Australian Housing Market Analysis:

A Data-Driven Analysis of the Australian Housing Market

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Dataset

This dataset offers a thorough examination of Dharruk's housing and socioeconomic conditions during four important time periods: 2006, 2011, 2016, and 2021. This dataset provides a thorough understanding of the shifting dynamics inside the suburb by capturing specific insights like housing prices, income levels, employment rates, household compositions, and means of transportation. Because the data is divided into discrete portions, it is simpler to see patterns, spot important changes, and analyse how the situation in Dharruk is changing.

Location	Dharruk	Dharruk	Dharruk	Dharruk
Time	Y2006	Y2011	Y2016	Y2021
MedianHousePrice	$245,000	$273,500	$498,000	$695,000
MedianUnitPrice				
MedianPersonalWeeklyIncome	$408	$431	$521	$556
MedianFamilyWeeklyIncome	$1,069	$1,170	$1,293	$1,558
MedianHouseholdWeelklyIncome	$1,045	$1,179	$1,281	$1,467
MedianMortgageWeeklyPayment	$307	$379	$358	$399
MedianWeeklyRent	$190	$215	$350	$390
Population	2,804	2,765	2,774	2,806
MedianAge	30	33	34	35
Families	755	734	732	715
TotalPrivateDwelling	899	891	908	955
Married(%)	45.8%	44.2%	42.5%	44.9%
Separated+Divorced(%)	12.3%	12.3%	5.6%	4.6%
Widowed(%)	3.6%	3.9%	4.9%	5.5%
NeverMarried(%)	38.4%	39.5%	39.7%	37.6%
BirthInAustralia(%)	61.6%	61.9%	61.5%	56.2%
Worked full-time(%)	63.1%	61.0%	59.3%	50.9%
Worked part-time(%)	21.5%	23.4%	29.7%	25.5%
Unemployment(%)	**9.2%**	**8.5%**	**11.0%**	**8.6%**
PeopleTravelledToWorkByPublicTransport(%)		14.8%	15.3%	**5.4%**
PeopleTravelledToWorkByCar(%)		67.2%	72.3%	**59.4%**
AverageMotorVehiclesPerDwelling		1.6	1.7	1.7
CoupleFamilyNoChidren(%)	23.8%	34.8%	2580.0%	26.9%
CoupleFamilyHasChidren(%)	49.0%	47.9%	45.1%	46.9%
OneParentFamily(%)	26.4%	15.3%	26.9%	24.1%
OtherFamily(%)	0.8%	2.0%	2.2%	2.7%
OccupiedDwellings(%)		**94.2%**	**95.7%**	**96.0%**
UnoccupiedDwelling(%)		**5.8%**	**4.3%**	**3.8%**
SeparateHouse(dwellings%)	**97.1%**	**97.9%**	**97.9%**	**97.8%**
SemiDetached(dwellings%)	**2.5%**	**2.1%**	**1.3%**	**1.3%**
FlatUnitApartment(dwellings%)	**0.0%**	**0.0%**	**0.0%**	**1.4%**
0xBedroom(%)		0.0%	0.4%	0.3%
1xBedroom(%)		0.4%	1.3%	0.8%
2xBedroom(%)		2.3%	3.2%	3.8%
3xBedroom(%)		69.2%	66.1%	66.1%
4xBedroom+(%)		25.2%	25.2%	26.5%
AverageNumberBedroomsPerDwelling	1.2	1.3	0.9	1.0
AverageNumberPeoplePerHousehold	3.2	3.8	3.1	3.3
FullyOwned(%)	**26.2%**	**32.7%**	**27.3%**	**29.2%**
OwnedWithMortgage(%)	**39.6%**	**41.4%**	**38.6%**	**36.8%**
Rented(%)	**27.8%**	**26.2%**	**30.0%**	**32.2%**
FamilyHouseHolds(%)	**81.8%**	**85.3%**	**82.6%**	**78.6%**
SinglePersonHouseHolds(%)	**12.7%**	**12.7%**	**15.2%**	**18.8%**
GroupHouseHold(%)	**1.9%**	**2.0%**	**2.2%**	**2.6%**
LessThan$650WeeklyIncome(%)		**21.0%**	**19.4%**	**18.0%**
MoreThan$3000WeeklyIncome(%)		**5.5%**	**7.7%**	**12.9%**
HouseholdsRentPayments<30%Income(%)		92.4%	88.8%	55.0%
HouseholdsRentPayments>30%Income(%)		7.6%	11.2%	35.3%
HouseholdsMortgageRepayments<30%Income(%)		86.1%	89.4%	63.2%
HouseholdsMortgageRepayments>30%Income(%)		13.9%	10.6%	24.5%

The median house price increased significantly from $245,000 in 2006 to $695,000 in 2021, indicating strong growth in the local real estate market, which is one of the key data indicators. In addition, income levels in the personal, family, and household categories show a discernible increasing trend, indicating a general increase in the financial well-being of the populace. A good economic trend can be seen, for instance, in the median family weekly income, which increased from $1,069 in 2006 to $1,558 in 2021

An additional noteworthy change in work patterns is the rise in part -time employment and fall in full -time employment over time. A rebound was evident in 2021 when the unemployment rate dropped from 11.0% in 2016 to 8.6%. transit preferences are also cover ed by the dataset, which shows a decrease in public transit use and an increase in automobile use for commuting.

