

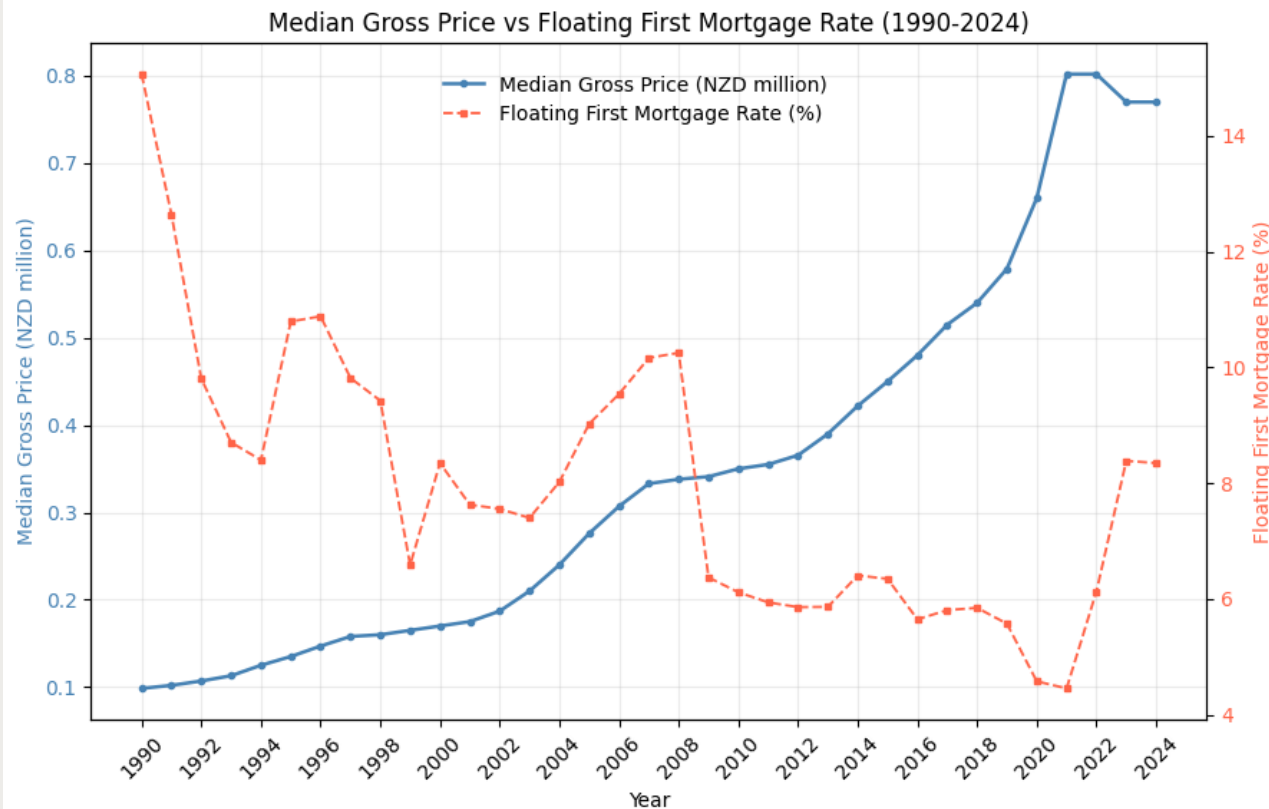


BUYING SMART: WHEN TO BUY, WHAT TO AFFORD, AND HOW FAR IT GROWS

A DATA JOURNEY THROUGH NEW ZEALAND'S HOUSING MARKET

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DATE: 21 OCT 2025



