ANALYSING OF HOUSE PRICES IN METROPOLITAN CITIES IN INDIA

COLLEGE NAME

GOVINDAMMAL ADITANAR COLLEGE FOR WOMEN

OUR TEAM MEMBERS

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PROJECT OBJECTIVE

- Defining Problem/Problem Understanding
- Literature survey
- Data Collection & Extraction from Database
- Data Preparation
- Data Visualisation
- Dashboard
- Story
- Advantages and Disadvantages
- Application
- Conclusion
- Future scope

INTRODUCTION

House price prediction in metropolitan cities in India is a crucial and highly relevant topic, given the dynamic and rapidly changing real estate market in these urban areas. Metropolitan cities like Mumbai, Delhi, Bangalore, Chennai, and Kolkata are characterized by a constant influx of people, rapid urbanization, and diverse economic activities, making them hotspots for property investment. Predicting house prices in these cities involves a complex interplay of various factors, including economic trends, infrastructure development, government policies, and social dynamics.

1. Urbanization and Real Estate: India's metropolitan cities have witnessed significant urbanization in recent decades, leading to a surge in demand for housing. This urbanization is driven by factors such as job opportunities, better education, and improved lifestyle, making these cities attractive for both domestic and international migrants.

2. Economic Growth: Metropolitan areas are often the economic engines of a country. Strong economic growth, flourishing industries, and a rising middle class all contribute to the demand for housing. Predicting house prices involves analyzing economic indicators such as GDP growth, employment rates, and income levels.

3. Infrastructure Development: Government investments in infrastructure projects like metro systems, highways, and airports can have a significant impact on property prices. Improved connectivity and amenities can lead to higher property values in certain areas.

4.Regulatory Factors: Real estate markets are heavily influenced by government policies and regulations. Changes in policies related to land acquisition, taxation, and housing finance can impact property prices. Tracking these policies is essential for accurate predictions.

5. Demographics: Understanding the demographics of the population, such as age groups, family sizes, and income distributions, can help in predicting housing preferences and demand.

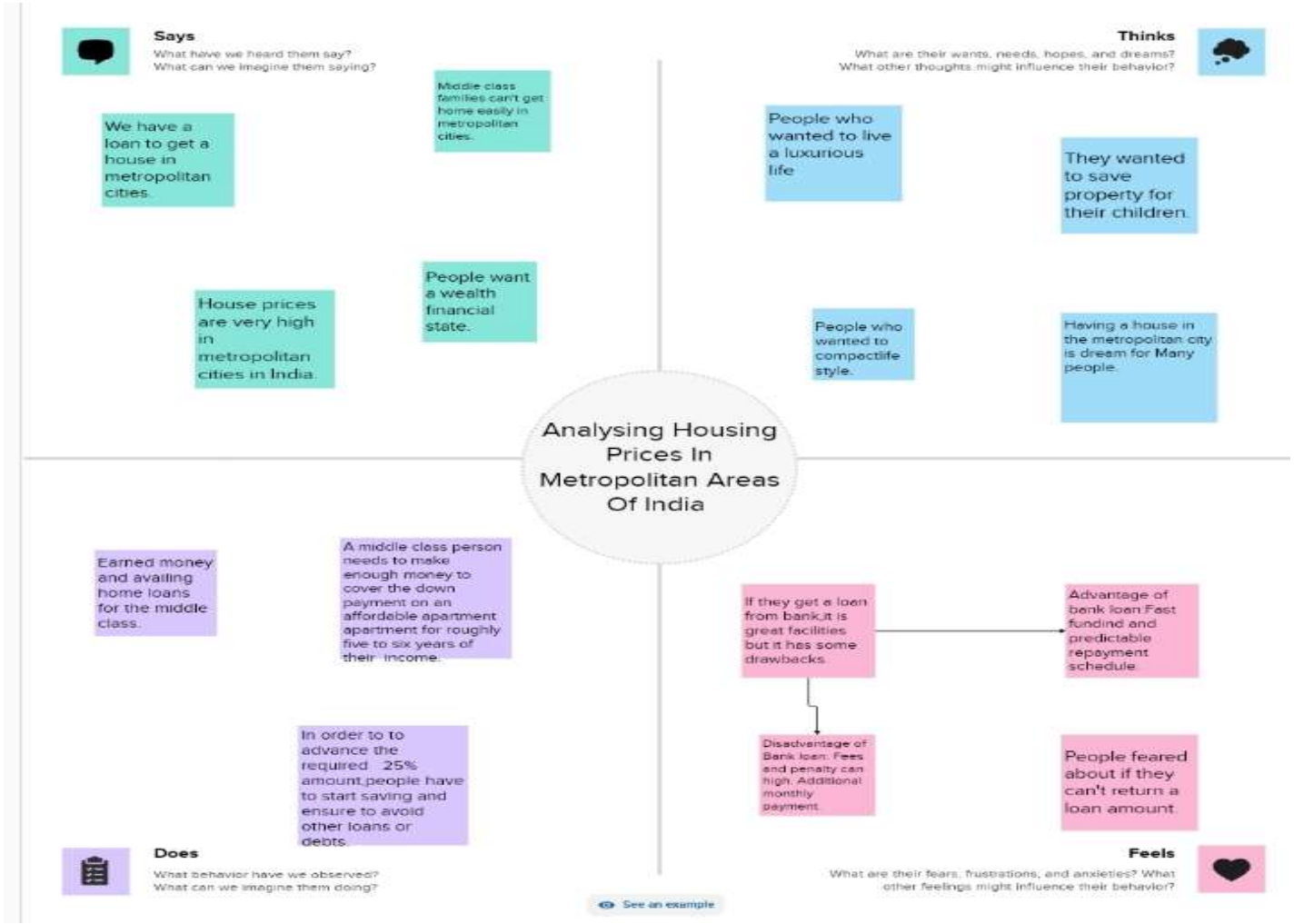
6. Supply and Demand: The balance between housing supply and demand is a fundamental driver of property prices. Factors such as population growth, migration patterns, and housing construction rates need to be considered.

7. Market Sentiment: Public perception and market sentiment play a role in property prices. Media coverage, investor sentiment, and consumer confidence can all affect the real estate market.

8. Technological Advancements: The use of advanced technologies like machine learning, data analytics, and AI has revolutionized house price prediction. These tools can analyze vast datasets to identify patterns and make more accurate predictions.

Defining Problem/Problem Understanding

We Created an Empathy map to define and understand the problem.Our empathy map is shown below.



SAYS

- We have a loan to get a house in Metropolitan citiies.
- Middle class families can’t get house in Metro politan cities
- House prices are very high iMetro politan cities.
- People want aWealth financial state.

THINKS

- People who wanted to live a luxurious Life.
- People who wnted to have Compact life Style.
- They wanted to save property for their Children
- Having a house in the Metropolitan city is dream for many people.

DOES

- Earned money and availing home loans for the Middle class
- A middle class person needs to make enough money to cover the down payment on an affordabe apartment for roughly fiveto six years of their income.
- In order to advance the required 25% amount,people have tyo start saving and ensure to avoid others loans or dedts

FEELS

- People feared about if they can’t return a loan amount.
- if they get aloan from bank ,it is facilities but it has some draw backs
- Advantages of bank loans- Fast fund and predictable repayment schedule.
- Disadvantage of bank loans-Fees and penality can high. Additional monthly payment.

BRAIN STORMING AND PRIORITIZATION

ne your problem statement

problem are you trying to solve? Frame your
em as a How Might We statement. This will be the
of your brainstorm.

inutes

There has never been any chance of decrement in prices of properties in metro cities of India except at the time of demonetization

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TIP

You can sele
and hit the p
sketch] icon

Person 1

- innovative financing models,
- House price prediction
- combination of government policies and initiatives,

Person 2

- House price predicition
- Lowering of interest rate of housing loan.
- Earned money and availing home loans for the middle class.

Person 3

- sustainable building practices and design
- House price predicition
- combination of government policies and initiatives,

Person 4

- Earned money and availing home loans for the middle class.

Person 5

Person 6

Person 7

Person 8

200.00 x 64.61 in

Person 3

sustainable building practices and design

House price predicition

combination of government policies and initiatives,

Person 4

Earned money and availing home loans for the middle class.

Lowering of interest rate of housing loan.

combination of government policies and initiatives,

Person 7

Person 8

combination of government policies and initiatives,

Lowering of interest rate of housing loan.

Earned money and availing home loans for the middle class.

House price predicition

Innovative financing models,

sustainable building practices and design

roup ideas

ske turns sharing your ideas while clustering similar or related notes as you go. Once all icky notes have been grouped, give each cluster a sentence-like label. If a cluster is gger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Lowering of interest rate of housing loan.

