

# Carss Park Property Analysis

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## 1 Introduction

This report outlines the key information and trends regarding the Sydney suburb of Carss Park to inform a potential property buyer in the suburb. We analyse the relevant Australian Bureau of Statistics (ABS) and Price Finder data between 2006 and 2021. By effectively graphing the data, we outline key findings and trends. We then conclude by relating these findings to practical advice for a prospective buyer.

## 2 Data Collection and Preparation

To enable data analysis, we first collect and prepare the data. The data belongs to the Sydney suburb of Carss Park. We obtain the median house and unit price from PriceFinder and input it manually using excel into the CSV titled “24505063-A1”. This file is stored on a cloud drive with version control. The remaining attributes belonging to property median price, type of dwellings, ownership status, financial status, suburb population, marriage status, unemployment status and family information are sourced from the ABS Suburb Profile. These groupings are indicated by changes in colour and are found in the given order in the excel spreadsheet. These values are also entered manually into the excel spreadsheet. Each column represents a different year, and each row represents an attribute.

The data possess a column/row format as we are using excel. Subsequently, the data must be formatted so that it is in the correct category (Column). This is ensured during data entry. The data also contains time series format which requires conversion to the correct unit of time. For example, Median Mortgage Weekly Repayment is given as a monthly value on ABS. To convert it to weekly we divide the value by 4.345. To convert values from yearly to weekly we divide by 52.143. Specifically:

$$\text{Weekly Value} = \text{Monthly Value} / 4.345$$

$$\text{Weekly Value} = \text{Yearly Value} / 52.143$$

Calculated values are rounded to the same number of significant figures present in the original dataset. We also ensure the correct value-based formatting. For example, we use a “\$” for currency, a “%” for percentages and numbers with decimal points for numerical values. To prepare for graphing and analysis in excel we reference the relevant values in a separate sheet. This ensures that if the original dataset values are updated all related values are updated which follows best practices. This also ensures that calculations and formatting can be applied without altering the original dataset.

## 3 Dataset Characteristics and Data types

The veracity refers to the reliability of the data. The veracity of this dataset is high as it comes from reputable government sources and trusted commercial data sources. The value of the data pertains to the usefulness of the data after analysis. The attributes in the dataset contain valuable quantities which will aid in offering valuable insights into real estate income trends over time. Additionally, the consistent year-over-year data points provide a strong foundation for trend formulation making the dataset valuable. The volume, or quantity, of the data is relatively small, hence it doesn’t fall into the category of big data. This enables analysis of the data to be more manageable and handled by simple analysis tools. However, the quantities in this dataset were obtained from a suburb wide census which will contain a large volume of data. The velocity of the data refers to the speed at which new data is generated. This data is generated every 5 years making it low volume and slow to reflect immediate changes. The variety of the data refers to the diversity of data types. The dataset contains numerical values, lacking diversity in data types such

as text, images and audio. This simplifies the tools necessary to analyse the data, enabling the use of conventional techniques.

Specifically, we collect the following structured internet data attributes for the years 2006, 2011, 2016 and 2021. We define the type with the following key: Quantitative interval-scale (I), Categorical (C), Categorical Nominal (N), Quantitative ratio-scale (R).

Attribute	Type	Description
MedianHousePrice	R	Median house price
MedianUnitPrice	R	Median unit price
MedianPersonalWeeklyIncome	R	Median personal weekly income
MedianFamilyWeeklyIncome	R	Median family weekly income
MedianHouseholdWeeklyIncome	R	Median household weekly income
MedianMortgageWeeklyPayment	R	Median mortgage weekly payment
MedianWeeklyRent	R	Median weekly rent
Population	R	Population size
MedianAge	R	Median age
Families	R	Number of families
TotalPrivateDwelling	R	Total private dwelling
Married(%)	R	Percentage of individuals married
Separated+Divorced(%)	R	Combined percentage of separated or divorced individuals
Widowed(%)	R	Percentage of widowed individuals
NeverMarried(%)	R	Percentage of individuals never married
BirthInAustralia(%)	R	Percentage of individuals born in Australia
Worked full-time(%)	R	Percentage of individuals who worked full-time that year
Worked part-time(%)	R	Percentage of individuals who worked part-time that year
Unemployment(%)	R	Percentage of individuals unemployed that year
PeopleTravelledToWork ByPublicTransport(%)	R	Percentage of individuals who travel to work by public transport
PeopleTravelledToWork ByCar(%)	R	Percentage of individuals who travelled to work by car
AverageMotorVehicles PerDwelling	R	Average number of moto vehicles per dwelling
CoupleFamilyNoChidren(%)	R	Percentage of families who are a couple with no children
CoupleFamilyHasChidren(%)	R	Percentage of families who are a couple with children
OneParentFamily(%)	R	Percentage of families who have one parent
OtherFamily(%)	R	Percentage of other family types
OccupiedDwellings(%)	R	Percentage of occupied dwellings
UnoccupiedDwelling(%)	R	Percentage of unoccupied dwellings
SeparateHouse(dwellings%)	R	Percentage of dwellings which are separated houses
SemiDetached(dwellings%)	R	Percentage of dwellings which are semi detached
FlatUnitApartment(dwellings%)	R	Percentage of dwellings which are flats or units
0xBedroom(%)	R	Percentage of dwellings with zero bedrooms
1xBedroom(%)	R	Percentage of dwellings with one bedroom
2xBedroom(%)	R	Percentage of dwellings with two bedrooms
3xBedroom(%)	R	Percentage of dwellings with three bedrooms
4xBedroom+(%)	R	Percentage of dwellings with four bedrooms
AverageNumber BedroomsPerDwelling	R	Average number of bedrooms per dwelling
AverageNumber PeoplePerHousehold	R	Average number of people per household
FullyOwned(%)	R	Percentage of dwellings fully owned
OwnedWithMortgage(%)	R	Percentage of dwellings owned with mortgage

