Singapore
Private Housing Market
Analysis

Eugene Chua
1048186J

IT8701
Introduction To Programming For Data Science
CA 2 Assignment

Introduction

The residential real estate market in Singapore has been an attractive investment asset to foreign buyers.

According to Statista, the Residential Real Estate market market in Singapore is estimated to reach a value of US$1.52tn by the end of 2024.

In the Jupyter notebook accompanying this slide deck, we seek to understand Singapore's private housing market in 4 sections:

1. Private Residential Property Transactions Overview
2. Interest Rates & Private Property Sold
3. Private Property Price Index
4. Analyzing Singapore's 3 Main Regions

Libraries & Datasets

Libraries

- Pandas
- Numpy
- Matplotlib
- Seaborn

Datasets & URLs

Private Residential Property Transactions in Singapore
https://beta.data.gov.sg/collections/1658/view

SORA Interest Rates
https://www.mas.gov.sg/monetary-policy/sora

Private Residential Property Price Index
https://beta.data.gov.sg/collections/1676/datasets/d_97f8a2e995022d311c6c68cfda6d034c/view

HDB Resale Price Index
https://beta.data.gov.sg/collections/152/view

Private Property Transactions
https://www.ura.gov.sg/property-market-information/pmiResidentialTransactionSearch

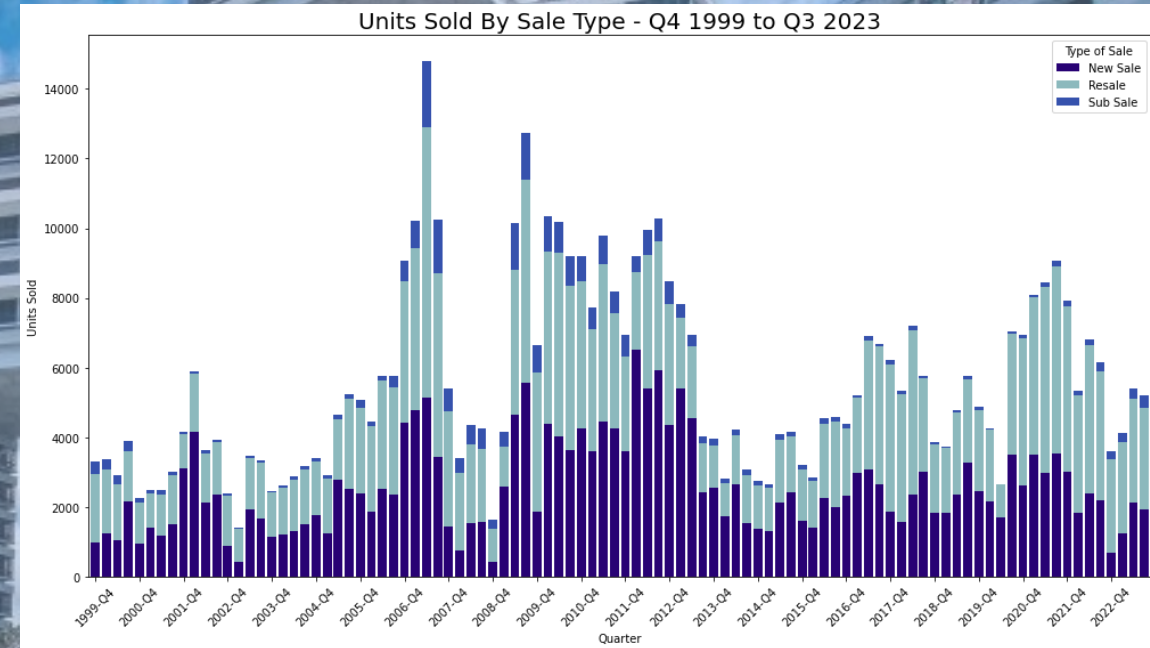# 1.Private Property Market Overview

Dataset:
Private Residential Property Transactions in Singapore

Methodology:
- I used pandas to load the dataset. Next, I checked for null values and the unique values in each column.
- There are 3 types of sale in this dataset: `New Sale`, `Resale`, `Sub Sale`.
- Using the `pivot_table` function, I grouped the data according to sale type and extract the number of units sold for each type.