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

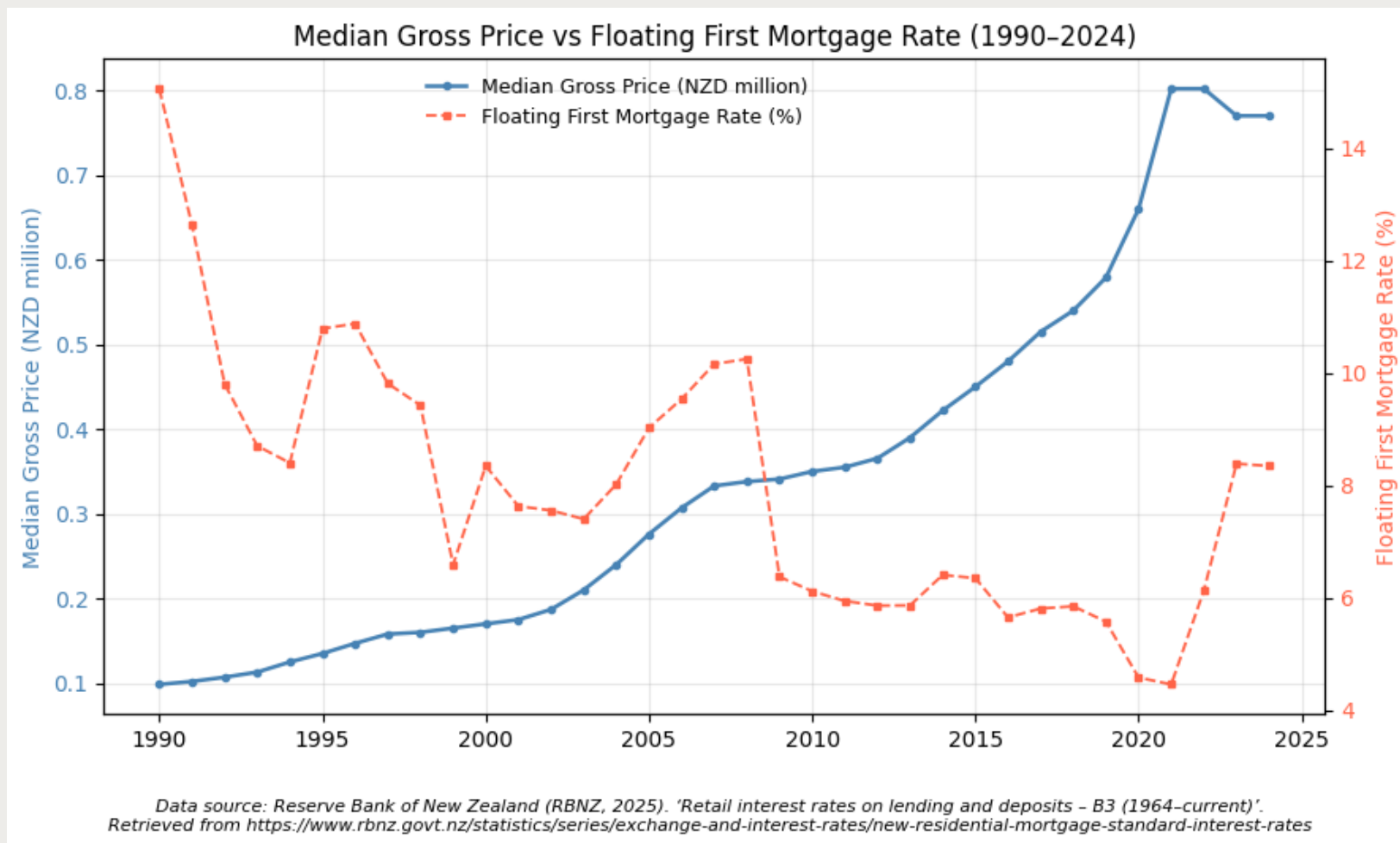
Dataset:

- Residential property sale statistics (Property IQ et al., 2010)
- Retail interest rates on lending and deposit – B3 (hb3) (RBNZ, 2025)