Rented(%)	R	Percentage of dwellings rented
FamilyHouseHolds(%)	R	Percentage of households containing a family
SinglePersonHouseHolds(%)	R	Percentage of households containing a single person
GroupHouseHold(%)	R	Percentage of households containing a group
LessThan\$650 WeeklyIncome(%)	R	Percentage of individuals with less than \$650 weekly income
MoreThan\$3000 WeeklyIncome(%)	R	Percentage of individuals with greater than \$3000 weekly income
HouseholdsRent Payments<30%Income (%)	R	Percentage of households with rent payments less than 30% of the income
HouseholdsRent Payments>30%Income(%)	R	Percentage of households with rent payments greater than 30% of the income
HouseholdsMortgage Repayments<30%Income(%)	R	Percentage of households with mortgage payments less than 30% of the income
HouseholdsMortgage Repayments>30%Income(%)	R	Percentage of households with mortgage payments greater than 30% of the income

Some attributes are not available online for certain years; hence the data is incomplete but still sufficient. For 2006 this includes: PeopleTravelledToWorkByPublicTransport(%), PeopleTravelledToWorkByCar(%), AverageMotorVehiclesPerDwelling, 0xBedroom(%), 1xBedroom(%), 2xBedroom(%), 3xBedroom(%), 4xBedroom+(%), LessThan\$650WeeklyIncome(%), MoreThan\$3000WeeklyIncome(%), HouseholdsRentPayments<30%Income(%), HouseholdsRentPayments>30%Income(%), HouseholdsMortgageRepayments<30%Income(%), HouseholdsMortgageRepayments>30%Income(%)

For 2011 this includes: LessThan\$650WeeklyIncome(%), MoreThan\$3000WeeklyIncome(%)

## 4 Data Visualisation

### 4.1 Supply and Demand

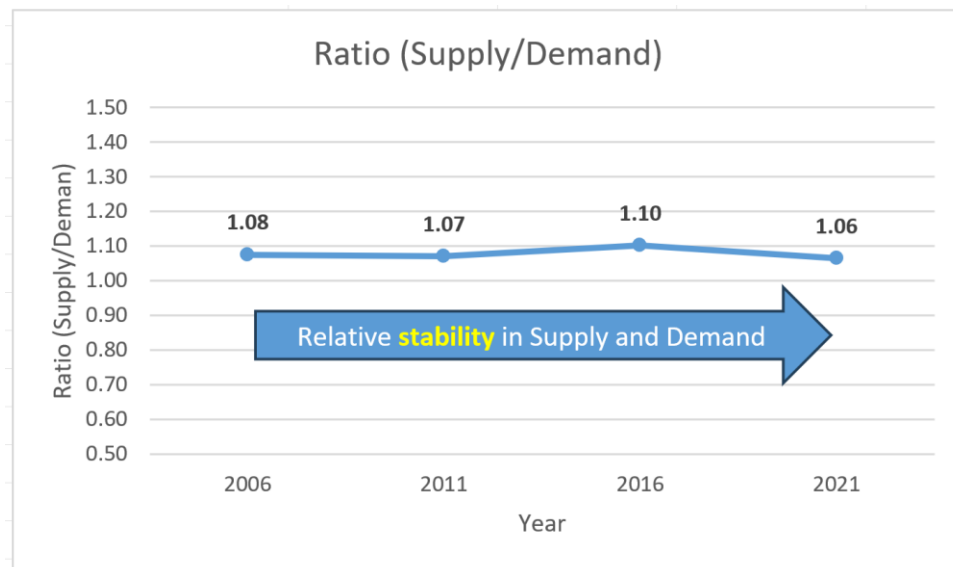


Figure 1

Figure 1 outlines the ratio of supply to demand over the 15-year time span from 2006 to 2021. It indicates a relatively stable balance between supply and demand. The values suggest minor fluctuations with no significant outliers. These slight changes imply that supply and demand are maintaining to ensure stability in price. However, when visualising property prices later we see that this is not the case as property prices have outpaced inflationary growth. This suggests an increase in demand due to the willingness of people to pay more. The ratio is calculated by:

$$\text{Demand} = \text{Population} / \text{Average Number People Per Household}$$

$$\text{Ratio (Supply/Demand)} = \text{TotalPrivateDwelling} / \text{Demand}$$

A possible explanation as to why this metric is a poor indicator of property price is that the suburb is relatively small, urbanised and occupied. Hence, we don't see increases in population which affects demand. This suggests the suburb is in demand for wealthy individuals, and inaccessible otherwise.

A line chart has been employed to effectively illustrate the ratio over time. A line chart provides clear visuals of the slight changes in ratio which is aided by the labelled datapoints. A trend-line was avoided as it added visual clutter without conveying additional information, as the existing datapoints already depicted a clear trend with a straight line. Additionally, a large blue arrow emphasises the stable trend by its choice of highlighted text and rotation to draw attention to the key finding. Axis labels and a title were used for clarity. One challenge found for visualisation was ensuring that the stability of stability of the datapoints was accurately conveyed. The recommended scale of the Y-axis by excel exaggerated minor fluctuations so this was changed. Additionally, the labels were moved to not overlap with the line and were bolded for clarity and readability.

## 4.2 Property Affordability

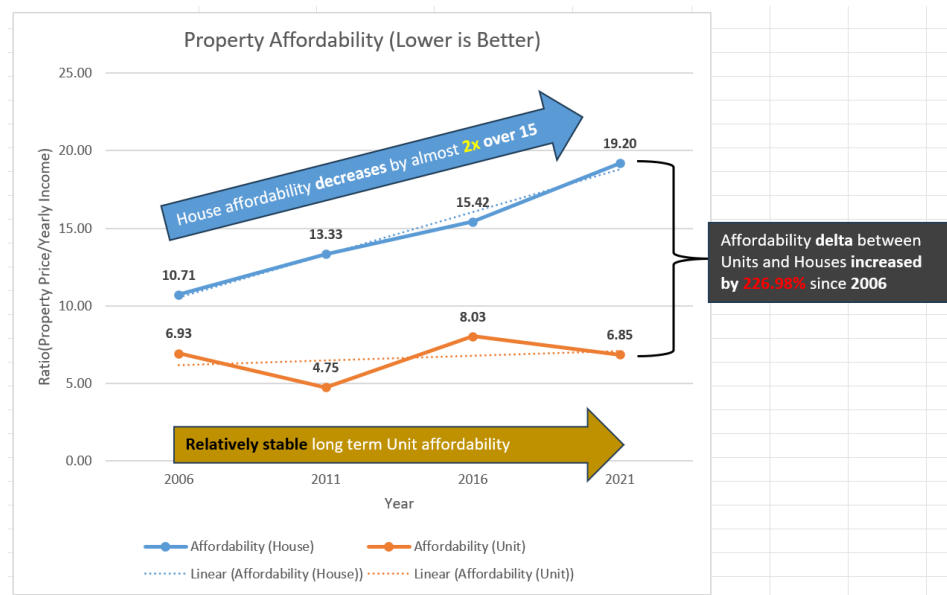


Figure 2

The above chart illustrates property affordability as the ratio of property price to yearly income for houses and units from 2006 to 2021. I.e.:

$$\begin{aligned}\text{Affordability} &= \text{Property price} / (\text{Annual Household Income}) \\ &= \text{Property price} / [(\text{Household Weekly Income}) \times 52.143]\end{aligned}$$