Insights:
- From Q4 1999 to Q3 2023, 530,164 private residential property units were sold in Singapore.
- Despite cooling measures introduced by the government in 2013, the property market stabilized and has found its footing.
- As the world recovers from the COVID pandemic, barring significant government intervention, the private property market is poised to return to pre-pandemic levels.

Units Sold By Sale Type - Q4 1999 to Q3 2023

Units Sold vs SORA

Dataset:
- Private Residential Property Transactions in Singapore
- SORA Interest Rates

Methodology:
- I reused the same dataset from the previous section. For this section I filtered the data for 'new sales' only.
- Next I loaded the dataframe for domestic interest rates and had to add a column for the quarter end date so that I could merge the 2 dataframes together using pd.merge.
- After that, I plotted a bar chart showing the number of units sold and overlaid a line chart showing the SORA rates.

Insights:
- From Q1 2008 to Q3 2023, the correlation between SORA rates and units sold was -0.33.
- Despite cooling measures to prevent the market from overheating, it appears that Singapore private property has proven to be an attractive investment asset.
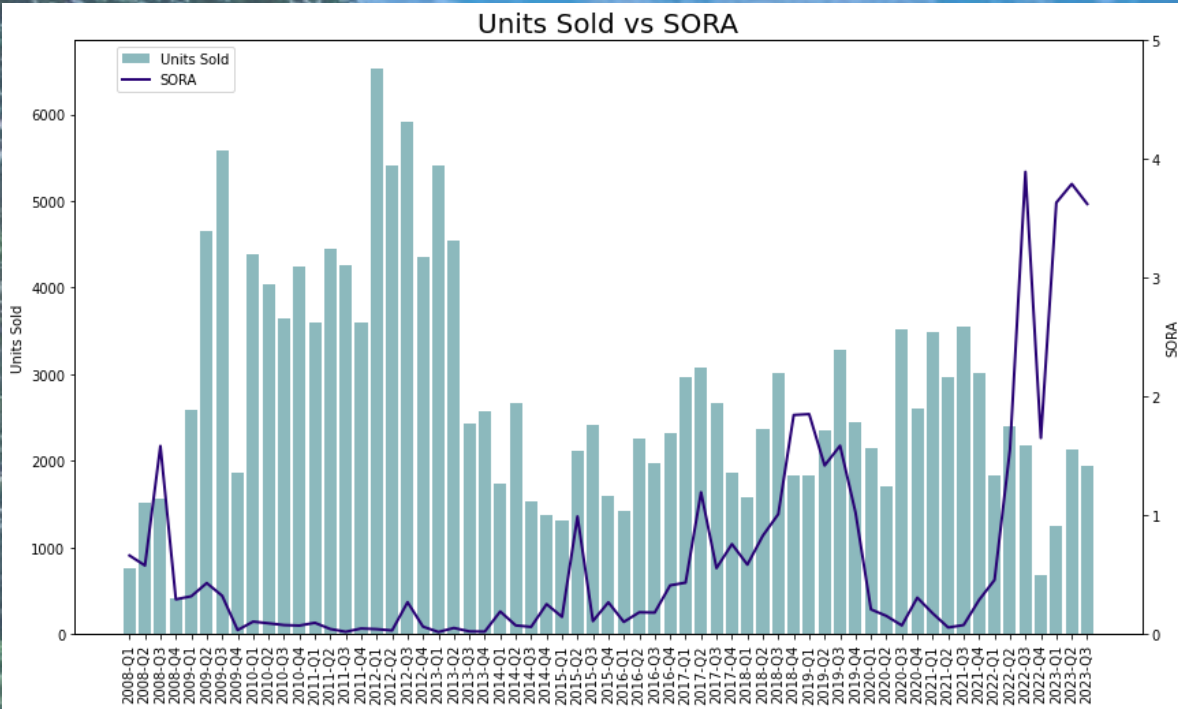
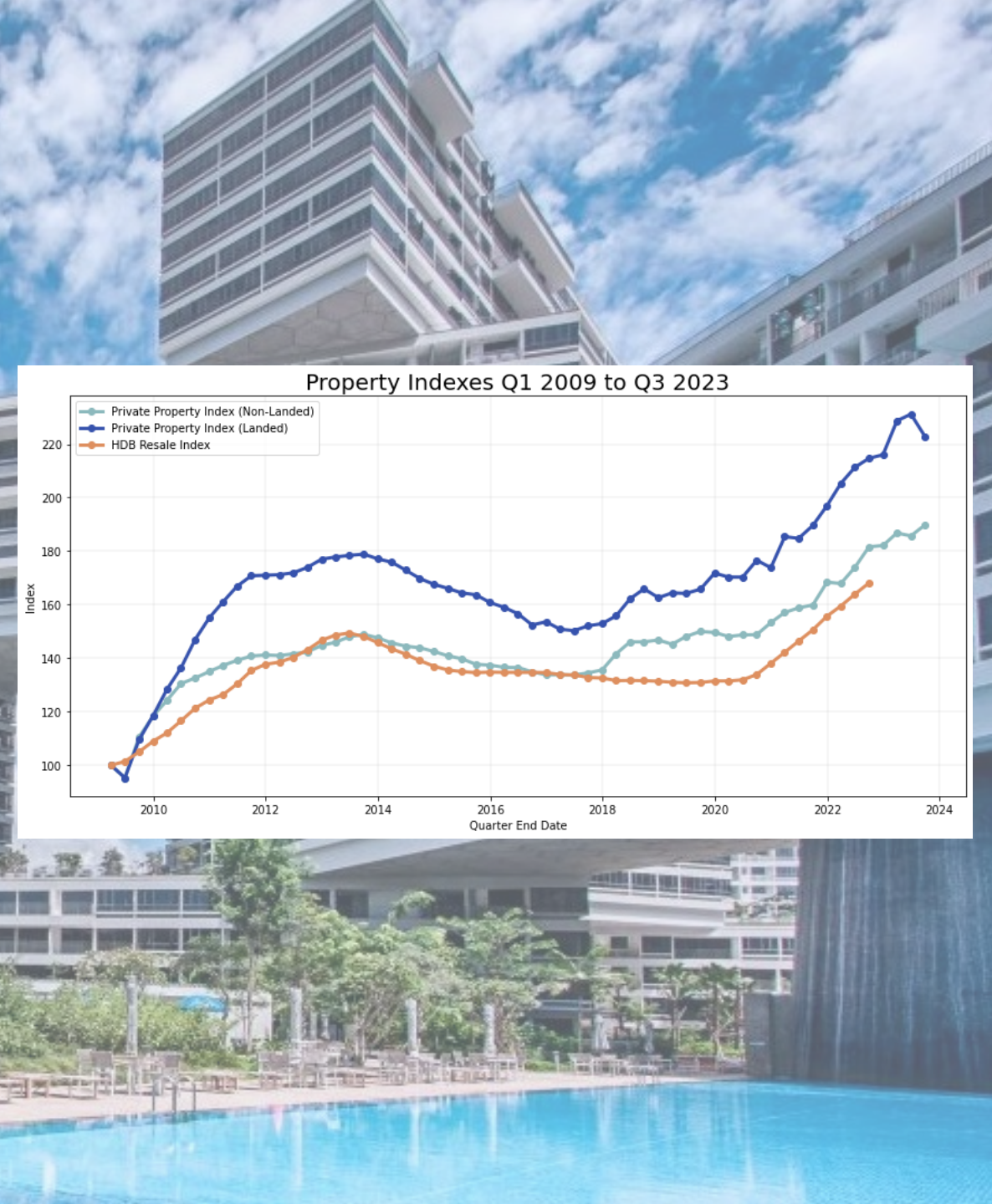# 3. Private Property Price Index

Dataset:
- Private Residential Property Price Index]
- HDB Resale Price Index

Methodology:
- This section examines the private residential property index and compares it to the HDB resale index.
- After using pandas to read the csv file, I added an additional column containing a date-time object for each quarters' end.
- Next I plotted a line chart comparing the performance of (i) landed private property, (ii) non-landed private property, and (iii) HDB resale flats.