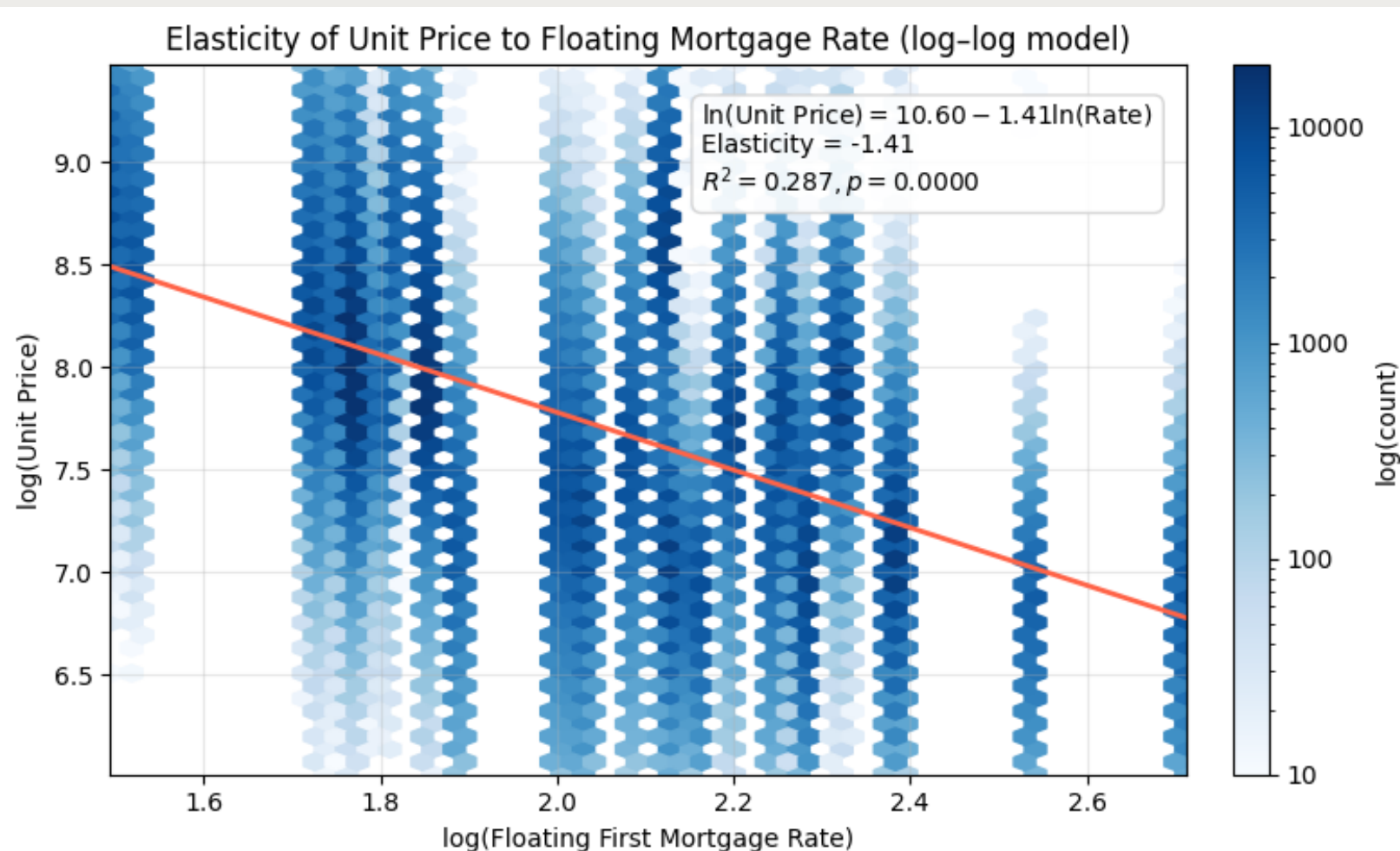
Data Size & Cleaning:

- ≈3.5 million sale records (1990-2024)
- Removed negative prices only

Clear Inverse Relationship



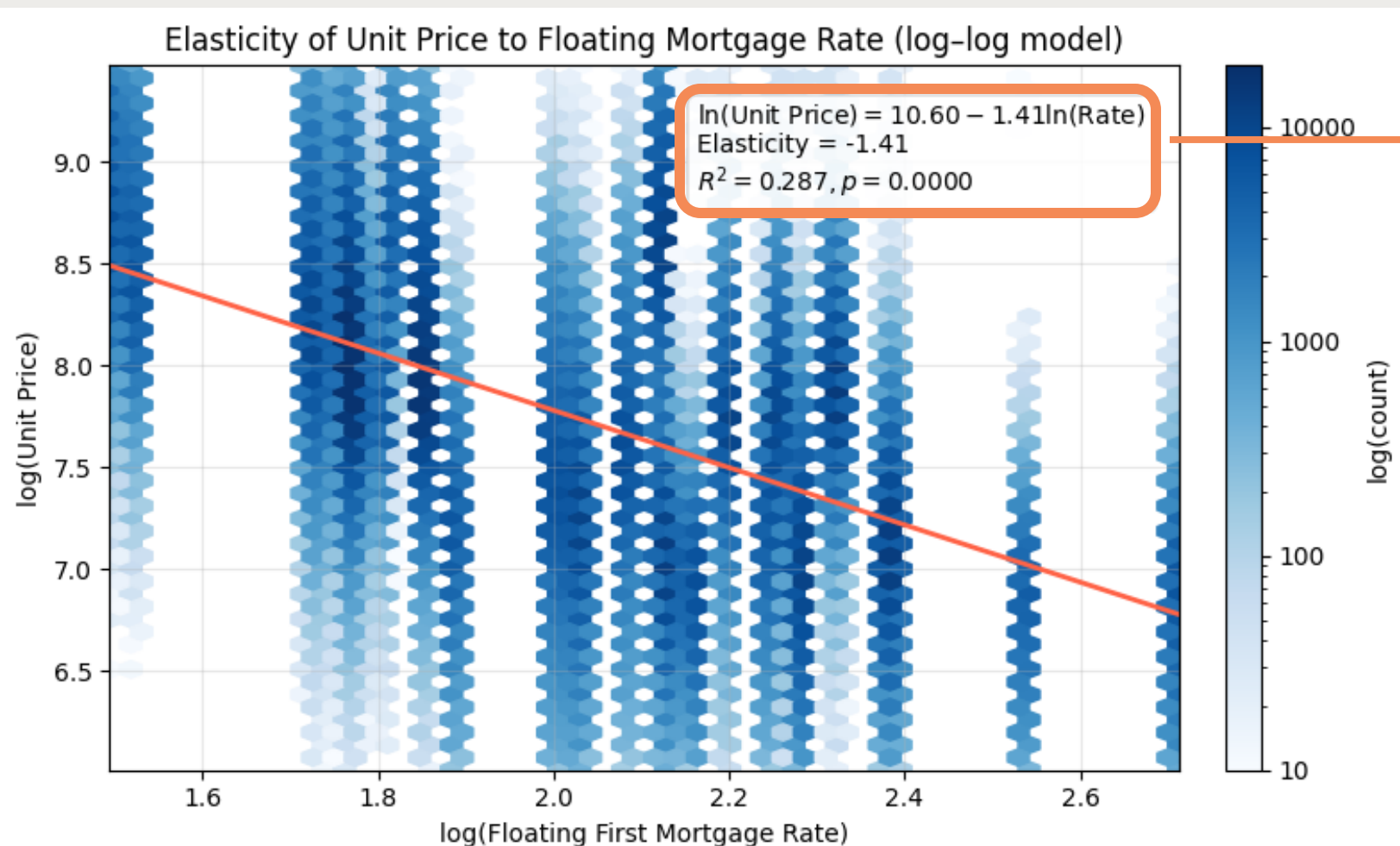
WHEN TO BUY — INTEREST RATE VS HOUSE PRICE



Data Preparation:

- Removed top & bottom 1 % to drop extremes
- Unit price = Gross Price / Floor Area

WHEN TO BUY — INTEREST RATE VS HOUSE PRICE



Elasticity measures how sensitively prices respond to rate changes.