In this case, a lower value suggests higher affordability, this unintuitive formula posed a challenge for readability. Hence, we clarified that lower is better in the title. Plotting the inverse of the data points was considered to reverse the unintuitive chart directions. However, this caused the numerical ratio value of the affordability data points to lose their meaning as a multiplier of income. In the chart we see a significant divergence between the two property types which is highlighted by a text box and line art. Over the 15-year period, house affordability has worsened by nearly doubling. Contrastingly, unit affordability has remained relatively stable, although it does fluctuate. The growing affordability gap between houses and units shows an increase of 226.98% which is highlighted in red. This suggests an outmatched desire for houses by buyers indicating that the suburb is more family oriented.

A line chart was employed to effectively showcase the trends in property affordability over time. A separate line with different colours was used for houses and units to clearly distinguish their movements. This colour coding is carried across to the arrows which highlight and explain the trends. The bolding of the labelled data points also improves clarity and readability. We decide to avoid displaying the trend line equation to reduce clutter, instead we note them below. X increments per 5 years to enable prediction into the future:

$$y(\text{House}) = 2.7561x + 7.7756$$

$$y(\text{Unit}) = 0.3031x + 5.8841$$

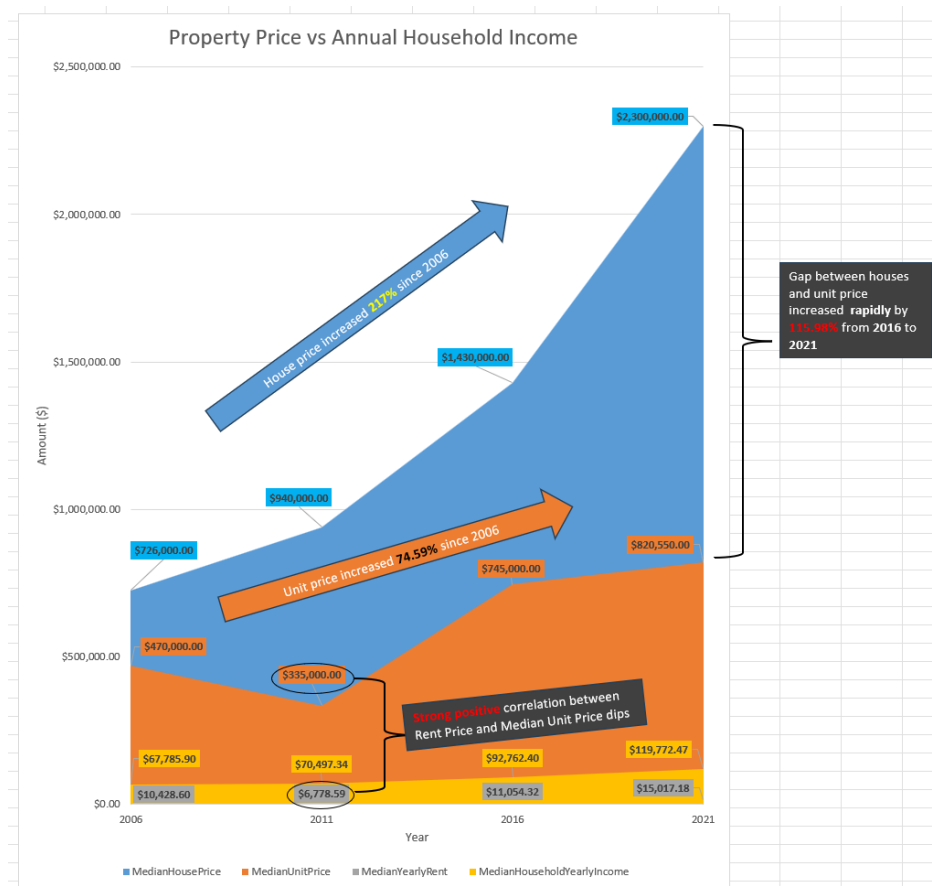


Figure 3

Figure 3 visualises the property prices versus annual household income between 2006 and 2021 to highlight significant changes in housing market trends. The median house price has seen a outlier growth of 213.4% over the 15-year period. Similarly, the median unit price increased by 131.4%. The chart also shows a rapid widening gap between house and unit prices, which has increased by 115.98% from 2016 to 2021. This is highlighted by the annotation and line art, in conjunction with the choice of an area chart to convey the proportions between asset class prices. Further, by highlighting and annotating the 2011 prices we reveal the strong positive correlation between median rent prices and median unit prices which reflects supply and demand. This strange outlier dip in unit price is difficult to explain as the unit supply does not spike during this year. However, the small size of Carss Park will result exaggerate the impact of small minor changes. Hence, this could be due to coincidental noise.

The chart employs a stacked area visualization to effectively convey the trends and differences in property prices. Contrasting colours are used to differentiate the various property categories. Annotations and arrows are logically and consistently placed and coloured to highlight insights and datapoints. For example, the data labels are always above their respective category with the same colour. The data labels enhance readability especially for the median yearly rent which is relatively low and hence is difficult to view on the one chart.

A major challenge with a dense chart such as this is managing the scale to avoid obscuring values and to ensure readability. Annotations were positioned to avoid obscuring labels. Further, annotations such as the arrows are angled to match the trendline of the data which couldn't be displayed clearly on a stacked area visualisation. This further clarifies trends and maintains the storytelling capability of the graph without sacrificing readability. Further, axis titles clarified the purpose of the chart. Additionally, all labels use a currency format to clearly indicate the values being represented are prices.

