32146: Data Visualisation and Visual Analytics

University of Technology Sydney

Assessment – 1

Data Visualisation Foundations

Aryan Bansal

Student ID - 25015126

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Introduction:

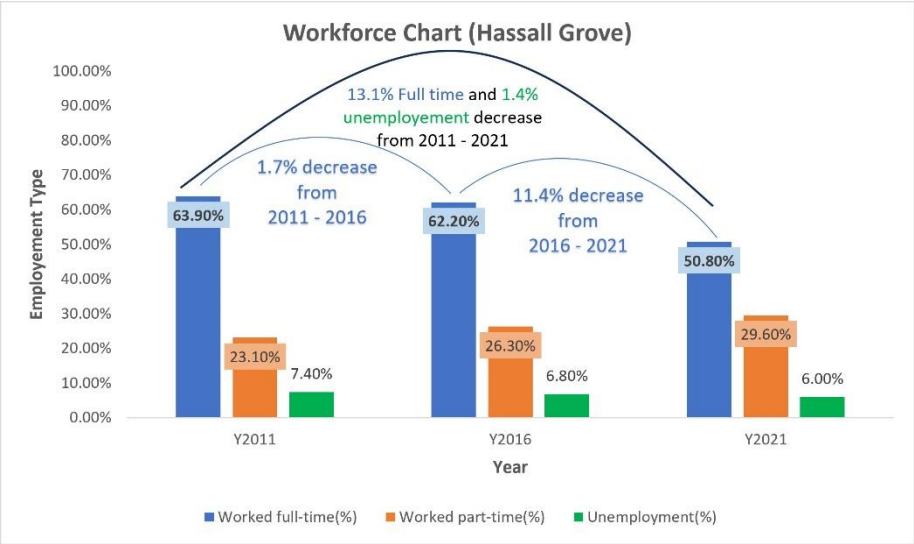
This report contains the data collected from Australia Bureau of Statistics and Price Finder for the suburb Hassall Grove which is situated in New South Wales (NSW), area code: SAL11873. The report is created to visualize and extract information for a property data analysis with keeping in mind about the different parameters used and different kinds of graphs to have a better understanding of the suburb.

The report contains the data from three years i.e. 2011, 2016 and 2021 and have been used to analyse for 8 unique parameters.

AIM: The aim of this report is to conclude the decision for a buyer interested to invest in the suburb for which key indicators and trends have been indicated.

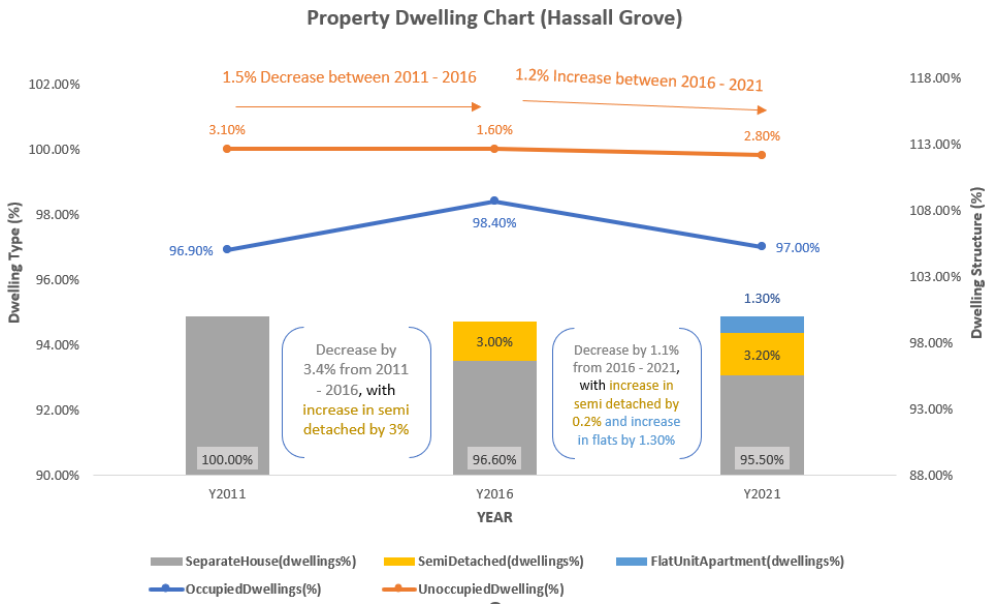
Executive Summary:

Workforce



For the workforce chart I've created a column cluster graph where on X-Axis, you can see the Years (2011 – 2021) and on Y-Axis, you can see the Employment Type. For full time working employees, there was constant decrease from Y2011 – Y2016 – Y2021 which accounted to 13.1% from 2011 – 2021. This might have happened because of increase in Part-time working employees which accounted to 3.2% increase from 2011-2016 and 3.3% from 2016-2021. There was a slight change in the unemployment rate as well which over the years got better by 1.4% between 2011-2021.