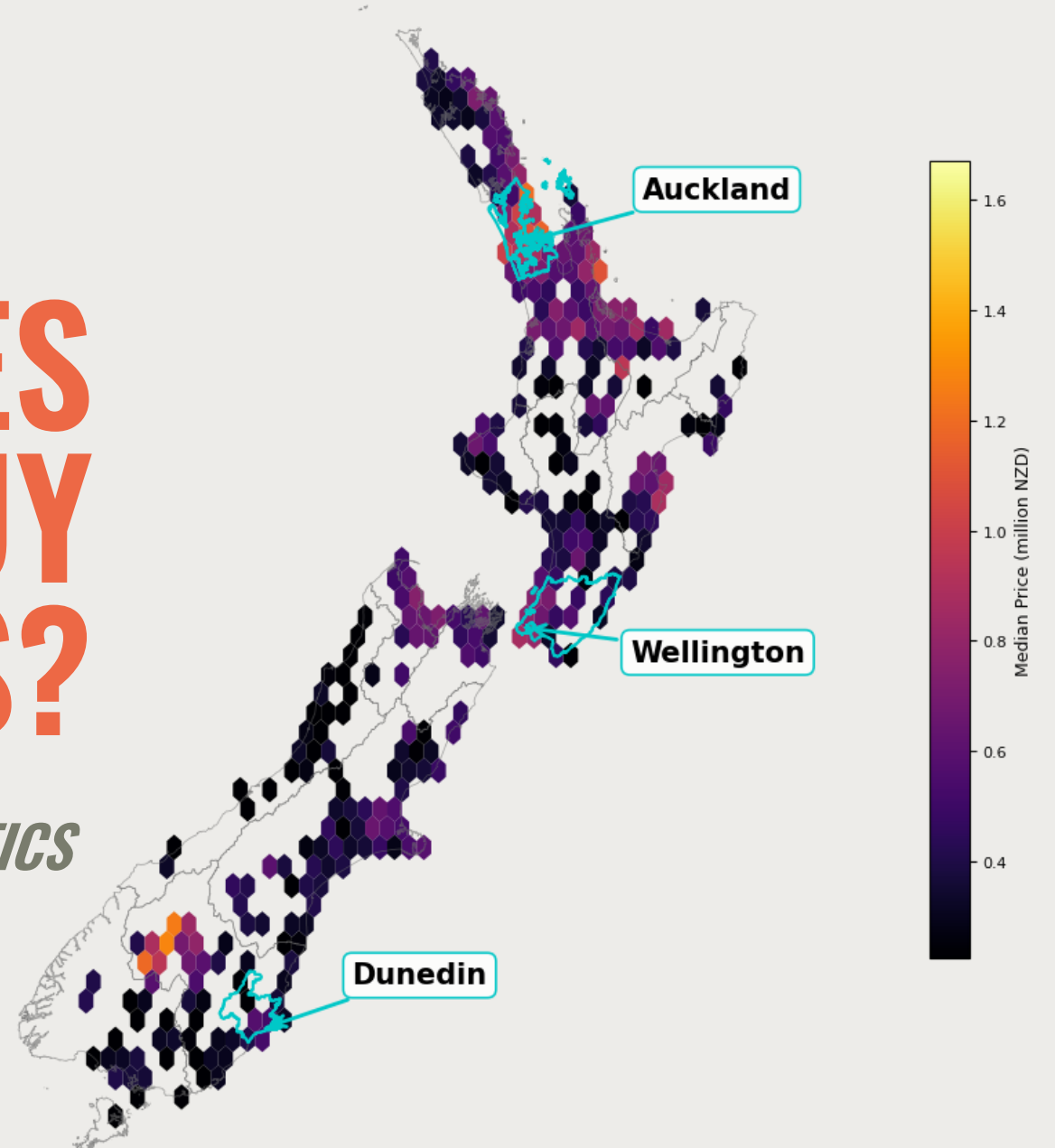
1 % rise in interest rate →
1.41 % fall in unit price.



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

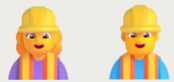
WHAT DOES \$780K BUY ACROSS CITIES?

TYPICAL HOME CHARACTERISTICS



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)

