Property Analysis Report

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Initial Exploration of Property Data

In this section, I will conduct an initial exploration of the property dataset provided. The exploration will include summarizing the types of data, identifying key data attributes and characteristics. Lastly, I will go through data preparation and collection at the end.

Types of Data

The dataset consists of numeric data due to the nature of the problem I'm solving. I've noticed all the variables are ratio data types, for example "median house price" represents monetary values, where zero has a true meaning, all these variables with prices follow the same ratio pattern. The variables with percentage values represent proportions and are also treated as ratios because they represent parts of a whole.

Data Source

1. ABS Census data

The Australian Bureau of Statistics (ABS) is used to provide access to Census data by specific geographic areas. The ABS is Australia's national statistical agency, known for its reliable and comprehensive data collection, including the Census, which is conducted every five years. The website is highly reputable and widely used by government agencies, researchers, businesses, and the public for accessing demographic and economic data to inform decision-making and policy development. This data source will be the primary data source for analyzing the property market for Ashcroft giving most of the data except for "MedianHousePrice" and "MedianUnitPrice".

2. Pricefinder

PriceFinder is a highly reputable resource for obtaining Median House Price and Median Unit Price data for specific suburbs, widely trusted by real estate professionals, investors, and researchers. The platform's reliability stems from its comprehensive and accurate data, sourced from a vast range of property transactions across Australia. By providing both current and historical price data, PriceFinder enables users to analyze market trends, assess the value of properties, and make informed decisions based on solid evidence. Its primary purpose is to serve as a go-to tool for understanding property markets at a granular level, offering insights

that are crucial for effective real estate investment and analysis.This data source will be the secondary data source providing “MedianHousePrice” and “MedianUnitPrice”.

Data Preparation and Collection

The data was manually inputted into excel using the data sources mentioned above, a template was used to enter the data where the data points consisted of percentages, currency and number, the template was in a wide format where each column under "Ashcroft" represents data from a different year, making it easier to compare these values side by side. To prepare the data further I used power query to appended three datasets including the main one into one table, “data2” had calculated columns from “data” and “data3” was used to help assist with visualizations such as a constant line to highlight important insights. After appending the queries all the time columns were unpivoted, also i made sure all the data types were correct after that closed and applied my transformations making it ready for visualizations later.

Key attributes and characteristics

MedianHousePrice and **MedianUnitPrice**

These attributes are important as they can be used to calculate affordability which will help me find insights for my property market analysis, the median unit price was mainly found through neighboring suburbs namely “Mount Pritchard”, the data values are formatted as currency, there’s no missing values, the maximum house price is “$750000” and minimum is “$252750”, the maximum unit price is “$620000” and minimum is “$260000”

AverageNumberPeoplePerHousehold

This attribute is important as it will help calculate demand for houses and units, the attribute is characterized by the average number of people per household using the count of people and seems to be around 3.

TotalPrivateDwelling

This attribute will help calculate supply and demand and represents the current supply, the attribute ranges from a min of 1134 to a max of 1293 seems like it's slowly increasing from a general glance of the data points.

MedianHouseHoldWeeklyIncome

This attribute will help calculate affordability attribute, it is represented in dollars and is characterized by household weekly income with a min of 602 dollars and a max of 1089 dollars showing an increasing trend.

Population

This attribute will help calculate demand, it represents the whole population of Ashcroft with a min of 3091 people and a max of 3634 people.

My Findings

1. Supply and Demand

I started by investigating the supply and demand for dwellings in Ashcroft, from the combo chart below we can see the supply and demand for ashcroft has been relatively stable fluctuating slightly above the equilibrium meaning that there is a little more dwellings available.