House price predicition

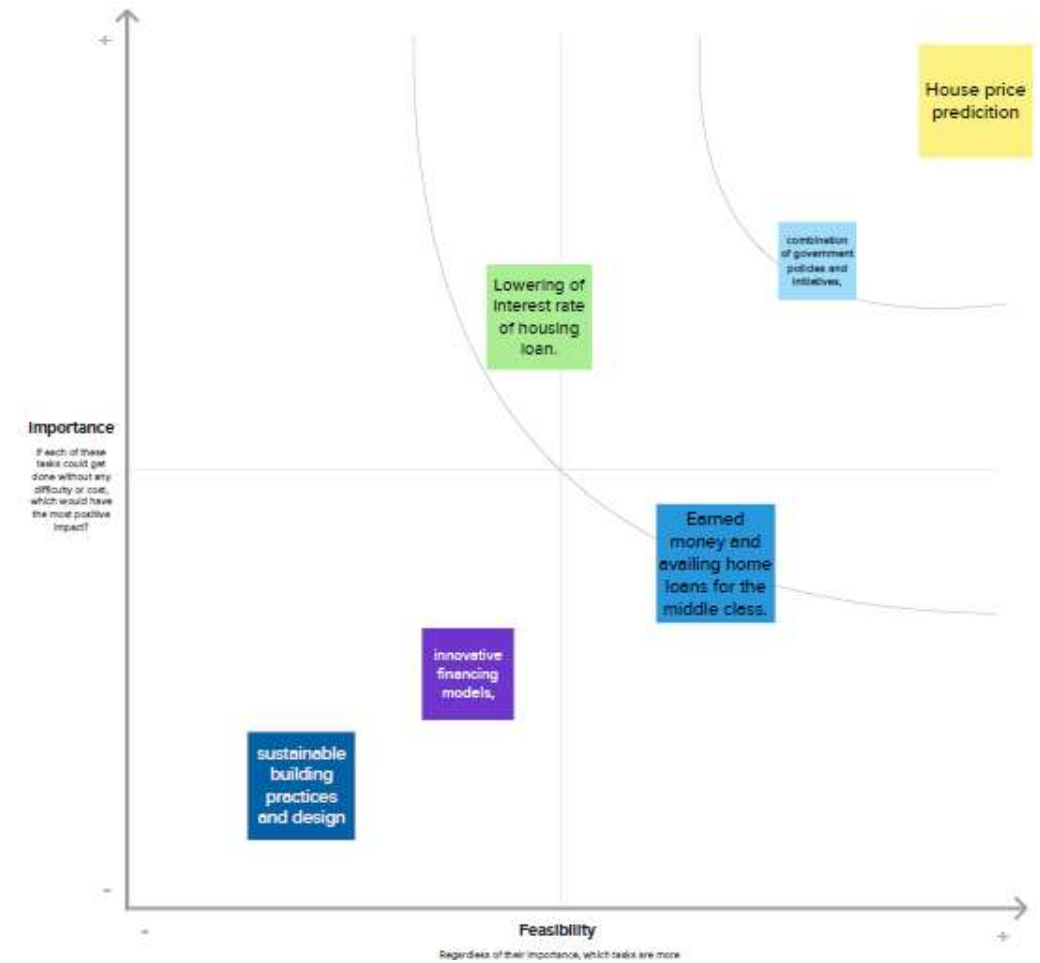
sustainable building practices and design

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the H key on the keyboard.



LITERATURE SURVEY

combination of government policies and initiatives,

Lowering of interest rate of housing loan.

Earned money and availing home loans for the middle class.

House price predicition

innovative financing models,

sustainable building practices and design

DATA COLLECTION & DATA EXTRACTION

Data collection is the process of gathering and measuring informatiion on variables of interest,in an established systematicfashion that enables one to answer stated research questions, test hypothese,evaluate outcomes and generate insight from the data.

Downloading the dataset

We Use this database link to collect the data

https://www.kaggle.com/datasets/ruchi798/housing-prices-in-metropolitan-area-of-india

Connect Dataset with tableau

We use the following link to connect dataset with tableau.

https://drive.google.com/file/d/11nyFJ7x2K6-GGWzsQ6S-i-n-SqePkgyE/view?usp=sharing

DATA PREPARATION

Preparing the data for visualization involves cleaning the data to remove irrelevant or missing data, transforming the data into a format that can be easily visualized, exploring the data to identify patterns and trends, filtering the data to focus on specific subsets of data, preparing the data for visualization software, and ensuring the data is accurate and complete. This process helps to make the data easily understandable and ready for creating visualizations to gain insights into performance and efficiency.

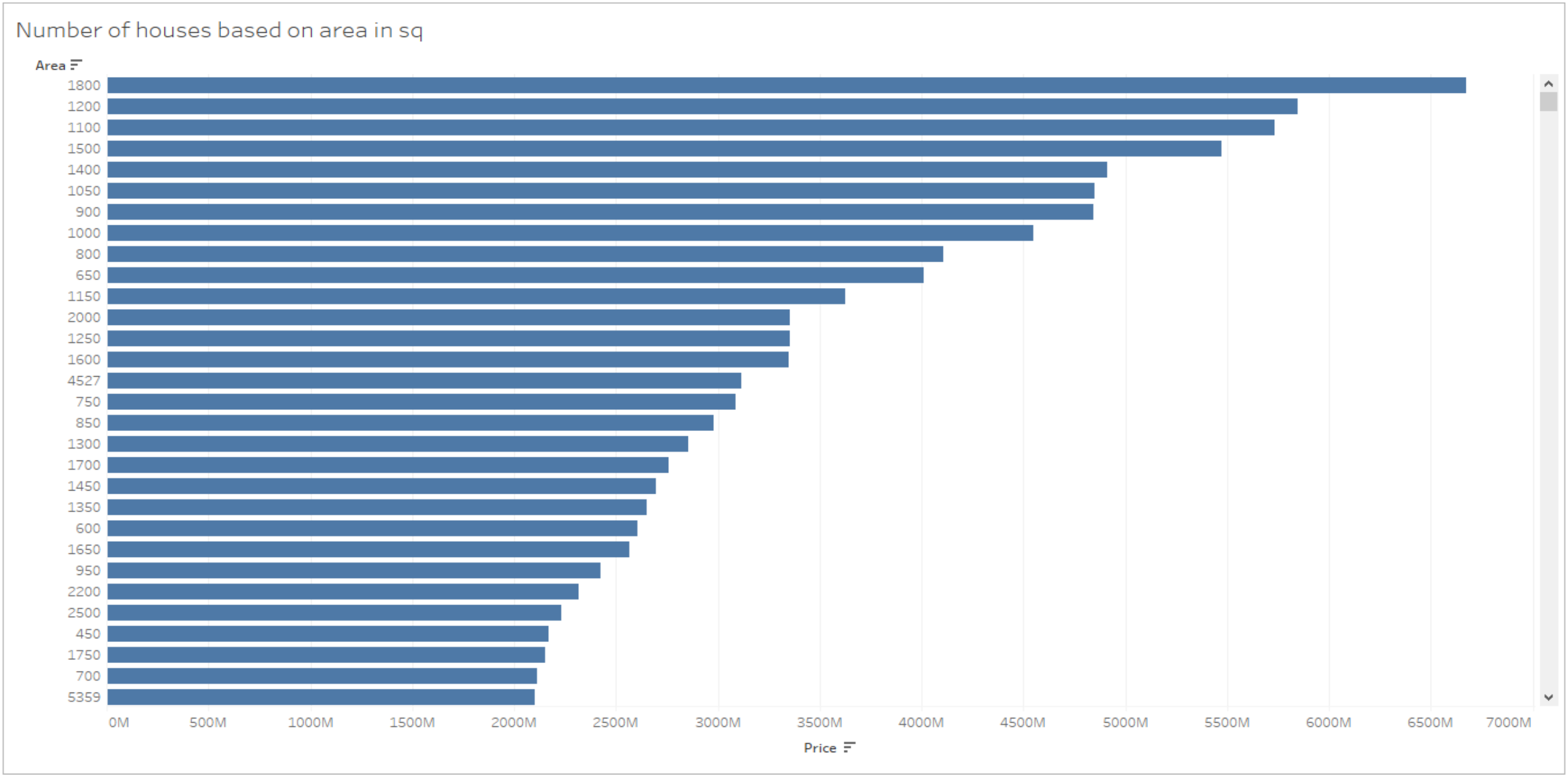
DATA VISUALIZATION

Data visualization is the process of creating graphical representations of data to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.

