FORECASTING HDB RESALE FLAT PRICE TREND FOR 2021 BY DATA VISUALIZATION

FINAL PROJECT FOR: DS102 & DS104

INTRODUCTION

- About 80% of Singaporeans stay in a HDB flat
- Since the first introduction of the cooling measure in 2010, HDB resale flat price has been quite stabilize
- Let see if we can forecast how the HDB resale market will be moving just by visualizing the data collected from past years

OBJECTIVES

- Compare the variables in the data and see if it affect the resale pricing
- How location affect the resale pricing
- How location affect the resale pricing
- What is the market trend like for the past years
- Finally what do we expect the market trend to be like for 2021

CHALLENGE:

- To convert the values in column 'remaining_lease' from string to float so that we can do some calculation.
- To get the geolocation of each flat transacted and MRT station using NEW ONEMAP API DOCS.
- To get the estimated travelling time from each town to Shenton Way

(Raffles Place MRT station) using TRAVEL TIME TO RAFFLES PLACE MRT (DISTANCESFROM.COM)

DATASET:

- We will be using the datasets from data.gov.sg(RESALE FLAT PRICES-DATA.GOV.SG)

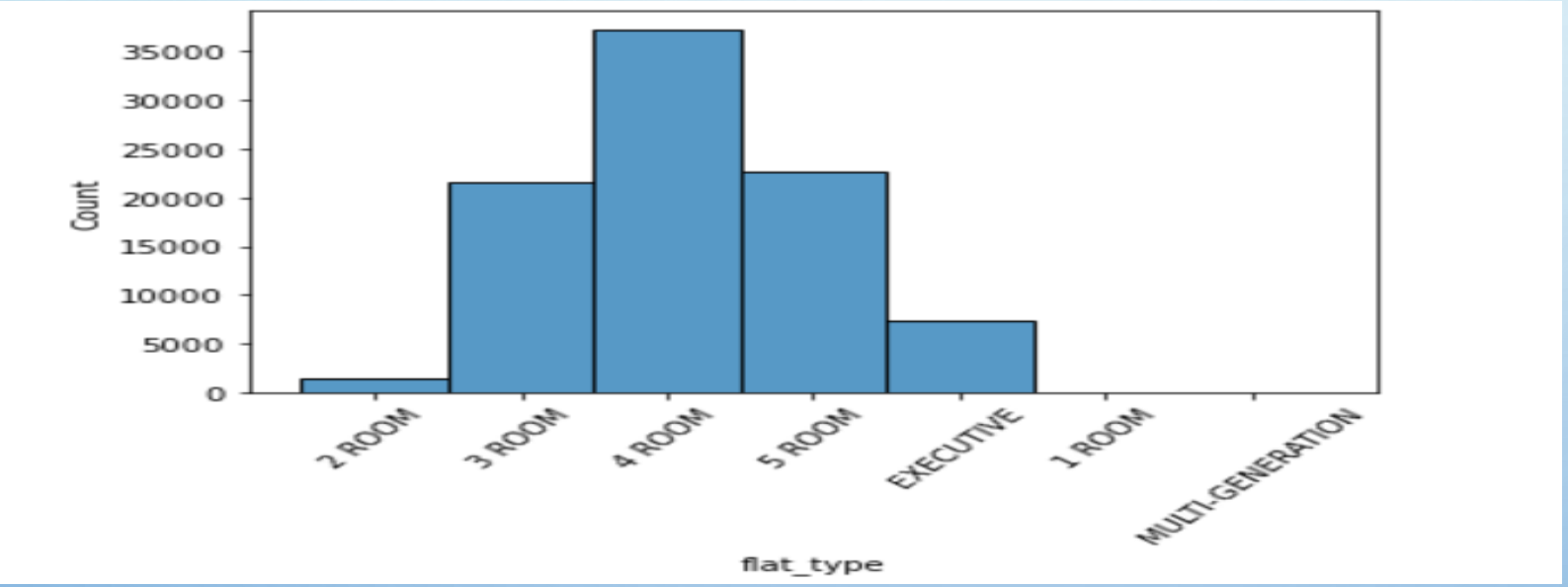
	month	town	flat_type	block	street_name	storey_range	floor_area_sqm	flat_model	lease_commence_date	remaining_lease	resale_price
0	2017-01	ANG MO KIO	2 ROOM	406	ANG MO KIO AVE 10	10 TO 12	44.0	Improved	1979	61 years 04 months	232000.0
1	2017-01	ANG MO KIO	3 ROOM	108	ANG MO KIO AVE 4	01 TO 03	67.0	New Generation	1978	60 years 07 months	250000.0
2	2017-01	ANG MO KIO	3 ROOM	602	ANG MO KIO AVE 5	01 TO 03	67.0	New Generation	1980	62 years 05 months	262000.0
3	2017-01	ANG MO KIO	3 ROOM	465	ANG MO KIO AVE 10	04 TO 06	68.0	New Generation	1980	62 years 01 month	265000.0
4	2017-01	ANG MO KIO	3 ROOM	601	ANG MO KIO AVE 5	01 TO 03	67.0	New Generation	1980	62 years 05 months	265000.0

	month	town	flat_type	block	street_name	storey_range	floor_area_sqm	flat_model	lease_commence_date	remaining_lease	resale_price
90118	2021-01	YISHUN	EXECUTIVE	643	YISHUN ST 61	04 TO 06	146.0	Maisonette	1987	65 years 08 months	590000.0
90119	2021-01	YISHUN	EXECUTIVE	724	YISHUN ST 71	10 TO 12	146.0	Maisonette	1986	64 years 07 months	588000.0
90120	2021-01	YISHUN	EXECUTIVE	834	YISHUN ST 81	04 TO 06	142.0	Apartment	1988	66 years	670000.0
90121	2021-01	YISHUN	EXECUTIVE	877	YISHUN ST 81	07 TO 09	142.0	Apartment	1987	65 years 11 months	690000.0
90122	2021-01	YISHUN	MULTI-GENERATION	666	YISHUN AVE 4	10 TO 12	179.0	Multi Generation	1987	66 years	860000.0