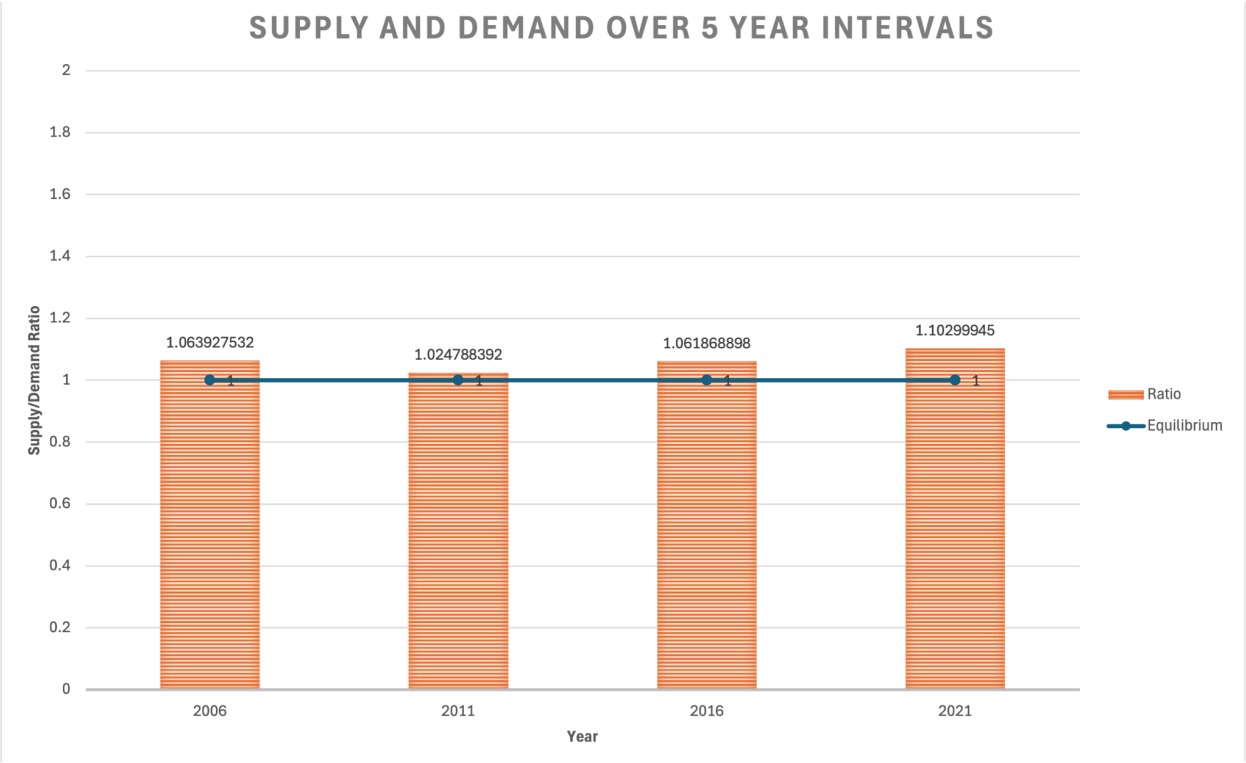
Visualization Type: Combo bar and line chart

Visual and Labeling Techniques

I created a line called equilibrium to demonstrate when the ratio is high or low in the bar charts, then i changed the minimum and maximum values of the y axis from 0 to 2 in align with the scale of the ratio, i made the bar charts a bit lighter in color to emphasis the equilibrium.

Challenges Encountered

I had to manually insert the data for the equilibrium in order to create the line due to the pivot table restrictions and maybe the way I formatted my data.



2. Affordability

After supply and demand, I investigated affordability of dwellings based on the weekly household income of the people in ashcroft. both house and unit affordability experienced a gradual increase, with house affordability showing more significant growth than units, as evidenced by the steeper upward trend in the "House Affordability" line. Projected trends indicate that house affordability will continue to rise at a faster pace, reaching an index of 13.21, whereas unit affordability is projected to increase more slowly, reaching 10.92. These insights suggest that while both types of dwellings are becoming less affordable, houses may become disproportionately less affordable compared to units over time.