Dwelling

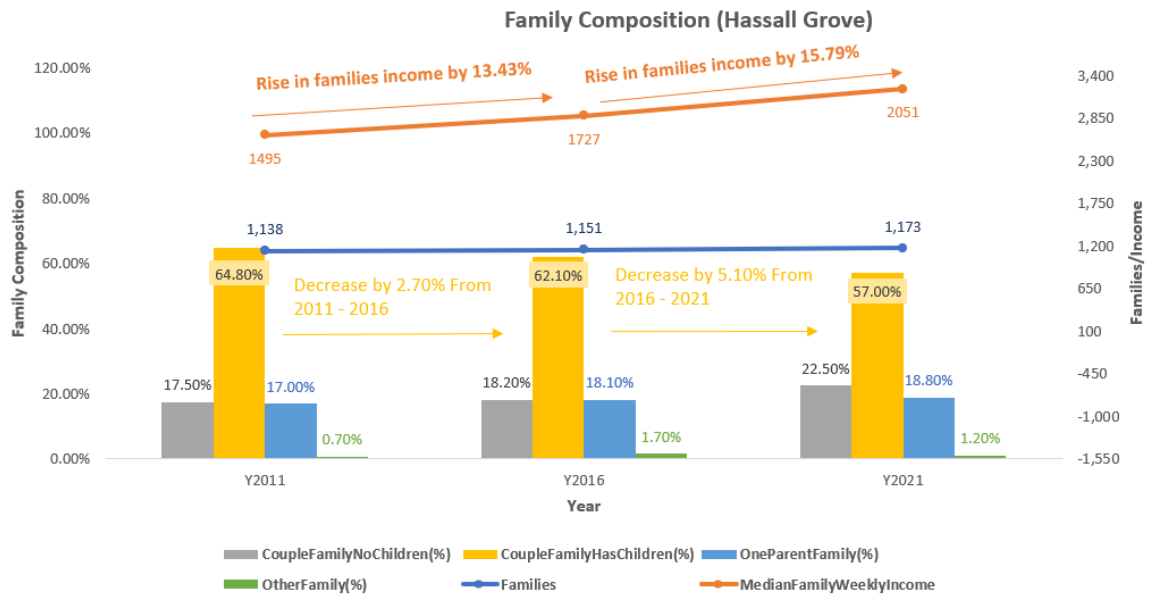


The Dwelling chart that can be seen is a combo chart which includes column cluster for Dwelling Structure on Secondary Axis and stacked lines for Dwelling Type on Y-Axis. There was a change for Separate housing as it decreased by 3.4% and 1.1% from 2011-2016 and 2016-2021 respectively. From 2011-2016 there was an increase in occupied dwelling by 1.5% but a decrease by 1.4% between 2016-2021.

Family Composition

The below chart is a combo chart which visualizes Family Composition as column cluster on Y-Axis, Families changed status and Median Family Weekly Income as stacked lines on Secondary Axis.

The advantage of using a combo chart for this composition is that the number of families can be visualized with change in median income for each of the sub-division in family structure.



