

Analysis on Beijing Property Market Prices

From the perspective of investors in 2018

Poon Zhe Xuan
Ng Zhan Yang
Ha HeeJu
Chia Ren Cong
Diane Teo



CONTENT



01

Introduction

02

Time Analysis

03

Location
Analysis

04

Property Type &
Amenities Analysis

05

Summary



Our Investors



Mr. Low

Low Budget

"I am looking for districts that are **affordable** and potential for growth and development"



Ms. Mid

Middle Budget

"My aim is to invest in houses that are located in **popular** and **developed** regions of Beijing."



Mr. High

High Budget

"I want to invest in properties belonging to **prime districts** where **amenities** are abundant."

Introduction

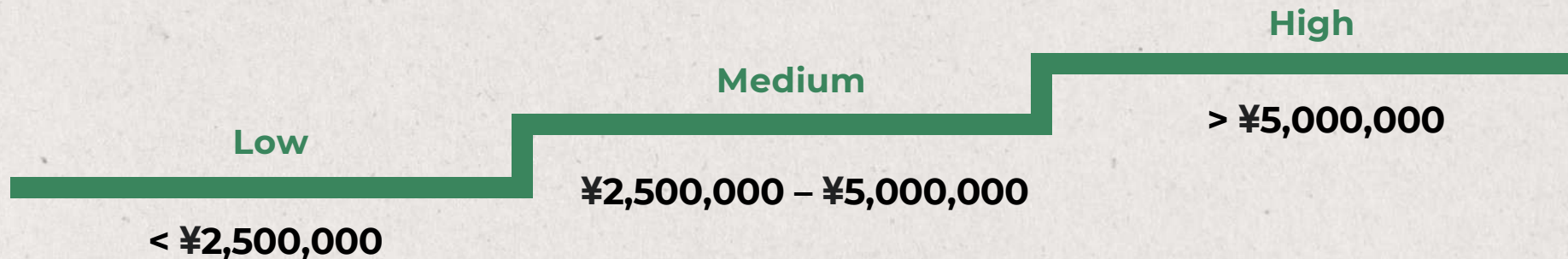
Time Analysis

Location Analysis

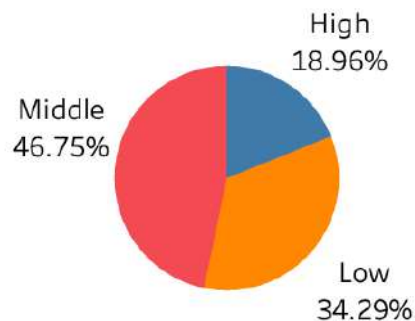
Property Type and Amenities

Summary

Detailed Budget Ranges for Investment



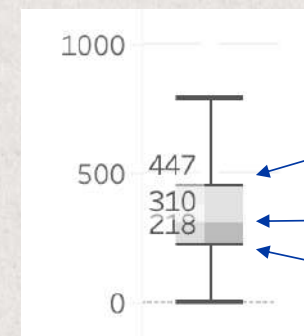
Pie Chart of Total Properties Prices split into the Budget Ranges



Budget Range

- High
- Low
- Middle

Pie Chart illustrates an **equitable** distribution of properties across different budget ranges



Upper Quartile

Median

Lower Quartile

Introduction

Time Analysis

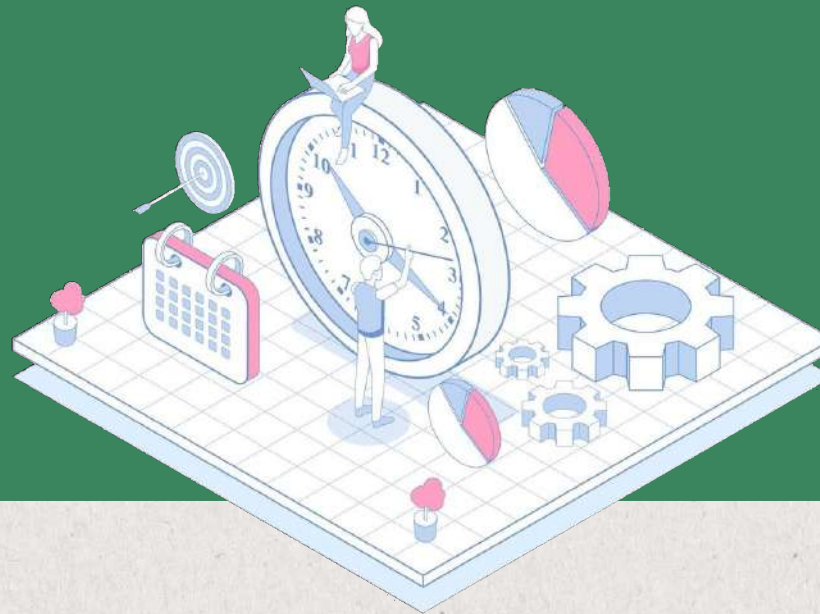
Location Analysis

Property Type and Amenities

Summary

Time Analysis

Outline of the different factors that affects the housing prices in Beijing across time



Average Property Prices across Time

Insight 1: Historical price drops in the Beijing Property Market can be attributed to **macroeconomic conditions**



Reasoning:

1. Poor economic conditions

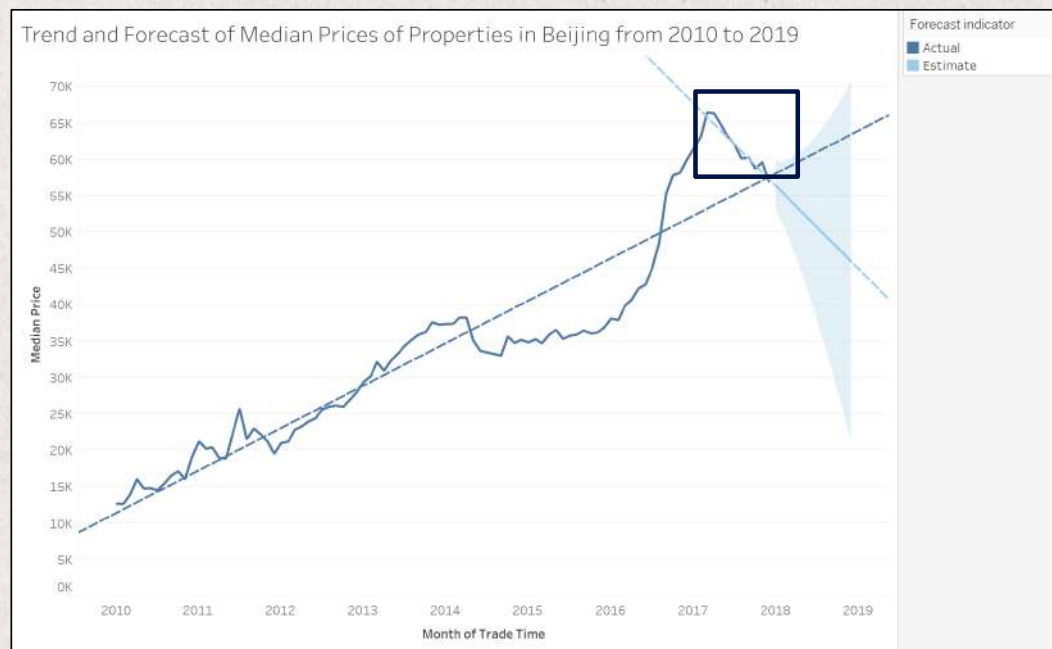
- Aftermath of **2008 global financial crisis** (Chen et al., 2018)
- China experienced the **slowest economic growth rate** in 24 years (Wong, 2015)

2. Property market cooling measures

in **2011** (Chang G. G., 2011) and **2014** (Bradsher K., 2014)

Average Property Prices across Time

Insight 1: **Historical price drops** in the Beijing Property Market can be attributed to **macroeconomic conditions**



Reasoning:

- 1. Market cooling measures in 2016** where downpayments were raised and restrictions were set on purchasing properties (Reuters, 2016)
- 2. Downward trend** of housing prices mid-2017 **is likely to continue.**

Timing Your Investments



Mr. Low



Ms. Mid



Mr. High

Recommendation #1: All 3 investors should look to enter the buyer's market after the effects of **cooling measures have waned**

Reasoning:

- **Consistent increasing trend** of property prices from 2011 to 2017
- Effects of past measures last for a period of **at least 12 months**

What's next?