We avoid displaying trend line to reduce clutter and instead opt to include their equations in the report in the same format as previously defined for predictive power:

$$y(\text{House}) = 521200x + 46000$$

$$y(\text{Unit}) = 146165x + 227225$$

$$y(\text{Income}) = 17822x + 43148$$

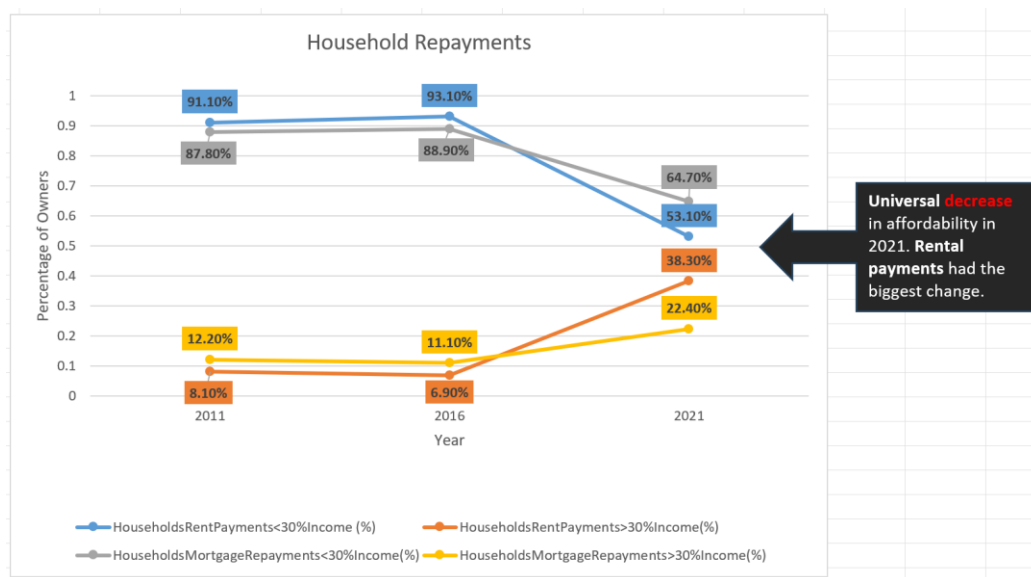


Figure 4

Figure 4 solidifies the previous findings to reveal a decrease in property affordability. This at the extremes of property ownership. The 2006 data is not available which reduces the ability to draw a long-term conclusions effectively. However, it is still clear that between 2016 and 2021 there was a substantial change in affordability. Specifically, the proportion of households where repayments were less than 30% of income decreased rapidly, and the inverse occurred for households that had repayments more than 30% of their income. This reveals that income is not matching the pace of mortgage and rent prices which suggests a substantial decrease in affordability. Interestingly, rental payments experienced the biggest movement. This finding is highlighted by the clear colour coded lines and the text box to draw attention to the key findings of the chart. Consequently, between 2016 and 2021 a significant number of people will have been priced out of the market. The stability before this point indicates that 2016 was a threshold year for prices.

A difficulty experienced while plotting this chart was ensuring quick readability of the specific changes in values. To achieve readability data labels were added, however due to the proximity of the lines on the chart there was overlap of the data labels. We addressed this by rescaling the axis and varying the location of the data labels either above or below the line. To ensure this variation didn't cause confusion, we colour coded the background of the data labels and bolded them for visual clarity.

