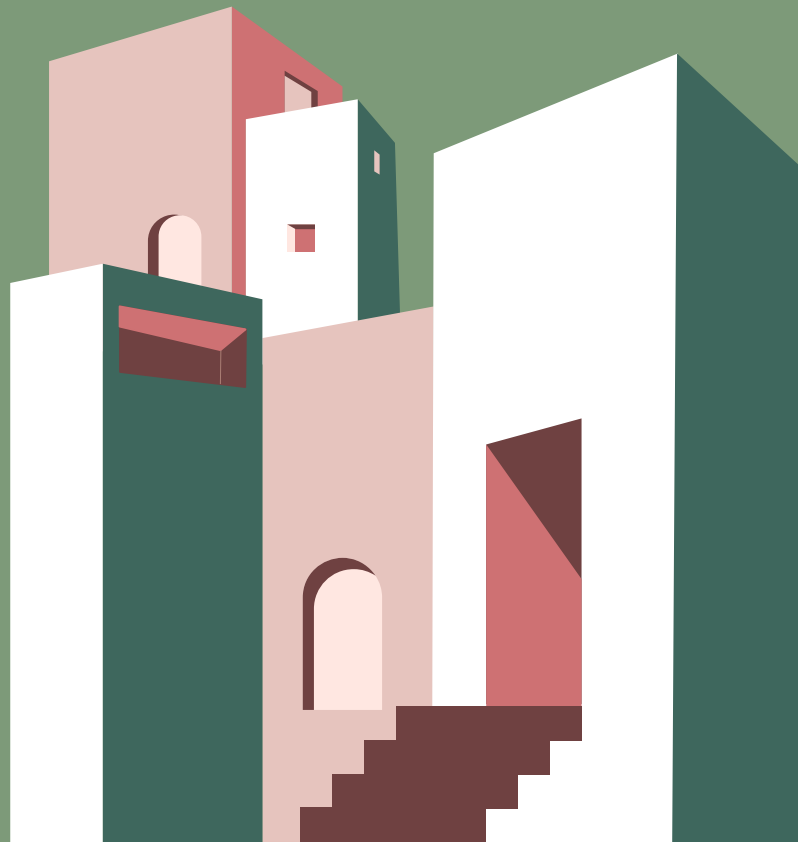


# PROJECT 2: UNDERSTANDING HDB RESALE PRICES

Ezra Calis



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# BACKGROUND



**HOUGANG**  
后港

BUY . SELL . RENT  
买 / 卖 / 租

HOUGANG MAY 14 HDB TRANSACTION



**PUNGGOL 榜鹅**



BLK 258A - BLK 261C			
3RM	三房式	\$320k - \$380k	
4RM	四房式	\$480k - \$570k	
5RM	五房式	\$600k - \$720k	

BLK 264A - BLK 266D			
3RM	三房式	\$320k - \$380k	
4RM	四房式	\$430k - \$550k	
5RM	五房式	\$600k - \$720k	

BLK 267A - BLK 270C			
4RM	四房式	\$420k - \$560k	
5RM	五房式	\$540k - \$680k	
5RM Loft	五房式阁楼	\$888k - \$900k	

BLK 271A - BLK 274D			
4RM	四房式	\$450k - \$550k	
5RM	五房式	\$640k - \$770k	

BLK 288A - BLK 289D			
3RM	三房式	\$350k - \$420k	
4RM	四房式	\$465k - \$560k	
5RM	五房式	\$635k - \$660k	

BLK 301A - BLK 303D			
4RM	四房式	\$420k - \$510k	

BLK 305A - BLK 306D			
3RM	三房式	\$320k - \$390k	
4RM	四房式	\$460k - \$570k	
5RM Loft	五房式阁楼	\$880k - \$900k	

Source From SRX

## Dear Sellers:

You might be SITTING ON a fair amount of SALES PROCEEDS ON YOUR HDB PROPERTY.  
You may consider the following options:

Rent Out or Upgrade to a Condo / Bigger HDB?

Upgrade to Resale Condo / New Launch?

Expand My Portfolio? Sell & Buy 2 Properties?

## Your One-Stop Property Solution

- Divorce / Bankruptcy Case
- Grant of Probate / Letter of Administration / Power of Attorney
- Contract (Sell & Buy At The Same Time)
- HDB / CPF / Legal Matters
- Detailed Financial Planning

MY PRIORITY IS TO GET THE HIGHEST SELLING PRICE IN THE SHORTEST POSSIBLE TIME

以最短的时间争取最高的卖价

FOR AN INDICATIVE VALUATION OF YOUR PROPERTY, PLEASE SMS  
<NAME & FULL ADDRESS>

想查询您的产业指示估价，  
请发短信 <名字和地址>

CALL ME NOW FOR A  
NON-OBLIGATORY DISCUSSION

## LET ME HELP YOU !

01

Are you still unsure whether to sell your current property?

03

How to own a 2nd property in this market?

05

Many Homeowners have "FEAR" of... Upgrading to private property. Are you one of them?

02

Recent implementation of property cooling measures changes.. How does it affect me?

04

Have you been selling your flat for the past few months but no offer?

06

Are you collecting key for your NEW BTO / EC Soon?

# BACKGROUND

Home purchase is the often **the most expensive purchase** in our lives, and overpaying for a home can cost us a **lot of money** (tens of thousands, or hundreds of thousands!).