- It consists of 90123 transactions from Jan 2017 to Jan 2020

BASIC PREPARATION OF THE DATASET:

- Convert the column ‘month’ to time-stamp object and set as index for the dataframe



- We will just focus on 3 room, 4 room, 5 room and Executive flat type and remove the others since there are not much transaction on those flat type for the past 4 years

BASIC CLEANING OF THE DATASET:

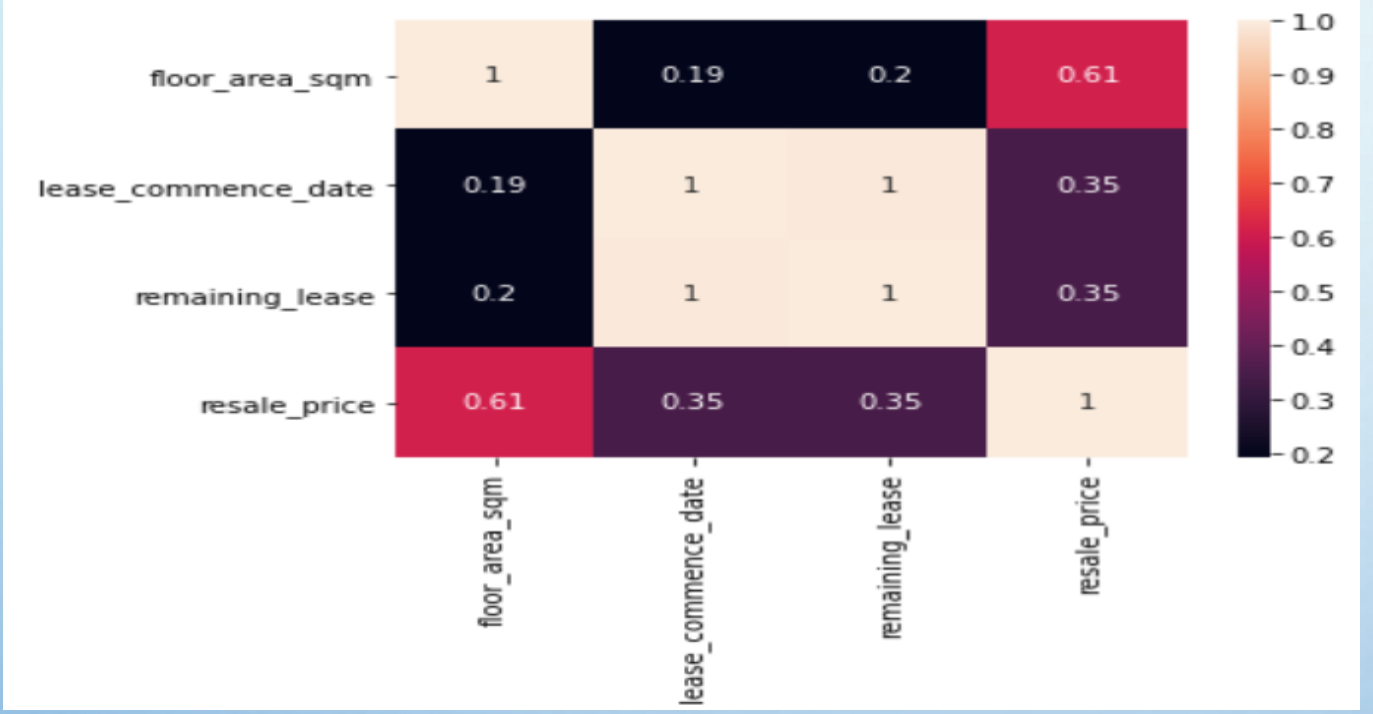
- Convert the column ‘remaining_lease’ from string to float for our analysis
- Since there is only data for Jan in the year 2021, we will remove that from the dataframe but will keep a copy for comparision later

registration_date	town	flat_type	block	street_name	storey_range	floor_area_sqm	flat_model	lease_commence_date	remaining_lease	resale_price
2020-12-01	YISHUN	EXECUTIVE	834	YISHUN ST 81	10 TO 12	146.0	Maisonette	1988	66.17	683500.0
2020-12-01	YISHUN	EXECUTIVE	824	YISHUN ST 81	07 TO 09	142.0	Apartment	1987	65.92	670000.0

- The data will look like this after the preparation is done

RELATIONSHIP BETWEEN PRICE AND OTHER VARIABLES:

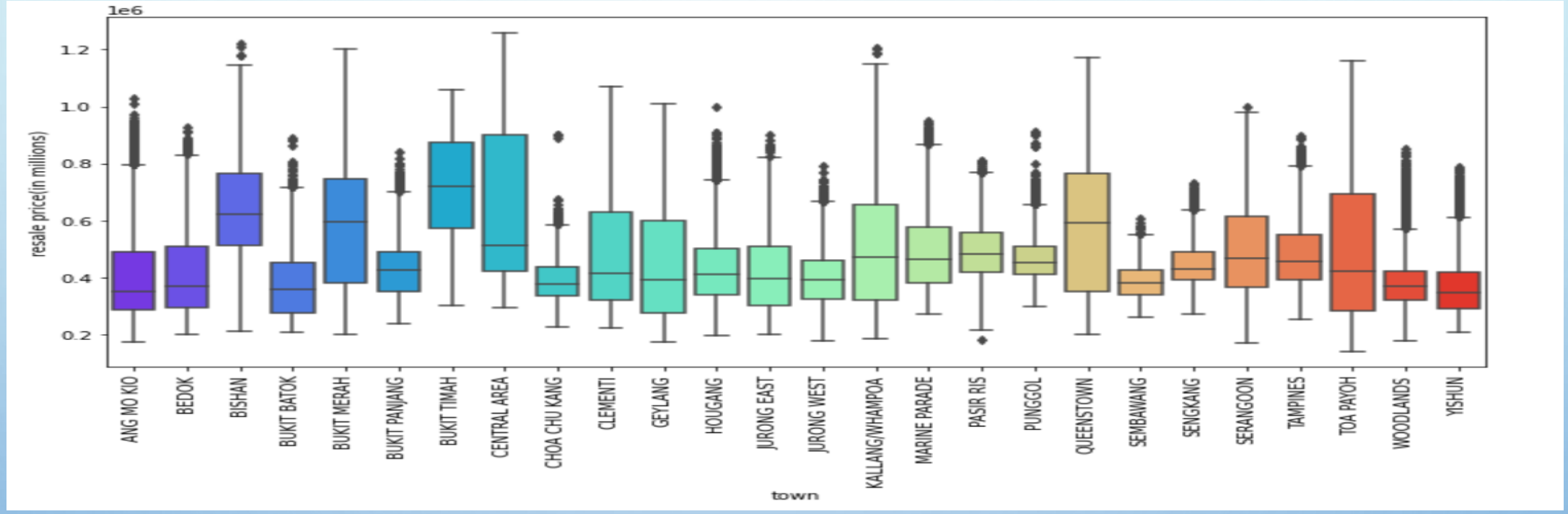
- Let's take a look at the correlationship



