

# PROJECT REPORT

## 1) INTRODUCTION

### 1.1 Overview:

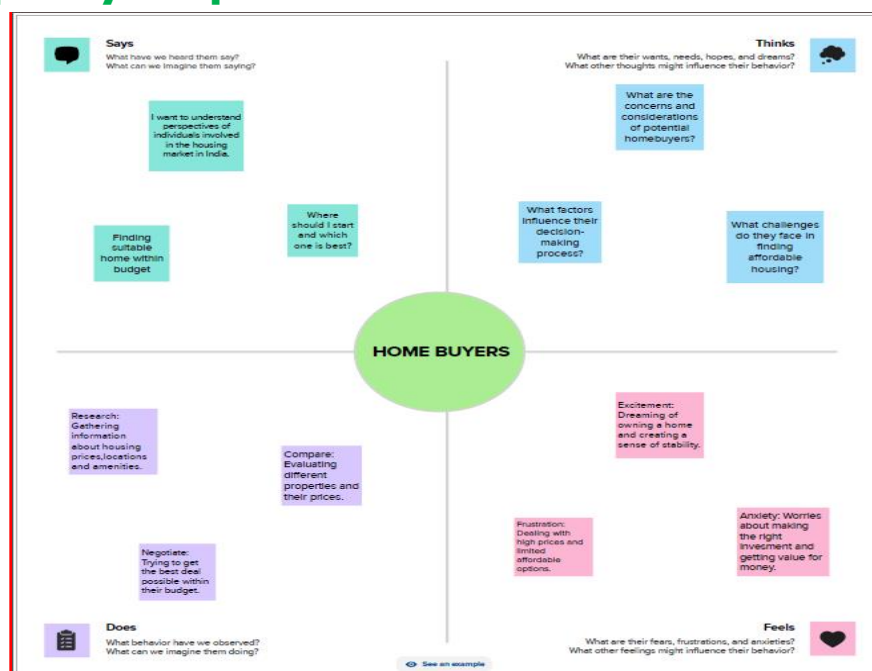
The project focuses on analyzing housing prices in metropolitan cities in India. By examining factors such as location, facilities and services, the aim is to provide valuable insights for potential buyers, sellers and investors.

### 1.2 Purpose:

- ✓ The project aims to thoroughly analyze housing prices in metropolitan cities in India.
- ✓ The goal is to provide insights into the factors that influence housing prices in metropolitan cities.
- ✓ The project seeks to identify patterns and trends in housing prices.

## 2) PROBLEM DEFINITION & DESIGN THINKING

### 1.3 Empathy Map



## 1.4 Ideation & Brainstorming map

1

### Define your problem statement

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

 5 minutes

#### PROBLEM

To analyze housing prices in metropolitan areas of India and identify the key factors that influence the fluctuations in prices. this analysis aims to provide valuable insights into the housing market, helping stakeholders navigate the complexities of the real estate sector in metropolitan areas of India.

2

### Brainstorm

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

 10 minutes

#### TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

#### Person 1

Gather comprehensive data on housing prices from various sources

This data should include information on property size, location, amenities, age of the property, and transaction history.

#### Person 2

Explore the impact of location on housing prices by considering factors such as proximity to city centers, educational institutions etc.

Analyze how these factors influence the demand and value of properties in different metropolitan areas

#### Person 3

Study the correlation between housing prices and economic indicators such as GDP growth, employment rates, inflation, and etc.

Identify how changes in these indicators affect the housing market and price fluctuations.

#### Person 4

Examine demographic factors such as population growth in metropolitan areas.

Determine how these factors impact housing demand and subsequently influence prices.

3

### Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger 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.

Develop a comprehensive and dynamic Smart Housing Price Index (SHPI) for metropolitan areas in India, providing real-time insights into housing market trends and price fluctuations.

Utilize machine learning algorithms to analyze the collected data and identify the key factors influencing housing prices.

