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Apples and oranges: Simplicity and complexity in world house prices

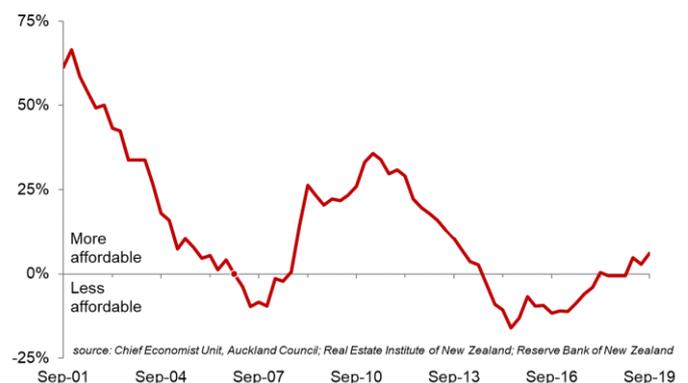
- Housing affordability remains a challenge for many Aucklanders, despite affordability being the best in almost six years, and 26% better than in June 2015.
- At a headline level, what causes house prices to rise is simple: Has the supply of housing been sufficient to meet demand from residents and non-residents?
- But in the detail, the question is more complex and there is a risk of oversimplifying: If we haven't built enough houses, why not?
- The reasons not enough houses are built are a function of demand factors such as incomes and unemployment rates, tax and ownership regimes; and supply factors such as industry structure, labour laws and construction wages, materials costs, regulation, and geography.

House prices rose sharply in Auckland between 2002 and 2006, and again from 2011 to 2016, making home ownership unaffordable for many in a city with strong stated and revealed preferences for home ownership.

There are many ways to measure affordability. Many [ignore one or more of interest rates, deposit requirements](#) and the circular impact of rising house prices on household incomes in determining serviceability. It was these gaps that led us to develop the Serviceability Affordability Model (SAM), [first published in February 2017](#).

Serviceability Affordability Model (SAM)

SAM median house price affordability relative to December 2006



The SAM shows that affordability is now the best it's been in nearly six years, but also that affordability has fallen sharply from the levels of the early 2000s.

Another often-cited affordability measure is the median multiple, which simply divides the median house price by the median household income to generate a ratio. At mortgage rates of 4%, higher than the fixed one and two-year rates today, the median income household in Auckland can afford a dwelling 6.5 times their annual income, assuming a 20% deposit, a 30-year repayment period, and that they spend no more than 30% of their gross income on housing. But the median dwelling price of roughly \$850,000 is 8.3 times the median household income. This means the median income household is restricted to buying a house below the median price.

Trust an economist to say this

Explanations of house prices **can be both too simplistic and too complex**. On one level, it is simply a question of supply and demand. If we don't build enough houses to meet the demand from residents looking for a house to live in as owners or renters, investors looking for properties to rent out, or from overseas buyers if the regulatory landscape allows for that, prices will rise.

This means whether enough houses have been built to meet demand for housing from **population growth** can be a good place to start, notwithstanding the fact this measure ignores non-resident demand. Once we've answered the question of whether a city has added enough homes to meet its resident demand, we're probably a long way to explaining at a headline level whether it has seen high house price growth.

By way of illustration, below is an extract from the [2019 Demographia](#) report, which uses the simple median multiple measure of house price divided by median household income. Seven of the nine major markets the report lists as affordable (it classes 82 of 91 as being in various states of unaffordability) have seen their **populations fall by 40% to 60%** over the last 70 years. In contrast, every city in the list of most unaffordable cities by Demographia's definition, has seen its population rise, by between 10% and 1000% (in the case of San Jose) since 1950. Auckland grew by over 300% in this period.

Explaining cheap housing in seven of the nine most affordable cities as anything other than an oversupply of housing would be disingenuous. In summary, cities that people have left in their hundreds of thousands have more than enough dwellings to meet the demand of those who have chosen to stay, and this is reflected in house prices.

