Australian Wage Growth v Median House Price Growth

Written by: Mathew Johnson, Leanne Porter, Sreemanth Gurram & John Mikhail

Research Proposal

Our research was focused on answering the following questions:

Is there a correlation between house price growth & average income growth in Australia and how has this relationship changed between 2010 – 2020?

Is there a correlation between house price growth & average income growth in Melbourne and how has this changed between 2010-2020?

We completed our analysis through studying the trend of median income growth & median house price growth between 2010-2020 in both Metro & Regional areas. In more depth, we analysed the two variables at the beginning of the time period (2010) to the end of the time period (2020) to establish whether the relationship had changed.

Data Cleaning & Exploration

- **Majority of data came from the ABS website:**

  - **The files required significant cleansing.**
  - **Reformatting of data from CSV files.**
  - **Different formatting across different files concerned in our analysis**

- **Limited number of years available:**
  - **No official publications on 2021 data, therefore most recent data used was 2020.**

- **Missing years for income data:**
  - **This meant that data had to be manipulated and merged.**

- **Suburb / Postcodes:**

 - **The postcode needed to be added to our file to match the income growth with the suburb.**

Capital Cities: Median House Price Growth

- Median house prices across Australian Capital Cities experienced steady growth between 2010 – 2020. The average annual growth for Capital cities was 3.98% with Sydney performing best with regards to highest price, and Melbourne performing the best in terms of average annual growth.

**Capital Cities Median House Price: 2010 - 2020**
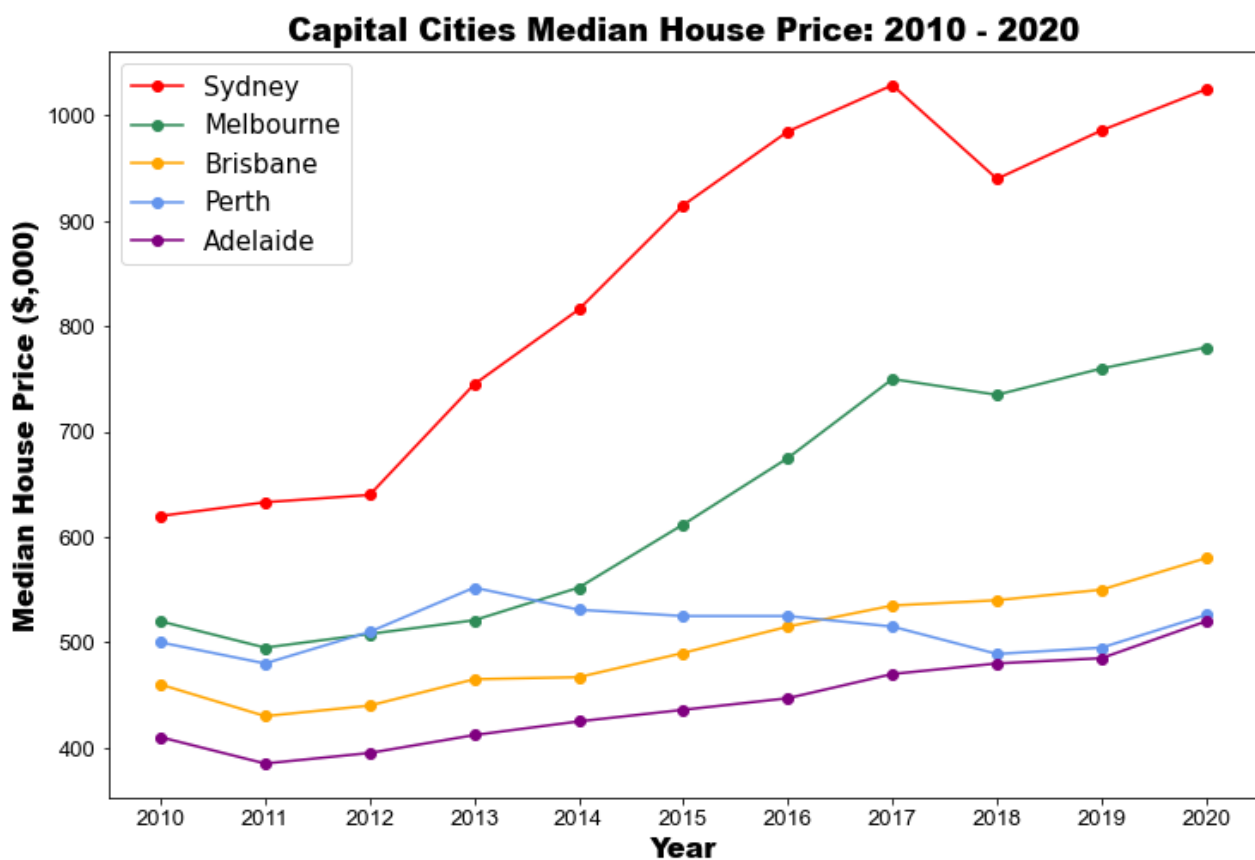
Regional: Median House Price Growth

- Median house prices in regional locations also experienced growth throughout the period, increasing at an average rate of 4.05%.

- The regional location with the highest median house price in 2020 was NSW, at $550,000.

- The regional area with the highest growth % across the period was Melbourne, with an average annual growth of 5.14%.