4

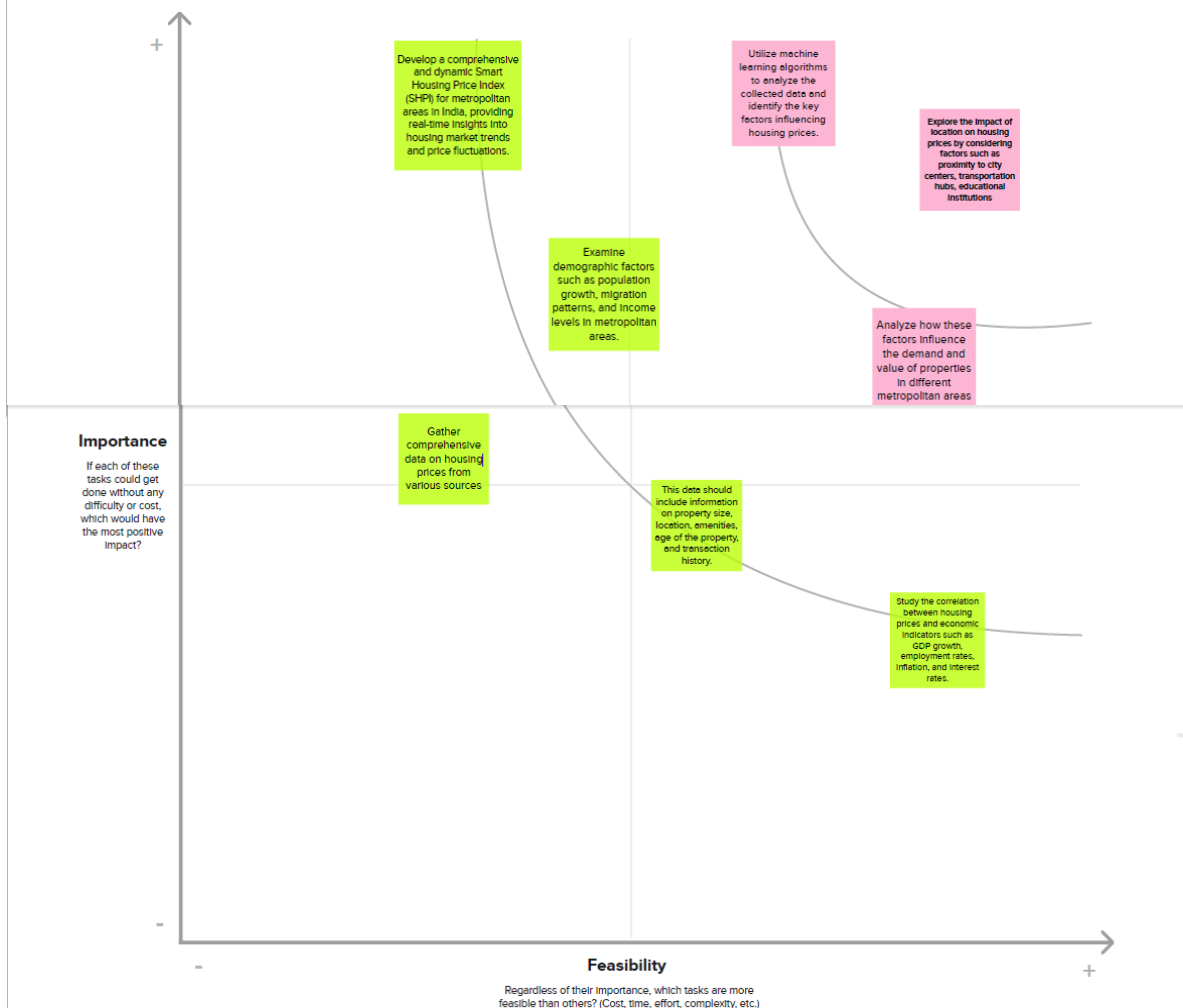
### Prioritize

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

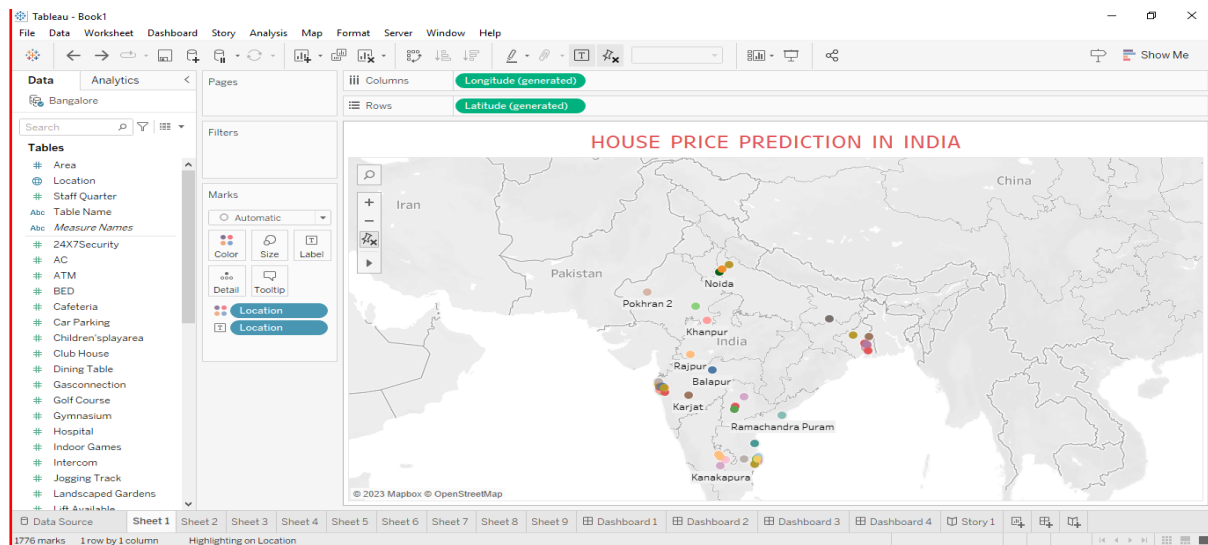
#### TIP

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.