This headline analysis doesn't help us understand why the unaffordable housing markets have not produced enough housing to keep up with demand, or why two of the nine most affordable cities do have more affordable housing

Major market median multiples, Demographia 2019

Rank	Nation	Metropolitan Market	Median Multiple
1	U.S.	Pittsburgh, PA	2.6
1	U.S.	Rochester, NY	2.6
3	U.S.	Oklahoma City, OK	2.7
4	U.S.	Buffalo, NY	2.8
4	U.S.	Cincinnati, OH-KY-IN	2.8
*4	U.S.	Cleveland, OH	2.8
4	U.S.	St. Louis, MO-IL	2.8
8	U.S.	Indianapolis, IN	2.9
9	U.S.	Detroit, MI	3.0
81	Canada	Toronto, ON	8.3
81	U.K.	London (Greater London Authority)	8.3
83	U.S.	Honolulu, HI	8.6
84	U.S.	San Francisco, CA	8.8
85	N.Z.	Auckland	9.0
86	U.S.	Los Angeles, CA	9.2
87	U.S.	San Jose, CA	9.4
88	Australia	Melbourne, VIC	9.7
89	Australia	Sydney, NSW	11.7
90	Canada	Vancouver, BC	12.6
91	China	Hong Kong	20.9

despite growth over the last 70 years. That requires deeper digging.

But in understanding why demand and supply are not matched, we can also be too simplistic. We have heard people argue that it's "low interest rates bidding up prices", or "foreign buyers", or "land supply constraints". These things may each be part of the puzzle.

What drives supply and demand?

A cynic would look at the list of affordable and less affordable cities and suggest that the list tells us all we need to know about why some areas are affordable and others not so much.

Cities with unaffordable housing markets are almost without exception coastal, with moderate climates, strong service sectors, guaranteed property rights and liberal democratic governments. In short, despite their costs they are desirable places to live as reflected in their oftentimes phenomenal growth.

In contrast, more affordable cities typically lack several of the ingredients present in the least affordable cities, such as good climates and the beach. But the attractiveness of a city isn't an explanation of **why there are not enough houses there to meet demand**.

With this in mind, the Chief Economist Unit, with help from the Research and Evaluation Unit (RIMU), looked at comparator cities with different affordability outcomes. Notwithstanding the over-simplification of a median multiple approach, our list included cities with dramatically different median multiples:

- unaffordable at current interest rates, with median multiples above 6.0 – Vancouver, Melbourne, and San Francisco
- moderately affordable, with median multiples between 4.5 and 6.0 – Brisbane and Manchester
- very affordable, with median multiples below 4.5 – Houston, Detroit, and Pittsburgh.

We wanted a mix of affordability levels, city sizes, growth patterns, jurisdictions, regulatory frameworks, geographies and climates.

Our review highlighted numerous factors that affect supply and demand for housing in these cities. **This list is not exhaustive**, but factors included were recurring.

A web of factors affect housing supply and demand

Potential factors influencing housing demand	Potential factors influencing housing supply
Employment growth / unemployment	Land supply regulations
Foreign buyer ban	Geography
	Other regulatory restrictions
Taxes and duties	Material and construction costs
Lending restrictions e.g. loan to value ratios	Labour laws and construction wages
	Industry capacity and structure

Unemployment and incomes

Employment and unemployment prospects in the different cities, as well as income growth, dramatically affect demand for homes. At the extreme, very high unemployment means people don't live in a home at all, or more people cram into one home. As incomes rise and unemployment falls, demand for housing rises. Most cities in our study have seen the unemployment rate fall over the last decade, but Auckland has one of the lowest unemployment rates (currently just over 4%). Rates are significantly higher in Brisbane (over 6%) for example, and over 5% in most cities compared.

Manchester, in addition to seeing its population decline, has experienced falling real incomes, down about 11% between 2002 and 2018, with an understandable impact on housing demand. Detroit has seen both low income growth and low overall household incomes for decades. This has encouraged people to leave the city and meant those who remain are not bidding up house prices.