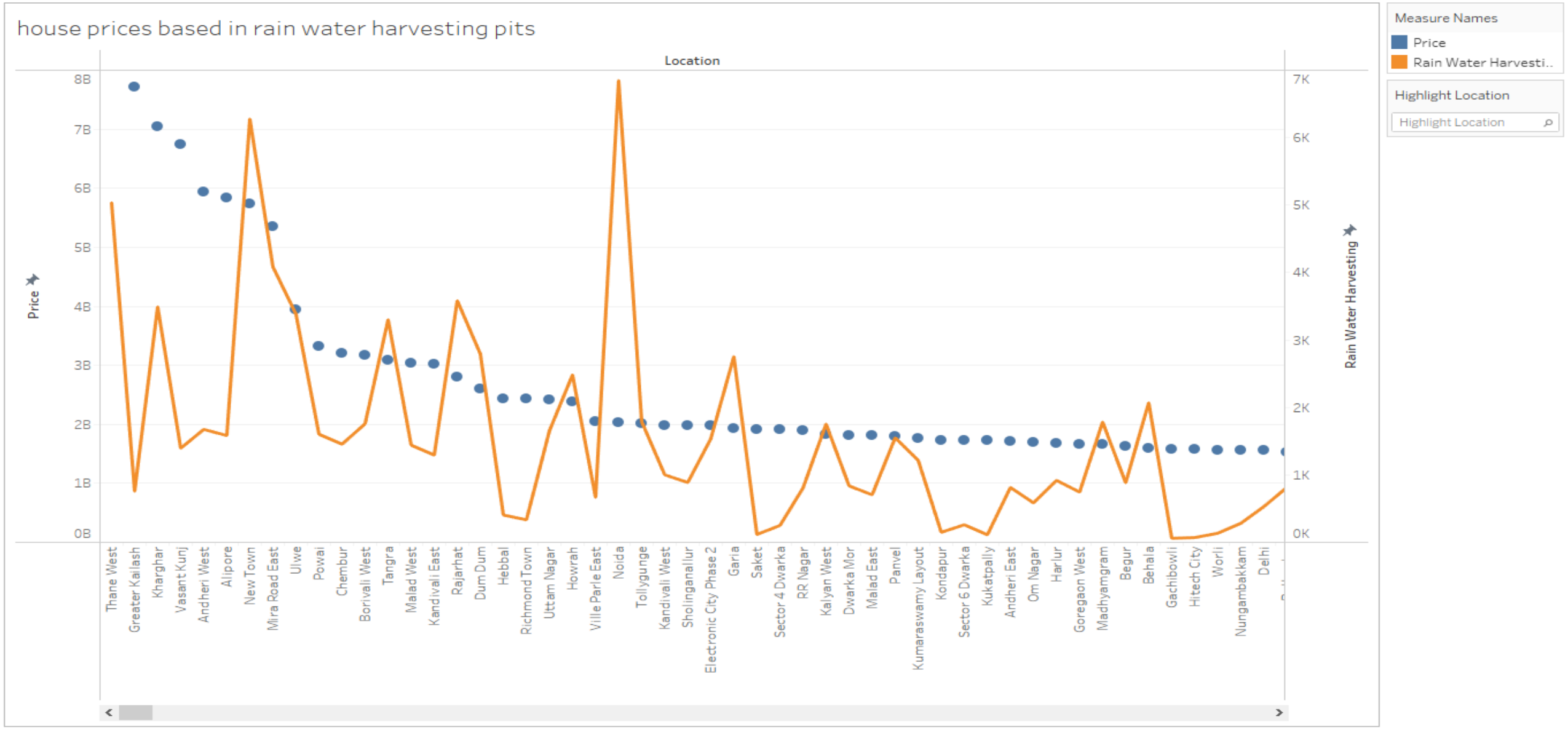
NUMBER OF UNIQUE VISUALIZATION

1. Latitude and Longitude based on Location

2.Number of houses based on area in sq

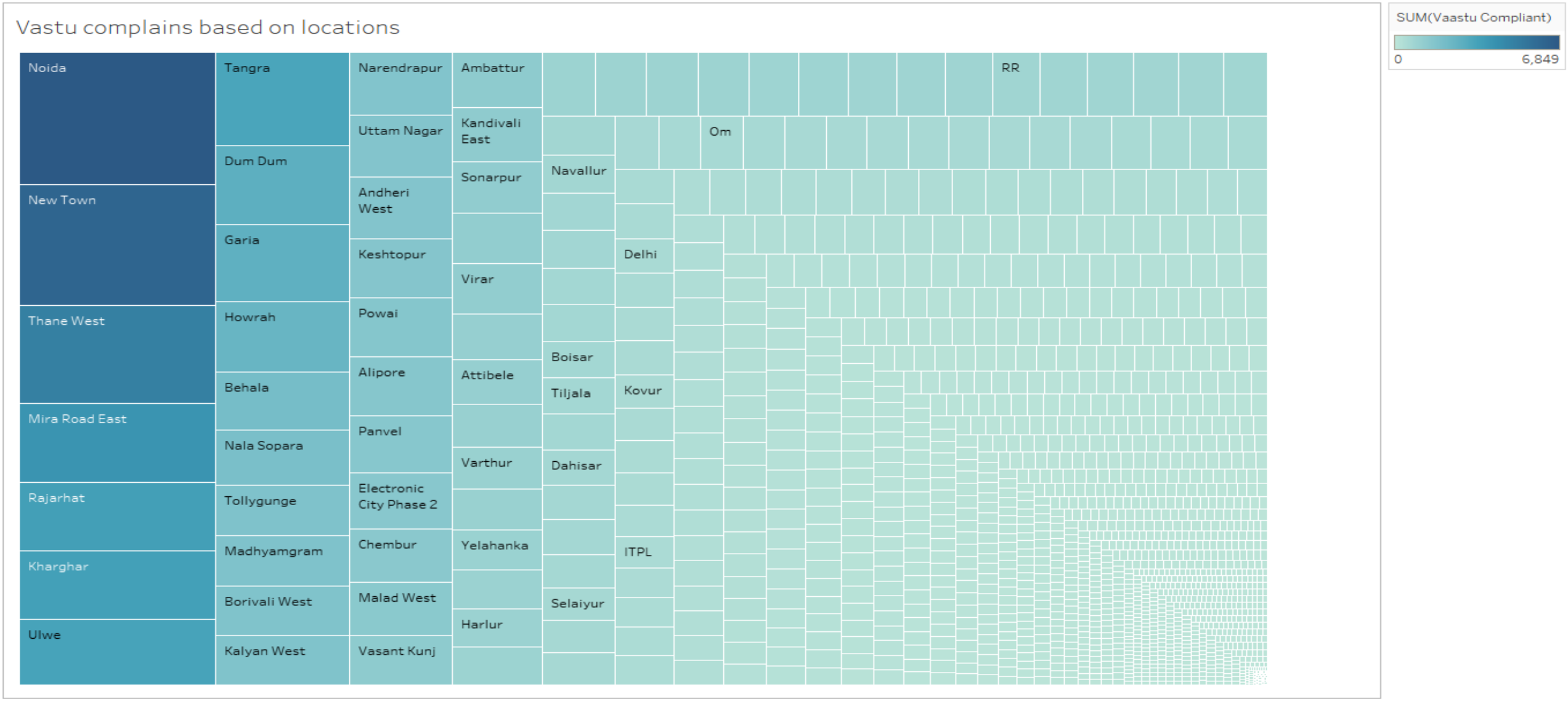


3. Houses prices based on rainwater harvest pits

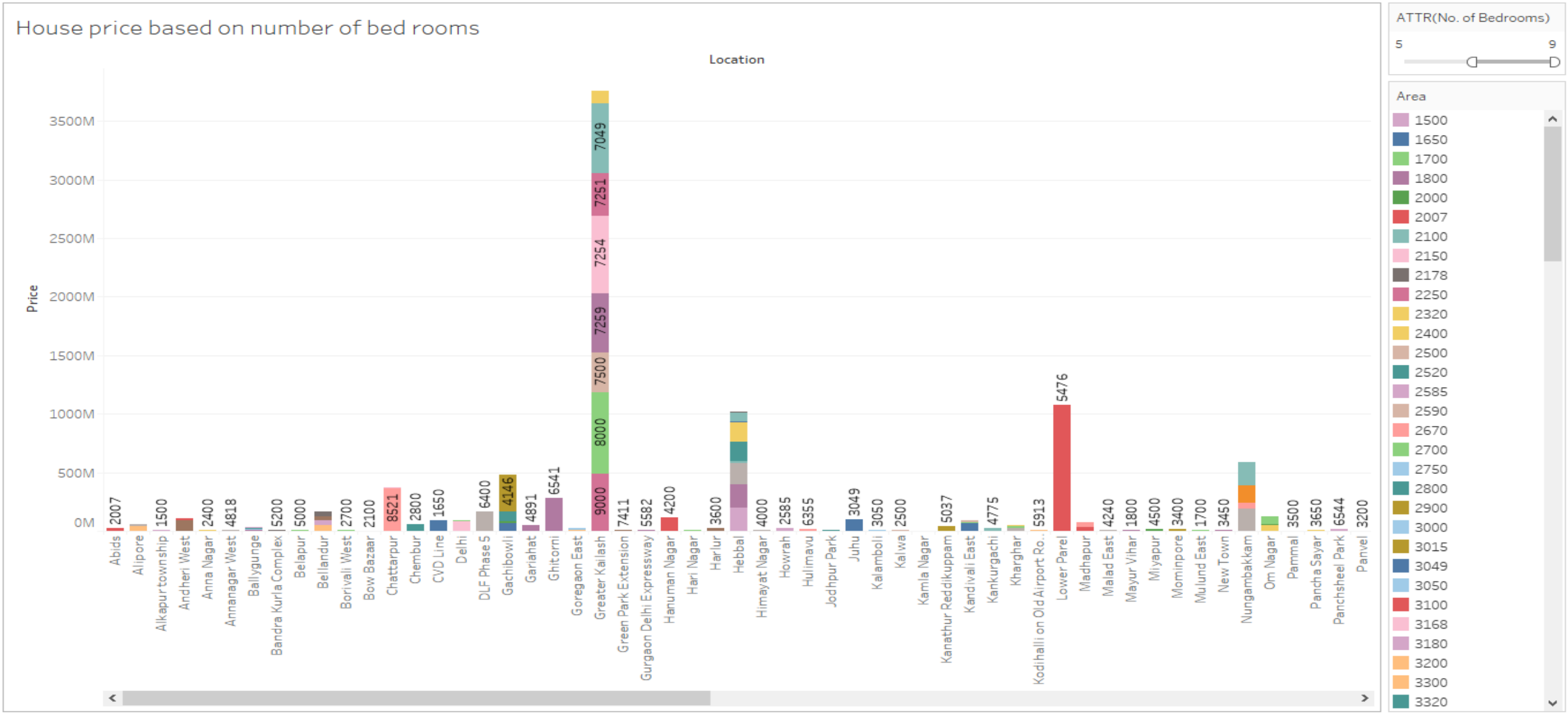


Sheet 1 | Sheet 2 | **Sheet 3** | Sheet 4 | Sheet 5 | Sheet 6 | Sheet 7 | Sheet 8 | Sheet 9 | Dashboard 1 | Dashboard 2 | Dashboard 3 | Dashboard 4 | Story 1