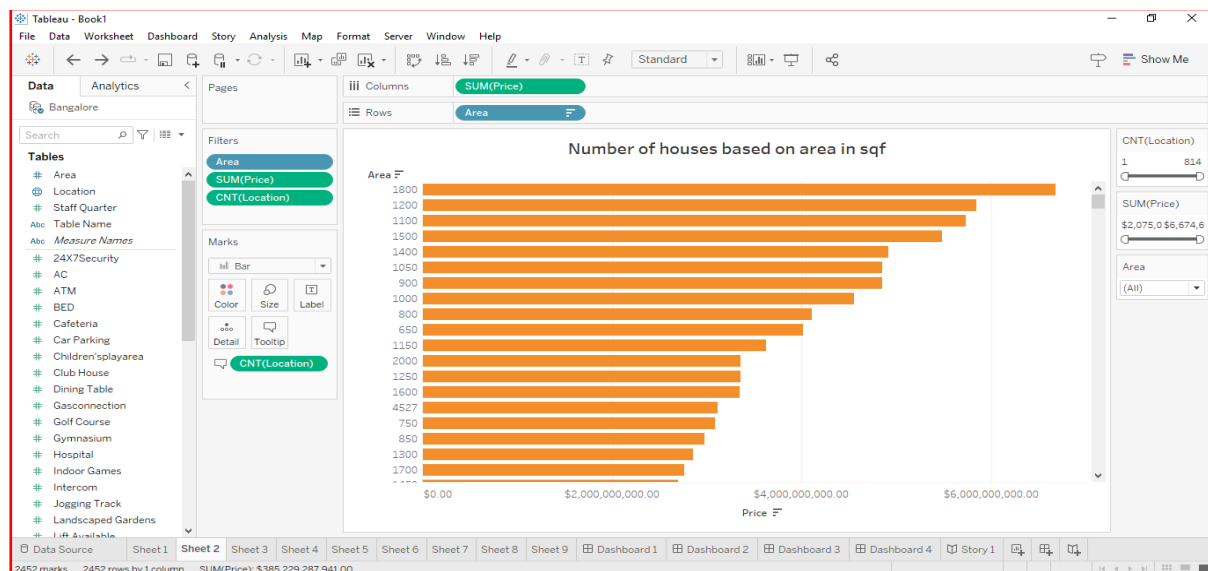


### 3) RESULT

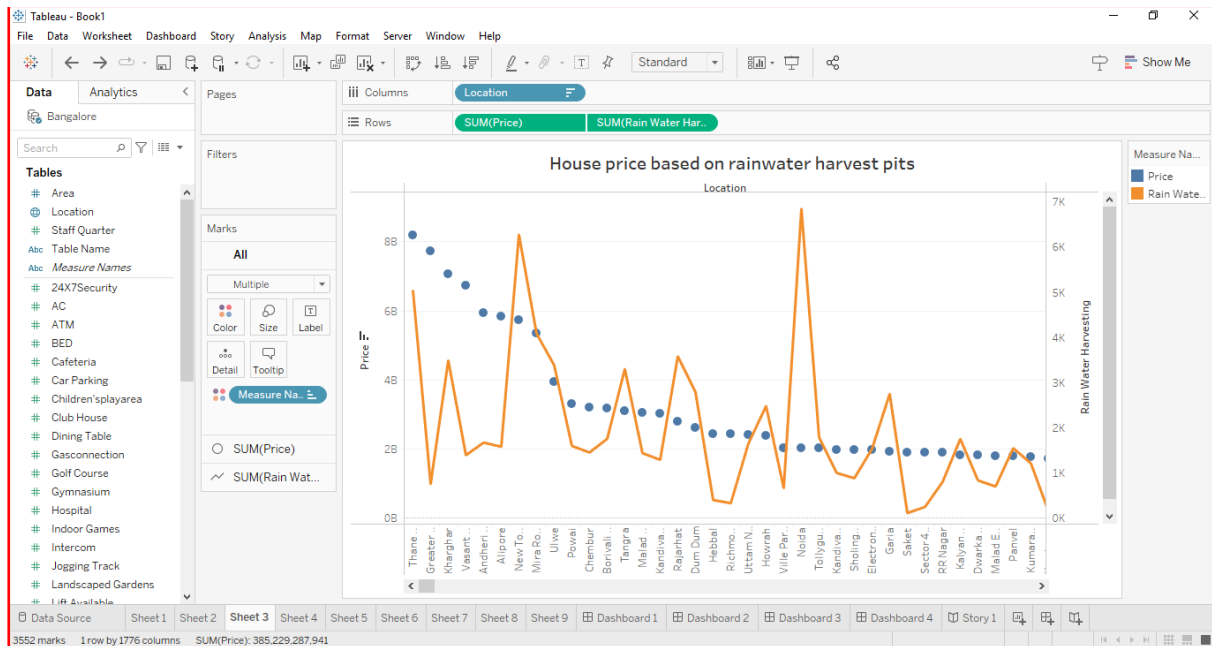
#### 1.5 Sheet Creation



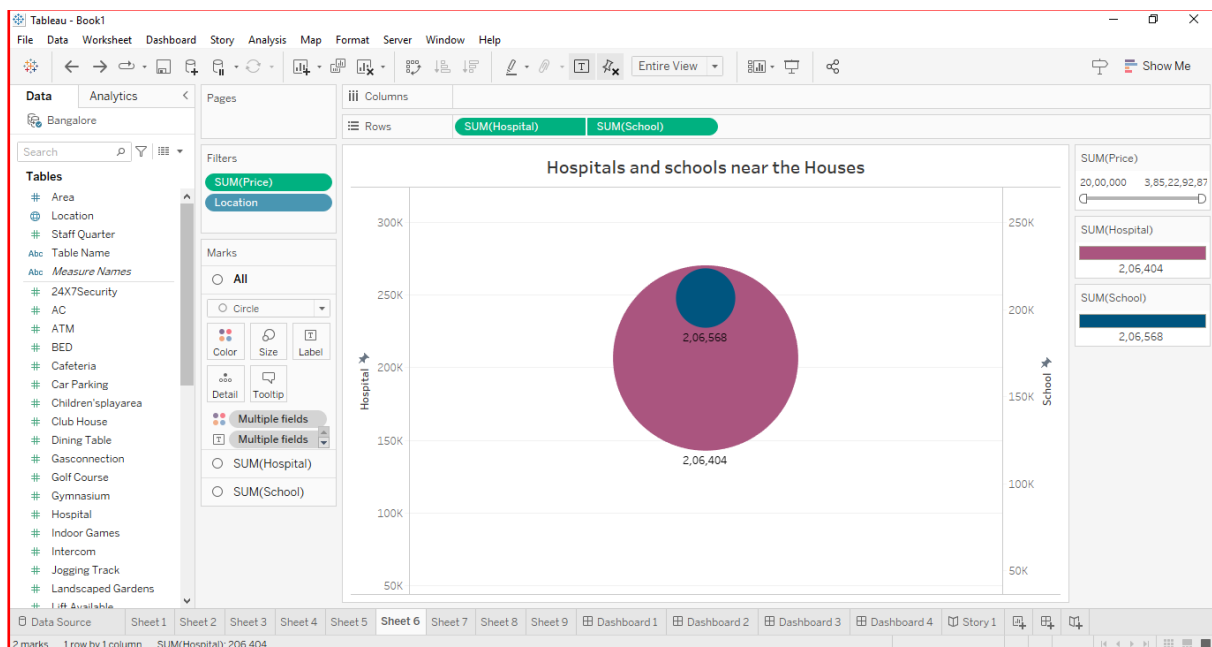
The location of the data can be determined using this sheet. Here, we used geographical map for finding the **locations**.



