# BUYING SMART: WHEN TO BUY, WHAT TO AFFORD, AND HOW FAR IT GROWS
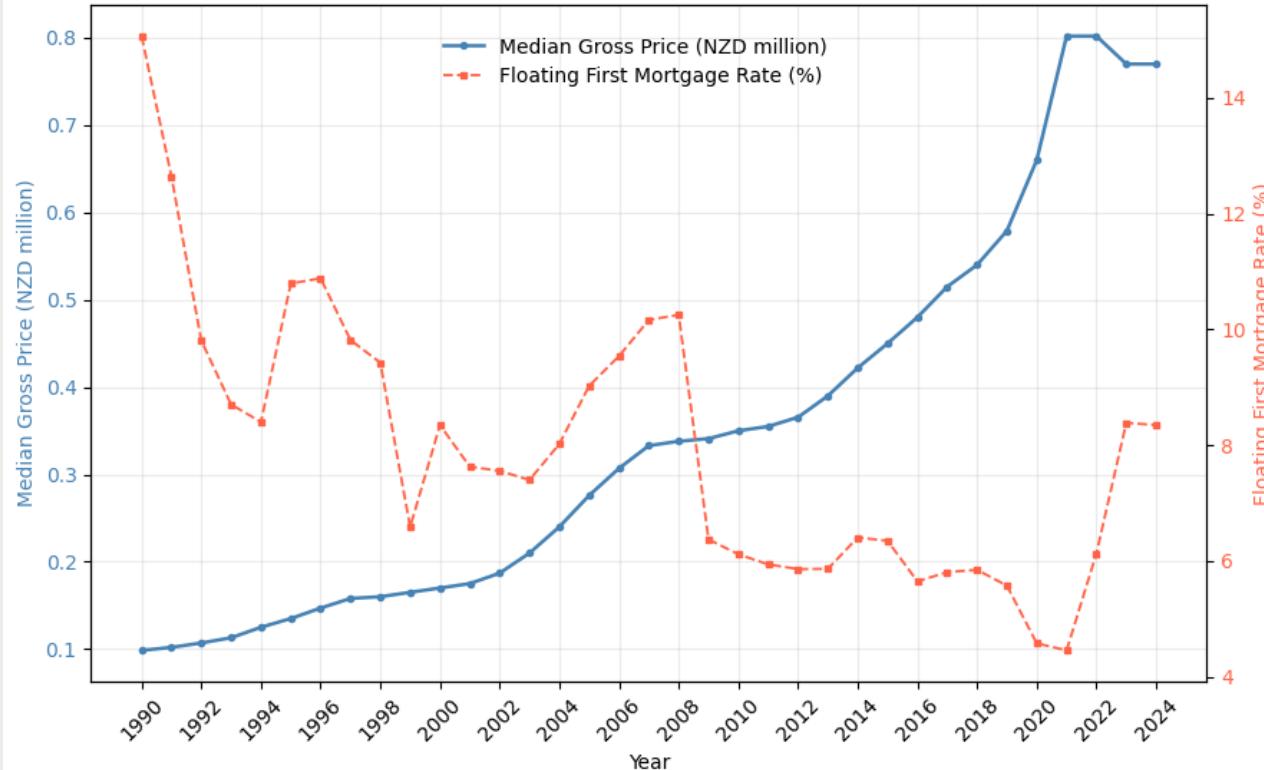
A DATA JOURNEY THROUGH NEW ZEALAND'S HOUSING MARKET
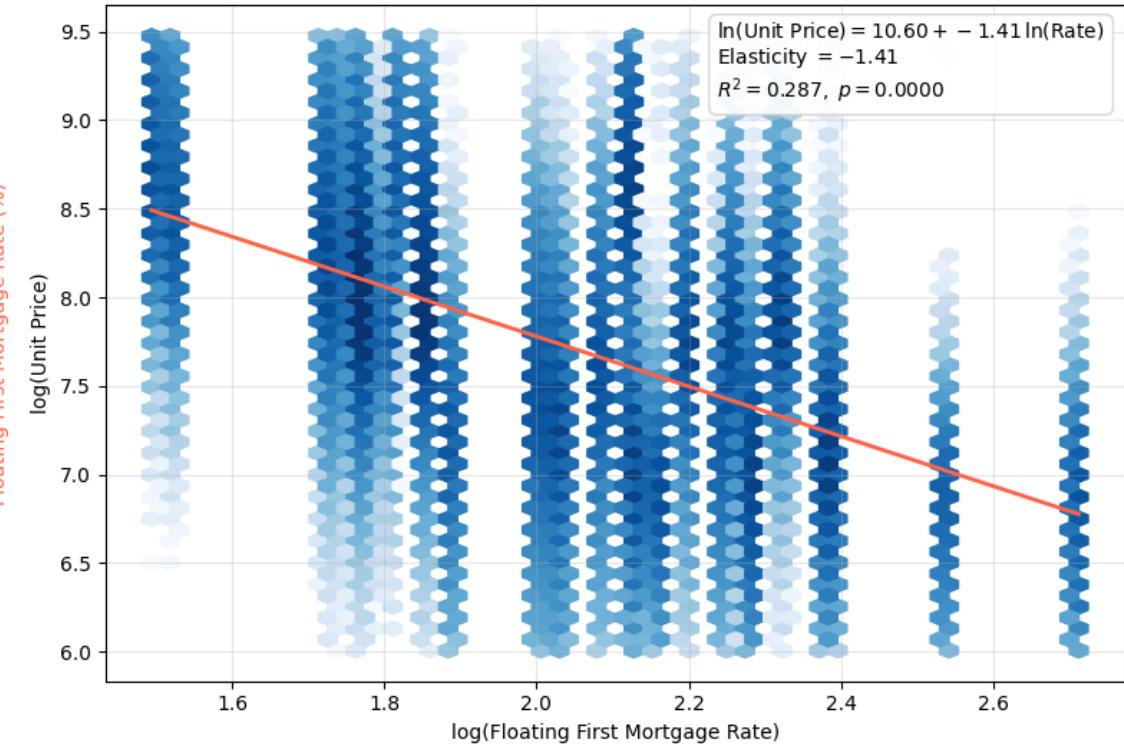
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DATE: 21 OCT 2025