House prices are determined by a **myriad of factors**, and it can get **very confusing**.

How can we **understand house valuations** so that we **do not overpay** for our homes?



# PROBLEM STATEMENT

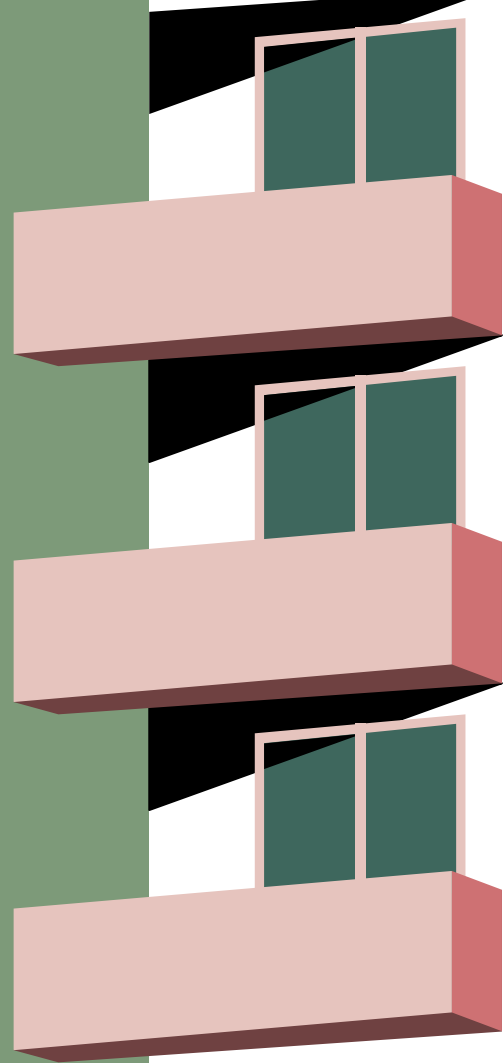
Can we accurately predict the resale value of a Housing Development Board (HDB) flat based on various housing-related data?

The ideal outcome is to provide home buyers with:

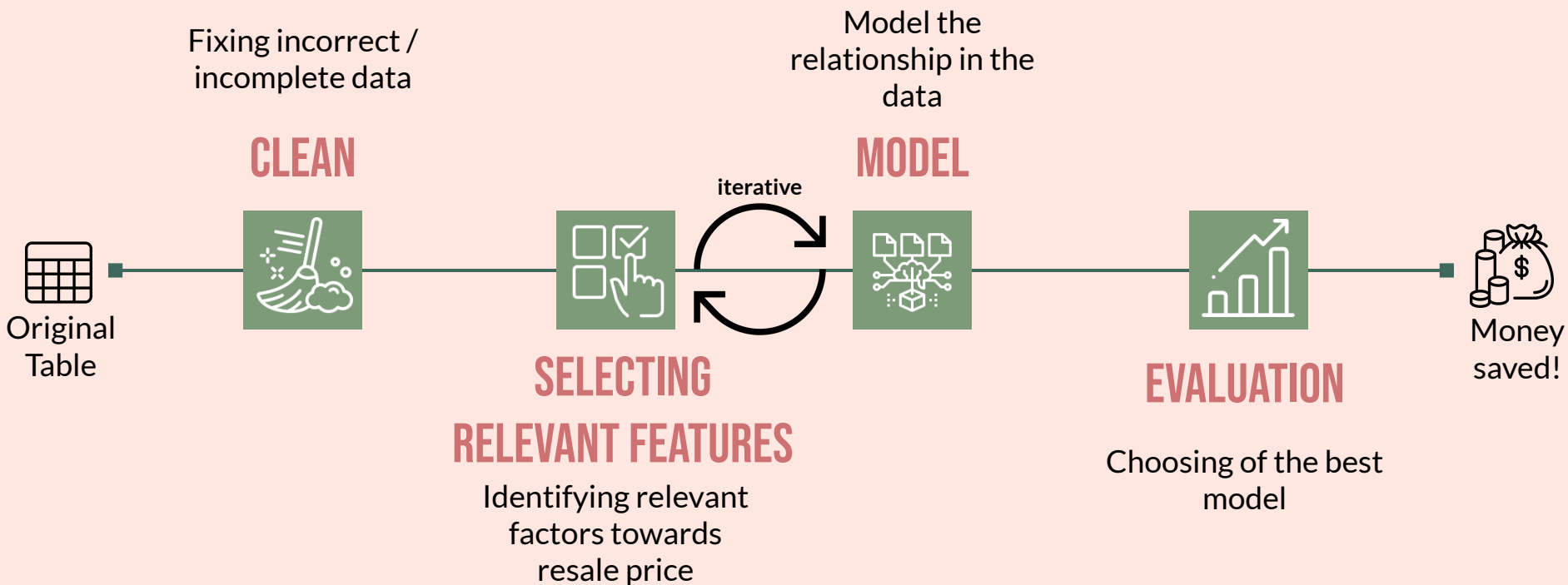
1. Relevant information to understand the drivers of flat resale value
2. Make good home valuation decisions when looking to buy resale flats.