### 4.3 Finance

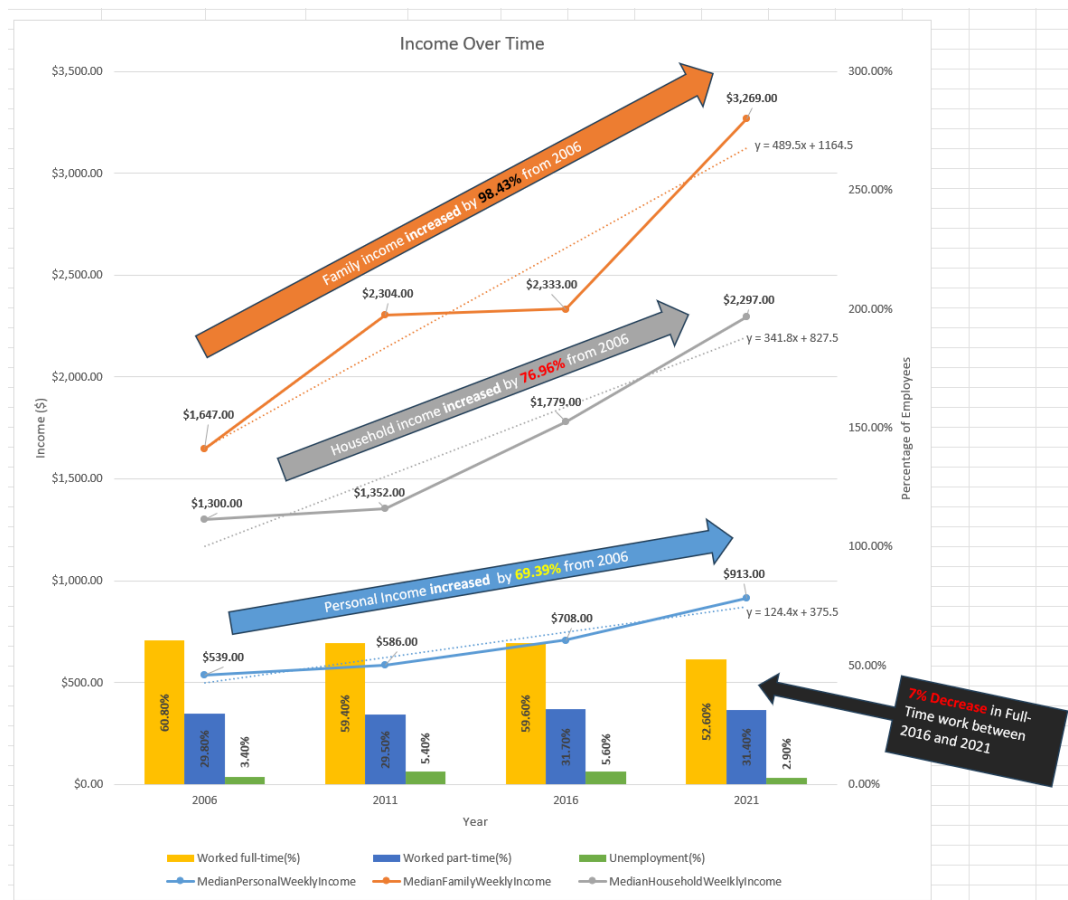


Figure 5



This chart outlines the trends in various income classes from 2006 to 2021 in conjunction with employment statics. A combo chart was selected to convey any possible correlations between employment type and median income. Family income saw the most significant increase rising by 98.55% over the 15 years. Household income also revealed substantial growth of 76.96%. Personal income, while showing the least increase still grew by a strong 69.39%. The employment statistics notably reveal a decrease in full-time work by 7% from 2016 to 2021 which is highlighted with a colour coded annotation. This indicates a slight shift in the employment landscape which would coincide with Covid-19 layoffs. Interestingly there were periods of negligible growth for family and household income. This asymmetry between these periods of growth suggests a minimal overlap between individuals in the family and household groups.

The benefit of a combination chart is that we can convey time-based progressions with line charts while depicting categorical data in the same chart. Specifically, the bar charts compliment the income data to provide context. This requires two axes such that the charts can be read meaningfully. This presented a challenge as the bar charts needed to be big enough to read but not so large that they obscure the line chart. We addressed this by rescaling the secondary axis and bolding the annotations of the data labels to clear any confusion caused by two axes. Further, distinct colours were chosen to distinguish between the data types to maintain clarity and focus. Large colour matched arrows with highlighted percentage labels focus the reader's attention on the story being told by the data. Trend lines were added with equations as space permitted. The equations were placed in consistent locations next to trend lines and were left unbolded to provide visual distinction from data labels. This enables extrapolation into the future to predict future trends.

#### 4.4 Population

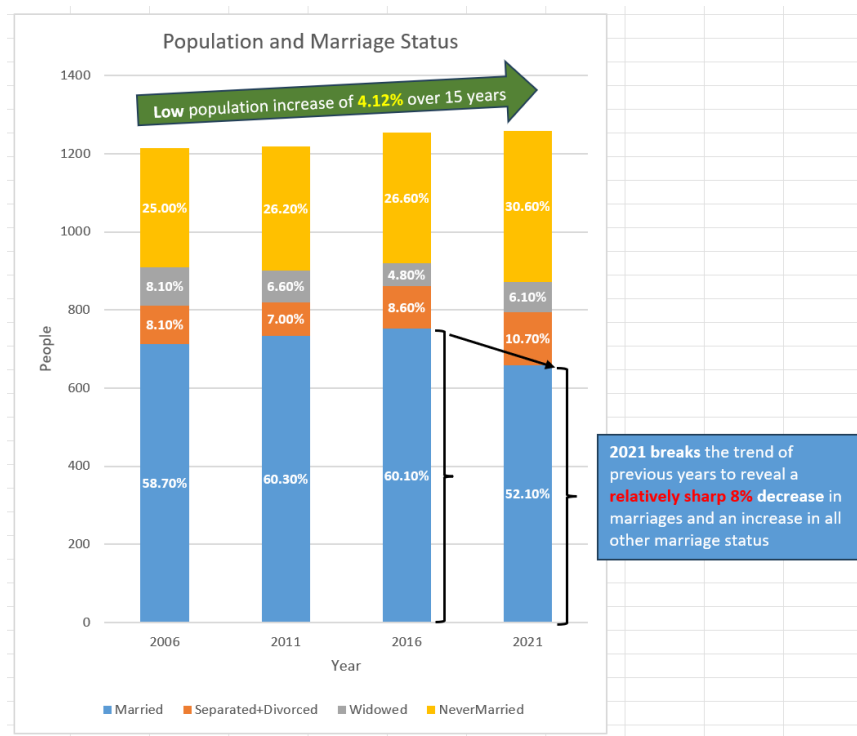


Figure 6

This chart outlines the population changes and marriage status over a 15-year period from 2006 to 2011, showing a relatively low population increase of 4.12%. This suggests that the small suburb is at maximum capacity without substantial redevelopment. Throughout this time the proportion of relationship types remained relatively stable where marriages were dominant. This suggest the suburb is more family oriented. However, we see a notable decline in 2021 where marriages drop by 8% from the previous year. Conversely, there was an in increase in other martial statuses. This may suggest a minor shift away from the family focussed suburb of years prior, however the small population size of Carss Park will reflect numerically insignificant changes in individuals as large percentages so this cannot be determined conclusively. The evolution of social patterns should be watched, however, they do comport with typical statewide sentiment that shows a shift away from marriage.

A stacked bar chart is used to represent the distribution of the different marital statuses within the population across the years. This allows us to convey the population numerically and proportions at the same time to provide a comprehensive understanding of the data. To enable this the original data points which were percentages had to be converted by multiplying the population by the marriage status percentage as follows:  $No. People = Population \times Status Percentage$

Each colour coded segment highlights the different status categories with a key to clarify this. By annotating the percentages, the reader gets a quicker understanding of meaningful proportions, which avoids the mental arithmetic of calculating numeric changes between years in the number of individuals. The percentage annotations are white and bold for contrast to increase readability. Additionally, an annotation with line art is applied to highlight the key finding that there was a marked decrease in marriages between 2016 and 2021. A difficulty encountered was conveying without exacerbating the small percentage changes over time. This was addressed by carefully selecting the scale of the chart. Annotations consequently had to be placed strategically to avoid overlap.