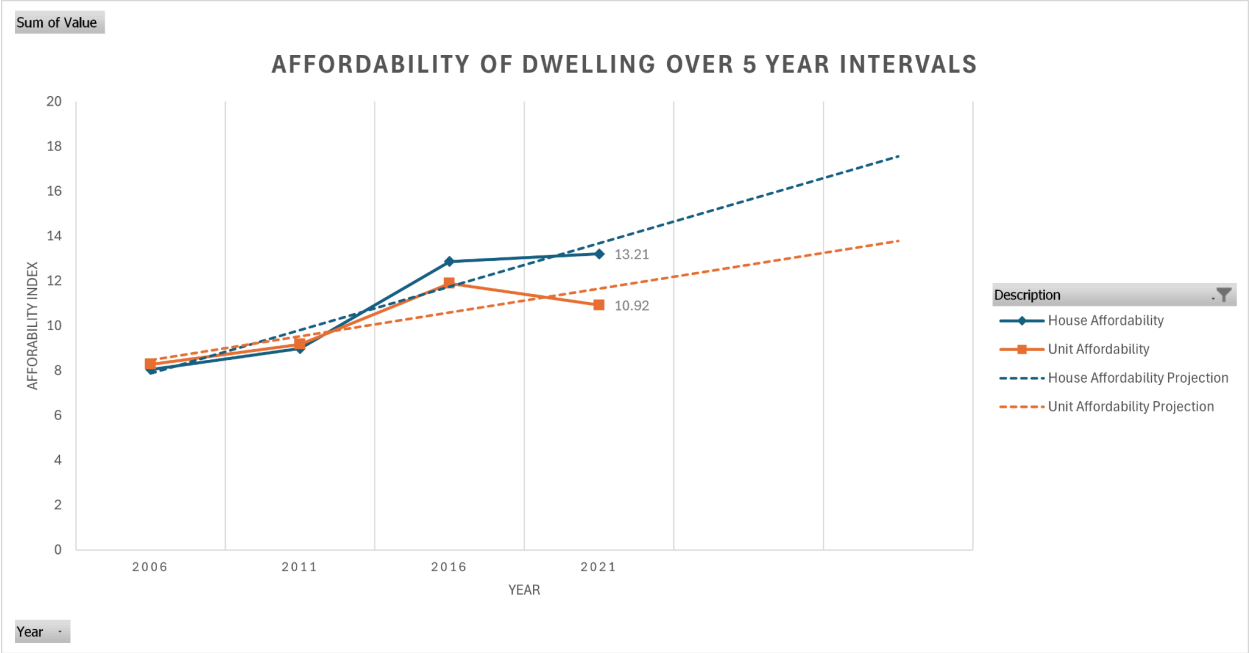
Visualization Type: Multi Line Chart

Visual and Labeling Techniques

I used data labels at the most recent year to give the viewer a better perception of the difference between the affordability of houses and units, I used forecast trend lines to emphasis the upward trend and lastly line markers to show the different data points as the years pass.

Challenges Encountered

No challenges encountered and mac is really bad for excel with limited functionality



3. Family household and personal income over 5 year intervals

Next I investigated the comparison of median family, household, and personal weekly incomes from 2006 to 2021, all of which display steady growth. Median family income increased significantly from around $800 in 2006 to $1,316 in 2021, while median household income rose from $600 to $1,089 during the same period. In contrast, median personal income experienced a more modest increase, from $300 to $458 by 2021. Projections suggest continued growth for all income categories, with family and household incomes rising at a faster pace than personal income, likely due to dual-income households and higher family contributions. Overall, the trends reflect consistent growth without any significant outliers.