- There is a positive relationship between those numerical variables and the resale price
- What about those categorical variables

RELATIONSHIP BETWEEN PRICE AND OTHER VARIABLES:

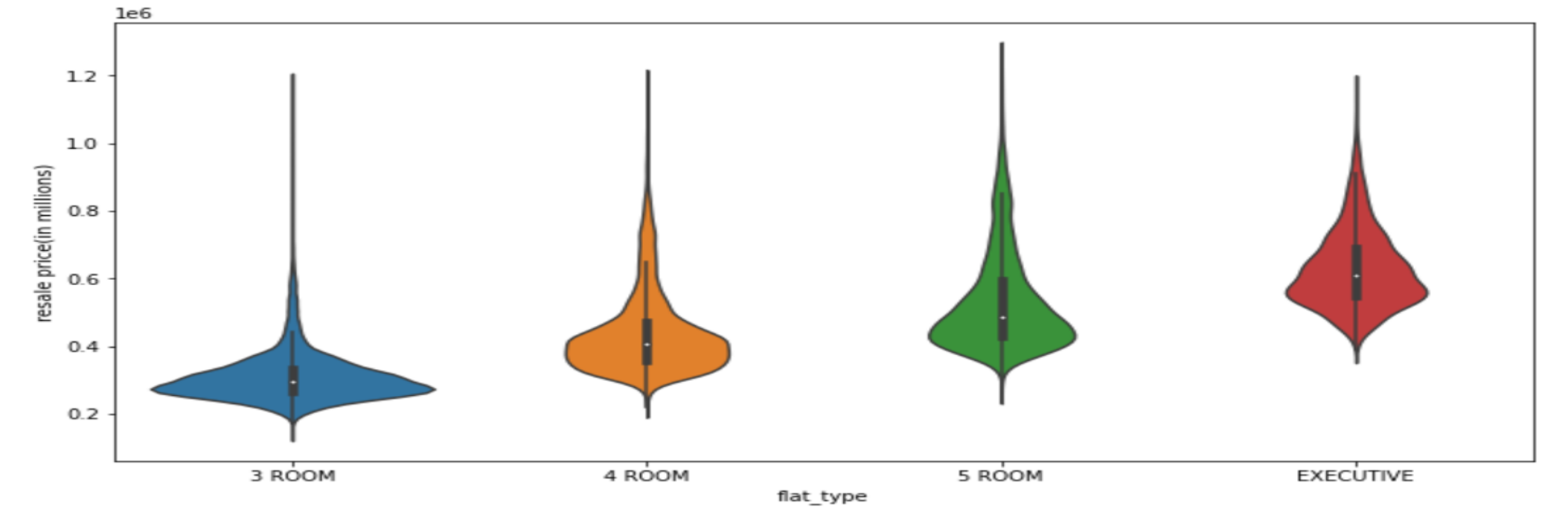
Town vs resale price:



- The median price varies across the town and there are a lot of outlier in some town
- Might because of the different flat type, flat model, location

RELATIONSHIP BETWEEN PRICE AND OTHER VARIABLES:

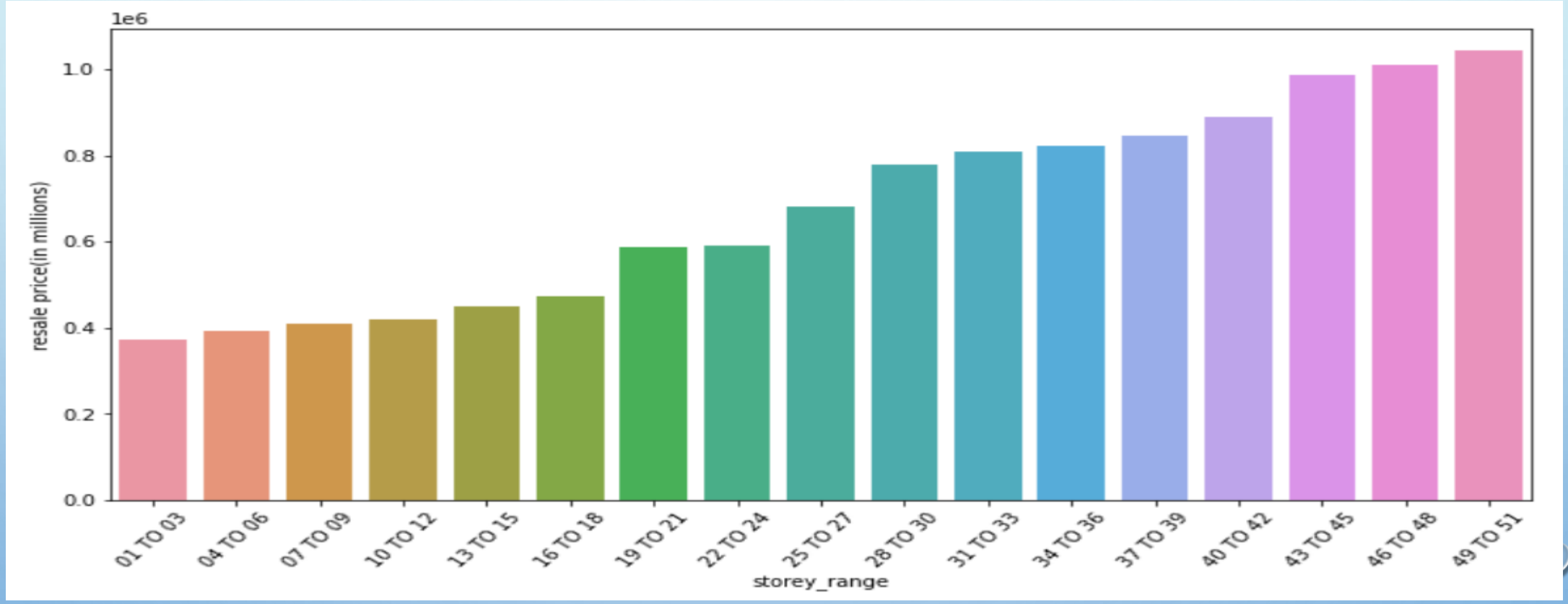
Flat type vs resale price:



- There is a positive relationship between flat type and resale price.
- Most of the price for each flat type are around the median price. The outlier might because of flat model, location within the town

RELATIONSHIP BETWEEN PRICE AND OTHER VARIABLES:

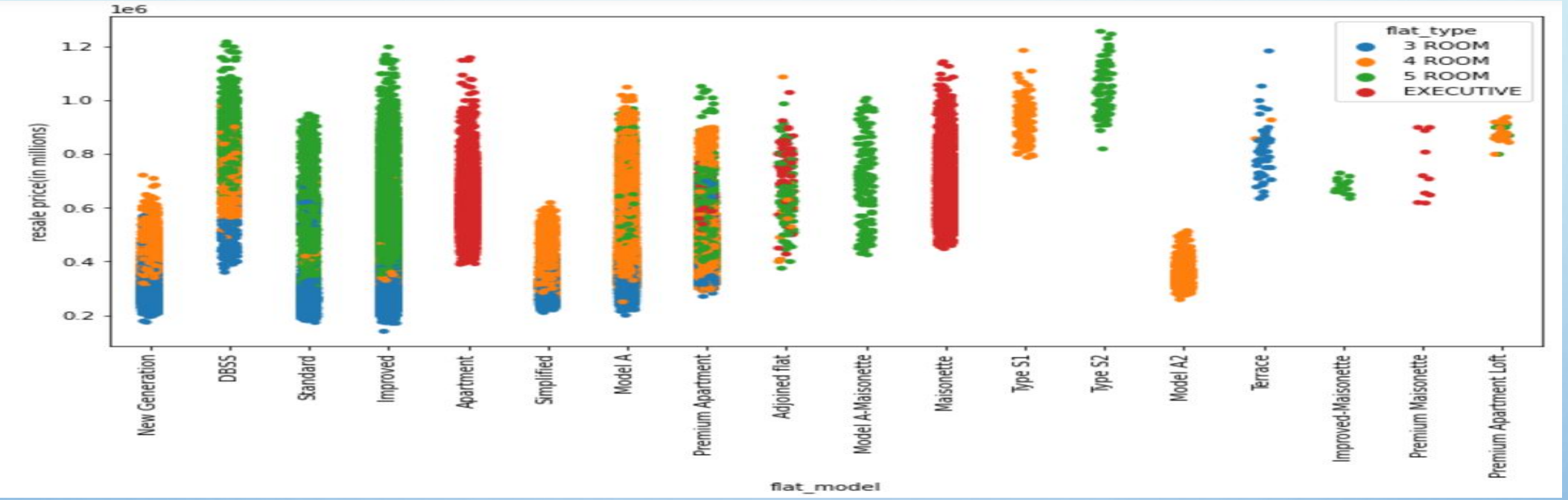
Storey range vs resale price:



- There is a strong positive relationship between storey range and resale price. This might because of the view from the flat

RELATIONSHIP BETWEEN PRICE AND OTHER VARIABLES:

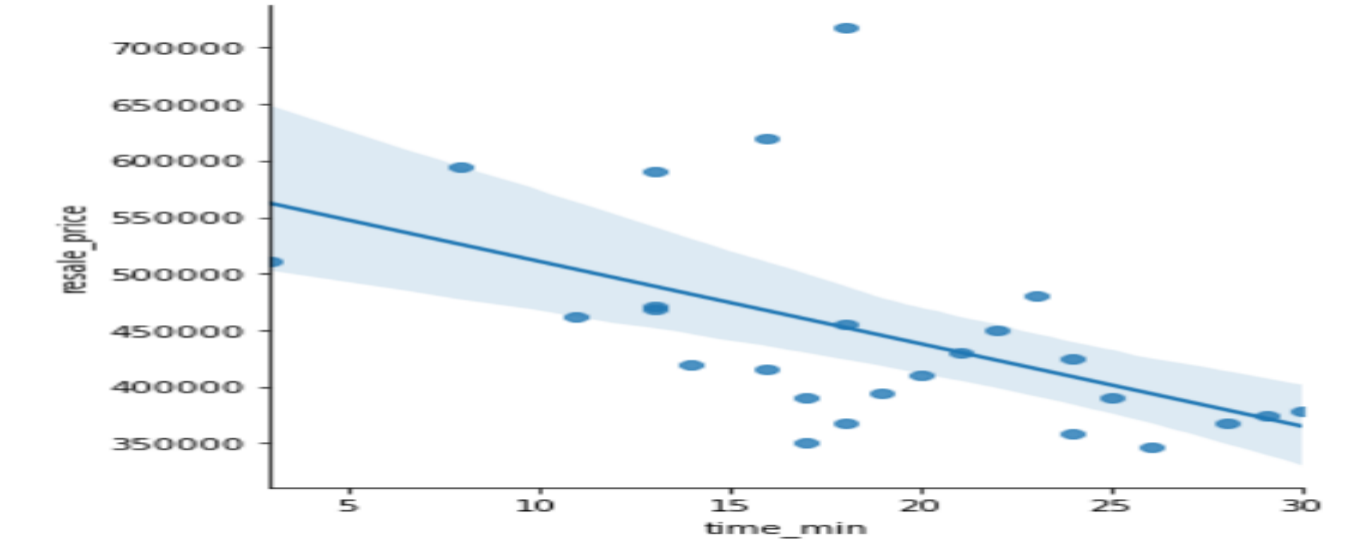
Flat model vs resale price:



