

Assessing Melbourne's Employment and Housing Correlations



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Presentation Outline

1. Question
2. Motivation of Research
3. Datasets
4. Data Wrangling Methodologies
5. Results
6. Reflections



Question ☆

“Do the increase in employment rates contribute to the rise of house prices in Melbourne?”



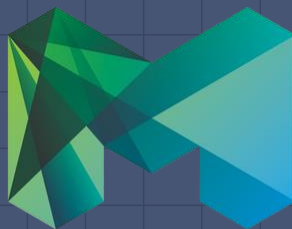
Motivation and Purpose

- Rise in employment rates and quality of life.
- Concerning increase in property prices.
- Assessing the future of Victoria's economy.

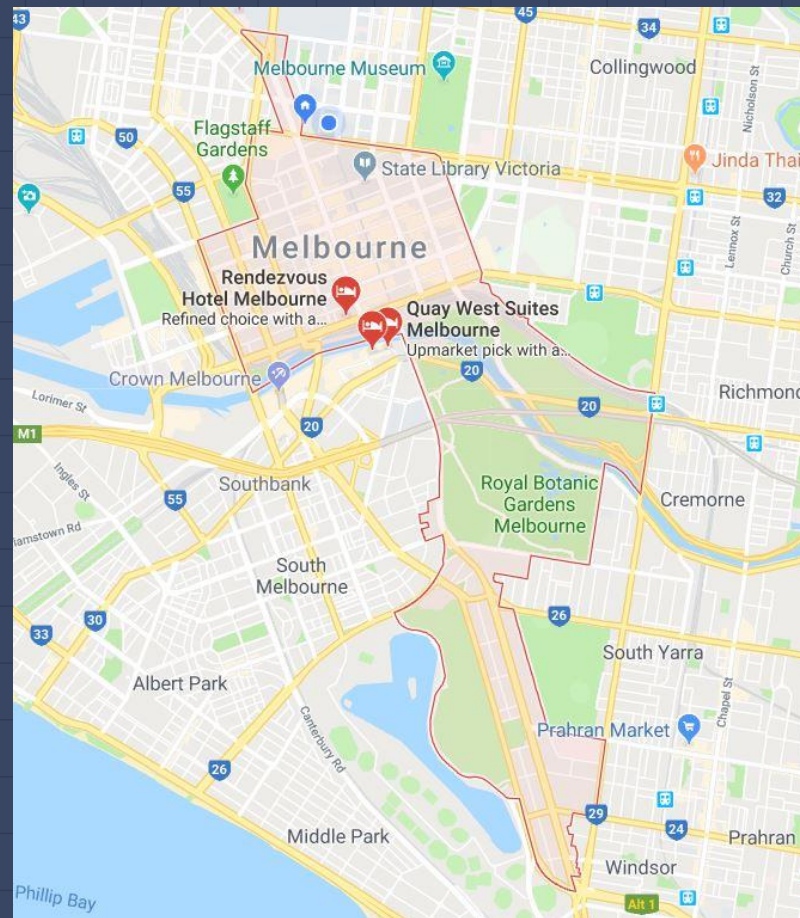


City of Melbourne

1. 'Median House Prices – By Type and Sale Year'
2. 'Employment by Block by Industry'



CITY OF MELBOURNE



Pre-processing

- Removing Unnecessary Data
- Input missing values in datasets
- Detecting Outliers
- Type Conversion

Integration

- Column Joins
- DataFrames implementation using **pandas**.
- Clustering of sectors

All done by Python

Special thanks to: Pandas, Matplotlib, Numpy, Scipy, Re, Decimal and Seaborn

Clustering Method Using the VAT algorithm

Normalisation is Magic

$$\text{Normalised Value} = \frac{\text{Old Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$$