Regional Median House Price: 2010 - 2020
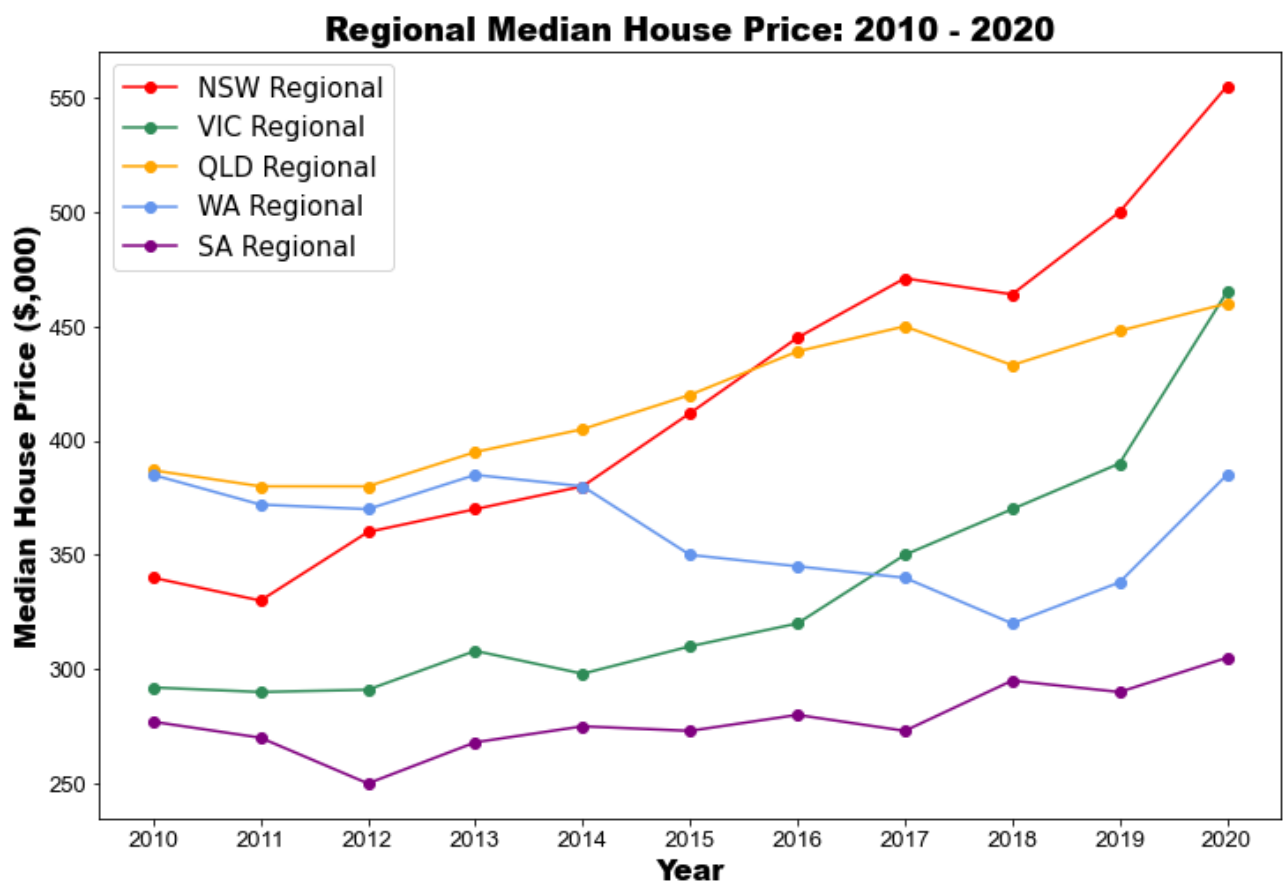
Metro & Regional Wage Growth

- **Metro wages experienced average growth of 4.42% between 2010 and 2020. The highest median salary was Sydney, totaling $77,586 in 2020.**

- **Regional wages grew at a slower rate when compared with Metro wage growth, with an average growth rate of 3.786%.**

Sydney v NSW Regional: Median Annual Salary

Melbourne v VIC Regional: Median Annual Salary
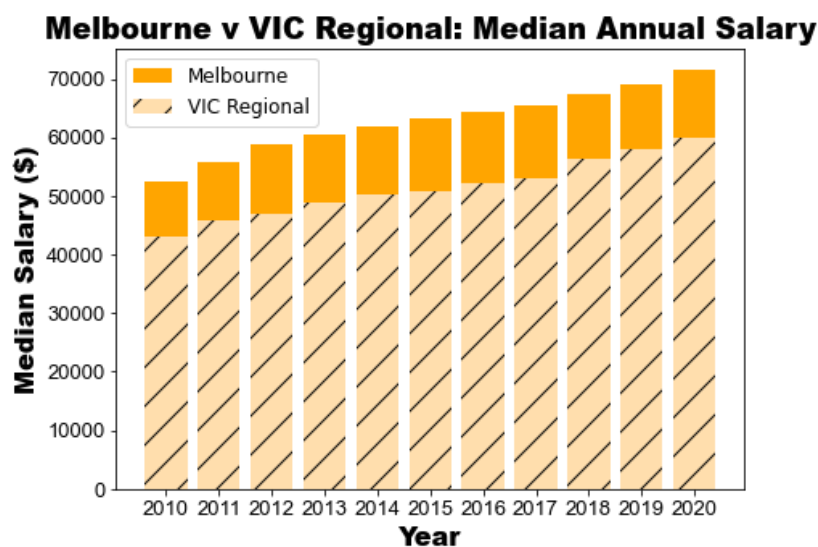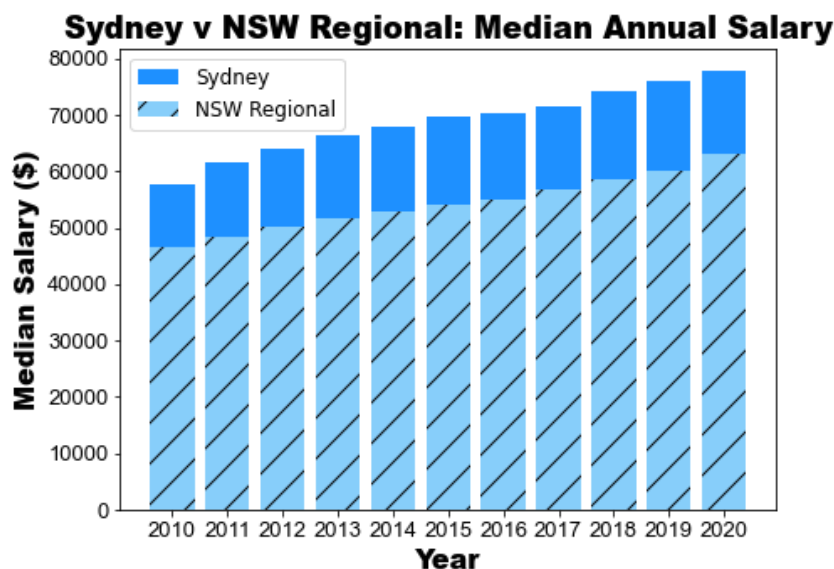
Adelaide v SA Regional: Median Annual Salary