#### 4.5 Ownership

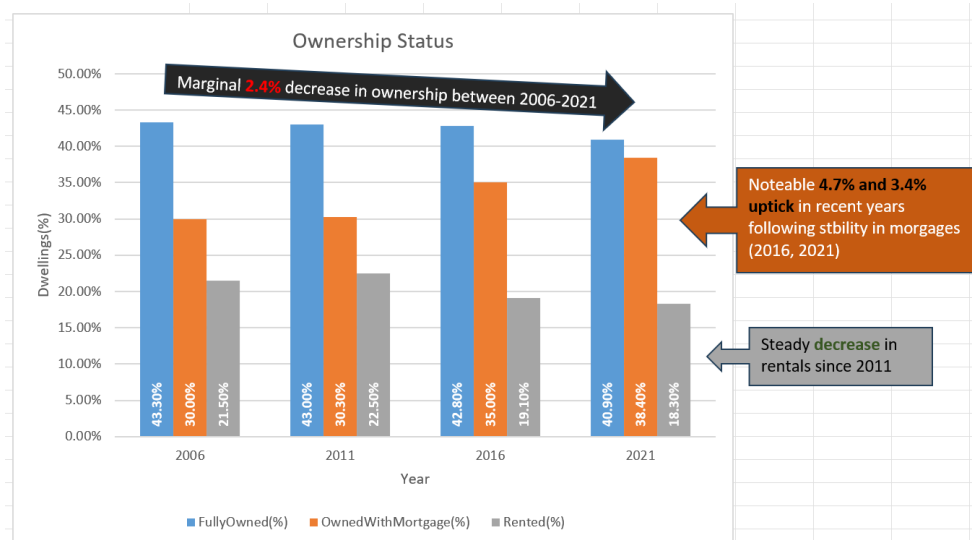
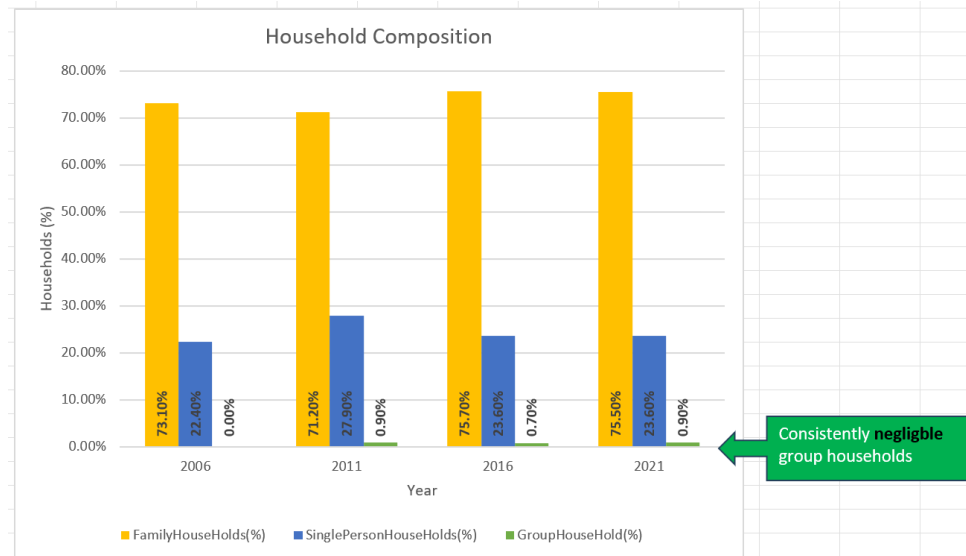


Figure 7

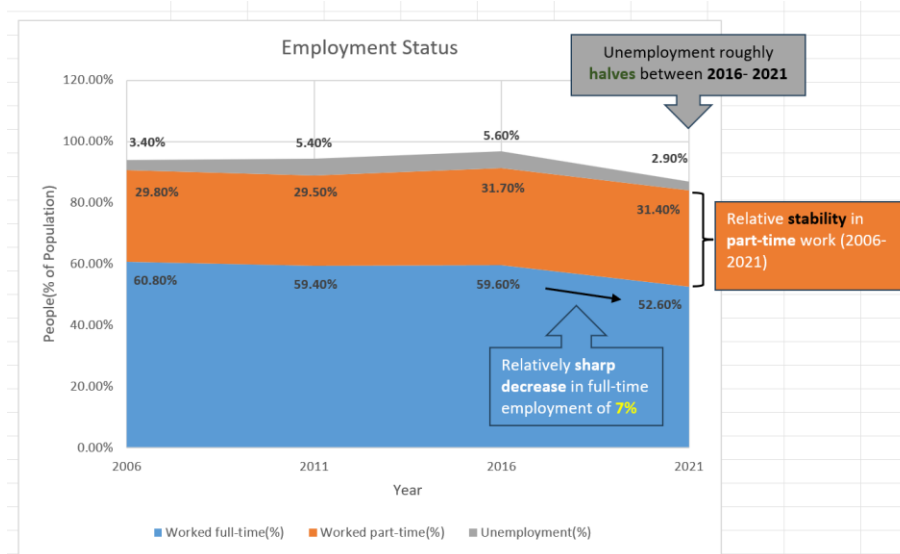


**Figure 8**

Figures 7 and 8 provide an overview of the trends in household ownership and composition between 2006 to 2021. A clustered column chart was chosen to convey the disparity between attributes at the same time. A bar chart was avoided as it loses the horizontal progression along the x axis that implies a change in time. A difficulty we found while attempting to use a 100% column chart is that the values did not add up to 100% in all cases due to a lack of reporting. A stacked 100% column chart more clearly portrays proportions of a whole, however it would mislead the reader into believing that the values graphed represent the whole. Hence, we opted for a grouped chart in both cases. Figure 7 highlights a marginal 2.4% decrease in overall home ownership over the 15-year period. Notably, there was an uptick in households with mortgages with increases of 4.7% and 3.4% in recent years following previous stability. This comports with previous findings to suggest growing unaffordability of home ownership due to the increasing need for financing. Alternatively, there has been a steady decline in rental households since 2011 indicating a shift towards home ownership, further validating the family-oriented nature of the suburb. Figure 8 clearly outlines relatively stable trends in all household arrangements.

To improve clarity, each category has been given a specific colour. Colours chosen were distinct and keyed to make it easy to compare changes. Annotations and arrows were strategically placed to provide specific numerical values and highlight key findings. Data labels were added for easier viewing of specific values. One challenge was ensuring that the annotations did not cover significant portions of the chart such that the axis lines were obscured. This was avoided by rotating the labels and placing them inside the bars. This also avoided the challenge of conveying small values such as group households, as they were difficult to read off of the graph. The data labels were placed in a consistent location at the bottom of the chart to improve readability.