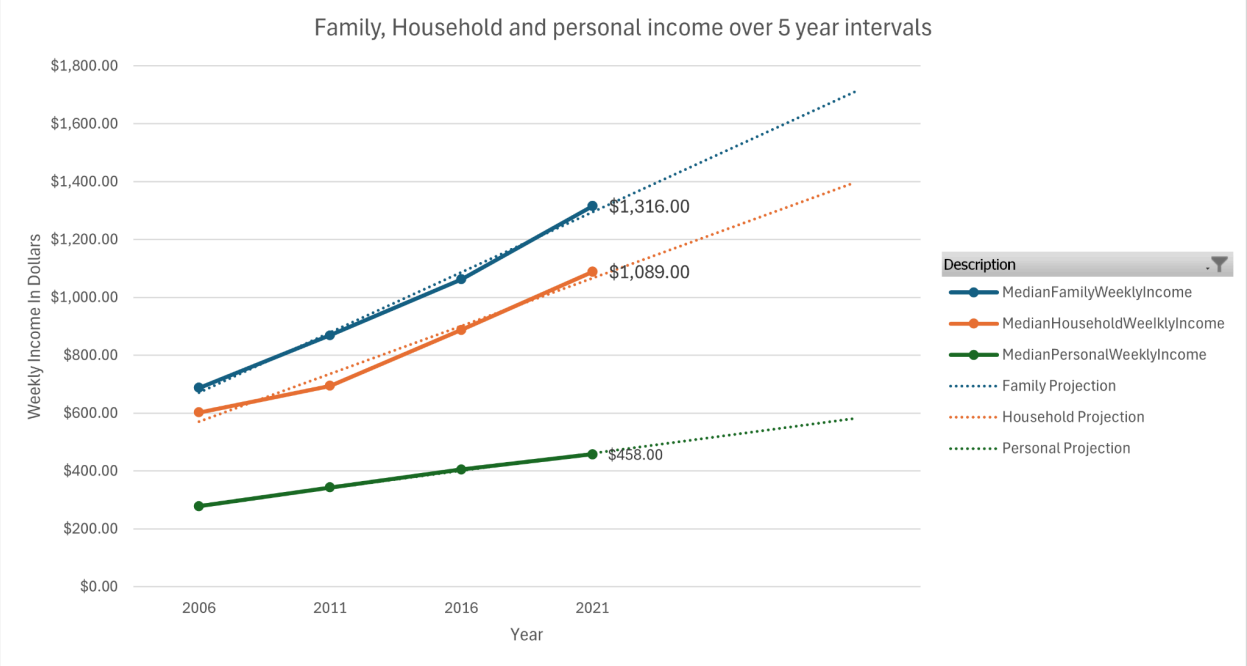
Visualization Type: Multi Line Chart

Visual and Labeling Techniques

I used data labels for the most recent year to give the viewer a better perception of the difference between the income in dollars as it progresses up, forecast trend lines to show the positive direction of the incomes, markers on the lines to make it clear where each year ends, y axis in currency units so people don't get confused and also the data labels as well, lastly labeling axis and title for better context.

Challenges Encountered

No challenges encountered.



4. Population, unit and house price trend over 5 year intervals

Next I used a multi line chart to explain population growth along with house and unit price changes, the chart illustrates significant growth in both median house and unit prices between 2006 and 2021, with house prices rising more sharply, reaching $750,000 by 2021, compared to unit prices at $620,000. The most substantial price increases occurred between 2011 and 2016, indicating a possible market surge. Projections beyond 2021 suggest continued growth, with house prices expected to exceed $1 million while unit prices remain under $900,000. In contrast, population growth shows a steadier, slower increase, highlighting a potential mismatch between housing demand and population changes.