Housing data from PriceFinder and the Australian Bureau of Statistics (ABS) illustrates important changes in property types, occupancy rates, and household compositions. Both the percentage of occupied residences and the number of childless couple families grew with time, reaching a peak in 2016 and then levelling down. In addition, the dataset tracks important factors including the proportion of households facing financial strain because their rent or mortgage payment exceeds 30% of their income, which offers vital insights into housing affordability issues.

In conclusion, this dataset is a crucial tool for comprehending the changes in Dharruk's socioeconomic landscape throughout time. It offers insightful information to investors, legislators, and urban planners, enabling them to make well-informed judgements on the changing housing, economic, and demographic landscape of the suburbs. This data is a priceless tool for data-driven decision-making since it allows us to see the chances and problems that Dharruk faces in the future.

Dataset Characteristics:

The Dharruk dataset includes continuous and categorical data across several socioeconomic characteristics. A thorough description of the dataset's features is provided below **A. Place & Time**

- Location (Dharruk) and Time (2006, 2011, 2016, and 2021) are the categories used to group the dataset.
- Time is represented as date values and processed as time-series data to track changes over particular years.

B. Financial Details

- Key indicators like the median house price, median unit price, median weekly rent, median weekly mortgage payment, and median personal, family, and household income are included in this section.
- These continuous values, which can be expressed as integers or floating-point values in numerical data, are essential for examining changes in the real estate market and the state of the economy.

C. Demographic Information

- Population, Median Age, family structures (Families), and percentages for categories (Married, Separated + Divorced, and Widowed) are examples of metrics that are included in demographic information.
- Integers are used to represent the population, families, and median age; floating-point values are used to represent percentages, such as married (%), widowed (%), and separated + divorced (%).

D. Type of Housing

- Total Private Dwellings, Separate Houses, Semi-Detached Houses, and other housing types are among the housing-related data.
- The Average Number of Bedrooms per Dwelling and occupancy metrics like Owned with Mortgage (%) and Rented (%) are also tracked in the dataset.
- For the most part, these figures are either numerical (for percentages and averages) or categorical (for dwelling kinds), with floating-point percentages for ownership and rental statistics and integer data for total dwellings.

E. Income Groups

- The percentage of households in each income bracket is indicated by categories with names like Less Than $650 Weekly Income and More Than $3000 Weekly Income.
- Because they are expressed as floating-point percentages, a thorough examination of the income distribution is possible.

F. Status of Employment

- The percentages of people who are unemployed, part-time workers, and full-time workers are shown in this section.
- These percentages are floating-point figures that shed light on labour market trends and employment patterns.

G. Types Of Households

- The various household compositions are represented as percentages by Family Households, Single Person Households, and Group Households.
- Because they are floating-point percentages, it is possible to compare the makeup of households throughout different time periods.

H. The affordability of housing

- Metrics like Rent Payments > 30% of Income (%) and Mortgage Payments > 30% of Income (%) show what proportion of households are stressed out about housing because their housing costs are too high compared to their income.
- These percentages are floating-point values that are crucial to comprehending suburban house affordability and financial hardship.

Data Type

The dataset includes time-series, categorical, and numerical data among other data types. An explanation of each data type can be found below **A. Types of Numerical Data:**
Both continuous and discontinuous numerical data are present in the collection.

- **Continuous Data:** Variables such as the median price of a house, median price of a flat, median personal income per week, median income per family per week, median income of a household per week, median mortgage payment per week, median rent per week, average number of bedrooms per dwelling, average number of cars per dwelling, and average number of people

per household are examples of continuous data. To obtain the accuracy needed for housing and financial measurements, these are usually quantified using floating-point data.

- **Discrete Data:** Discrete numerical data is expressed as integer numbers and includes categories like Population, Families, and Total Private Dwellings.

B. Types of Categorical Data:

The dataset contains both nominal and ordinal categories of categorical data.

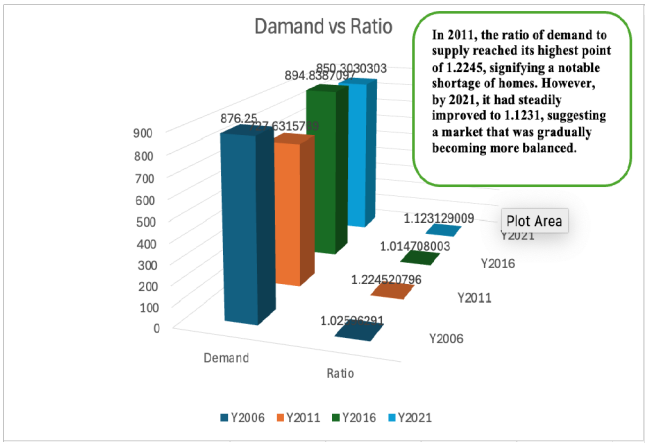
- **Nominal Data:** Examples include the following categories: Never Married (%), Widowed (%), Separated + Divorced (%), and Married (%). These are recorded as categorical variables and indicate demographic groupings that are not arranged in any particular order.
- **Ordinal Data:** Because they are arranged in a certain hierarchy according to the type of property, dwelling types including detached homes, semi-detached homes, and flat/unit apartments are examples of ordinal data.