Legend: Adelaide, SA Regional
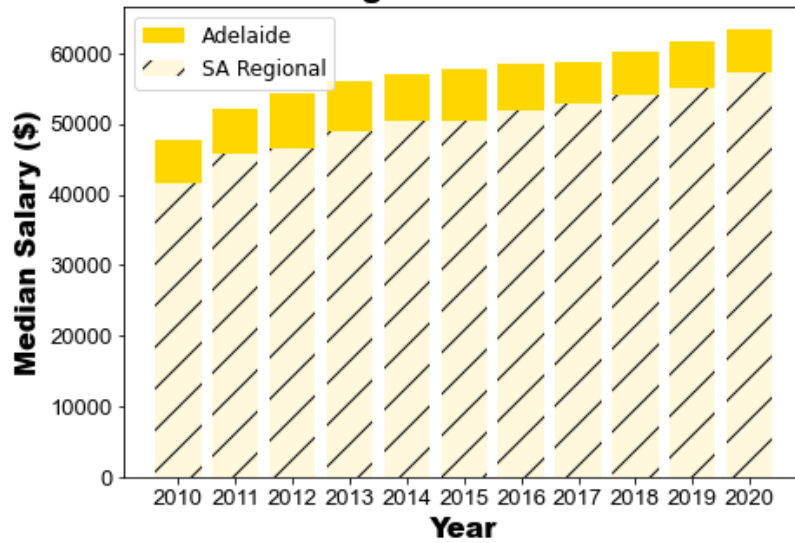
Brisbane v QLD Regional: Median Annual Salary

Legend: Brisbane, QLD Regional
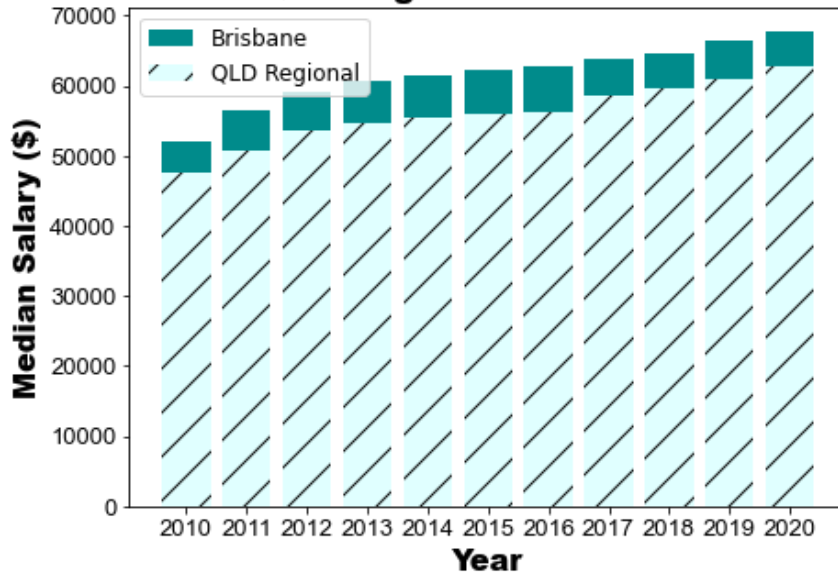
Perth v WA Regional: Median Annual Salary

Legend: Perth, WA Regional
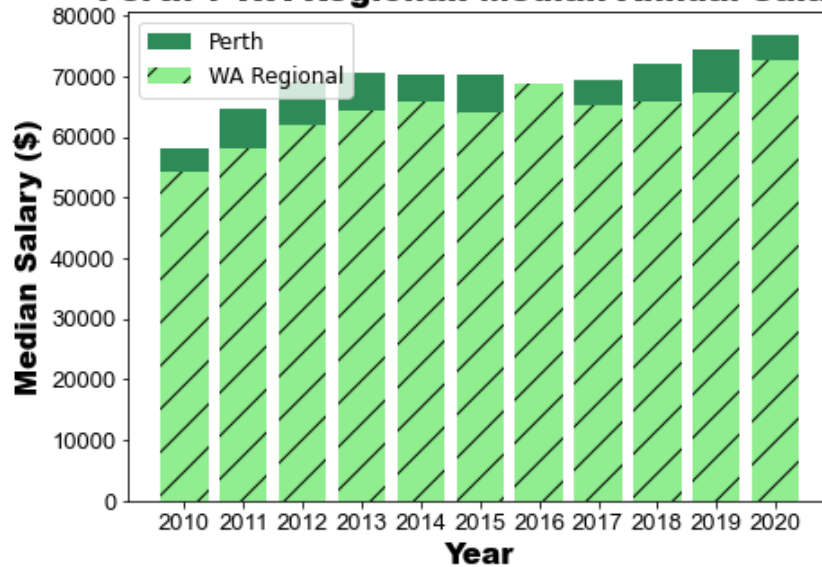
# Conclusions: Median Income Growth v Median House Price Growth

---

- **A positive correlation existed between house price growth & income growth, with each variable increasing over the 10 year period in both METRO & regional locations.**

- **Despite this, we can conclude, that the relationship between house price growth & income growth weakened between 2010 – 2020.**

- **In 2010, METRO income grew at a rate of 6.4%, whereas median house price grew at a rate of 6%, representing a strong correlation between the two factors.**

- **2020, in comparison, saw METRO median house price growth at an annual rate of 4.52%, with wage growth underperforming, seeing annual growth of 2.60%.**

- **With regards to regional locations, in 2010, average income was growing at 4.8% with house prices growing at a rate of 2.4%.**

- **Again, we have seen this change with regards to 2020 performance, with median house price growth exceeding median income growth. Median income growth was 7.20%, compared to wage growth of 4.2%.**