02

# METHODOLOGY



# METHODOLOGY





**03**

# ANALYSIS

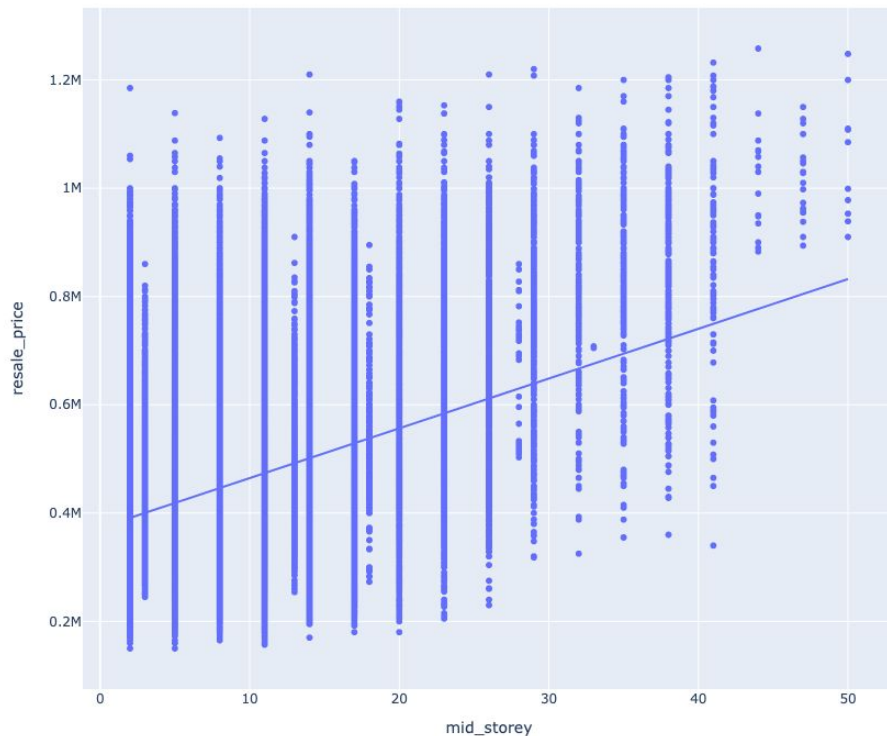


# MID STOREY VS RESALE PRICE

We see a mild positive correlation between the storey and resale price.

However, it seems to be pulled up quite a bit by the really expensive houses at the top right.

Relationship between mid storey and resale price



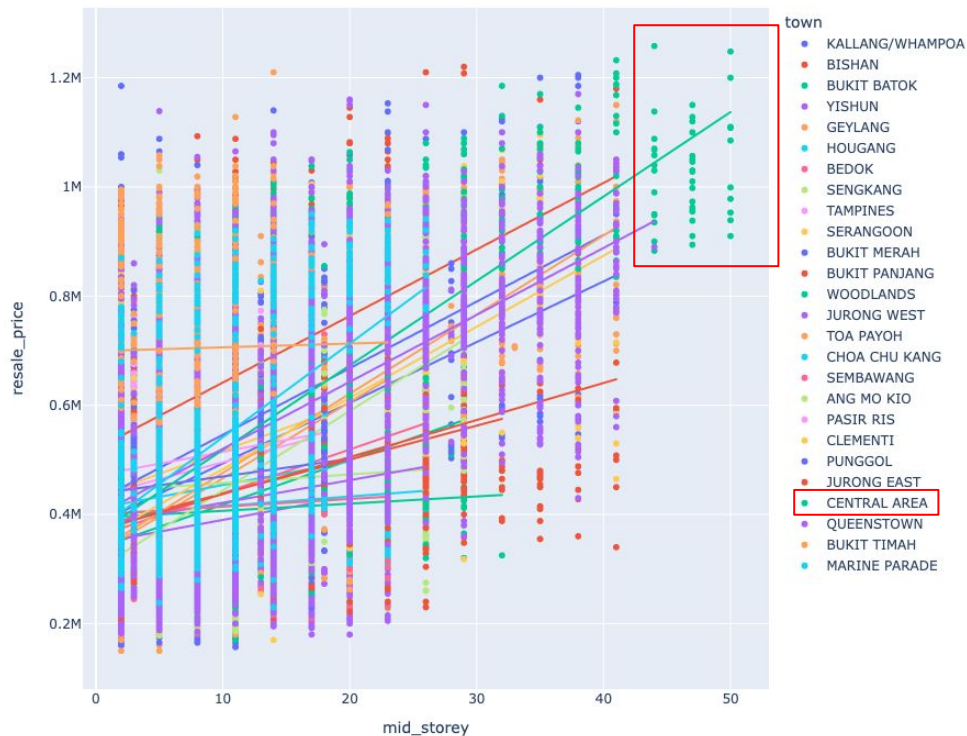
# MID STOREY VS RESALE PRICE

These are all houses in the Central area (Duxton, Dawson, Henderson)!

So it might not be purely the height of the house that affects resale price, it can be the location.

Relationships are not as clean as we thought!