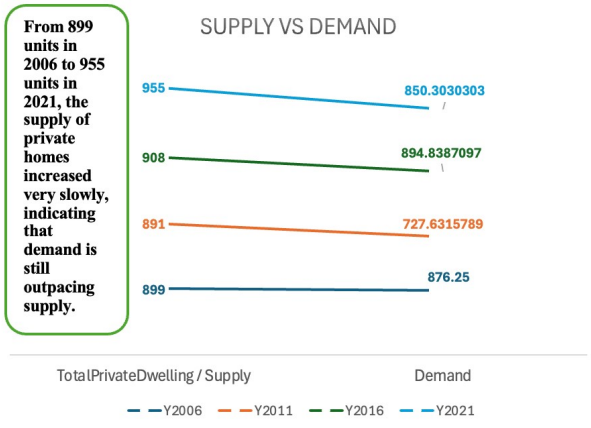
C. Data Ratio:

- Ratio data, or continuous data with a real zero point and significant ratios between data points, is included in the dataset. Income, costs, and average values (such as the typical number of bedrooms per home) are a few examples.
- Because financial measurements like median weekly income and house prices may be compared by multiplication or division and have a meaningful zero value (no income, no price), the ratio scale is particularly pertinent for these types of data.

Supply and Demand

- From 876.25 units in 2006 to a low of 727.63 units in 2011, the demand for housing fell and then increased to 850.30 units in 2021. This indicates a gradual increase in the demand for housing overall, most likely as a result of population growth and shifting household sizes.
- The overall number of private homes/supplies increased somewhat from 899 units in 2006 to 955 units in 2021, remaining largely steady. This consistent supply shows that, despite variations in demand, supply has been gradually increasing, albeit not at the same rate as demand.
- Over time, the ratio of supply to demand has steadied, peaking at 1.2245 in 2011 and falling to 1.1231 in 2021. It began at 1.0259 in 2006. This implies that the market has been partly balanced as a result of the supply gradually adjusting to meet the growing demand.
- **Visualisation Techniques**: To clearly distinguish across time periods and highlight variations in housing needs, 3D bar charts were used to show changes in demand and the demand-to-supply ratio over time. Additionally, line charts were used to compare supply and demand. Each year's colour was unique, making it simple to monitor patterns over time.
- **Challenges and Solutions:** The 3D bar charts were meticulously positioned and coloured to guarantee that the data points stayed separate and preserved data clarity. Repositioning and resizing labels prevented overcrowding and ensured legibility without sacrificing the charts' aesthetic integrity. This solved the labelling difficulty.
- **Recommendations:** There is room for more residential development given the growing need for housing, which is indicated by the demand-to-supply ratio. The housing market in Dharruk might stabilise if more homes were built to fulfil the growing demand. Furthermore, in order to account for future population increase and changes in household sizes, flexible housing solutions must be planned for.
- In **conclusion**, Dharruk's housing market's cyclical supply and variable demand patterns were well-represented by the visuals. A clear and perceptive grasp of the market dynamics was made possible by the use of 3D bar charts and line graphs in conjunction with colour coding. These insights were helpful for making decisions on urban planning and real estate investment.