Bans and taxes

Several cities in the comparison have capital gains taxes, at least on investment properties. In the US, gains on properties owned for less than a year are taxed at the owner's marginal tax rate, or at 20% for longer-term investments, while each state can add its own capital gains tax. In the UK, capital gains tax is due on gains dependent on total annual income, while Australia also has a capital gains tax on investment properties. These

jurisdictions are in contrast to New Zealand, which does not have capital gains taxes on investment property, making investment in property more attractive on this dimension in New Zealand than in those overseas markets. Vancouver metro has introduced a 20% foreign buyer tax (up from an original 15%), and Vancouver city also has a vacancy tax of 1% on empty homes. Australia has long had a foreign buyer ban that prevents overseas buyers from buying existing homes if not as their primary place of residence.

New Zealand imposed a similar ban in October 2018. Prior to the ban, foreign buyers accounted for at least one in six purchases in central Auckland (and potentially much more before China reversed exchange control rules in late 2016, according to many real estate agents). The foreign buyer ban rapidly saw purchases from formerly eligible buyers fall 80%, undeniably contributing to a period of flatter house prices even in the face of low interest rates, ongoing very strong immigration, and a big backlog of building.

A further factor that limits demand for housing and thus price growth is property taxes. Property taxes in Texas (Houston) are among the highest in the United States, with taxes at county, municipal and school district, despite the state's wider reputation for low taxes. Similarly, council taxes in Manchester are high – around NZ\$3,000 for the "middle" Band D category of home (with some bands paying more and other less). These costs are factored into the overall price of home ownership and are almost certainly contributors to lower upfront house prices there.

Lending restrictions

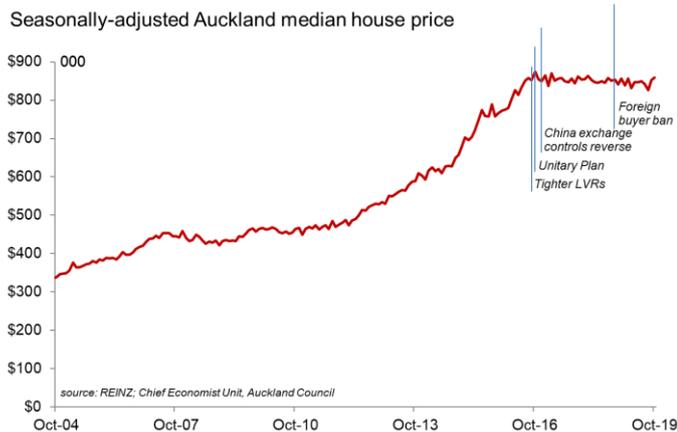
The UK introduced debt to income ratios in 2014, currently set at 4.5 times annual income. In Manchester, where the median post-tax household income is estimated to be under NZ\$65,000, this ensures limited demand at higher price points.

In New Zealand, loan to value restrictions (LVRs) on investors, when tightened officially from October 2016 and in spirit a few months earlier, had a marked impact on lending to investors. With the competition introduced into land markets through the Unitary Plan and a reversal in exchange control rules in China, these restrictions appear to have played an important role in arresting further rises in house prices in the Auckland market from November 2016.

Land supply regulation

Regulatory frameworks are surprisingly mixed across these cities. Even Houston, the exemplar of "zoning free development", is hardly that. The lack of zoning is primarily limited to the City of Houston, which accounts

Change in Auckland house prices



for less than one-third of Houston's metropolitan population. Many of the roughly 160 other municipalities in Houston use more conventional zoning approaches.

Further, the use of deed restrictions, akin to private covenants placed on land by developers in New Zealand, is widespread in Houston. These restrictions determine the type of development that are allowed in sub-divisions, to "keep the neighbourhood up", but effectively limit development to stand-alone housing types. These limits on land use keep land prices low (due to their prescribed economically inefficient land use), and lead to an expansive city form. As a result, more than 70% of all new dwelling approvals in Greater Houston in 2018 were for stand-alone homes, compared to a little under 50% in Auckland, where a lot more intensive development is typically allowed.