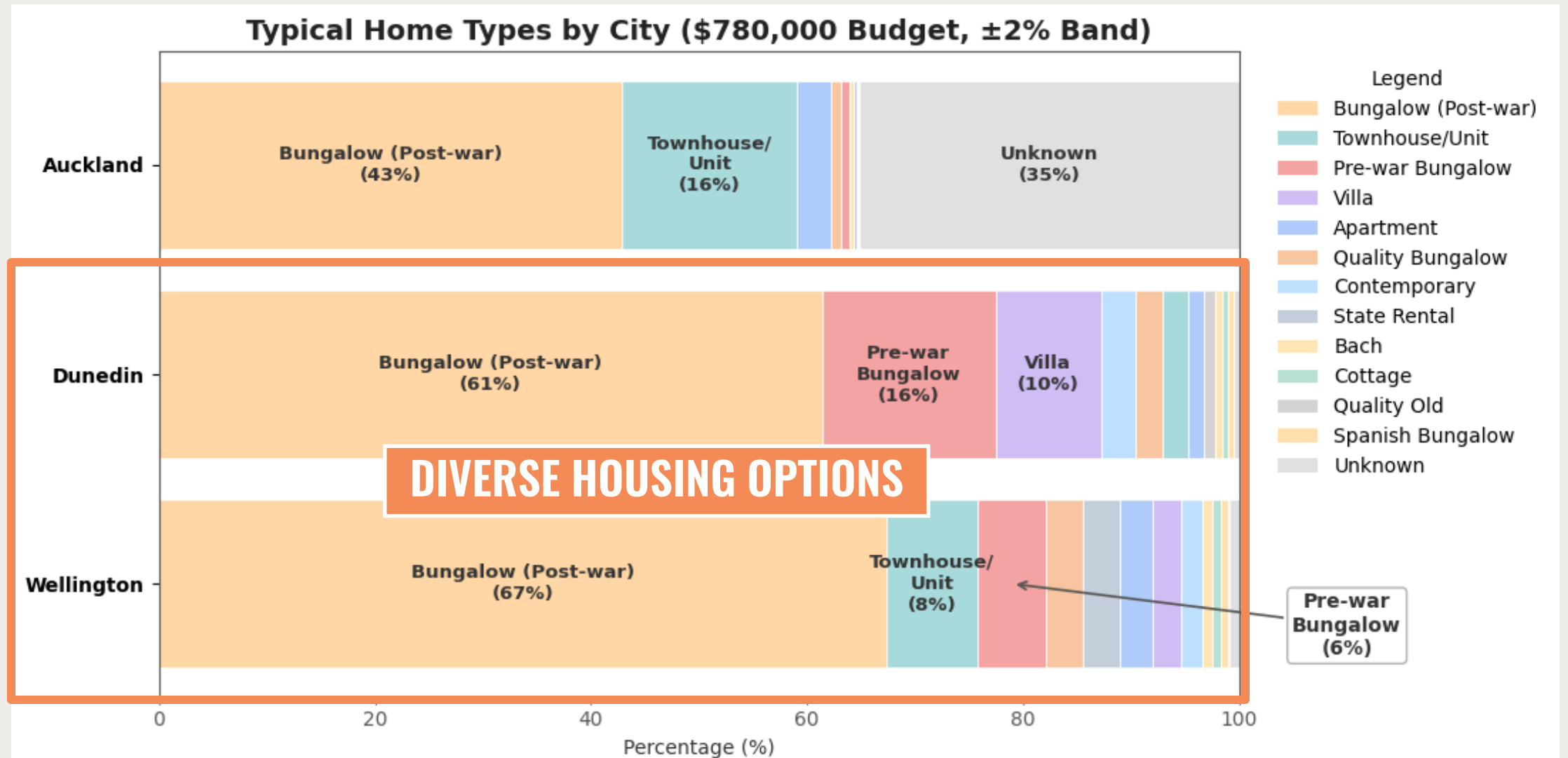
TYPICAL HOME FEATURES – K-NEAREST NEIGHBOUR MACHINE LEARNING