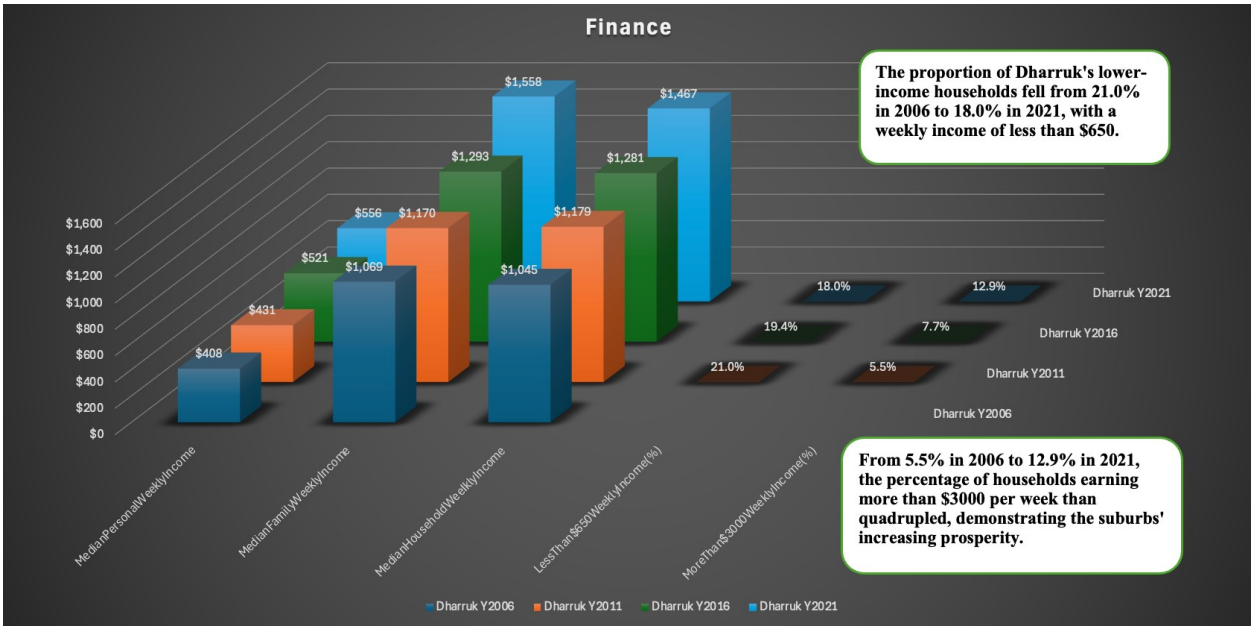


Property affordability

- From $245,000 in 2006 to $695,000 in 2021, the median home price has increased significantly, indicating a significant increase in property values. The expansion in household salaries is not keeping up with the current surge in housing prices.
- The house price to yearly household income ratio, which measures housing affordability, showed a considerable decline. Houses have become less affordable despite rising household earnings; in 2006, the affordability ratio was 4.50, but by 2021, it had increased to 9.09.
- **Visualisation Techniques**: To compare median home prices, median weekly household income, median yearly income, and affordability with time, 3D bar charts were used. This does a good job of illustrating how quickly housing prices have risen relative to salaries. The years were distinguished from one another using colour coding, which made it simpler to identify trends and changes in the affordability of real estate over time.
- **Challenges and Solutions**: The 3D bar chart was the most effective way to show the complex link between property price, income, and affordability in terms of data clarity. Strict colour coding and spacing were used to guarantee the bars' uniqueness. Challenges with label placing were overcome by varying the sizes and angles of the labels, which allowed for accurate readability without overcrowding the chart.
- **Recommendations**: It is imperative to address the issue of housing affordability, possibly through legislative initiatives such as programs for affordable housing or incentives for first-time homebuyers. To close the affordability gap in Dharruk, income growth should also be given top priority in order to keep up with the rising cost of housing.
- In **conclusion**, the visual aids proficiently illustrate the notable surge in housing costs in contrast to the more gradual growth of income, resulting in decreased affordability. These patterns were easily understood thanks to the 3D bar charts, which also offered suggestions for possible remedies to Dharruk's housing market problems.