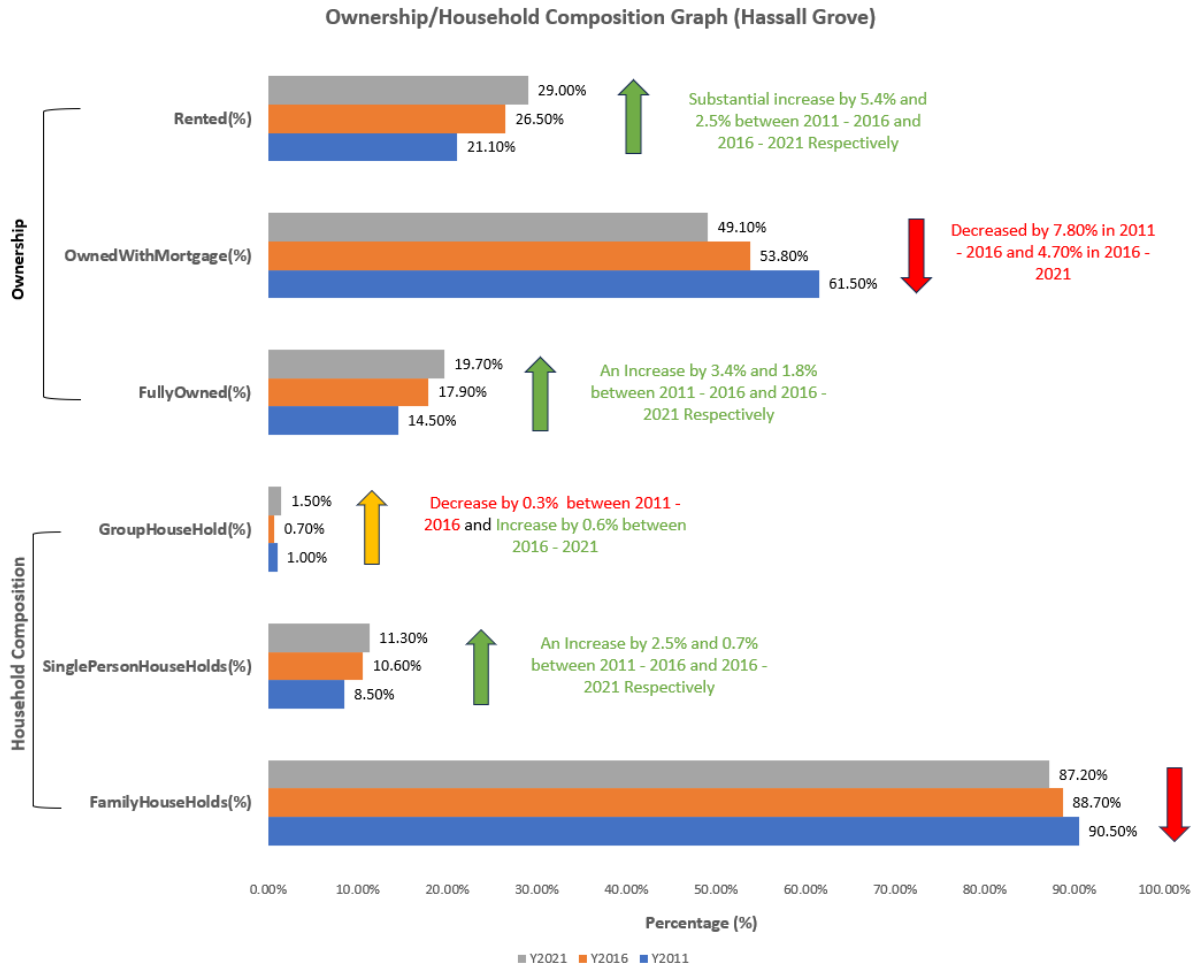
The Income as on the top can be seen is rising at a constant rate from 2011 – 2021, whereas the change in number of families was not much.

The family composition has noticeable changes over the years as Couple family who have children decreased by 7.8% from 2011-2021, Couple family with No Children increased by 5% within those years and slight changes for one parent family and other family.

Ownership

The above graph is for ownership which is represented on a bar graph where on X-Axis, change in percentage can be seen and, on the Y-Axis, there are two parameters.

The advantage of using bar graph is to showcase Household composition and Ownership Type for 3 years on the same axis with percentage change on the other.