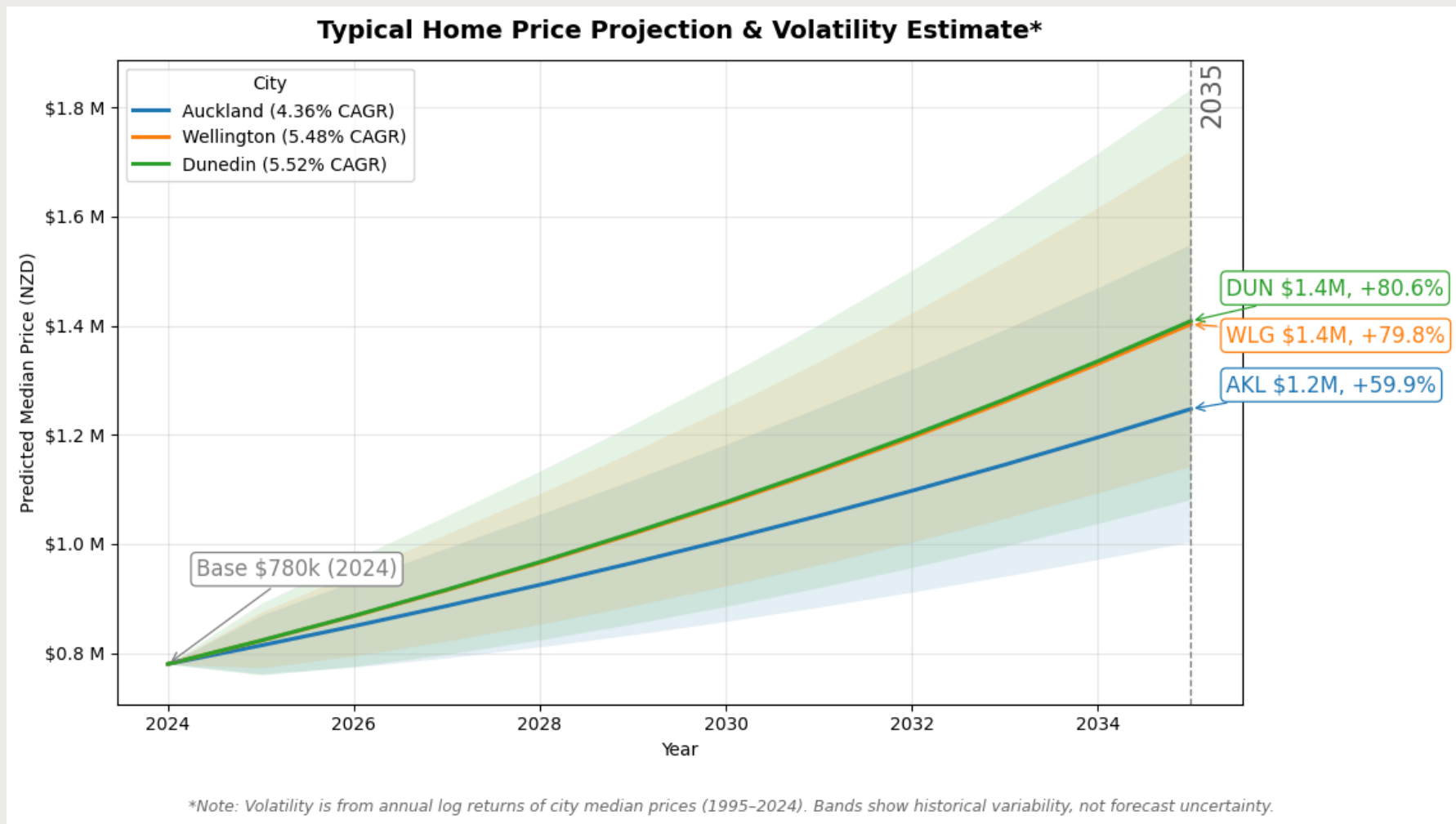
Table 2. Median Typical Homes with \$780K Budget