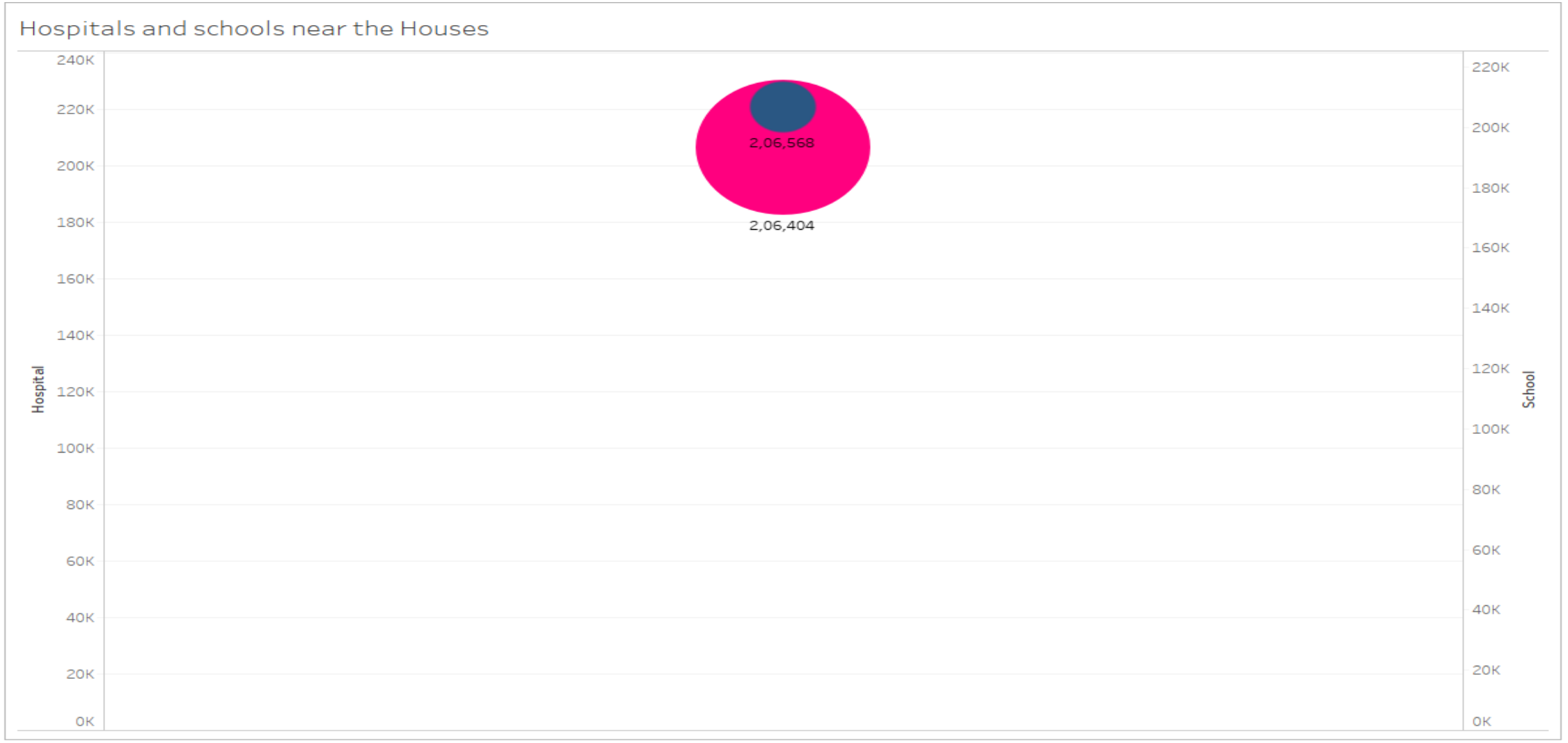
4. vastu- complains based on location



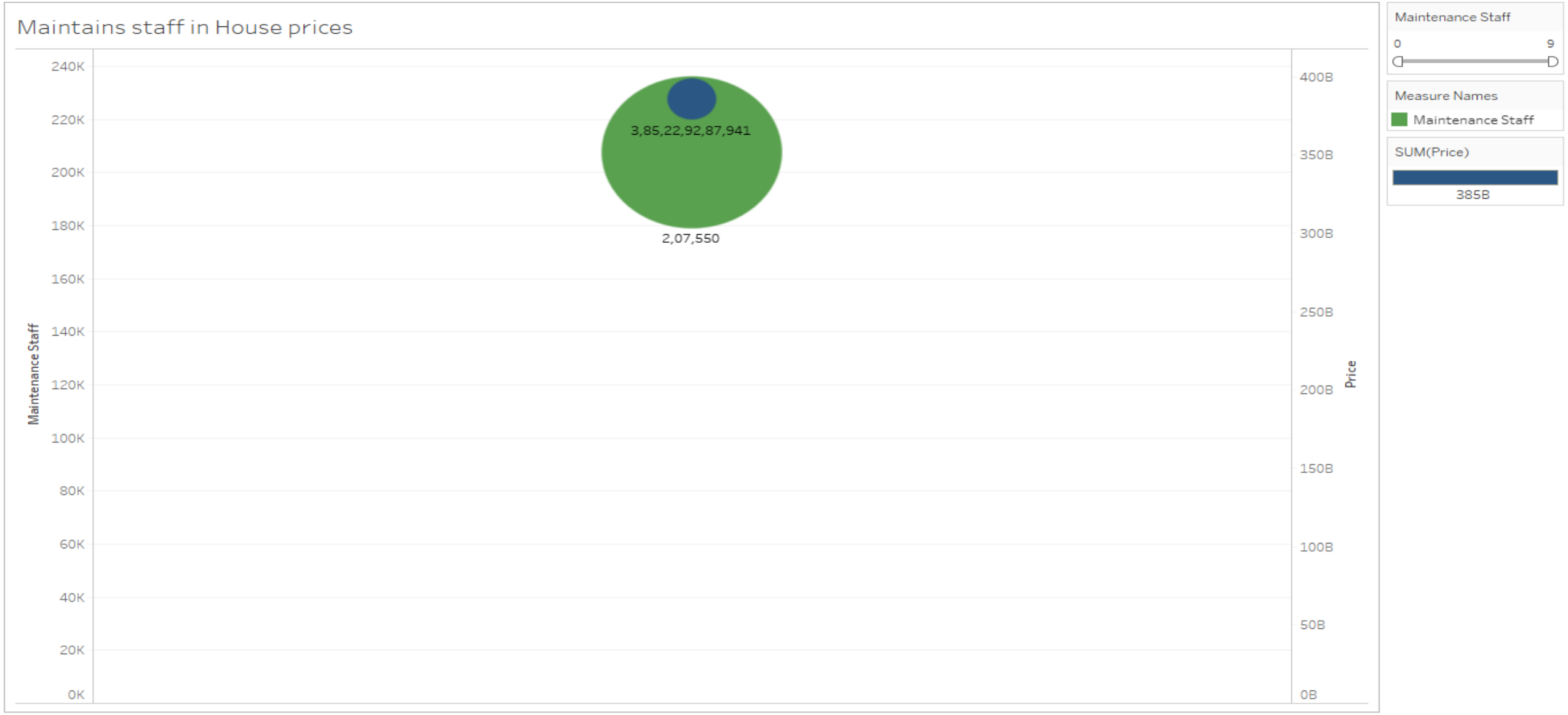
5. House price based on Number Of Bedrooms



