Code level. The score incorporates four primary inputs: the sale-to-list price ratio (35%), the volume of homes sold (35%), the median number of days on market (15%), and median household income (15%). The greatest emphasis is placed on liquidity measures, specifically the sale-to-list ratio and transaction volume, which directly reflect buyer competition, pricing power, and ease of exit, all of which are critical for the evaluation of private lending risk. The inclusion of days on market adds insight into transactional efficiency and market momentum, while income provides an economic baseline that supports pricing behavior but is not a primary driver of real estate turnover. These weights were not chosen arbitrarily, but rather, they reflect the core priorities of private lenders: identifying markets with strong demand signals and minimizing exposure to stagnant or distressed areas. The result is a scoring system that balances interpret-ability, operational relevance, and the ability to discriminate between Prime, Neutral, and Declining lending zones across Metro Los Angeles.

3.3 LTV Adjustment Framework

- **Level I – County Risk**: LA County = -2%, Riverside = -1%
- **Level II – Market Category**: +2% (Prime), 0% (Neutral), -5% (Declining)

LTV values after adjustment are constrained within a 60% to 75% cap to prevent overexposure, even in favorable markets. This multi-layered adjustment process allows lenders to

respond intelligently to both macro- and micro-geographic risk indicators while still honoring underwriting discipline and capital preservation goals.

4 Visual Analysis and Interpretation

4.1 Market Score Distribution

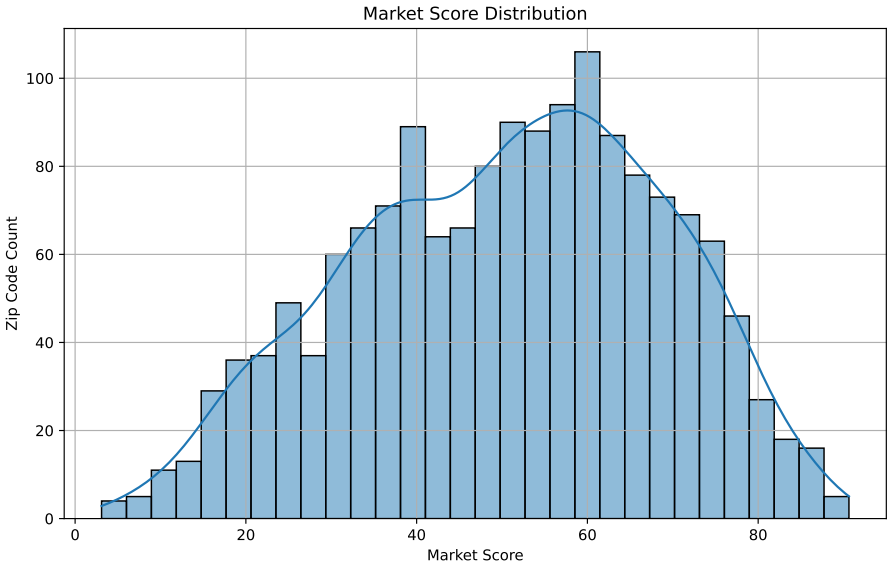

Figure 1: Distribution of Market Scores Across Metro LA ZIP Codes

Scores are normally distributed around the mid-range, with a modest number of ZIPs scoring very high or very low. This confirms that most markets are "Neutral" with clear outliers driving Prime and Declining categorization.