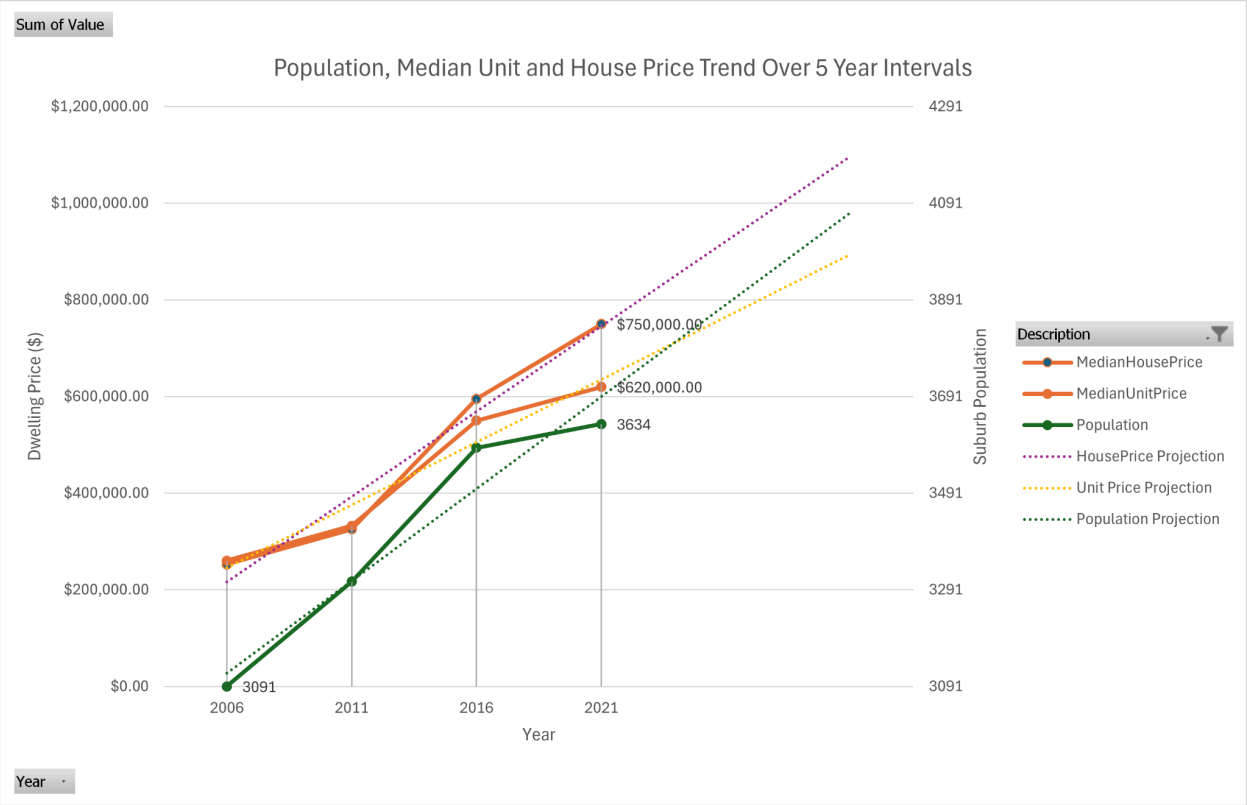
Visualization Type: Multi Line Chart

Visual and Labeling Techniques

I used data labels for the most recent year to give the viewer a better perception of the difference between the prices and population as it progresses up, forecast trend lines to show the positive direction of the incomes and population, markers on the lines to make it clear where each year ends, y axis in currency units so people don't get confused and also the data labels as well, labeling axis and title for better context and a secondary axis for the population due to the different unis being used

Challenges Encountered

No challenges encountered.



5. Comparison of mortgage and rent payments

Next I investigated real estate ownership with two chart comparisons, the two charts highlight key trends in mortgage payments/ownership and rent payments/tenancy from 2006 to 2021. Weekly mortgage payments increased from $300 in 2006 to approximately $450 in 2021, reflecting rising housing costs. However, the percentage of people owning homes with a mortgage remained relatively stable, ranging between 23.6% and 24%, indicating that despite higher mortgage payments, ownership rates saw little change. In contrast, rent payments experienced a more significant increase, rising from $125 in 2006 to $295 by 2021. Concurrently, the proportion of people renting grew from 43.8% to 51.3%, suggesting a shift towards renting, likely driven by affordability challenges as housing costs continued to rise.

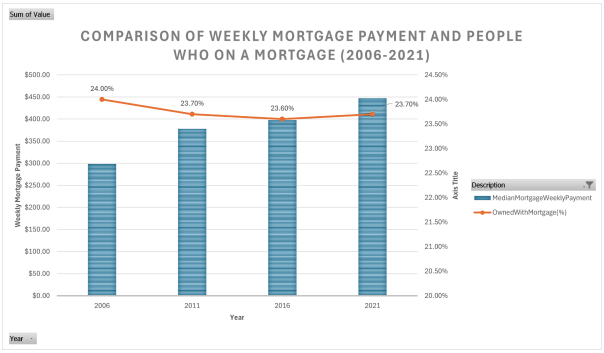
Visualization Type: Side by side combo chart

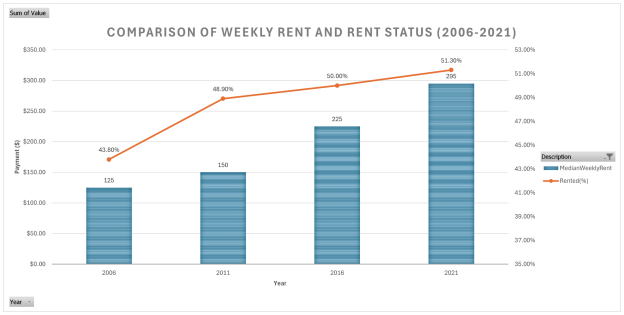
Visual and Labeling Techniques

I used data labels for both trend lines to show the slight changes in percentages, for the mortgage chart i changed the secondary axis minimum and maximum values so that the slight changes don’t appear big as it trends to the right, both charts have secondary axis since were working with two different units and each chart has labeled axes and titles to give more context and understanding and they are all in their respective data types for less confusion.

Challenges Encountered

No challenges encountered.





6. Unoccupied dwelling and demand comparison

Next I investigated unoccupied dwellings and demand using a combo chart, this finding is very similar to the supply and demand chart at the beginning, but this time showing the unoccupied dwelling trend. This chart highlights the trend in unoccupied dwellings and housing demand from 2006 to 2021. Over this period, the proportion of unoccupied dwellings increased significantly, from 5.03% in 2006 to 10.3% in 2021, indicating a rising number of vacant properties despite growing demand. The demand for housing also increased steadily, with a noticeable rise between 2016 and 2021, reflecting higher market activity. This divergence between rising demand and growing unoccupied dwellings may point to issues such as housing affordability or investment properties being left vacant, despite heightened housing needs.