#### 4.6 Workforce



**Figure 9**

Figure 9 displays employment status trends between 2006 to 2021. Specifically, it highlights the change in proportions of employment type. A notable finding is the sharp decrease in full-time employment which dropped by 7% between 2016 to 2021. This can be explained by Covid-19 leading to layoffs. Contrastingly, the proportion of part-time workers has showed notable stability, hovering around 30% throughout the 15-year period. An outlier event occurred the unemployment rate halved from 2016 to 2021 which would indicate an improvement in employment conditions, however the decrease in full time work suggests otherwise. This could indicate an increase in alternative forms of employment in line with Covid-19 changes. An alternative explanation is Carss Park's small population size is showing large percentage movements due to a small number of people causing an outsized influence to the data.

A stacked area chart is used to represent the data. This effectively shows the cumulative contributions of each employment category. To clarify these categories distinct colours were chosen to improve readability. Further, a stacked area chart is particularly good at showing how proportions change over time, which helps to reveal the stability in part-time employment. The use of arrows, line art and text boxes aid to clarify these changes and draw the reader's attention to the salient story being told.

One difficulty faced was ensuring that the changes in the unemployed category, which was relatively small, was visible. This was achieved by scaling the graph and adding data labels to reveal numerically significant changes that were proportionally small. Additionally, due to the linearity of some the first three census year plots, it was hard to distinguish the specific point on the graph that corresponded to the year marker on the x axis. This was due to a consequent lack of sharp vertices in the line plots, hence we added vertical gridlines to provide context.