- **Stay updated** on measures and regulations
- Which are the **prime locations** in Beijing to invest in?

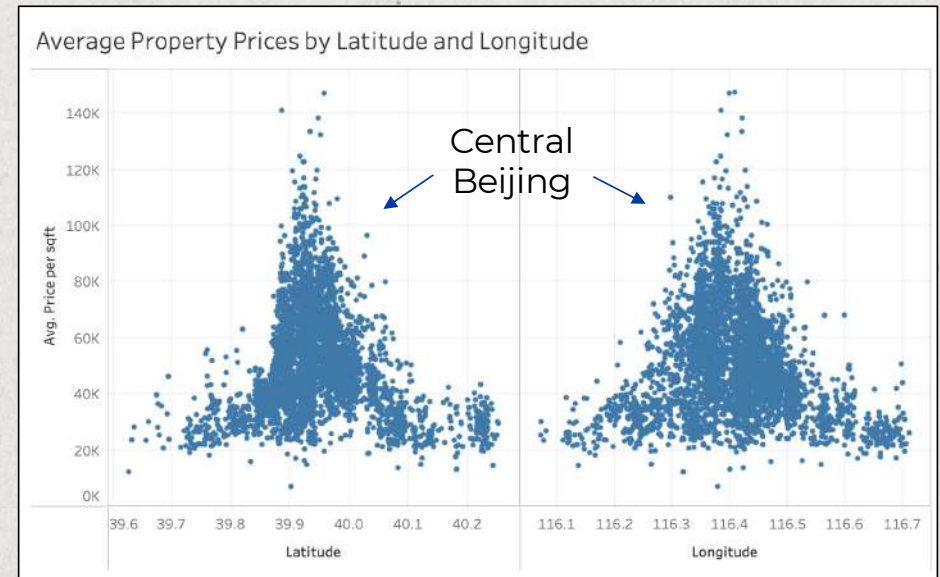
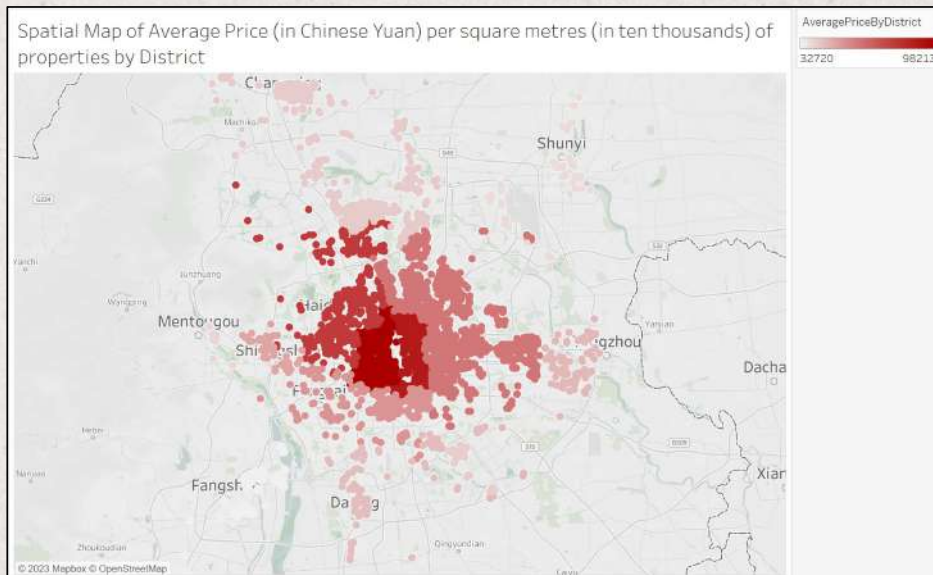
Location Analysis

Presenting to you the locational properties that influence the
top – valued properties in Beijing



Property Prices in Beijing

Insight 2: Property prices (per sqft) are **higher** towards the **centre of Beijing**



Reasoning:

- Located close to Beijing's **Central Business District** (CBD) and **iconic landmarks** such as the Forbidden City and Tiananmen Square

Introduction

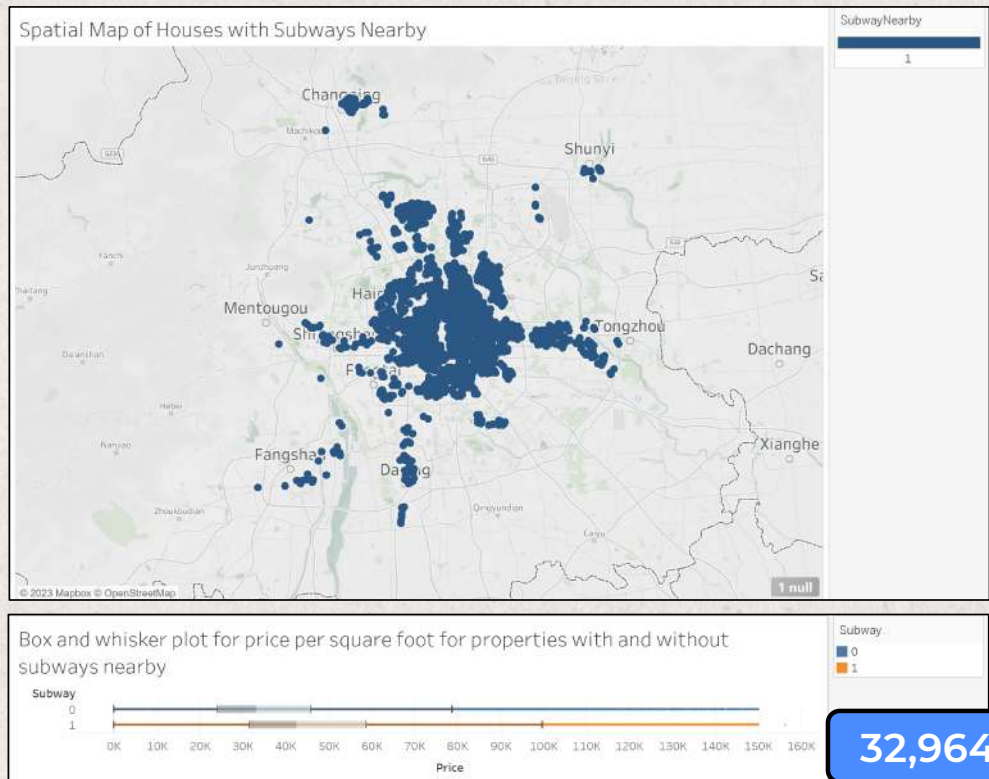
Time Analysis

Location Analysis

Property Type and Amenities

Summary

Distribution of Subway Stations & Property Prices



28.8% Median price of properties with subway stations are 28.8% higher

Insight 3: Presence of subway stations **concentrated** near the city centre are **associated with higher property prices**

Reasoning:

- Access to transport increases land value (Chadwick Real Estate, 2023)
- **Upcoming subway development projects:**
 - **ChaoYang** (to complete in 2020)
 - **FengTai** (to start reconstruction in 2018)

Introduction

Time Analysis

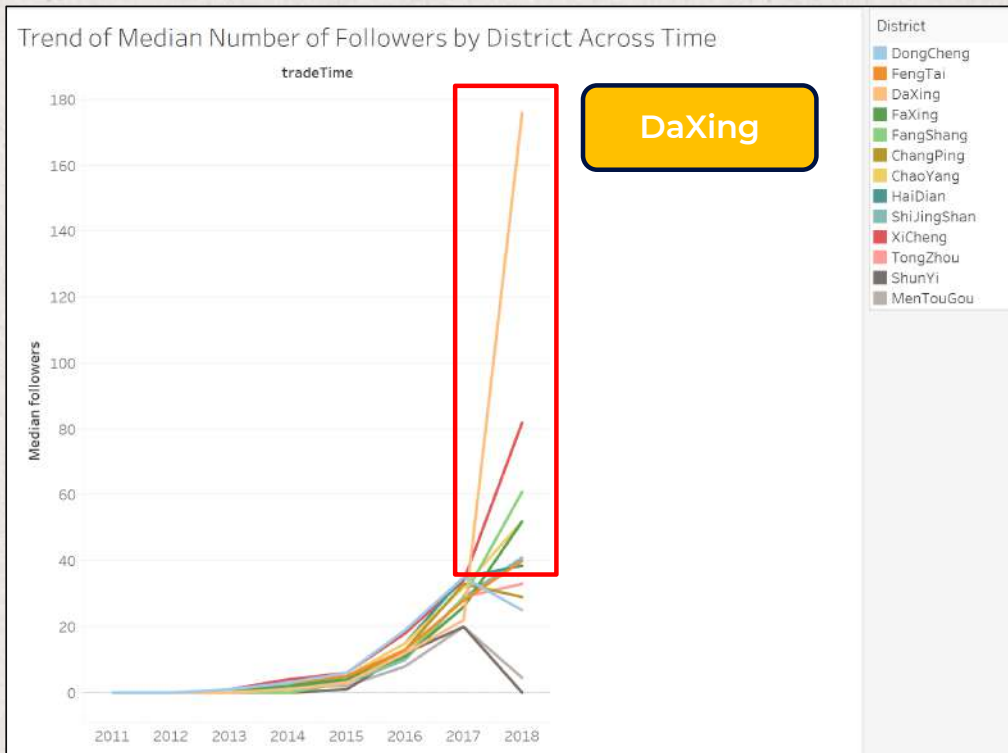
Location Analysis

Property Type and Amenities

Summary

*District data was obtained from the same Kaggle dataset

Median Followers by District across Time



Insight 4:

Exceedingly **high demand** for houses in **DaXing district in 2017**

Reasoning:

DaXing International Airport, Beijing's New Hub

- Airport and airport subway to be completed in **2019**
- **Future appreciation** due to limited land supply in the event of airport expansion (Godrej Properties, 2019)
- Potential for **high investment returns in the future**

Introduction

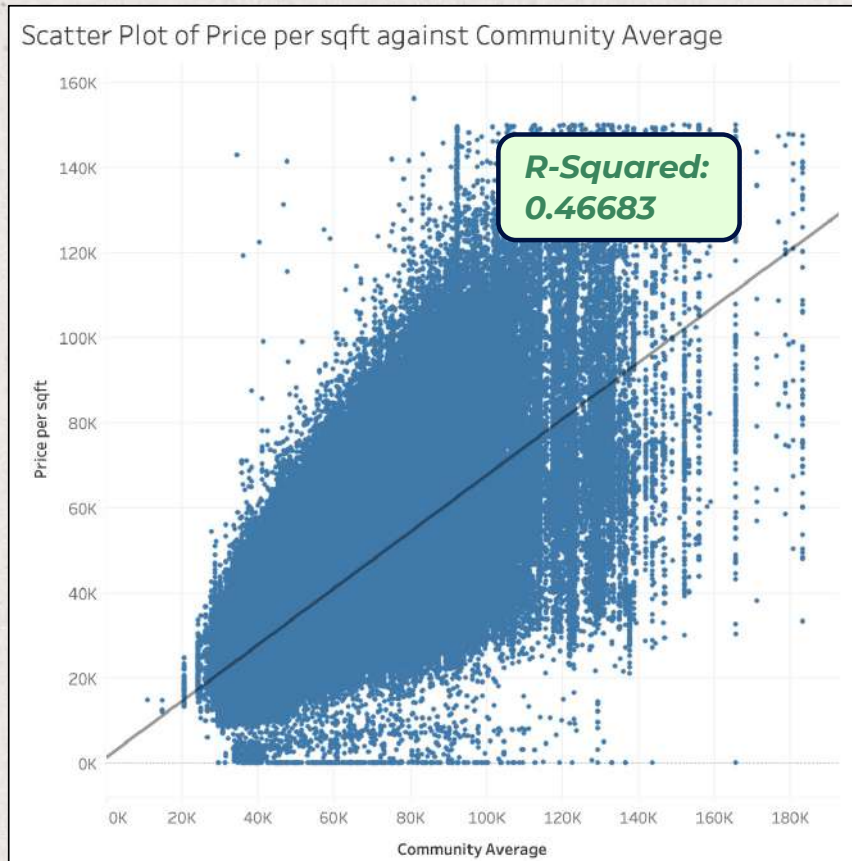
Time Analysis

Location Analysis

Property Type and Amenities

Summary

Community Average



Insight 5: High property prices are associated with more people in the community

Reasoning:

- More densely populated communities tend to have **more amenities and economic opportunities**, leading to **higher demand** and **property prices** (Mulder C. H., 2006)

Investing based on Location

Recommendation #2: Investors should look to target the **ChaoYang**, **FengTai** and **DaXing** districts

Reasoning:

High
Demand

Future
Development
Plans

High
Population
Density

Population (2020)

ChaoYang: 3,452,460 (1st)

FengTai: 2,019,764 (4th)

DaXing: 1,993,591 (5th)

Source: China National Bureau of Statistics (web)

What's next?

- Monitor prices, **sell when prices peak**
- What **amenities** are ideal for me?



Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Summary

Investing based on Location

Recommendation #2: Investors should look to target the **ChaoYang**, **FengTai** and **DaXing** districts



Mr. Low
DaXing

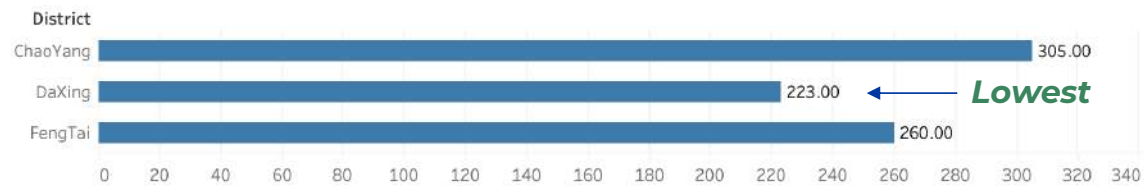


Ms. Mid
ChaoYang/FengTai



Mr. High

Bar chart of Median Property Prices of the 3 Districts



Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Summary

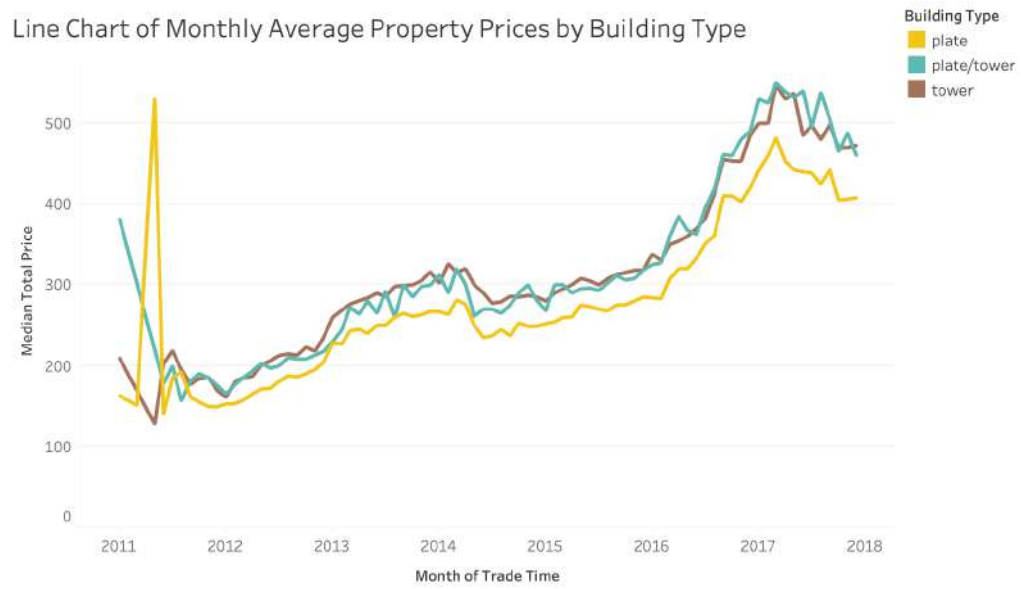
Property Type and Amenities Analysis

Focused on the districts ChaoYang, FengTai and DaXing between
2011-2017



Property Type

Line Chart of Monthly Average Property Prices by Building Type



Insight 6: From 2011-2017, prices of the three main building types followed **similar trends**

Significance:

- No bungalows were bought** in the three districts we are focusing on

Heatmap of Building Type against Year showing Transaction Count

Building Type	Trade Time							Grand Total
	2011	2012	2013	2014	2015	2016	2017	
plate	1,521	9,367	9,490	8,600	17,233	22,850	11,208	80,269
plate/tower	632	4,029	4,065	3,305	7,822	9,740	4,525	34,118
tower	1,090	7,412	7,317	6,124	13,197	17,110	7,455	59,705