4.2 Max LTV vs. Market Score

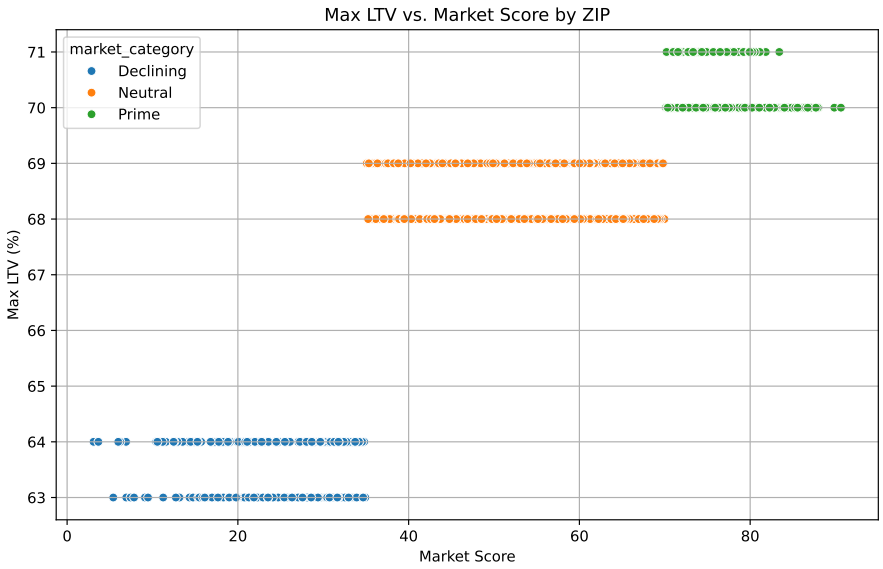

Figure 2: Maximum LTV vs. Market Score

As expected, maximum LTV increases with the Market Score due to the structure of the adjustments. ZIP Codes classified as "Prime" typically achieve LTV ratios in the 70–75% range, reflecting their favorable liquidity, pricing strength, and transaction volume. In contrast, 'declining' ZIP codes are restricted to a narrower range of 60 to 64%, reflecting the greater risk associated with soft demand, longer days on the market and weak price-to-list ratios. The step pattern in the plot confirms the effect of categorical adjustments layered county-level risk modifiers. In particular, the LTV schedule is deliberately conservative even in high-performing markets, ensuring that strong market dynamics justify modest leverage increases without compromising downside protection. This disciplined approach balances opportunity with prudence, reinforcing the framework's use as a practical risk buffer in private lending operations.

5 Key ZIP Code Results

5.1 Top 10 ZIP Codes by Market Score

ZIP	Market Score	Max LTV	Category	Median Income
91105	90.63	70	Prime	$91,447
91107	89.86	70	Prime	$57,509
91030	88.01	70	Prime	$73,363
90066	87.92	70	Prime	$60,593
91107	87.77	70	Prime	$57,509
90405	87.70	70	Prime	$75,495
91105	87.12	70	Prime	$91,447
91214	86.75	70	Prime	$62,194
90402	86.46	70	Prime	$91,710
91104	86.10	70	Prime	$47,648

These ZIPs consistently perform across all scoring inputs. They are highly liquid, support strong pricing power, and justify a maximum LTV of 70%.

5.2 Bottom 10 ZIP Codes by Market Score

ZIP	Market Score	Max LTV	Category	Median Income
92225	3.10	64	Declining	$22,621
92333	3.66	64	Declining	NULL
90057	5.41	63	Declining	$27,087
92301	5.99	64	Declining	$29,543
92240	6.22	64	Declining	$29,665
92254	6.91	64	Declining	$23,840
91204	6.93	63	Declining	$29,555
90011	7.44	63	Declining	$24,657
90270	7.84	63	Declining	$28,035
90304	9.10	63	Declining	$29,213

These ZIPs are characterized by low sales volume, sluggish turnover, and weak pricing power. Even modest incomes do not offset their soft market conditions.

5.3 ZIP-Level Adjustment Breakdown

ZIP	County	Score	Category	Income	C.Adj	S.Adj	LTV	Price	Sales	DOM
92254	Riverside	6.91	Declining	23,840	-1	-5	64	320,000	1	77
92508	Riverside	64.25	Neutral	54,421	-1	0	69	730,000	86	48
90277	LA	63.71	Neutral	78,560	-2	0	68	985,000	15	26.5
91790	LA	56.86	Neutral	36,732	-2	0	68	787,521	7	24
92252	Riverside	35.74	Neutral	29,443	-1	0	69	401,750	64	114

The LTV formula captures ZIP-specific risk with both market category and county profile. High-turnover ZIPs with neutral scores still receive higher LTV than slow-moving, low-score neighborhoods.

6 Conclusion

This project created a practical system for evaluating real estate markets at the ZIP code level in Angeles, focusing on key indicators that matter most to ltoers: sale-to-list price ratios, sales volumvolumeays on market. These metrics were combined into a Market Score that directly informs loan-to-value (LTV) decisions through considering county-wide economic risk and local market conditions.

The results demonstrated that neighborhoods with higher Market Scores, indicating stronger pricing power and faster sales,could support slightly higher LTV limits, while weaker markets required more conservative approaches. Notably, traditional factors like income levels showed less predictive power than current market activity measures in assessing lending risk.

Designed for flexibility, this approach can be adapted to other metropolitan areas and enhanced through future refinements such as temporal tracking of market scores, integration of credit risk factors, and analysis of spatial relationships between neighborhoods. The model ultimately provides lenders with a balanced, data-informed method to align their underwriting with local market realities while maintaining operational efficiency.