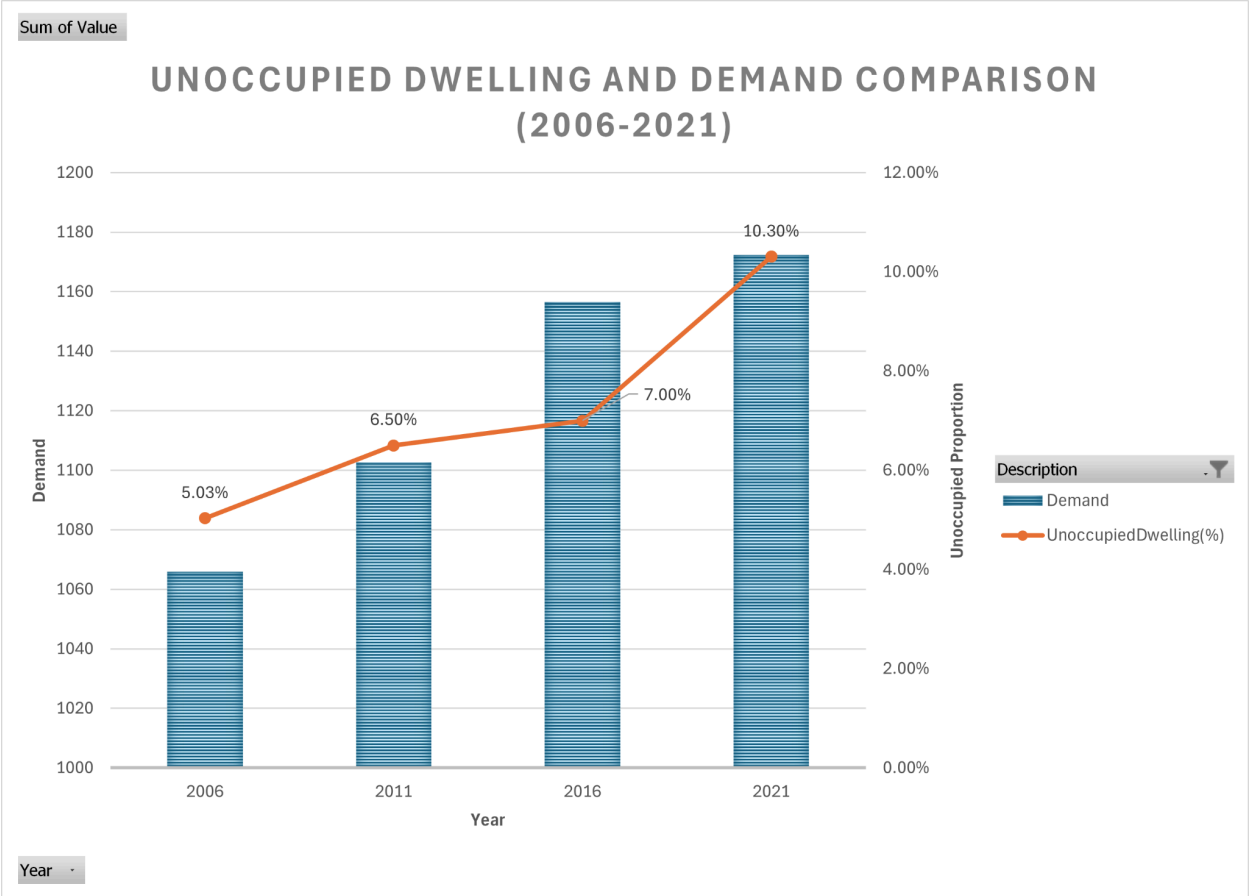
Visualization Type: Combo bar and line chart

Visual and Labeling Techniques

I used data labels for the trend line only to emphasis the changes in unoccupied dwellings as it increases, there is a secondary axis for unoccupied dwelling since were working with two different units each with their respective data type for less confusion, all axises are labelled and have a title for context and less confusion.

Challenges Encountered

No challenges encountered.



7. Comparison of people working full time and the household income trend

Next I investigated the comparison between median household weekly income and the percentage of people working full-time from 2006 to 2021. Over this period, household income consistently increased from $602 in 2006 to $1,089 in 2021, reflecting wage growth. However, the percentage of people working full-time declined from 58.4% in 2006 to 41.9% in 2021, suggesting a shift towards part-time work or other forms of employment. The projections show a continuing increase in household income, while full-time work is expected to decline further, pointing towards potential changes in labor market dynamics where income grows despite fewer people working full-time.