Transaction Count
632 22,850

Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Summary

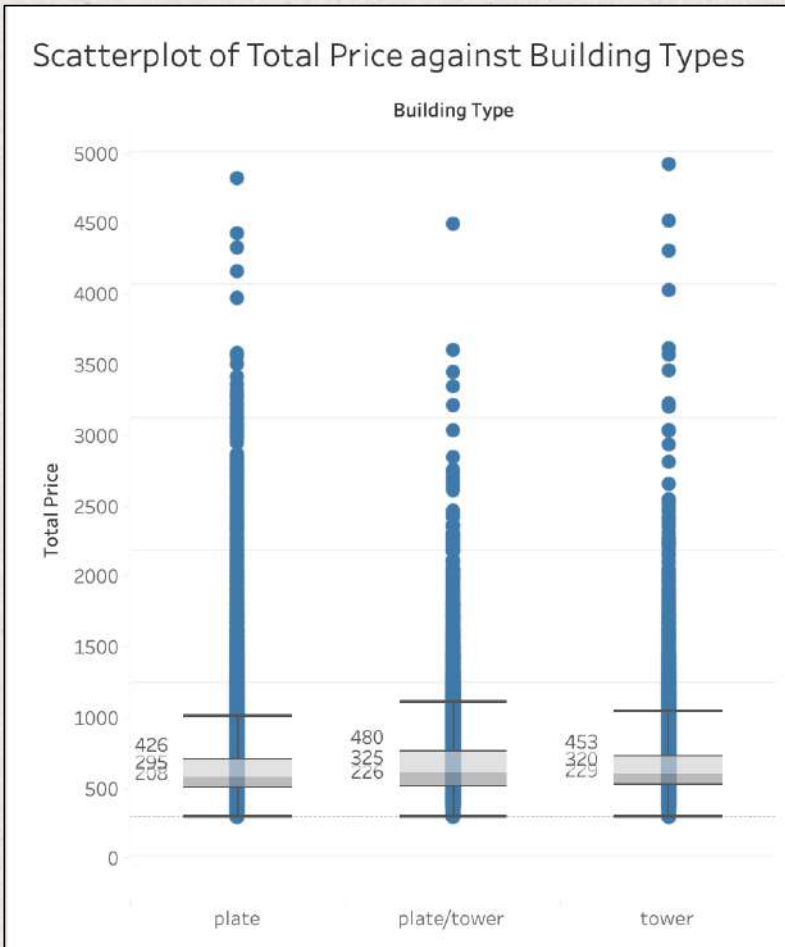
Property Type

Insight 7: Similar median prices and **high standard deviation** across housing types

Reasoning:

- **Similar median prices** by building type indicate that **other factors** have a **greater influence on price**
- **Investors** across all three budget groups can invest in properties **regardless of building type**

Total Prices (10,000s yuan)	Plate	Plate/Tower	Tower
Median	295	325	320
Standard Deviation	251.37	241.59	211.68



*All prices are in ten thousands Yuan

Introduction

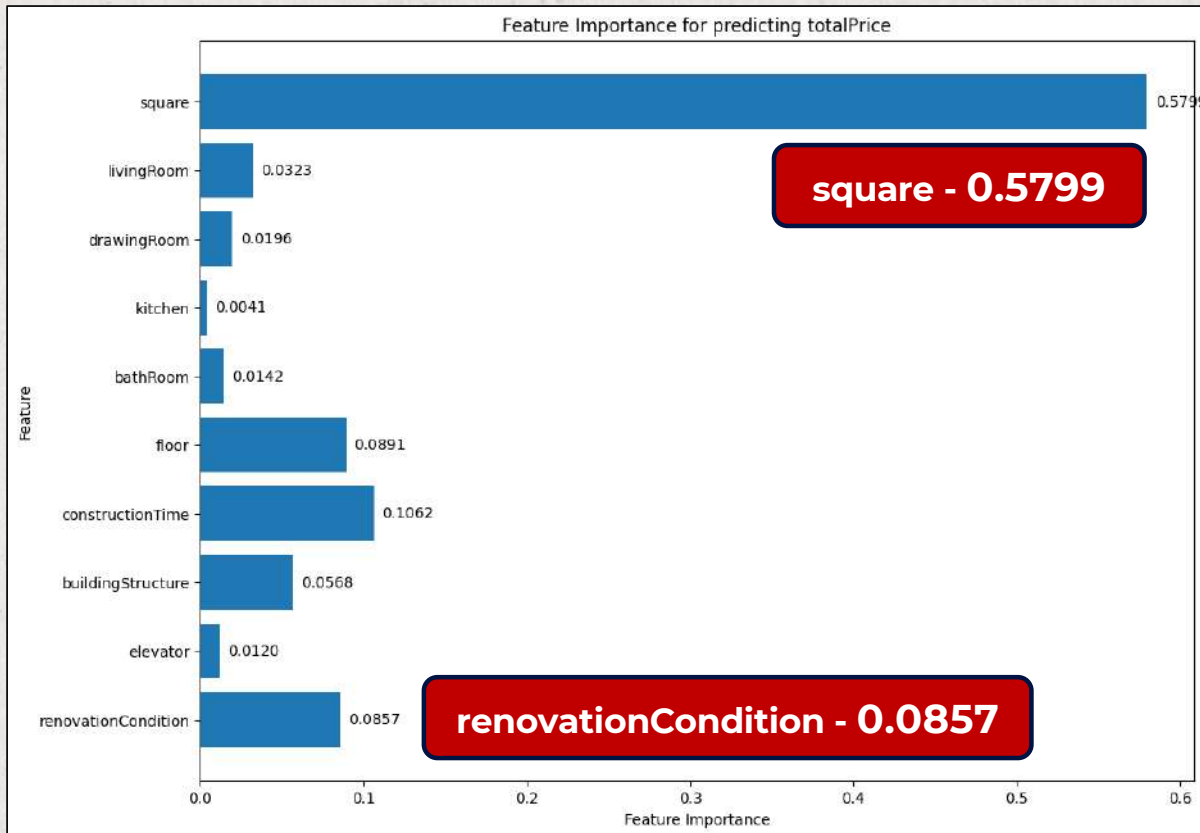
Time Analysis

Location Analysis

Property Type and Amenities

Summary

Feature Importance for Total Price



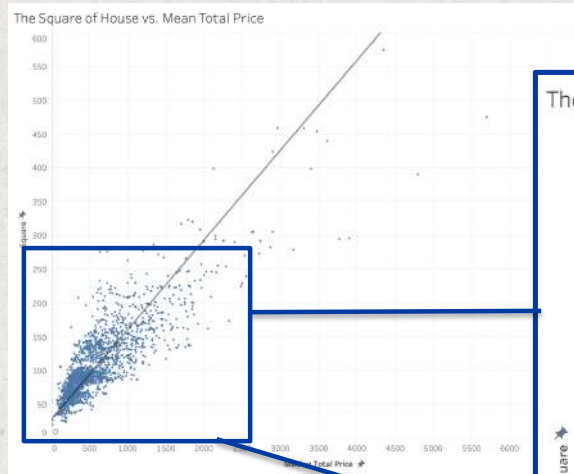
Insight 8: Size (square) is the most significant feature in predicting housing price

Insight 9: Renovation condition is also a significant feature in predicting house prices