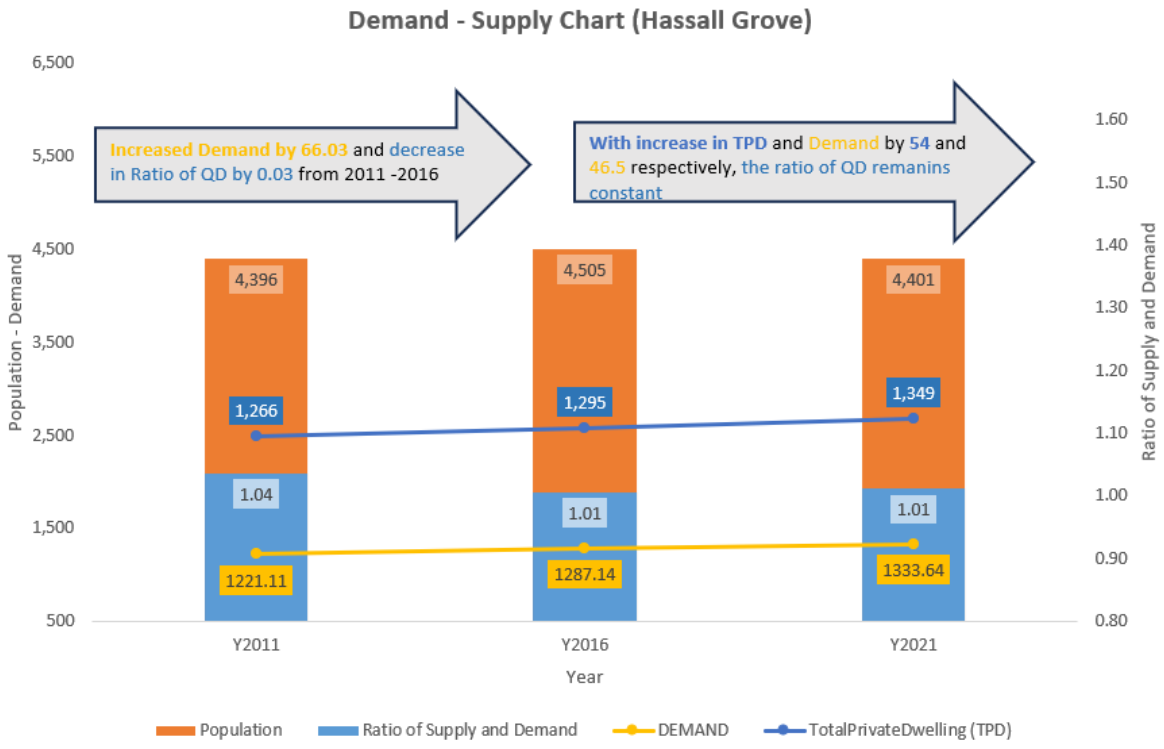


First is Household Composition, in which Group Household fluctuates between 2011-2021 but an increase of 0.5% within those years. Single person Household has an increase over the years accounting to 2.5% increase between 2011-2016 and 0.7% between 2016-2021. The increase in these two sub-parameters has led to a decrease in Family Household by 3.3% between 2011-2021.

Second parameter on the Y-Axis is the ownership where there is a positive change in rented market by 7.9% between 2011-2021, Negative change in owning with mortgage where a huge change happened between 2011-2016 by 7.8% and 4.7% decrease from 2016-2021.

Demand – Supply Graph

The demand – supply chart is represented on a combo chart where on the X-Axis you can see the Years (2011-2016-2021), on Y-Axis, Population, Demand and Total Private Dwelling is depicted and on the Secondary Axis, the ratio of supply and demand is represented.