- The resale price varies between different flat model. This might because of the floor area

HOW LOCATION AFFECT RESALE PRINCING:

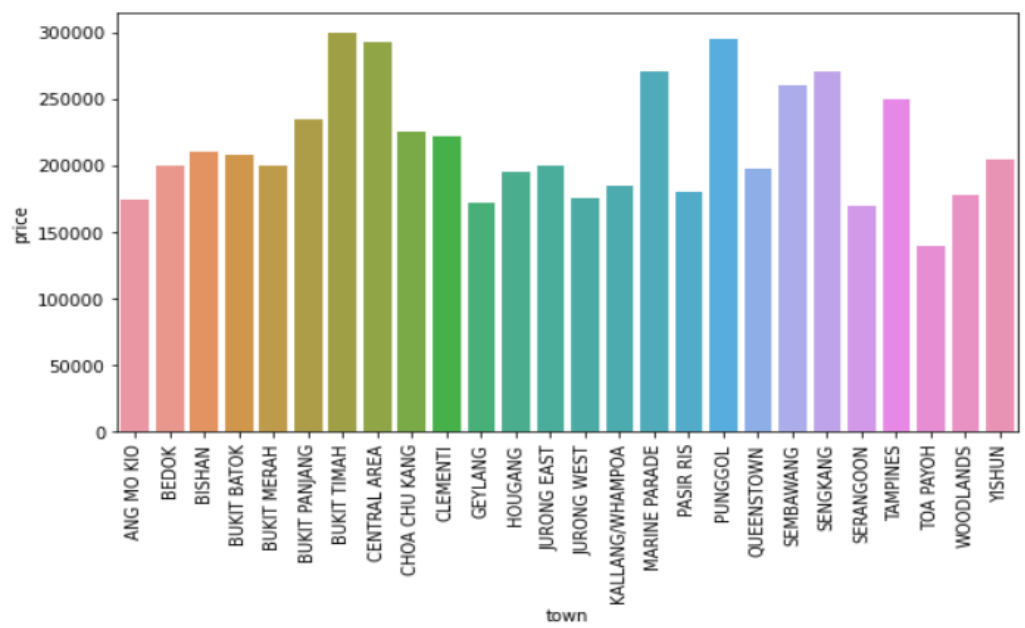
Distance to downtown - Shenton Way (Raffles MRT station):

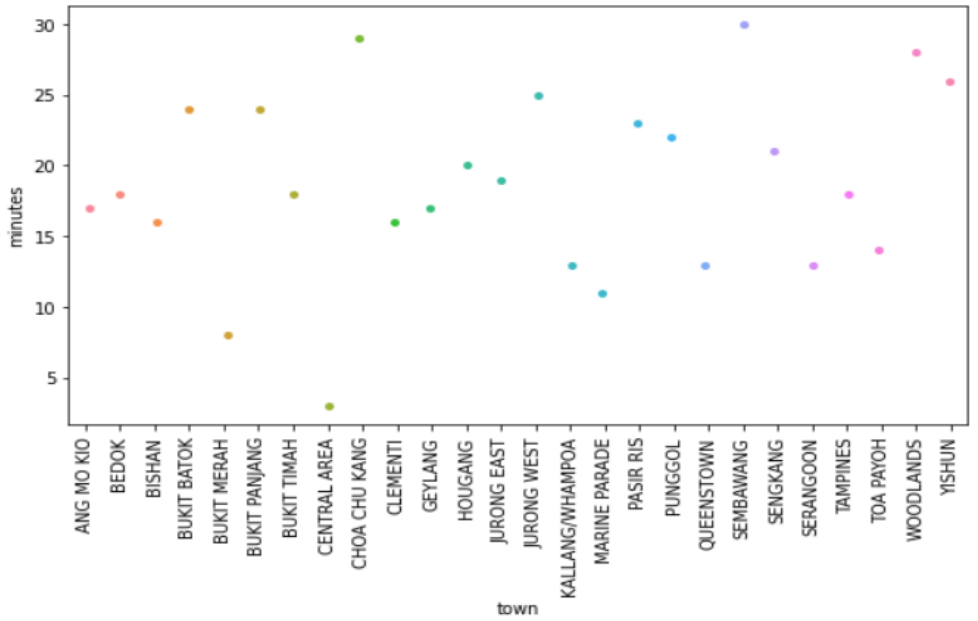


- The median price is affected by the distance to downtown
- It is cheaper away from downtown
- For the cheapest 4 room flat in Woodlands and Bishan for example, the difference can be as much as $110,000

HOW LOCATION AFFECT RESALE PRINCING:

- Is there any exception?