Relationship between mid storey and resale price

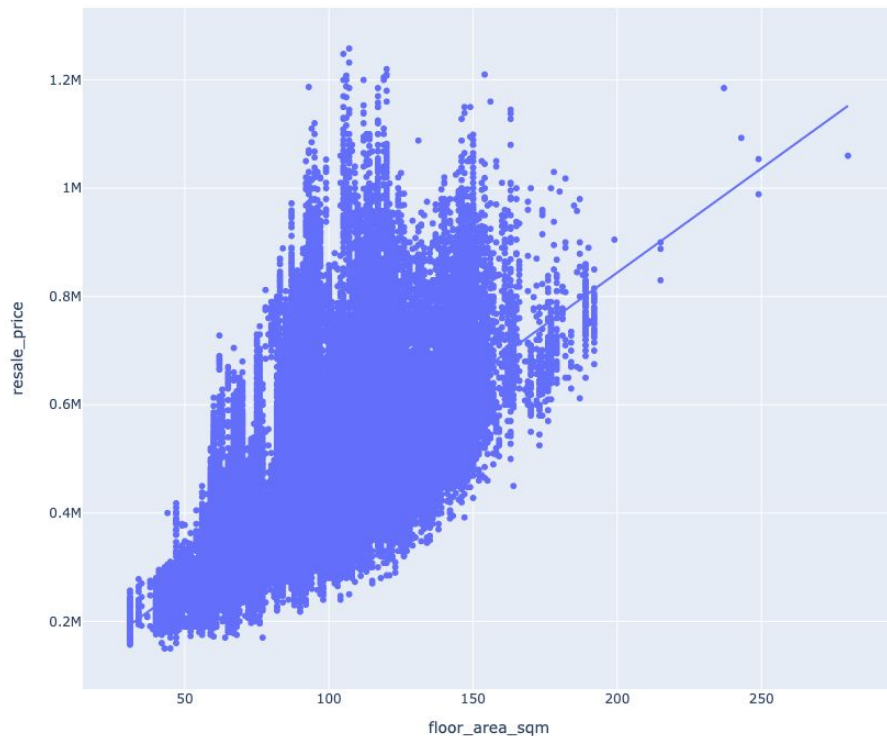


# FLOOR AREA VS RESALE PRICE

We see a moderate positive correlation between the floor area and resale price.

Bigger variance of prices for larger homes compared to smaller ones.

Relationship between floor area and resale price

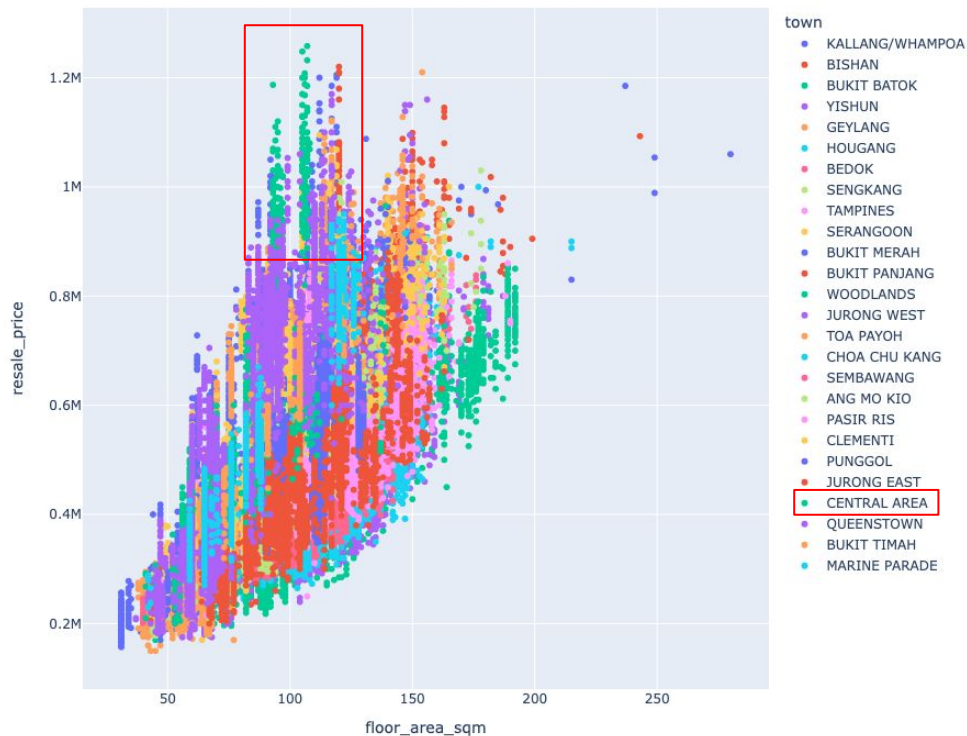


# FLOOR AREA VS RESALE PRICE

We see interesting clusters for towns, where houses in certain areas with similar floor areas tend to fetch similar prices.

Perhaps due to websites like PropertyGuru?