Manchester is another comparator with more affordable housing yet complex regulation. It has a green belt that completely surrounds greater Manchester, and a "brownfield first" policy enacted in 2019. The zoning environment provides very little certainty over what people can develop and where. Each development is assessed by a planning inspector against the local authority's planning framework or local plan on an independent, ad hoc basis.

Pittsburgh, the most affordable major market in the 2019 Demographia report, is home to an astonishing 463 general purpose governments, making it the most jurisdictionally fragmented metropolitan area in the United States, governing just 2.4 million people. Different government areas have significantly different zoning, and there is no overarching development framework that provides coordination or certainty on infrastructure rollout.

That said, cities like Vancouver are known for strict urban containment policies – its Urban Containment Boundary allows 905 km² for urban activity for its 2.5 million people, so the question should be asked as to whether urban containment is inflating house prices in cities like this.

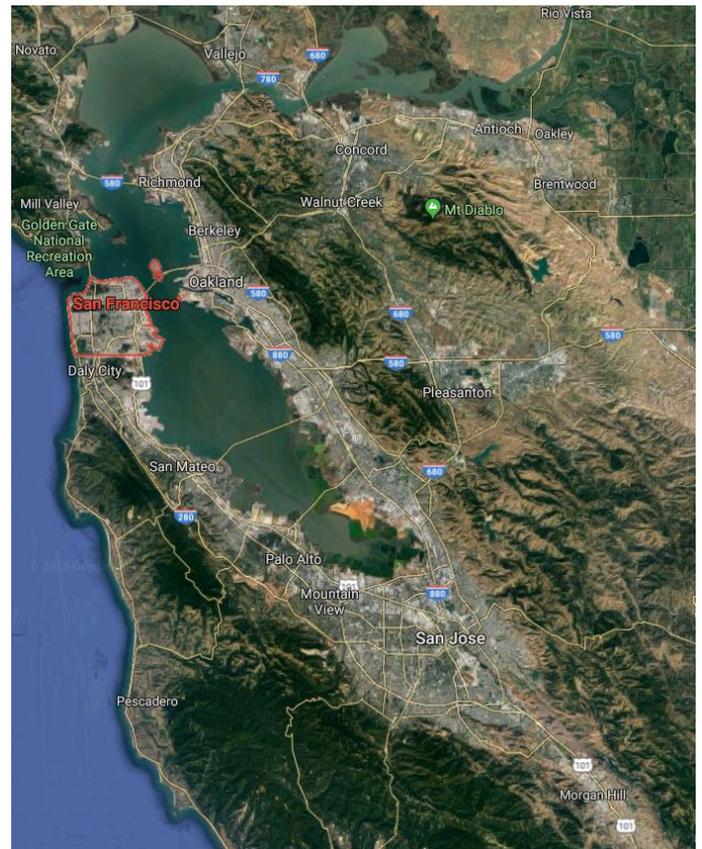
In Auckland, for example, the Unitary Plan increased

development potential by a factor of 12 over the legacy zoning rules it replaced. But this change was only introduced three years ago. It is possible that legacy plans did significantly constrain development. The Chief Economist Unit is currently completing the first ever study in New Zealand on whether the **current** rural urban boundary imposes price premiums on land inside it. Results are expected to be published early in 2020.

Geography and infrastructure

Often ignored is that most of the cities at the less affordable end of the spectrum are coastal, with huge geographical constraints on development. San Francisco, including its southern extent as far as San Jose, north as far as San Rafael, and east as far as Oakland, is one of the most extreme examples of geographical constraints anywhere. Surrounded by water on one, two or three sides, and with mountain ranges covering much of the peninsula, as well as just east of Oakland and across the Golden Gate Bridge, mean where and at what cost the Bay Area can develop is severely constrained.