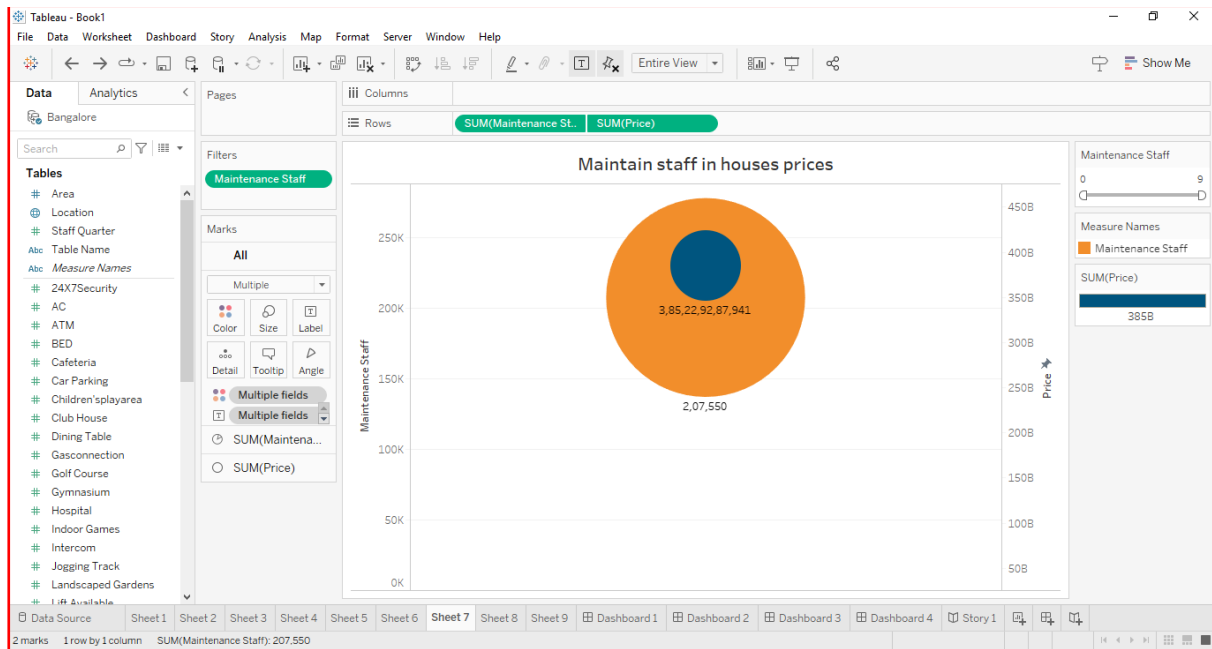
Analysing the number of houses based in a given **area** based on **square feet** can provide insights into the density and demand for housing in that locations.



Here, we analyzed the presence of **rainwater harvest pits** in a property can potentially impacts its price, as it indicates the availability of sustainable water resources.