Median Gross Price vs Floating First Mortgage Rate (1990-2024)

- Median Gross Price (NZD million)
- Floating First Mortgage Rate (%)

Elasticity of Unit Price to Floating Mortgage Rate (log–log model)

$\ln(\text{Unit Price}) = 10.60 + -1.41 \ln(\text{Rate})$
Elasticity $= -1.41$
$R^2 = 0.287$, $p = 0.0000$

Data source: Reserve Bank of New Zealand (RBNZ)(2025).Retail interest rates on lending and deposits - B3 (1964-current) https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/statistics/series/b/b3/hb3.xlsx

WHEN INTEREST RATES RISE, DO HOUSE PRICES FALL?

INTEREST RATE IMPACT ON UNIT HOUSE PRICE

WHEN TO BUY — INTEREST RATE VS HOUSE PRICE
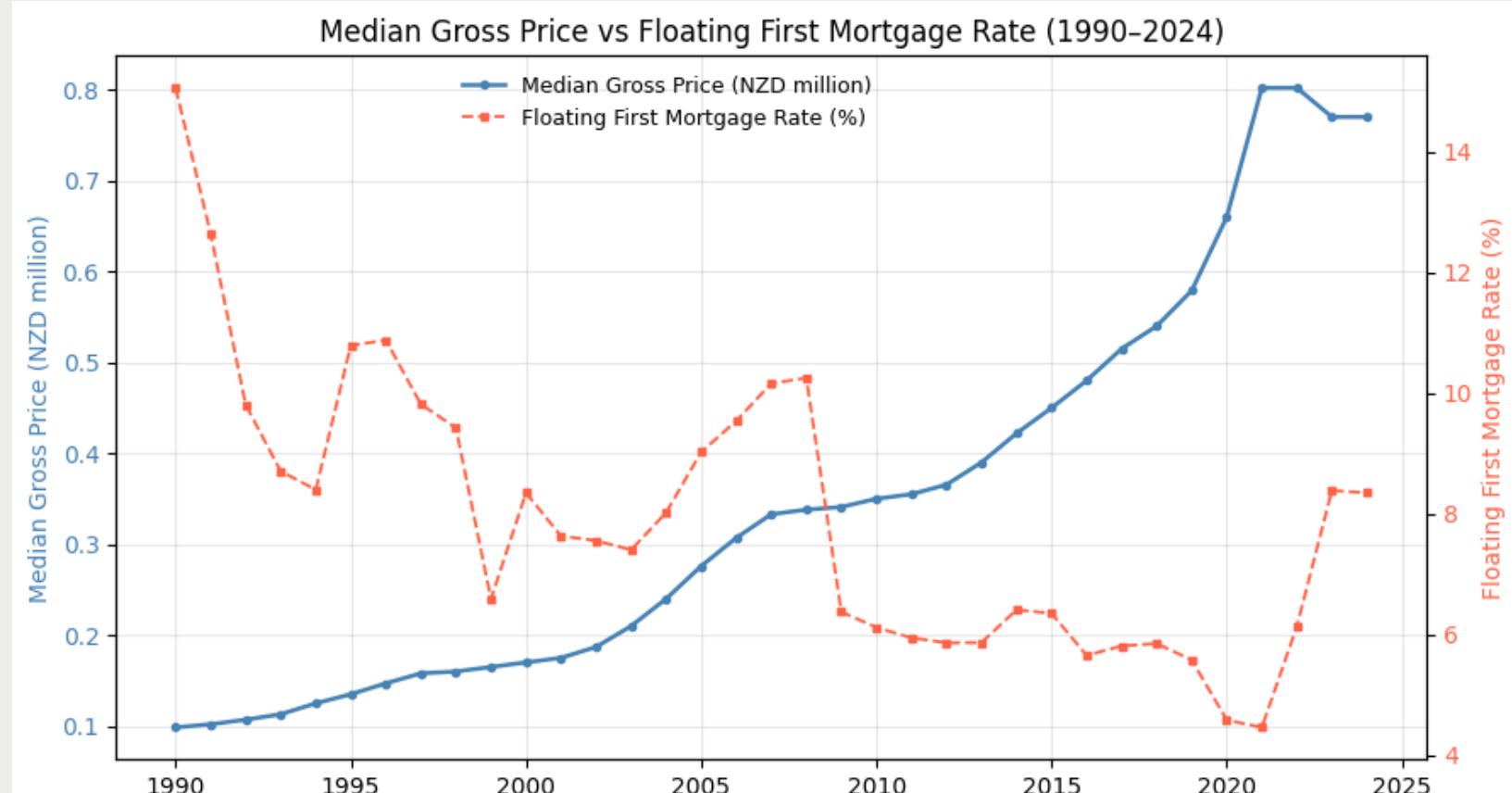
Dataset:

- Residential property sale statistics (Property IQ et al., 2010)

- Retail interest rates on lending and deposit – B3 (hb3) (RBNZ, 2025)

Data Size & Cleaning:

- ≈3.5 million sale records (1990-2024)

- Removed negative prices only
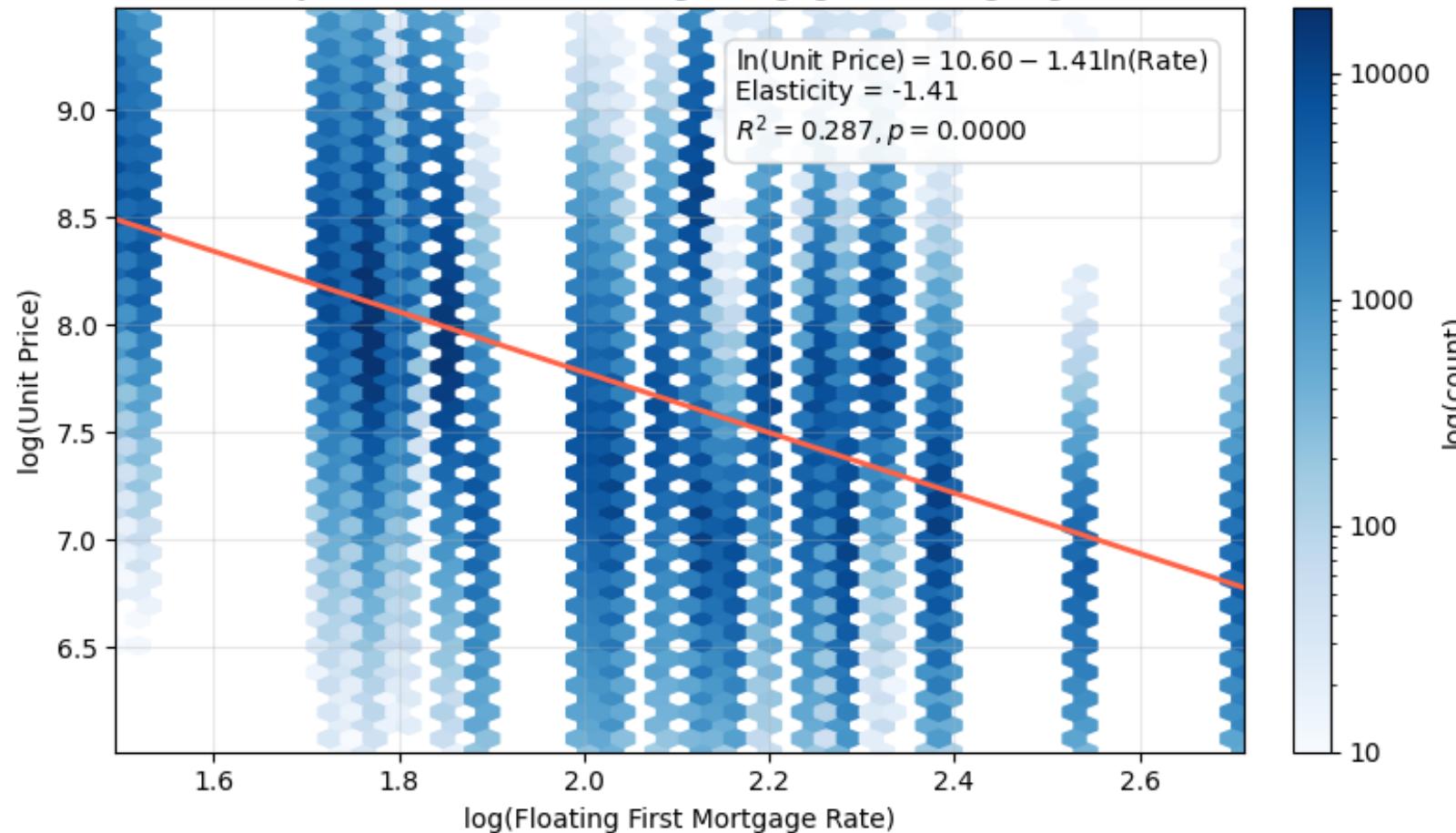
Clear Inverse Relationship