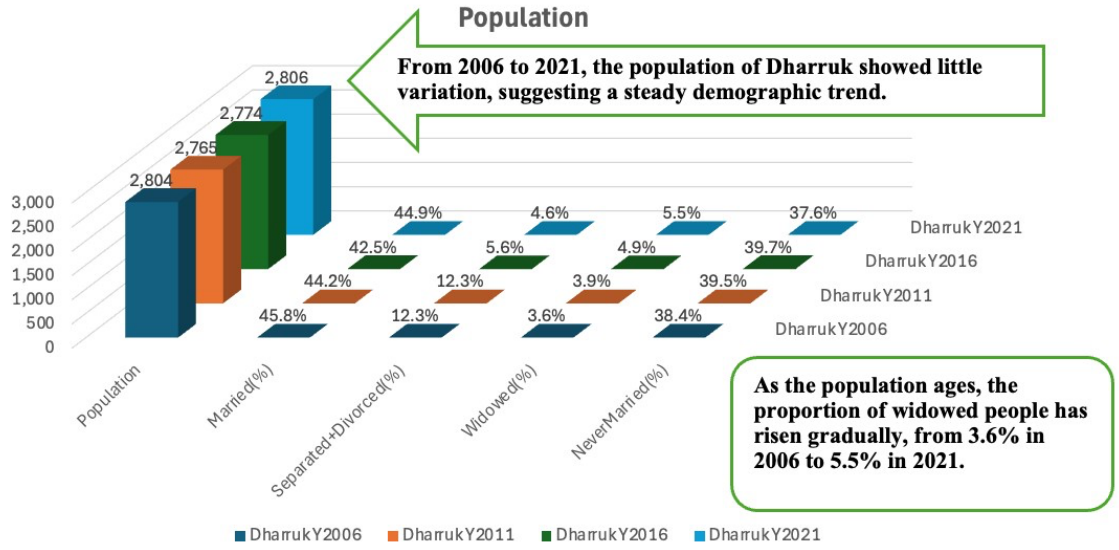
Finance

- The median weekly income of a household increased from $1,045 in 2006 to $1,467 in 2021, indicating a growth in overall earnings.
- The affordability ratio has substantially deteriorated despite income increases, making properties in Dharruk less affordable for typical households.
- The percentage of households making less than $650 per week fell from 21% in 2006 to 18% in 2021, suggesting a shift away from lower-class demographics.
- The proportion of homes in Dharruk who make more than $3000 per week has doubled, indicating the city's burgeoning affluence.
- **Visualisation Techniques**: Using different colours to indicate each year, a 3D bar chart effectively showed affordability and income trends across time. The labels were arranged so as not to overlap, which made comparing different income groups and percentages simple.
- **Challenges & Solutions**: Bar spacing was changed and label widths were lowered for clarity in order to manage data overlap while displaying numerous categories. To guarantee an accurate representation of the trends in both income and housing prices, uniform axis scaling was used.
- **Recommendations**: Purchasing real estate in Dharruk offers substantial profits due to rising property values, particularly for purchasers with higher incomes. But the decline in affordability emphasizes how important it is to have cheap homes in order to help lowerclass families.
- In **conclusion**, the 3D bar chart demonstrated a clear visual representation of price and income patterns, indicating rising incomes and falling affordability. Developers and investors in Dharruk were able to gain important insights from the clear labelling and spacing, which made interpretation simple.



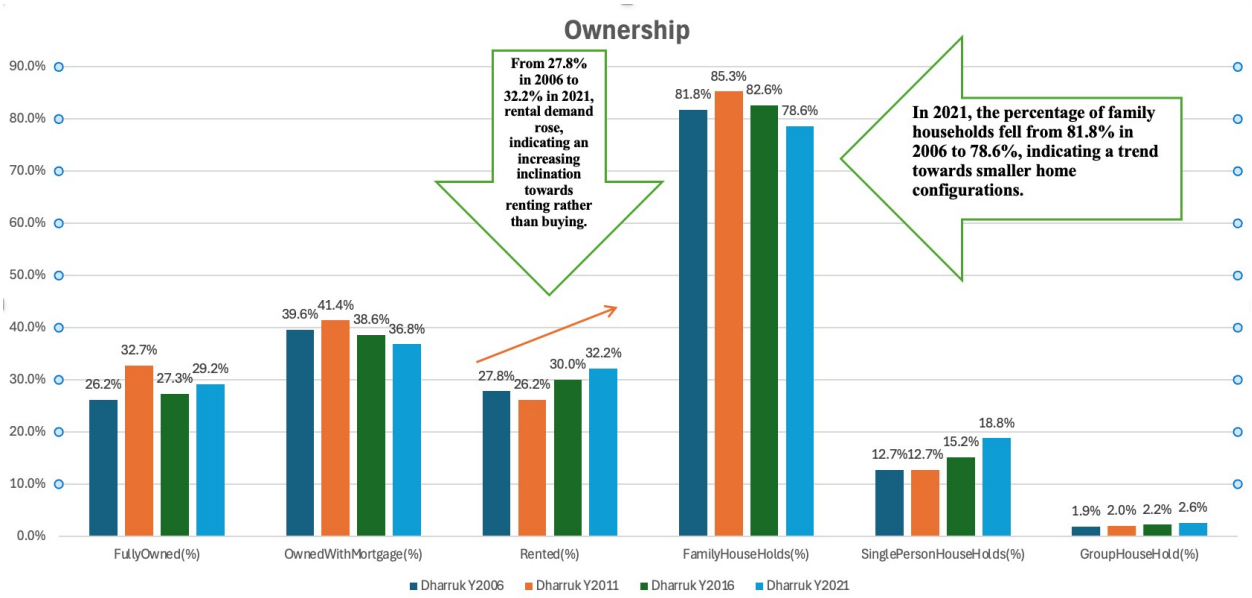
Population:

- Between 2006 and 2021, Dharruk's population stayed mostly constant, with the exception of a small uptick from 2,804 to 2,806, which suggests that the suburb has had only modest demographic growth.
- Over time, marriage rates have remained stable, averaging 45%, indicating stable suburban family patterns.
- There has been a notable decline in the proportion of people who are separated or divorced, from 12.3% in 2006 to 4.6% in 2021. This could indicate that people are marrying for longer periods of time or that there are fewer formal separations.
- The percentage of widows has increased over time, rising from 3.6% in 2006 to 5.5% in 2021, which is indicative of Dharruk's ageing population.
- The percentage of persons who say they have never married (38.4% to 37.6%) has slightly decreased, suggesting that more people are opting to get married later in life.
- **Visualisation**: To illustrate the changes in Dharruk's population over time, a 3D bar chart was used. The labels provided exact data and colour coding for each year improved the visibility of the trends, making it easier to understand how the population and family structure changed over time.
- **Challenges Encountered**: To ensure that every category was observable and comparable without visual clutter, we adjusted bar spacing and resized labels in the 3D bar chart to address data overlap and label crowding. To accurately compare various demographic data sets, a consistent axis scale was maintained.
- **Recommendations** for Buyers / Investors: The number of widows rising indicates that the population is getting older, which opens up possibilities for senior-friendly housing options. Furthermore, Dharruk's steady marriage rate and demographic stability indicate that it's a good fit for long-term, family-focused residential developments.
- In **conclusion**, Dharruk's demographic stability and ageing trends were effectively illustrated by the visualisation tactics implemented. A clear and concise picture was produced with the help of 3D bar charts, thoughtful colour coding, and accurate labelling, enabling well-informed decisionmaking for suburban real estate investments.