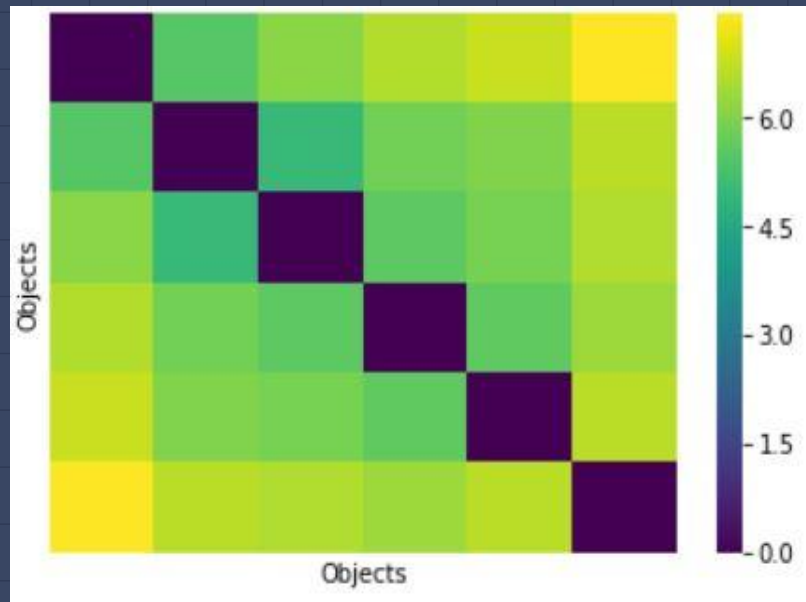


Figure 1: VAT visualisation of the 6 employment sectors

"An Outlier Speaks A Thousand Words"