Median Gross Price vs Floating First Mortgage Rate (1990–2024)

Data source: Reserve Bank of New Zealand (RBNZ, 2025). 'Retail interest rates on lending and deposits – B3 (1964–current)'.
Retrieved from https://www.rbnz.govt.nz/statistics/series/exchange-and-interest-rates/new-residential-mortgage-standard-interest-rates

WHEN TO BUY — INTEREST RATE VS HOUSE PRICE

Elasticity of Unit Price to Floating Mortgage Rate (log–log model)

$\ln(\text{Unit Price}) = 10.60 - 1.41\ln(\text{Rate})$
Elasticity = -1.41
$R^2 = 0.287, p = 0.0000$

Data source: Reserve Bank of New Zealand (RBNZ, 2025). 'Retail interest rates on lending and deposits – B3 (1964–current)'.
Retrieved from https://www.rbnz.govt.nz/statistics/series/exchange-and-interest-rates/new-residential-mortgage-standard-interest-rates
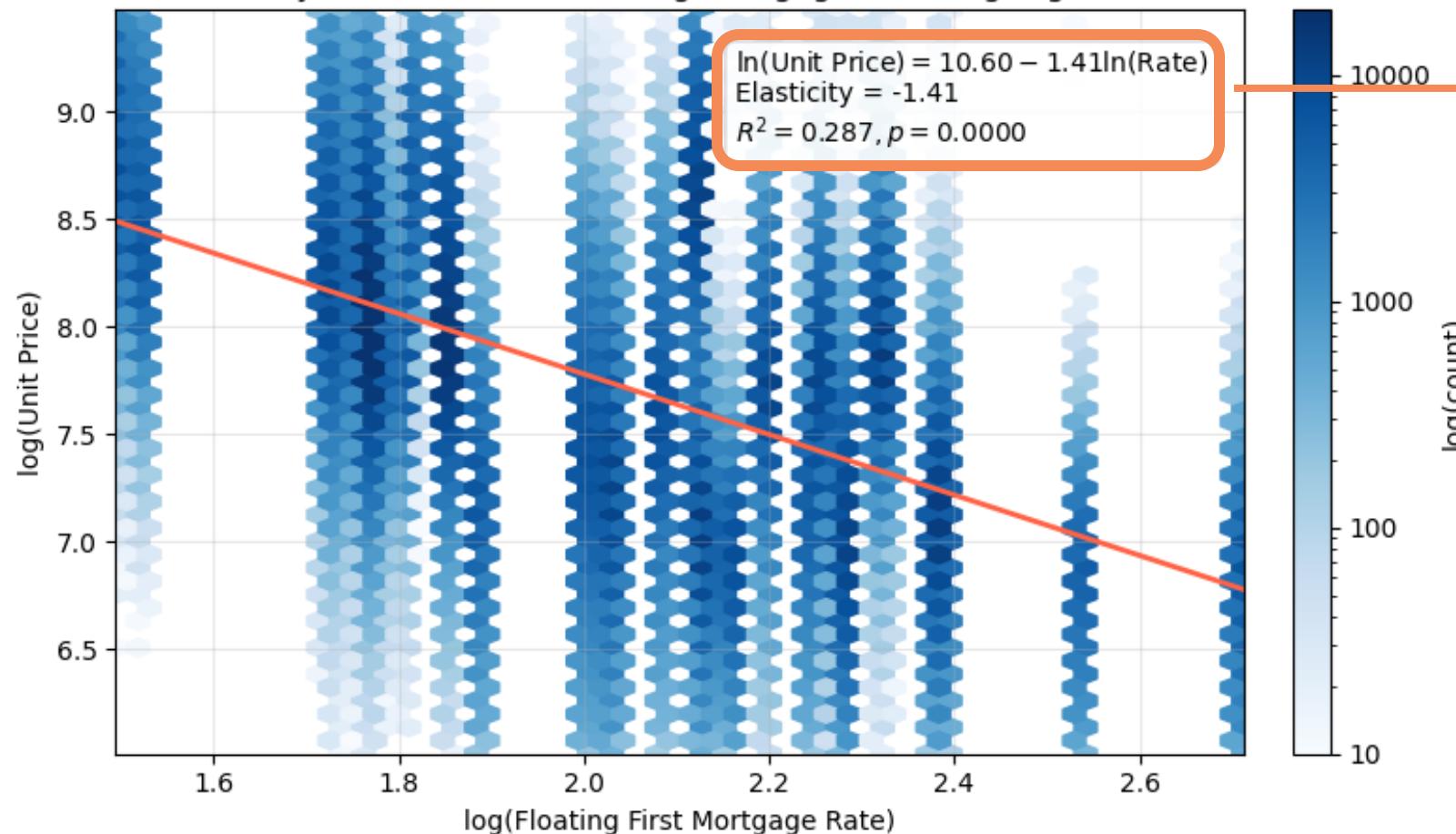
Data Preparation:

- Removed top & bottom 1 % to drop extremes

- Unit price = Gross Price / Floor Area

WHEN TO BUY — INTEREST RATE VS HOUSE PRICE

Elasticity of Unit Price to Floating Mortgage Rate (log–log model)

ln(Unit Price) = 10.60 − 1.41ln(Rate)
Elasticity = -1.41
$R^2 = 0.287, p = 0.0000$

Elasticity measures how sensitively prices respond to rate changes.
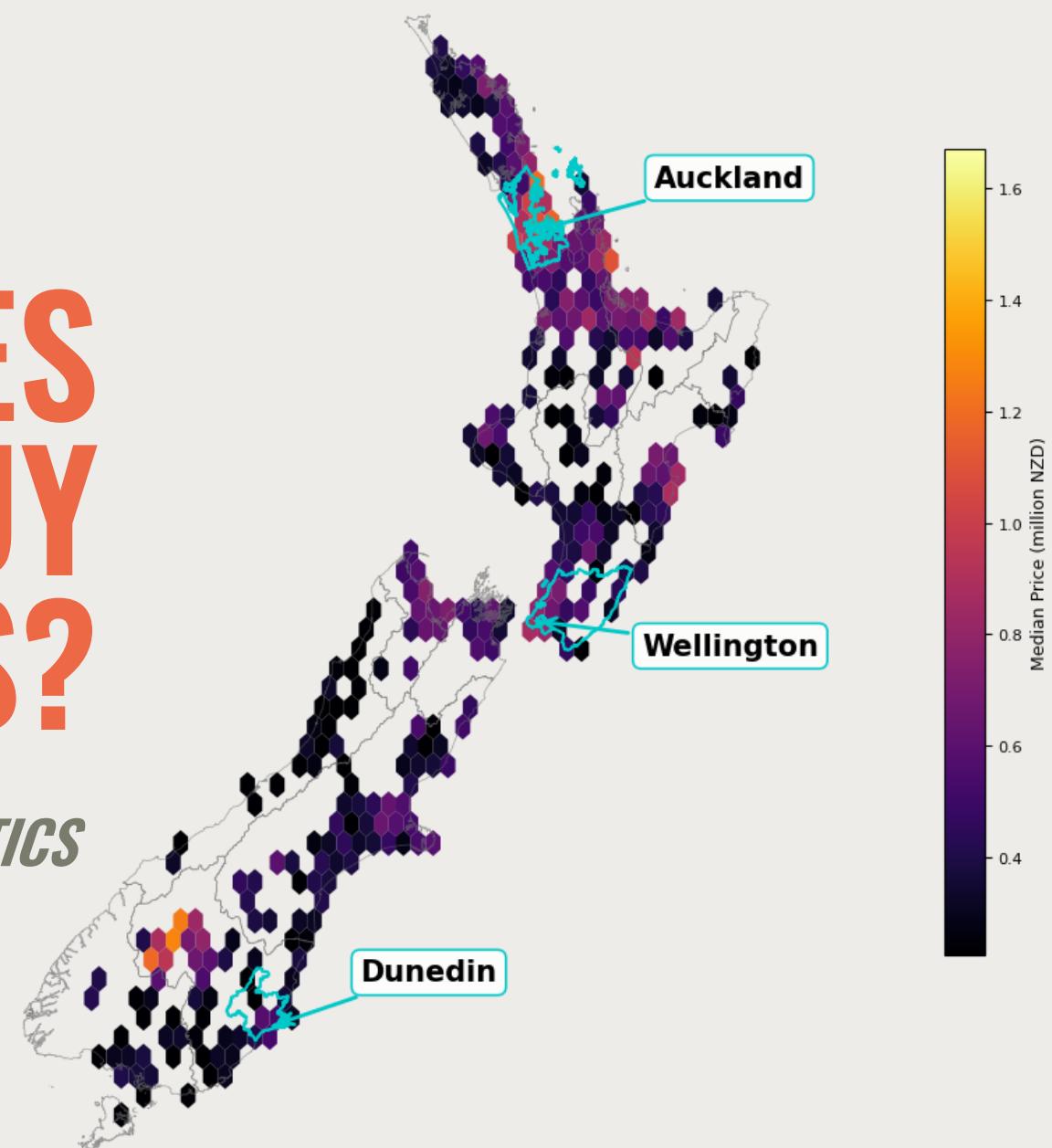
1 % rise in interest rate →
1.41 % fall in unit price.