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TYPICAL HOMES TYPES

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





WHERE ARE PRICES HEADING IN 10 YEARS?

HOUSE PRICE PROJECTION ACROSS CITIES

COMPOUND ANNUAL GROWTH RATE (CAGR) TREND MODELLING

Filter by Land &
Floor Area

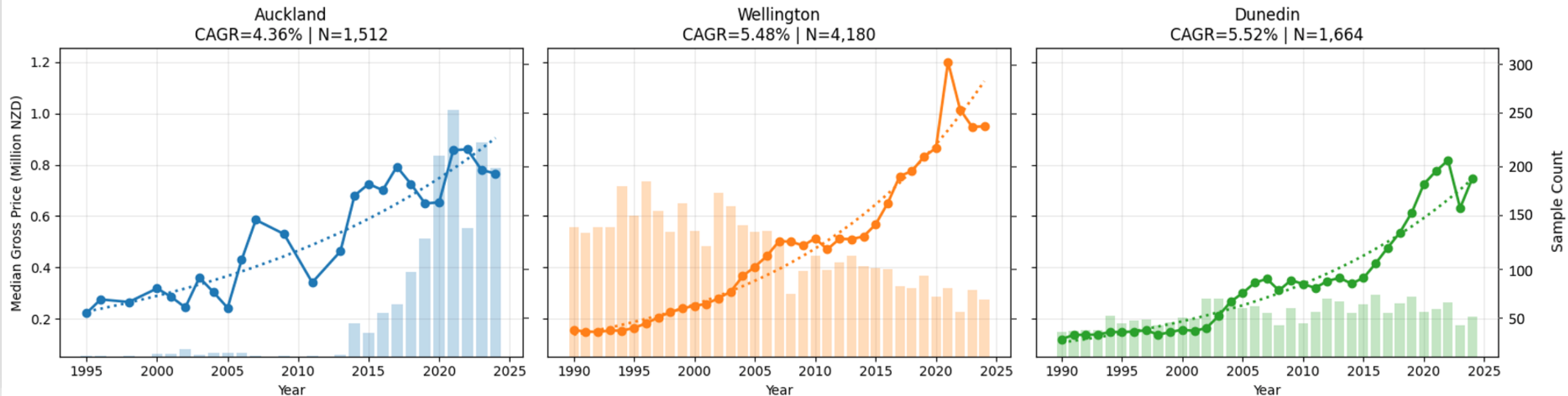
Test with
Tolerance

Prediction
Method
Test

Accuracy
Verification

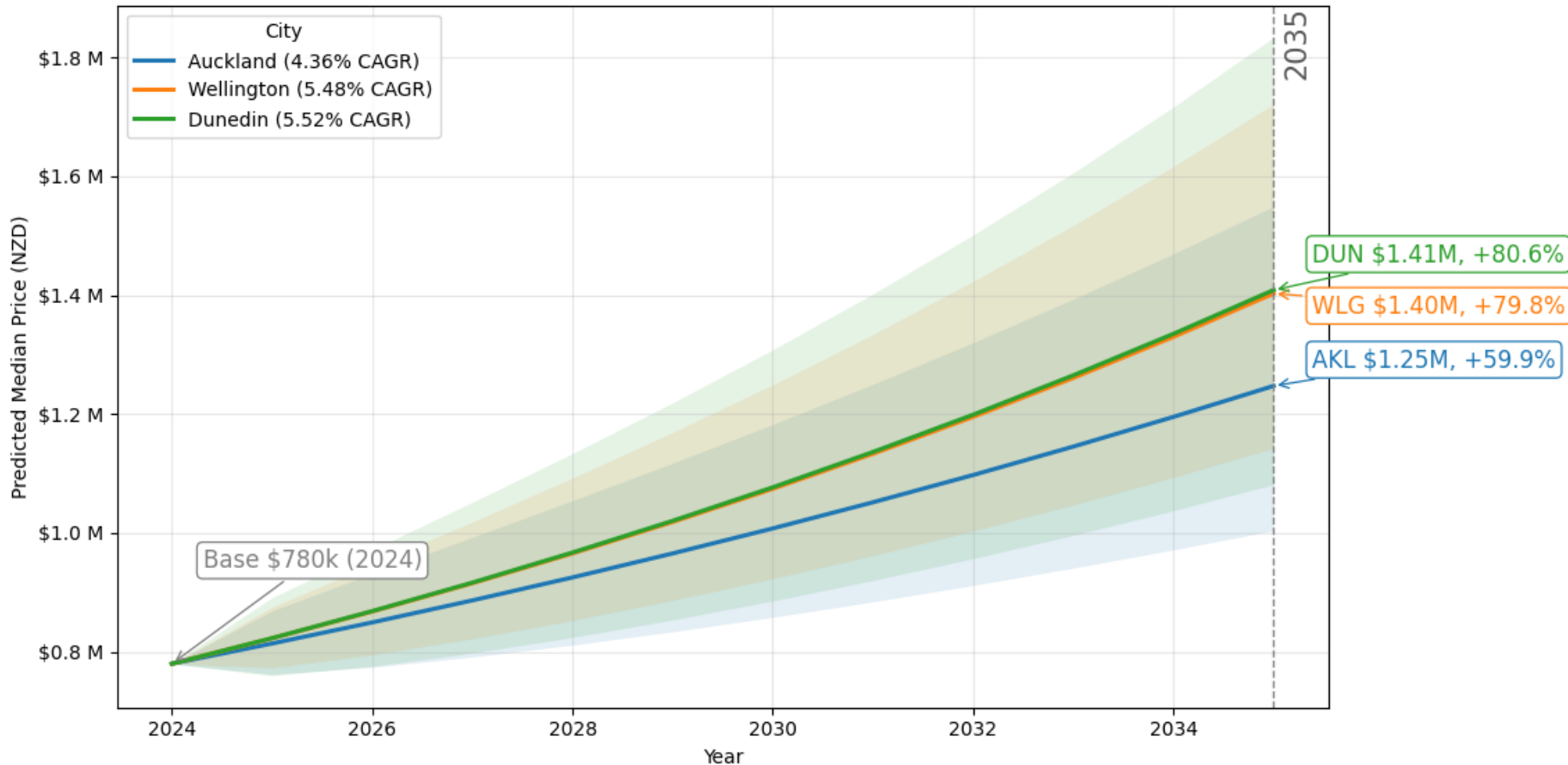
Typical Homes: $\pm 10\%$ Structural Tolerance | City Windows

Bars = Count — Solid = Median Dotted = Log-linear



2035 PROJECTION — GROWTH VS STABILITY

Typical Home Price Projection & Volatility Estimate*



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

- **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** ($\approx -1.4\%$)
- **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.



REFERENCES

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Stats NZ. (2025a). *Regional Council 2025 – clipped [Shapefile]*. Stats NZ Data Service. <https://datafinder.stats.govt.nz/data/>

Stats NZ. (2025b). *Territorial Authority 2025 – clipped [Shapefile]*. Stats NZ Data Service. <https://datafinder.stats.govt.nz/data/>



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QUESTIONS?



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THANK YOU