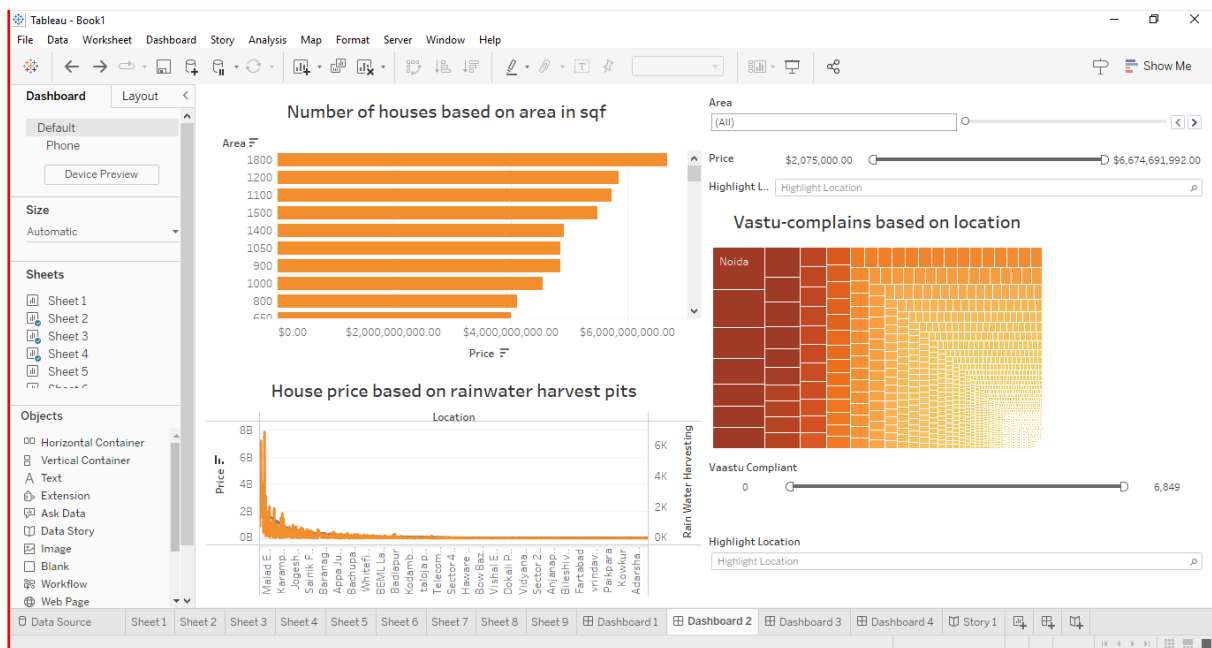


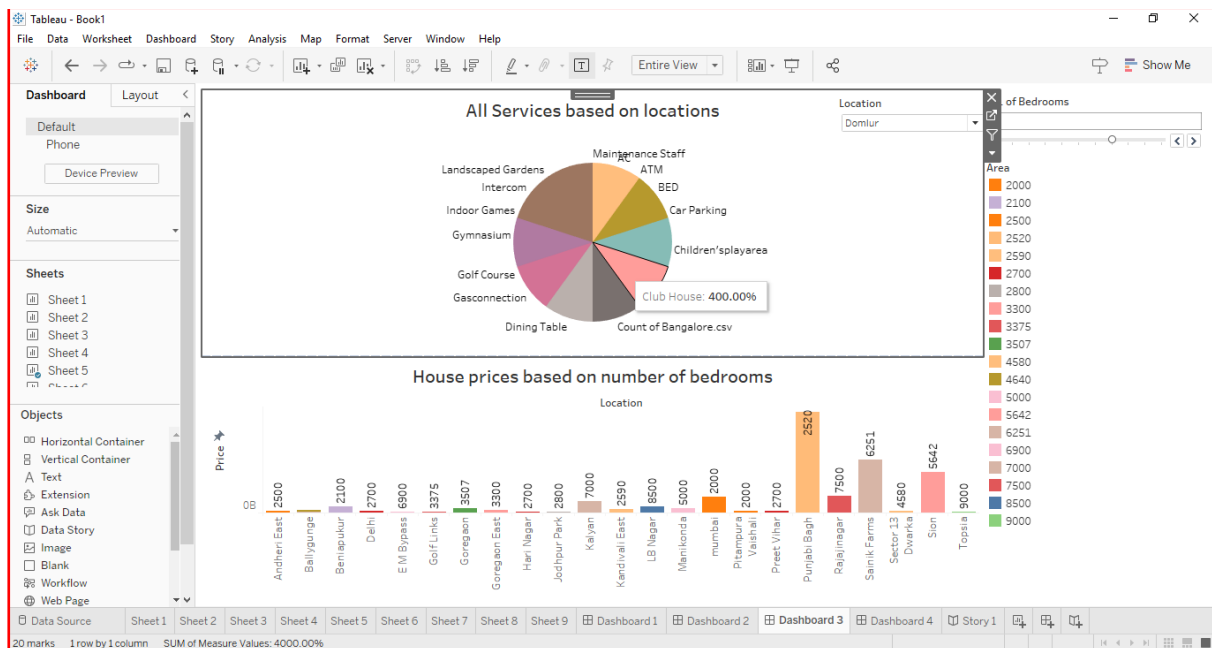
Using **pie chart**, we have created a visualisation which shows the availability of **Hospital and Schools** near the houses.