💡 **Significant but small effect — best to buy when rates fall.**

Data source: Reserve Bank of New Zealand (RBNZ, 2025). 'Retail interest rates on lending and deposits – B3 (1964–current)'.
Retrieved from https://www.rbnz.govt.nz/statistics/series/exchange-and-interest-rates/new-residential-mortgage-standard-interest-rates

NZ Residential Price Heatmap (2018-2024)

WHAT DOES $780K BUY ACROSS CITIES?

TYPICAL HOME CHARACTERISTICS

Auckland

Wellington

Dunedin

Median Price (million NZD)

WHY 780K? – A REALISTIC FIRST-HOME BUDGET

LOAN = 6 x INCOME = $130K ANNUAL HOUSEHOLD INCOME REQUIRED

👷‍♀️ 👷‍♂️ Two Graduate Engineers (2 x 65 K)

👷‍♀️ 🧑 1½ Mid-Level Engineer (1.5 x 87K)

👷‍♀️ One Senior Engineer (1 x 130K)

TYPICAL HOME FEATURES – K-NEAREST NEIGHBOUR MACHINE LEARNING

📅 **Time Frame:** 2018 – 2024

💰 **Budget:** $780K ± 2 % price band

📊 **Selection:** Top 20 % closest (min. 100 homes per city)

Table 2. Median Typical Homes with $780K Budget

City	# of Matched Homes	Typical Home	Floor (m²)	Land (m²)	Age (yrs)
Auckland	5,094	3 bed / 1 bath	92	104	34
Wellington	2,709	3 bed / 1 bath	123	551	48
Dunedin	399	3 bed / 2 bath	180	629	54

TYPICAL HOME FEATURES – K-NEAREST NEIGHBOUR MACHINE LEARNING

Table 2. Median Typical Homes with $780K Budget

| SAME budget, DIFFERENT living standard.		City	# of Matched Homes	Typical Home	Floor (m²)	Land (m²)	Age (yrs)
Newer, smaller homes →		Auckland	5,094	3 bed / 1 bath	92	104	34
Moderate size →		Wellington	2,709	3 bed / 1 bath	123	551	48
Largest but older stock →		Dunedin	399	3 bed / 2 bath	180	629	54

TYPICAL HOMES TYPES

**Same budget,
Different lifestyles, maintenance costs &
neighbourhood environments.**

Typical Home Types by City ($780,000 Budget, ±2% Band)

Auckland
- Bungalow (Post-war) (43%)
- Townhouse/Unit (16%)
- Unknown (35%)

Dunedin
- Bungalow (Post-war) (61%)
- Pre-war Bungalow (16%)
- Villa (10%)

Wellington
- Bungalow (Post-war) (67%)
- Townhouse/Unit (8%)
- Pre-war Bungalow (6%)

DIVERSE HOUSING OPTIONS

Legend
- Bungalow (Post-war)
- Townhouse/Unit
- Pre-war Bungalow
- Villa
- Apartment
- Quality Bungalow
- Contemporary
- State Rental
- Bach
- Cottage
- Quality Old
- Spanish Bungalow
- Unknown

Percentage (%)

Typical Home Price Projection & Volatility Estimate*

City
- Auckland (4.36% CAGR)
- Wellington (5.48% CAGR)
- Dunedin (5.52% CAGR)

2035

DUN $1.4M, +80.6%
WLG $1.4M, +79.8%
AKL $1.2M, +59.9%

Base $780k (2024)

Predicted Median Price (NZD)

Year

*Note: Volatility is from annual log returns of city median prices (1995–2024). Bands show historical variability, not forecast uncertainty.

WHERE ARE PRICES HEADING IN 10 YEARS?