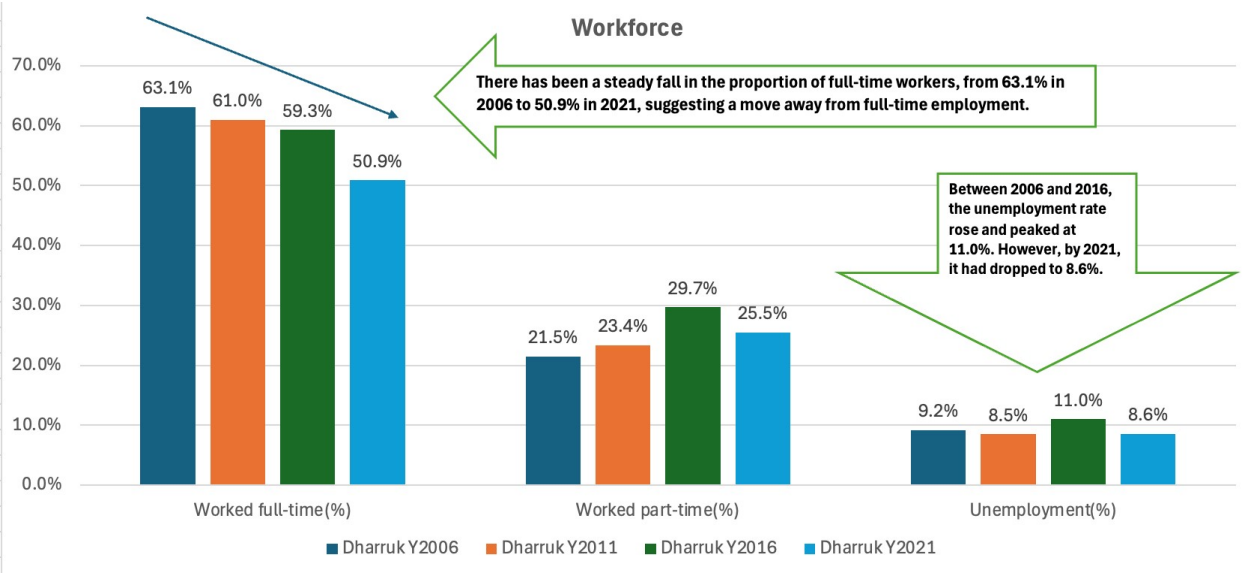
Ownership

- The median house price surged from $245,000 in 2006 to $695,000 in 2021, indicating a sharp rise in property values. Unit prices followed a similar trend.
- Rental rates increased, with rented properties rising from 27.8% to 32.2% over the same period, suggesting growing demand for rental accommodation as affordability issues rise.
- Single-person households increased from 12.7% to 18.8% while family homes shrank from 81.8% to 78.6%, suggesting a trend towards smaller families and a possible need for more cheap, smaller housing units.
- Group households expanded marginally but stayed rather consistent, suggesting that shared living arrangements are being driven by affordability issues.
- The percentage of fully owned residences fluctuated between 26.2% and 32.7% by 2011 and 29.2% by 2021, presumably as a result of growing property values.
- Mortgaged residences declined to 36.8% in 2021 from a peak of 41.4% in 2011, indicating difficulties in financing homeownership.
- **Visualisation Techniques:** Annotations indicating important trends such as rising rental rates and a decline in family households were combined with colour coding and data labels to enhance readability and provide clear year-over-year comparisons in side-by-side bar charts.
- **Challenges and Solutions:** Data overlap was eliminated by spacing and smaller labels, axis scaling was consistent to guarantee clarity, and label placement modifications enhanced readability.
- **Recommendations** for Buyers/Investors: Due to increased demand, invest in rental properties; focus on smaller units for single-person dwelling; and take into account long-term investments for price appreciation despite high initial expenses.
- In **conclusion,** bar charts, colour coding, and annotations provided clear, practical information for prospective buyers and investors, and the visualisations successfully illustrated housing patterns.