Relationship between floor area and resale price

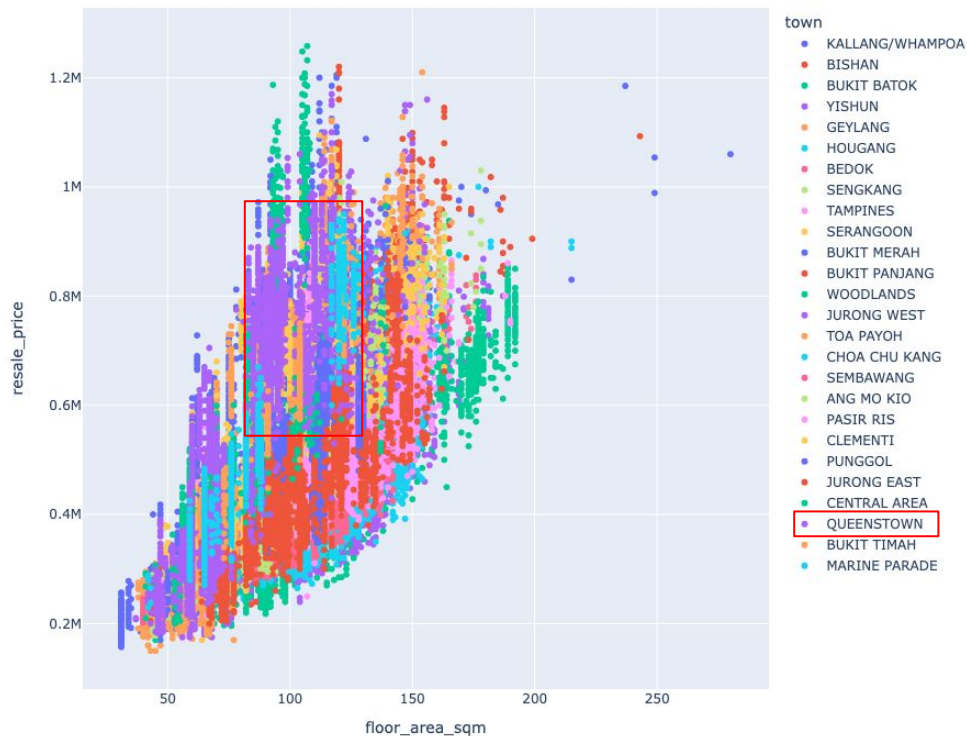


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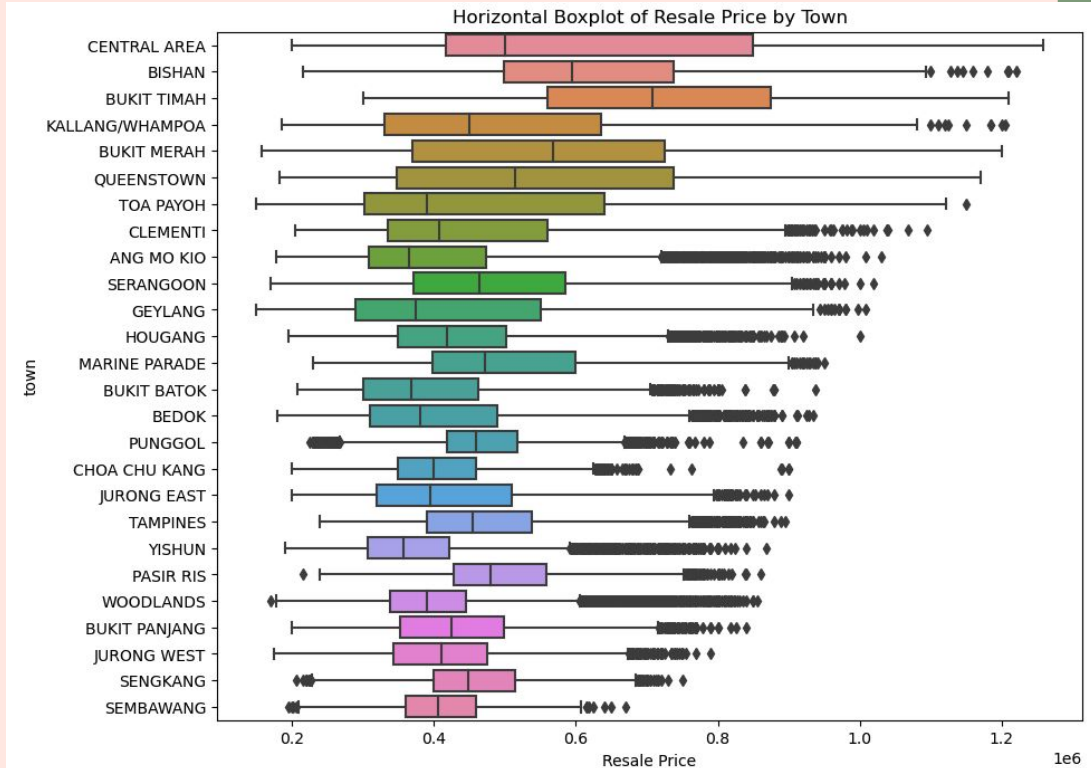
Relationship between floor area and resale price