Visualization Type: Multi Line Chart

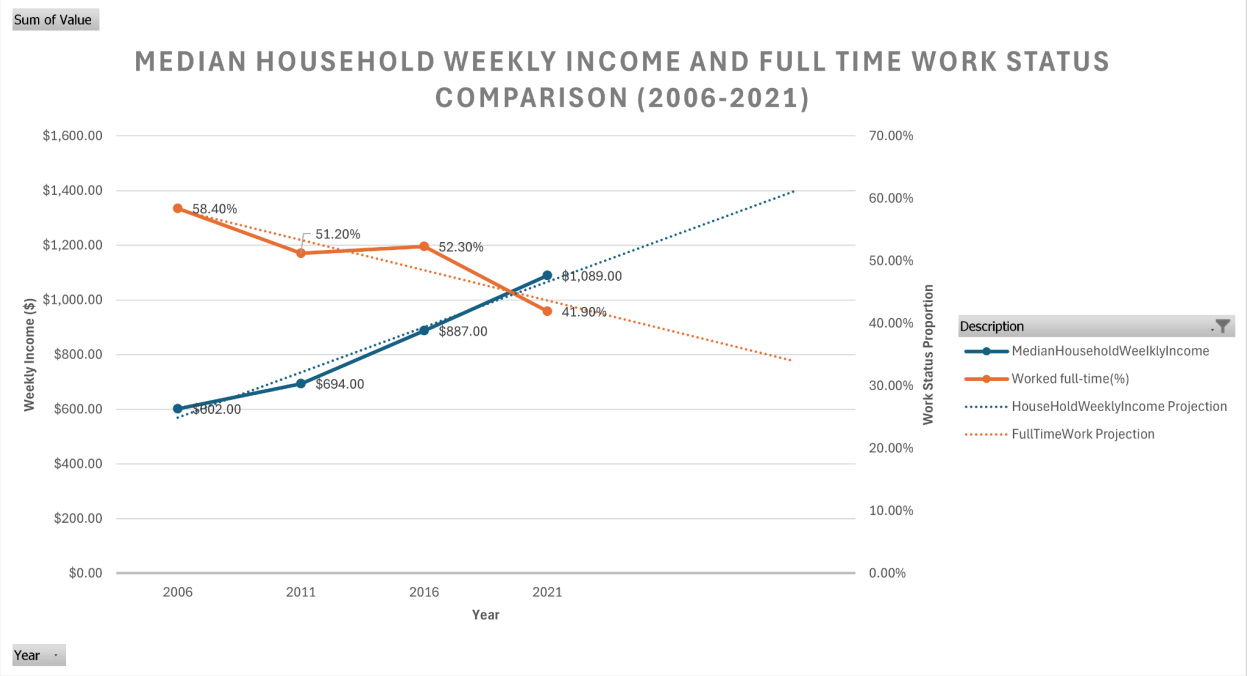
Visual and Labeling Techniques

I used data labels for both trend lines to show a precise representation of the trends lines as they intersect and trend further, i used forecast trend lines to emphasis the possible directions

they’re going in, i made sure household income trend values were in dollars including the axis and the proportions of the full time status were in percentages plus the data labels, I put a chart title for better context and markers to show each step in the year and that the chart is based on a small dataset.

Challenges Encountered

No challenges encountered.



8. The mean family types trend in comparison to house and unit price movements

Lastly I investigated the trends in median mortgage payments, median rent payments, and the mean of family types from 2006 to 2021. Over this period, both mortgage and rent payments increased significantly. Median mortgage payments rose from $298 in 2006 to $447 in 2021, while median rent payments more than doubled from $125 in 2006 to $295 in 2021, reflecting substantial housing cost increases.

Despite these price movements, the mean family proportion remained relatively stable at around 0.25 throughout the period, suggesting that family composition did not significantly change in response to rising housing costs. This stability in family types, despite escalating rent and mortgage prices, could indicate that family structures have remained constant even as affordability has become more challenging.