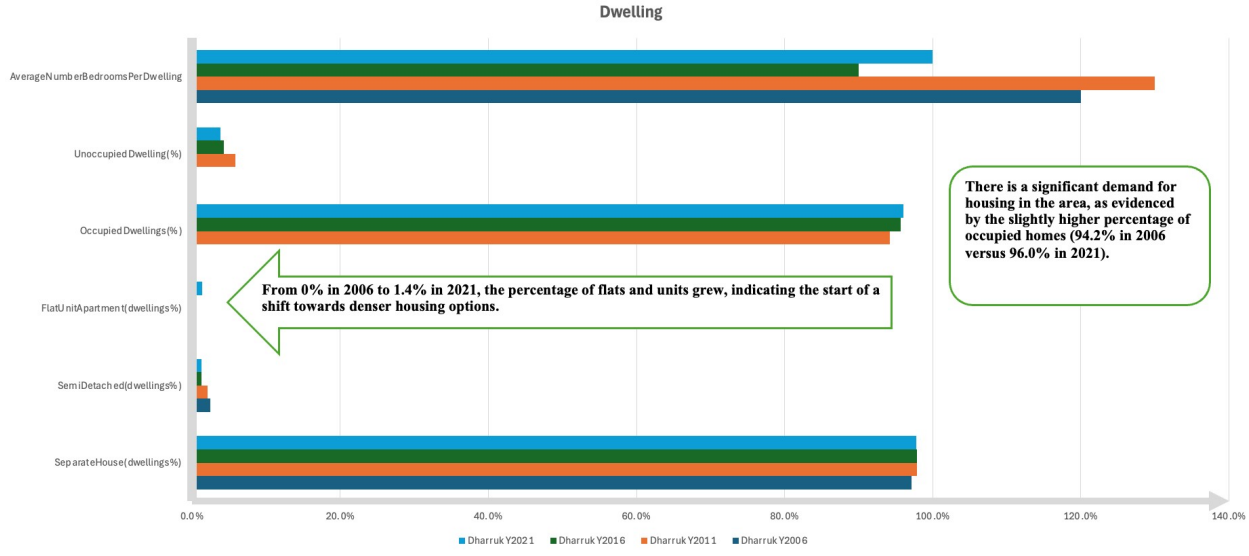
Workforce

- Full-time employment has significantly decreased, falling from 63.1% in 2006 to 50.9% in 2021. This indicates that part-time work that is more flexible is becoming more common in the workforce; it reached 29.7% in 2016 before marginally falling to 25.5% in 2021. A shift in the labour market is shown by the data, since fewer people are employed in typical full-time positions.
- Perhaps as a result of economic difficulties, unemployment increased to 11.0% in 2016 before declining to 8.6% in 2021, a sign of recovery and a stabilizing labour market. By 2021, Dharruk's workforce appears to have recovered despite the brief increase.
- **Visualisation Techniques**: It was simple to compare workforce patterns over time with side-by-side bar charts. The years were distinguished from one another by colour coding, and labels offered concise information for easy understanding. Important changes, such the increase in part-time employment and variations in unemployment, were noted in the annotations.
- **Challenges and Solutions**: Bar spacing adjustments and the use of different colours for each year helped to eliminate data overlap. Font sizes were lowered and repositioned for improved readability in order to alleviate label crowding.
- **Recommendations**: Given the increase in part-time work, companies ought to provide more flexible work schedules. As evidenced by the unemployment rate stabilizing, Dharruk's economy is recovering and offers promising investment prospects.
- In **conclusion**, Dharruk's workforce patterns were well-represented by the visualisations, which offered lucid insights on the shift towards part-time employment and the economic recovery. For staff planning and investment, the use of bar charts, colour labelling, and annotations guaranteed understanding and practical takeaways.