# TOWN VS RESALE PRICE

## Findings:

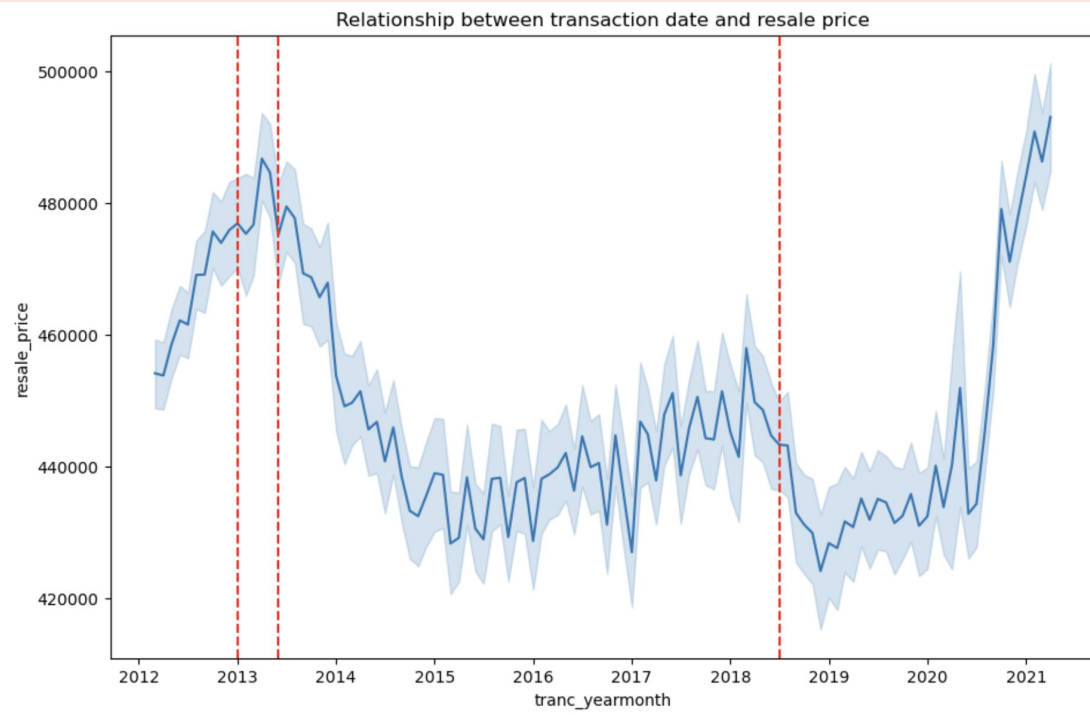
1. Certain towns are more expensive than others
2. However, we can't just use that, because age can be a very big factor too
3. There are LOADS of outliers!



# TRANSACTION DATE VS RESALE PRICE

Red lines mark the dates when cooling measures are implemented by the Singapore Government

Unfortunately it is not a variable in our data!





04

MODEL



# ORIGINAL DATA

1. 77 columns, **75 possible variables**
2. Many columns **correlated** with each other
3. Many **missing** values

# MODEL

16 columns



## FLAT ATTRIBUTES

Floor area, storey, flat type, planning area



## SURROUNDINGS

Nearest distance to hawker, MRT, Primary School, Secondary School, commercial



## AGE WHEN SOLD

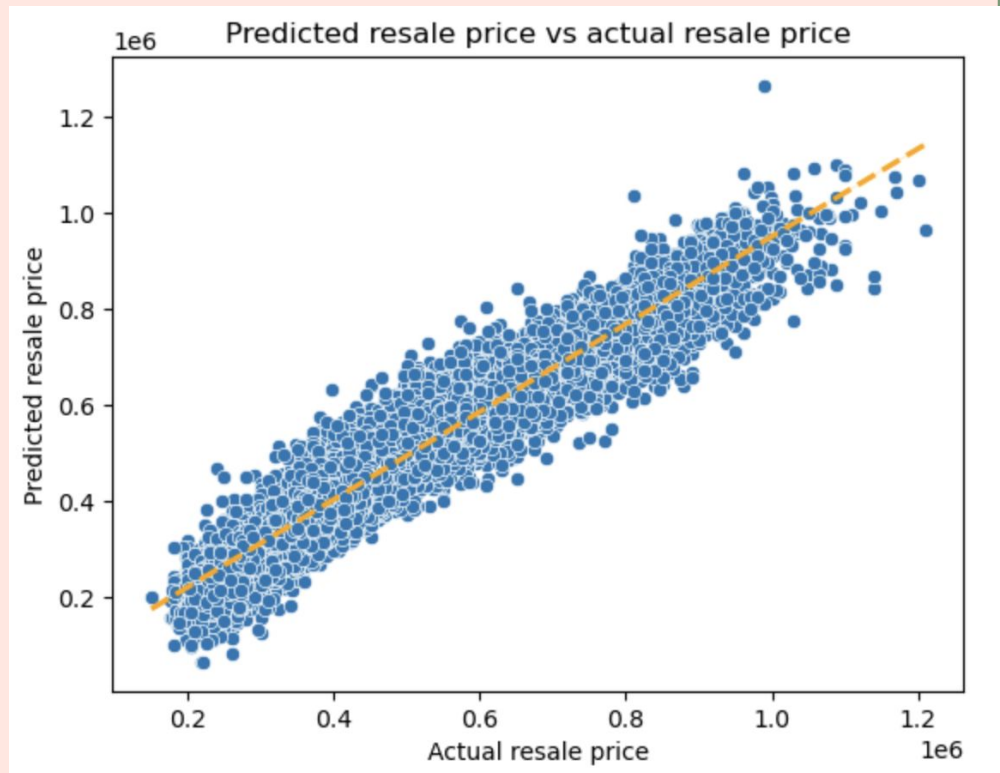
# LINEAR REGRESSION MODEL

We assumed that there is a linear relationship between the housing prices and the different factors.

Eg.