- In line with **"Fix and Flip"** investment strategy

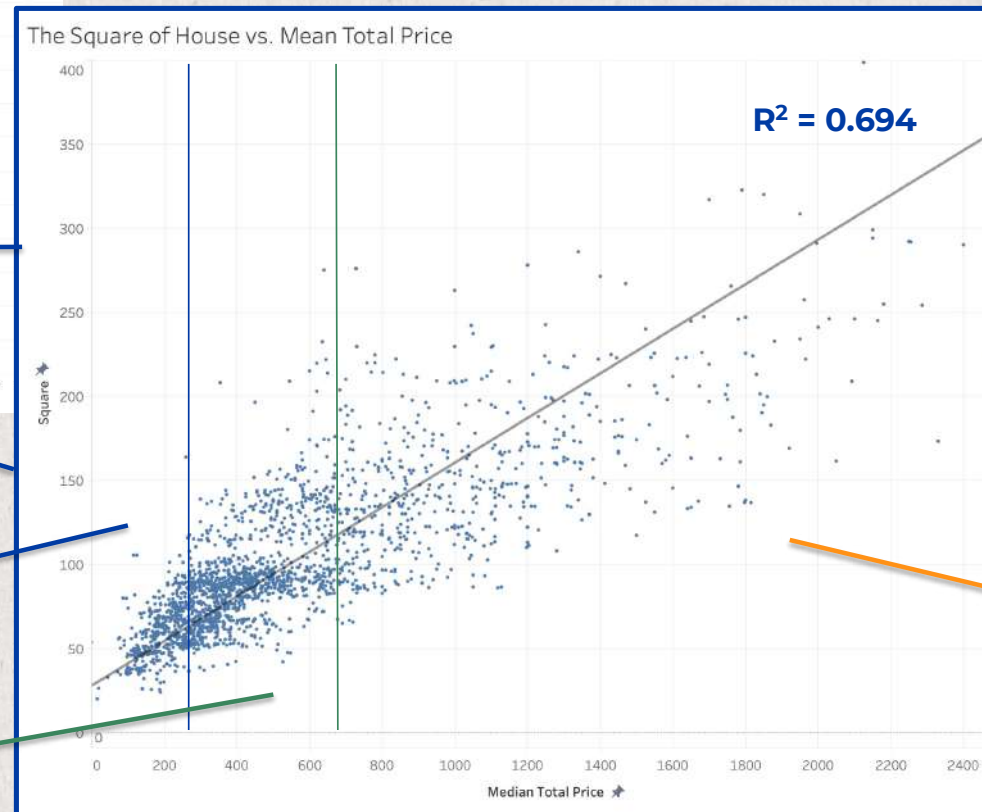
Size of Houses

Range of house size where each budget range may invest in:



Low
15 - 110m²

Medium
40 - 215m²



High
64- 600m²

Introduction

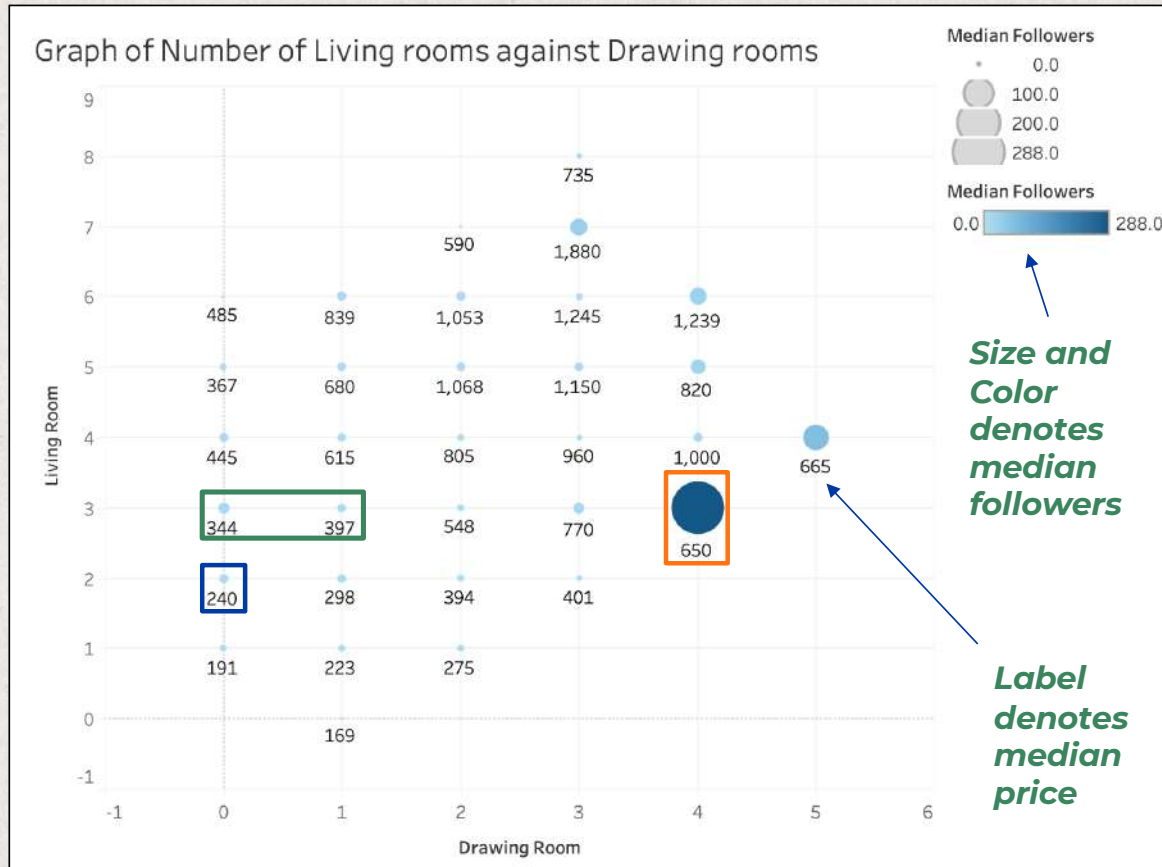
Time Analysis

Location Analysis

Property Type and Amenities

Summary

Popularity and Price of Properties by Number of Rooms



Insight 10: Most popular

properties are those with 3 living rooms and 4 drawing rooms with a **median price of ¥6,500,000**

Reasoning:

- **Low budget** – 2 Living & 0 Drawing Rooms
- **Medium budget** – 3 Living & 0-1 Drawing Rooms
- **High budget** – 3 Living & 4 Drawing Rooms

*All prices are in ten thousands Yuan

Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Summary

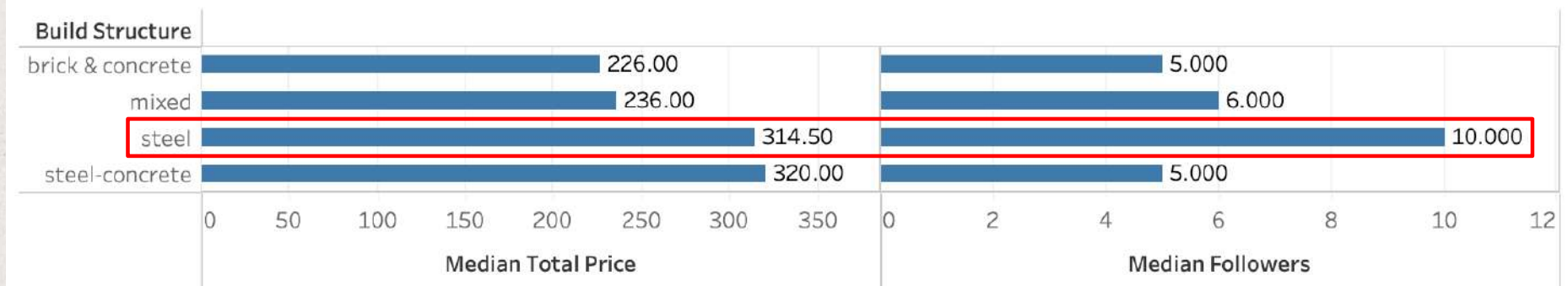
Popularity and Price of Properties by Building Structure

Insight 11: Properties with **steel structure** have the **highest median followers**

Reasoning:

- Beijing is **earthquake prone** and has experienced multiple big earthquakes in the past (Chen S., 2021)
- Steel buildings have higher structural integrity and are **earthquake resistant**
- **Higher initial costs** and **construction time**

Barchart of Build Structure against Median Total Price and Median Followers



Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Summary

Investing based on Amenities

Recommendation #3: All investors should invest in houses with **steel build structures**, but based on their budget, choose properties based on **size**.



Mr. Low

15 – 110m²
2 Living &
0 Drawing Rooms



Ms. Mid

40 - 215m²
3 Living &
1 Drawing Rooms



Mr. High

64 - 600m²
3 Living &
4 Drawing Rooms

What's next?

- What can investors do to **maximise their return on investments** after securing a decent property?