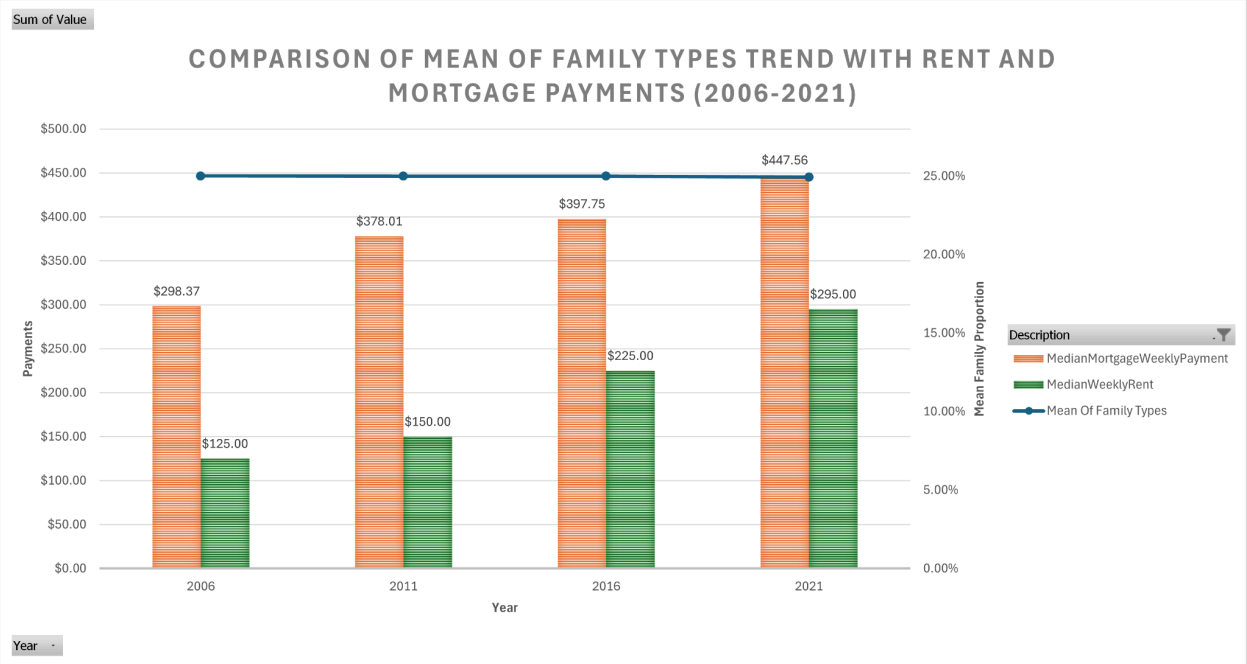
Visualization Type: Combo bar and line chart

Visual and Labeling Techniques

I used data labels for the bar chart only since the trend line didn't really have any variation, the labels were in dollars, i implemented a secondary axis in percentages and changed the minimum and maximum values to not emphasis the small changes in the line since there wasn't really any significant noticeable changes, all the axises were labelled and chart title for more context and less confusion

Challenges Encountered

Again I had to manually calculate the mean of family types line and input the average of all the family types for each year.



Key Recommendations

1. **Buy Now Before Prices Rise Further:** House prices are expected to surpass $1 million, so buying now could lead to significant capital gains. If you're looking for something more affordable, units are a better option as their prices are rising slower than houses.
2. **Strong Rental Potential:** Rent prices are increasing faster than mortgage payments, and more people are opting to rent. This makes Ashcroft a great opportunity for investors seeking rental income.
3. **Stable Family Market:** Despite rising prices, the number of families living in the area has remained stable. Investing in family-friendly properties is a safe bet, as demand is steady.

4. **Good Long-Term Investment:** There is currently a slight oversupply of housing, but demand is growing, which means prices should keep going up in the long run.
5. **Watch for Vacant Properties:** The number of unoccupied dwellings has increased significantly. This might present opportunities to purchase properties at a lower price, especially if they are investment properties left vacant. Savvy investors could capitalize on these opportunities by filling the demand for rental housing.
6. **Monitor Full-Time Employment Trends:** The decline in full-time employment, coupled with the rise in household income, suggests a shift in the labor market. Investors might consider targeting properties that appeal to a more diverse range of workers, including those in part-time or flexible jobs, as they are becoming a larger segment of the population.
7. **Potential for Market Surge:** The period from 2011 to 2016 saw significant house price growth, and future projections suggest continued strong growth. Investors should be aware of the potential for another market surge, particularly as population growth remains steady.

Visualization Approaches and Advantages

The report utilized several visualization techniques that effectively conveyed crucial information:

- **Combo bar and line charts:** These were helpful in comparing supply, demand, and affordability trends over time. For example, using an equilibrium line in the supply and demand analysis made it easy to visualize market conditions.
- **Multi-line charts:** These were used to show trends in population, housing prices, and household incomes. This approach made it clear how different factors were progressing in tandem or diverging, such as the difference between rising house prices and more gradual population growth.
- **Data labels and trend lines:** By placing data labels at the most recent data points and employing forecast trend lines, the visualizations helped highlight significant trends and future projections, making the findings easy to understand at a glance.