Capital Cities Median House Price Growth Rate: 2003 - 2020
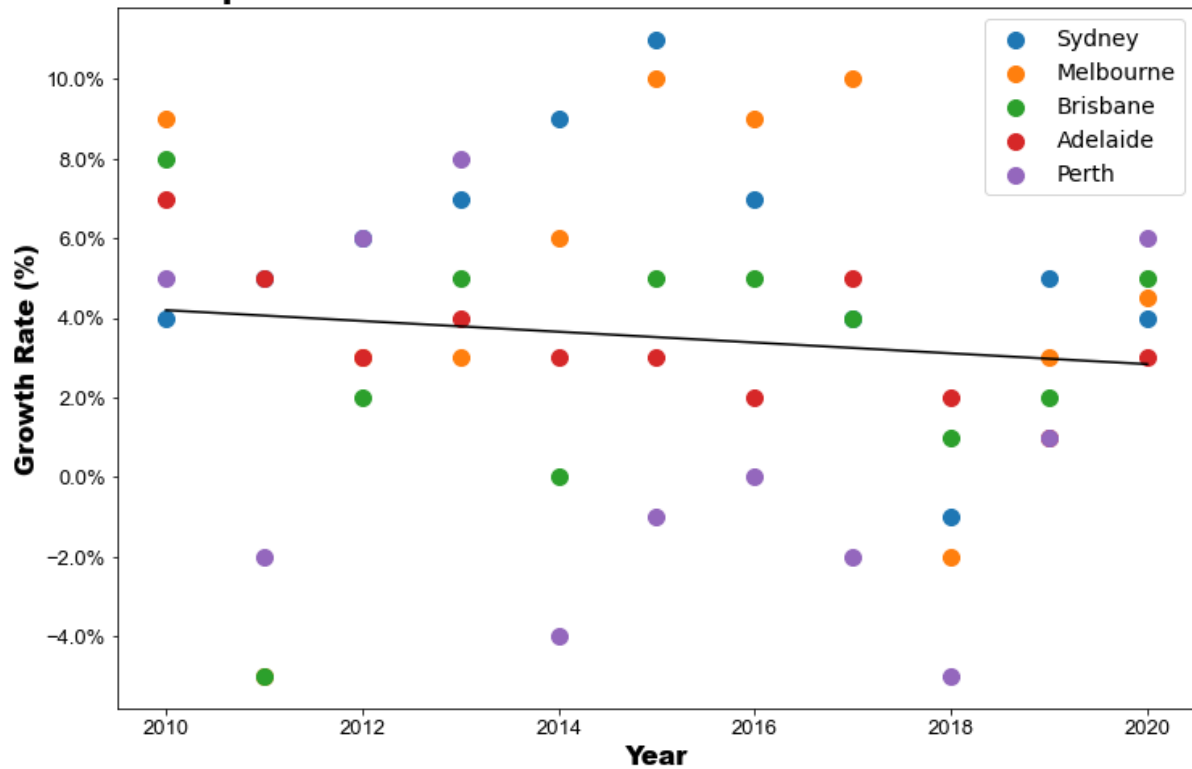
Capital Cities Median Income Growth Rate: 2003 - 2020

Regional Median House Price Growth Rate: 2010 - 2020