Introduction

Time Analysis

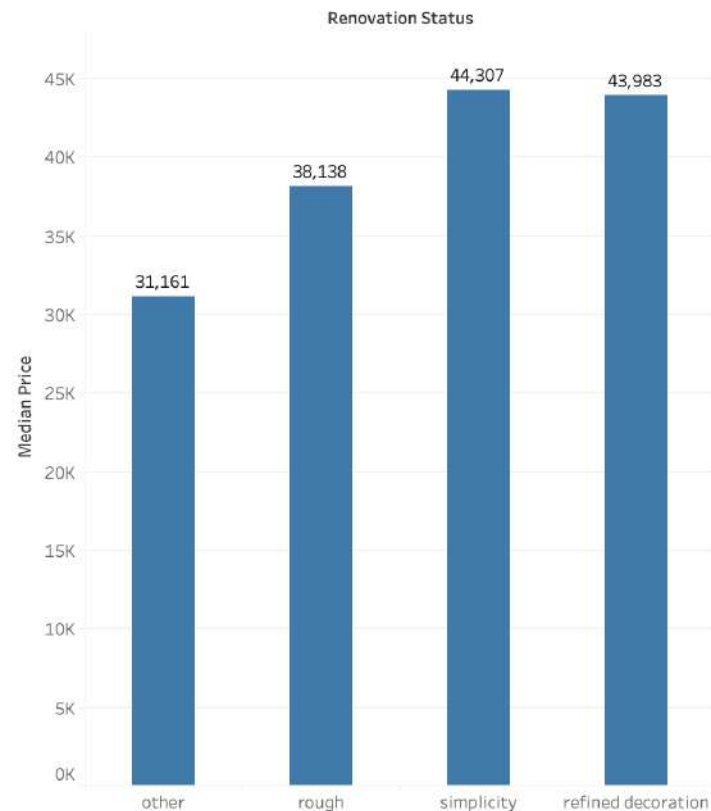
Location Analysis

Property Type and Amenities

Summary

Building Type & Extent of Renovation

Bar chart comparing Median Prices against Renovation Condition



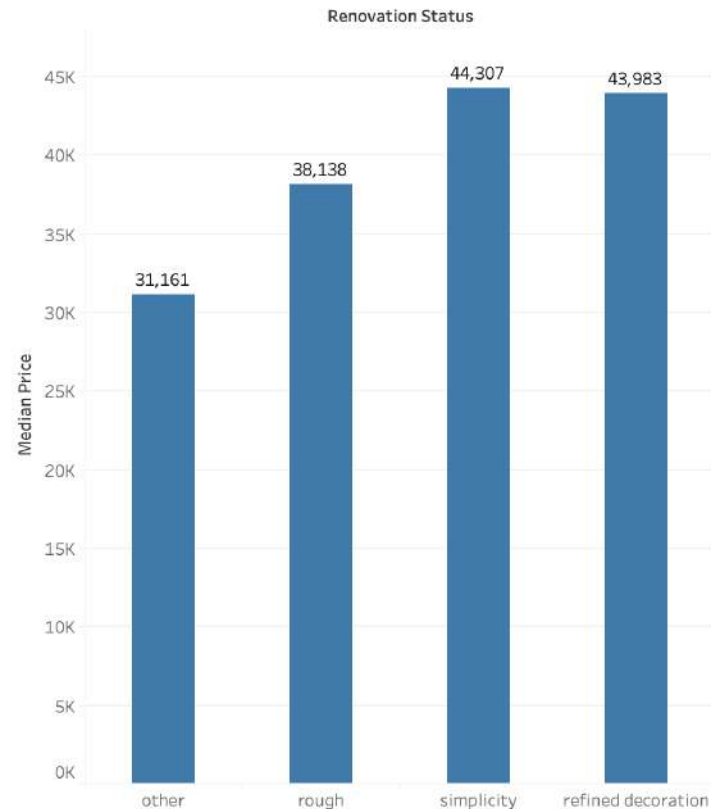
Insight 12: Simplistic renovation has the **highest median total price**

Reasoning:

- **Beyond renovation condition of “simplicity”,** median house prices experience a **downward trend**.
- **Renovation trend** of real estate in Beijing to add value to properties (Maxview Realty, 2019)

Building Type & Extent of Renovation

Bar chart comparing Median Prices against Renovation Condition



Insight 12: Simplistic
renovation has the **highest median total price**

Recommendation #4:
Conduct **"simplistic" renovation** after purchasing a property as it is likely to **increase property value** and **maximise ROI**.

Your Investment Strategy



Your Investment Strategy

Timing the Market

- **Buying:** Enter a buyer's market when effects of market cooling measures have waned

Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Your Investment Strategy

Your Investment Strategy

Timing the Market

- **Buying:** Enter a buyer's market when effects of market cooling measures have waned

High-value Destinations

- **DaXing, FengTai, ChaoYang** are high-value districts
- High demand, future development plans, dense population

Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Your Investment Strategy

Your Investment Strategy

Timing the Market

- **Buying:** Enter a buyer's market when effects of market cooling measures have waned

High-value Destinations

- **DaXing, FengTai, ChaoYang** are high-value districts
- High demand, future development plans, dense population

Tailored Investments

- **Steel** Building Structure
- **Low budget** – 2 Living & 0 Drawing Rooms
- **Medium budget** – 3 Living & 0-1 Drawing Rooms
- **High budget** – 3 Living & 4 Drawing Rooms

Your Investment Strategy

Timing the Market

- **Buying:** Enter a buyer's market when effects of market cooling measures have waned

High-value Destinations

- **DaXing, FengTai, ChaoYang** are high-value districts
- High demand, future development plans, dense population

Tailored Investments

- **Steel** Building Structure
- **Low budget** – 2 Living & 0 Drawing Rooms
- **Medium budget** – 3 Living & 0-1 Drawing Rooms
- **High budget** – 3 Living & 4 Drawing Rooms

Simplistic Renovation

- Conduct simplistic renovation on properties before flipping to **maximise return on investments**

Introduction

Time Analysis

Location Analysis

Property Type and Amenities

Your Investment Strategy

References

- A new trend in real estate in Beijing: The renovation of Apartments. A new trend in real estate in Beijing: the renovation of apartments*, Maxview Realty. (n.d.). <https://beijing.maxviewrealty.com/industry/429.html>
- Anderlini, J. (2010, December 25). China raises interest rates. <https://www.ft.com/content/084630ba-1020-11e0-be4a-00144feabdc0>
- Beijing Fengtai Railway Station, China. Railway Technology*. (2022, April 28). <https://www.railway-technology.com/projects/beijing-fengtai-railway-station-china/?cf-view>
- Bradsher, K. (2014, May 13). China's sizzling real estate market cools. *The New York Times*. <https://www.nytimes.com/2014/05/14/business/china-real-estate-falls-back-to-earth.html>
- Chadwick Real Estate. (n.d.) What value does proximity to a train station add to a home? <https://chadwickrealestate.com.au/best-places/what-value-does-proximity-to-a-train-station-add-to-a-home/>
- Chang, G. G. (2011, November 15). Property prices collapse in China. is this a crash?. *Forbes*. <https://www.forbes.com/sites/gordonchang/2011/11/06/property-prices-collapse-in-china-is-this-a-crash/?sh=643ca4152046>
- Chen, W., Mrkaic, M., & Nabar, M. (2018, October 3). Lasting effects: The global economic recovery 10 years after the crisis. IMF. Mulder, C. H. (2006). Population and housing. *Demographic Research*, 15, 401–412. <https://www.imf.org/en/Blogs/Articles/2018/10/03/blog-lasting-effects-the-global-economic-recovery-10-years-after-the-crisis#:~:text=In%20the%20year%20following%20the,output%20followed%20its%20precrisis%20trend>.
- China earthquake survey doubles Beijing's high-risk fault lines. *South China Morning Post*. (2021, April 7). <https://www.scmp.com/news/china/science/article/3128469/china-earthquake-survey-doubles-beijings-high-risk-fault-lines>

References

- Godrej Properties (2023, August 24). Property near airport: Understanding the pros and cons. Godrej Properties.
<https://www.godrejproperties.com/blog/buying-property-near-airport-pros-and-cons/#:~:text=Future%20Appreciation&text=As%20airports%20expand%20and%20modernise,values%20in%20the%20long%20run.>
- Meiling, C. (2019, December 20). Renovation trend in real estate means more opportunities in Beijing. Chinadaily.com.cn.
<https://www.chinadaily.com.cn/a/201912/20/WS5dfc7ea4a310cf3e3557f984.html#:~:text=Renovation%20trend%20in%20real%20estate%20means%20more%20opportunities%20in%20Beijing,-By%20Chen%20Meiling&text=The%20trend%20for%20Beijing%20city,estate%20operators%2C%20an%20expert%20said>
- Rapoza, K. (2014, August 3). Real estate oversupply becoming bigger problem for China. Forbes.
<https://www.forbes.com/sites/kenrapoza/2014/08/03/real-estate-oversupply-becoming-bigger-problem-for-china/?sh=24ed36e5451d>
- Reuters, C. W. (2016, October 3). Chinese cities curb property purchases as Wang fans fears of housing bubble. CNBC.
<https://www.cnbc.com/2016/10/03/chinese-cities-curb-property-purchases-as-wang-fans-fears-of-housing-bubble.html>
- Wikipedia. (2023, October 22). Beijing chaoyang railway station. Wikipedia.
https://en.wikipedia.org/wiki/Beijing_Chaoyang_railway_station#:~:text=The%20construction%20began%20in%202018,operation%20on%2022%20January%202021.
- Wong, L. A. (2015, January 20). China economy grows at slowest pace in 24 years. CNBC.
<https://www.cnbc.com/2015/01/19/china-economy-grew-74-in-2014.html#:~:text=China's%20economy%20grew%20at%20its,of%20%22around%207.5%20percent.%22>