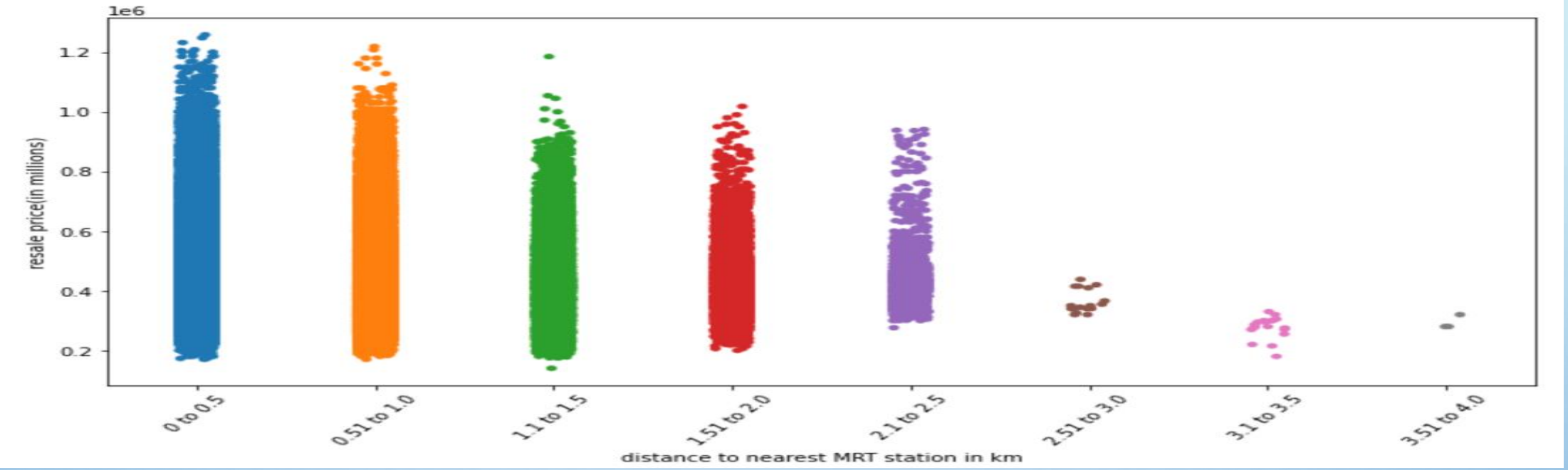




registration_date	town	flat_type	block	street_name	storey_range	floor_area_sqm	flat_model	lease_commence_date	remaining_lease	resale_price
2020-06-01	CENTRAL AREA	3 ROOM	29	KELANTAN RD	04 TO 06	65.0	Improved	1977	56.5	292000.0

HOW LOCATION AFFECT RESALE PRINCING:

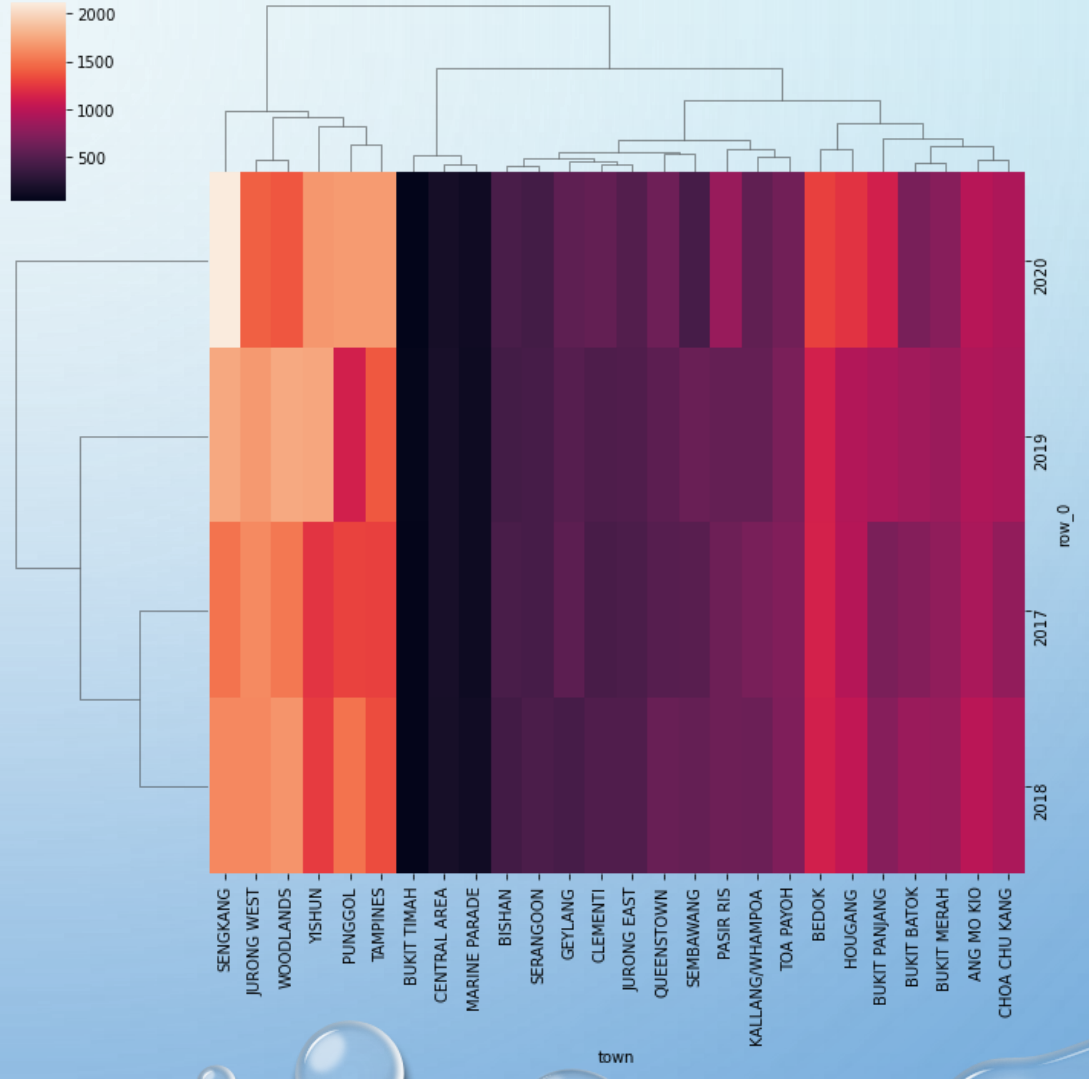
Distance to nearest MRT station:



- The price is also affected by the distance to MRT station
- It is higher for those nearer to MRT station
- A 4 room flat in Woodlands for example, the difference between the furthest and nearest can be $37,000

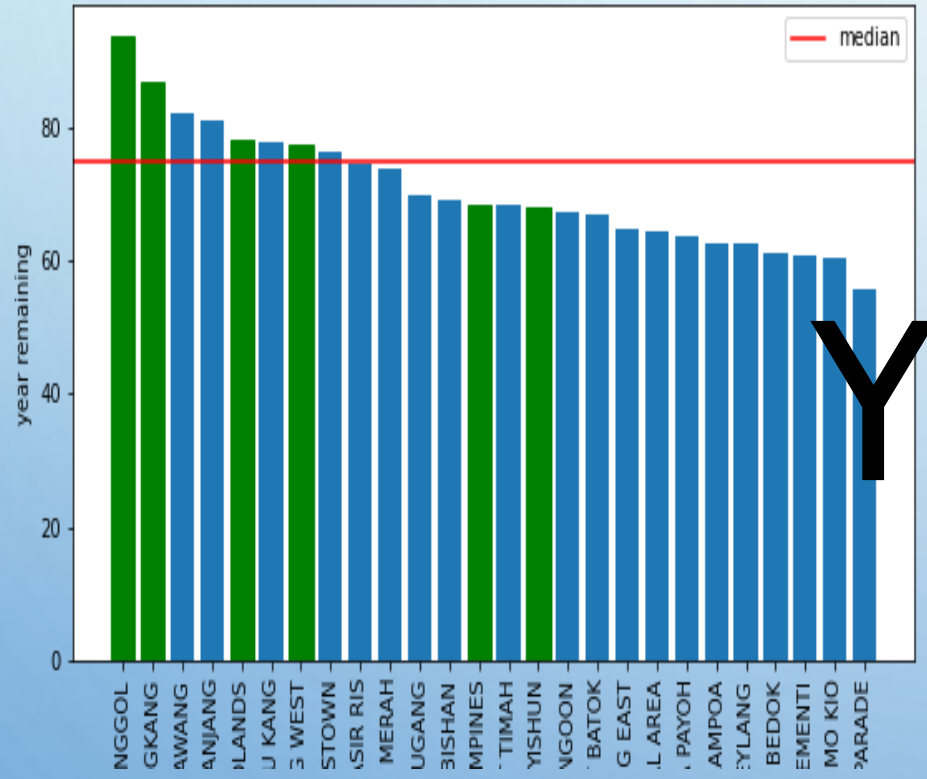
WHICH TOWN HAS THE MOST TRANSACTION AND WHY?

- Sengkang, Jurong West, Woodlands, Yishun, Punggol and Tampines have increase the most compared to other town across the years

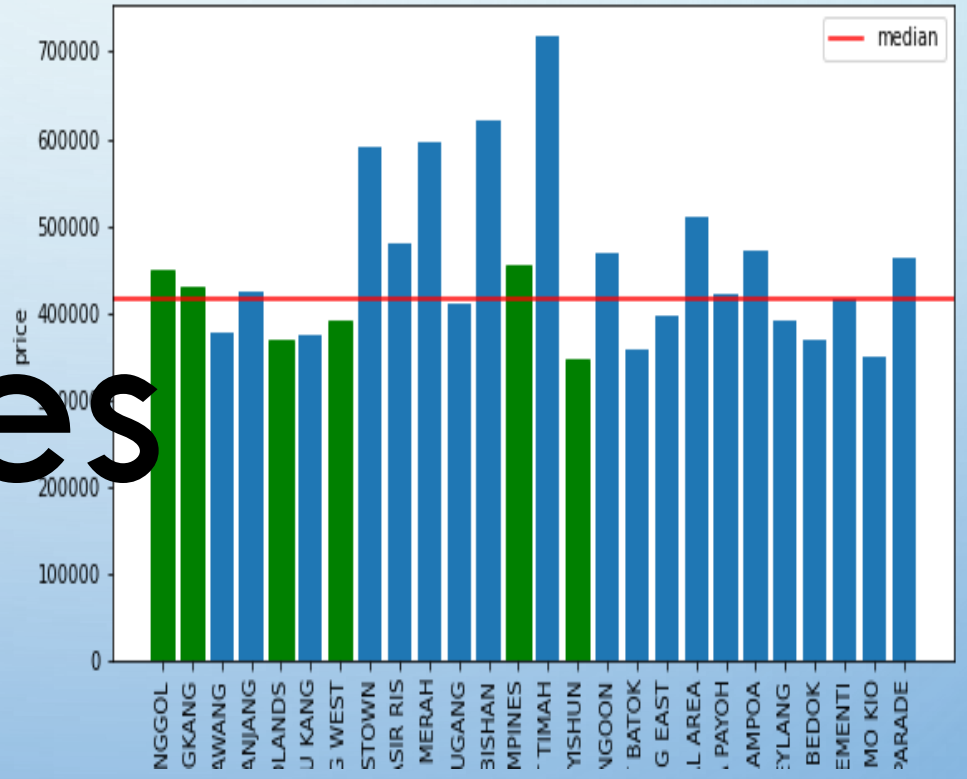


WHICH TOWN HAS THE MOST TRANSACTION AND WHY?

Is remaining lease a factor?