Insights:
- As of Q3 2022, the Private Property Index (Landed) was 222.9 while the the Private Property Index (Non-Landed) stood at 189.9. While no new data has been provided since Q3 2022, we can expect it to be in line with the strong uptrends exhibited by the private property indexes.

Property Indexes Q1 2009 to Q3 2023
- Private Property Index (Non-Landed)
- Private Property Index (Landed)
- HDB Resale Index

4. Analyzing Singapore's 3 Main Regions

Market Profile by Transaction Value (2019)

Market Profile by Transaction Value (2023)

Market Profile by Transaction Volume (2019)

Market Profile by Transaction Volume (2023)

Dataset:
Private Property Transactions

Methodology:
- I used pandas to load the CSV files and then concatenated them using pd.concat.
- After checking for null values, I filtered them by year and market segment and plotted a pie chart to compare the market profiles of 2019 and 2023.

Insights:
- The transacted value of apartments and condominiums grew from SGD25.8bn in 2019 to SGD35.0bn in 2023, representing a 36.0% increase during this period.
- Nevertheless, the contribution from the 3 regions remaining stable with each contributing roughly a third. Furthermore, in 2023, none of regions' compositions deviated more than 2% from the their respective 2019 figures.
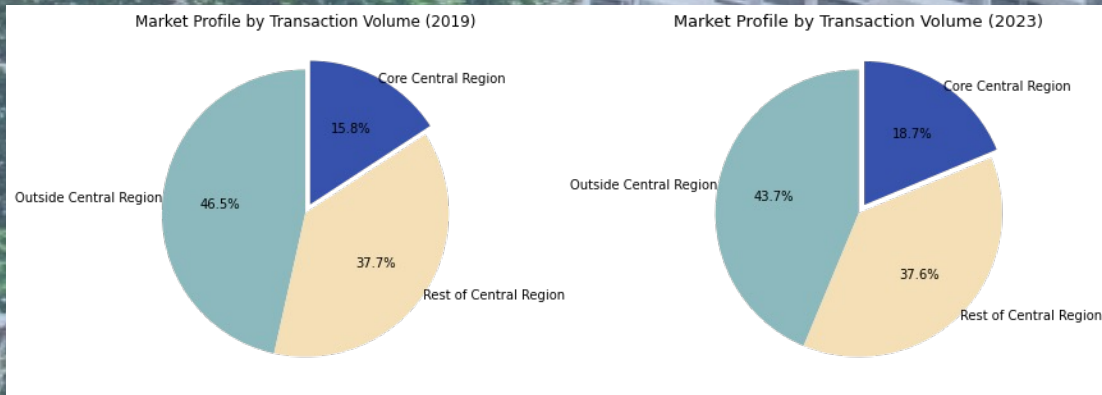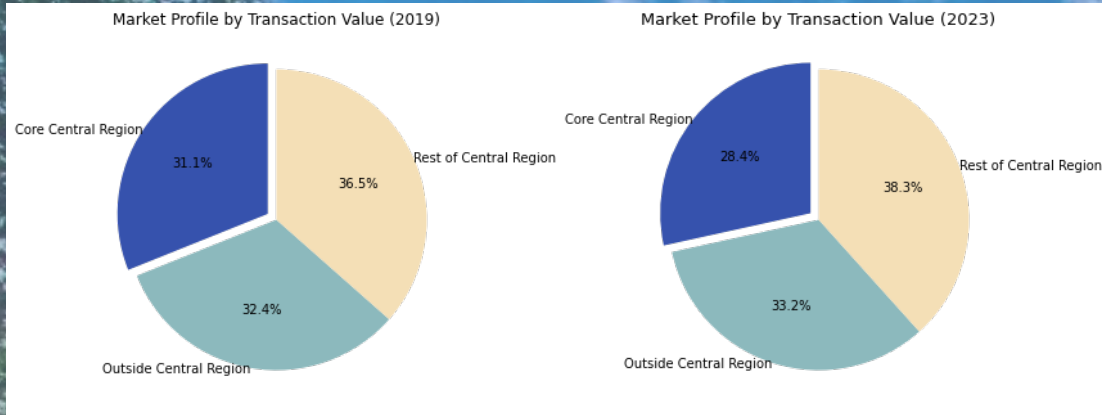
4. Analyzing Singapore's 3 Main Regions
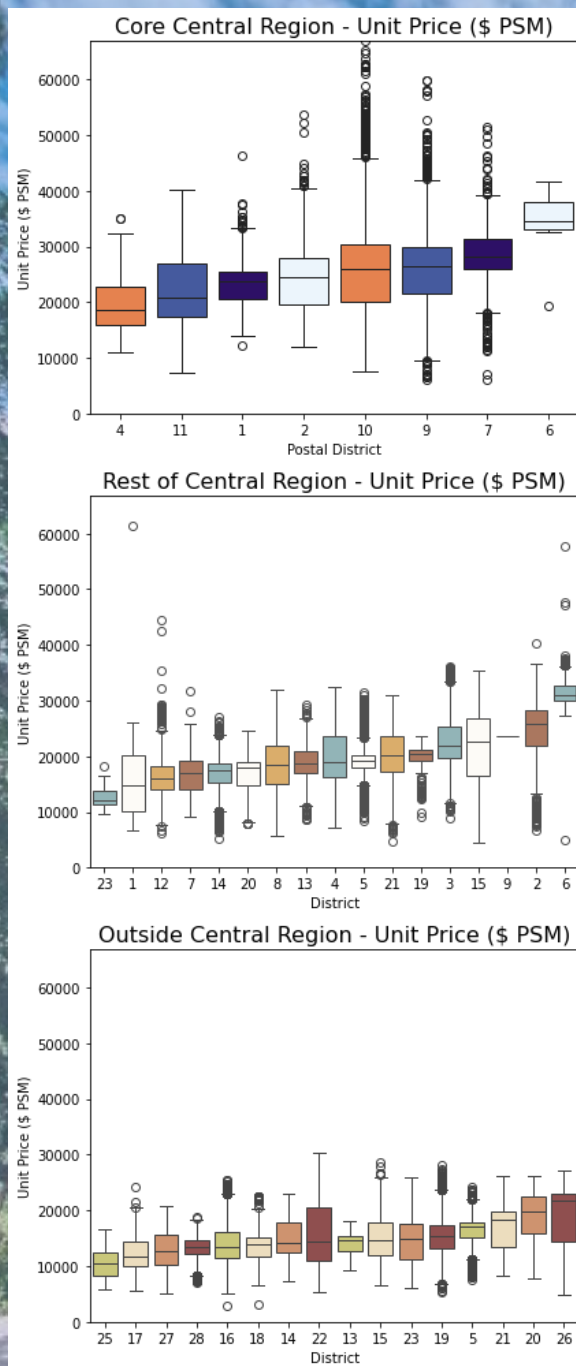
Dataset:
Private Property Transactions

Methodology:
- Using the same dataset as the previous slide, I created dataset for each region. Using df.groupby, I grouped them by posteal district and unit price per square metre.
- Next I sorted them by median prices. Finally, I charted them using a box plot.

Insights:
- Given its premium location, the districts in the Core Central Region (CCR) registered considerably higher median prices compared to the other 2 regions.
- Of all the districts, district 6 had the highest median price per square metre (PSM), registering a median of SGD34,654 for apartments and condominiums located in the CCR.

End Of Presentation