HOUSE PRICE PROJECTION ACROSS CITIES

COMPOUND ANNUAL GROWTH RATE (CAGR) TREND MODELLING

Filter by Land & Floor Area → Test with Tolerance → Prediction Method Test → Accuracy Verification
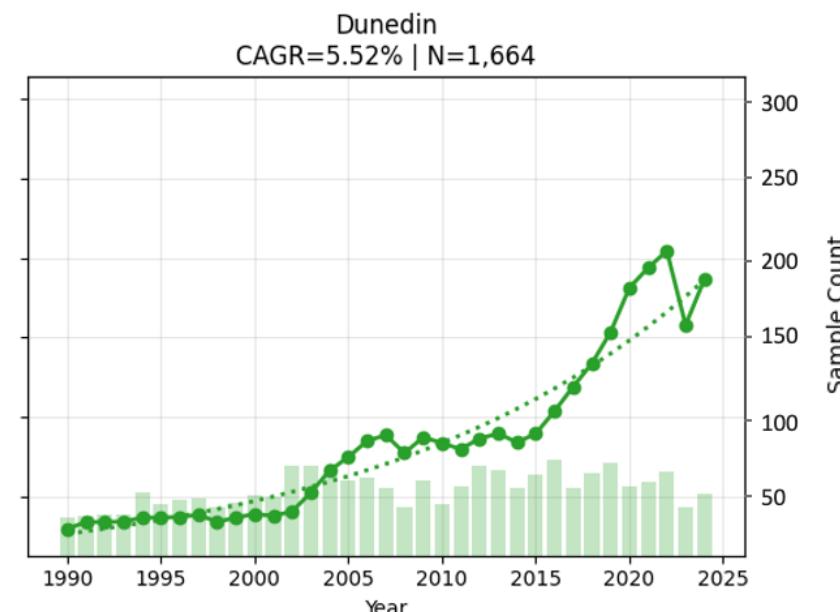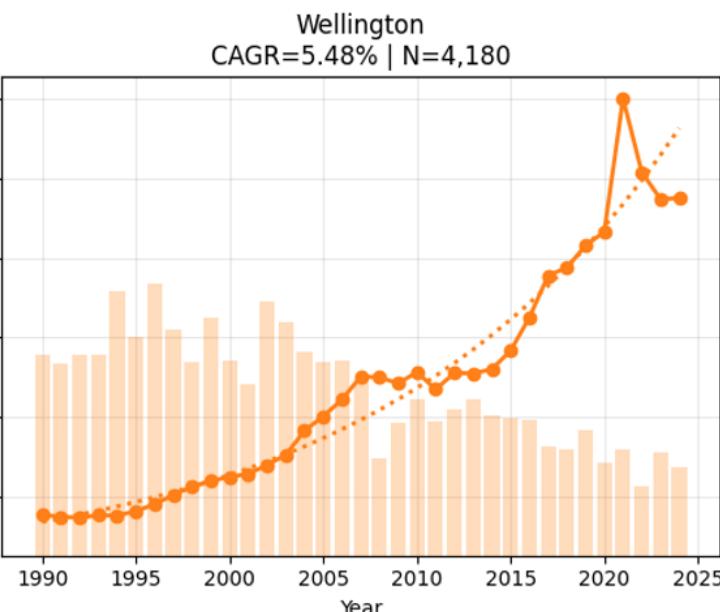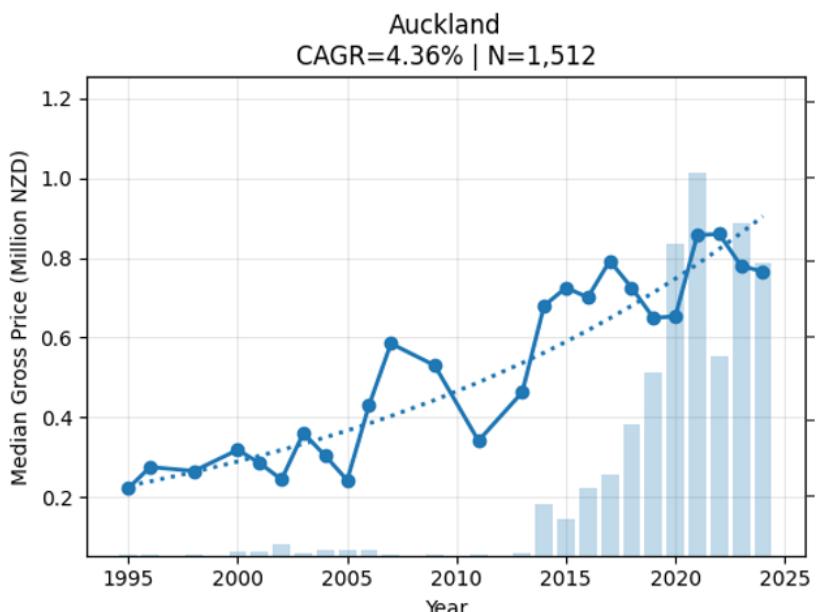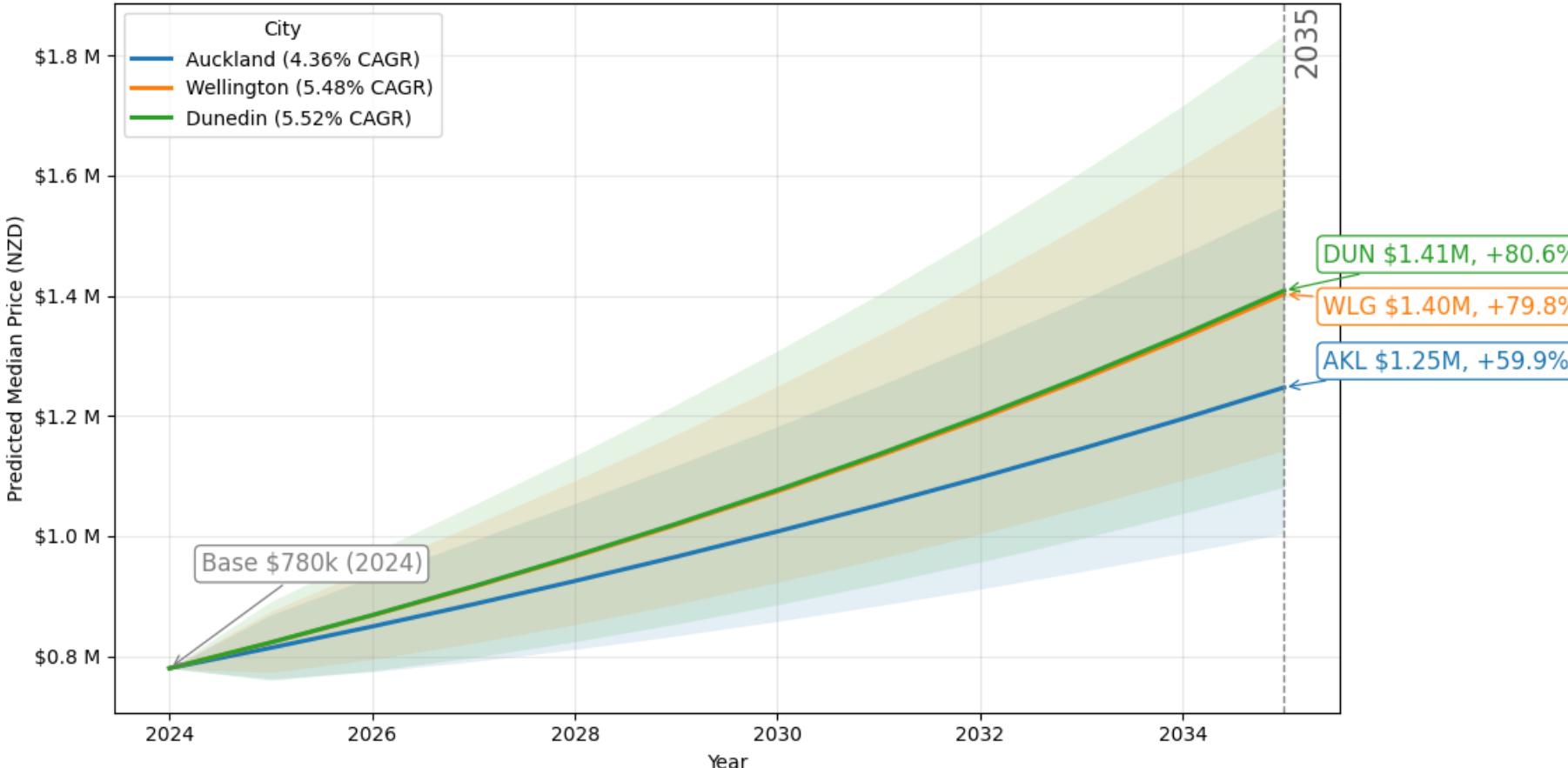
Typical Homes: ±10% Structural Tolerance | City Windows