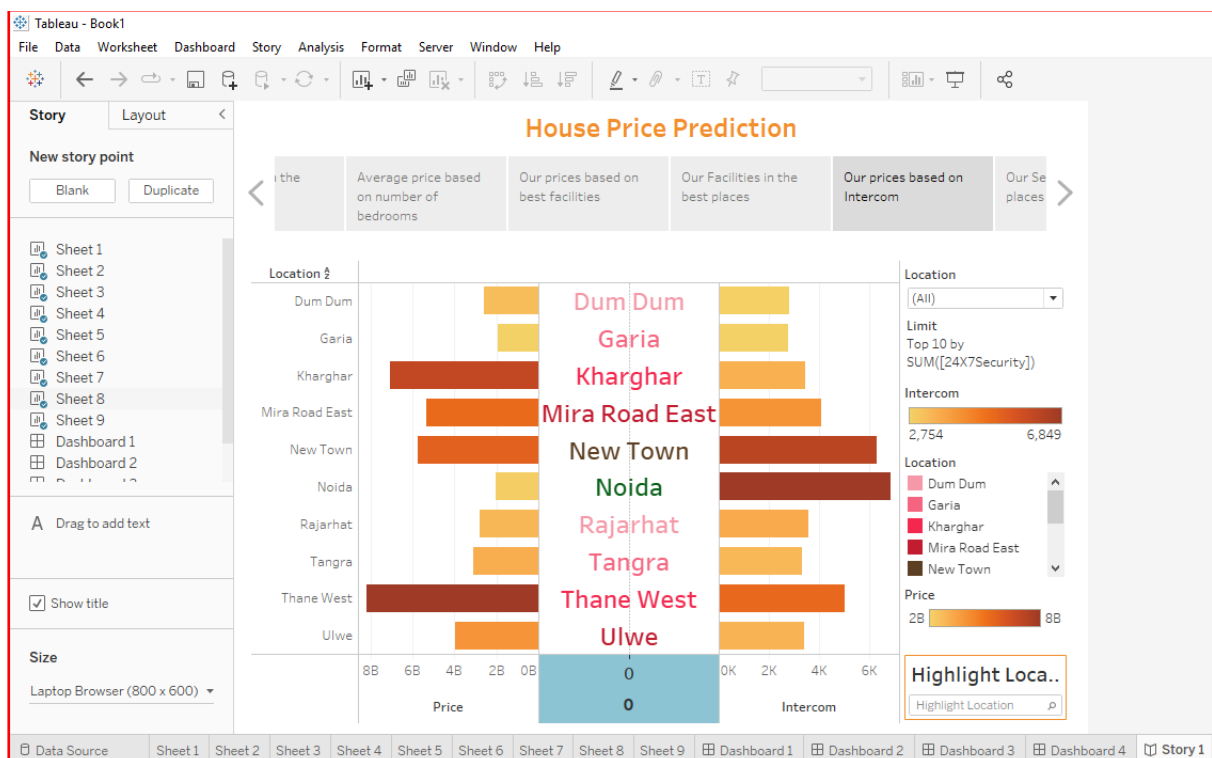
The availability of maintenance staff or services within a housing complex or community can influence the price of houses. We used a pie chart representation to calculate the housing priced based on number of maintenance staffs.