Appendix

Annex A: Data Cleaning



	Missing Values	Percentage (%)
DOM	157977	49.545713
constructionTime	19285	6.048280
buildingType	2037	0.638856
communityAverage	463	0.145209
livingRoom	32	0.010036
drawingRoom	32	0.010036
kitchen	32	0.010036
bathRoom	32	0.010036

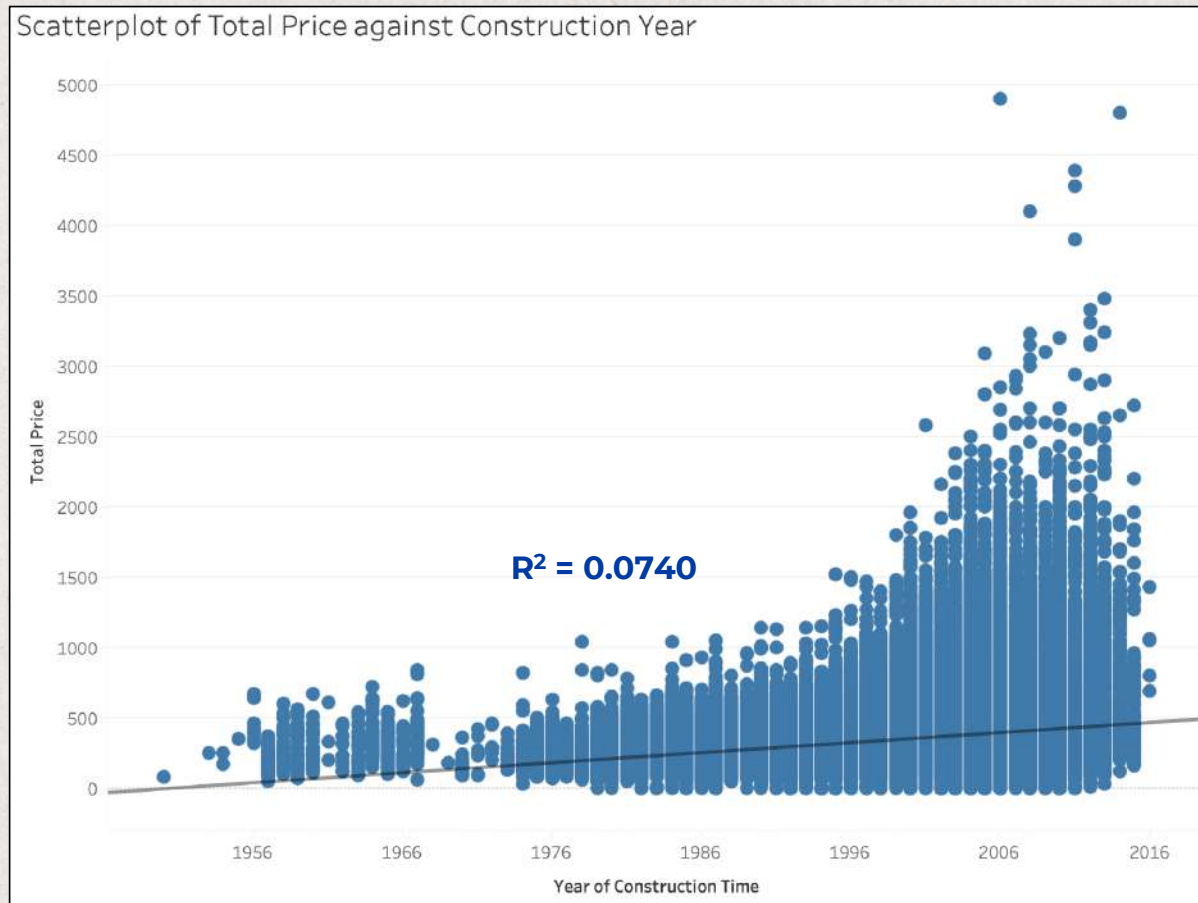
Missing Values

- Imputed missing *DOM* values with **median**
- Did not remove rows with missing values for *constructionTime* due to **high** % of total rows
- **Removed rows** with missing values for other columns

Duplicate Rows

- **No duplicated** rows found

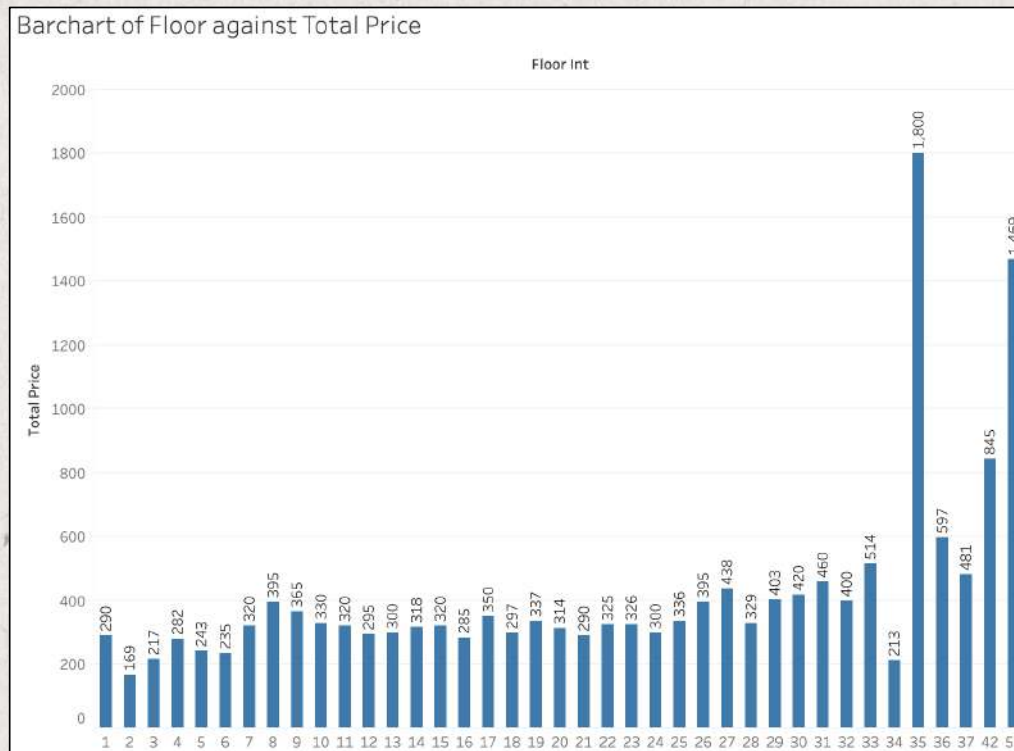
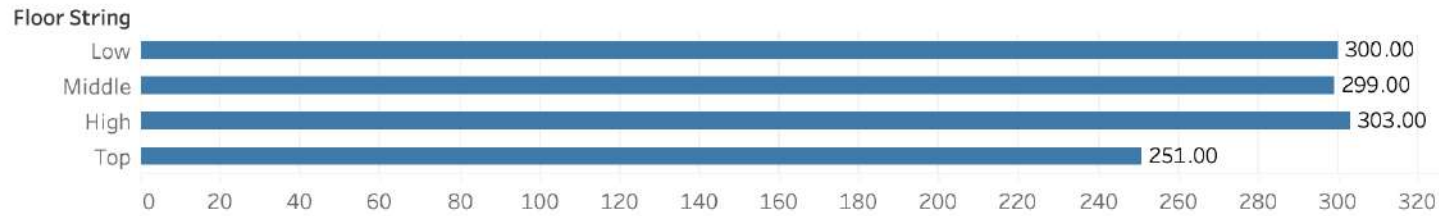
Annex B: Construction Time and Price