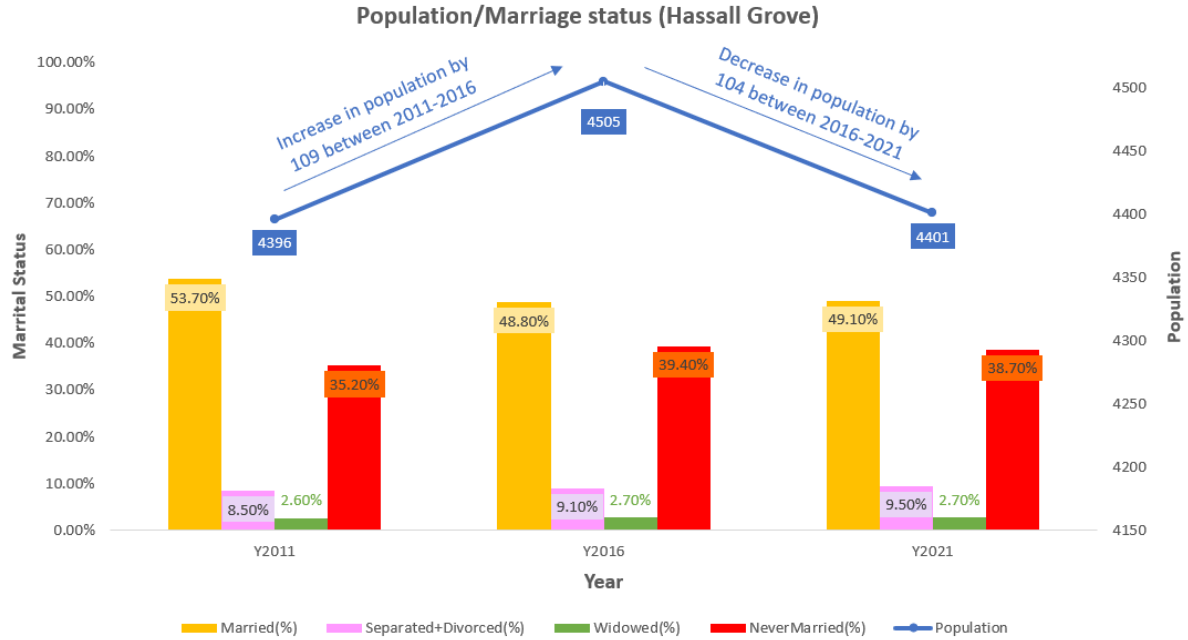


With the above visualization, it is very evident that with an increase in Total private dwelling (Increased by 83 from 2011-2021), there is an increase in demand (by 112.53 from 2011-2021), but the ratio of supply and demand decreased by 0.03 between 2011-2016 which might be possible because of increase in population and increase in total private dwelling. Although, a constant ratio can be analyzed between 2016-2021 which might be possible due to decrease in population (by 104 between 2016-2021) and a steady growth in total private dwellings (by 54 between 2016-2021).

Population:

The above graph is a combo graph which I've created to visualize population from the dataset and the marital status. On the X-Axis I've represented Years (2011-2016-2021), on the Y-Axis marital status can be seen which is in the form of cluster column and on the Secondary Axis, I've represented Population which is in the form of stacked lines.

The combination of marital status and population change in a single graph gives an advantage to visualize the data more effectively and clearly due to which the output can be concluded very easily.

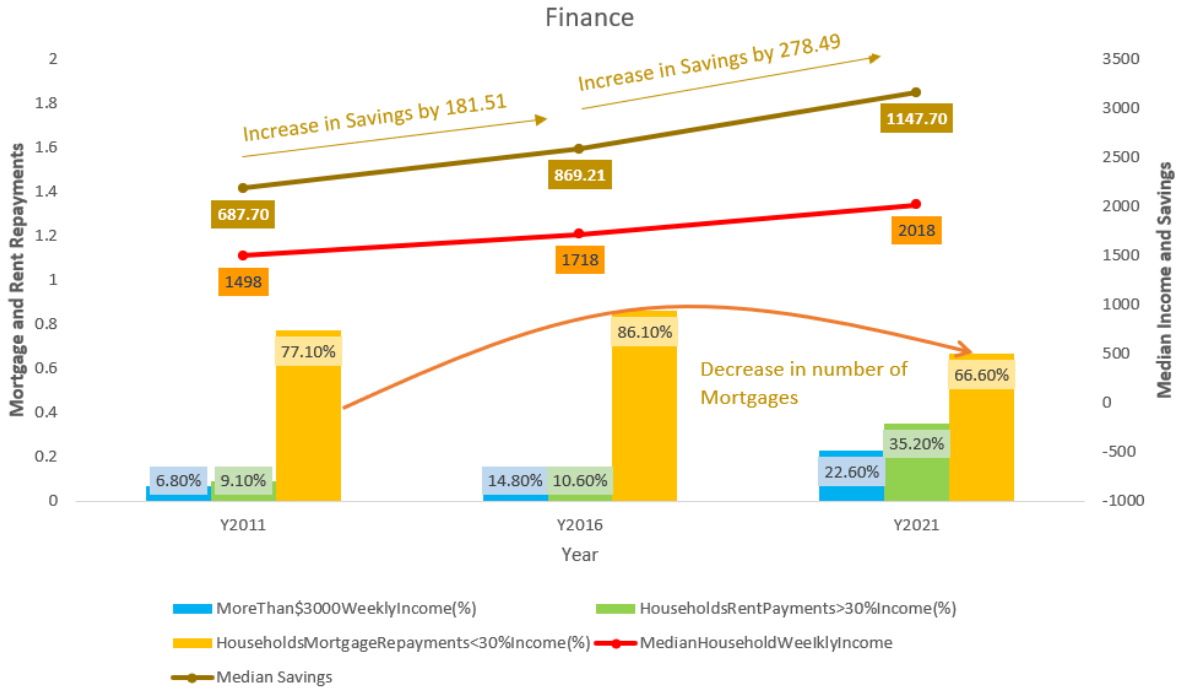


From 2011-2016, there was an increase in Never married by 4.2% and decrease in Married by 4.9%. Widows remaining constant throughout the analysis, there was a slight increase in Separated + Divorced by 1% from 2011-2021.

The change in population from 2011-2016 and change between 2016-2021 has combine effect of just a slight increase by 5 from 2011-2021.