San Francisco's geography explains a lot



Auckland and Vancouver are not as extreme as this, but also have water on two or more sides. In the case of Vancouver, mountains border the north, and in the case of Auckland, flood plains and volcanic rock also limit where development can occur. Where areas can be developed mitigation through infrastructure can often be eye-wateringly expensive.

Contrast this to Houston, Detroit, or Manchester, where the land is relatively to very flat, without many of the infrastructure challenges that creates. Houston, for instance, is known for its Gulf Coastal Plain of temperate grassland, although much of the city has also been built on marshes, forested land, and swamps, which create their own infrastructure and severe weather event risks.

Other regulation and policy

The city comparison also identified policy and regulatory decisions that affect the supply of housing and its typologies. Brisbane reimburses some or all costs for infrastructure and fees for affordable housing, stimulating that part of the market. Several of the cities we examined had affordable housing programmes, including even Detroit, despite its huge population loss and resultant relatively affordable housing. It has pilot programmes in place to encourage redevelopment of blighted properties closer to the city at affordable price points.

Materials and construction costs

Much has been said about the cost of building materials in New Zealand versus elsewhere around the world. Some have suggested materials are as much as 30% more expensive in New Zealand than in Australia.

Notwithstanding the significant differences in building regulations and requirements due to seismicity or weather conditions here and overseas, evidence from Australia and the US does suggest building there is generally cheaper. The sheer scale of these markets means multiple large producers of building products are supported, competition is possible, and innovation is encouraged. Recent estimates of stand-alone home building costs in Houston and in Manchester were both around 20% cheaper than in Auckland.

Yet new dwellings are still being delivered at prices much higher than the median house price even in Pittsburgh and Detroit. For instance, the median house price in Detroit is US\$219,000, but newbuilds sell for around US\$306,000. The comparable figures in Pittsburgh are US\$143,000 and US\$233,000. This is because the stock of existing homes is characterised by many blighted or run-down properties, with the depreciated value of the dwelling very low compared to the price of building a new home on those same sections.

Labour access and wages

Labour law and access to labour play a role in determining the price and pace at which housing can be delivered. Texas and Pennsylvania for instance, have a minimum wage of US\$7.25 (roughly NZ\$11.35) an hour compared to NZ\$17.70 in New Zealand. In Detroit, the minimum wage is NZ\$14.46. In Melbourne and Brisbane, the minimum wage is NZ\$20.70.

And in Houston, [up to half of construction sector workers](#) are estimated to be undocumented, with a lower estimate of [at least one-quarter](#). This means a large supply of workers with no legal recourse who are potentially working for even less than minimum wage. This has huge implications for delivering housing more cheaply, but not in a way we would like to emulate in Auckland.

Industry capacity and structure

Access to the right skills to deliver at a mix of price points also varies across the comparator cities. For instance, Brisbane has a range of specialist affordable home developers, something conspicuously missing from the Auckland market until recently. And in Detroit, 63,000 people work in construction despite just 7,200 new building permits a year.

Compare this to the familiar Auckland (and New Zealand) story, where the building boom of 2004 was followed by a building crash and the hollowing out of the sector here, with thousands of workers leaving predominantly for Australia. This limited the sector's ability to scale up when demand for housing began to surge on the back of population growth from 2012.

In conclusion

The analysis of cities from across the affordability spectrum shows that when you don't have a housing shortage, prices remain moderate. When you have a shortage, there can be a number of reasons why.

We can't change our geography. But over the last three years, the Auckland market has benefitted from a number of regulatory and structural changes that have helped moderate growth – much more enabling zoning rules, a foreign buyer ban, tighter LVRs, tougher exchange controls in China, a surge in industry capacity, ongoing economic strength with income growth and low unemployment, among others.

Housing remains unaffordable for many Aucklanders, but the evidence suggests it's a mix of policies, conditions and changes that have allowed the progress made so far. As we continue to tackle this challenge, it's going to take more of this holistic view to get the job done.