6. Hospitals and School near the Houses

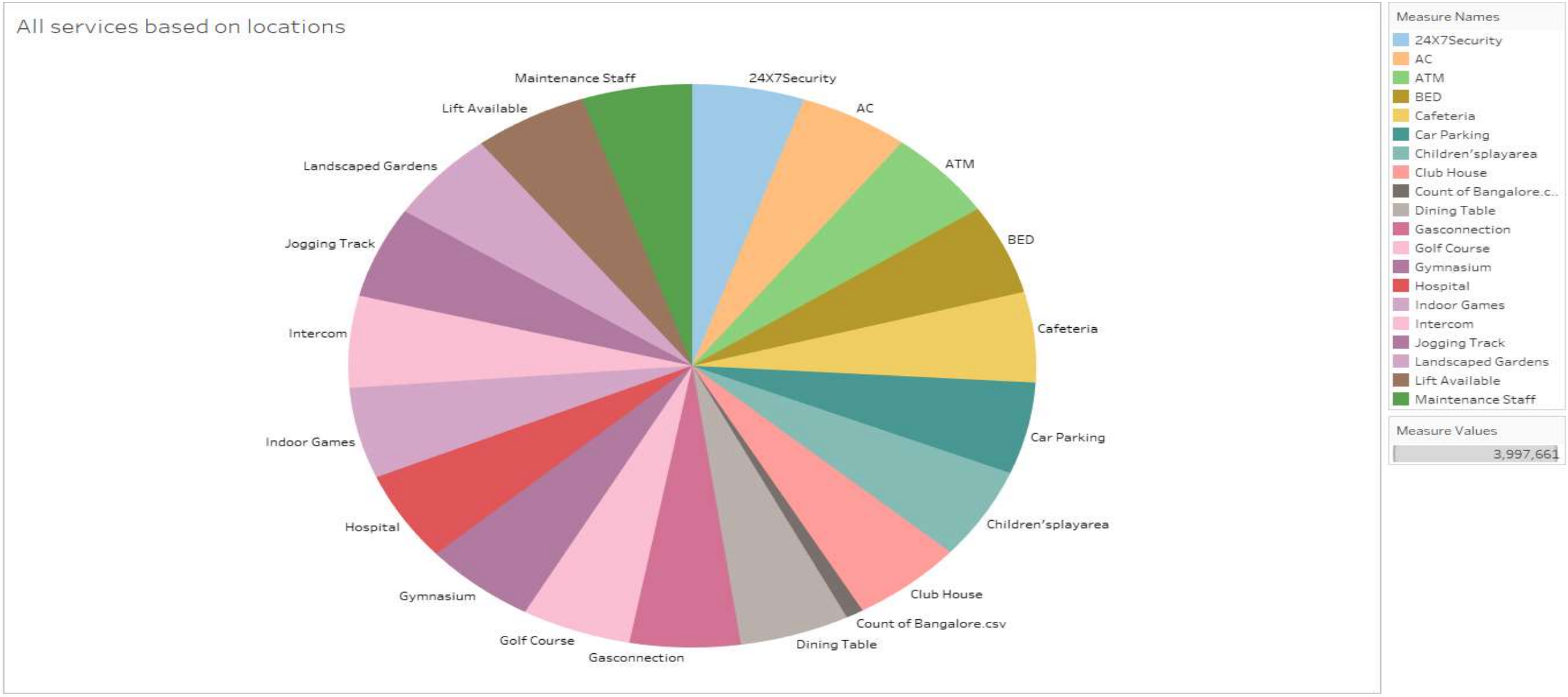


7. Maintains staff in house prices

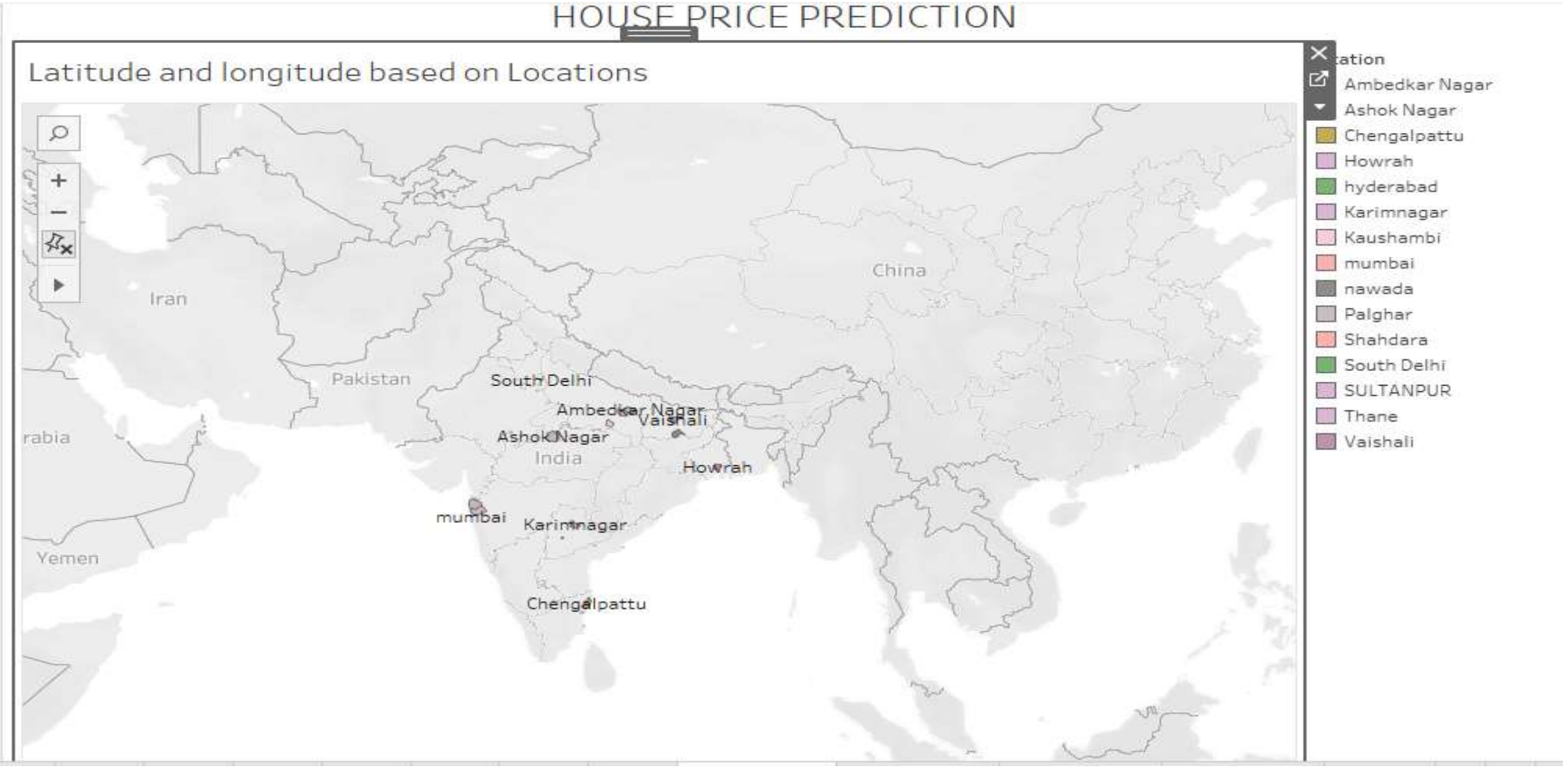


8. House price and intercom

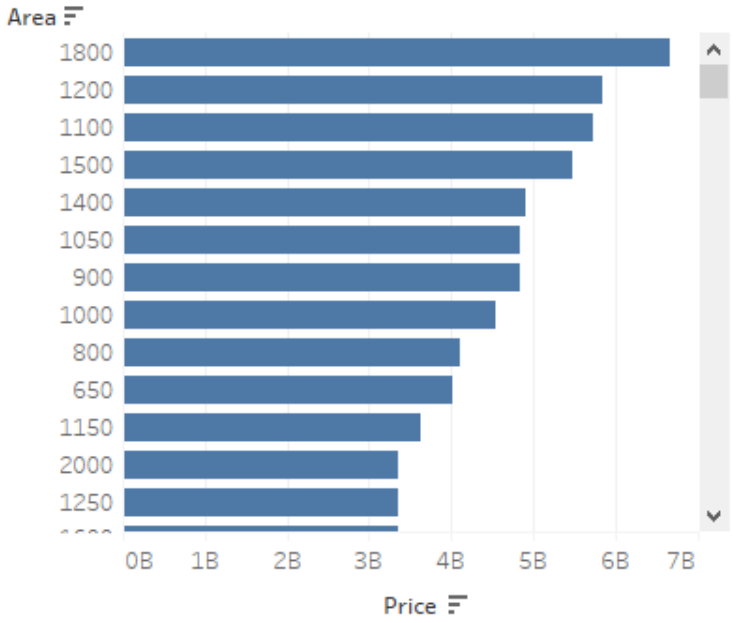
9. All services based on locations



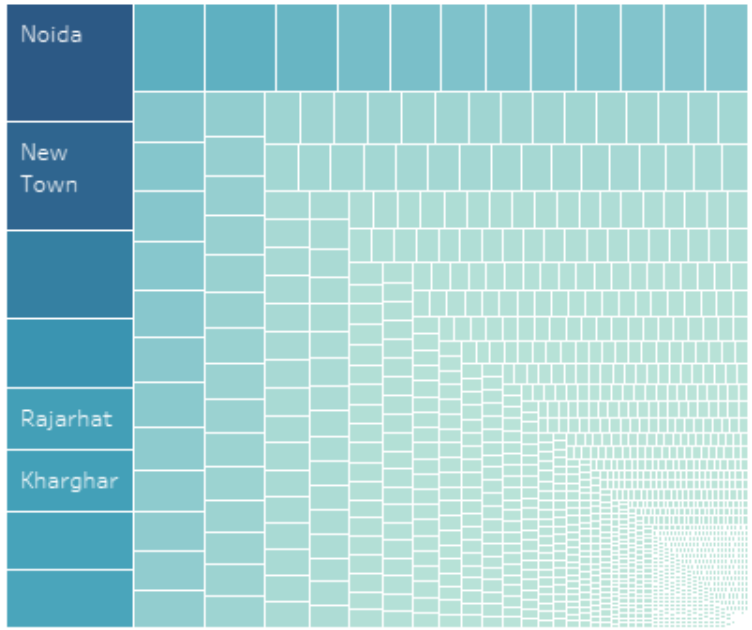
DASHBOARD


HOUSE PRICE PREDICTION
Latitude and longitude based on Locations
Iran
Pakistan
China
India
South Delhi
Ambedkar Nagar
Vaishali
Ashok Nagar
Howrah
mumbai
Karimnagar
Chengalpattu
Yemen
rabia
tation
Ambedkar Nagar
Ashok Nagar
Chengalpattu
Howrah
hyderabad
Karimnagar
Kaushambi
mumbai
nawada
Palghar
Shahdara
South Delhi
SULTANPUR
Thane
Vaishali

Number of houses based on area in sq



Vastu complains based on locations



Measure Names

- Price
- Rain Water Harvesti..