Bars = Count   ⸻ Solid = Median   ···· Dotted = Log-linear

Auckland
CAGR=4.36% | N=1,512

Wellington
CAGR=5.48% | N=4,180

Dunedin
CAGR=5.52% | N=1,664

2035 PROJECTION — GROWTH VS STABILITY

Typical Home Price Projection & Volatility Estimate*

- **Dunedin & Wellington:** fastest growth but Dunedin more volatile.

- **Auckland:** slower, steadier trend.

Big city ≠ big return — buy smart!

LIMITATION & FUTURE POTENTIAL

Limitations

- Auckland trend mainly based on post-2014 data

- Only 3 cities analysed

- Median hides local variation

Potentials

- Apply model nationwide or to smaller regions

- Test with other price range

- Add factors like school zone, material type, house conditions etc.

💡 **Practical application:**
What if this model became a TradeMe Property feature?

CONCLUSION & RECOMMENDATIONS

- Interest-rate changes affect prices only **slightly** (≈ –1.4 %)

- For buyers: If it's not essential, wait until rates drop — prices won't rise as much as expected.

- Same budget = completely different lifestyles (e.g. Dunedin + 90 m² floor / + 500 m² land than Auckland)

- Despite popular belief, Wellington & Dunedin outperformed Auckland in long-term growth with 780k budget.

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Property IQ New Zealand., CoreLogic NZ., and Cotality. *Residential Property Sales Statistics*. Wellington: Property IQ New Zealand, 2010. Web.

Reserve Bank of New Zealand (RBNZ). (2025). *New residential mortgage standard interest rates (B20). (B1. Floating first mortgage new customer housing rate) [hb3 dataset]. Retail interest rates on lending and deposits (1964 – current).* Retrieved from https://www.rbnz.govt.nz/statistics/series/exchange-and-interest-rates/new-residential-mortgage-standard-interest-rates

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QUESTIONS?

THANK YOU