Auckland Economic Commentary

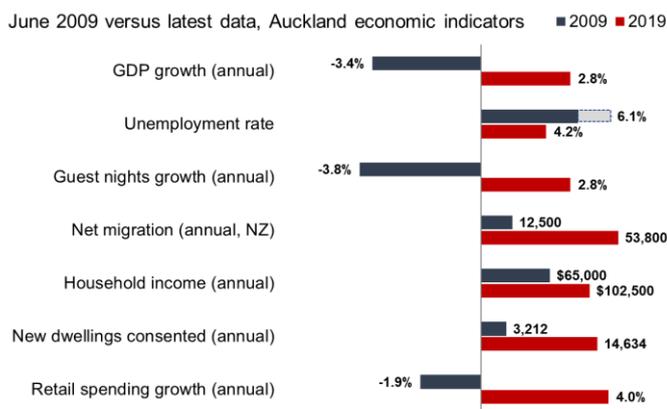
Shyamal Maharaj

Economist, Chief Economist Unit

- Auckland is still growing steadily despite the pessimism that's lingering in the air.
- The labour market in Auckland is holding up well, wages are rising at above average rates and the participation rate is firm.
- Residential dwellings consented continue to rise, especially in the multi-unit category.
- On the flip side, consented commercial floor space is coming off record highs, but a backlog of work suggests that building work put in place will continue to increase for some time.
- House prices are beginning to tick upwards again, following record low mortgage rates and consistently strong migration.
- That said, it is encouraging to see the RBNZ is looking beyond sentiment to real world data, with their recent market surprising decision to hold the OCR at 1% in their November decision.

Auckland's economy is tracking along steadily despite the lingering pessimism in confidence surveys although growth across the New Zealand economy for the September quarter is broadly expected to take a further small step down. But a significant part of the expected weaker September performance is likely due to factors beyond our borders, such as the ongoing trade war.

Monetary policy meanwhile has surprised markets, but not anyone looking astutely at the data rather than the angst of business sentiment and uncertainty through confidence surveys. Our chart below summarises this well.



Source: Chief Economist Unit, Auckland Council; Statistics New Zealand; Infometrics; NZIER

The challenge remains for Auckland not to fall prey to sentiment, as the economy approaches the next phase of the economic cycle.

Fundamental to the health of the Auckland economy is the labour market. Unemployment is at levels not seen since

the Global Financial Crisis hit in 2008 (notwithstanding changes to measurement methods). In fact, official data suggests unemployment fell to 4.1% in the September quarter for Auckland. Meanwhile, the New Zealand number unwound its surprise 3.9% from the June quarter reverting back to 4.0%. The unemployment rate has been roughly flat for a year now.

In the context of Auckland, incomes continue to rise, with wages continuing their gains. However, the recent rise in wages has been partly attributed to the pay-outs associated with employment dispute settlements. Looking through this however, Auckland wage growth is still solid and supports a healthy view of the wider economy. We would expect that if wage growth remains strong for a couple of additional quarters, it could signal that we have reached the low point in the unemployment rate for this cycle.

Residential dwellings consented continue to surprise on the upside, and are well higher than our forecasts of likely growth in 2019 after the sensational gains in 2018. Our analysis shows that annual consent numbers in excess of 14,000 are likely needed to meet the need of existing growth and to begin to eat into the shortfall of roughly 45,000. We still have a lot to do.

A large part of this rapid surge in multi-unit consents has been due to the Unitary Plan enabling better use of existing land in urban Auckland. Multi-unit consents now represent more than 53% of annual dwellings consented. This is signalling a change in the appetite of dwelling typologies and is an indicator of what Auckland could look like one day.

On the flip side, consented commercial floor space is coming off its record highs although a large pipeline and backlog of work remains to be built. Building work put in place is still rising fast and trails non-residential floor space consented. Growth in commercial construction activity will remain a major part of the engine of the Auckland economy for the next year despite floor area consented having peaked.