'As the storey increase by 1 level, we can expect the resale price to increase by \$40,000 on average'

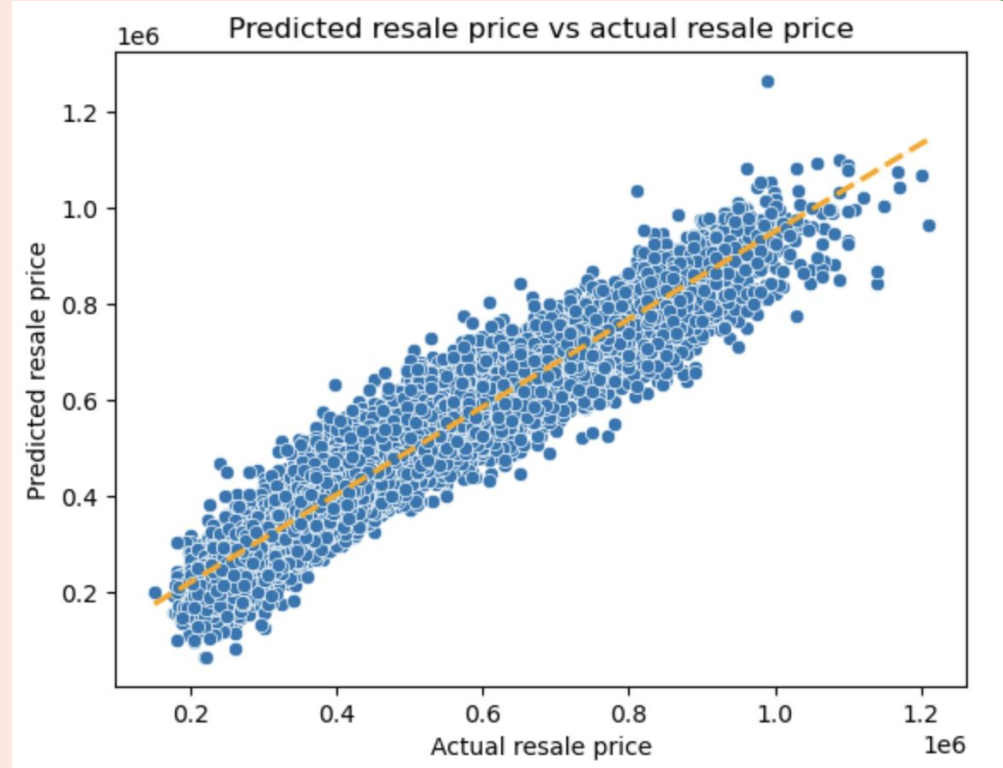
It gave us good results!



# R SQUARED

R-squared = 0.908

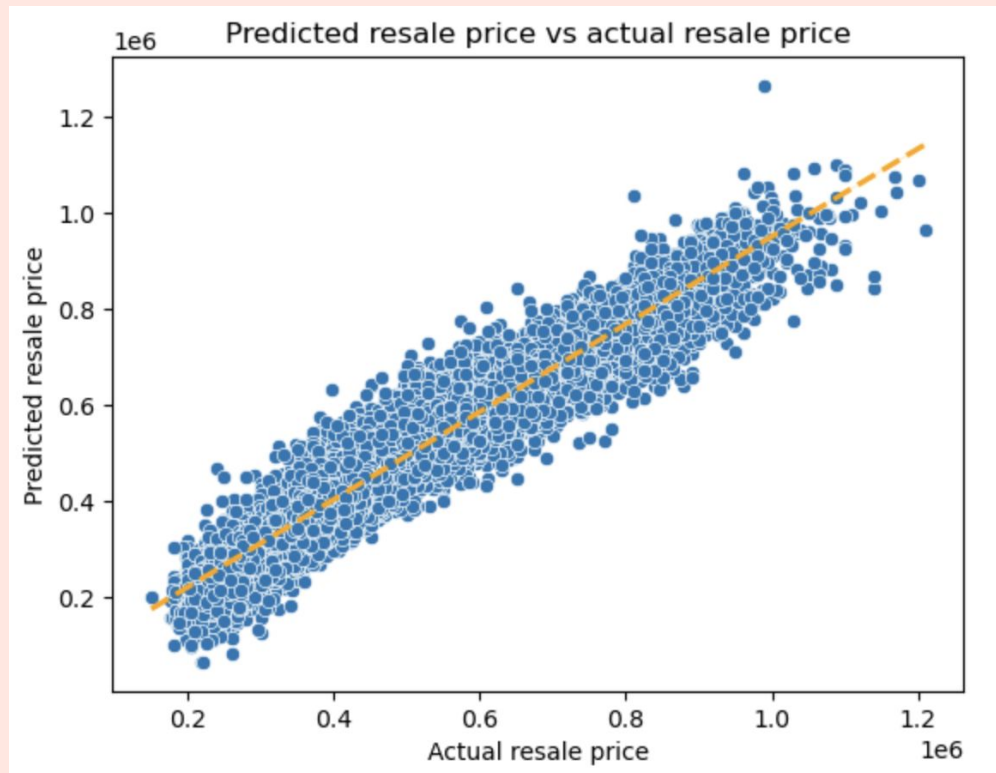
**90.8%** of the changes / variation in the resale prices of HDB houses can be explained by our model



# ROOT MEAN SQUARE DEVIATION

RMSE = 43323

Based on our model, the predicted price can vary from the actual price by \$43,323 on average.





05

# CONCLUSIONS & RECOMMENDATIONS

You can describe the topic of the section here

# CONCLUSION

THESE ARE THE TOP 5 FACTORS THAT HAVE AN IMPACT ON HOUSING PRICE:

## SIZE OF HOUSE

The larger the house, the more expensive it is.