Regional Income Growth Rate: 2010 - 2020
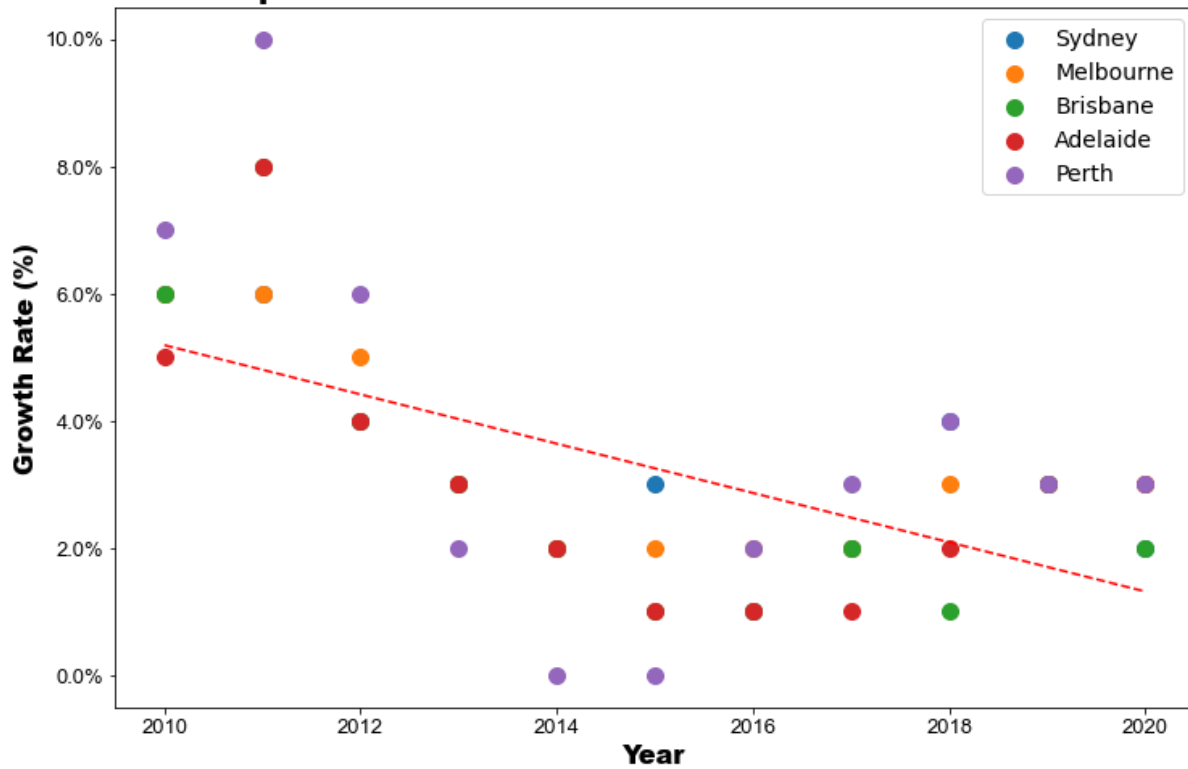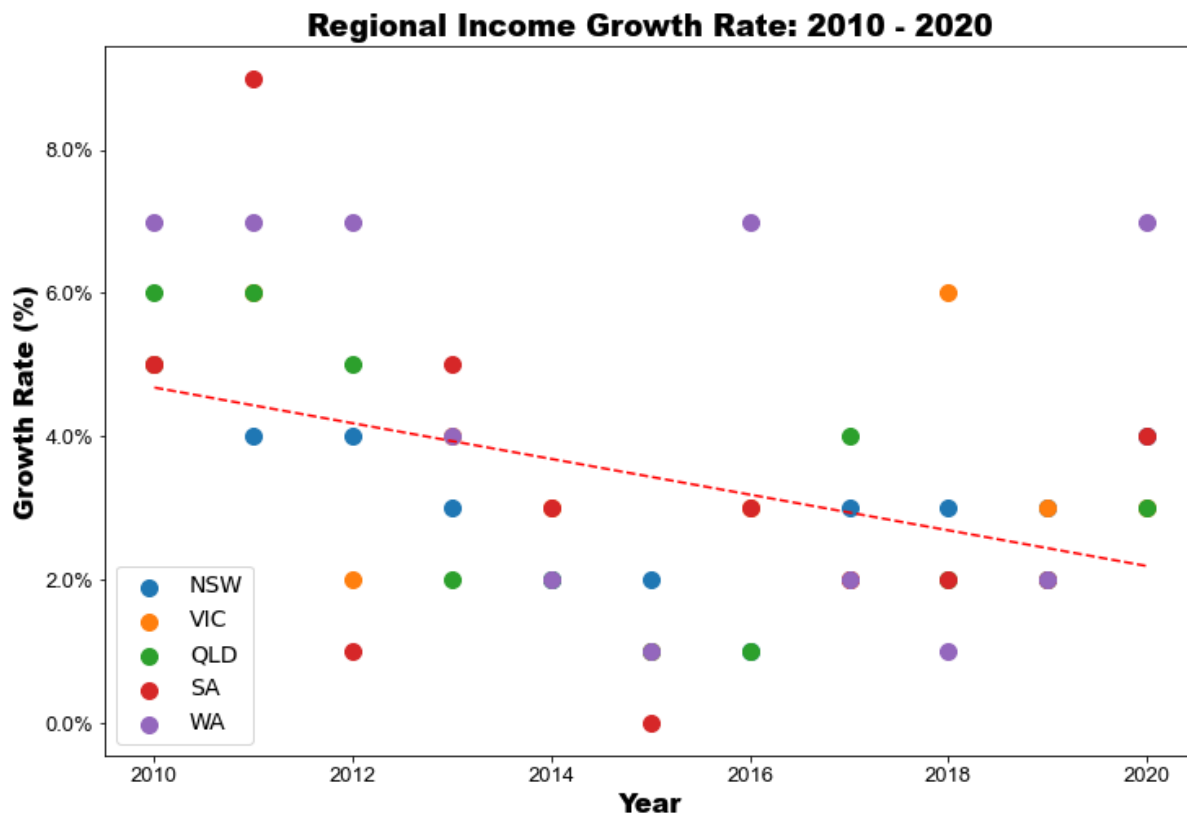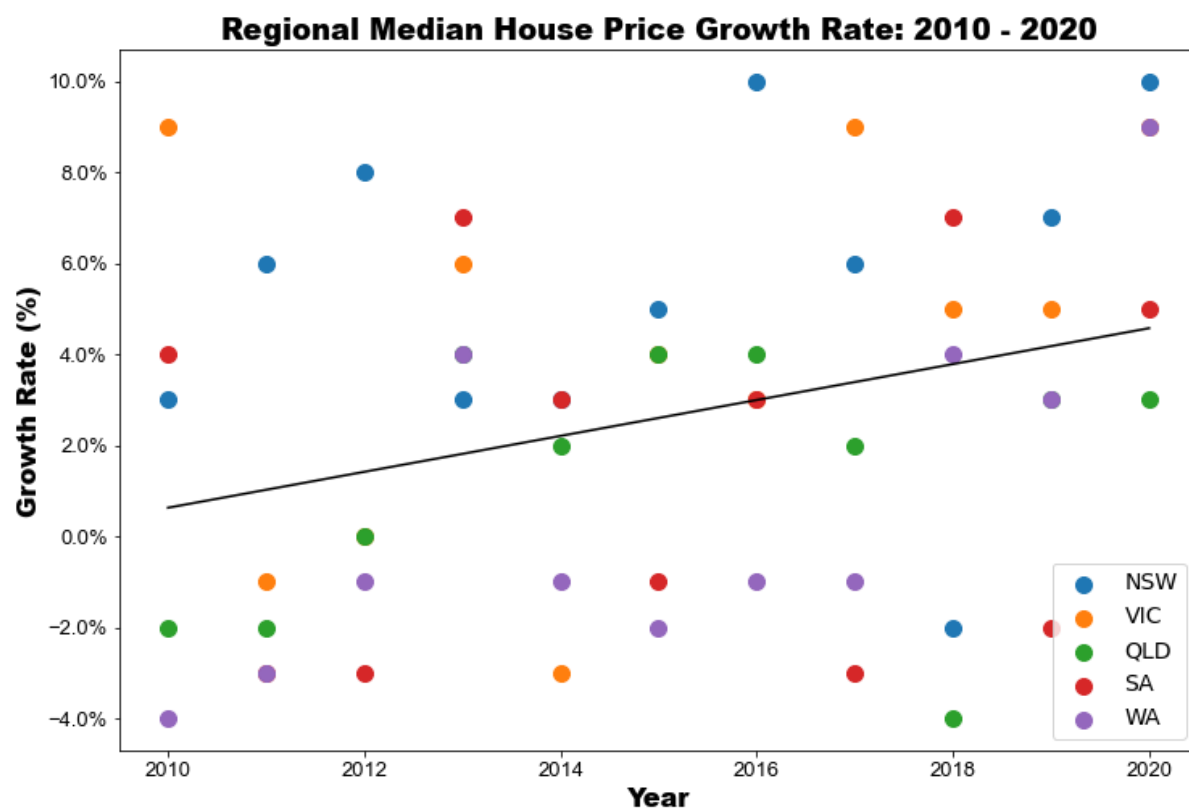
Capital City House Price Forecast