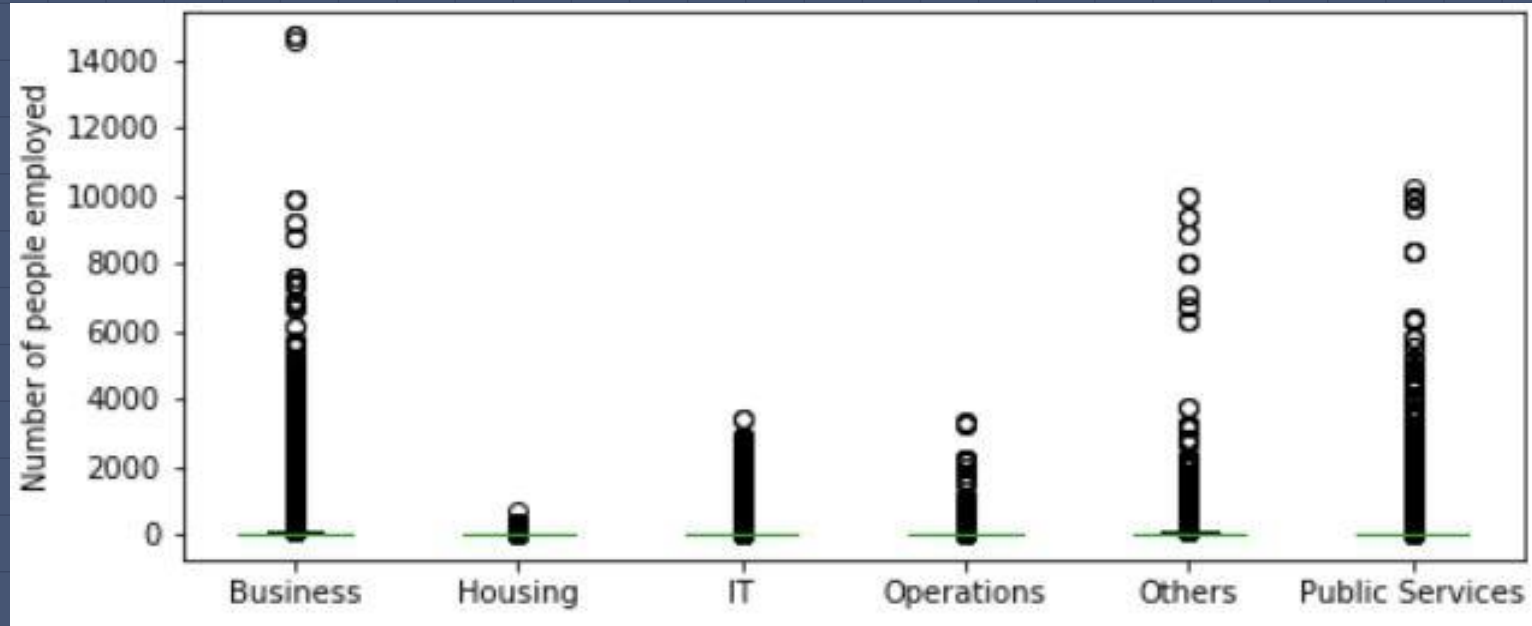


Figure 2: Instances of people employed for each sector in the City of Melbourne

House Prices are on the Rise

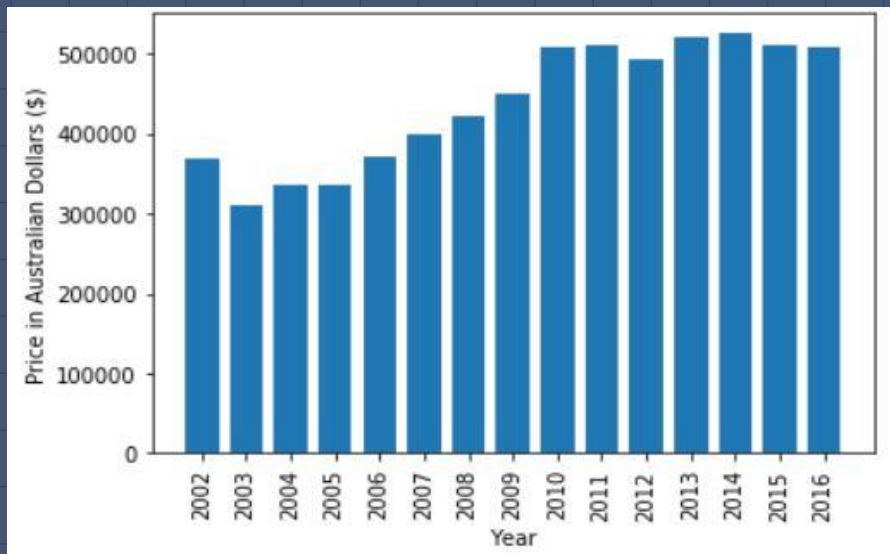


Figure 3: Median Apartment Price in Melbourne

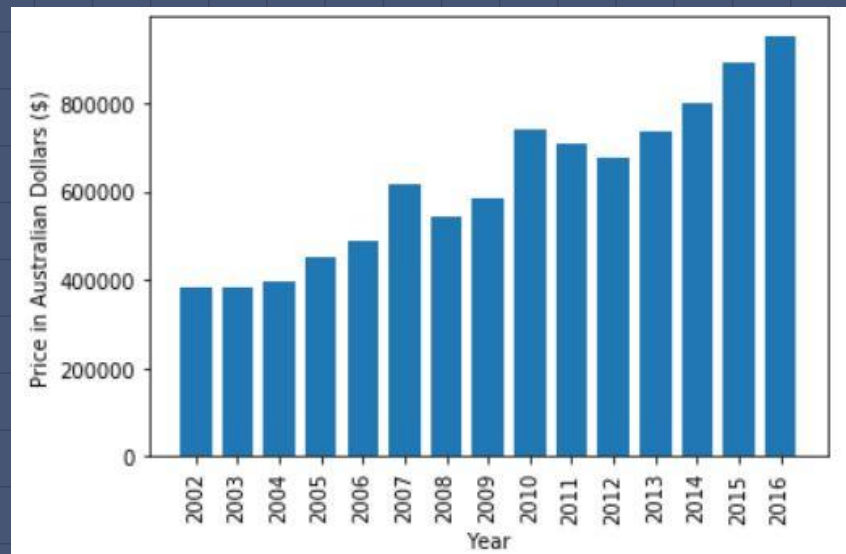


Figure 4: Median House Price in Melbourne

What about employment rates?