Finance

The above graph represented is a combo graph which is created to visualize the Finance of the people of Hassall Grove. On the Y-Axis, Mortgage and Rent Repayments have been indicated and on the secondary axis median income and savings have been indicated.



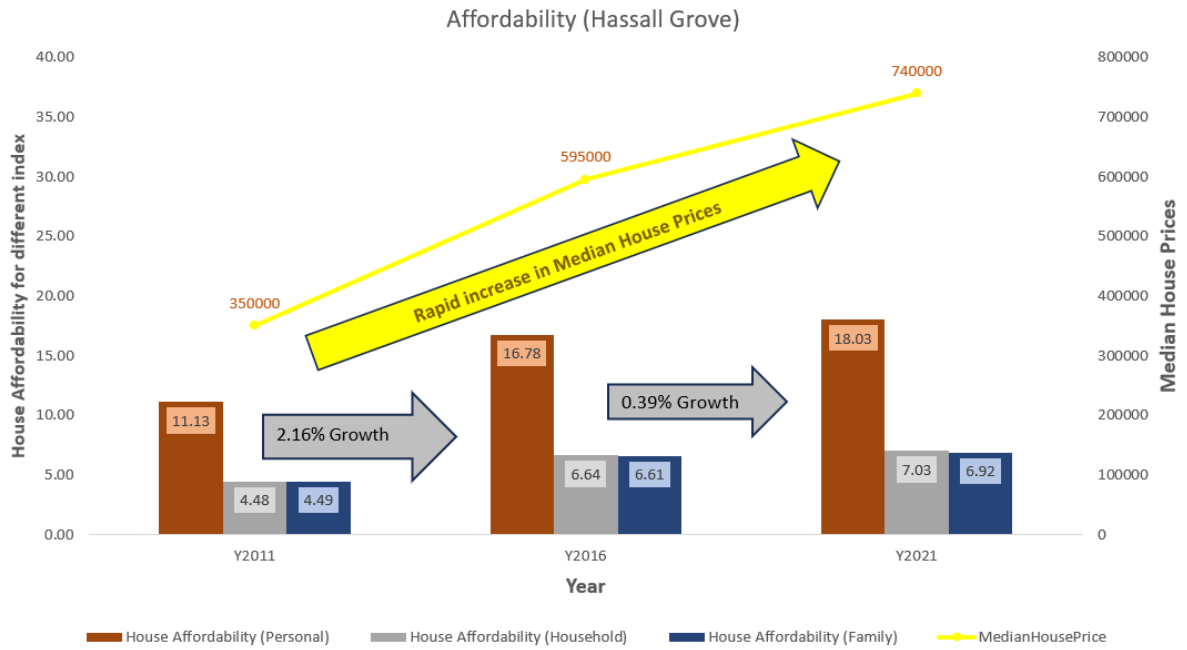
There are many parameters that are indicated in this graph such as Household rent payment greater than 30% income has been tremendously increased from 9.10% to 35.2% between 2011-2021 which is more than 3.5 times.

Household Mortgage Repayments have been fluctuating over the years but gradually decreased by 11.5% from 2011-2021 which indicates that people are paying less mortgages.

There is also one parameter that has been created through calculating different data which is Median Savings. Median Savings can be seen as increasing at a fast pace i.e., 20.88% growth from 2011-2016 and 26.26% growth from 2016-2021. The overall growth in these 10 years has been around 40.08%.

All of the above parameters indicate that people have started renting houses instead of buying and paying mortgages.

Affordability



The above graph shows the affordability index for different parameters such as Household, Personal, and Family with Median house prices represented on Secondary Axis.

There is a high growth in Median House prices from 2011-2021 with over 52.7%.

The affordability index for household has not much increased but there was a significant change of 2.16% increase between 2011-2016 and 0.39% growth between 216-2021.

Conclusion and Recommendations

Considering the trends and parameters stated above, it appears that Hassall Grove has much more concerning trends rather than positive ones, as the increasing housing prices which were over 52.7% from 2011-2021, it rules out the growth in Household, personal Income and Family income as well. The affordability index has been reducing for personal income and has been constant for household incomes for several years.

Secondly, there is a trend shift towards part time employment and vast changes in family composition which indicates a dynamic and evolving community that may give birth to the uncertainty of investing for longer terms.

And lastly, the mortgage repayments which are greater than 30%of their income has been tripled from 2011-2021, which indicates declining housing affordability and limits to the narrow scope of future house growth.