## 3.2 DASHBOARD & STORY CREATION:





The housing prices based on all services and number of bedrooms. Analyzing the correlation between the number of bedrooms and house prices can help in predicting the value of the property based on its bedroom count.



**Story** is a **series of visualisations** with a caption that helps to present our visualisation in an effective way.

Here, we analyzed the presence and quality of **intercom systems** in a house can potentially impact their prices, as it offers convenience and **security features**.

#### **4) ADVANTAGES**

- Financial planning
- Real Estate Investment
- Market analysis
- Risk Mitigation
- Market transparency

#### **DISADVANTAGES**

- Inaccuracy
- Data limitations
- External Factors
- Overreliance on Predictions
- Neglecting local factors

#### **5) APPLICATIONS**

**1. Real Estate Investment:** Housing price predictions are commonly used by real estate investors to identify **potential investment opportunities**. By analyzing **predicted price trends**, investors can make informed decisions about buying, selling, or holding properties to maximize their returns.



**2. Mortgage Lending:** Housing price predictions play a crucial role in mortgage lending. Lenders use these predictions to assess the **risk associated** with lending funds for property purchases. Predictions help lenders determine the **loan-to-value ratio**, interest rates, and other terms of the mortgage.

**3. Urban Planning:** Housing price predictions are valuable for urban planners and **policymakers**. They provide insights into the demand and supply dynamics of housing in specific areas, helping in the formulation of effective urban development strategies and land-use planning.

**4. Housing Market Analysis:** Housing price predictions are used by analysts and researchers to study market trends and understand the dynamics of the real estate industry. This analysis helps in forecasting market conditions, **identifying patterns**, and making informed predictions about future housing market performance.

**5. Insurance and Risk Assessment:** Insurance companies utilize housing price predictions to assess the value of properties for insurance purposes. Predictions help determine the appropriate coverage and premiums for homeowners, ensuring that they are adequately protected against **potential losses**.

**6. Personal Financial Planning:** Individuals can use housing price predictions to plan their personal finances. For example, **homeowners** can estimate the potential appreciation of their property to determine its value in the future. This information can be used for retirement planning or other financial decisions.

**7. Government Policy Making:** Housing price predictions assist policymakers in formulating housing policies, such as rent control or affordable housing programs. Predictions provide insights into **market conditions** and trends, helping governments make informed decisions to address housing affordability and market stability.

## **6) CONCLUSION**

In conclusion , incorporating various factors such as **latitude and longitude**, number of houses based on area, rainwater harvest pits, Vastu-compliance, number of bedrooms, proximity to schools, availability of maintenance staff and presence of **intercom systems** can significantly enhance housing price predictions.

Housing prices in metropolitan areas of India have been experiencing a steady increase in recent years. Factors such as **rapid urbanization**, population growth, and limited availability of land have contributed to the rise in housing prices. Additionally, the demand for housing in these areas has also been fueled by the influx of migrants seeking better **economic opportunities**.

However, it is important to note that the affordability of housing in metropolitan areas has become a major concern, as the rising prices have made it increasingly difficult for many individuals and families to own a home.

Efforts to address this issue, such as the implementation of affordable **housing schemes** and the

promotion of sustainable urban development, are crucial in ensuring that housing remains accessible and affordable for all residents in metropolitan areas of India.

Furthermore, advancements in technology and data analysis techniques offer promising opportunities for further improving the accuracy and reliability of housing price predictions. The integration of alternative data sources, **geospatial analysis**, **real-time predictions**, and enhanced transparency can contribute to more precise and dynamic predictions.

## **7) FUTURE SCOPE**

**1. Enhanced Data Analytics:** Advancements in data analytics techniques can improve the **accuracy** and reliability of housing price predictions.

**2. Improved Transparency and Explainability:** Enhancing the **transparency** and explainability of housing price prediction models can help build trust among users.

**3. Regional and Global Market Integration:** As the world becomes more interconnected, housing price prediction models that can integrate regional and global market dynamics can provide **a broader perspective**.