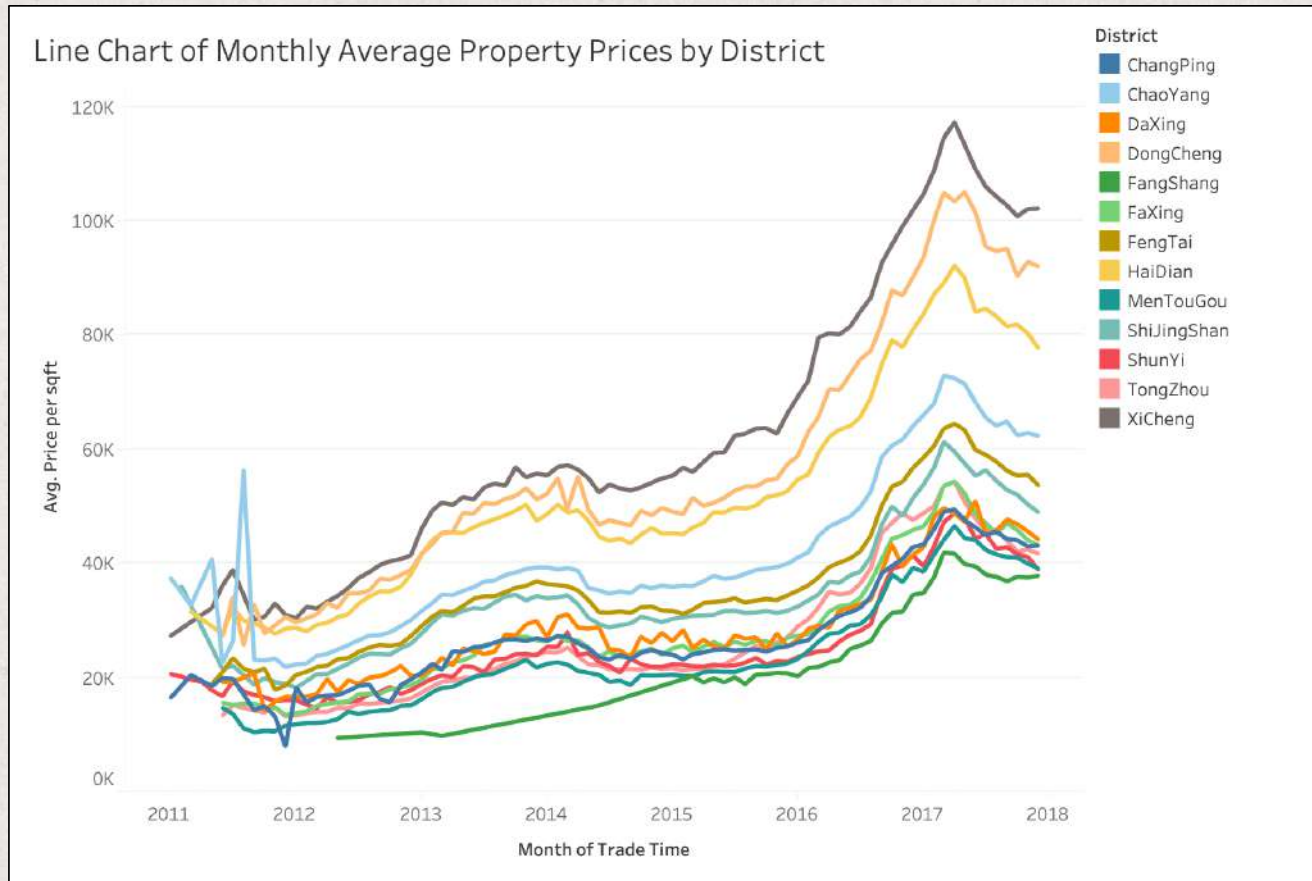
- **Low correlation** between year of construction and total price

Annex C: Floor and Price

Barchart of Floor against Total Price



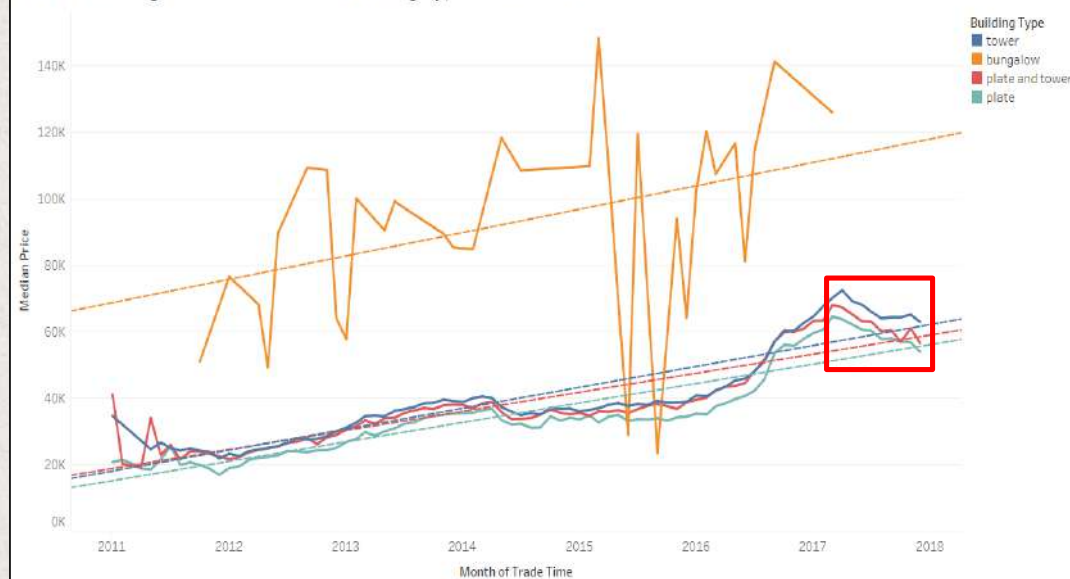
Annex D: Property Prices over Time by District



- Property Prices across different districts **follow similar trends**

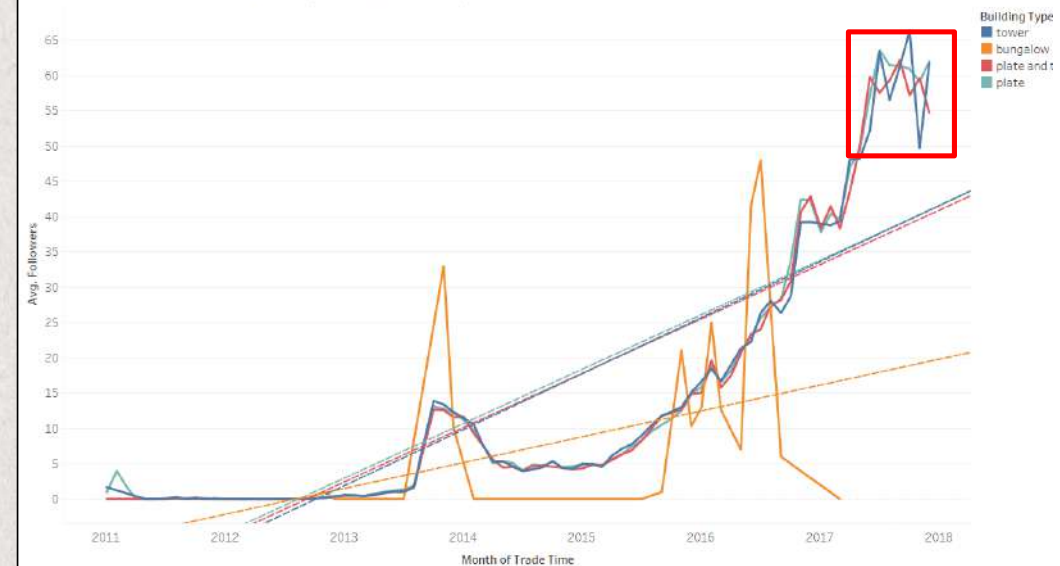
Annex E: Property Prices and Followers across Time by Building Type

Median Housing Prices for Different Building Types Across Time



The trend of median of Price for Trade Time Month. Color shows details about Building Type. The data is filtered on Trade Time, which ranges from 1/1/2011 to 31/12/2017.

Average Followers across Time (by Building Type)



The trend of average of Followers for Trade Time Month. Color shows details about Building Type. The data is filtered on Trade Time, which ranges from 1/1/2011 to 31/12/2017.