- **From our analysis, we were able to conclude that house pricing would grow at approximately 4.6% in capital cities between 2020 – 2025. This projection was based on trailing data, generating a moving average across the period to establish average annualized growth.**


Capital City House Price Growth Forecast
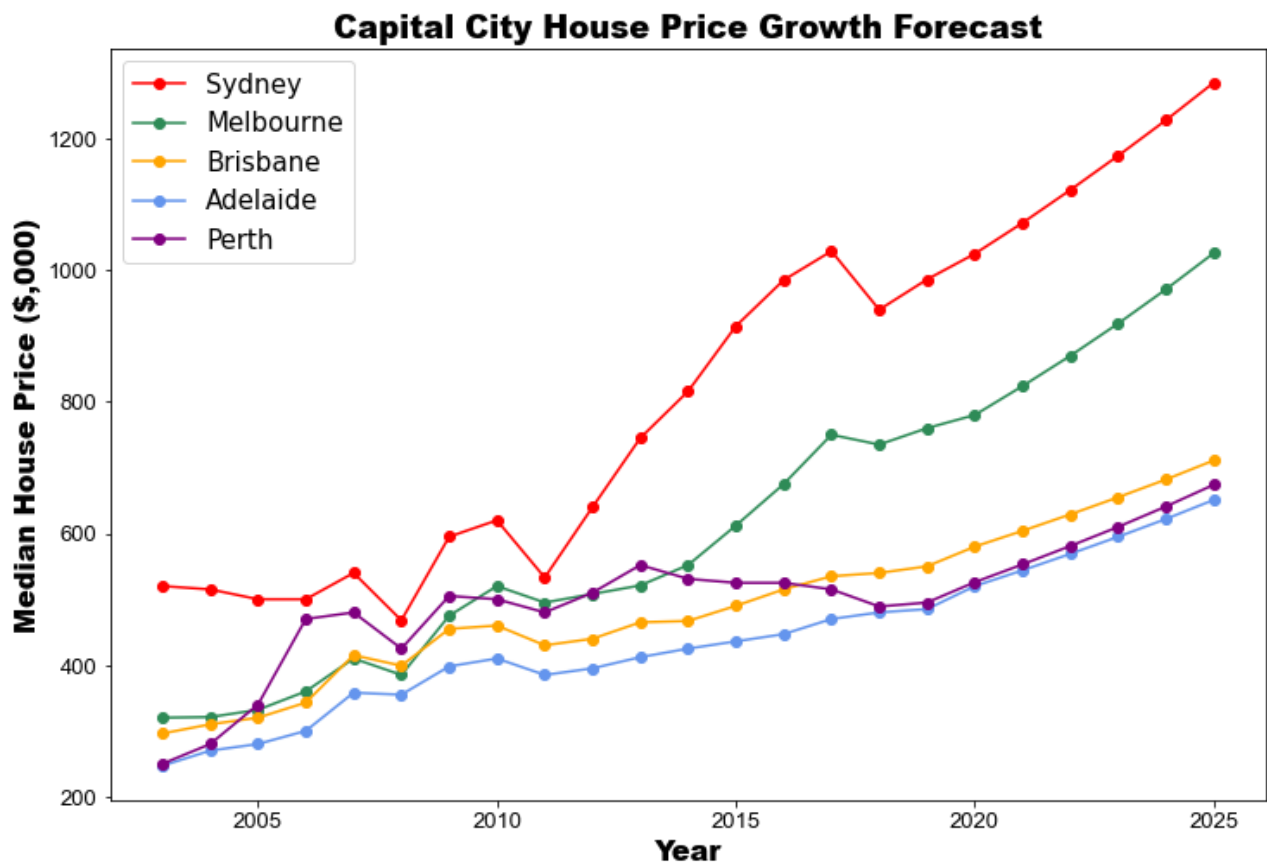
Victorian House Prices