Yes

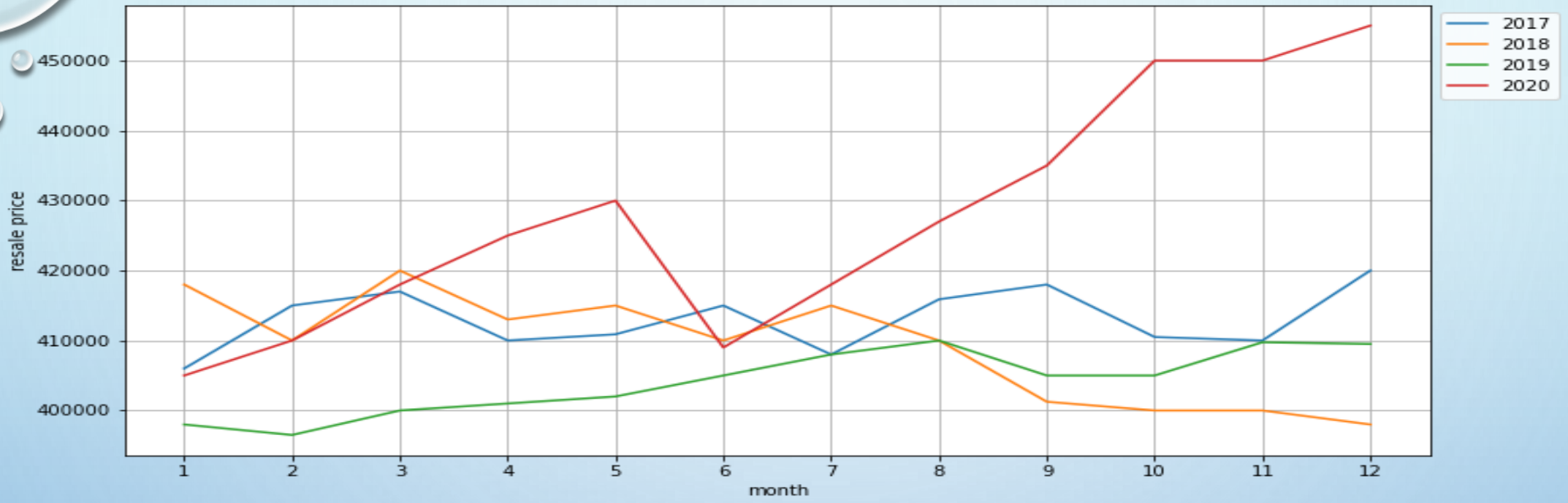


WHICH TOWN HAS THE MOST TRANSACTION AND WHY?

Other factors?

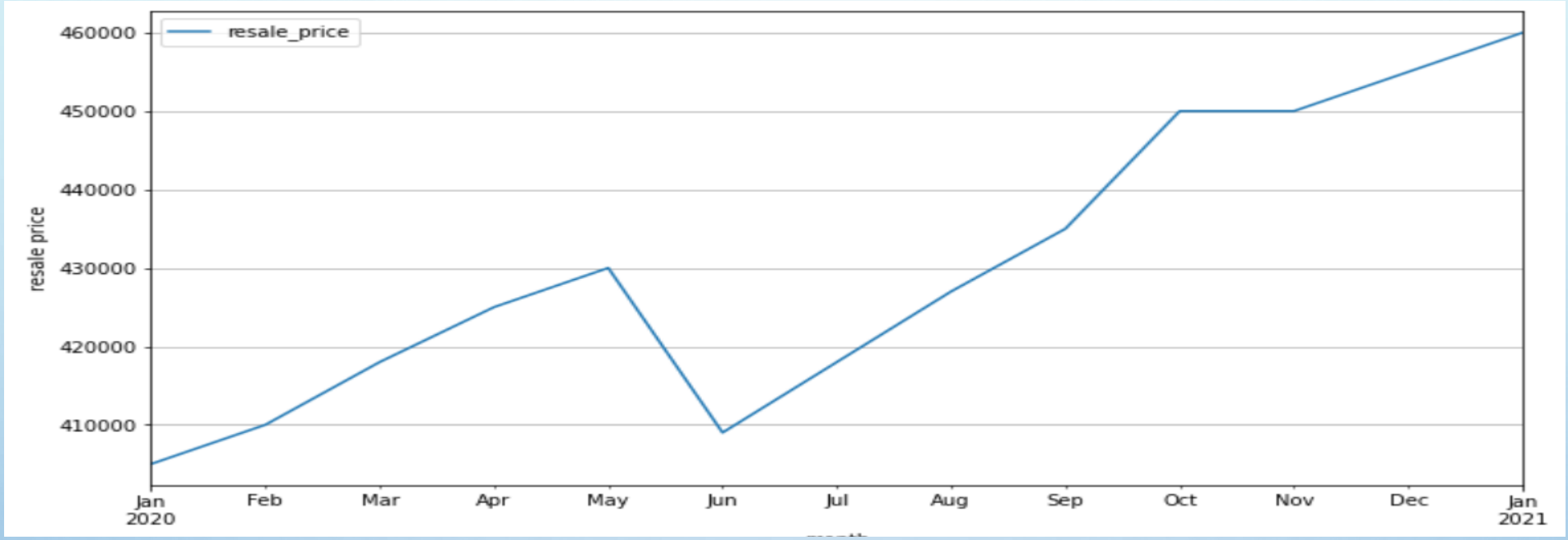
- Price – Is in the region of the median price
- Future development - More planning for these towns

WHAT IS THE TREND LIKE FOR THE PAST YEARS?



- Resale price is quite stable throughout until end 2019
- Start of 2020, the price is picking up constantly
- Drop during CB but pick up again after that
- An increase of 11.25%

HOW IS THE TREND LIKE COMING TO 2021?



- Price has continue to go up
- Has already increase by around $5,000 since the start of 2021

CONCLUSION:

The price increase from the start of last year might be due to the current pandemic. The T.O.P of most BTO flat has been delayed due to the pandemic, causing buyer to look at the resale market since the government has enhance some policy like more CPF housing grant, thus causing the price to increase. Unless there is another round of cooling measure introduced, the resale price will likely to continue in the northerly direction.

ADDITIONAL INFORMATION

Here is the link to my full notebook:

ANDYCHEW8015/PROJECT: FINAL PROJECT FOR DS102/DS104 (GITHUB.COM)

QUESTION?