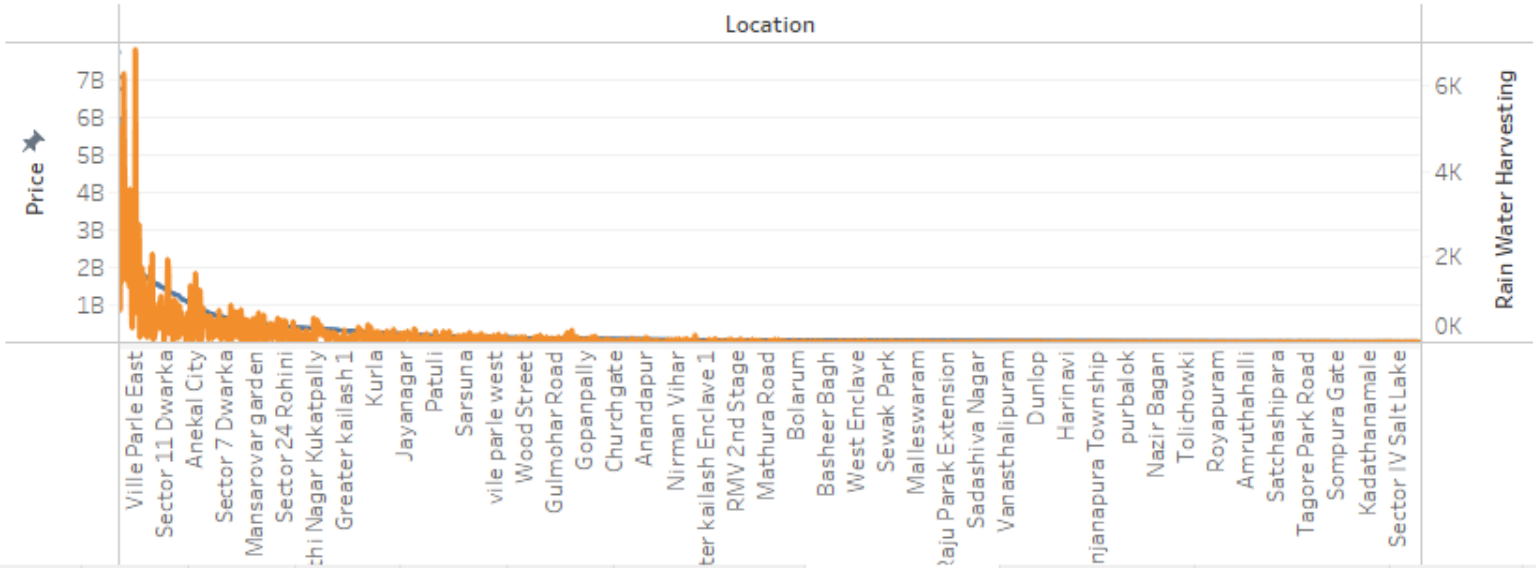
Highlight Location

Highlight Location

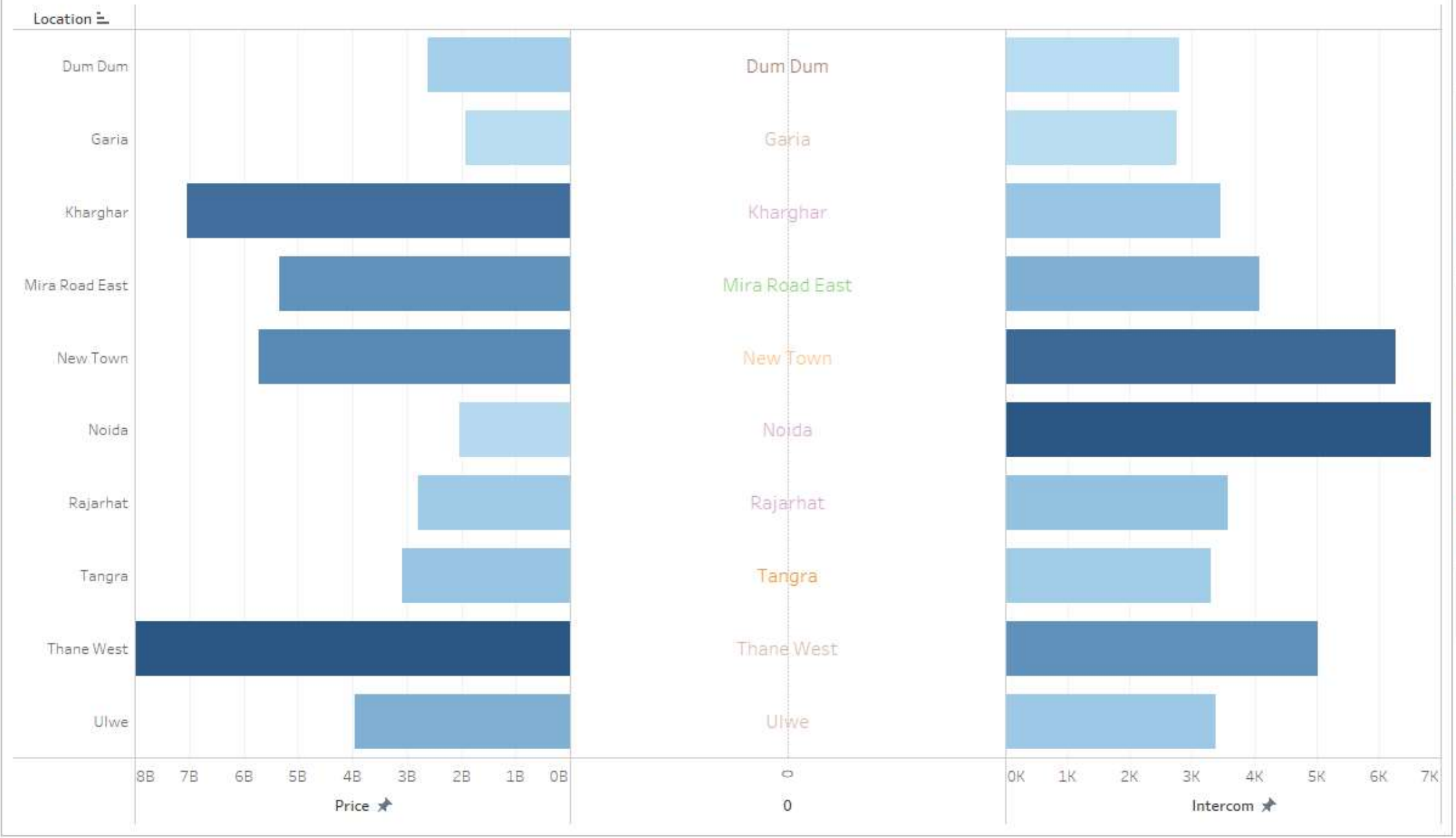
Vaastu Compliant

0 6,849

house prices based in rain water harvesting pits



house price and intercom



Location

Limit
Top 10 by
SUM([24X7Security])