- **As anticipated, the highest median house price were concentrated primarily within Melbourne's CBD area, with the lowest median house prices growth recorded in regional Victoria.**

- **The suburbs with the highest median house price value remained relatively similar between 2010-2015, however, in 2020 we can see the red zone significantly increase, indicating an exponential increase in median house pricing within Melbourne and also within regional locations.**
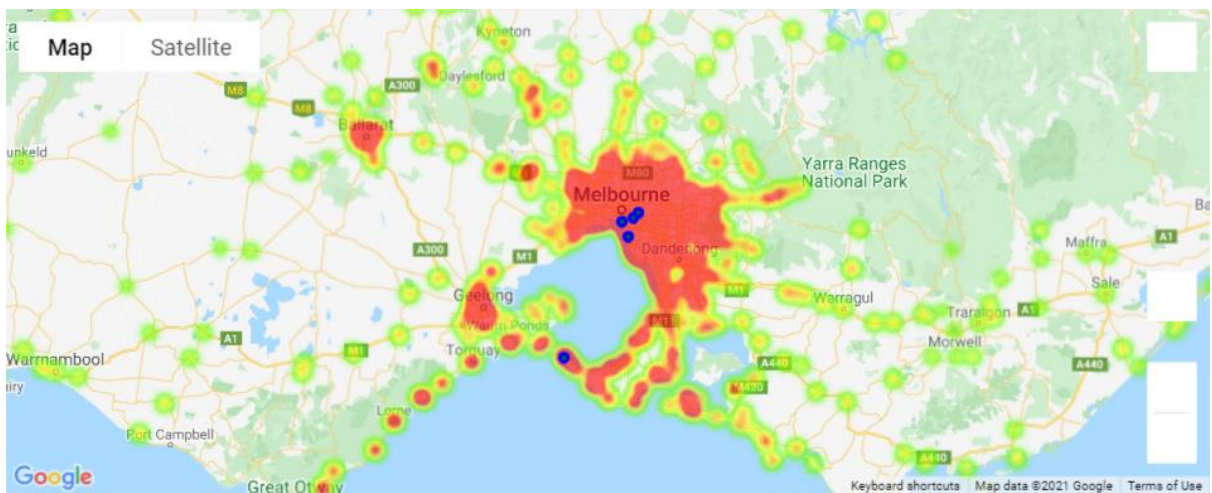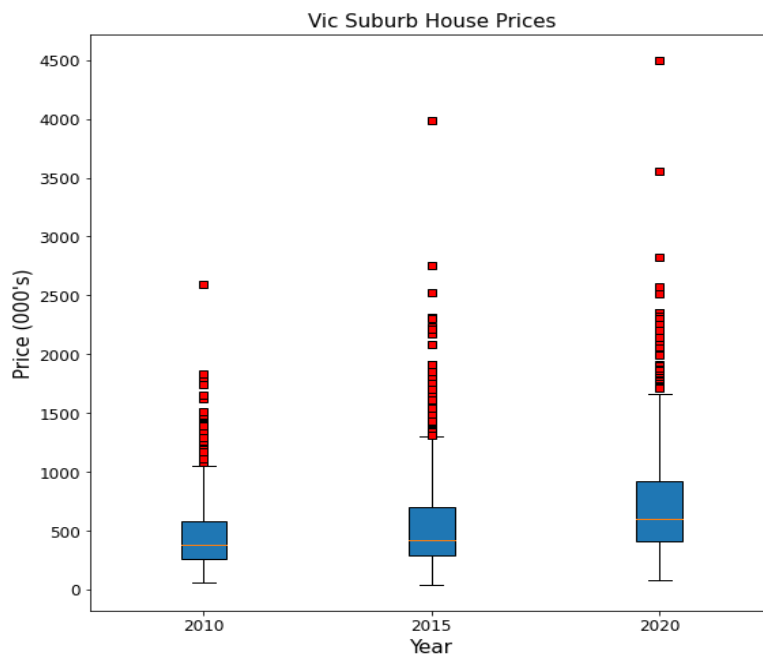
2010:
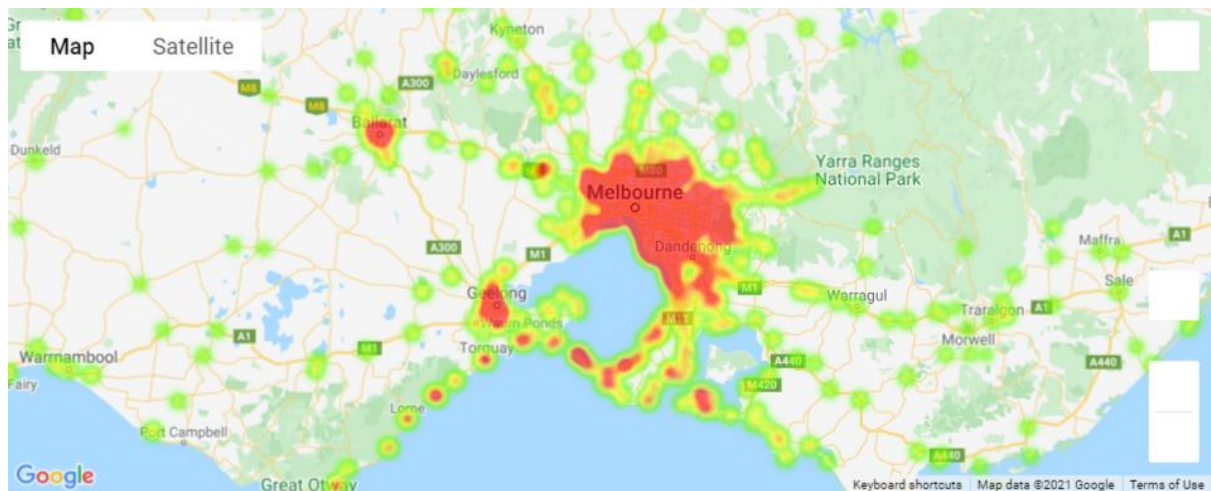
2015:
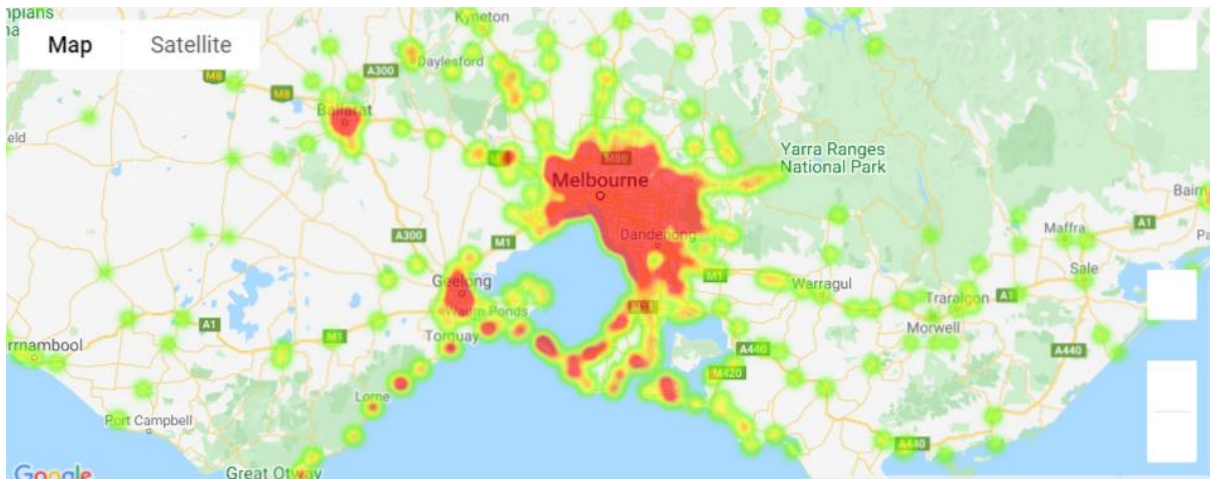
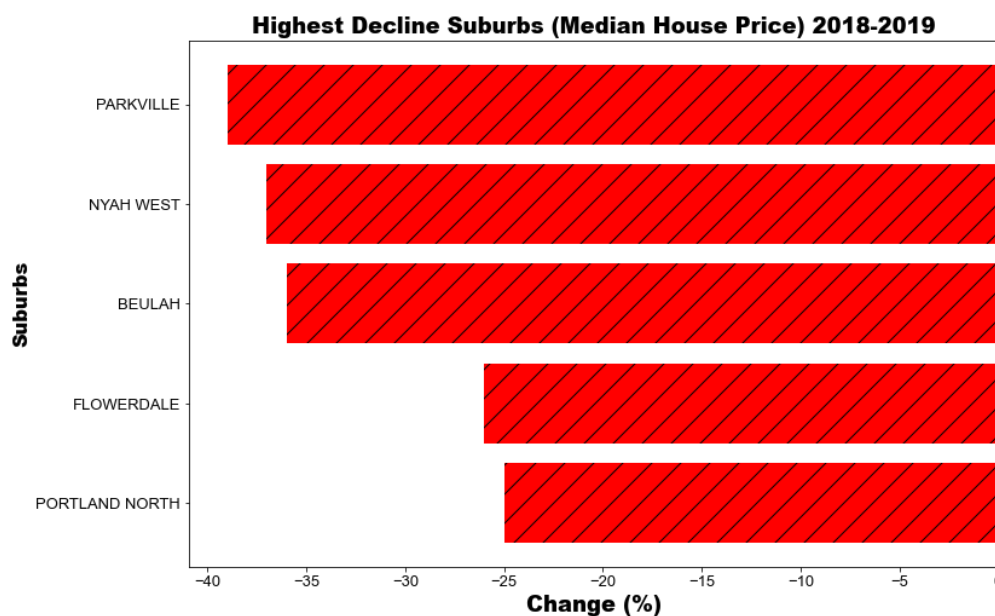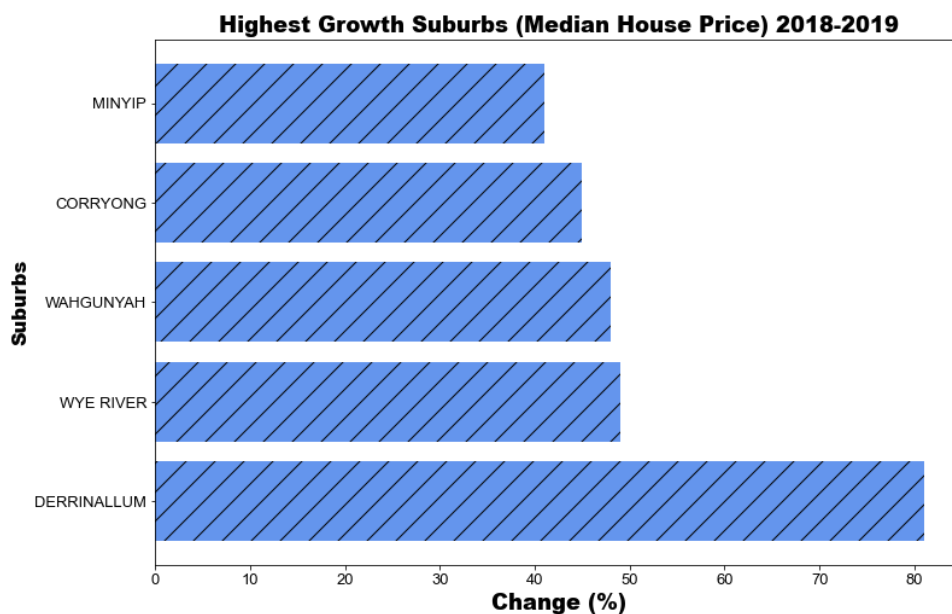**2020:**