## STOREY OF HOUSE

The higher the storey of the house, the more expensive it is.

## AGE OF HOUSE WHEN SOLD

The older the house when sold, the cheaper it is.

## COMMERCIAL

If the flat does NOT have commercial units in the block, it is more expensive

## DISTANCE FROM MRT STATION

The nearer it is to an MRT station, the more expensive it is.

# RECOMMENDATIONS (FOR HOME BUYERS)

1

Note the **5 key factors** that affect the house prices.

2

Look at the prices in the **block** and **level** nearest to the house you are interested in. (use PropertyGuru for this!)

3

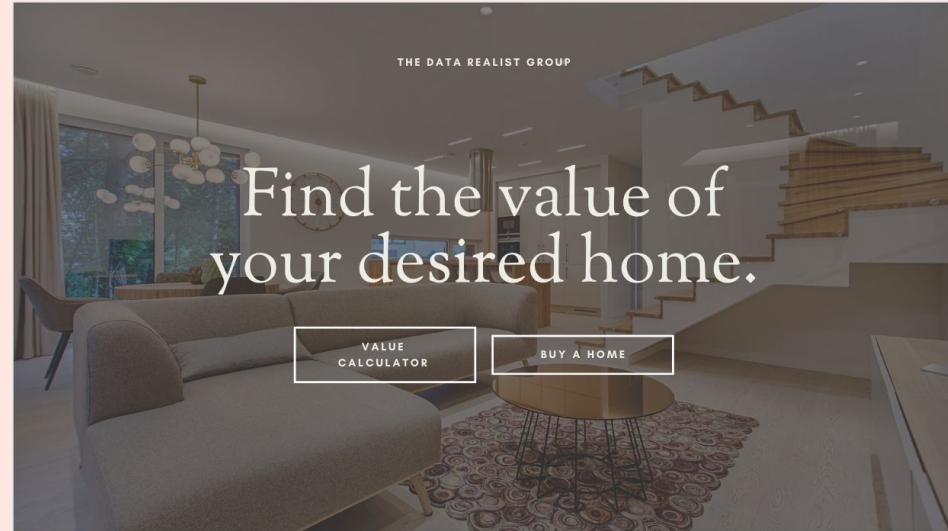
If you are looking at a specific home already but do not know how much to offer, let's discuss 1-on-1 (not free)

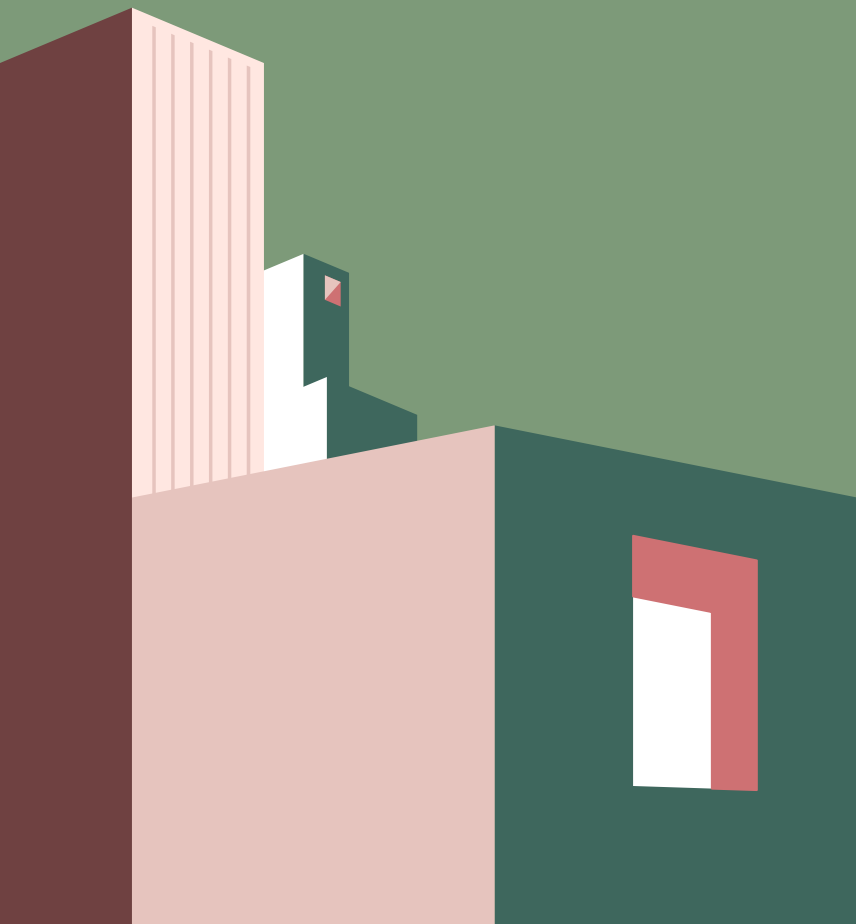


# BUSINESS RECOMMENDATIONS

## CREATE A 'VALUE RECOMMENDER' SOLUTION FOR HOUSING AGENTS

1. Input details of the house that they are willing to buy (eg. town, age of house, size of house)
2. Using our model, we come up with a suggested price range
3. Homebuyers and housing agents can use that to decide on the price to offer to the home seller.





**THANK  
YOU**