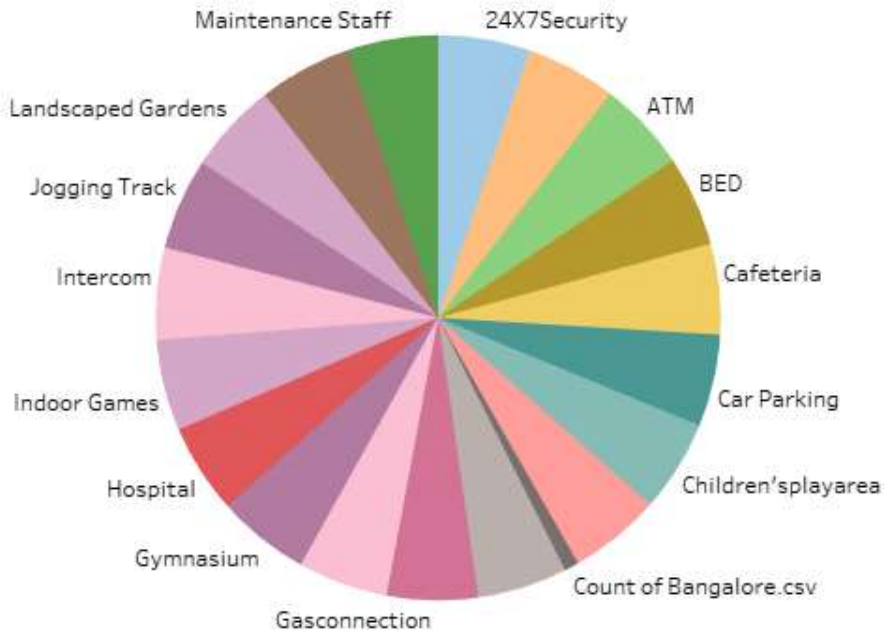
SUM(Intercom)
2,754 6,849

SUM(Price)
2B 8B

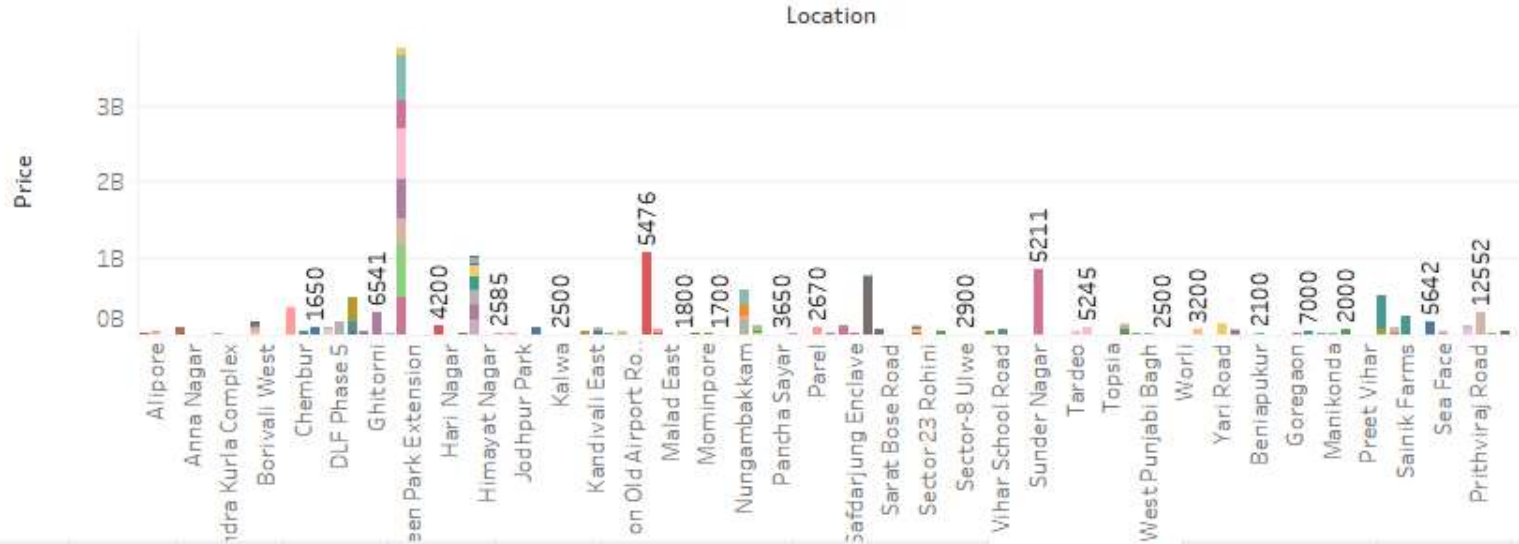
Location
- Dum Dum
- Garia
- Kharghar
- Mira Road East
- New Town
- Noida
- Rajarhat
- Tangra
- Thane West
- Ulwe

Highlight Location
Highlight Location

All services based on locations



House price based on number of bed rooms



Measure Names
- 24X7Security
- AC
- ATM
- BED
- Cafeteria
- Car Parking
- Children'splayarea
- Club House
- Count of Bangalore.c..
- Dining Table
- Gasconnection
- Golf Course
- Gymnasium
- Hospital
- Indoor Games
- Intercom
- Jogging Track
- Landscaped Gardens
- Lift Available
- Maintenance Staff

STORY

A data story is a way of presenting data and analysis in a narrative format, intending to make the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis logically and systematically, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos

The number of scenes in a storyboard for a data visualization analysis of the performance and efficiency of Radisson Hotels will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process and it breaks down the analysis into a series of steps or scenes.
Explanation video link:
https://drive.

STORY

HOUSE PRICE PREDICTION

our house prices in this 5metropolitan	our prices based on Area in sq	House prices based on Rain water harvesting pits	Vastu complains based on locations	Average price based on number of bedrooms	Hospitals and schools near the locations	Ma hou

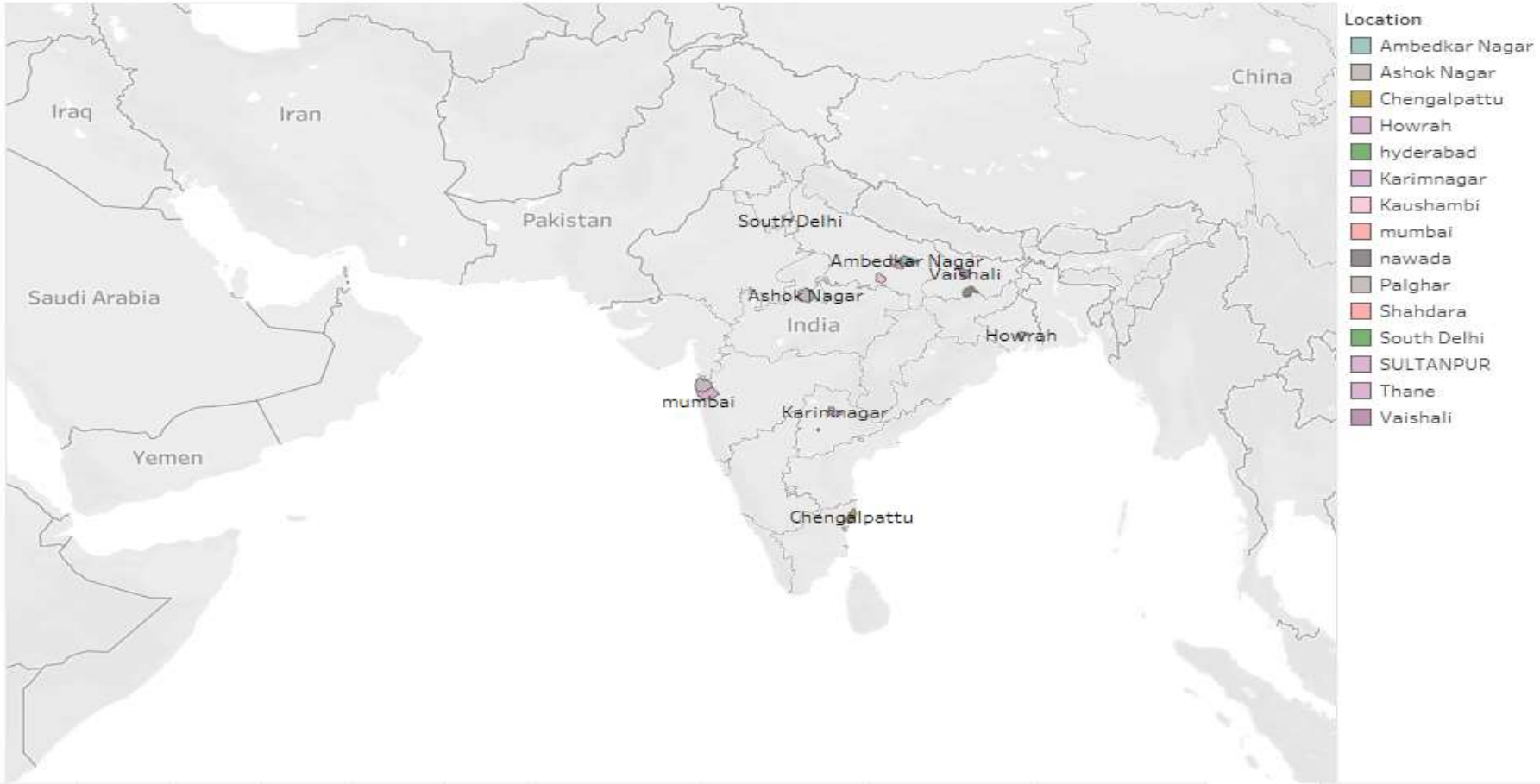


Tableau - story 1 [from LOCALHOST] - Tableau license expires in 13 days

File Data Worksheet Dashboard Story Analysis Format Server Window Help

Show Me

Story Layout

New story point

Blank Duplicate

Sheet 1
Sheet 2
Sheet 3
Sheet 4
Sheet 5
Sheet 6
Sheet 7
Sheet 8
Sheet 9
Dashboard 1
Dashboard 2