Following an extended period of flat house prices in Auckland, the market is showing signs of springing to back to life, beyond the usual rise when warmer weather hits. It appears that a cacophony of factors that put a brake on house prices may be less of a concern now. Factors such as the foreign buyer ban (seems to have done its job), capital gains tax (indefinitely shelved), tougher loan-to-value restrictions (LVR) on investors and broader economic uncertainty have all played their part. But as the market adjusts to record low mortgage rates, still exceptionally-strong immigration, and rising incomes,

the real-world data suggests a modest resurgence in prices. We have long argued that there was [no reason to expect prices would fall sharply](#) from where they are, but a modest uptick does appear to be upon us a few months earlier than we anticipated.

Seasonally-adjusted house prices in October were the highest in 20 months, and are now only about 1.7% off the peak in October 2016. Still, our Serviceability Affordability Model (SAM) shows that servicing a mortgage is more affordable than it has been in almost 6 years.

Recognising the importance of real-world data over sentiment, the RBNZ kept the OCR at 1% in November. Although, this had its reactions on the day, fixed mortgage rates are still easing, and the economy is doing quite well.

This appears to have been a wise decision. Data since, including September retail trade data, has continued to be stronger than many in the market had forecast, and more in line with what we've been saying in recent months.

Against this reality, the Auckland economy in 2020 is likely to be supported by resilient fundamentals including a generally firm labour market with rising wages, continuing construction led growth, strong population growth and wealth gains from modestly rising house prices.

Data summary provided by [Ross Wilson](#) - Analyst, RIMU

Indicator	Sep-19 quarter	Jun-19 quarter	Sep-18 quarter	5-year average	Rest of New Zealand Sep-19 quarter
Employment indicators					
Annual employment growth (%pa)	0.5%	2.6%	3.5%	3.7%	1.1%
Unemployment rate (%)	4.1%	4.2%	3.7%	4.9%	3.9%
Unemployment rate among 20 to 24 year olds (%)	9.4%	7.3%	6.4%	9.2%	6.5%
Unemployment rate among 15 to 19 year olds (%)	17.1%	16.1%	16.2%	20.9%	15.0%
Earning and affordability indicators					
Annual nominal wage growth (%pa)	3.1%	4.3%	2.8%	2.5%	4.0%
Annual geometric mean rent growth (%pa)*	1.9%	3.1%	3.8%	3.8%	3.9%
Geometric mean rent to median household income ratio (%)*	26.8%	26.9%	26.6%	28.0%	24.1%
Annual median house price growth (%pa)*	0.2%	0.0%	-0.5%	6.5%	6.3%
Mortgage serviceability ratio (relative to Dec-06)*	6.2%	2.9%	-0.5%	-5.7%	21.7%
Construction					
Annual new residential building consents growth (%pa)	13.0%	13.4%	16.3%	14.6%	11.3%
Annual m2 non-residential building consent growth (%pa)	-2.5%	19.0%	35.4%	5.9%	8.0%
International connections					
Annual guest night growth (%pa)	2.9%	2.8%	-0.6%	1.8%	0.8%
Annual net migration	1.7%	3.0%	4.7%	6.7%	NA
Confidence					
Annual retail sales growth (%pa)	4.5%	4.0%	-16.1%	6.2%	3.7%
Quarterly Survey of Business Opinion (net optimists)	-38.4%	-34.5%	-26.1%	0.2%	-40.2%
Westpac Consumer Confidence*	106.7	102.0	98.2	110.9	103.5

Sources: Chief Economist Unit, Auckland Council; Statistics New Zealand; Ministry of Business Innovation and Employment; Real Estate Institute of New Zealand; New Zealand Institute of Economic Research; Westpac; Reserve Bank of New Zealand. * Rest of New Zealand figures are for all of New Zealand including Auckland. Data is not seasonally-adjusted.

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