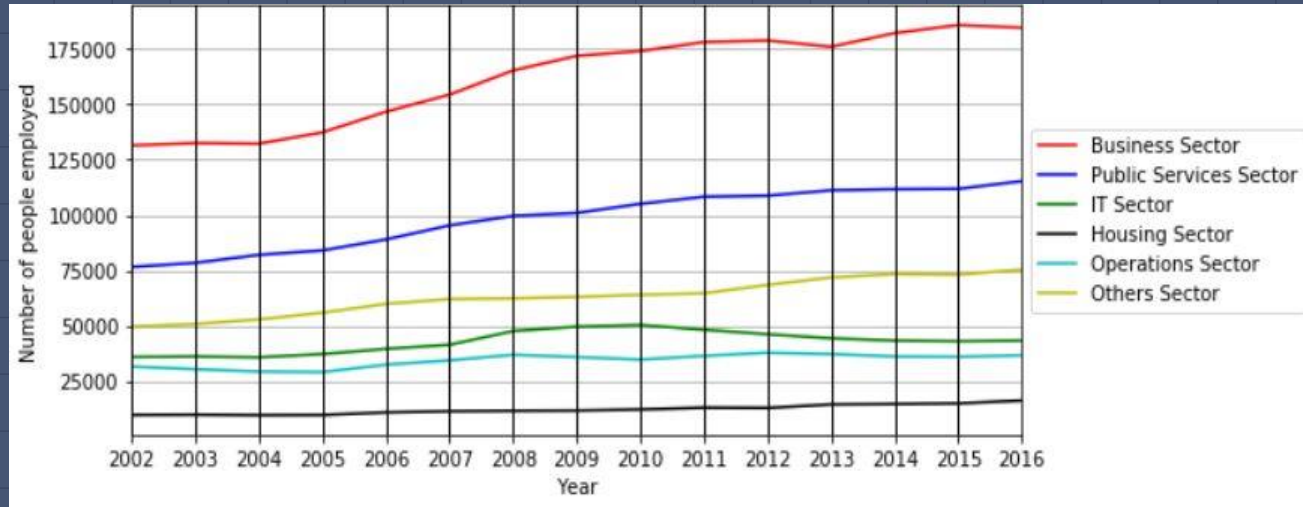


Figure 5: Number of employment per year for each sector (City of Melbourne)

Let's Correlate!

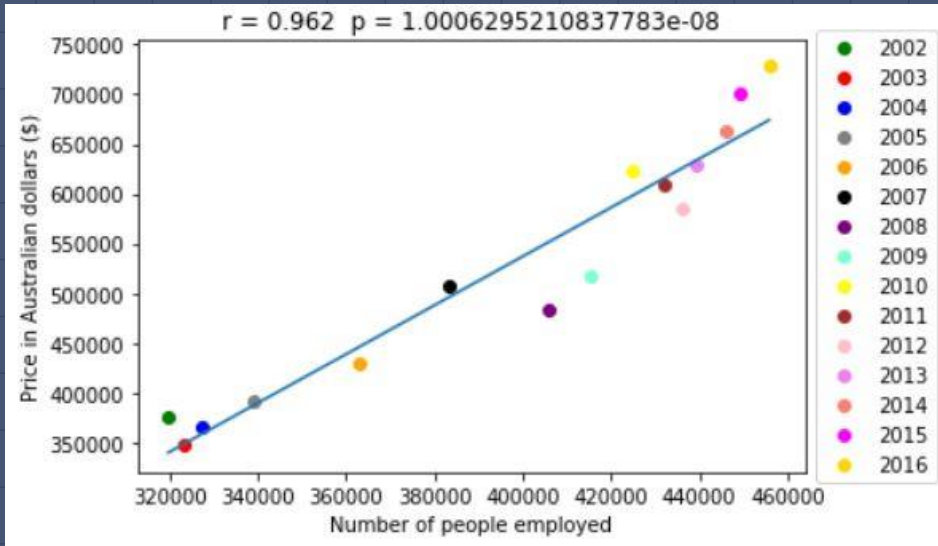


Figure 6: Median house and apartment price averaged vs number of people employed (City of Melbourne)

194.14%



Percentage increase of housing prices

142.54%



Percentage increase in number of people employed

0.962



Pearson Correlation Coefficient

Reflections

Challenge 1

Missing
values in the
datasets.

Challenge 2

Raw heatmap
visualisation?
Too many
instances!

Challenge 3

Initial
question? Too
complex.

INITIAL QUESTION:

**“What are the variables that affect
changing property prices?”**

Population?
Education?
Immigration?
Crime Rate?

Poverty?
Employment?
Economy?
Interest Rates?