Victorian House Prices: Conclusions

- **Median house price within Victoria experienced strong growth throughout the period within our analysis.**

- **The Inter Quartile range become increasingly widespread, representing higher variation in median house price.**

- **Approximately 20% of our population were statistically classified as outliers. This figure remained at a similar level between 2010 – 2020.**

- **Our research indicated property prices were growing higher between 2010-2020. In 2010, $1m was considered an outlier in terms of the highest property prices, this figure grew to $1.6m by 2020.**

Vic Suburb House Prices

Year	Lower Qrt	Upper Qrt	IQR	Median	No. of Outliers
2010	262.0	576.0	314.0	382.5	34
2015	293.5	700.0	406.5	423.5	43
2020	405.0	925.0	520.0	600.5	37

Highest & Lowest Growth Suburbs: Victoria – 2018 to 2019

- **The blue chart represents the top 5 Suburbs with the highest growth and the red chart shows the top 5 with the highest decline in median house price between 2018 – 2019.**

Highest Growth Suburbs (Median House Price) 2018-2019

Highest Decline Suburbs (Median House Price) 2018-2019

Highest & Lowest Growth Suburbs: Victoria – 2010 to 2020

- **The blue chart represents the top 5 Suburbs with the highest growth and the red chart shows the top 5 with the highest decline in median house price between 2010 – 2020.**

Highest Growth Suburbs (Median House Price) 2010-2020

Highest Decline Suburbs (Median House Price) 2010-2020
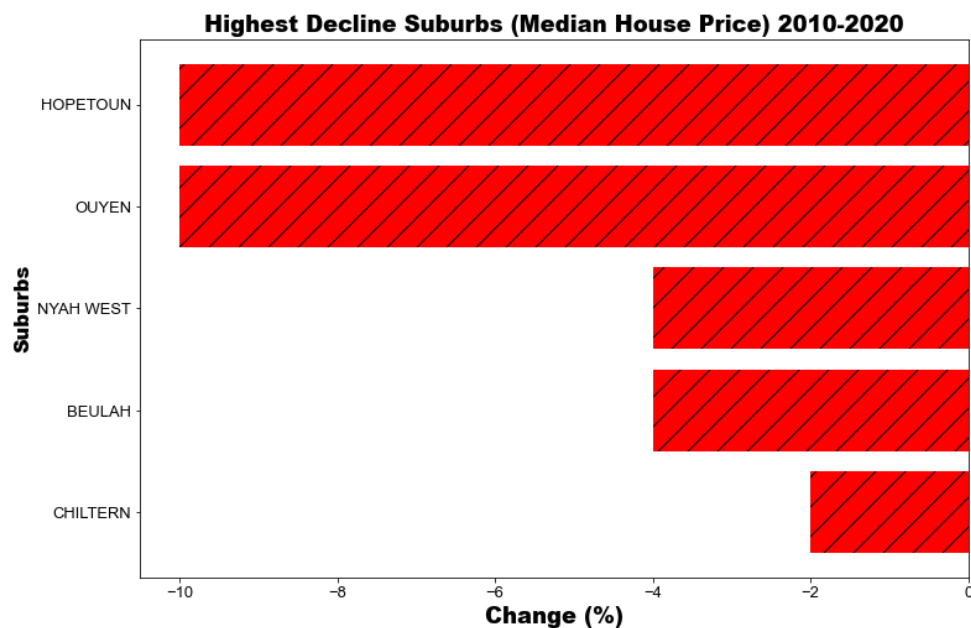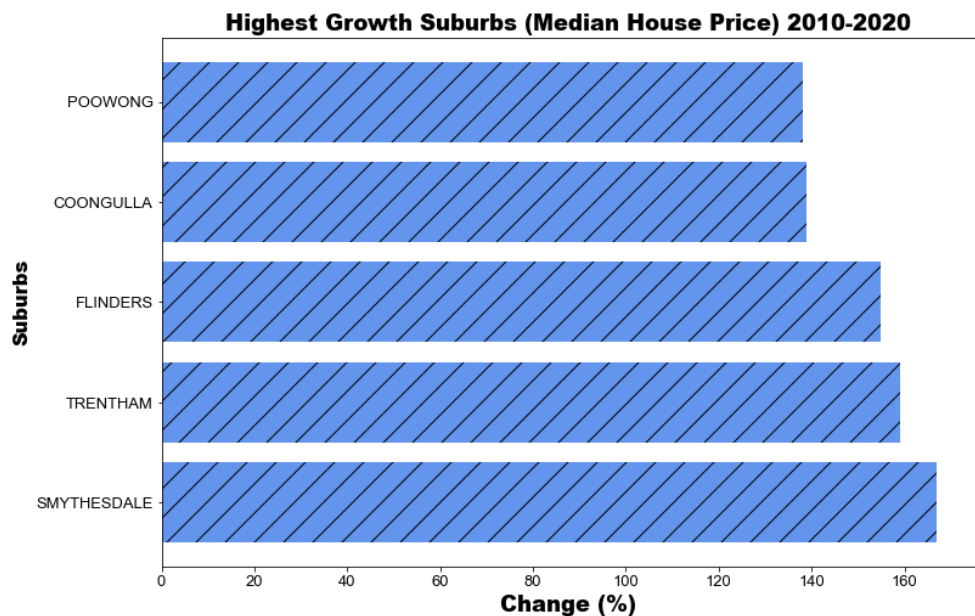
Difficulties & Further Research Questions

- **Exploration & Cleansing Difficulties:**

  - ○ **The data we required to complete our analysis effectively was not available in one place. We had to utilise many different sources.**

- **Change in Research Proposal:**

  - ○ **We initially intended to study how median house pricing had changed as a result of the Covid-19 pandemic. However, when we attempted to source the data, we could not find data from reliable sources and therefore opted for a different research proposal where accurate information was available in the public domain.**

- **What would we look at if we had more time?**

  - ○ **We would factor additional variables into our analysis e.g. employment rate, crime rates in different suburbs and, when data becomes available, Covid-19's impact on house price growth.**