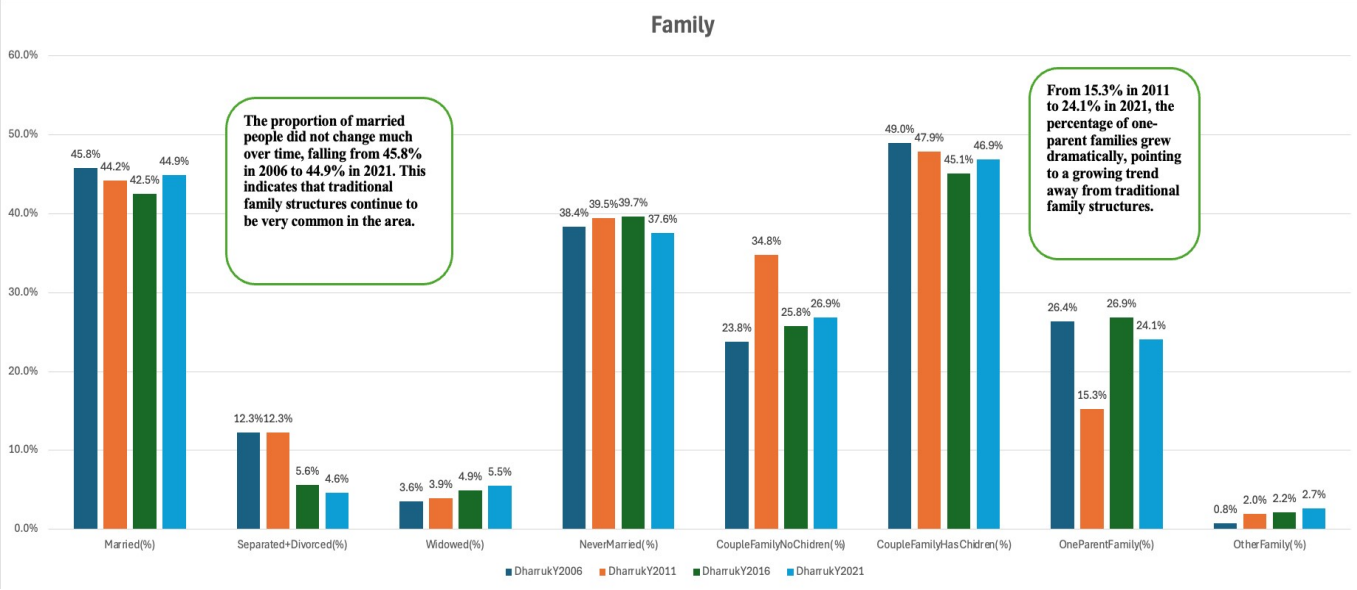
Dwelling

- The suburb's high predilection for independent residences is demonstrated by the fact that from 2006 to 2021, separate houses constantly made up roughly 97.8% of all dwellings.
- Occupied homes climbed little, hitting 96.0% in 2021 as a result of lower housing supply shortages and rising housing demand.
- From 0% in 2006 to 1.4% in 2021, there was a slight but significant growth in flats and unit apartments, indicating early indications of diversification in the housing supply.
- The percentage of semi-detached homes fell from 2.5% in 2006 to 1.3% in 2021, which may be a result of shifting local development patterns or preferences for different types of housing.
- The percentage of vacant homes decreased from 5.8% in 2006 to 3.8% in 2021, suggesting that more people are living in their homes, which is consistent with rising demand for real estate.
- **Visualisation Techniques:** To make comparisons easier, horizontal bar charts were used to show the average number of bedrooms per residence, occupancy rates, and types of habitation over a period of several years. The years were distinguished by colour coding, and data labels were provided for accurate value identification.
- **Challenges and Solutions:** Label visibility was enhanced by shrinking in size and moving to prevent crowding, and data overlap was eliminated by modifying bar spacing.
- **Recommendations:** The rising number of apartments indicates a possible growth sector for future expansion, while investing in separate houses could yield substantial returns due to steady occupancy rates.
- In **conclusion**, the visualisations show that Dharruk is still largely a suburb of single-family homes, with a little increase in apartment buildings and a decline in vacant properties. These trends were clearly shown by horizontal bar charts and colour coding, which made it simple to comprehend the dynamics of the housing market.



Family

- The proportion of married people fell from 45.8% in 2006 to 44.9% in 2021, suggesting a gradual erosion of traditional family arrangements.
- From 15.3% in 2011 to 24.1% in 2021, the percentage of one-parent families increased significantly, indicating a trend towards more varied family structures.
- The proportion of singles did not change much from 2006 to 2016, ranging from 38.4% to 39.7%, and then declining little to 37.6% in 2021.
- From 23.8% in 2006 to 26.9% in 2021, the percentage of couple families without children increased, suggesting a trend towards smaller households.
- **Visualisation Techniques:** To effectively illustrate changes in patterns over time, family structures from various years were compared using bar charts. The years were colour coded to improve readability, and the data labels showed precise percentage values to guarantee accuracy and clarity when reporting changes in family dynamics.
- **Challenges and Solutions:** By making sure there was enough room between each bar in the chart, avoiding clutter, and enhancing visual clarity, data overlap was managed. In order to reduce congestion and improve readability, label visibility was improved by reducing font sizes and modifying the label placements.
- **Recommendations:** The number of one-parent homes is increasing, which presents opportunities for developers by highlighting the demand for housing and services specifically designed for these households. There seems to be a shift in family preferences as evidenced by the rise in childless couples and the growing demand for smaller dwellings.
- In **conclusion,** the visualisations depict an increase in single-parent and childless couples and a fall in traditional family arrangements. These alterations were well-represented by bar charts and colour coding, which shed light on how Dharruk's family dynamics were changing.



Conclusion

Practical Recommendations for Buyers / Investors: Dharruk has two major advantages for prospective buyers and investors: an ageing population and stable neighborhood. The notable increase of widowed people points to an ageing population, providing opportunity for investments in senior-friendly housing options like retirement complexes or handicapped-accessible homes. Further evidence that Dharruk is still a family-friendly suburb that provides a stable, long-term setting for residential developments targeted at families and multigenerational living comes from the city's consistent population growth and stable marriage rates.

Advantages of Visualization Techniques: Changes in household structures and population throughout time were clearly shown by using 3D bar charts and colour coding for each year. This method made it possible to distinguish clearly across years and demographic categories, which made it simple to understand trends like the rising number of widows and steady marriage rates. Accuracy in comparisons was assured by carefully positioned labels that maintained readability without clutter and uniform axis scale throughout charts. Potential investors and developers were able to make data-driven decisions with the use of these visual aids, which simplified and made the complex data more understandable by offering a thorough and practical overview of the major demographic trends.