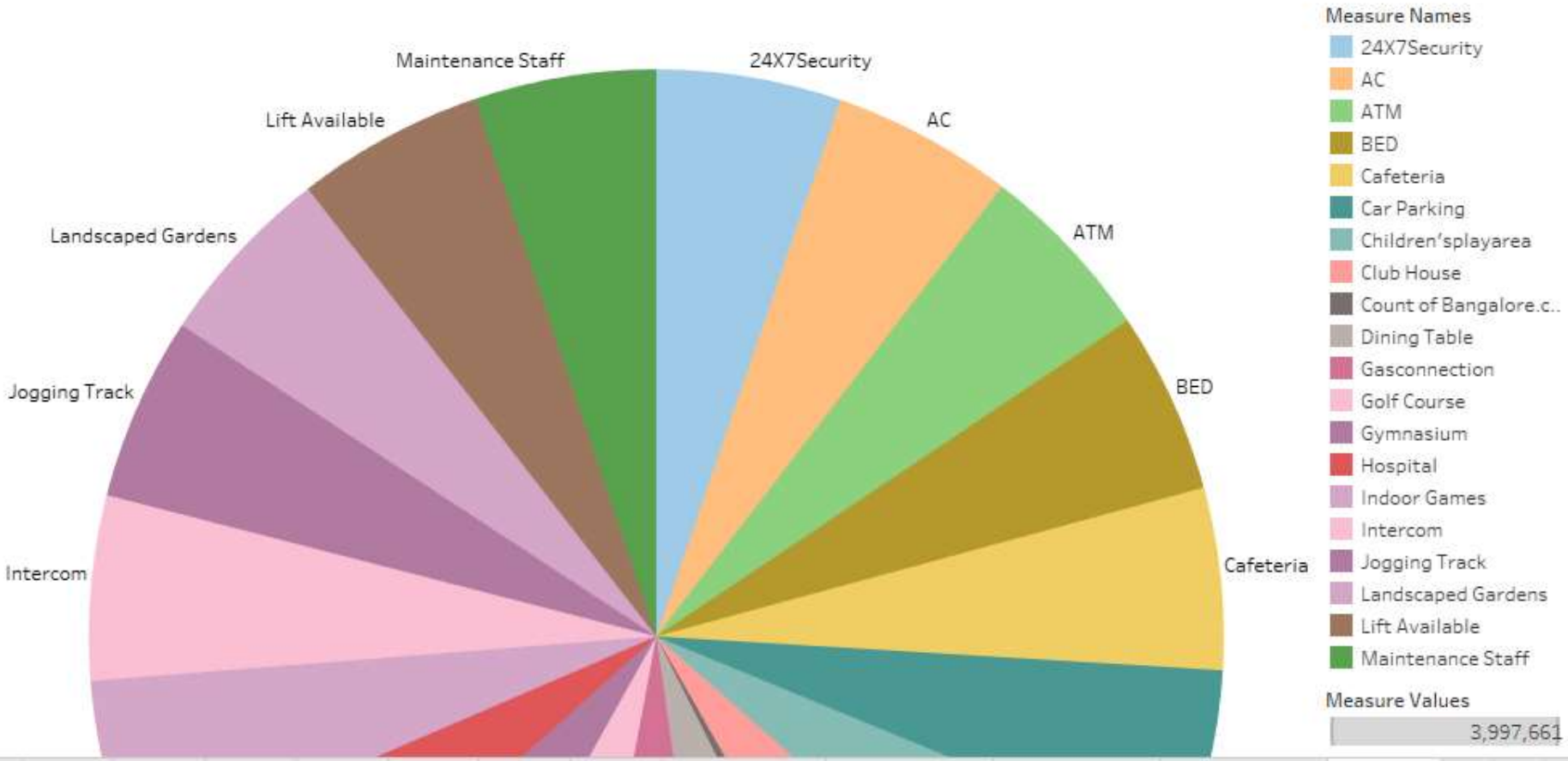
Drag to add text

Show title

Size

Story (1016 x 964)

on ng | Vastu complains based on locations | Average price based on number of bedrooms | Hospitals and schools near the locations | Maintains staff in house prices | our prices based on intercom | All services based on locations



Measure Names
24X7Security
AC
ATM
BED
Cafeteria
Car Parking
Children'splayarea
Club House
Count of Bangalore.c..
Dining Table
Gasconnection
Golf Course
Gymnasium
Hospital
Indoor Games
Intercom
Jogging Track
Landscaped Gardens
Lift Available
Maintenance Staff

Measure Values
3,997,661

Data Source | Sheet 1 | Sheet 2 | Sheet 3 | Sheet 4 | Sheet 5 | Sheet 6 | Sheet 7 | Sheet 8 | Sheet 9 | Dashboard 1 | Dashboard 2 | Dashboard 3 | Dashboard 4 | Story 1

ADVANTAGES:

- Investment Decision Support: Accurate house price predictions can help individuals and investors make informed decisions about buying or selling property. This can lead to better investment outcomes.
- Risk Mitigation: For real estate developers and investors, predicting house prices can help in risk assessment and mitigation. They can adjust their strategies based on market conditions.
- Financial Planning: Homebuyers can use price predictions to plan their budgets and assess affordability, ensuring they don't overstretch financially.
- Improved Transparency: Price predictions can enhance transparency in real estate markets, reducing information asymmetry between buyers and sellers.
- Data-Driven Decision-Making: Predictive models rely on data, which encourages data-driven decision-making, minimizing emotional decisions in property transactions.

ADVANTAGES:

- Data Quality and Availability: Predictive models heavily depend on the quality and availability of data. In some cases, obtaining accurate and up-to-date property data can be challenging in India, leading to less reliable predictions.

- Market Volatility: Real estate markets can be highly volatile, influenced by various factors such as economic conditions, government policies, and local events. Predicting prices accurately can be challenging due to these external factors.

- Model Complexity: Building accurate predictive models for house prices requires a deep understanding of data science and machine learning techniques. Many people may not have the necessary expertise.

- Ethical Concerns: There can be ethical concerns related to using predictive models in real estate, such as potential biases in data or models that may discriminate against certain groups.

- Limited Scope: Predictive models may not account for all variables affecting property prices, such as local zoning regulations, infrastructure development plans, or neighborhood changes.

- Market Sentiment: Real estate prices can be influenced by market sentiment and emotional factors, which may not always align with predictions

APPLICATIONS:

❖ Real Estate Investment:

Investors can use house price prediction models to make informed decisions about where to invest in real estate. These models can help identify neighborhoods or areas with the potential for high future price appreciation, allowing investors to maximize their returns.

❖ Homebuying:

Prospective homebuyers can use these models to estimate the future value of a property they are interested in purchasing. This information can help them decide whether the property is a good investment and if it fits within their budget.

❖ Property Valuation:

Real estate agents and appraisers can use house price prediction models to provide accurate property valuations to sellers and buyers. This ensures that properties are priced competitively in the market.

❖ Urban Planning:

City planners and local government authorities can benefit from house price prediction models to understand trends in housing demand and property values. This information can be used to make decisions about zoning, infrastructure development, and affordable housing initiatives.

❖ Mortgage Lending:

Banks and financial institutions can use these models to assess the risk associated with lending for property purchases. By accurately predicting property values, they can determine loan-to-value ratios and interest rates.

❖ Property Tax Assessment:

Local governments can use predictive models to assess property taxes more accurately. This can help ensure that property taxes are fair and reflect the current market value of properties.

❖ Risk Management:

Property developers and construction companies can use house price prediction models to assess the potential risk associated with new developments. These models can help developers make decisions about the timing and location of their projects.

❖ Housing Policy:

Government agencies can use these models to formulate housing policies that address issues such as affordability, gentrification, and housing supply. Predictive analytics can inform the creation of policies that promote sustainable urban development.

❖ Real Estate Marketing:

Real estate agents and property listing platforms can leverage predictive models to provide more accurate and relevant property recommendations to potential buyers and renters.

❖ Rental Market:

Landlords and property management companies can use house price prediction models to determine appropriate rental rates. This ensures that rental properties are priced competitively and generate optimal rental income.

CONCLUSION

- Summary of the Study: Begin by summarizing the main objectives and scope of your study. Mention the data sources used, the predictive model(s) employed, and any specific features or variables that were considered.

- Model Performance: Discuss the performance of the predictive models. This can include metrics like Mean Absolute Error (MAE), Mean Squared Error (MSE), Root Mean Squared Error (RMSE), or R-squared. Highlight the strengths and weaknesses of the models used.

- Variable Importance: Explain which factors or variables had the most significant impact on house prices in the metropolitan cities under study. Identify key predictors that potential buyers and sellers should consider.

- Geographical Variation: Analyze whether house prices varied significantly between different metropolitan cities within India. Identify any trends or patterns that emerged.

- Temporal Trends: Discuss any temporal trends observed in house prices. Has there been a consistent increase or decrease over time? Are there seasonal patterns that affect prices?

- Market Insights: Provide insights into the factors driving house prices in these cities. This could include economic factors, infrastructure development, population growth, and real estate market conditions.

- Policy Implications: Consider any policy implications of your findings. Are there potential policy changes or interventions that could influence house prices positively or negatively?

- Limitations: Acknowledge the limitations of your study. Discuss any data constraints, potential biases, or simplifications made in the modeling process.

- Future Research: Suggest areas for future research. Are there aspects of house price prediction or real estate market analysis that could benefit from further investigation?

- Final Remarks: Conclude by summarizing the key findings and their significance. Highlight the practical applications of your research and how it contributes to our understanding of house price dynamics in metropolitan cities in India.

FUTURE SCOPE:

- Increasing Urbanization: India is experiencing rapid urbanization, with more people moving to metropolitan cities in search of better job opportunities and improved living standards. This trend is likely to continue, increasing the demand for housing in these cities.

- Data Availability: With the advent of technology and the increasing digitization of real estate transactions, there is a growing amount of data available for analysis. This data includes property prices, location-based information, economic indicators, and demographic data. Machine learning and data analytics can leverage this data to make more accurate predictions.

- Technology Advancements: Advances in machine learning and artificial intelligence are enabling more sophisticated and accurate prediction models. These models can take into account a wide range of variables, including historical property prices, economic indicators, infrastructure development, and even sentiment analysis from social media, to predict future property prices.

- Government Policies: Government policies and regulations play a significant role in the real estate market. Policies related to land use, construction permits, taxation, and housing incentives can impact property prices. Predictive models can take these factors into account when making forecasts.

- Market Sentiment Analysis: Analyzing market sentiment through social media and news articles can provide valuable insights into potential fluctuations in property prices. Sentiment analysis models can be integrated into prediction systems to capture this information.

THANK YOU