#### 4.7 Dwelling

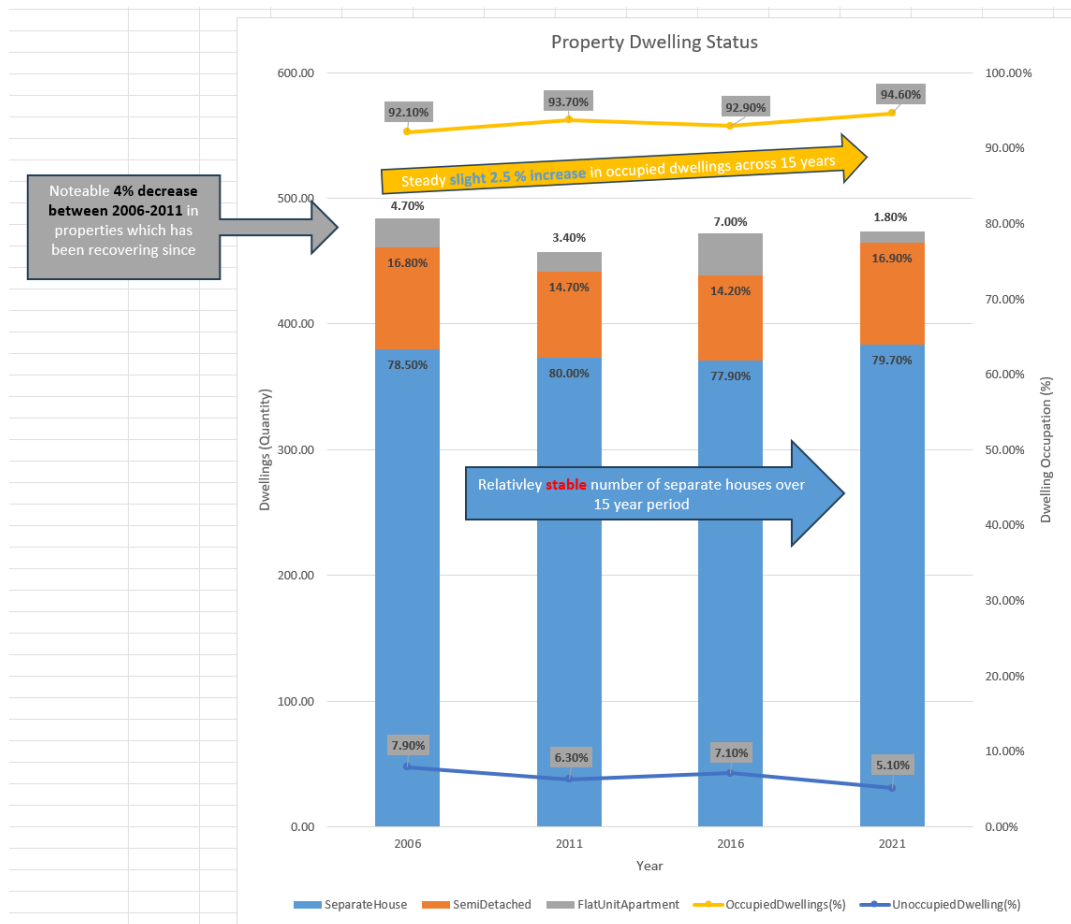


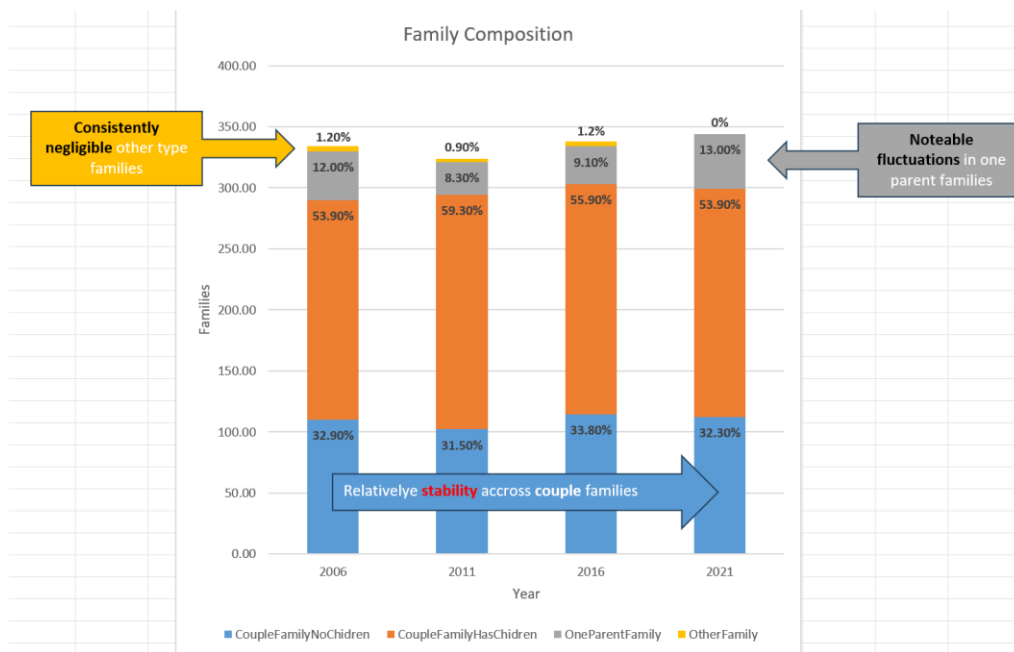
Figure 10

This chart illustrates the changes in property dwelling status from 2006 to 2021, it outlines changes in dwelling type and occupancy rates. The choice to combine both data categories into one chart enabled the reader to easily contrast how fluctuations in supply matched occupancy. A notable 4% decrease in the number of properties was observed in 2011, which has since been recovering. This change was reflected in the increase in occupation percentages as supply decreased, possibly suggesting that the decrease was caused by new developments in the area which were on vacant blocks previously. Redevelopment could have been promoted by the lingering effects of the 2008 financial crisis which would have led individuals to sell property. The proportion of separated houses has remained relatively stable over the whole period indicating a preference of buyers in the area towards houses. Contrastingly, the percentage of units and semi-detached dwellings has fluctuated throughout the period but remains a minor component of the total suburb makeup. The overall occupancy rate has steadily risen by 2.5% over the 15 year period.

A difficulty with combo-charts is readability as a lot of data is being displayed at once. This was addressed by adding distinct colours and keys, along with axis labels to clarify for the reader what they were reading. The annotation arrows are strategically placed, and colour coded to highlight trends to the reader. Further, by displaying two charts on one graph there is the risk of obscuring the data points. This was addressed by adding and scaling the secondary axis to place the line graphs in secluded locations. Challengingly, there was no way to avoid unoccupied dwellings overlapping with the bars which is why

data labels with a grey background were selected to highlight the different data points. We chose to convert the dwelling percentages in the dataset by multiplying them with the total number of dwellings as follows:  $No. Dwellings = Total Number of dwellings \times Type Percentage$ . This is done so that the stacked bar chart could be used to read the total number of dwellings. However, we still wanted to maintain the intuitive nature of percentages to convey composition, hence the data labels for dwelling type were written as percentages.

#### 4.8 Family



**Figure 11**

This chart illustrates the family composition over time between 2006 to 2021. The largest category consistently remains “Couple families with children”, hovering around 55% across the whole periods. This further supports the notion that the suburb is family oriented. Next, “Couple families with children” have remained relatively stable, hovering around 32%. Notably, there were relatively significant fluctuations in the proportion of “One-parent families”. This is highlighted by the annotation. The change in 2011 families corresponds with the decrease in total dwellings that year. A possible explanation for this is an increase in cohabitation following the 2008 financial crisis which would have left the already struggling demographic of single parent families to be unable to afford living alone in Carss Park. The “Other family” category remains negligible throughout the 15-year period. To highlight this, we add an annotation with bolded text as the Other Family category is difficult to visualise due to its small presence on the chart.

A stacked bar chart is employed to visually represent the composition of different family types. To clearly distinguish between the categories, we employ distinct colours and a key with annotated axes for added clarity. Interestingly, we graph the numerical values of the number of families but make the data labels represent percentages. This addresses the challenging need to be able to convey numerical comparisons between years while also avoiding the mental arithmetic needed to convey proportional changes. Hence,

the reader is still able to interpret the total number of families by reading the top of the stacked bar. To achieve this, we multiplied the total number of families by the percentage of the given category in the dataset as follows:  $No. Families = Total Number of Families \times Percentage$ . Additionally, annotations are added to focus the reader on the main takeaways from the data. Another challenge was to ensure the smaller categories were visible and not obstructed by annotations, this was achieved by scaling the graph.

## 5 Conclusion

Based on the data analysis achieved using effective visualisations, prospective Carss Park buyers should consider several key findings. Firstly, property affordability has significantly decreased for houses by two-fold. Hence, the suburb has become significantly less accessible. This is supported by the trend of increasing home ownership with mortgages. Similarly, this is supported by all income categories failing to grow at the same rate as detached houses. Consequently, Carss Park should be avoided by first time buyers, however high-income families should consider it as they will achieve a strong long-term return. Additionally, Carss Park is a highly family-oriented area. This is supported by the high marriage status at roughly 52%, the high proportion of family households at roughly 75.50% and the high average number of people per dwelling at roughly 2.8. Hence, wealthy families should consider living in the area.

Contrastingly, units are a more stable and affordable option, however they will be a less profitable investment option compared to houses. Specifically, extrapolating linearly (which will undershoot the value of houses) we expect a 24.46% increase in house price between 2021 and 2026 versus 18% for units. Despite this, there is still strong demand for units, and they should be strongly considered as an entry point into this growing suburb if houses are inaccessible, instead of simply avoiding the suburb. It is safe to assume the growth will continue to follow historical trends as Carss Park is a mature and desirable suburb with limited room for expansion as indicated by the stable total dwelling and population figures. Likewise, the proportion of houses and units remains relatively stable. This supports the notion that Carss Park will provide a predictable high return on investment due to restricted supply.

Renting is advised against as it has shown the strongest decrease in affordability. Due to the highly desirable nature of Carss Park rent is prohibitively high. Additionally, as renting does not provide equity in a property, the premium of living in Carss Park cannot be justified by a predicted return due to strong growth.

From a visualisation perspective, the application of various highly relevant charts has effectively conveyed these findings. Line and area charts were essential to depict monetary changes over time which illustrated the evolving real estate market. This included the price growth and income disparities over time. Alternatively, group and stacked column charts were used to convey categorical data which revealed the composition of the suburb intuitively. This included family trends and employment trends which are needed to predict future growth. These charts were enhanced by intuitive labelling (e.g. axis labels, titles, data labels) and storytelling techniques like the addition of colour coded arrows and plots to highlight all categories and trends.

In Conclusion, if a prospective family or investor has the capital, they should strongly consider purchasing property in the area. Units are a less lucrative investment but more affordable alternative to live in this desirable suburb; however, renting should be avoided as it is a poor use of capital.